

Name: Suzhou Saibao Calibration Technology Co., Ltd.

Address: No.4, Baotong Road, Wuzhong Economic Development Zone, Suzhou, Jiangsu, China

Registration No. CNAS L2336

Accreditation Criteria: ISO/IEC 17025:2017 and relevant requirements of CNAS

Effective Date: 2023-02-08 Expiry Date: 2028-12-23

## SCHEDULE 5 ACCREDITED CALIBRATION AND MEASUREMENT CAPABILITY SCOPE

Note: The instruments with \* represents onsite calibration can be performed.

| No       | Instrument                      | Measurand | Calibration Method                               | Range         | Expanded Uncertainty<br>( $k=2$ ) | Note                                    | Effective Date |
|----------|---------------------------------|-----------|--------------------------------------------------|---------------|-----------------------------------|-----------------------------------------|----------------|
| Geometry |                                 |           |                                                  |               |                                   |                                         |                |
| 1        | *Linear Displacement Sensors    | Length    | C.S. for Linear Displacement Sensors JJF 1305    | (0.1~1000)mm  | $U=0.06\%FS$                      |                                         |                |
| 2        | Tape                            | Length    | V.R. of Steel Measuring Tapes JJG 4              | (0~100)m      | $U=0.2mm+2\times 10^{-5}L$        | except for Steel sounding tape measure. |                |
| 3        | Fiber Tapes And Measuring Ropes | Length    | V.R. of Fiber Tapes And Measuring Ropes JJG 5    | (0~100)m      | $U=0.2mm+1\times 10^{-4}L$        |                                         |                |
| 4        | $\pi$ ruler                     | Length    | $\pi$ - ruler calibration specification JJF 1423 | (9~5000)mm    | $U=0.02mm+4\times 10^{-6}L$       |                                         |                |
| 5        | Steel Rule                      | Length    | Verification Regulation of Steel Rule JJG 1      | (0~600)mm     | $U=0.06mm$                        |                                         |                |
|          |                                 |           |                                                  | (>600~1500)mm | $U=0.10mm$                        |                                         |                |



No. CNAS L2336

第 1 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                | Measurand | Calibration Method                                                                        | Range                                    | Expanded Uncertainty<br>( $k=2$ )          | Note | Effective Date |
|----|-------------------------------------------|-----------|-------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------|------|----------------|
|    |                                           |           |                                                                                           | ( $>1500\sim2000$ )mm                    | $U=0.15\text{mm}$                          |      |                |
| 6  | *Capacitive grating digital display scale | length    | Calibration specification for capacitive grating digital display scale JJF 1280           | ( $0\sim500$ )mm                         | $U=0.01\text{mm}$                          |      |                |
|    |                                           |           |                                                                                           | ( $>500\sim1000$ )mm                     | $U=0.02\text{mm}$                          |      |                |
| 7  | *Cable Length Meter                       | Length    | V.R. of Cable Length Meter JJG 987                                                        | ( $10\sim1000$ ) m                       | $U_{\text{rel}}=0.18\%$                    |      |                |
| 8  | *Tool Microscope                          | Length    | V.R. of Universal Measuring Microscopes and Makers Microscopes JJG 56                     | ( $0\sim200$ )mm                         | $U=0.5\text{ }\mu\text{m}+2\times10^{-6}L$ |      |                |
| 9  | *Reading and measuring microscope         | Length    | V.R. of Measuring Microscope JJG 571                                                      | measuring microscope:<br>( $0\sim50$ )mm | $U=2\text{ }\mu\text{m}$                   |      |                |
|    |                                           | Length    |                                                                                           | Reading microscope:<br>( $0\sim6$ )mm    | $U=2\text{ }\mu\text{m}$                   |      |                |
| 10 | *Metallurgical Microscope                 | Length    | C.S. for Biological Microscopes JJF 1402                                                  | ( $0\sim10$ ) mm                         | $U=1.2\text{ }\mu\text{m}$                 |      |                |
|    |                                           |           |                                                                                           | ( $4\times\sim125\times$ )               | $U_{\text{rel}}=1.2\%$                     |      |                |
| 11 | *Imaging Probe Measuring Machines         | Length    | C.S. for Imaging Probe Measuring Machines JJF 1318                                        | ( $0\sim1000$ )mm                        | $U=0.5\text{ }\mu\text{m}+2\times10^{-6}L$ |      |                |
| 12 | *Projector                                | Length    | C.S. for Projectors JJF 1093                                                              | ( $0\sim200$ )mm                         | $1.1\text{ }\mu\text{m}+5\times10^{-6}L$   |      |                |
| 13 | *Level Rule                               | Length    | Calibration Specification for projectors Detecting The Notch of Tehe Sample JJF(Zhe) 1133 | ( $0\sim100$ )mm                         | $U=6\text{ }\mu\text{m}$                   |      |                |
|    |                                           |           |                                                                                           | $10\times\sim50\times$                   | $U_{\text{rel}}=0.3\%$                     |      |                |
|    |                                           | Angle     |                                                                                           | ( $0\sim90$ )°                           | $U=2'$                                     |      |                |
| 14 | *Metallurgical Microscope                 | Length    | Calibration Specification for Metallurgical Microscopes JJF 1914                          | ( $0\sim10$ ) mm                         | $U=1.2\text{ }\mu\text{m}$                 |      |                |
|    |                                           |           |                                                                                           | $4\times\sim125\times$                   | $U_{\text{rel}}=1.2\%$                     |      |                |



No. CNAS L2336

第 2 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                   | Measurand | Calibration Method                                                     | Range                                       | Expanded Uncertainty<br>( $k=2$ )        | Note                   | Effective Date |
|----|----------------------------------------------|-----------|------------------------------------------------------------------------|---------------------------------------------|------------------------------------------|------------------------|----------------|
| 15 | *Stereomicroscope                            | Length    | C.S. for Stereomicroscope<br>JJF(Min) 1063                             | $0.5 \times \sim 5 \times$                  | $U_{\text{rel}}=1.2\%$                   |                        |                |
| 16 | Gauge Block                                  | Length    | V.R. of Gauge Blocks<br>JJG 146                                        | $(0.5 \sim 1000)\text{mm}$                  | $U=0.14\mu\text{m}+1.4 \times 10^{-6}Ln$ |                        |                |
| 17 | Internal Micrometers                         | Length    | V.R. of Internal Micrometers JJG 22                                    | $(50 \sim 1000)\text{mm}$                   | $1.5 \mu\text{m}+6 \times 10^{-6}L$      |                        |                |
| 18 | *Micrometer for measuring internal dimension | Length    | C.S. for Micrometers for Measuring Inside Dimension<br>JJF 1411        | Internal: $(5 \sim 200)\text{mm}$           | $U=3 \mu\text{m}$                        |                        |                |
|    |                                              |           |                                                                        | three grasp: $(6 \sim 200)\text{mm}$        | $U=2 \mu\text{m}$                        |                        |                |
| 19 | *Micrometers                                 | Length    | V.R. of Micrometer JJG 21                                              | $(0 \sim 100)\text{mm}$                     | $1.3 \mu\text{m}+3 \times 10^{-6}L$      |                        |                |
|    |                                              |           |                                                                        | digital: $(0 \sim 100)\text{mm}$            | $0.7 \mu\text{m}+4 \times 10^{-6}L$      |                        |                |
|    |                                              |           |                                                                        | $(> 100 \sim 500)\text{mm}$                 | $1.5 \mu\text{m}+5 \times 10^{-6}L$      |                        |                |
|    |                                              |           |                                                                        | digital: $(> 100 \sim 500)\text{mm}$        | $0.8 \mu\text{m}+4 \times 10^{-6}L$      |                        |                |
|    |                                              |           |                                                                        | Measuring rod: $(25 \sim 500)\text{mm}$     | $0.5 \mu\text{m}+6 \times 10^{-6}L$      |                        |                |
| 20 | *Outside micrometer of large size            | Length    | C.S. for Large Dimension Outside Micrometers JJF 1088                  | $(> 500 \sim 1000)\text{mm}$                | $1.5 \mu\text{m}+6 \times 10^{-6}L$      |                        |                |
|    |                                              |           |                                                                        | Measuring rod: $(> 500 \sim 1000)\text{mm}$ | $0.5 \mu\text{m}+6 \times 10^{-6}L$      |                        |                |
| 21 | *Pointed micrometer                          | length    | Calibration specification for pointed micrometers JJF (zhe) 1045       | $(0 \sim 200)\text{mm}$                     | $U=2 \mu\text{m}$                        | 合格评定国家认可委员会<br>认可证书专用章 |                |
| 22 | *Wafer micrometer                            | length    | Calibration specification for micrometers JJF (zhe) 1090               | $(0 \sim 200)\text{mm}$                     | $U=2 \mu\text{m}$                        |                        |                |
| 23 | *Micrometer with small probe                 | length    | Calibration specification for micrometer with small probe JJF(zhe)1131 | $(0 \sim 100)\text{mm}$                     | $U=2 \mu\text{m}$                        |                        |                |



No. CNAS L2336

第 3 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

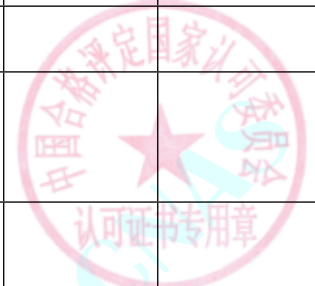
| №  | Instrument                                                 | Measurand | Calibration Method                                                         | Range                                 | Expanded Uncertainty<br>( $k=2$ )   | Note | Effective Date |
|----|------------------------------------------------------------|-----------|----------------------------------------------------------------------------|---------------------------------------|-------------------------------------|------|----------------|
| 24 | *Micrometer with round probe                               | Length    | Calibration specification for micrometers with circular probe JJF(zhe)1132 | (0~200)mm                             | $U=2 \mu\text{m}$                   |      |                |
| 25 | *Depth Micrometer                                          | Length    | V.R. of Depth Micrometers JJG 24                                           | (0~300)mm                             | $1.2 \mu\text{m}+5 \times 10^{-6}L$ |      |                |
| 26 | Micrometers with Dial Comparater and Indicating Snap Gauge | Length    | V.R. of Micrometers with Dial Comparater and Indicating Snap Gauge JJG 26  | (0~200)mm                             | $U=1.0 \mu\text{m}$                 |      |                |
| 27 | *Micrometers with Gauge                                    | Length    | V.R. of Micrometers with Gauge JJG 427                                     | (0~100)mm                             | $0.7 \mu\text{m}+4 \times 10^{-6}L$ |      |                |
| 28 | *Indicator table                                           | Length    | V. R. of Dial Gauges(dial and digital) JJG 34                              | dial reading in 0.001mm: (0~5)mm      | $1.8 \mu\text{m}+3 \times 10^{-4}L$ |      |                |
|    |                                                            |           |                                                                            | digital reading in 0.001mm: (0~1)mm   | $U=1.4 \mu\text{m}$                 |      |                |
|    |                                                            |           |                                                                            | digital reading in 0.001mm: (>1~10)mm | $U=2.4 \mu\text{m}$                 |      |                |
|    |                                                            |           |                                                                            | dial reading in 0.01mm: (0~10)mm      | $U=5 \mu\text{m}$                   |      |                |
|    |                                                            |           |                                                                            | digital reading in 0.01mm: (0~10)mm   | $U=7 \mu\text{m}$                   |      |                |
| 29 | *Large range dial indicator                                | Length    | V. R. of Wide Range Gauges Reading in 0.01mm JJG 379                       | dial: (10~50)mm                       | $U=8 \mu\text{m}$                   |      |                |
|    |                                                            |           |                                                                            | digital: (10~50)mm                    | $U=0.01\text{mm}$                   |      |                |
| 30 | *Dial Test Indicator                                       | Length    | V.R. of Dial Test Indicator JJG 35                                         | reading in 0.01mm: (0~1)mm            | $U=2.7 \mu\text{m}$                 |      |                |
|    |                                                            |           |                                                                            | reading in 0.001mm: (0~0.4)mm         | $U=1.2 \mu\text{m}$                 |      |                |



No. CNAS L2336

第 4 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                               | Measurand | Calibration Method                                                      | Range                               | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|----|----------------------------------------------------------|-----------|-------------------------------------------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
| 31 | *Bore Dial Indicators                                    | Length    | C.S. for Bore Dial Indicators<br>JJF 1102                               | Inner diameter dial gauge:(6~450)mm | $U=3\mu\text{m}$                  |                                                                                      |                |
|    |                                                          |           |                                                                         | Inside dial indicator:(6~450)mm     | $U=1.9\mu\text{m}$                |                                                                                      |                |
| 32 | *Depth Dial Gauge                                        | Length    | V.R. of Depth Dial Gauge<br>JJG 830                                     | (0~10) mm                           | $U=1\mu\text{m}$                  |                                                                                      |                |
|    |                                                          |           |                                                                         | (>10~100)mm                         | $U=2\mu\text{m}$                  |                                                                                      |                |
| 33 | *Current Calipers                                        | Length    | V.R. of Current Calipers<br>JJG 30                                      | (0~500)mm                           | $U=0.01\text{mm}$                 |                                                                                      |                |
|    |                                                          |           |                                                                         | (>500~1000)mm                       | $U=0.02\text{mm}$                 |                                                                                      |                |
|    |                                                          |           |                                                                         | (>1000~1500)mm                      | $U=0.03\text{mm}$                 |                                                                                      |                |
|    |                                                          |           |                                                                         | (>1500~2000)mm                      | $U=0.04\text{mm}$                 |                                                                                      |                |
| 34 | *Height Gauge                                            | Length    | V. R. of Feeler Gauge<br>JJG 31                                         | (0~500)mm                           | $U=0.01\text{mm}$                 |                                                                                      |                |
|    |                                                          |           |                                                                         | (>500~1000)mm                       | $U=0.02\text{mm}$                 |                                                                                      |                |
| 35 | *Dial Snap Gauges                                        | Length    | C.S. for Dial Snap Gauges<br>JJF 1253                                   | (5~100)mm                           | $U=9\mu\text{m}$                  |                                                                                      |                |
| 36 | *Thickness Gauges                                        | Length    | C.S. for Thickness Gauges JJF 1255                                      | (0~50)mm                            | $U=2\mu\text{m}$                  |                                                                                      |                |
| 37 | *Tester for Dial Indicator Gauges                        | Length    | V.R. of Tester for Dial Indicator Gauges JJG 201                        | (0~50)mm                            | $0.2\mu\text{m}+2\times 10^{-5}L$ |                                                                                      |                |
| 38 | *Micrometers with Prismatically Arranged Measuring Faces | Length    | V.R. of Micrometers with Prismatically Arranged Measuring Faces JJG 182 | (1~50)mm                            | $U=1.4\mu\text{m}$                |  |                |
| 39 | *Rubber, plastic film thickness gauge                    | Length    | C.S. for rubber, plastic film thickness gauge JJF 1488                  | (0~30) mm                           | $U=3\mu\text{m}$                  |                                                                                      |                |

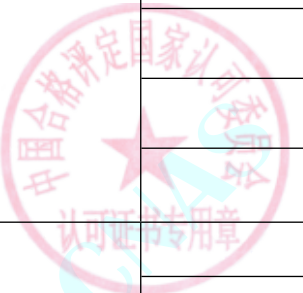


No. CNAS L2336

第 5 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



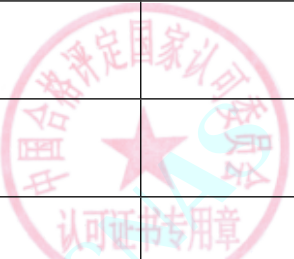
| №  | Instrument                                            | Measurand        | Calibration Method                                                          | Range                           | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|-------------------------------------------------------|------------------|-----------------------------------------------------------------------------|---------------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
| 40 | Ultrasonic flaw detection test block                  | Length           | C.S. for ultrasonic flaw detection block JJF 1487                           | (0~300) mm                      | $U=4 \mu m$                   |                                                                                      |                |
| 41 | *Tire Tread Depth Gauges                              | Length           | C.S. for Tire Tread Depth Gauges JJF 1477                                   | (0~50)mm                        | $U=0.02mm$                    |                                                                                      |                |
| 42 | *Inside Calipers                                      | Length           | C.S. for Inside Calipers JJF(Zhe) 1091                                      | (0~500) mm                      | $U=0.01mm$                    |                                                                                      |                |
| 43 | *Brick Calipers                                       | Length           | C.S. for Brick Calipers JJF(Zhe) 1130                                       | (-50~+50) mm                    | $U=0.01mm$                    |                                                                                      |                |
| 44 | *Recess Measuring Micrometer                          | Length           | V.R. of Measuring Micromete JJG(Militaryproject) 56                         | (0~50) mm                       | $U=3 \mu m$                   |                                                                                      |                |
| 45 | *Wide Randc Electromic Digital Display Dial Indicator | Length           | C.S. for Wide Randc Electromic Digital Display Dial Indicator JJF(Zhe) 1135 | (0~50) mm                       | $U=2 \mu m$                   |                                                                                      |                |
| 46 | Box Plates                                            | Angle            | V.R. of Box Plates JJG 194                                                  | (100~400)mm                     | $U=2.8 \mu m$                 |                                                                                      |                |
| 47 | Square                                                | Perpendicularity | V.R. of Squares JJG 7                                                       | wide-stand square: H(0~630)mm   | $2 \mu m+3 \times 10^{-6}H$   |  |                |
|    |                                                       |                  |                                                                             | Knife edge square: H(0~200)mm   | $U=2 \mu m$                   |                                                                                      |                |
|    |                                                       |                  |                                                                             | Parallel square: H(0~500)mm     | $U=3 \mu m$                   |                                                                                      |                |
|    |                                                       |                  |                                                                             | Triangle square: H(0~630)mm     | $0.5 \mu m+1 \times 10^{-6}H$ |                                                                                      |                |
|    |                                                       |                  |                                                                             | Linear steel square: (0~500) mm | $U=0.06mm$                    |                                                                                      |                |
| 48 | Straight Edge                                         | Linearity        | V.R. of Straight Edge JJG 63                                                | (75~175) mm                     | $U=0.4 \mu m$                 |                                                                                      |                |
|    |                                                       |                  |                                                                             | (>175~300)mm                    | $U=0.8 \mu m$                 |                                                                                      |                |



No. CNAS L2336

第 6 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                   | Measurand | Calibration Method                                                    | Range                  | Expanded Uncertainty<br>( $k=2$ )           | Note                                                                                 | Effective Date |
|----|----------------------------------------------|-----------|-----------------------------------------------------------------------|------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                              |           |                                                                       | ( $>300\sim500$ )mm    | $U=1.4\text{ }\mu\text{ m}$                 |                                                                                      |                |
| 49 | Square Gauge                                 | Length    | V.R. of Square Gauge JJG 1046                                         | H:(100~630)mm          | $0.2\text{ }\mu\text{ m}+2\times10^{-6}H$   |                                                                                      |                |
| 50 | *General Bevel Protractor                    | Angle     | C.S. for General Bevel Protractors JJF 1959                           | (0~360)°               | $U=1'$                                      |                                                                                      |                |
| 51 | *Composite angle gauge                       | Angle     | C.S. for Composite Type Angle Rules JJF 1132                          | (0~180)°               | $U=4'$                                      |                                                                                      |                |
|    |                                              | Length    |                                                                       | (0~300)mm              | $U=0.05\text{ mm}$                          |                                                                                      |                |
| 52 | Frame Levels and Shaft Levels                | Angle     | C.S. for Frame Levels and Shaft Levels JJF 1084                       | 0.02mm/m               | $U_{\text{rel}}=3\%$                        |                                                                                      |                |
|    |                                              |           |                                                                       | 0.05mm/m               | $U_{\text{rel}}=4\%$                        |                                                                                      |                |
|    |                                              |           |                                                                       | 0.10mm/m               | $U_{\text{rel}}=6\%$                        |                                                                                      |                |
| 53 | *Calibrators for the Level                   | Length    | V.R. of Calibrators for the Level JJG 191                             | (0.005~1.5)mm/m        | $U_{\text{rel}}=2\%$                        |                                                                                      |                |
| 54 | clinometers                                  | Angle     | Calibration Specification for Clinometers JJF 1915                    | (0~360)°               | $U=0.01^\circ$                              |                                                                                      |                |
| 55 | Level Rule                                   | Angle     | C.S. for Level Rules JJF 1085                                         | (0.5~10) mm/m          | $U_{\text{rel}}=4\%$                        |                                                                                      |                |
|    |                                              | Length    |                                                                       | (0~1000)mm             | $U=0.1\text{ mm}$                           |                                                                                      |                |
| 56 | *Image contact angle tester                  | angle     | Calibration specification for image contact angle tester JJF (su) 219 | (10~170) °             | $U=0.20^\circ$                              |  |                |
| 57 | *Digital Display Height Measuring Instrument | Length    | C.S. for Height Measuring Instrument with Digital JJF 1254            | (0~1000)mm             | $0.5\text{ }\mu\text{ m}+1.5\times10^{-6}L$ |                                                                                      |                |
| 58 | *Concentricity Testers                       | Length    | C.S. for Concentricity Testers JJF 1109                               | (20~30) $\mu\text{ m}$ | $U=2\text{ }\mu\text{ m}$                   |                                                                                      |                |



No. CNAS L2336

第 7 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                         | Measurand | Calibration Method                                                    | Range                         | Expanded Uncertainty<br>( $k=2$ )           | Note                                                                              | Effective Date |
|----|------------------------------------|-----------|-----------------------------------------------------------------------|-------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------|----------------|
| 59 | *Tooth thickness caliper           | length    | Calibration specification for tooth thickness caliper JJF 1072        | Modulus: (1~50) mm            | $U=0.01\text{mm}$                           |                                                                                   |                |
| 60 | *Common Normal Micrometer          | Length    | V.R. of Common Normal Micrometer JJG 82                               | (0~200)mm                     | $1.2\text{ }\mu\text{m}+5.5\times 10^{-6}L$ |                                                                                   |                |
| 61 | *Thread micrometer                 | length    | Verification regulation of thread micrometer JJG25                    | (0~200)mm                     | $1\text{ }\mu\text{m}+7\times 10^{-6}L$     |                                                                                   |                |
| 62 | Screw Templates                    | Length    | V.R. of Screw Templates JJG 60                                        | (0.4~6.35)mm                  | $U=2\text{ }\mu\text{m}$                    |                                                                                   |                |
| 63 | Working gauge for petroleum thread | Length    | C.S. for OCTG Thread Working Gauges JJF 1108                          | Pitch: (0.941~3.175)mm        | $U=4.0\text{ }\mu\text{m}$                  |                                                                                   |                |
|    |                                    |           |                                                                       | Medium diameter: (5~200)mm    | $3.4\text{ }\mu\text{m}+6\times 10^{-6}L$   |                                                                                   |                |
| 64 | *Coordinate Measuring Machine      | Length    | C.S. for Coordinate Measuring Machines JJF 1064                       | (0~1000)mm                    | $0.5\text{ }\mu\text{m}+1\times 10^{-6}L$   | except for the coordinate measuring machine with rotary table as the fourth axis. |                |
|    |                                    |           |                                                                       | (>1000~7000)mm                | $2\text{ }\mu\text{m}+1\times 10^{-6}L$     |                                                                                   |                |
| 65 | *Roundness instrument              | Roundness | Measurement Standard Instrument of Roundness and Cylindricity JJG 429 | (1~11) $\mu\text{m}$          | $U_{\text{rel}}=6\%$                        |                                                                                   |                |
|    |                                    |           |                                                                       | (19~20) $\mu\text{m}$         | $U_{\text{rel}}=4\%$                        |                                                                                   |                |
| 66 | *Flat Plate                        | Flatness  | V.R. of Surface Plates JJG 117                                        | 160mm×100mm~630mm×400mm       | $U=0.9\text{ }\mu\text{m}$                  |                                                                                   |                |
|    |                                    |           |                                                                       | 630mm×400mm~1600mm×1000mm:    | $U=2.2\text{ }\mu\text{m}$                  |                                                                                   |                |
|    |                                    |           |                                                                       | >1600mm×1000mm~3000mm×2000mm: | $U=3.5\text{ }\mu\text{m}$                  |                                                                                   |                |
| 67 | Feeler gauge                       | Length    | V. R. of Feeler Gauge JJG 62                                          | (0.02~0.10)mm                 | $U=2\text{ }\mu\text{m}$                    |                                                                                   |                |



No. CNAS L2336

第 8 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                        | Measurand | Calibration Method                                                                 | Range                                          | Expanded Uncertainty<br>( $k=2$ )           | Note | Effective Date |
|----|-----------------------------------|-----------|------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------|------|----------------|
|    |                                   |           |                                                                                    | ( $>0.10\sim3.00$ )mm                          | $U=3\text{ }\mu\text{ m}$                   |      |                |
| 68 | Wedge Feeler Gauge                | Length    | Calibration specification for wedge feeler gauge JJF 1548                          | ( $0\sim60$ )mm                                | $U=0.01\text{ mm}$                          |      |                |
| 69 | Standard Ring Gauge               | Length    | V.R. of Standard Ring Gauge JJG 894                                                | ( $2\sim200$ ) mm                              | $U=0.7\text{ }\mu\text{ m}+6\times10^{-6}L$ |      |                |
| 70 | *Snap Gauge Reading in 0.01mm     | Length    | V.R. of Snap Gauge Reading in 0.01mm JJG 109                                       | ( $0\sim200$ )mm                               | $U=4\text{ }\mu\text{ m}$                   |      |                |
| 71 | Cylindrical Thread Gauges         | Length    | C.S. for Cylindrical Thread Gauges JJF 1345                                        | Gauge:( $1\sim500$ )mm                         | $U=3.4\text{ }\mu\text{ m}+6\times10^{-6}L$ |      |                |
|    |                                   |           |                                                                                    | Ring:( $2\sim500$ )mm                          | $U=3.4\text{ }\mu\text{ m}+6\times10^{-6}L$ |      |                |
| 72 | Sealing pipe thread gauge         | Length    | Calibration specification for thread gauge of $55^\circ$ sealing pipe JJF (su) 223 | Medium diameter: ( $7\sim165$ )mm              | $U=3.4\text{ }\mu\text{ m}+6\times10^{-6}L$ |      |                |
| 73 | Smooth limit gauge                | Length    | V.R. of Plain Limit Gauges JJG 343                                                 | External dimension:( $1\sim500$ )mm            | $U=0.5\text{ }\mu\text{ m}+4\times10^{-6}L$ |      |                |
|    |                                   |           |                                                                                    | inside dimension:( $1\sim500$ )mm              | $U=1.0\text{ }\mu\text{ m}+3\times10^{-6}L$ |      |                |
| 74 | Pin Gauge, Thread Measuring Wires | Length    | C.S. for Cylindrical Measuring Pin JJF 1207                                        | Thread Measuring Wires: ( $0.118\sim6.585$ )mm | $U=0.3\text{ }\mu\text{ m}$                 |      |                |
|    |                                   |           |                                                                                    | Pin Gauge: ( $0.1\sim25$ )mm                   | $U=0.5\text{ }\mu\text{ m}$                 |      |                |
| 75 | *Optimeter                        | Length    | V.R. of Optimeter JJG 45                                                           | ( $-100\sim+100$ ) $\mu\text{ m}$              | $U=0.12\text{ }\mu\text{ m}$                |      |                |
| 76 | *Length Measuring Instruments     | Length    | C.S. for Length Measuring Instruments JJF 1066                                     | ( $0\sim3000$ )mm                              | $U=0.2\text{ }\mu\text{ m}+2\times10^{-6}L$ |      |                |
| 77 | *Length Measuring                 | Length    | C.S. for Length Measuring Instrument JJF 1189                                      | ( $0\sim50$ )mm                                | $U=0.2\text{ }\mu\text{ m}$                 |      |                |



No. CNAS L2336

第 9 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                       | Measurand | Calibration Method                                                         | Range                                      | Expanded Uncertainty<br>( $k=2$ )    | Note | Effective Date |
|----|----------------------------------|-----------|----------------------------------------------------------------------------|--------------------------------------------|--------------------------------------|------|----------------|
|    | Instrument                       |           |                                                                            | ( $>50\sim500$ )mm                         | $U=0.2\ \mu\text{m}+2\times10^{-6}L$ |      |                |
| 78 | *Laser Diameter Measuring Gauges | Length    | C.S. for Laser Diameter Measuring Gauges JJF 1250                          | ( $0.1\sim30$ )mm                          | $U=0.5\ \mu\text{m}$                 |      |                |
|    |                                  |           |                                                                            | Standard gauge: ( $0.1\sim30$ )mm          | $U=0.3\ \mu\text{m}$                 |      |                |
| 79 | *Microcator                      | Length    | V.R. of Microcator JJG 118                                                 | ( $-300\sim300$ ) $\mu\text{m}$            | $U=0.14\ \mu\text{m}$                |      |                |
| 80 | *Comparator of Machinery Type    | Length    | V.R. of Comparator of Machinery Type JJG 39                                | ( $-1000\sim1000$ ) $\mu\text{m}$          | $U=0.12\ \mu\text{m}$                |      |                |
| 81 | *Inductive Micrometers           | Length    | C.S. for Inductive Micrometers JJF 1331                                    | ( $-10\sim+10$ ) $\mu\text{m}$             | $U=0.03\ \mu\text{m}$                |      |                |
|    |                                  |           |                                                                            | ( $-100\sim+100$ ) $\mu\text{m}$           | $U=0.2\ \mu\text{m}$                 |      |                |
|    |                                  |           |                                                                            | ( $-1000\sim+1000$ ) $\mu\text{m}$         | $U=1\ \mu\text{m}$                   |      |                |
| 82 | *Grating Micrometer              | Length    | C.S. for Grating Micrometers JJF 1682                                      | $0.2\ \mu\text{m}$ grade; ( $0\sim25$ ) mm | $U=0.09\ \mu\text{m}$                |      |                |
|    |                                  |           |                                                                            | $0.5\ \mu\text{m}$ grade; ( $0\sim50$ ) mm | $U=0.16\ \mu\text{m}$                |      |                |
|    |                                  |           |                                                                            | $1\ \mu\text{m}$ grade; ( $0\sim100$ ) mm  | $U=0.3\ \mu\text{m}$                 |      |                |
|    |                                  |           |                                                                            | $2\ \mu\text{m}$ grade; ( $0\sim100$ ) mm  | $U=0.9\ \mu\text{m}$                 |      |                |
|    |                                  |           |                                                                            | $5\ \mu\text{m}$ grade; ( $0\sim100$ ) mm  | $U=2\ \mu\text{m}$                   |      |                |
|    |                                  |           |                                                                            | $10\ \mu\text{m}$ grade; ( $0\sim100$ ) mm | $U=2\ \mu\text{m}$                   |      |                |
| 83 | Roughness Comparison Specimens   | Roughness | Calibration specification for surface roughness comparison blocks JJF 1099 | Ra( $0.012\sim6.3$ ) $\mu\text{m}$         | $U_{\text{rel}}=7.6\%$               |      |                |
|    |                                  |           | C.S. for Contact (Stylus)                                                  | Ra:( $0.04\sim0.1$ ) $\mu\text{m}$         | $U_{\text{rel}}=6.0\%$               |      |                |



No. CNAS L2336

第 10 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                            | Measurand | Calibration Method                                                                   | Range                             | Expanded Uncertainty<br>( $k=2$ )      | Note | Effective Date |
|----|-----------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------|------|----------------|
|    | Instruments of Surface Roughness Meters by the profile Method         |           | Instruments of Surface Roughness Measurement by the profile Method JJF 1105          | Ra:(1.4~6.9) $\mu\text{m}$        | $U_{\text{rel}}=4.0\%$                 |      |                |
| 85 | Fineness of Grind Gauge                                               | Length    | V.R. of Fineness of Grind Gage JJG 905                                               | (0~25) $\mu\text{m}$              | $U=0.6 \mu\text{m}$                    |      |                |
|    |                                                                       |           |                                                                                      | (>25~50)mm                        | $U=1.0 \mu\text{m}$                    |      |                |
|    |                                                                       |           |                                                                                      | (>50~150)mm                       | $U=1.3 \mu\text{m}$                    |      |                |
| 86 | *Contact (Stylus) Surface Contour Tester                              | Length    | C.S. for Contact (Stylus) Surface Contour Tester JJF(Min) 1043                       | Z axis: (0~50)mm                  | $U=0.5 \mu\text{m}+3\times 10^{-5}L$   |      |                |
|    |                                                                       |           |                                                                                      | X axis: (0~100)mm                 | $U=0.8 \mu\text{m}$                    |      |                |
|    |                                                                       |           |                                                                                      | radius: 10mm                      | $U=0.9 \mu\text{m}$                    |      |                |
|    |                                                                       | Angle     |                                                                                      | 0~90°                             | $U=40''$                               |      |                |
| 87 | *Tool Presetting and Measuring Instruments                            | Length    | V.R. of Tool Presetting and Measuring Instruments JJG 938                            | (0~1000)mm                        | $U=1.7 \mu\text{m}+2.2\times 10^{-6}L$ |      |                |
| 88 | *Magnetic and Eddy Current Measuring Instrument for Coating Thickness | Length    | V.R. of Magnetic and Eddy Current Measuring Instrument for Coating Thickness JJG 818 | Magnetic : (0~2000) $\mu\text{m}$ | $U=0.4 \mu\text{m}+6\times 10^{-3}L$   |      |                |
|    |                                                                       |           |                                                                                      | (0~2000) $\mu\text{m}$            | $U=0.4 \mu\text{m}+6\times 10^{-3}L$   |      |                |
|    |                                                                       |           |                                                                                      | (10~2000) $\mu\text{m}$           | $U_{\text{rel}}=0.6\%$                 |      |                |
| 89 | *X-Ray Thickness Gauge                                                | Length    | C. S. for X-Ray Fluorescence Coating Thickness Instruments JJF 1306                  | (0.053~0.2) $\mu\text{m}$         | $U_{\text{rel}}=10\%$                  |      |                |
|    |                                                                       |           |                                                                                      | (>0.2~15) $\mu\text{m}$           | $U_{\text{rel}}=6\%$                   |      |                |
| 90 | *Ultrasonic Thickness Instrument                                      | Length    | C.S. for Ultrasonic Thickness Instrument JJF 1126                                    | (0.5~15) mm                       | $U=0.02\text{mm}$                      |      |                |
|    |                                                                       |           |                                                                                      | (>15~75) mm                       | $U=0.03\text{mm}$                      |      |                |



No. CNAS L2336

第 11 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

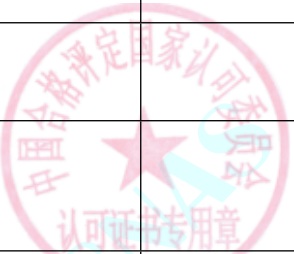
| №  | Instrument                                      | Measurand | Calibration Method                                            | Range                                                      | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|-------------------------------------------------|-----------|---------------------------------------------------------------|------------------------------------------------------------|-------------------------------|------|----------------|
|    |                                                 |           |                                                               | (>75~200)mm                                                | U=0.07mm                      |      |                |
| 91 | *Pneumatic measuring instrument for micrometers | Length    | V.R.of Pneumatic Measuring Instrument for Micrometers JJG 356 | Buoy-type read in 0.5 $\mu$ m: (0~8) $\mu$ m               | U=0.2 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Buoy-type read in 1 $\mu$ m: (0~15) $\mu$ m                | U=0.4 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Buoy-type read in 2 $\mu$ m: (0~40) $\mu$ m                | U=0.6 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Buoy-type read in 5 $\mu$ m: (0~80) $\mu$ m                | U=1.3 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Electronic column type read in 0.2 $\mu$ m: (0~10) $\mu$ m | U=0.2 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Electronic column type read in 0.5 $\mu$ m: (0~25) $\mu$ m | U=0.4 $\mu$ m                 |      |                |
|    |                                                 |           |                                                               | Electronic column type read in 1 $\mu$ m: (0~50) $\mu$ m   | U=0.9 $\mu$ m                 |      |                |
| 92 | Radius Gauges                                   | Length    | V.R.of Radius Gauge JJG 58                                    | (R1~R25)mm                                                 | U=10 $\mu$ m                  |      |                |
| 93 | Test Sieves                                     | Length    | C.S. for Test Sieves JJF 1175                                 | (0.04~4)mm                                                 | U=2 $\mu$ m                   |      |                |
|    |                                                 |           |                                                               | (>4~125)mm                                                 | U=0.04mm                      |      |                |
| 94 | Wedge-feet Calibrator for Micrometers           | Length    | V.R.of Wedge-feet Calibrator for Micrometers JJG 525          | (0~2000) $\mu$ m                                           | U=0.3 $\mu$ m                 |      |                |
| 95 | *Callipers for Welding Inspection               | Angle     | V.R. of Callipers for Welding Inspection JJG 704              | (0~360)°                                                   | U=8'                          |      |                |
|    |                                                 | Length    |                                                               | (0~60)mm                                                   | U=0.03mm                      |      |                |

No. CNAS L2336

第 12 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №   | Instrument                                         | Measurand  | Calibration Method                                                                                             | Range                                    | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|-----|----------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
| 96  | *Staight Edges                                     | Linearity  | C.S.for Staight Edges JJF 1097                                                                                 | (300~1000) mm                            | $U=0.7 \mu m$                 |                                                                                      |                |
|     |                                                    |            |                                                                                                                | (>1000~2000)mm                           | $U=1.0 \mu m$                 |                                                                                      |                |
|     |                                                    |            |                                                                                                                | (>2000~3000)mm                           | $U=1.4 \mu m$                 |                                                                                      |                |
| 97  | Wet film thickness gauge                           | Length     | Calibration specification for Wet film thickness gauge JJF 1484                                                | The comb gauge:<br>(5~100) $\mu m$       | $U=1 \mu m$                   |                                                                                      |                |
|     |                                                    |            |                                                                                                                | The comb gauge : ><br>(100~3000) $\mu m$ | $U=3 \mu m$                   |                                                                                      |                |
|     |                                                    |            |                                                                                                                | Wheel gauge : (0~125) $\mu m$            | $U=1 \mu m$                   |                                                                                      |                |
|     |                                                    |            |                                                                                                                | Wheel gauge: (125~1500) $\mu m$          | $U=4 \mu m$                   |                                                                                      |                |
| 98  | *Surface profile table                             | Length     | Calibration specification for Surface profile gauges JJF 1476                                                  | (0~6.5) mm                               | $U=1.7 \mu m$                 |                                                                                      |                |
| 99  | *Tensile stretch tester                            | elongation | Verification procedure for test equipment of enamdelled winding wire-<br>Part3:Elongation tester<br>JB/T4279.3 | 0~60%                                    | $U=0.3\%$                     |                                                                                      |                |
| 100 | Paint film scribe                                  | Length     | Calibration Specification for Film Cross-cut Tester JJF(Su) 196                                                | (1~3) mm                                 | $U=3 \mu m$                   |  |                |
| 101 | *Articulated arm type coordinate measuring machine | length     | Calibration specification for articulated arm CMM JJF 1408                                                     | (0~1000)mm                               | $U=6 \mu m+4 \times 10^{-6}L$ |                                                                                      |                |
| 102 | *Laser micrometer                                  | length     | Calibration specification for laser micrometer JJF 1663                                                        | (0.1~6)mm                                | $U=0.024\%FS$                 |                                                                                      |                |



No. CNAS L2336

第 13 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №   | Instrument                           | Measurand | Calibration Method                                                           | Range                  | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|-----|--------------------------------------|-----------|------------------------------------------------------------------------------|------------------------|-------------------------------|------|----------------|
|     |                                      |           |                                                                              | (>6~100)mm             | U=0.015%FS                    |      |                |
| 103 | *Solder Paste Inspection Instruments | length    | Calibration Specification for Solder Paste Inspection Instruments JJF1965    | (75~400) μm            | U=1.5 μm                      |      |                |
| 104 | *Drop Test Machine for Packages      | Length    | Drop Test Machine for Packages JJG (Yue) 045                                 | (10~2000)mm            | U=0.7mm                       |      |                |
|     |                                      | Angle     |                                                                              | 0~5°                   | U=0.6°                        |      |                |
| 105 | *Molds                               | Length    | Calibration Specification for Molds JJF 1307                                 | (0~600) mm             | U=0.02mm                      |      |                |
| 106 | *Extensometer                        | Length    | Verification Regulation for Extensometer JJG 762                             | (0~1/3) mm             | U=0.5 μm                      |      |                |
|     |                                      |           |                                                                              | (>1/3~25) mm           | U <sub>rel</sub> =0.18%       |      |                |
| 107 | *Fabric Thickness Instruments        | Length    | Calibration Specification for Fabric Thickness Instruments JJF (Textile) 020 | (0~10)mm               | U=0.002mm                     |      |                |
| 108 | *Circle Sample Cutters               | Length    | Calibration Specification for Circle Sample Cutters JJF (Textile) 061        | (0~150)mm              | U=0.3mm                       |      |                |
| 109 | *Vertical Combustion Tester          | Mass      | Calibration Specification for Vertical Combustion Tester JJF(Textile)068     | (50~460)g              | U=0.4g                        |      |                |
|     |                                      | Time      |                                                                              | (0~3600) s             | U=0.2s                        |      |                |
|     |                                      | Length    |                                                                              | (0~50) mm              | U=0.2mm                       |      |                |
|     |                                      | Angle     |                                                                              | (0~30) °               | U=0.5°                        |      |                |
| 110 | Microscale                           | Length    | C.S.for Micropattern Standards JJF 1917                                      | line spacing: (0~10)mm | U=0.5 μm                      |      |                |
|     |                                      |           |                                                                              | diameter: (0~10)mm     | U=0.8 μm                      |      |                |
|     |                                      | Angle     |                                                                              | (0~360) °              | U=16"                         |      |                |



No. CNAS L2336

第 14 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №          | Instrument                                                      | Measurand   | Calibration Method                                                                        | Range                         | Expanded Uncertainty<br>(k=2)  | Note                             | Effective Date |
|------------|-----------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|----------------------------------|----------------|
| 111        | Optical instrument inspection tool                              | Length      | C.S. for Material Measures of Length Measuring Instrument with Optical Principle JJF1941  | Eccentric shaft: e(20~30) μ m | U=0.8 μ m                      |                                  |                |
|            |                                                                 | Length      |                                                                                           | Standard mandrel: (0~500)mm   | U=0.5 μ m                      |                                  |                |
| 112        | *Center distance caliper                                        | Length      | C.S. for CenterDistance Calipers JJF (su) 199                                             | (0~500)mm                     | U=0.01mm                       |                                  |                |
|            |                                                                 |             |                                                                                           | (≥ 500~1000)mm                | U=0.02mm                       |                                  |                |
| 113        | *Chamfer caliper                                                | Length      | C.S. for Calipers and gauges of Chamfer JJF (su) 211                                      | (1.2~10)mm                    | U=0.02mm                       |                                  |                |
| 114        | Gauges for plugs and sockets for household and similar purposes | Length      | C.S. for plugs and Socket-outlets guages forHousehold and Similar Purposes JJF (zhe) 1119 | (0~60)mm                      | U=0.0033mm                     |                                  |                |
|            |                                                                 | Angle       |                                                                                           | (119~121)°                    | U=2'                           |                                  |                |
| 115        | One dimensional and two-dimensional geometric dimensions        | Length      | C.S. for one-dimensional and two-dimensional geometric dimension measurement JJF(xin)68   | (0~500)mm                     | U=0.5 μ m+5×10 <sup>-6</sup> L |                                  |                |
|            |                                                                 |             |                                                                                           | (≥ 500~1000)mm                | U=0.7 μ m+5×10 <sup>-6</sup> L |                                  |                |
|            |                                                                 | Angle       |                                                                                           | (0~360)°                      | U=8''                          |                                  |                |
| 116        | *Strip thickness gauge                                          | Length      | C.S. for Sliver and Roving Length Sampler JJF(fangzhi)001                                 | (0~1000)mm                    | U=0.3mm                        |                                  |                |
|            |                                                                 | Mass        |                                                                                           | (0~4500)g                     | U=5g                           |                                  |                |
| Thermology |                                                                 |             |                                                                                           |                               |                                |                                  |                |
| 1          | Working Noble Metal Thermocouples                               | Temperature | V.R.of Working Noble Metal Thermocouples JJG 141                                          | (300~1100) °C                 | U=0.8℃                         | Accredited Only for Type S and R |                |
| 2          | Base Metal Thermocouples                                        | Temperature | C. S. for Base Metal Thermocouples JJF 1637                                               | (0~300)℃                      | U=0.3℃                         |                                  |                |
|            |                                                                 |             |                                                                                           | (300~1100)℃                   | U=1.1℃                         |                                  |                |



No. CNAS L2336

第 15 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                           | Measurand   | Calibration Method                                                    | Range                                                | Expanded Uncertainty<br>( $k=2$ ) | Note                        | Effective Date |
|----|------------------------------------------------------|-------------|-----------------------------------------------------------------------|------------------------------------------------------|-----------------------------------|-----------------------------|----------------|
| 3  | Sheathed Thermocouples                               | Temperature | C. S. for Sheathed Thermocouples JJF1262                              | $(-40\sim 300)^{\circ}\text{C}$                      | $U=0.3^{\circ}\text{C}$           |                             |                |
|    |                                                      |             |                                                                       | $(300\sim 1100)^{\circ}\text{C}$                     | $U=1.1^{\circ}\text{C}$           |                             |                |
| 4  | Industrial Platinum and Copper Resistance Thermistor | Temperature | V. R. of Industrial Platinum and Copper Resistance Thermistor JJG 229 | Platinum Resistance: $(-80\sim 300)^{\circ}\text{C}$ | $U=0.09^{\circ}\text{C}$          |                             |                |
|    |                                                      |             |                                                                       | Copper Resistance: $(0\sim 150)^{\circ}\text{C}$     | $U=0.12^{\circ}\text{C}$          |                             |                |
| 5  | Standard Mercury-in-Glass Thermometers               | Temperature | V.R.of Standard Mercury-in-Glass Thermometers JJG 161                 | $(-60\sim 300)^{\circ}\text{C}$                      | $U=0.04^{\circ}\text{C}$          |                             |                |
| 6  | Liquid-in-Glass Thermometers for Working             | Temperature | V.R. of Liquid-in-Glass Thermometers for Working JJG 130              | $(-80\sim 300)^{\circ}\text{C}$                      | $U=0.06^{\circ}\text{C}$          |                             |                |
| 7  | Electric contact mercury-in-glass thermometers       | Temperature | V.R. of Electric Contact Mercury-in-Glass Thermometers JJG 131        | $(-30\sim 100)^{\circ}\text{C}$                      | $U=0.05^{\circ}\text{C}$          |                             |                |
|    |                                                      |             |                                                                       | $(100\sim 300)^{\circ}\text{C}$                      | $U=0.08^{\circ}\text{C}$          |                             |                |
| 8  | Clinical Electronic Thermometer                      | Temperature | V.R. for the Clinical Electronic Thermometer JJG 1162                 | $(35\sim 41)^{\circ}\text{C}$                        | $U=0.03^{\circ}\text{C}$          |                             |                |
| 9  | Clinical Thermometers                                | Temperature | V.R. of the Clinical Thermometers JJG 111                             | $(30\sim 43)^{\circ}\text{C}$                        | $U=0.03^{\circ}\text{C}$          |                             |                |
| 10 | *Bimetallic Thermometers                             | Temperature | Calibration Specification for Bimetallic Thermometers JJF 1908        | $(-80\sim 300)^{\circ}\text{C}$                      | $U=0.5^{\circ}\text{C}$           | 合格评定国家认可<br>CNAS<br>认可证书专用章 |                |
| 11 | *Filled System Thermometers                          | Temperature | Calibration Specification for Filled System Thermometers JJF 1909     | $(-80\sim 300)^{\circ}\text{C}$                      | $U=0.5^{\circ}\text{C}$           |                             |                |
| 12 | Surface Thermometers                                 | Temperature | C.S.for the Surface Thermometers JJF 1409                             | $(50\sim 400)^{\circ}\text{C}$                       | $U=1.8^{\circ}\text{C}$           |                             |                |
| 13 | Surface Platinum                                     | Temperature | V.R.of Surface Platinum Resistance Thermometer JJG                    | $(-30\sim 50)^{\circ}\text{C}$                       | $U=0.8^{\circ}\text{C}$           |                             |                |

No. CNAS L2336

第 16 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument                                                                      | Measurand   | Calibration Method                                                                              | Range                                          | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------|------|----------------|
|    | Resistance Thermometer                                                          |             | 684                                                                                             | (50~300) °C                                    | U=1.6 °C                      |      |                |
| 14 | *Digital Thermometer                                                            | Temperature | C.S.for digital thermometer JJF(Su) 95                                                          | (-80~300) °C                                   | U=0.08 °C                     |      |                |
|    |                                                                                 |             |                                                                                                 | (300~1000) °C                                  | U=0.90 °C                     |      |                |
| 15 | Thermistor Thermometer                                                          | Temperature | C. S. for Thermistor Thermometers JJF1379                                                       | (15~35) °C ,<br>Resolution 0.001 °C            | U=0.013 °C                    |      |                |
|    |                                                                                 |             |                                                                                                 | (-50~200) °C ,<br>Resolution 0.1 °C            | U=0.1 °C                      |      |                |
| 16 | *Thermometers of Clinic Autoclave                                               | Temperature | C.S. for Thermometers of Clinic Autoclave JJF 1308                                              | (20~150) °C                                    | U=0.1 °C                      |      |                |
| 17 | WBGT-index Meters                                                               | Temperature | C.S. for Thermometers of WBGT-index Meters JJF 1407                                             | (5~120) °C                                     | U=0.3 °C                      |      |                |
| 18 | Fiber-optic Distributed Thermometers                                            | Temperature | C.S. for Fiber-optic Distributed Thermometers JJF 1630                                          | (-20~100) °C                                   | U=0.4 °C                      |      |                |
| 19 | Working Copper/Copper-Nick Thermocouple                                         | Temperature | V.R.of the Working Copper/Copper-Nickel Thermocouple JJG368                                     | (-80~300) °C                                   | U=0.2 °C                      |      |                |
| 20 | *Temperature Indicators and Simulators by Electrical Simulation and Measurement | Temperature | C.S.for Temperature Indicators and Simulators by Electrical Simulation and Measurement JJF 1309 | (-200~1600) °C                                 | U=0.02 °C                     |      |                |
| 21 | Recorders for Industrial Process Measurement                                    | Temperature | V.R. of the Recorders for Industrial Process Measurement JJG 74                                 | With Platinum thermal resistance:(-200~800) °C | U=0.2 °C                      |      |                |
|    |                                                                                 |             |                                                                                                 | With Thermocouple: (-200~1600) °C              | U=0.8 °C                      |      |                |

No. CNAS L2336

第 17 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                       | Measurand   | Calibration Method                                             | Range                                             | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|--------------------------------------------------|-------------|----------------------------------------------------------------|---------------------------------------------------|-------------------------------|------|----------------|
| 22 | Temperature Data Acquisition Instruments         | Temperature | C. S. for Temperature Data Acquisition Instruments JJF 1366    | (-80~300)°C                                       | U=0.08°C                      |      |                |
| 23 | Temperature Itinerant Detecting Instrument       | Temperature | C.S. for Temperature Itinerant Detecting Instrument JJF 1171   | (-80~300)°C                                       | U=0.11°C                      |      |                |
| 24 | *Analogue Temperature Indicators and Controllers | Temperature | V.R.of Analogue Temperature Indicators and Controllers JJG 951 | With Platinum Thermal Resistance:(0~850)°C        | U=1.0°C                       |      |                |
|    |                                                  |             |                                                                | With Thermocouple:(0~1300)°C                      | U=1.0°C                       |      |                |
| 25 | *Digital Temperature Indicators and Controllers  | Temperature | V.R.of Digital Temperature Indicators and Controllers JJG 617  | With Platinum Thermal Resistance:(-100~600)°C     | U=0.4°C                       |      |                |
|    |                                                  |             |                                                                | With Thermocouple: (-100~1300) °C                 | U=0.6°C                       |      |                |
| 26 | *Iron Thermometer                                | Temperature | C.S. for Soldering Iron Thermometers JJF 1629                  | (50~600)°C                                        | U=1.5°C                       |      |                |
| 27 | Temperature transmitters                         | Temperature | C.S.of the Temperature Transmitter JJF 1183                    | With Platinum Thermal Resistance: (-80~300)°C     | U=0.2°C                       |      |                |
|    |                                                  |             |                                                                | Without Platinum Thermal Resistance: (-200~800)°C | U=0.6°C                       |      |                |
|    |                                                  |             |                                                                | With Thermocouple: (-80~1100)°C                   | U=1.0°C                       |      |                |
|    |                                                  |             |                                                                | Without Thermocouple: (-200~1300)°C               | U=1.2°C                       |      |                |
| 28 | *Temperature Indicators                          | Temperature | C.S. for Temperature Indicators JJF 1664                       | With Platinum Thermal resistance: (-100~850) °C   | U=0.4°C                       |      |                |
|    |                                                  |             |                                                                | With Thermocouple: (-200~1300) °C                 | U=0.6°C                       |      |                |



No. CNAS L2336

第 18 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                   | Measurand   | Calibration Method                                                                                                                        | Range                          | Expanded Uncertainty<br>(k=2)  | Note | Effective Date |
|----|----------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|------|----------------|
| 29 | *Thermostatic Bath                           | Temperature | Measurement and Test Norm of Thermostatic Bath's Technological Characteristics JJF 1030                                                   | Uniformity: (-80~300)°C        | U=0.007°C                      |      |                |
|    |                                              |             |                                                                                                                                           | Volatility: (-80~300)°C        | U=0.009°C                      |      |                |
| 30 | *Temperature Block Calibrators               | Temperature | Calibration Guideline of the Temperature Block Calibrators JJF 1257                                                                       | (-60~400)°C                    | U=0.32°C                       |      |                |
| 31 | *Equipment of the Environmental Testing      | Temperature | C. S. for the Equipment of the Environmental Testing for Temperature and Humidity Parameters JJF 1101                                     | (-80~300)°C                    | U=0.5°C                        |      |                |
|    |                                              | Humidity    |                                                                                                                                           | 20%RH~95%RH                    | U=1.5%RH                       |      |                |
| 32 | *Equipment of the Chamber Electric Furnace   | Temperature | C.S. for the Equipment of the Chamber Electric Furnace JJF 1376                                                                           | (100~1100)°C                   | U=1.5°C                        |      |                |
| 33 | *Thermostat Water Bath                       | Temperature | Verification Procedure for Test Equipment of Rubber Plastic Wire and Cable-Part 7:Thermostat Water Bath JB/T4278.7                        | (0~100)°C                      | U=0.5°C                        |      |                |
|    |                                              | Time        |                                                                                                                                           | (0~60)min                      | U=0.5s                         |      |                |
| 34 | *Steam Sterilizer                            | Temperature | C.S. for Steam Sterilizer's Temperature and Pressure JJF(Su) 96                                                                           | (40~140)°C                     | U=0.5°C                        |      |                |
|    |                                              | Pressure    |                                                                                                                                           | (1~200)kPa                     | U=0.5kPa                       |      |                |
| 35 | *Salt Mist Testing Chambers                  | Temperature | C.S. for Salt Mist Testing Chambers JJF(Su) 147                                                                                           | (0~60)°C                       | U=0.6°C                        |      |                |
|    |                                              | Mist Rate   |                                                                                                                                           | (1~2)mL/(h•80cm <sup>2</sup> ) | U=0.4mL/(h•80cm <sup>2</sup> ) |      |                |
| 36 | *Natural Ventilation Thermal Aging Test Oven | Temperature | Verification Procedure for Test Equipment of Rubber Plastic Wire and Cable -Part 6:Natural Ventilation Thermal Aging Test Oven JB/T4278.6 | (20~300)°C                     | U=0.8°C                        |      |                |
|    |                                              | Ventilation |                                                                                                                                           | (8~20)Times/Hour               | U=1Times/Hour                  |      |                |



No. CNAS L2336

第 19 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                                | Measurand    | Calibration Method                                                                                    | Range                                 | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------|------|----------------|
| 37 | *Electro-thermal Incubator                                                | Temperature  | Calibration Method of Electro-thermal Incubator SL144.4                                               | (0~50)℃                               | $U=0.6^{\circ}\text{C}$           |      |                |
| 38 | *Unsaturated Pressurized Vapour Damp Heat/steady State Testing Equipments | Temperature  | V.R.of Unsaturated Pressurized Vapour Damp Heat/steady State Testing Equipments JJG(Electronic) 31504 | (100~170)℃                            | $U=0.5^{\circ}\text{C}$           |      |                |
|    |                                                                           | Humidity     |                                                                                                       | 50%RH~90%RH                           | $U=1.8\%\text{RH}$                |      |                |
| 39 | *Heat Distortion and Vicat Softening Temperature Apparatus                | Temperature  | C.S. for Heat Distortion and Vicat Softening Temperature Apparatus JJF(Zhe) 1051                      | (20~300)℃                             | $U=0.3^{\circ}\text{C}$           |      |                |
|    |                                                                           | Heating Rate |                                                                                                       | 50℃/h、120℃/h                          | $U=0.2^{\circ}\text{C/h}$         |      |                |
|    |                                                                           | Displacement |                                                                                                       | (0~100)mm                             | $U=0.03\text{mm}$                 |      |                |
|    |                                                                           | Mass         |                                                                                                       | (0~5000)g                             | $U=0.3\text{g}$                   |      |                |
| 40 | *Electrically-heated Thermostatic Water bath                              | Temperature  | C.S. of Electrically-heated Thermostatic Water bath JJF(Liao) 118                                     | (0~100)℃                              | $U=0.2^{\circ}\text{C}$           |      |                |
| 41 | *Vacuum Drying Chamber                                                    | Temperature  | C.S. for Temperature and Pressure of Vacuum Drying Chamber JJF(Su) 177                                | (40~150)℃                             | $U=0.6^{\circ}\text{C}$           |      |                |
|    |                                                                           | Pressure     |                                                                                                       | (0~101)kPa                            | $U=2.4\text{kPa}$                 |      |                |
| 42 | *Equipment of Biological Artificial Climate                               | Temperature  | C.S. for Equipment of Biological Artificial Climate JJF(Zhe)1103                                      | (5~40)℃                               | $U=0.6^{\circ}\text{C}$           |      |                |
|    |                                                                           | Humidity     |                                                                                                       | 50%RH~95%RH                           | $U=1.7\%\text{RH}$                |      |                |
|    |                                                                           | Illumination |                                                                                                       | (100~10000)lx                         | $U_{\text{rel}}=3.0\%$            |      |                |
| 43 | *Dry Bath Incubator for Biological Experiments                            | Temperature  | C.S. for Dry Bath Incubator for Biological Experiments JJF(Zhe)1150                                   | (-10~150)℃<br>(Temperature Deviation) | $U=0.13^{\circ}\text{C}$          |      |                |



No. CNAS L2336

第 20 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                 | Measurand               | Calibration Method                                                          | Range                                    | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |  |
|----|------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------|------------------------------------------|----------------------------------------|------|----------------|--|
|    |                                                            |                         |                                                                             | (-10~150) °C<br>(Temperature Uniformity) | <i>U</i> =0.07 °C                      |      |                |  |
|    |                                                            |                         |                                                                             | (-10~150) °C<br>(Temperature Volatility) | <i>U</i> =0.10 °C                      |      |                |  |
| 44 | *Temperature and Humidity Standard Chambers                | Temperature             | C.S. for Temperature and Humidity Standard Chambers JJF1564                 | (5~50)°C<br>(uniformity)                 | <i>U</i> =0.05 °C                      |      |                |  |
|    |                                                            |                         |                                                                             | (5~50)°C<br>(fluctuation)                | <i>U</i> =0.02 °C                      |      |                |  |
|    |                                                            | Temperature change rate |                                                                             | (0~5)°C/min                              | <i>U</i> =0.03 °C/min                  |      |                |  |
|    |                                                            | Humidity                |                                                                             | 20%RH~90%RH<br>(Uniformity)              | <i>U</i> =0.6%RH                       |      |                |  |
|    |                                                            |                         |                                                                             | 20%RH~90%RH<br>(Fluctuation)             | <i>U</i> =0.3%RH                       |      |                |  |
|    |                                                            | Humidity change rate    |                                                                             | 0RH/min~1%RH/min                         | <i>U</i> =0.6%RH/min                   |      |                |  |
| 45 | Working Radiation Thermometers                             | Temperature             | V.R. of the Working Radiation Thermometers JJG 856                          | (50~500)°C                               | <i>U</i> =1.3 °C                       |      |                |  |
|    |                                                            |                         |                                                                             | (>400~800)°C                             | <i>U</i> =(1.4~1.7)°C                  |      |                |  |
|    |                                                            |                         |                                                                             | (>800~1000)°C                            | <i>U</i> =2.0 °C                       |      |                |  |
|    |                                                            |                         |                                                                             | (>1000~1200)°C                           | <i>U</i> =(1.7~3.0)°C                  |      |                |  |
| 46 | Infrared Thermometers for Measurement of Human Temperature | Temperature             | C.S.for Infrared Thermometers for Measurement of Human Temperature JJF 1107 | (22.0~40.0) °C                           | <i>U</i> =0.14 °C                      |      |                |  |



No. CNAS L2336

第 21 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                           | Measurand          | Calibration Method                                          | Range                  | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|--------------------------------------|--------------------|-------------------------------------------------------------|------------------------|----------------------------------------|------|----------------|
| 47 | Thermal Imagers                      | Temperature        | C. S. for Thermal Imagers JJF 1187                          | (50~300)℃              | <i>U</i> =1.5℃                         |      |                |
|    |                                      |                    |                                                             | (>300~500)℃            | <i>U</i> =1.8℃                         |      |                |
|    |                                      |                    |                                                             | (>500~900)℃            | <i>U</i> =2.4℃                         |      |                |
|    |                                      |                    |                                                             | (>900~1200)℃           | <i>U</i> =3.0℃                         |      |                |
| 48 | Mechanical Thermo-hygrometers        | Temperature        | V.R. of Mechanical Thermo-hygrometers JJG 205               | (5~50)℃                | <i>U</i> =0.6℃                         |      |                |
|    |                                      | Humidity           |                                                             | 30%RH~90%RH            | <i>U</i> =1.8%RH                       |      |                |
| 49 | Digital hygrometer                   | Temperature        | V.R. of Digital Thermo-hygrometers JJG(Su) 99               | (-10~50)℃              | <i>U</i> =0.4℃                         |      |                |
|    |                                      | Humidity           |                                                             | 30%RH~90%RH            | <i>U</i> =1.8%RH                       |      |                |
| 50 | Digital Temperature-hygrometers      | Humidity           | C.S. for Digital Temperature-hygrometers JJF 1076           | 10%RH~90%RH (20℃)      | <i>U</i> =0.6%RH~1.5%RH                |      |                |
| 51 | Temperature and Humidity Transmitter | Temperature        | C.S.for Temperature and Humidity Transmitter JJF(Zhe)1035   | ( 5~50)℃               | <i>U</i> =0.4℃                         |      |                |
|    |                                      | Humidity           |                                                             | 20%RH~90%RH            | <i>U</i> =1.9%RH                       |      |                |
| 52 | *Dust and Sand Testing Equipments    | Temperature        | C. S. for Dust and Sand Testing Equipments JJF(Military) 18 | ( 21~75 ) ℃            | <i>U</i> =0.4℃                         |      |                |
|    |                                      | Humidity           |                                                             | 20%RH~30%RH            | <i>U</i> =1.5%RH                       |      |                |
|    |                                      | Wind Velocity      |                                                             | ( 0.5~2.5 ) m/s        | <i>U</i> <sub>rel</sub> =12%           |      |                |
|    |                                      |                    |                                                             | ( 7.7~10.1 ) m/s       | <i>U</i> <sub>rel</sub> =3.2%          |      |                |
|    |                                      |                    |                                                             | ( 18~29 ) m/s          | <i>U</i> <sub>rel</sub> =2.8%          |      |                |
|    |                                      | Dust Concentration |                                                             | (0~20)g/m <sup>3</sup> | <i>U</i> =(0.03~0.76)g/m <sup>3</sup>  |      |                |
| 53 | *Rain Testing Equipments             | Rainfall Intensity | C. S. for Rain Testing Equipments JJF(Military) 17          | ( 90~110 ) mm/h        | <i>U</i> <sub>rel</sub> =2.6%          |      |                |



No. CNAS L2336

第 22 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                    | Measurand               | Calibration Method                                                                                                                                         | Range                        | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|------|----------------|
|    |                                                               | Wind Velocity           |                                                                                                                                                            | (16~20) m/s                  | $U_{rel}=4.6\%$               |      |                |
| 54 | *Single Insulated Wire and Cable Vertical burning Test Device | Temperature             | Verification Procedure for Test Equipment of Rubber Plastic Wire and Cable -Part 5:Single Insulated Wire and Cable Vertical Burning Test Device JB/T4278.5 | (0~1300) °C                  | $U=0.8^{\circ}\text{C}$       |      |                |
|    |                                                               | Time                    |                                                                                                                                                            | (0~60) s                     | $U=0.5\text{s}$               |      |                |
|    |                                                               | Length                  |                                                                                                                                                            | (0~150) mm                   | $U=0.5\text{mm}$              |      |                |
| 55 | *Ventilated Textile Oven                                      | Temperature             | C.S.for Ventilated Textile Oven JJF(Textile) 059                                                                                                           | (50~150)°C                   | $U=0.8^{\circ}\text{C}$       |      |                |
| 56 | *Eight-Basket Oven                                            | Temperature             | C.S. for Eight-Basket Oven JJF(Textile) 011                                                                                                                | (50~150)°C                   | $U=0.8^{\circ}\text{C}$       |      |                |
|    |                                                               | Time                    |                                                                                                                                                            | (-80~300)min                 | $U=0.5\text{s}$               |      |                |
| 57 | *Light and Weather Fastness Tester                            | Temperature             | C.S.for Light and Weather Fastness Tester JJF(Textile) 051                                                                                                 | (20~50)°C                    | $U=0.8^{\circ}\text{C}$       |      |                |
|    |                                                               | Humidity                |                                                                                                                                                            | 20%RH~95%RH                  | $U=1.7\%\text{RH}$            |      |                |
|    |                                                               | Rotate speed            |                                                                                                                                                            | (10~100)r/min                | $U=0.7\text{r/min}$           |      |                |
|    |                                                               | Time                    |                                                                                                                                                            | (0~1800) s                   | $U=0.6\text{s}$               |      |                |
|    |                                                               | Irradiance              |                                                                                                                                                            | (0.01~1000) W/m <sup>2</sup> | $U_{rel}=23\%$                |      |                |
| 58 | Bucket Thermometers                                           | Temperature             | V. R. of Bucket Thermometers JJG289                                                                                                                        | (-5~40)°C                    | $U=0.10^{\circ}\text{C}$      |      |                |
| 59 | *Baby Incubator                                               | Temperature             | C.S.for Baby Incubator JJF 1260                                                                                                                            | (20~50)°C                    | $U=0.3^{\circ}\text{C}$       |      |                |
|    |                                                               | Humidity                |                                                                                                                                                            | 20%RH~90%RH                  | $U=2.0\%\text{RH}$            |      |                |
|    |                                                               | Noise                   |                                                                                                                                                            | (30~100)dB                   | $U=2.0\text{dB}$              |      |                |
|    |                                                               | Concentration of Oxygen |                                                                                                                                                            | (30~40) %                    | $U=2.1\%$                     |      |                |



No. CNAS L2336

第 23 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                           | Measurand                    | Calibration Method                                            | Range          | Expanded Uncertainty<br>( $k=2$ ) | Note                              | Effective Date |
|----|--------------------------------------|------------------------------|---------------------------------------------------------------|----------------|-----------------------------------|-----------------------------------|----------------|
| 60 | *Glow-wire Apparatus                 | Temperature                  | C. S. for Glow-wire Apparatus JJF(Zhe)1050                    | (30~1000)°C    | $U=1.6^{\circ}\text{C}$           |                                   |                |
|    |                                      | Time                         |                                                               | (0~60)s        | $U=0.5\text{s}$                   |                                   |                |
|    |                                      | Length                       |                                                               | (0~150)mm      | $U=0.05\text{mm}$                 |                                   |                |
|    |                                      | Force value                  |                                                               | (0~10)N        | $U=0.1\text{N}$                   |                                   |                |
| 61 | *Colour Fastness to Washing Testers  | Temperature                  | C. S. for Colour Fastness to Washing Testers JJF(Textile) 026 | (20~200)°C     | $U=0.5^{\circ}\text{C}$           |                                   |                |
|    |                                      | Time                         |                                                               | (0~3600)s      | $U=0.5\text{s}$                   |                                   |                |
|    |                                      | Rotate Speed                 |                                                               | (1~60) r/min   | $U=0.4\text{r/min}$               |                                   |                |
| 62 | *Scorch and Sublimation Tester       | Temperature                  | C. S. for Scorch and Sublimation Tester JJF(Textile) 029      | (20~250)°C     | $U=1.4^{\circ}\text{C}$           |                                   |                |
|    |                                      | Force value                  |                                                               | (0~50)N        | $U=0.5\text{N}$                   |                                   |                |
|    |                                      | Time                         |                                                               | (0~60)min      | $U=0.5\text{s}$                   |                                   |                |
|    |                                      | Length                       |                                                               | (0~150)mm      | $U=0.05\text{mm}$                 |                                   |                |
| 63 | *Fabric Shrinkage Testers            | Temperature                  | C. S. for Fabric Shrinkage Testers JJF (Textile) 052          | (20~100)°C     | $U=1.4^{\circ}\text{C}$           |                                   |                |
|    |                                      | Time                         |                                                               | (0~60)min      | $U=0.5\text{s}$                   |                                   |                |
|    |                                      | Rotate speed                 |                                                               | (30~1000)r/min | $U_{\text{rel}}=1.5\%$            |                                   |                |
| 64 | *Carbon Dioxide Incubator            | Temperature                  | C.S. for Carbon Dioxide Incubator JJF (Liao) 463              | (20~55) °C     | $U=0.2^{\circ}\text{C}$           |                                   |                |
|    |                                      | Carbon dioxide concentration |                                                               | (0.1~10) %     | $U_{\text{rel}}=2.4\%$            |                                   |                |
| 65 | *Polymerase Chain Reaction Analyzers | Temperature                  | C.S. for Polymerase Chain Reaction Analyzers JJF 1527         | (0~120) °C     | $U=0.20^{\circ}\text{C}$          | Accredited only for PCR Analyzers |                |



No. CNAS L2336

第 24 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No        | Instrument                            | Measurand                        | Calibration Method                                           | Range                          | Expanded Uncertainty<br>(k=2) | Note                                                                                        | Effective Date |
|-----------|---------------------------------------|----------------------------------|--------------------------------------------------------------|--------------------------------|-------------------------------|---------------------------------------------------------------------------------------------|----------------|
| 66        | *Oxygen Transmission Rate Testers     | Oxygen transmittance             | C.S. for Oxygen Gas Transmission Rate Testers JJF (Xiang) 66 | (0.02~20)cm³/(m²·24h)          | U <sub>rel</sub> =9%          |                                                                                             |                |
|           |                                       | ( >20~70 ) cm³/(m²·24h)          |                                                              | U <sub>rel</sub> =7%           |                               |                                                                                             |                |
|           |                                       | Temperature                      |                                                              | ( 20~40 ) °C                   | U=0.26℃                       |                                                                                             |                |
| 67        | *Gas Transmittance Meter              | Gas transmittance                | C. S. for Gas Transmittance Meter JJF(Qian) 42               | (0.01~10)[cm³/(m²·24h·0.1MPa)] | U <sub>rel</sub> =26%         |                                                                                             |                |
|           |                                       | ( >10~12 ) [cm³/(m²·24h·0.1MPa)] |                                                              | U <sub>rel</sub> =20%          |                               |                                                                                             |                |
|           |                                       | Temperature                      |                                                              | ( 20~40 ) °C                   | U=0.4℃                        |                                                                                             |                |
| 68        | *Water Vapor Transmission Rate Tester | Water vapor transmittance        | C.S. of Water Vapor Transmission Rate Tester JJF(Ji) 191     | (0.01~2)g/(m²·24h)             | U <sub>rel</sub> =17%         |                                                                                             |                |
|           |                                       | ( >2~5 ) g/(m²·24h)              |                                                              | U <sub>rel</sub> =19%          |                               |                                                                                             |                |
|           |                                       | Temperature                      |                                                              | ( 0~50 ) °C                    | U=0.14℃                       |                                                                                             |                |
|           |                                       | Humidity                         |                                                              | 10%RH~95%RH                    | U=1.3%RH                      |                                                                                             |                |
| Mechanics |                                       |                                  |                                                              |                                |                               |                                                                                             |                |
| 1         | Weights                               | Mass                             | V. R.of Weights JJG 99                                       | 1mg~500g                       | U=(0.01~1.2)mg                | 1mg~500g: Calibrate F <sub>1</sub> grade and below only; 1kg~25kg: Calibrate F <sub>2</sub> |                |



No. CNAS L2336

第 25 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument                                | Measurand | Calibration Method                                                           | Range                          | Expanded Uncertainty<br>( $k=2$ )    | Note                    | Effective Date |
|---|-------------------------------------------|-----------|------------------------------------------------------------------------------|--------------------------------|--------------------------------------|-------------------------|----------------|
|   |                                           |           |                                                                              | (1~25)kg                       | $U=(0.006\sim0.2)\text{g}$           | grade and below only    |                |
| 2 | *Mechanical Balance                       | Mass      | V. R. Mechanical Balance JJG 98                                              | 1mg~200g                       | $U=(0.003\sim0.03)\text{mg}$         |                         |                |
|   |                                           |           |                                                                              | 200g~20kg                      | $U=(0.03\sim3.0)\text{mg}$           |                         |                |
| 3 | *Electronic Balance                       | Mass      | V. R. of Electronic Balance JJG 1036, C. S. for Electronic Balances JJF 1847 | 1mg~200g                       | $U=0.0014\text{mg}\sim0.35\text{mg}$ |                         |                |
|   |                                           |           |                                                                              | 200g~5kg                       | $U=0.35\text{mg}\sim0.052\text{g}$   |                         |                |
|   |                                           |           |                                                                              | 5kg~30kg                       | $U=0.052\text{g}\sim0.015\text{g}$   |                         |                |
|   |                                           |           |                                                                              | 30kg~150kg                     | $U=0.15\text{g}\sim2\text{g}$        |                         |                |
| 4 | *Torsion Balance                          | Mass      | V. R. of Torsion Balance JJG 46                                              | (5~2500)mg                     | $U=(0.04\sim1.3)\text{mg}$           |                         |                |
| 5 | *Table Balance                            | Mass      | V. R. of Table Balances JJG 156                                              | (0.1~10)kg                     | $U=(0.03\sim1.6)\text{g}$            |                         |                |
| 6 | *Non-self indication Weighing instruments | Mass      | V. R. of Non-self-indication Weighing Instruments JJG 14                     | (0~100)kg                      | $U=(0.47\sim13)\text{g}$             |                         |                |
|   |                                           |           |                                                                              | (100~1000)kg                   | $U=(0.013\sim0.13)\text{kg}$         |                         |                |
|   |                                           |           |                                                                              | (1~5)t                         | $U=(0.13\sim0.55)\text{kg}$          |                         |                |
| 7 | *Digital Indicating Weighing Instrument   | Mass      | V. R. of Digital Indicating Weighing Instrument JJG 539                      | (2~500)g                       | $U=(0.02\sim0.04)\text{g}$           |                         |                |
|   |                                           |           |                                                                              | (0.5~30)kg                     | $U=(0.04\sim1.2)\text{g}$            |                         |                |
|   |                                           |           |                                                                              | $(30\sim3\times10^3)\text{kg}$ | $U=1.2\text{g}\sim0.2\text{kg}$      |                         |                |
|   |                                           |           |                                                                              | $(3\sim10)\times10^3\text{kg}$ | $U=(0.2\sim0.7)\text{kg}$            |                         |                |
| 8 | Volumetric Glass                          | Volume    | V. R. of Working Glass Container JJG 196                                     | (0~0.1)mL                      | $U=0.0008\text{mL}$                  | Measurement method only |                |
|   |                                           |           |                                                                              | (0.1~0.2)mL                    | $U=0.001\text{mL}$                   |                         |                |



No. CNAS L2336

第 26 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument            | Measurand | Calibration Method                                       | Range                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|-----------------------|-----------|----------------------------------------------------------|------------------------|-----------------------------------|------|----------------|
|   |                       |           |                                                          | (0.2~0.25)mL           | $U=0.001\text{mL}$                |      |                |
|   |                       |           |                                                          | (0.25~0.5)mL           | $U=0.002\text{mL}$                |      |                |
|   |                       |           |                                                          | (0.5~1)mL              | $U=0.002\text{mL}$                |      |                |
|   |                       |           |                                                          | (1~2)mL                | $U=0.003\text{mL}$                |      |                |
|   |                       |           |                                                          | (2~3)mL                | $U=0.005\text{mL}$                |      |                |
|   |                       |           |                                                          | (3~5)mL                | $U=0.005\text{mL}$                |      |                |
|   |                       |           |                                                          | (5~10)mL               | $U=0.006\text{mL}$                |      |                |
|   |                       |           |                                                          | (10~15)mL              | $U=0.008\text{mL}$                |      |                |
|   |                       |           |                                                          | (15~20)mL              | $U=0.010\text{mL}$                |      |                |
|   |                       |           |                                                          | (20~25)mL              | $U=0.010\text{mL}$                |      |                |
|   |                       |           |                                                          | (25~50)mL              | $U=0.016\text{mL}$                |      |                |
|   |                       |           |                                                          | (50~100)mL             | $U=0.024\text{mL}$                |      |                |
|   |                       |           |                                                          | (100~200)mL            | $U=0.05\text{mL}$                 |      |                |
|   |                       |           |                                                          | (200~250)mL            | $U=0.05\text{mL}$                 |      |                |
|   |                       |           |                                                          | (250~500)mL            | $U=0.08\text{mL}$                 |      |                |
|   |                       |           |                                                          | (500~1000)mL           | $U=0.14\text{mL}$                 |      |                |
|   |                       |           |                                                          | (1000~2000)mL          | $U=0.22\text{mL}$                 |      |                |
| 9 | locomotive<br>pipette | Volume    | Verification Regulation of<br>Locomotive Pipette JJG 646 | (0.1~10) $\mu\text{L}$ | $U=0.014\text{ }\mu\text{L}$      |      |                |
|   |                       |           |                                                          | (10~100) $\mu\text{L}$ | $U=0.06\text{ }\mu\text{L}$       |      |                |



No. CNAS L2336

第 27 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                 | Measurand | Calibration Method                                                                    | Range                                     | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                            | Effective Date |
|----|------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------|----------------|
|    |                                                            |           |                                                                                       | (100~1000) $\mu$ L                        | $U=0.4 \mu$ L                     |                                                                                 |                |
|    |                                                            |           |                                                                                       | (1000~10000) $\mu$ L                      | $U=4 \mu$ L                       |                                                                                 |                |
| 10 | Float Meter                                                | Flow      | V. R. of Float Meter JJG257                                                           | (3.3~100)L/min,(gas)                      | $U_{rel}=0.6\%$                   | Volumetric method only(grade 1.5 and below)                                     |                |
| 11 | *Electromagnetic Flowmeters                                | Flow      | C. S. for Electromagnetic Flowmeters JJF(Su) 228                                      | (5.4~1270)m <sup>3</sup> /h,DN:(80~300)mm | $U_{rel}=1.8\%$                   | Standard meter method only(external clamp ultrasonic flowmeter,only grade 2.5)  |                |
| 12 | *Pipeline liquid flowmeter                                 | Flow      | C. S. for Online calibration specification for pipeline liquid flowmeter SBJZ-ZB-L001 | (5.4~1270)m <sup>3</sup> /h,DN:(80~300)mm | $U_{rel}=1.8\%$                   | Standard meter method only (external clamp ultrasonic flowmeter,only grade 2.5) |                |
| 13 | *Elastic Element Precise Pressure Gaugee and Vacuum Gauges | Pressure  | V. R. of Elastic Element Precise Pressure Gaugee and Vacuum Gauges JJG 49             | (-0.1~100)MPa                             | $U=0.09\%$ FS                     | (100 ~ 500) MPa cannot be calibrated on site                                    |                |
|    |                                                            |           |                                                                                       | (100~500)MPa                              | $U_{rel}=0.03\%$                  |                                                                                 |                |
|    | *Elastic Element Precise Pressure                          | Pressure  | V. R. of f Elastic Element Precise Pressure                                           | (-0.1~100)MPa                             | $U=0.6\%$ FS                      | (100 ~ 500) MPa                                                                 |                |

No. CNAS L2336

第 28 页 共 137 页

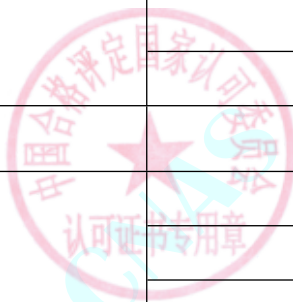


The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                      | Measurand | Calibration Method                               | Range                         | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                                                            | Effective Date |
|----|-------------------------------------------------|-----------|--------------------------------------------------|-------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------|
|    | Vacuum Gauges and Vacuum Gauges for General Use |           | Gauges and Vacuum Gauges for General Use JJG 52  | (100~500)MPa                  | $U_{rel}=0.4\%$                   | cannot be calibrated on site                                                                                                    |                |
| 15 | *Digital Pressure Gauges                        | Pressure  | V. R. of Digital Pressure Gauges JJG 875         | (-0.1~100)MPa<br>(100~500)MPa | $U=0.09\%FS$<br>$U_{rel}=0.02\%$  | Under 100MPa: only grade 0.2 and below; 100MPa and above: only grade 0.02 and below; (100~500) MPa cannot be calibrated on site |                |
| 16 | *Pressure Transducer(Static)                    | Pressure  | V. R. of the Pressure Transducer(Static) JJG 860 | (-0.1~100)MPa<br>(100~500)MPa | $U=0.09\%FS$<br>$U_{rel}=0.02\%$  | Under 100MPa: only grade 0.2 and below; 100MPa and above: only grade 0.05 and below; (100~500) MPa cannot be calibrated on site |                |
| 17 | *Pressure                                       | Pressure  | V. R. of Pressure Controller                     | (-0.1~100)MPa                 | $U=0.09\%FS$                      | (100~500) MPa cannot                                                                                                            |                |



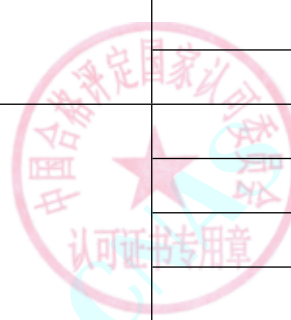
| No | Instrument                                           | Measurand | Calibration Method                                                      | Range            | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|------------------------------------------------------|-----------|-------------------------------------------------------------------------|------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                                      |           |                                                                         | (100~500)MPa     | $U_{rel}=0.2\%$               | be calibrated on site                                                                |                |
| 18 | *Pressure Transmitter                                | Pressure  | V. R. of Pressure Transmitter JJG 882                                   | (-0.1~100)MPa    | $U=0.07\%FS$                  | Under 100MPa:only grade 0.2 and below;(100~500)MPa cannot be calibrated on site      |                |
|    |                                                      |           |                                                                         | (100~500)MPa     | $U_{rel}=0.02\%$              |                                                                                      |                |
| 19 | Pressure Regulators with Bourdon Tube Pressure Gauge | Pressure  | C. S. for Pressure Regulators with Bourdon Tube Pressure Gauge JJF 1328 | (0.001~25)MPa    | $U=0.9\%FS$                   |                                                                                      |                |
| 20 | *Point Type Micro-differential Pressure Gauge        | Pressure  | V. R. of Point Type Micro-differential Pressure Gauge JJG(Yue) 020      | (-30~30)kPa      | $U=0.7\%FS$                   |                                                                                      |                |
| 21 | Compensated Micro-manometer                          | Pressure  | V. R. of Compensated Micro-manomete JJG 158                             | (-2500~2500) Pa  | $U=0.7\%FS$                   |                                                                                      |                |
| 22 | Tilting Tube Micromanometers                         | Pressure  | V. R. of Tilting Tube Micromanometers JJG 172                           | (-2~2)kPa        | $U=1.0\%FS$                   |                                                                                      |                |
| 23 | *leak tester of digitai difference pressure          | Pressure  | V. R. of leak tester of digitai difference pressure GJB/J 5461          | Span: (-1~1) kPa | $U=7.0Pa$                     |                                                                                      |                |
|    |                                                      |           |                                                                         | (-0.1~2) MPa     | $U=0.3\%FS$                   |                                                                                      |                |
| 24 | Standard Dynamometers                                | Force     | V. R. of Standard Dynamometers JJG 144                                  | (10~1100) N      | $U_{rel}=0.03\%$              |  |                |
| 25 | *Working Dynamometers                                | Force     | V. R. of Working Dynamometers JJG 455                                   | 1cN~500N         | $U_{rel}=0.1\%$               |                                                                                      |                |
|    |                                                      |           |                                                                         | 500N~600kN       | $U_{rel}=0.15\%$              |                                                                                      |                |
|    |                                                      |           |                                                                         | (600~5000)kN     | $U_{rel}=0.36\%$              |                                                                                      |                |



No. CNAS L2336

第 30 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                  | Measurand    | Calibration Method                                                          | Range             | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|-------------------------------------------------------------|--------------|-----------------------------------------------------------------------------|-------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
| 26 | *Working Force Measuring Machines for Special Purposes      | Force        | C. S. for Working Force Measuring Machines for Special Purposes JJF 1134    | 1cN~5MN           | U <sub>rel</sub> =0.4%        |                                                                                      |                |
| 27 | *Tension,Compression and Universal Testing Machines         | Force        | V. R. of Universal Testing and Compression Testing Machine JJG 139          | 0.01N~5MN         | U <sub>rel</sub> =0.36%       |                                                                                      |                |
|    |                                                             | Displacement |                                                                             | (1~1000)mm        | U <sub>rel</sub> =0.36%       |                                                                                      |                |
| 28 | *Electronic Universal Testing Machine                       | Force        | V. R. of Electronic Universal Testing Machine JJG 475                       | 0.01N~5MN         | U <sub>rel</sub> =0.36%       |                                                                                      |                |
|    |                                                             | Displacement |                                                                             | (1~1000)mm        | U <sub>rel</sub> =0.36%       |                                                                                      |                |
|    |                                                             | Rate         |                                                                             | (0.1~1000) mm/min | U <sub>rel</sub> =0.36%       |                                                                                      |                |
| 29 | *Electro-hydraulic Servo Universal Testing Machine          | Force        | V. R. of Electro-hydraulic Servo Universal Testing Machines JJG 1063        | 0.01N~1MN         | U <sub>rel</sub> =0.3%        |                                                                                      |                |
|    |                                                             |              |                                                                             | (1~3)MN           | U <sub>rel</sub> =0.5%        |                                                                                      |                |
| 30 | *Wire Bending Testing Machine                               | Angle        | V. R. of Wire Bending Testing Machine JJG (Yue) 022                         | 0° ~360°          | U=0.2°                        |                                                                                      |                |
|    |                                                             | Speed        |                                                                             | (10~100)times/min | U <sub>rel</sub> =0.3%        |                                                                                      |                |
|    |                                                             | Mass         |                                                                             | (0.01~2)kg        | U=0.2g                        |                                                                                      |                |
| 31 | *Flexure Testing Machine                                    | Force        | V. R. of Flexure Testing Mahin JJG 476                                      | (0.01~10)kN       | U <sub>rel</sub> =0.4%        |                                                                                      |                |
|    |                                                             | Torque Speed |                                                                             | (40~60) N/s       | U=2N/s                        |                                                                                      |                |
| 32 | *High-Temperature Creep and Stress-Rupture Testing Machines | Length       | V. R. of High-Temperature Creep and Stress-Rupture Testing Machines JJG 276 | (0.01~15) mm      | U <sub>rel</sub> =0.08%       |  |                |
|    |                                                             | Force        |                                                                             | 0.01N~1000kN      | U <sub>rel</sub> =0.4%        |                                                                                      |                |
|    |                                                             | Temperature  |                                                                             | (50~900)℃         | U=1.4℃                        |                                                                                      |                |
|    |                                                             |              |                                                                             | (900~1000)℃       | U=1.8℃                        |                                                                                      |                |
|    |                                                             |              |                                                                             | Alignment         | (0.01~25) %                   |                                                                                      |                |

No. CNAS L2336

第 31 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                        | Measurand | Calibration Method                                                 | Range                              | Expanded Uncertainty<br>( <i>k</i> =2) | Note                     | Effective Date |
|----|---------------------------------------------------|-----------|--------------------------------------------------------------------|------------------------------------|----------------------------------------|--------------------------|----------------|
|    |                                                   | Time      |                                                                    | (0.01~3600) s                      | <i>U</i> <sub>rel</sub> =0.1%          |                          |                |
| 33 | *Cupping Testing Machine                          | Force     | V. R. of Cupping Testing Machine JJG 583                           | (9.5~10.5)kN                       | <i>U</i> <sub>rel</sub> =0.28%         |                          |                |
|    |                                                   | Length    |                                                                    | (15~60) mm                         | <i>U</i> =0.02mm                       |                          |                |
| 34 | *Hydraulic Jacks                                  | Force     | V. R. of Hydraulic Jacks JJG 621                                   | (1~10)MN                           | <i>U</i> <sub>rel</sub> =0.7%          |                          |                |
|    |                                                   |           |                                                                    | (1~1000)kN                         | <i>U</i> <sub>rel</sub> =0.6%          |                          |                |
| 35 | Force Transducers                                 | Force     | V. R. of Force Transducers JJG 391                                 | (100~1100)N                        | <i>U</i> <sub>rel</sub> =0.3%          | Grade 0.3 and below only |                |
| 36 | Screen Tension Meters                             | Force     | C. S. for Screen Tension Meters JJF 1465                           | (5~50) N/cm                        | <i>U</i> =1.5%FS                       |                          |                |
| 37 | *Pendulum Impact Testing Machines                 | Energy    | V. R. of Pendulum Impact Testing Machines JJG 145                  | (1~30)J                            | <i>U</i> <sub>rel</sub> =2.0%          |                          |                |
|    |                                                   |           |                                                                    | (30~110)J                          | <i>U</i> <sub>rel</sub> =1.9%          |                          |                |
|    |                                                   |           |                                                                    | (110~220)J                         | <i>U</i> <sub>rel</sub> =1.8%          |                          |                |
|    |                                                   |           |                                                                    | (220~300)J                         | <i>U</i> <sub>rel</sub> =1.8%          |                          |                |
|    |                                                   | Length    |                                                                    | Size: (0.1~1000) mm                | <i>U</i> =0.02mm                       |                          |                |
|    |                                                   |           |                                                                    | Clearance: (0~0.5) mm              | <i>U</i> =0.02mm                       |                          |                |
| 38 | *Cantilever-Beam(Izod-Type)Impact Testing Machine | Energy    | V. R. of Cantilever-Beam(Izod-Type) Impact Testing Machine JJG 608 | (1~150)J                           | <i>U</i> <sub>rel</sub> =0.5%          |                          |                |
|    |                                                   | Length    |                                                                    | Geometric parameters: (0.01~25) mm | <i>U</i> =0.01mm                       |                          |                |
|    |                                                   |           |                                                                    | Pendulum length: (50~1000) mm      | <i>U</i> =0.06mm                       |                          |                |



No. CNAS L2336

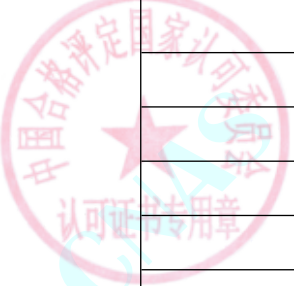
第 32 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                  | Measurand    | Calibration Method                                          | Range          | Expanded Uncertainty<br>( $k=2$ ) | Note                                    | Effective Date |
|----|---------------------------------------------|--------------|-------------------------------------------------------------|----------------|-----------------------------------|-----------------------------------------|----------------|
| 39 | *Calibration Instrument for Torque Wrenches | Torque       | V. R. of Calibration Instrument for Torque Wrenches JJG 797 | (0.2~100)Nm    | $U_{rel}=0.18\%$                  |                                         |                |
| 40 | *Working Torque-meters                      | Torque       | V. R. of Working Torque-meters JJG1146                      | (0.1~2000)Nm   | $U_{rel}=0.4\%$                   |                                         |                |
| 41 | Torque Wrenches                             | Torque       | V. R. of Torque Wrenches JJG 707                            | (0.2~500)Nm    | $U_{rel}=0.5\%$                   |                                         |                |
|    |                                             |              |                                                             | (500~2000)Nm   | $U_{rel}=0.4\%$                   |                                         |                |
| 42 | Electric and pneumatic torque wrenchs       | Torque       | C. S. for Electric and Pneumatic Torque Wrenches JJF 1610   | (0.5~180)Nm    | $U_{rel}=1.2\%$                   |                                         |                |
| 43 | *Equipment of Power Measuring               | Torque       | V. R. of Equipment of Power Measuring JJG 653               | (0.01~2000)Nm  | $U_{rel}=0.5\%$                   | Non-contact type only(grade B、 grade C) |                |
|    |                                             | Rotate speed |                                                             | (1~30000)r/min | $U_{rel}=0.2\%$                   |                                         |                |
| 44 | *Metallic Brinell Hardness Testers          | Hardness     | V. R. of Metallic Brinell Hardness Testers JJG 150          | (90~125)HBW    | $U_{rel}=2.0\%$                   |                                         |                |
|    |                                             |              |                                                             | (125~225)HBW   | $U_{rel}=1.9\%$                   |                                         |                |
|    |                                             |              |                                                             | (225~350)HBW   | $U_{rel}=2.0\%$                   |                                         |                |
| 45 | *Portable Brinell Hardness Tester           | Hardness     | C. S. for Portable Brinell Hardness Tester JJF 1595         | (70~300)HBW    | $U_{rel}=1.7\%$                   |                                         |                |
|    |                                             | Force        |                                                             | (0.001~30) kN  | $U_{rel}=0.6\%$                   |                                         |                |
| 46 | *Portable Rockwell Hardness Tester          | Hardness     | C. S. for Portable Rockwell Hardness Tester JJF 1594        | (20~70)HRC     | $U=1.0\text{HRC}$                 |                                         |                |
|    |                                             |              |                                                             | (>80~100)HRBW  | $U=1.2\text{HRBW}$                |                                         |                |
|    |                                             |              |                                                             | (>75~88)HRA    | $U=1.0\text{HRA}$                 |                                         |                |
|    |                                             | Force        |                                                             | (0.01~1.5) kN  | $U_{rel}=0.6\%$                   |                                         |                |
|    | *Metallic                                   | Hardness     | V. R. of Metallic Rockwell                                  | (20~30)HRC     | $U=0.7\text{HRC}$                 |                                         |                |





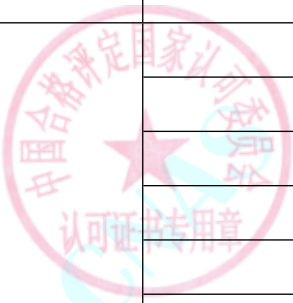
| №  | Instrument                               | Measurand | Calibration Method                               | Range          | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|----|------------------------------------------|-----------|--------------------------------------------------|----------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
|    | Rockwell<br>Hardness Testing<br>Machines |           | Hardness Testing Machines<br>JJG 112             | (35~55)HRC     | $U=0.6\text{HRC}$                 |                                                                                      |                |
|    |                                          |           |                                                  | (60~70)HRC     | $U=0.5\text{HRC}$                 |                                                                                      |                |
|    |                                          |           |                                                  | (45~88) HRA    | $U=0.6\text{HRA}$                 |                                                                                      |                |
|    |                                          |           |                                                  | (85~100) HRBW  | $U=0.7\text{HRBW}$                |                                                                                      |                |
|    |                                          |           |                                                  | (89~91) HR15N  | $U=0.9\text{HR15N}$               |                                                                                      |                |
|    |                                          |           |                                                  | (42~54) HR30N  | $U=1.0\text{HR30N}$               |                                                                                      |                |
|    |                                          |           |                                                  | (74~80) HR30N  | $U=0.9\text{HR30N}$               |                                                                                      |                |
|    |                                          |           |                                                  | (32~61) HR45N  | $U=1.1\text{HR45N}$               |                                                                                      |                |
|    |                                          |           |                                                  | (88~93) HR15TW | $U=1.0\text{HR15TW}$              |                                                                                      |                |
|    |                                          |           |                                                  | (70~82) HR30TW | $U=0.9\text{HR30TW}$              |                                                                                      |                |
|    |                                          | Time      |                                                  | (0~20) s       | $U=0.4\text{s}$                   |                                                                                      |                |
|    |                                          | Length    |                                                  | (0~2) mm       | $U=0.6\text{ }\mu\text{m}$        |                                                                                      |                |
|    |                                          | Angle     |                                                  | (119~121) °    | $U=0.08^\circ$                    |                                                                                      |                |
| 48 | *Ultrasonic<br>Hardness Testers          | Hardness  | C. S. for Ultrasonic Hardness<br>Testers JJF1436 | (>175~200)HV   | $U_{\text{rel}}=5.0\%$            |  |                |
|    |                                          |           |                                                  | (>200~400)HV   | $U_{\text{rel}}=3.0\%$            |                                                                                      |                |
|    |                                          |           |                                                  | (>400~600)HV   | $U_{\text{rel}}=1.7\%$            |                                                                                      |                |
|    |                                          |           |                                                  | (>600~800)HV   | $U_{\text{rel}}=1.4\%$            |                                                                                      |                |
|    |                                          |           |                                                  | (20~70)HRC     | $U=0.5\text{HRC}$                 |                                                                                      |                |
|    |                                          |           |                                                  | (85~650)HBW    | $U_{\text{rel}}=3.0\%$            |                                                                                      |                |



No. CNAS L2336

第 34 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                        | Measurand | Calibration Method                                               | Range           | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |  |  |
|----|---------------------------------------------------|-----------|------------------------------------------------------------------|-----------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|--|--|
|    |                                                   | Force     |                                                                  | (1~98)N         | <i>U</i> <sub>rel</sub> =1.2%          |                                                                                      |                |  |  |
| 49 | *Plastic Rock Well<br>Hardness Testing<br>Machine | Hardness  | V. R.of Plastic Rock Well<br>Hardness Testing Machine<br>JJG 884 | (70~94)HRE      | <i>U</i> =0.9HRE                       |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (100~120)HRL    | <i>U</i> =0.8HRL                       |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (114~125)HRR    | <i>U</i> =0.9HRR                       |                                                                                      |                |  |  |
| 50 | *Metallic Webster<br>Hardness Testing<br>Machines | Hardness  | V. R.of Metallic Webster<br>Hardness Testing Machines<br>JJG 944 | (8~17)HWA       | <i>U</i> =0.3HWA                       |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (4~6)HWB        | <i>U</i> =0.3HWB                       |                                                                                      |                |  |  |
| 51 | *Equotip Hardness<br>Tester                       | Mass      | V. R.of Equotip Hardness<br>Tester JJG 747                       | (0~30)g         | <i>U</i> =0.08g                        |                                                                                      |                |  |  |
|    |                                                   | Hardness  |                                                                  | (490~570)HLD    | <i>U</i> =5HLD                         |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (590~670)HLD    | <i>U</i> =6HLD                         |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (750~830)HLD    | <i>U</i> =6HLD                         |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (460~540)HLG    | <i>U</i> =6HLG                         |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (550~630)HLG    | <i>U</i> =6HLG                         |                                                                                      |                |  |  |
| 52 | *Shore Hardness<br>Tester                         | Hardness  | V. R.of Shore Hardness<br>Tester JJG 346                         | (0~140)HSD      | <i>U</i> =0.8HSD                       |                                                                                      |                |  |  |
| 53 | *Metal Vickers<br>Hardness Testers                | Hardness  | V. R.of Metal Vickers<br>Hardness Testers JJG 151                | (700~800) HV5   | <i>U</i> <sub>rel</sub> =2.7%          |  |                |  |  |
|    |                                                   |           |                                                                  | (175~225) HV5   | <i>U</i> <sub>rel</sub> =3.9%          |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (400~600) HV10  | <i>U</i> <sub>rel</sub> =2.6%          |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (400~600) HV30  | <i>U</i> <sub>rel</sub> =2.6%          |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (700~800) HV1   | <i>U</i> <sub>rel</sub> =3.5%          |                                                                                      |                |  |  |
|    |                                                   |           |                                                                  | (700~800) HV0.5 | <i>U</i> <sub>rel</sub> =4.5%          |                                                                                      |                |  |  |

No. CNAS L2336

第 35 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                      | Measurand | Calibration Method                                                         | Range            | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------|-----------|----------------------------------------------------------------------------|------------------|-----------------------------------|------|----------------|
|    |                                 |           |                                                                            | (700~800) HV0.2  | $U_{\text{rel}}=5.0\%$            |      |                |
|    |                                 |           |                                                                            | (400~600) HV0.1  | $U_{\text{rel}}=5.5\%$            |      |                |
|    |                                 |           |                                                                            | (175~225) HV0.05 | $U_{\text{rel}}=6.0\%$            |      |                |
| 54 | Shore A Durometers              | Hardness  | V. R. of Shore A Durometers<br>JJG 304                                     | (0~100)HA        | $U=0.2\text{HA}$                  |      |                |
|    |                                 | Length    |                                                                            | (0.5~2) mm       | $U=0.01\text{mm}$                 |      |                |
|    |                                 | Angle     |                                                                            | (30~40) °        | $U=0.08^\circ$                    |      |                |
|    |                                 | Force     |                                                                            | (0.5~10) N       | $U=0.03\text{N}$                  |      |                |
| 55 | Shore D Durometer               | Hardness  | V. R. of Shore D Durometer<br>JJG 1039                                     | (0~100)HD        | $U=0.2\text{HD}$                  |      |                |
|    |                                 | Length    |                                                                            | (0.05~4) mm      | $U=0.005\text{mm}$                |      |                |
|    |                                 | Angle     |                                                                            | (25~35) °        | $U=0.08^\circ$                    |      |                |
|    |                                 | Force     |                                                                            | (0.05~50) N      | $U=0.03\text{N}$                  |      |                |
| 56 | *Type A Barcol Hardness Testers | Hardness  | V. R. of Type A Barcol Hardness Testers JJG 610                            | (42~52)HBa       | $U=0.7\text{HBa}$                 |      |                |
|    |                                 |           |                                                                            | (82~88)HBa       | $U=1.2\text{HBa}$                 |      |                |
| 57 | *Pencil Hardness Tester         | Angle     | V. R. of Film hardness of pencil Scratch Test<br>JJG(Chemicalindustry) 012 | 44° ~46°         | $U=0.06^\circ$                    |      |                |
|    |                                 | Quality   |                                                                            | (1~2000)g        | $U=0.7\text{g}$                   |      |                |
|    |                                 | Length    |                                                                            | (0~100) mm       | $U=1\text{mm}$                    |      |                |
| 58 | *Pencil Hardness Tester         | Angle     | C. S. for Pencil Hardness Testers JJF(Petrifaction)007                     | 44° ~46°         | $U=0.06^\circ$                    |      |                |
|    |                                 | Quality   |                                                                            | (1~2000)g        | $U=0.7\text{g}$                   |      |                |
|    |                                 | Length    |                                                                            | (0~100) mm       | $U=1\text{mm}$                    |      |                |



No. CNAS L2336

第 36 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                   | Measurand            | Calibration Method                                                  | Range                                               | Expanded Uncertainty<br>( $k=2$ ) | Note                         | Effective Date |
|----|----------------------------------------------|----------------------|---------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|------------------------------|----------------|
| 59 | *Shore Durometer<br>Calibrating<br>Apparatus | Force                | C. S. for Shore Durometer<br>Calibrating Apparatus SBJZ-<br>ZB-L002 | 1959mN                                              | $U=2\text{mN}$                    | $g=9.7946\text{m/s}^2$       |                |
|    |                                              |                      |                                                                     | 4897mN                                              | $U=2\text{mN}$                    |                              |                |
|    |                                              |                      |                                                                     | 9795mN                                              | $U=3\text{mN}$                    |                              |                |
|    |                                              |                      |                                                                     | 19589mN                                             | $U=5\text{mN}$                    |                              |                |
|    |                                              |                      |                                                                     | 48973mN                                             | $U=8\text{mN}$                    |                              |                |
|    |                                              | Length               |                                                                     | (0~3)mm                                             | $U=0.5\text{ }\mu\text{m}$        |                              |                |
| 60 | Vibration<br>Displacement<br>Transducer      | Displacement         | V. R.of Vibration<br>Displacement Transducer JJG<br>644             | (0.1~5)mm, (3~<br>2000)Hz                           | $U_{\text{rel}}=1.8\%$            | Calibrate<br>dynamic<br>only |                |
| 61 | Electromagnetic<br>Velocity<br>Transducer    | Velocity             | V. R.of Electromagnetic<br>Velocity Transducer JJG 134              | (0.1~100)cm/s, (3~<br>2000)Hz                       | $U_{\text{rel}}=1.6\%$            |                              |                |
| 62 | Piezoelectric<br>accelerometer               | Acceleration         | V. R.of Piezoelectric<br>Accelerometer JJG 233                      | reference<br>point:100m/s <sup>2</sup> ,160Hz       | $U_{\text{rel}}=0.9\%$            | Comparative<br>method only   |                |
|    |                                              |                      |                                                                     | Passband: (1~441)<br>m/s <sup>2</sup> , (2~52000)Hz | $U_{\text{rel}}=1.2\%$            |                              |                |
| 63 | Portable<br>Vibration<br>Calibrator          | Acceleration         | Portable Vibration Calibrator<br>JJG1062                            | (1~980)m/s <sup>2</sup> , (3~<br>3570)Hz            | $U_{\text{rel}}=1.0\%$            |                              |                |
|    |                                              |                      |                                                                     | (1~980)m/s <sup>2</sup> , (3570~<br>5300)Hz         | $U_{\text{rel}}=1.5\%$            |                              |                |
|    |                                              | Frequency            |                                                                     | (3~5300)Hz                                          | $U_{\text{rel}}=0.01\%$           |                              |                |
|    |                                              | Distortion<br>factor |                                                                     | 1%~100%                                             | $U_{\text{rel}}=1\%$              |                              |                |
| 64 | *Standard<br>Vibrators                       | Frequency            | V. R.of Standard Vibrators<br>JJG 298                               | (3~5000)Hz                                          | $U_{\text{rel}}=0.02\%$           |                              |                |
|    |                                              | Acceleration         |                                                                     | (1~980)m/s <sup>2</sup>                             | $U_{\text{rel}}=2.3\%$            |                              |                |



No. CNAS L2336

第 37 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                       | Measurand                                             | Calibration Method                                              | Range                                     | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|--------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------|-----------------------------------|------|----------------|
|    |                                                  | Distortion factor                                     |                                                                 | 1%~100%                                   | $U_{rel}=1\%$                     |      |                |
|    |                                                  | Transverse vibration ratio                            |                                                                 | 0.1%~100%                                 | $U_{rel}=4.0\%$                   |      |                |
|    |                                                  | Stability of acceleration amplitude                   |                                                                 | (1~980)m/s <sup>2</sup> , (1~5000)Hz      | $U_{rel}=1.5\%$                   |      |                |
|    |                                                  | Voltage                                               |                                                                 | 10mv~10v (1~10)kHz                        | $U_{rel}=0.1\%$                   |      |                |
| 65 | *Digital electrodynamic vibration testing system | Frequency                                             | V. R.of Digital Electrodynamic Vibration Testing System JJG 948 | (1~5000)Hz                                | $U_{rel}=0.02\%$                  |      |                |
|    |                                                  | Acceleration                                          |                                                                 | (1~980)m/s <sup>2</sup>                   | $U_{rel}=2.6\%$                   |      |                |
|    |                                                  | Distortion factor                                     |                                                                 | 0.01%~100%                                | $U=1\%$                           |      |                |
|    |                                                  | Velocity                                              |                                                                 | (0.001~10)m/s                             | $U_{rel}=2.1\%$                   |      |                |
|    |                                                  | Displacement                                          |                                                                 | (0.001~200)mm                             | $U_{rel}=2.1\%$                   |      |                |
|    |                                                  | PSD                                                   |                                                                 | (0.001~100)m <sup>2</sup> /s <sup>3</sup> | $U_{rel}=4.7\%$                   |      |                |
|    |                                                  | Acceleration rms                                      |                                                                 | (1~980)m/s <sup>2</sup>                   | $U_{rel}=4.7\%$                   |      |                |
|    |                                                  | Impact acceleration amplitude                         |                                                                 | (30~3000)m/s <sup>2</sup>                 | $U_{rel}=4.7\%$                   |      |                |
|    |                                                  | pulse duration                                        |                                                                 | (3~50)ms                                  | $U_{rel}=3.2\%$                   |      |                |
|    |                                                  | Uniformity of root mean square of random acceleration |                                                                 | 0.01%~100%                                | $U_{rel}=4.0\%$                   |      |                |



No. CNAS L2336

第 38 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                   | Measurand                                                                               | Calibration Method                                                                                                          | Range       | Expanded Uncertainty<br>( $k=2$ ) | Note                | Effective Date |
|----|----------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------|---------------------|----------------|
|    |                                              | Root mean square of random acceleration and Spectral density transverse vibration ratio | ilac-MRA<br>CNAS<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | 0.01%~100%  | $U_{rel}=4.0\%$                   |                     |                |
|    |                                              | Random dynamic range                                                                    |                                                                                                                             | (10~100)dB  | $U=0.3\text{dB}$                  |                     |                |
|    |                                              | Vibration test system noise                                                             |                                                                                                                             | (30~130)dB  | $U=0.7\text{dB}$                  |                     |                |
|    |                                              | Vibration control channel consistency                                                   |                                                                                                                             | (0.01~10)dB | $U=0.01\text{dB}$                 |                     |                |
|    |                                              | Vibration test system mesa magnetic flux leakage                                        |                                                                                                                             | (0.01~20)mT | $U_{rel}=2.0\%$                   |                     |                |
|    |                                              | Force                                                                                   |                                                                                                                             | (1.0~700)kN | $U_{rel}=2.8\%$                   |                     |                |
|    |                                              | Change of impact velocity                                                               |                                                                                                                             | (0.1~30)m/s | $U_{rel}=3.2\%$                   |                     |                |
| 66 | *Mechanical Vibration Generator for Tsetting | Frequency                                                                               | V. R. of Mechanical Vibration Generator for Tsetting JJG 189                                                                | (3~2000)Hz  | $U_{rel}=0.2\%$                   | 合格评定国家认可<br>认证证书专用章 |                |
|    |                                              | Displacement                                                                            |                                                                                                                             | (0.1~50)mm  | $U_{rel}=2.6\%$                   |                     |                |
|    |                                              | Distortion factor                                                                       |                                                                                                                             | 0.01%~100%  | $U=1\%$                           |                     |                |



No. CNAS L2336

第 39 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                          | Measurand                                     | Calibration Method                                 | Range                                     | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-------------------------------------|-----------------------------------------------|----------------------------------------------------|-------------------------------------------|-----------------------------------|------|----------------|
|    |                                     | Acceleration                                  |                                                    | (1~200)m/s <sup>2</sup>                   | $U_{rel}=2.6\%$                   |      |                |
|    |                                     | Noise of vibration test bed                   |                                                    | (30~130)dB                                | $U=0.7\text{dB}$                  |      |                |
| 67 | *Hydraulic Vibration Testing System | Frequency                                     | V. R.of Hydraulic Vibration Testing System JJG 638 | (1~5000)Hz                                | $U_{rel}=0.02\%$                  |      |                |
|    |                                     | Acceleration                                  |                                                    | (1~200)m/s <sup>2</sup>                   | $U_{rel}=3.0\%$                   |      |                |
|    |                                     | Distortion factor                             |                                                    | 0.01%~100%                                | $U=3\%$                           |      |                |
|    |                                     | Velocity                                      |                                                    | (0.001~10)m/s                             | $U_{rel}=2.1\%$                   |      |                |
|    |                                     | Displacement                                  |                                                    | (0.1~500)mm                               | $U_{rel}=2.1\%$                   |      |                |
|    |                                     | PSD                                           |                                                    | (0.001~100)m <sup>2</sup> /s <sup>3</sup> | $U_{rel}=4.7\%$                   |      |                |
|    |                                     | Noise                                         |                                                    | (30~130)dB                                | $U=0.7\text{dB}$                  |      |                |
|    |                                     | Root mean square value of random acceleration |                                                    | (1~980)m/s <sup>2</sup>                   | $U_{rel}=4.7\%$                   |      |                |
|    |                                     | Uniformity of acceleration                    |                                                    | 0.1%~100%                                 | $U_{rel}=4.0\%$                   |      |                |
| 68 | *Bump Testing machines              | Acceleration                                  | V. R.of Shock and Bump Testing Machines JJG 1174   | (30~1000) m/s <sup>2</sup>                | $U_{rel}=5\%$                     |      |                |
|    |                                     |                                               |                                                    | (1000~5000) m/s <sup>2</sup>              | $U_{rel}=7\%$                     |      |                |
|    |                                     | Pulse duration                                |                                                    | (3~50)ms                                  | $U_{rel}=5\%$                     |      |                |
|    |                                     | Velocity variation                            |                                                    | (0.01~20)m/s                              | $U_{rel}=4.2\%$                   |      |                |



No. CNAS L2336

第 40 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                 | Measurand                                         | Calibration Method                                                          | Range                       | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                         | Effective Date |
|----|------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------|-----------------------------------|------------------------------------------------------------------------------|----------------|
|    |                                                            | Repeat frequency of shock                         |                                                                             | (2~100) h/min               | $U_{rel}=1.0\%$                   |                                                                              |                |
|    |                                                            | Mesa peak acceleration uniformity                 |                                                                             | 0.1%~100%                   | $U_{rel}=4.0\%$                   |                                                                              |                |
|    |                                                            | Lateral vibration ratio of mesa peak acceleration |                                                                             | 0.1%~100%                   | $U_{rel}=4.0\%$                   |                                                                              |                |
| 69 | *Electrodynamic Horizontal Vibration Generator for Testing | Frequency                                         | V. R. of Electrodynamic Horizontal Vibration Generator for Testing JJG 1000 | (1~4000)Hz                  | $U_{rel}=0.05\%$                  |                                                                              |                |
|    |                                                            | Acceleration                                      |                                                                             | (1~980)m/s <sup>2</sup>     | $U_{rel}=2.6\%$                   |                                                                              |                |
|    |                                                            | Displacement                                      |                                                                             | (0.001~300)mm               | $U_{rel}=2.6\%$                   |                                                                              |                |
|    |                                                            | Distortion factor                                 |                                                                             | 0.01%~100%                  | $U=1\%$                           |                                                                              |                |
|    |                                                            | Working noise of vibration test bench             |                                                                             | (30~130)dB                  | $U=0.7\text{dB}$                  |                                                                              |                |
| 70 | *Shock testing machine                                     | Acceleration                                      | V. R. of Falling Body Type Shock Testing Machines JJG 541                   | (100~50000)m/s <sup>2</sup> | $U_{rel}=7\%$                     | Except for lateral motion ratio and non-uniformity of acceleration amplitude |                |
|    |                                                            | Time                                              |                                                                             | (0.3~60)ms                  | $U_{rel}=8\%$                     |                                                                              |                |
|    |                                                            | Velocity variation                                |                                                                             | (0.001~20)m/s               | $U_{rel}=8\%$                     |                                                                              |                |
|    |                                                            | Mesa peak acceleration uniformity                 |                                                                             | 0.1%~100%                   | $U_{rel}=4.0\%$                   |                                                                              |                |



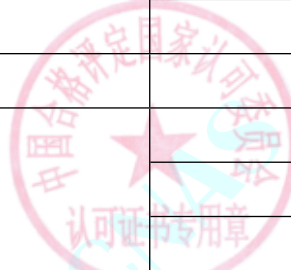
| №  | Instrument                                                            | Measurand                                                 | Calibration Method                                                                      | Range                                   | Expanded Uncertainty<br>( $k=2$ ) | Note                    | Effective Date |
|----|-----------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------|-------------------------|----------------|
|    |                                                                       | Lateral vibration ratio of mesa peak acceleration         |                                                                                         | 0.1%~100%                               | $U_{rel}=4.0\%$                   |                         |                |
| 71 | Vibration Meters                                                      | Acceleration                                              | V. R. of Vibration Meters JJG 676                                                       | (1~441)m/s <sup>2</sup> ,<br>2Hz~6000Hz | $U_{rel}=2.0\%$                   | Comparative method only |                |
|    |                                                                       | Speed                                                     |                                                                                         | (0.1~1500)mm/s,<br>2Hz~1000Hz           | $U_{rel}=2.0\%$                   |                         |                |
|    |                                                                       | Displacement                                              |                                                                                         | (0.01~16)mm<br>2Hz~500Hz                | $U_{rel}=2.0\%$                   |                         |                |
|    |                                                                       | Frequency                                                 |                                                                                         | (2~6000)Hz                              | $U_{rel}=0.012\%$                 |                         |                |
| 72 | *Temperature/Humidity/Vibration Combined Environmental Testing System | Temperature                                               | C. S. for Temperature/Humidity/Vibration Combined Environmental Testing System JJF 1270 | (-75~200)°C                             | $U=0.5^{\circ}\text{C}$           |                         |                |
|    |                                                                       | Humidity                                                  |                                                                                         | 20%RH~95%RH                             | $U=1.7\%\text{RH}$                |                         |                |
|    |                                                                       | Acceleration                                              |                                                                                         | (1~980)m/s <sup>2</sup>                 | $U_{rel}=3.0\%$                   |                         |                |
|    |                                                                       | Wind velocity                                             |                                                                                         | (0.1~20)m/s                             | $U_{rel}=3.0\%$                   |                         |                |
|    |                                                                       | Rate of temperature change                                |                                                                                         | (0.5~60)°C/min                          | $U_{rel}=5.0\%$                   |                         |                |
|    |                                                                       | The test system operates at maximum noise                 |                                                                                         | (30~130)dB                              | $U=0.7\text{dB}$                  |                         |                |
|    |                                                                       | Indication of acceleration amplitude in temperature cycle |                                                                                         | (1~980)m/s <sup>2</sup>                 | $U_{rel}=2.6\%$                   |                         |                |



No. CNAS L2336

第 42 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                       | Measurand                                                               | Calibration Method                                              | Range                              | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|----|--------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                                  | Vibration<br>table<br>additional<br>table<br>acceleration<br>uniformity |                                                                 | 0.1%~100%                          | <i>U</i> <sub>rel</sub> =4.0%          |                                                                                      |                |
| 73 | *Spring Hammers                                  | Force                                                                   | C. S. for Spring Hammers JJF 1475                               | 10N                                | <i>U</i> <sub>rel</sub> =0.28%         |                                                                                      |                |
|    |                                                  | Length                                                                  |                                                                 | (9.8~10.2)mm                       | <i>U</i> =0.06mm                       |                                                                                      |                |
|    |                                                  | Energy                                                                  |                                                                 | (0.18~0.22)J                       | <i>U</i> <sub>rel</sub> =2.0%          |                                                                                      |                |
|    |                                                  |                                                                         |                                                                 | (0.32~0.38)J                       | <i>U</i> <sub>rel</sub> =2.0%          |                                                                                      |                |
|    |                                                  |                                                                         |                                                                 | (0.46~0.54)J                       | <i>U</i> <sub>rel</sub> =2.5%          |                                                                                      |                |
|    |                                                  |                                                                         |                                                                 | (0.65~0.75)J                       | <i>U</i> <sub>rel</sub> =2.3%          |                                                                                      |                |
|    |                                                  |                                                                         |                                                                 | (0.95~1.05)J                       | <i>U</i> <sub>rel</sub> =2.2%          |                                                                                      |                |
|    |                                                  |                                                                         |                                                                 | (1.95~2.05)J                       | <i>U</i> <sub>rel</sub> =2.1%          |                                                                                      |                |
| 74 | *Film Impact Testers                             | Mass                                                                    | C. S. for Film Impact Testers JJF(Petrifaction) 002             | Weight of heavy hammer:(999~1001)g | <i>U</i> =0.6g                         |                                                                                      |                |
|    |                                                  | Length                                                                  |                                                                 | Roller scale:(0~500)mm             | <i>U</i> =0.1mm                        |                                                                                      |                |
| 75 | Tachometers                                      | Rotate speed                                                            | V. R.of Tachometers JJG 105                                     | (20~30000)r/min                    | <i>U</i> <sub>rel</sub> =0.02%         |  |                |
| 76 | *Constant Acceleration Centrifugal Test Machines | Length                                                                  | V. R.of Constant Acceleration Centrifugal Test Machines JJG 972 | (0.01~5)m                          | <i>U</i> <sub>rel</sub> =0.2%          |                                                                                      |                |
|    |                                                  | Rotate speed                                                            |                                                                 | (1~20000)r/min                     | <i>U</i> <sub>rel</sub> =0.2%          |                                                                                      |                |
|    |                                                  | Noise                                                                   |                                                                 | (60~90)dB (A)                      | <i>U</i> =1.2dB (A)                    |                                                                                      |                |
| 77 | *Medical Centrifuge                              | Rotate speed                                                            | C. S. for Medical Centrifuge JJF(Zhe) 1117                      | (1~9999)r/min                      | <i>U</i> <sub>rel</sub> =0.3%          |                                                                                      |                |



No. CNAS L2336

第 43 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                          | Measurand              | Calibration Method                                                    | Range              | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------|------------------------|-----------------------------------------------------------------------|--------------------|-----------------------------------|------|----------------|
|    |                                                     |                        |                                                                       | (10000~30000)r/min | $U_{rel}=0.1\%$                   |      |                |
| 78 | *Friability<br>Surveymeter                          | Rotate speed           | C. S. for Friability<br>Surveymeter JJF(Lu) 92                        | (1~200)r/min       | $U_{rel}=1.5\%$                   |      |                |
|    |                                                     | Count                  |                                                                       | (1~200)round       | $U=1$ round                       |      |                |
|    |                                                     | Length                 |                                                                       | (0~300)mm          | $U=0.4$ mm                        |      |                |
|    |                                                     | Time                   |                                                                       | (0~4)min           | $U=3.0$ s                         |      |                |
| 79 | *impeller agitator                                  | Length                 | Calibration method of<br>impeller agitator TGX012                     | (0~100)mm          | $U=0.2$ mm                        |      |                |
|    |                                                     | Rotate speed           |                                                                       | (500~700)r/min     | $U_{rel}=2.0\%$                   |      |                |
| 80 | *Flow<br>Integration<br>Meters                      | DC Electric<br>current | V. R.of Flow Integration<br>Meters JJG 1003                           | (0.1~20)mA         | $U_{rel}=0.04\%$                  |      |                |
|    |                                                     | DC Voltage             |                                                                       | (0.01~5)V          | $U_{rel}=0.04\%$                  |      |                |
|    |                                                     | Resistance             |                                                                       | (1~10000) $\Omega$ | $U_{rel}=0.04\%$                  |      |                |
|    |                                                     | Frequency              |                                                                       | (0.1~10)kHz        | $U_{rel}=0.02\%$                  |      |                |
| 81 | *Corlour Fastness<br>to Friction Testers            | Force                  | C. S. for Corlour Fastness to<br>Friction Testers JJF(Textile)<br>027 | (8~10)N            | $U=0.08$ N                        |      |                |
|    |                                                     | Length                 |                                                                       | (100~110)mm        | $U=0.5$ mm                        |      |                |
|    |                                                     | Rotate speed           |                                                                       | (55~65)r/min       | $U=0.7$ r/min                     |      |                |
| 82 | *Perspiration<br>Fastness<br>Instruments            | Force                  | C. S. for Perspiration Fastness<br>Instruments JJF(Textile) 028       | (49~51)N           | $U=0.1$ N                         |      |                |
|    |                                                     | Length                 |                                                                       | (2~120)mm          | $U=0.5$ mm                        |      |                |
| 83 | *Type Pressure<br>Gauges                            | Pressure               | V. R.of Type Pressure<br>Gauges JJG 927                               | (0~2.5)MPa         | $U=0.7\%$ FS                      |      |                |
| 84 | *Simulation Test-<br>bed for Road<br>Transportation | Frequency              | C. S. for Simulation Test-bed<br>for Road Transportation JJF<br>1271  | (3~400)Hz          | $U_{rel}=2.0\%$                   |      |                |

No. CNAS L2336

第 44 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №                | Instrument                                       | Measurand         | Calibration Method                                                                       | Range          | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|------------------|--------------------------------------------------|-------------------|------------------------------------------------------------------------------------------|----------------|-------------------------------|------|----------------|
|                  |                                                  | Acceleration      |                                                                                          | (0.1~100)m/s²  | U <sub>rel</sub> =3.0%        |      |                |
| 85               | *Compression Strength Tester for Board           | Force             | V. R.of Compression Strength Tester for Board JJG(LightIndustry) 49                      | (1~3000)N      | U <sub>rel</sub> =0.4%        |      |                |
| 86               | *Bursting Strength Tester for Paper and Board    | Pressure          | C. S. for Bursting Strength Testers for Paper(Board) JJF 1811                            | (0.001~6)MPa   | U=0.2%FS                      |      |                |
| 87               | *Compression Strength Tester for Corrugated Box  | Force             | V. R.of Compression Strength Tester for Corrugated Box JJG(LightIndustry) 115            | (0.1~50)kN     | U <sub>rel</sub> =0.4%        |      |                |
|                  |                                                  | Length            |                                                                                          | (0~500) mm     | U=0.4mm                       |      |                |
| 88               | *Tablet Hardness Tester Needle Tube              | Force             | C.S. for Tablet Hardness Tester Needle Tube JJF(E) 46                                    | 1N~500N        | U <sub>rel</sub> =0.1%        |      |                |
| Electromagnetism |                                                  |                   |                                                                                          |                |                               |      |                |
| 1                | *Charge Amplifiers                               | Voltage           | Charge Amplifiers JJG338                                                                 | (1mV~10V)      | U <sub>rel</sub> =0.1%        |      |                |
|                  |                                                  | Frequency         |                                                                                          | (0.01~100) kHz | U <sub>rel</sub> =0.1%        |      |                |
|                  |                                                  | Distortion factor |                                                                                          | (0.01~100) %   | U <sub>rel</sub> =5%          |      |                |
| 2                | *Instantaneous Discontinuity Testing Instruments | Resistance        | Calibration Specification of Instantaneous Discontinuity Testing Instruments JJF(电子)0042 | 10mΩ~1000Ω     | U <sub>rel</sub> =1.0%        |      |                |
|                  |                                                  | Time              |                                                                                          | (0.01~100) μs  | U <sub>rel</sub> =0.2%        |      |                |
| 3                | *Process Calibrators                             | IN-DC resistor    | Calibration specification for process calibrators JJF 1472                               | (10~400) Ω     | U <sub>rel</sub> =0.012%      |      |                |
|                  |                                                  | IN-DC current     |                                                                                          | (400~4000) Ω   | U <sub>rel</sub> =0.010%      |      |                |
|                  |                                                  |                   |                                                                                          | (0.2~2) mA     | U <sub>rel</sub> =0.013%      |      |                |



No. CNAS L2336

第 45 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand           | Calibration Method | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|---------------------|--------------------|------------------------------|-----------------------------------|------|----------------|
|    |            |                     |                    | (2~100) mA                   | $U_{rel}=0.015\%$                 |      |                |
|    |            | IN-DC voltage       |                    | (10~1000) mV                 | $U_{rel}=0.007\%$                 |      |                |
|    |            |                     |                    | (1~50) V                     | $U_{rel}=0.006\%$                 |      |                |
|    |            | IN-AC voltage       |                    | (10~1000) mV<br>(10Hz~20kHz) | $U_{rel}=0.02\%$                  |      |                |
|    |            |                     |                    | (1~20) V (10Hz~20kHz)        | $U_{rel}=0.01\%$                  |      |                |
|    |            | IN-Frequency        |                    | 10Hz~50kHz                   | $U_{rel}=0.009\%$                 |      |                |
|    |            | IN-Temperature(TC)  |                    | (-100~1300) °C               | $U=0.4^{\circ}\text{C}$           |      |                |
|    |            | IN-Temperature(RTD) |                    | (-100~800) °C                | $U=0.3^{\circ}\text{C}$           |      |                |
|    |            | OUT-DC resistor     |                    | (10~400) $\Omega$            | $U_{rel}=0.007\%$                 |      |                |
|    |            |                     |                    | (400~10000) $\Omega$         | $U_{rel}=0.006\%$                 |      |                |
|    |            | OUT-DC current      |                    | (0.2~2) mA                   | $U_{rel}=0.008\%$                 |      |                |
|    |            |                     |                    | (2~24) mA                    | $U_{rel}=0.009\%$                 |      |                |
|    |            | OUT-DC voltage      |                    | (10~1000) mV                 | $U_{rel}=0.006\%$                 |      |                |
|    |            |                     |                    | (1~100) V                    | $U_{rel}=0.005\%$                 |      |                |
|    |            | IN-Temperature(TC)  |                    | (-100~1300) °C               | $U=0.2^{\circ}\text{C}$           |      |                |

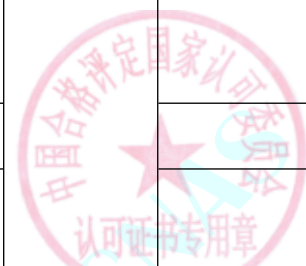


No. CNAS L2336

第 46 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument                             | Measurand                                 | Calibration Method                                                       | Range                                  | Expanded Uncertainty<br>(k=2) | Note | Effective Date           |                      |
|---|----------------------------------------|-------------------------------------------|--------------------------------------------------------------------------|----------------------------------------|-------------------------------|------|--------------------------|----------------------|
|   |                                        | IN-Temperature (RTD)                      |                                                                          | (-100~800) °C                          | U=0.2℃                        |      |                          |                      |
| 4 | *DC Standard Voltage Source            | DC Voltage                                | Verification regulation of DC Standard Voltage Source JJG (military) 193 | 10mV~330mV                             | U <sub>rel</sub> =0.0019%     |      |                          |                      |
|   |                                        |                                           |                                                                          | 0.33V~3.3V                             | U <sub>rel</sub> =0.0015%     |      |                          |                      |
|   |                                        |                                           |                                                                          | 3.3V~330V                              | U <sub>rel</sub> =0.0015%     |      |                          |                      |
|   |                                        |                                           |                                                                          | 330V~1000V                             | U <sub>rel</sub> =0.0016%     |      |                          |                      |
| 5 | *DC Voltage Stable Source              | DC Voltage                                | DC Voltage Stable Source JJG(Military Industry) 77                       | 0.1V~100V                              | U <sub>rel</sub> =0.003%      |      |                          |                      |
|   |                                        |                                           |                                                                          | 100V~1000V                             | U <sub>rel</sub> =0.002%      |      |                          |                      |
|   |                                        | DC Current                                |                                                                          | 0.01A~20A                              | U <sub>rel</sub> =0.02%       |      |                          |                      |
|   |                                        |                                           |                                                                          | 20A~200A                               | U <sub>rel</sub> =0.03%       |      |                          |                      |
|   |                                        | Regulation rate of regulated power supply |                                                                          | 0.01%~10%                              | U <sub>rel</sub> =0.006%      |      |                          |                      |
|   |                                        |                                           |                                                                          | Regulated load adjustment rate         | 0.01%~10%                     |      | U <sub>rel</sub> =0.01%  |                      |
|   |                                        |                                           |                                                                          |                                        | Ripple voltage                |      | 0.1mV~1000mV             | U <sub>rel</sub> =2% |
|   |                                        |                                           |                                                                          | Short-term stability of output voltage | 0.005%~10%                    |      | U <sub>rel</sub> =0.006% |                      |
| 6 | *Precise AC Voltage Calibration Source | AC Voltage                                | V.R.of Precise AC Voltage Calibration Source JJG 410                     | 2V~400V(45Hz~1kHz)                     | U <sub>rel</sub> =0.2%        |      |                          |                      |



在线扫码获取验证

No. CNAS L2336

第 47 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                            | Measurand         | Calibration Method                                                 | Range                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------------|-------------------|--------------------------------------------------------------------|------------------------|-----------------------------------|------|----------------|
|    |                                       | Frequency         |                                                                    | 40Hz~1kHz              | $U_{rel}=0.015\%$                 |      |                |
|    |                                       | Distortion factor |                                                                    | (0.01~10)%             | $U=0.3\%$                         |      |                |
| 7  | *DC Digital Voltmeter                 | DC Voltage        | Verification regulation of DC Digital Voltmeter JJG (military) 198 | 10mV~100mV             | $U_{rel}=0.009\%$                 |      |                |
|    |                                       |                   |                                                                    | 0.1V~10V               | $U_{rel}=0.0015\%$                |      |                |
|    |                                       |                   |                                                                    | 10V~100V               | $U_{rel}=0.0015\%$                |      |                |
|    |                                       |                   |                                                                    | 100V~1000V             | $U_{rel}=0.0016\%$                |      |                |
| 8  | *AC Digital Voltmeter                 | AC Voltage        | V.R. of AC Digital Voltmeter JJG(military)72                       | 10mV~100mV (50Hz)      | $U_{rel}=0.11\%$                  |      |                |
|    |                                       |                   |                                                                    | 10mV~100mV (1kHz)      | $U_{rel}=0.11\%$                  |      |                |
|    |                                       |                   |                                                                    | 0.1V~100V (50Hz)       | $U_{rel}=0.032\%$                 |      |                |
|    |                                       |                   |                                                                    | 0.1V~100V (1kHz)       | $U_{rel}=0.032\%$                 |      |                |
|    |                                       |                   |                                                                    | 100V~1000V (50Hz)      | $U_{rel}=0.038\%$                 |      |                |
|    |                                       |                   |                                                                    | 100V~1000V (1kHz)      | $U_{rel}=0.038\%$                 |      |                |
| 9  | *D.C.Potentiometers                   | DC Voltage        | Verification Regulation Of D.C.Potentiometers JJG 123              | 10mV~2V                | $U_{rel}=0.01\%$                  |      |                |
|    |                                       |                   |                                                                    | 0.2V~2V                | $U_{rel}=0.003\%$                 |      |                |
| 10 | *Digital High Voltmeter               | DC Voltage        | Verification Regulation of Digital High Voltmeter DLT973           | 0.1kV~50kV             | $U_{rel}=0.1\%$                   |      |                |
|    |                                       | AC Voltage        |                                                                    | 0.1kV~50kV (50Hz,60Hz) | $U_{rel}=0.2\%$                   |      |                |
| 11 | High Voltage Electrostatic Voltmeters | DC Voltage        | V.R. of High Voltage Electrostatic Voltmeters JJG 494              | 0.1kV~50kV             | $U_{rel}=0.1\%$                   |      |                |
|    |                                       | AC Voltage        |                                                                    | 0.1kV~50kV (50Hz,60Hz) | $U_{rel}=0.2\%$                   |      |                |



No. CNAS L2336

第 48 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                               | Measurand                            | Calibration Method                                                                                 | Range                 | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|------|----------------|
| 12 | *DC Resistive Volt Ratio Box             | DC Voltage                           | V.R.of DC Resistive Volt Ratio Box JJG 531                                                         | (0.01~1000) V         | $U_{rel}=0.005\%$                 |      |                |
| 13 | *High-voltage Divider At Power Frequency | AC Voltage                           | Verification Regulation of High-voltage Divider At Power Frequency JJG 496                         | 0.1kV~50kV (50Hz)     | $U_{rel}=0.2\%$                   |      |                |
| 14 | DC High voltage Divider                  | DC Voltage                           | Verification Regulation of DC High voltage Divider JJG 1007                                        | 0.1kV~50kV            | $U_{rel}=0.1\%$                   |      |                |
| 15 | *AC Voltage Stable Source                | Frequency                            | Calibration specification for Stable Character of AC Voltage Stable Source JJF(Militaryproject) 85 | 10Hz~40Hz             | $U_{rel}=0.03\%$                  |      |                |
|    |                                          |                                      |                                                                                                    | 40Hz~1kHz             | $U_{rel}=0.012\%$                 |      |                |
|    |                                          | AC Voltage                           |                                                                                                    | 0.1V~300V (40Hz~1kHz) | $U_{rel}=0.12\%$                  |      |                |
|    |                                          | Rate of adjustment of supply voltage |                                                                                                    | 0.01%~10%             | $U_{rel}=0.12\%$                  |      |                |
|    |                                          | Load adjustment rate                 |                                                                                                    | 0.01%~10%             | $U_{rel}=0.12\%$                  |      |                |
|    |                                          | Degree of distortion                 |                                                                                                    | 0.01%~10%             | $U=1.2\text{dB}$                  |      |                |
|    |                                          | Efficiency                           |                                                                                                    | 0.1%~100%             | $U=0.5\%$                         |      |                |
|    |                                          | Output voltage stability             |                                                                                                    | 0.01%~10%             | $U_{rel}=0.12\%$                  |      |                |
| 16 | High Insulation Resistance Meters        | Voltage                              | Calibration specification for contactless electrostatic voltage measuring instrument JJF 1517      | 0.1kV~20kV            | $U_{rel}=3\%$                     |      |                |



No. CNAS L2336

第 49 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                    | Measurand  | Calibration Method                                                   | Range                         | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-------------------------------|------------|----------------------------------------------------------------------|-------------------------------|-----------------------------------|------|----------------|
| 17 | *Withstanding Voltage Testers | Voltage    | V.R. of Withstanding Voltage Testers JJG 795                         | 0.1kV~15kV                    | $U_{rel}=0.6\%$                   |      |                |
|    |                               |            |                                                                      | 0.1kV~15kV(50Hz, 60Hz)        | $U_{rel}=0.6\%$                   |      |                |
|    |                               | Current    |                                                                      | 0.01mA~200mA                  | $U_{rel}=0.6\%$                   |      |                |
|    |                               |            |                                                                      | 0.01mA~200mA(50Hz, 60Hz)      | $U_{rel}=0.6\%$                   |      |                |
|    |                               | Time       |                                                                      | (0.01~999.99)s                | $U=0.8\%T+0.03s$                  |      |                |
| 18 | *DC Standard Current Source   | DC Current | V.R. for Direct Current Standard Source JJG(Military Industry) 69    | 0.01A~20A                     | $U_{rel}=0.05\%$                  |      |                |
|    |                               |            |                                                                      | 20A~200A                      | $U_{rel}=0.07\%$                  |      |                |
|    |                               |            |                                                                      | 200A~2000A                    | $U_{rel}=0.12\%$                  |      |                |
| 19 | *DC Digital Amperemeter       | DC Current | Verification regulation of DC Digital Amperemeter JJG (military) 197 | 10 $\mu$ A~100 $\mu$ A        | $U_{rel}=0.11\%$                  |      |                |
|    |                               |            |                                                                      | 0.1mA~100mA                   | $U_{rel}=0.012\%$                 |      |                |
|    |                               |            |                                                                      | 0.1A~1A                       | $U_{rel}=0.025\%$                 |      |                |
|    |                               |            |                                                                      | 1A~3A                         | $U_{rel}=0.031\%$                 |      |                |
|    |                               |            |                                                                      | 3A~10A                        | $U_{rel}=0.058\%$                 |      |                |
|    |                               |            |                                                                      | 10A~20A                       | $U_{rel}=0.077\%$                 |      |                |
| 20 | *AC Digital Amperemeter       | AC Current | V.R. of AC Digital Amperemeter JJG(military)68                       | 29 $\mu$ A~100 $\mu$ A (50Hz) | $U_{rel}=0.43\%$                  |      |                |
|    |                               |            |                                                                      | 29 $\mu$ A~100 $\mu$ A (1kHz) | $U_{rel}=0.38\%$                  |      |                |
|    |                               |            |                                                                      | 0.1mA~1mA (50Hz)              | $U_{rel}=0.27\%$                  |      |                |
|    |                               |            |                                                                      | 0.1mA~1mA (1kHz)              | $U_{rel}=0.26\%$                  |      |                |



No. CNAS L2336

第 50 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument      | Measurand  | Calibration Method               | Range                        | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-----------------|------------|----------------------------------|------------------------------|----------------------------------------|------|----------------|
|    |                 |            |                                  | 1mA~100mA (50Hz)             | <i>U</i> <sub>rel</sub> =0.071%        |      |                |
|    |                 |            |                                  | 1mA~100mA (1kHz)             | <i>U</i> <sub>rel</sub> =0.070%        |      |                |
|    |                 |            |                                  | 100mA~1A (50Hz)              | <i>U</i> <sub>rel</sub> =0.075%        |      |                |
|    |                 |            |                                  | 100mA~1A (1kHz)              | <i>U</i> <sub>rel</sub> =0.074%        |      |                |
|    |                 |            |                                  | 1A~3A (50Hz)                 | <i>U</i> <sub>rel</sub> =0.078%        |      |                |
|    |                 |            |                                  | 1A~3A (1kHz)                 | <i>U</i> <sub>rel</sub> =0.077%        |      |                |
|    |                 |            |                                  | 3A~10A (50Hz)                | <i>U</i> <sub>rel</sub> =0.16%         |      |                |
|    |                 |            |                                  | 3A~10A (1kHz)                | <i>U</i> <sub>rel</sub> =0.15%         |      |                |
|    |                 |            |                                  | 10A~20A (50Hz)               | <i>U</i> <sub>rel</sub> =0.19%         |      |                |
|    |                 |            |                                  | 10A~20A (1kHz)               | <i>U</i> <sub>rel</sub> =0.17%         |      |                |
| 21 | *Clamp Ammeters | DC Current | C. S. of Clamp Ammeters JJF 1075 | analog:1A~20A                | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|    |                 |            |                                  | analog:2A~1000A              | <i>U</i> <sub>rel</sub> =0.6%          |      |                |
|    |                 |            |                                  | digitale: 1A~20A             | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
|    |                 |            |                                  | digitale: 20A~1000A          | <i>U</i> <sub>rel</sub> =0.6%          |      |                |
|    |                 | AC Current |                                  | analog:1A~20A (45Hz~60Hz)    | <i>U</i> <sub>rel</sub> =0.5%          |      |                |
|    |                 |            |                                  | analog:20A~1000A (45Hz~60Hz) | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|    |                 |            |                                  | digitale: 1A~20A(45Hz~60Hz)  | <i>U</i> <sub>rel</sub> =0.3%          |      |                |



No. CNAS L2336

第 51 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                    | Measurand        | Calibration Method                                                                                                      | Range                           | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------|------|----------------|
|    |                                               |                  |                                                                                                                         | analog:20A~1000A<br>(45Hz~60Hz) | $U_{rel}=0.6\%$                   |      |                |
| 22 | *Magnetic Yoke Detectors                      | DC current       | Calibration specification of Magnetic Yoke Detectors JJF 1458                                                           | (0~20)A                         | $U=0.3A$                          |      |                |
|    |                                               | Lifting Power    |                                                                                                                         | (1~300)N                        | $U_{rel}=1\%$                     |      |                |
| 23 | *Current Transformers                         | AC Current       | Verification Regulation of instrument Current Transformers JJG 313                                                      | (5~5000)/5A (5%~120%)(50Hz)     | $U_{rel}=0.07\%$                  |      |                |
|    |                                               | phase            |                                                                                                                         | (0~900)' , 5%~120%(50Hz)        | $U=2'$                            |      |                |
| 24 | Leakage Current Meter                         | AC Current       | V.R. of Leakage Current Meter JJG 843                                                                                   | (0.1~2)mA (45Hz~60Hz)           | $U=0.004mA$                       |      |                |
|    |                                               | AC Voltage       |                                                                                                                         | (2~20)mA (45Hz~60Hz)            | $U=0.04mA$                        |      |                |
|    |                                               | DC Current       |                                                                                                                         | (0.1~250)V (45Hz~60Hz)          | $U=0.8V$                          |      |                |
|    |                                               | DC Voltage       |                                                                                                                         | (0.1~2)mA                       | $U=0.004mA$                       |      |                |
|    |                                               | Input Resistance |                                                                                                                         | (2~20)mA                        | $U=0.04mA$                        |      |                |
|    |                                               |                  |                                                                                                                         | (0.1~250)V                      | $U=0.8V$                          |      |                |
|    |                                               |                  |                                                                                                                         | 100 $\Omega$ ~ 1M $\Omega$      | $U_{rel}=0.3\%$                   |      |                |
| 25 | *Electrolytic Capacitor Leakage Current Meter | DC Voltage       | Electrolytic Capacitor Leakage Current Meter JJG(Electron) 306003                                                       | 10V~1000V                       | $U_{rel}=0.08\%$                  |      |                |
|    |                                               | DC Current       |                                                                                                                         | 0.1 $\mu$ A~200 $\mu$ A         | $U_{rel}=0.6\%$                   |      |                |
|    |                                               |                  |                                                                                                                         | 200 $\mu$ A~30mA                | $U_{rel}=0.4\%$                   |      |                |
| 26 | *charge & Discharge of battery tester         | Charge Voltage   | Calibration specification for charge & Discharge of battery tester JJF(Military project) 108, Calibration specification | (0.01~1000) V                   | $U_{rel}=0.03\%$                  |      |                |
|    |                                               | Charge Current   |                                                                                                                         | 10 $\mu$ A~200A                 | $U_{rel}=0.06\%$                  |      |                |

No. CNAS L2336

第 52 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                    | Measurand                                               | Calibration Method                                                          | Range                         | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------|-----------------------------------|------|----------------|
|    |                               |                                                         | for charge and discharge of<br>battery test systems<br>JJF(electron)0016    | 200A~2000A                    | $U_{rel}=0.07\%$                  |      |                |
|    |                               | Discharge<br>Voltage                                    |                                                                             | (0.01~1000) V                 | $U_{rel}=0.03\%$                  |      |                |
|    |                               | Discharge<br>Current                                    |                                                                             | 10 $\mu$ A~200A               | $U_{rel}=0.06\%$                  |      |                |
|    |                               |                                                         |                                                                             | 200A~2000A                    | $U_{rel}=0.07\%$                  |      |                |
|    |                               | DC power                                                |                                                                             | 0.1W~100W                     | $U_{rel}=0.10\%$                  |      |                |
|    |                               |                                                         |                                                                             | 100W~10kW                     | $U_{rel}=0.15\%$                  |      |                |
|    |                               | Discharge<br>capacity                                   |                                                                             | 0.1Ah~10Ah                    | $U_{rel}=0.09\%$                  |      |                |
|    |                               |                                                         |                                                                             | 10Ah~1kAh                     | $U_{rel}=0.05\%$                  |      |                |
| 27 | Hall effect<br>current sensor | Constant<br>current<br>charging<br>current rise<br>time |                                                                             | 10 $\mu$ s~10ms               | $U_{rel}=0.3\%$                   |      |                |
|    |                               | Temperature                                             |                                                                             | - 20℃~100℃                    | $U=0.2^{\circ}\text{C}$           |      |                |
|    |                               | DC Current                                              |                                                                             | (1 ~100)A                     | $U_{rel}=0.02\%$                  |      |                |
|    |                               |                                                         |                                                                             | (100 ~2000)A                  | $U_{rel}=0.03\%$                  |      |                |
|    |                               | AC Current                                              | Calibration specification of<br>Hoare current sensor<br>JJF(machinery) 1067 | (1 ~100)A, (45~60)<br>Hz      | $U_{rel}=0.07\%$                  |      |                |
|    |                               |                                                         |                                                                             | (100 ~2000)A, (45~<br>60) Hz  | $U_{rel}=0.08\%$                  |      |                |
|    |                               |                                                         |                                                                             | (2000 ~6000)A, (45~<br>60) Hz | $U_{rel}=0.6\%$                   |      |                |
|    |                               |                                                         |                                                                             |                               |                                   |      |                |
| 28 | *DC Resistors                 | Resistance                                              | V.R. of DC Resistors JJG<br>166                                             | 0.01 $\Omega$ ~0.1 $\Omega$   | $U_{rel}=0.2\%$                   |      |                |

No. CNAS L2336

第 53 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                | Measurand  | Calibration Method                                                | Range                          | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------|------------|-------------------------------------------------------------------|--------------------------------|-----------------------------------|------|----------------|
|    |                           |            |                                                                   | 0.1 $\Omega$ ~ 1 $\Omega$      | $U_{rel}=0.05\%$                  |      |                |
|    |                           |            |                                                                   | 1 $\Omega$ ~ 10 $\Omega$       | $U_{rel}=0.01\%$                  |      |                |
|    |                           |            |                                                                   | 10 $\Omega$ ~ 100 $\Omega$     | $U_{rel}=0.004\%$                 |      |                |
|    |                           |            |                                                                   | 100 $\Omega$ ~ 100k $\Omega$   | $U_{rel}=0.002\%$                 |      |                |
|    |                           |            |                                                                   | 100k $\Omega$ ~ 1M $\Omega$    | $U_{rel}=0.005\%$                 |      |                |
|    |                           |            |                                                                   | 1M $\Omega$ ~ 10M $\Omega$     | $U_{rel}=0.01\%$                  |      |                |
| 29 | *DC Resistance Box        | Resistance | V. R. of D.C. Resistance Box JJG 982                              | 0.01 $\Omega$ ~ 0.1 $\Omega$   | $U_{rel}=0.2\%$                   |      |                |
|    |                           |            |                                                                   | 0.1 $\Omega$ ~ 1 $\Omega$      | $U_{rel}=0.05\%$                  |      |                |
|    |                           |            |                                                                   | 1 $\Omega$ ~ 10 $\Omega$       | $U_{rel}=0.01\%$                  |      |                |
|    |                           |            |                                                                   | 10 $\Omega$ ~ 100 $\Omega$     | $U_{rel}=0.005\%$                 |      |                |
|    |                           |            |                                                                   | 100 $\Omega$ ~ 100000 $\Omega$ | $U_{rel}=0.002\%$                 |      |                |
| 30 | *DC Digital Ohmmeter      | Resistance | Verification regulation of DC Digital Ohmmeter JJG (military) 199 | 1 $\Omega$ ~ 10 $\Omega$       | $U=0.0045\%R_x+0.01 \Omega$       |      |                |
|    |                           |            |                                                                   | 10 $\Omega$ ~ 100 $\Omega$     | $U=0.0035\%R_x+0.015 \Omega$      |      |                |
|    |                           |            |                                                                   | 100 $\Omega$ ~ 100k $\Omega$   | $U=0.0035\%R_x+1 \Omega$          |      |                |
|    |                           |            |                                                                   | 100k $\Omega$ ~ 1M $\Omega$    | $U=0.0035\%R_x+10 \Omega$         |      |                |
|    |                           |            |                                                                   | 1M $\Omega$ ~ 10M $\Omega$     | $U=0.0015\%R_x+0.15k \Omega$      |      |                |
|    |                           |            |                                                                   | 10M $\Omega$ ~ 100M $\Omega$   | $U=0.0055\%R_x+3k \Omega$         |      |                |
| 31 | *DC Low Resistance Meters | Resistance | V.R. of DC Low Resistance Meters JJG 837                          | (1~20) $\mu \Omega$            | $U_{rel}=1.3\%$                   |      |                |
|    |                           |            |                                                                   | (20~200) $\mu \Omega$          | $U_{rel}=0.6\%$                   |      |                |



No. CNAS L2336

第 54 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                               | Measurand             | Calibration Method                                      | Range                                         | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------------|-----------------------|---------------------------------------------------------|-----------------------------------------------|-----------------------------------|------|----------------|
|    |                                          |                       |                                                         | $(0.2 \sim 2) \text{ m}\Omega$                | $U_{\text{rel}}=0.13\%$           |      |                |
|    |                                          |                       |                                                         | $(2 \sim 20) \text{ m}\Omega$                 | $U_{\text{rel}}=0.06\%$           |      |                |
|    |                                          |                       |                                                         | $20 \text{ m}\Omega \sim 20 \text{ k}\Omega$  | $U_{\text{rel}}=0.013\%$          |      |                |
| 32 | *D.C Bridges                             | Resistance            | V.R. of D.C Bridges JJG 125                             | $(0.01 \sim 0.1) \Omega$                      | $U_{\text{rel}}=6\%$              |      |                |
|    |                                          |                       |                                                         | $(0.1 \sim 1) \Omega$                         | $U_{\text{rel}}=1.2\%$            |      |                |
|    |                                          |                       |                                                         | $(1 \sim 10) \Omega$                          | $U_{\text{rel}}=0.12\%$           |      |                |
|    |                                          |                       |                                                         | $(10 \sim 100) \Omega$                        | $U_{\text{rel}}=0.04\%$           |      |                |
|    |                                          |                       |                                                         | $(100 \Omega \sim 100 \text{ k}\Omega)$       | $U_{\text{rel}}=0.03\%$           |      |                |
| 33 | *Insulation Resistance                   | Insulation Resistance | V.R. of Megohm-meter JJG 622                            | $0.1 \text{ M}\Omega \sim 10 \text{ M}\Omega$ | $U_{\text{rel}}=0.3\%$            |      |                |
|    |                                          |                       |                                                         | $10 \text{ M}\Omega \sim 100 \text{ M}\Omega$ | $U_{\text{rel}}=0.6\%$            |      |                |
|    |                                          |                       |                                                         | $100 \text{ M}\Omega \sim 1 \text{ G}\Omega$  | $U_{\text{rel}}=1.2\%$            |      |                |
|    |                                          |                       |                                                         | $1 \text{ G}\Omega \sim 10 \text{ G}\Omega$   | $U_{\text{rel}}=3\%$              |      |                |
|    |                                          | Terminal voltage      |                                                         | $50 \text{ V} \sim 10000 \text{ V}$           | $U_{\text{rel}}=0.3\%$            |      |                |
| 34 | *Electronic Insulating Resistance Meters | Insulation Resistance | V.R. of Electronic Insulating Resistance meter JJG 1005 | $0.1 \text{ M}\Omega \sim 10 \text{ M}\Omega$ | $U_{\text{rel}}=0.3\%$            |      |                |
|    |                                          |                       |                                                         | $10 \text{ M}\Omega \sim 100 \text{ M}\Omega$ | $U_{\text{rel}}=0.6\%$            |      |                |
|    |                                          |                       |                                                         | $100 \text{ M}\Omega \sim 1 \text{ G}\Omega$  | $U_{\text{rel}}=1.2\%$            |      |                |
|    |                                          |                       |                                                         | $1 \text{ G}\Omega \sim 1000 \text{ G}\Omega$ | $U_{\text{rel}}=3\%$              |      |                |
|    |                                          | Charging Voltage      |                                                         | $10 \text{ V} \sim 10000 \text{ V}$           | $U_{\text{rel}}=0.6\%$            |      |                |



No. CNAS L2336

第 55 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                         | Measurand             | Calibration Method                                | Range                           | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------|-----------------------|---------------------------------------------------|---------------------------------|-----------------------------------|------|----------------|
| 35 | *High Insulation Resistance Meters | Resistance            | V.R. of High Insulation Resistance Meters JJG 690 | 1M $\Omega$ ~ 100M $\Omega$     | $U_{rel}=0.6\%$                   |      |                |
|    |                                    |                       |                                                   | 100M $\Omega$ ~ 1G $\Omega$     | $U_{rel}=1.2\%$                   |      |                |
|    |                                    |                       |                                                   | 1G $\Omega$ ~ 1000G $\Omega$    | $U_{rel}=3\%$                     |      |                |
|    |                                    | Terminal voltage      |                                                   | 25V ~ 10kV                      | $U_{rel}=0.3\%$                   |      |                |
| 36 | *Earth Resistance Meters           | Resistance            | V.R. of Earth Resistance Meters JJG 366           | 0.01 $\Omega$ ~ 0.1 $\Omega$    | $U_{rel}=7\%$                     |      |                |
|    |                                    |                       |                                                   | 0.1 $\Omega$ ~ 1 $\Omega$       | $U_{rel}=1.2\%$                   |      |                |
|    |                                    |                       |                                                   | 1 $\Omega$ ~ 1000 $\Omega$      | $U_{rel}=0.7\%$                   |      |                |
| 37 | *Earth-Continuity Testers          | Resistance            | V.R. of Earth-Continuity Testers JJG 984          | (0.01 ~ 0.1)m $\Omega$          | $U_{rel}=12\%$                    |      |                |
|    |                                    |                       |                                                   | (0.1 ~ 1)m $\Omega$             | $U_{rel}=5\%$                     |      |                |
|    |                                    |                       |                                                   | (1 ~ 10)m $\Omega$              | $U_{rel}=0.8\%$                   |      |                |
|    |                                    |                       |                                                   | (10 ~ 1000)m $\Omega$           | $U_{rel}=0.7\%$                   |      |                |
|    |                                    | Current               |                                                   | (0.1 ~ 60)A                     | $U_{rel}=0.4\%$                   |      |                |
| 38 | *Clamp Earth Resistance Meters     | Resistance            | V.R. of Clamp Earth Resistance Meters JJG 1054    | 0.100 $\Omega$ ~ 9.999 $\Omega$ | $U_{rel}=0.6\%$                   |      |                |
|    |                                    |                       |                                                   | 10.00 $\Omega$ ~ 99.99 $\Omega$ | $U_{rel}=0.5\%$                   |      |                |
|    |                                    |                       |                                                   | 100.0 $\Omega$ ~ 199.9 $\Omega$ | $U_{rel}=0.7\%$                   |      |                |
|    |                                    |                       |                                                   | 200 $\Omega$ ~ 400 $\Omega$     | $U_{rel}=1\%$                     |      |                |
|    |                                    |                       |                                                   | 400 $\Omega$ ~ 600 $\Omega$     | $U_{rel}=3\%$                     |      |                |
|    |                                    |                       |                                                   | 600 $\Omega$ ~ 1111 $\Omega$    | $U_{rel}=5\%$                     |      |                |
| 39 | *Wrist Strap Tester                | Insulation Resistance | C.S. for Wrist Strap Tester JJF(Electron) 31502   | 0.01M $\Omega$ ~ 10M $\Omega$   | $U_{rel}=1.5\%$                   |      |                |

No. CNAS L2336

第 56 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                       | Measurand             | Calibration Method                                                  | Range                         | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|----------------------------------|-----------------------|---------------------------------------------------------------------|-------------------------------|----------------------------------------|------|----------------|
|    |                                  |                       |                                                                     | 10M Ω ~ 100M Ω                | <i>U</i> <sub>rel</sub> =2%            |      |                |
|    |                                  |                       |                                                                     | 100M Ω ~ 1G Ω                 | <i>U</i> <sub>rel</sub> =3%            |      |                |
| 40 | *Resistance                      | Resistance            | C.S.for Surface Resistance Tester JJF 1285                          | 0.001M Ω ~ 10M Ω              | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
|    |                                  |                       |                                                                     | 10M Ω ~ 100M Ω                | <i>U</i> <sub>rel</sub> =0.6%          |      |                |
|    |                                  |                       |                                                                     | 100M Ω ~ 1G Ω                 | <i>U</i> <sub>rel</sub> =1.2%          |      |                |
|    |                                  |                       |                                                                     | 1G Ω ~ 1000G Ω                | <i>U</i> <sub>rel</sub> =3%            |      |                |
|    |                                  | Open circuit voltage  | 10V~250V                                                            | <i>U</i> <sub>rel</sub> =0.3% |                                        |      |                |
| 41 | *Loop Resistance Meters          | Resistance            | V.R. of Loop Resistance and DC Resistance Meters JJG 1052           | 10 μ Ω ~ 2m Ω                 | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|    |                                  | Current               |                                                                     | 2m Ω ~ 200m Ω                 | <i>U</i> <sub>rel</sub> =0.2%          |      |                |
|    |                                  |                       |                                                                     | (10~100) A                    | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
| 42 | DC Shunt                         | Resistance            | V. R. of DC Shunts JJG 1069                                         | (0.001~10) Ω                  | <i>U</i> <sub>rel</sub> =0.08%         |      |                |
| 43 | *Air Ionizer                     | Voltage               | Periodic Verification of Air Ionizers ANSI/ESDSP3.3                 | (1~1000)V                     | <i>U</i> =3V                           |      |                |
|    |                                  | Time                  |                                                                     | (0.1~999.9)s                  | <i>U</i> =0.2s                         |      |                |
| 44 | *Charged Plate Monitor           | Electrostatic voltage | Calibration Regulation of Charged Plate Monitor JJF(Electron) 31003 | (0.1~1000)V                   | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
|    |                                  | decay time            |                                                                     | (0.01~60)s                    | <i>U</i> <sub>rel</sub> =0.1%          |      |                |
| 45 | *Components of Lightning Testers | DC Voltage            | C. S. for Components of Lightning Testers JJF(gui) 18               | (0.1~2)kV                     | <i>U</i> <sub>rel</sub> =0.12%         |      |                |
|    |                                  |                       |                                                                     | (1~2)kV                       | <i>U</i> <sub>rel</sub> =0.5%          |      |                |
|    |                                  | DC Current            |                                                                     | (0.1~2000) μ A                | <i>U</i> <sub>rel</sub> =0.3%          |      |                |



No. CNAS L2336

第 57 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                      | Measurand               | Calibration Method                                                            | Range                 | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------|-------------------------|-------------------------------------------------------------------------------|-----------------------|-----------------------------------|------|----------------|
|    |                                 | Rate Of Voltage Rise    |                                                                               | 100V/s~1000V/s        | $U_{rel}=3\%$                     |      |                |
| 46 | *VDR DC Parameter Testers       | DC Voltage              | C. S. for VDR DC Parameter Testers<br>JJF(zhe)1088                            | (0.1~2)kV             | $U_{rel}=0.12\%$                  |      |                |
|    |                                 | DC Current              |                                                                               | (1~2)kV               | $U_{rel}=0.5\%$                   |      |                |
|    |                                 |                         |                                                                               | (0.1~2000) $\mu$ A    | $U_{rel}=0.3\%$                   |      |                |
|    |                                 | Rate Of Voltage Rise    |                                                                               | 100V/s~1000V/s        | $U_{rel}=3\%$                     |      |                |
| 47 | *AC Digital Powermeter          | AC Digital Powermeter   | V.R. of AC Digital Powermeter JJG 780                                         | 0.1W~20W (40Hz~1kHz)  | $U_{rel}=0.10\%$                  |      |                |
|    |                                 |                         |                                                                               | 20W~500W (40Hz~1kHz)  | $U_{rel}=0.12\%$                  |      |                |
|    |                                 |                         |                                                                               | 500W~20kW (40Hz~1kHz) | $U_{rel}=0.15\%$                  |      |                |
|    |                                 | AC Digital Voltmeter    |                                                                               | (1~600)V (40Hz~1kHz)  | $U_{rel}=0.08\%$                  |      |                |
|    |                                 | AC Digital Ampere-meter |                                                                               | 10mA~20A (40Hz~1kHz)  | $U_{rel}=0.09\%$                  |      |                |
| 48 | *Electric parameters test meter | DC Voltage              | Calibration Specification for Digital electric parameters test meter JJF 1491 | (1~3000)W (45Hz~65Hz) | $U_{rel}=0.07\%$                  |      |                |
|    |                                 | Frequency               |                                                                               | 40Hz~1000Hz           | $U_{rel}=0.03\%$                  |      |                |
|    |                                 | AC Voltage              |                                                                               | (1~600)V (40Hz~1kHz)  | $U_{rel}=0.08\%$                  |      |                |
|    |                                 | DC Current              |                                                                               | 1mA~20A               | $U_{rel}=0.08\%$                  |      |                |
|    |                                 | AC Current              |                                                                               | 10mA~20A (40Hz~1kHz)  | $U_{rel}=0.09\%$                  |      |                |
|    |                                 | DC Powermeter           |                                                                               | 0.1W~20kW             | $U_{rel}=0.12\%$                  |      |                |

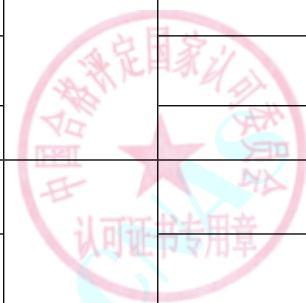


No. CNAS L2336

第 58 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

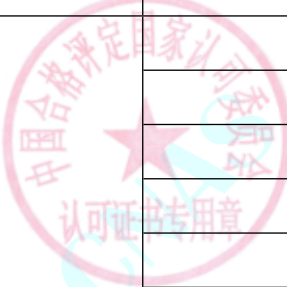
| No | Instrument                                  | Measurand             | Calibration Method                                                            | Range                                                   | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------------------------------------|-----------------------|-------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------|------|----------------|
|    |                                             | AC Powermeter         |                                                                               | 500W~20kW (40Hz~1kHz)                                   | $U_{rel}=0.15\%$              |      |                |
| 49 | *Industry Frequency Singlephase Phase Meter | Phase                 | V.R.of Industry Frequency Singlephase Phase Meter JJG 440                     | Phase: (0~360)° (50Hz)<br>Power factor: (0~1.000)(50Hz) | $U=0.15^\circ$<br>$U=0.001$   |      |                |
| 50 | *Electrical safety analyzer                 | Insulation Resistance | Calibration specification for comprehensive safety tester JJF(Electronic)0004 | (1kΩ~10MΩ)                                              | $U_{rel}=0.3\%$               |      |                |
|    |                                             |                       |                                                                               | (10~100) MΩ                                             | $U_{rel}=0.6\%$               |      |                |
|    |                                             |                       |                                                                               | (100~1000) MΩ                                           | $U_{rel}=1.3\%$               |      |                |
|    |                                             |                       |                                                                               | (1000~5000) MΩ                                          | $U_{rel}=3\%$                 |      |                |
|    |                                             | Earth Continuity      |                                                                               | (1~600) mΩ                                              | $U_{rel}=0.6\%$               |      |                |
|    |                                             | Earth Current         |                                                                               | (1~40) A                                                | $U_{rel}=0.3\%$               |      |                |
|    |                                             | DC Voltage            |                                                                               | (0.1~10) kV                                             | $U_{rel}=0.7\%$               |      |                |
|    |                                             | AC voltage            |                                                                               | (0.01~6) kV (50Hz, 60Hz)                                | $U_{rel}=0.7\%$               |      |                |
|    |                                             | DC current            |                                                                               | (0.01~200) mA                                           | $U_{rel}=0.8\%$               |      |                |
| 51 | *AC Impedance Parameter Testers             | AC Voltage            | C. S. of AC Impedance Parameter Testers JJF(zhe) 1083                         | (10~1000)V (45~65) Hz                                   | $U_{rel}=0.10\%$              |      |                |
|    |                                             | AC Current            |                                                                               | (0.1~20)A (45~65) Hz                                    | $U_{rel}=0.12\%$              |      |                |
|    |                                             | AC Power              |                                                                               | 1W~10kW(45~65)Hz                                        | $U_{rel}=0.15\%$              |      |                |



No. CNAS L2336

第 59 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                   | Measurand             | Calibration Method                                                          | Range                 | Expanded Uncertainty<br>( <i>k</i> =2)            | Note                                                                                 | Effective Date |
|----|------------------------------|-----------------------|-----------------------------------------------------------------------------|-----------------------|---------------------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                              | Frequency             |                                                                             | (45~65)Hz             | <i>U</i> <sub>rel</sub> =0.02%                    |                                                                                      |                |
|    |                              | Phase                 |                                                                             | (0° ~359.99° )        | <i>U</i> =0.02°                                   |                                                                                      |                |
| 52 | *Motor Stator Testing System | DC Resistance         | Calibration Specification for Motor Stator Testing System JJF(min)1060-2014 | 1m Ω ~2m Ω            | <i>U</i> <sub>rel</sub> =0.13%                    |                                                                                      |                |
|    |                              |                       |                                                                             | (2~20) m Ω            | <i>U</i> <sub>rel</sub> =0.06%                    |                                                                                      |                |
|    |                              |                       |                                                                             | 20m Ω ~ 20k Ω         | <i>U</i> <sub>rel</sub> =0.02%                    |                                                                                      |                |
|    |                              | AC Voltage            |                                                                             | (0.1~3)kV(45~65)Hz    | <i>U</i> <sub>rel</sub> =0.7%                     |                                                                                      |                |
|    |                              | AC Current            |                                                                             | (0.1~100) mA(45~65)Hz | <i>U</i> <sub>rel</sub> =0.8%                     |                                                                                      |                |
|    |                              | Insulation Resistance |                                                                             | (0.1~10)M Ω           | <i>U</i> <sub>rel</sub> =0.3%                     |                                                                                      |                |
|    |                              |                       |                                                                             | (10~100)M Ω           | <i>U</i> <sub>rel</sub> =0.7%                     |                                                                                      |                |
|    |                              |                       |                                                                             | (100~1000)M Ω         | <i>U</i> <sub>rel</sub> =0.8%                     |                                                                                      |                |
|    |                              | DC Voltage            |                                                                             | (500~1000)V           | <i>U</i> <sub>rel</sub> =0.8%                     |                                                                                      |                |
|    |                              | Pulse voltage         |                                                                             | (0.1~3)kV(45~65)Hz    | <i>U</i> <sub>rel</sub> =1.2%                     |                                                                                      |                |
|    |                              | Front time            |                                                                             | (0.1~1.2) μ s         | <i>U</i> <sub>rel</sub> =1.0%                     |                                                                                      |                |
| 53 | *Multifunction Calibrator    | DC Voltage            | Calibration Specification for Mulifunction Standard Sources JJF 1638        | 10mV~200mV            | <i>U</i> =0.0011% <i>V</i> <sub>x</sub> +1.0 μ V  |  |                |
|    |                              |                       |                                                                             | 200mV~2V              | <i>U</i> =0.0010% <i>V</i> <sub>x</sub> +1.4 μ V  |                                                                                      |                |
|    |                              |                       |                                                                             | 2V~10V                | <i>U</i> =0.00096% <i>V</i> <sub>x</sub> +4.8 μ V |                                                                                      |                |
|    |                              |                       |                                                                             | 10V~20V               | <i>U</i> =0.0010% <i>V</i> <sub>x</sub> +10 μ V   |                                                                                      |                |
|    |                              |                       |                                                                             | 20V~200V              | <i>U</i> =0.0011% <i>V</i> <sub>x</sub> +0.12mV   |                                                                                      |                |
|    |                              |                       |                                                                             | 200V~1000V            | <i>U</i> =0.0013% <i>V</i> <sub>x</sub> +0.7mV    |                                                                                      |                |

No. CNAS L2336

第 60 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.



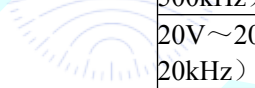
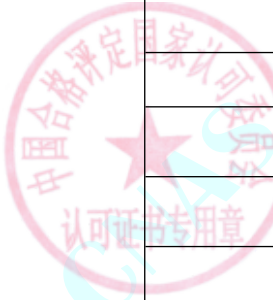
| No | Instrument | Measurand  | Calibration Method | Range                         | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|------------|--------------------|-------------------------------|-----------------------------------|------|----------------|
|    |            | AC Voltage |                    | 10mV~200mV<br>(40Hz~20kHz)    | $U=0.013\%V_x+12\mu V$            |      |                |
|    |            |            |                    | 10mV~200mV<br>(20kHz~50kHz)   | $U=0.043\%V_x+12\mu V$            |      |                |
|    |            |            |                    | 10mV~200mV<br>(50kHz~100kHz)  | $U=0.11\%V_x+36\mu V$             |      |                |
|    |            |            |                    | 10mV~200mV<br>(100kHz~300kHz) | $U=0.13\%V_x+36\mu V$             |      |                |
|    |            |            |                    | 10mV~200mV<br>(300kHz~500kHz) | $U=0.22\%V_x+48\mu V$             |      |                |
|    |            |            |                    | 0.2V~2V (40Hz~<br>20kHz)      | $U=0.01\%V_x+8\mu V$              |      |                |
|    |            |            |                    | 0.2V~2V (20kHz~<br>50kHz)     | $U=0.017\%V_x+24\mu V$            |      |                |
|    |            |            |                    | 0.2V~2V (50kHz~<br>100kHz)    | $U=0.034\%V_x+96\mu V$            |      |                |
|    |            |            |                    | 0.2V~2V (100kHz~<br>300kHz)   | $U=0.058\%V_x+0.18mV$             |      |                |
|    |            |            |                    | 0.2V~2V (300kHz~<br>500kHz)   | $U=0.14\%V_x+0.5mV$               |      |                |
|    |            |            |                    | 2V~20V (40Hz~<br>20kHz)       | $U=0.01\%V_x+84\mu V$             |      |                |
|    |            |            |                    | 2V~20V (20kHz~<br>50kHz)      | $U=0.017\%V_x+0.24mV$             |      |                |
|    |            |            |                    | 2V~20V (50kHz~<br>100kHz)     | $U=0.034\%V_x+0.5mV$              |      |                |
|    |            |            |                    | 2V~20V (100kHz~<br>300kHz)    | $U=0.072\%V_x+1.7mV$              |      |                |



No. CNAS L2336

第 61 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand            | Calibration Method                                                                                                                                                                              | Range                  | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date                |
|----|------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
|    |            |                      | <br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF A RECALIBRATION CERTIFICATE | 2V~20V（300kHz~500kHz）  | $U=0.17\%V_x+6\text{mV}$               |  |                               |
|    |            |                      |                                                                                                                                                                                                 | 20V~200V（40Hz~20kHz）   | $U=0.011\%V_x+1.2\text{mV}$            |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 20V~200V（20kHz~50kHz）  | $U=0.03\%V_x+5\text{mV}$               |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 20V~200V（50kHz~100kHz） | $U=0.072\%V_x+12\text{mV}$             |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 200V~1000V（40Hz~10kHz） | $U=0.0119\%V_x+5\text{mV}$             |                                                                                      |                               |
|    |            | DC Current           |                                                                                                                                                                                                 | 10 μ A~200 μ A         | $U=0.007\%I_x+11\text{nA}$             |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 200 μ A~2mA            | $U=0.007\%I_x+11\text{nA}$             |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 2mA~20mA               | $U=0.007\%I_x+0.11\text{ μ A}$         |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 20mA~200mA             | $U=0.007\%I_x+11\text{ μ A}$           |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 200mA~2A               | $U=0.01\%I_x+33\text{ μ A}$            |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 2A~10A                 | $U=0.04\%I_x+0.53\text{mA}$            |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | 10A~20A                | $U=0.11\%I_x+0.83\text{mA}$            |                                                                                      |                               |
|    |            |                      |                                                                                                                                                                                                 | AC Current             | (1~20)mA 40Hz~1kHz                     |                                                                                      | $U=0.018\%I_x+0.4\text{ μ A}$ |
|    |            | (1~20)mA（1~5）kHz     |                                                                                                                                                                                                 |                        | $U=0.077\%I_x+6\text{ μ A}$            |                                                                                      |                               |
|    |            | (1~20)mA 5kHz~10kHz  |                                                                                                                                                                                                 |                        | $U=0.2\%I_x+11\text{ μ A}$             |                                                                                      |                               |
|    |            | (20~200)mA 40Hz~1kHz |                                                                                                                                                                                                 |                        | $U=0.02\%I_x+5\text{ μ A}$             |                                                                                      |                               |



No. CNAS L2336

第 62 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument                            | Measurand  | Calibration Method                                                            | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------------|------------|-------------------------------------------------------------------------------|------------------------------|-----------------------------------|------|----------------|
|    |                                       | AC Current | Calibration Specification of<br>Calibrators for Electrical<br>Meters JJF 1284 | (20~200)mA 1kHz~5kHz         | $U=0.08\%Ix+60\mu A$              |      |                |
|    |                                       |            |                                                                               | (20~200)mA 5kHz~10kHz        | $U=0.2\%Ix+0.11mA$                |      |                |
|    |                                       |            |                                                                               | (0.20~2)A 40Hz~1kHz          | $U=0.083\%Ix+44\mu A$             |      |                |
|    |                                       |            |                                                                               | (0.2~2)A 1kHz~5kHz           | $U=0.094\%Ix+0.11mA$              |      |                |
|    |                                       |            |                                                                               | (0.2~2)A 5kHz~10kHz          | $U=1.1\%Ix+0.22mA$                |      |                |
|    |                                       |            |                                                                               | (2~10)A 40Hz~1kHz            | $U=0.051\%Ix+0.19mA$              |      |                |
|    |                                       |            |                                                                               | (10~20)A 45Hz~100Hz          | $U=0.13\%Ix+6mA$                  |      |                |
|    |                                       |            |                                                                               | (10~20)A 100Hz~1kHz          | $U=0.17\%Ix+6mA$                  |      |                |
|    |                                       |            |                                                                               | (10~20)A 1kHz~5kHz           | $U=0.33\%Ix+6mA$                  |      |                |
|    |                                       |            |                                                                               | 1 $\Omega$ ~ 10 $\Omega$     | $U_{rel}=0.022\%$                 |      |                |
|    |                                       |            |                                                                               | 10 $\Omega$ ~ 100 $\Omega$   | $U_{rel}=0.0054\%$                |      |                |
|    |                                       |            |                                                                               | 100 $\Omega$ ~ 10k $\Omega$  | $U_{rel}=0.0014\%$                |      |                |
|    |                                       |            |                                                                               | 10k $\Omega$ ~ 100k $\Omega$ | $U_{rel}=0.016\%$                 |      |                |
|    |                                       |            |                                                                               | 100k $\Omega$ ~ 1M $\Omega$  | $U_{rel}=0.0028\%$                |      |                |
|    |                                       |            |                                                                               | 1M $\Omega$ ~ 10M $\Omega$   | $U_{rel}=0.005\%$                 |      |                |
|    |                                       |            |                                                                               | 10M $\Omega$ ~ 100M $\Omega$ | $U_{rel}=0.015\%$                 |      |                |
| 54 | *Calibrators for<br>Electrical Meters | DC voltage | Calibration Specification of<br>Calibrators for Electrical<br>Meters JJF 1284 | (10~200)mV                   | $U_{rel}=0.003\%$                 |      |                |
|    |                                       |            |                                                                               | (0.2~1000)V                  | $U_{rel}=0.002\%$                 |      |                |



No. CNAS L2336

第 63 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №          | Instrument                                       | Measurand   | Calibration Method | Range                      | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date                                    |
|------------|--------------------------------------------------|-------------|--------------------|----------------------------|----------------------------------------|------|---------------------------------------------------|
|            |                                                  | AC voltage  |                    | 10mV~1000V,<br>(40Hz~2kHz) | <i>U</i> <sub>rel</sub> =0.04%         |      |                                                   |
|            |                                                  | DC current  |                    | 10 μ A~20A                 | <i>U</i> <sub>rel</sub> =0.05%         |      |                                                   |
|            |                                                  | AC current  |                    | (20~200) μ A (40Hz~2kHz)   | <i>U</i> <sub>rel</sub> =0.1%          |      |                                                   |
|            |                                                  |             |                    | (0.2~200)mA, (40Hz~2kHz)   | <i>U</i> <sub>rel</sub> =0.09%         |      |                                                   |
|            |                                                  |             |                    | (0.2~2)A (40Hz~2kHz)       | <i>U</i> <sub>rel</sub> =0.15%         |      |                                                   |
|            |                                                  |             |                    | (2~20)A (40Hz~2kHz)        | <i>U</i> <sub>rel</sub> =0.4%          |      |                                                   |
|            |                                                  |             |                    | resistance                 | (1~20) Ω                               |      | <i>U</i> <sub>rel</sub> =0.01%                    |
|            |                                                  | 20 Ω ~2M Ω  |                    |                            | <i>U</i> <sub>rel</sub> =0.003%        |      |                                                   |
|            |                                                  | (2~20)M Ω   |                    |                            | <i>U</i> <sub>rel</sub> =0.004%        |      |                                                   |
|            |                                                  | (20~200)M Ω |                    |                            | <i>U</i> <sub>rel</sub> =0.1%          |      |                                                   |
|            |                                                  | Frequency   |                    |                            | 40Hz~10kHz                             |      | <i>U</i> <sub>rel</sub> =6×10 <sup>-6</sup>       |
|            |                                                  | 55          |                    | *Digital Multimeter        | DC Voltage                             |      | Calibration Specification for Multimeter JJF 1587 |
| 220mV~2.2V | <i>U</i> =0.0008% <i>V</i> <sub>x</sub> +1.2 μ V |             |                    |                            |                                        |      |                                                   |
| 2.2V~11V   | <i>U</i> =0.0008% <i>V</i> <sub>x</sub> +4 μ V   |             |                    |                            |                                        |      |                                                   |
| 11V~22V    | <i>U</i> =0.0008% <i>V</i> <sub>x</sub> +8 μ V   |             |                    |                            |                                        |      |                                                   |
| 22V~220V   | <i>U</i> =0.0009% <i>V</i> <sub>x</sub> +100 μ V |             |                    |                            |                                        |      |                                                   |
| 220V~1000V | <i>U</i> =0.0011% <i>V</i> <sub>x</sub> +0.6mV   |             |                    |                            |                                        |      |                                                   |



No. CNAS L2336

第 64 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand  | Calibration Method | Range                     | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|------------|--------------------|---------------------------|-----------------------------------|------|----------------|
|    |            | AC Voltage |                    | (10~220)mV 40Hz~20kHz     | $U=0.011\%V_x+10\mu V$            |      |                |
|    |            |            |                    | (10~220)mV 20kHz~50kHz    | $U=0.036\%V_x+10\mu V$            |      |                |
|    |            |            |                    | (10~220)mV 50kHz~100kHz   | $U=0.090\%V_x+30\mu V$            |      |                |
|    |            |            |                    | (10~220)mV 100kHz~300kHz  | $U=0.11\%V_x+30\mu V$             |      |                |
|    |            |            |                    | (10~220)mV 300kHz~500kHz  | $U=0.18\%V_x+40\mu V$             |      |                |
|    |            |            |                    | (10~220)mV 500kHz~1MHz    | $U=0.36\%V_x+0.1mV$               |      |                |
|    |            |            |                    | (0.22~2.2)V 40Hz~20kHz    | $U=0.0085\%V_x+7\mu V$            |      |                |
|    |            |            |                    | (0.22~2.2)V 20kHz~50kHz   | $U=0.014\%V_x+20\mu V$            |      |                |
|    |            |            |                    | (0.22~2.2)V 50kHz~100kHz  | $U=0.028\%V_x+80\mu V$            |      |                |
|    |            |            |                    | (0.22~2.2)V 100kHz~300kHz | $U=0.048\%V_x+0.15mV$             |      |                |
|    |            |            |                    | (0.22~2.2)V 300kHz~500kHz | $U=0.12\%V_x+0.4mV$               |      |                |
|    |            |            |                    | (0.22~2.2)V 500kHz~1MHz   | $U=0.24\%V_x+1mV$                 |      |                |
|    |            |            |                    | (2.2~22)V 40Hz~20kHz      | $U=0.0085\%V_x+70\mu V$           |      |                |
|    |            |            |                    | (2.2~22)V 20kHz~50kHz     | $U=0.014\%V_x+0.2mV$              |      |                |
|    |            |            |                    | (2.2~22)V 50kHz~100kHz    | $U=0.028\%V_x+0.4mV$              |      |                |

No. CNAS L2336

第 65 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand  | Calibration Method | Range                   | Expanded Uncertainty<br>( $k=2$ )               | Note | Effective Date |
|----|------------|------------|--------------------|-------------------------|-------------------------------------------------|------|----------------|
|    |            |            |                    | 100V~1000V(45Hz~10kHz)  | $U_{rel}=2.0\times 10^{-4}\sim 9\times 10^{-4}$ |      |                |
|    |            |            |                    | (2.2~22)V 100kHz~300kHz | $U=0.060\%V_x+1.7mV$                            |      |                |
|    |            |            |                    | (2.2~22)V 300kHz~500kHz | $U=0.14\%V_x+5mV$                               |      |                |
|    |            |            |                    | (2.2~22)V 500kHz~1MHz   | $U=0.30\%V_x+9mV$                               |      |                |
|    |            |            |                    | (22~220)V 40Hz~20kHz    | $U=0.0090\%V_x+1mV$                             |      |                |
|    |            |            |                    | (22~220)V 20kHz~50kHz   | $U=0.025\%V_x+4mV$                              |      |                |
|    |            |            |                    | (22~220)V 50kHz~100kHz  | $U=0.060\%V_x+10mV$                             |      |                |
|    |            |            |                    | (22~220)V 100kHz~300kHz | $U=0.16\%V_x+0.11V$                             |      |                |
|    |            |            |                    | (22~220)V 300kHz~500kHz | $U=0.54\%V_x+0.11V$                             |      |                |
|    |            |            |                    | (22~220)V 500kHz~1MHz   | $U=1.3\%V_x+0.22V$                              |      |                |
|    |            |            |                    | (220~1000)V 40Hz~1kHz   | $U=0.009\%V_x+4mV$                              |      |                |
|    |            | DC Current |                    | 10 $\mu A$ ~220 $\mu A$ | $U=0.006\%I_x+10nA$                             |      |                |
|    |            |            |                    | 220 $\mu A$ ~2.2mA      | $U=0.0060\%I_x+10nA$                            |      |                |
|    |            |            |                    | 2.2mA~22mA              | $U=0.0060\%I_x+100nA$                           |      |                |
|    |            |            |                    | 22mA~220mA              | $U=0.0070\%I_x+1\mu A$                          |      |                |
|    |            |            |                    | 220mA~2.2A              | $U=0.0095\%I_x+30\mu A$                         |      |                |
|    |            |            |                    |                         |                                                 |      |                |



No. CNAS L2336

第 66 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



| № | Instrument | Measurand  | Calibration Method | Range                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|------------|------------|--------------------|------------------------|-----------------------------------|------|----------------|
|   |            |            |                    | 2.2A~11A               | $U=0.036\%Ix+0.48\text{mA}$       |      |                |
|   |            |            |                    | 11A~20A                | $U=0.1\%Ix+0.75\text{mA}$         |      |                |
|   |            | AC Current |                    | (1~22)mA 40Hz~1kHz     | $U=0.016\%Ix+0.4\mu\text{A}$      |      |                |
|   |            |            |                    | (1~22)mA 1kHz~5kHz     | $U=0.070\%Ix+5\mu\text{A}$        |      |                |
|   |            |            |                    | (1~22)mA 5kHz~10kHz    | $U=0.18\%Ix+10\mu\text{A}$        |      |                |
|   |            |            |                    | (22~220)mA 40Hz~1kHz   | $U=0.018\%Ix+4\mu\text{A}$        |      |                |
|   |            |            |                    | (22~220)mA 1kHz~5kHz   | $U=0.070\%Ix+50\mu\text{A}$       |      |                |
|   |            |            |                    | (22~220)mA 5kHz~10kHz  | $U=0.18\%Ix+0.1\text{mA}$         |      |                |
|   |            |            |                    | (0.22~2.2)A 40Hz~1kHz  | $U=0.075\%Ix+40\mu\text{A}$       |      |                |
|   |            |            |                    | (0.22~2.2)A 1kHz~5kHz  | $U=0.085\%Ix+0.1\text{mA}$        |      |                |
|   |            |            |                    | (0.22~2.2)A 5kHz~10kHz | $U=1.0\%Ix+0.2\text{mA}$          |      |                |
|   |            |            |                    | (2.2~11)A 40Hz~1kHz    | $U=0.046\%Ix+0.17\text{mA}$       |      |                |
|   |            |            |                    | (2.2~11)A 1kHz~5kHz    | $U=0.095\%Ix+0.38\text{mA}$       |      |                |
|   |            |            |                    | (2.2~11)A 5kHz~10kHz   | $U=0.36\%Ix+0.75\text{mA}$        |      |                |
|   |            |            |                    | (11~20)A 45Hz~100Hz    | $U=0.12\%Ix+5\text{mA}$           |      |                |
|   |            |            |                    | (11~20)A 100Hz~1kHz    | $U=0.15\%Ix+5\text{mA}$           |      |                |



No. CNAS L2336

第 67 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

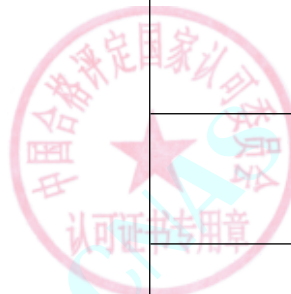
| No | Instrument                                      | Measurand     | Calibration Method                                                | Range                 | Expanded Uncertainty<br>(k=2) | Note | Effective Date |  |  |
|----|-------------------------------------------------|---------------|-------------------------------------------------------------------|-----------------------|-------------------------------|------|----------------|--|--|
|    |                                                 | DC Resistance |                                                                   | (11~20)A 1kHz~5kHz    | $U=0.3\%Ix+5mA$               |      |                |  |  |
|    |                                                 |               |                                                                   | 1 Ω                   | $U_{rel}=0.011\%$             |      |                |  |  |
|    |                                                 |               |                                                                   | 10 Ω                  | $U_{rel}=0.0027\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 100 Ω                 | $U_{rel}=0.0012\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 1k Ω                  | $U_{rel}=0.0010\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 10k Ω                 | $U_{rel}=0.0010\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 100k Ω                | $U_{rel}=0.0013\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 1M Ω                  | $U_{rel}=0.0023\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 10M Ω                 | $U_{rel}=0.0046\%$            |      |                |  |  |
|    |                                                 |               |                                                                   | 100M Ω                | $U_{rel}=0.012\%$             |      |                |  |  |
| 56 | *Amperemeter, Voltmeter, Wattmeter And Ohmmeter | DC Voltage    | V.R. of Amperemeters, Voltmeters, Wattmeters and Ohmmeter JJG 124 | 10mV~1000V            | $U_{rel}=7\times 10^{-4}$     |      |                |  |  |
|    |                                                 | DC Current    |                                                                   | 1mA~1A                | $U_{rel}=8\times 10^{-4}$     |      |                |  |  |
|    |                                                 |               |                                                                   | 1A~10A                | $U_{rel}=1\times 10^{-3}$     |      |                |  |  |
|    |                                                 |               |                                                                   | 10A~20A               | $U_{rel}=2\times 10^{-3}$     |      |                |  |  |
|    |                                                 | AC Voltage    |                                                                   | 10mV~1000V(45Hz~1kHz) | $U_{rel}=8\times 10^{-4}$     |      |                |  |  |
|    |                                                 | AC Current    |                                                                   | 1mA~10mA(45Hz~1kHz)   | $U_{rel}=2\times 10^{-3}$     |      |                |  |  |
|    |                                                 |               |                                                                   | 10mA~1A(45Hz~1kHz)    | $U_{rel}=9\times 10^{-4}$     |      |                |  |  |
|    |                                                 |               |                                                                   | 1A~10A(45Hz~100Hz)    | $U_{rel}=1\times 10^{-3}$     |      |                |  |  |



No. CNAS L2336

第 68 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

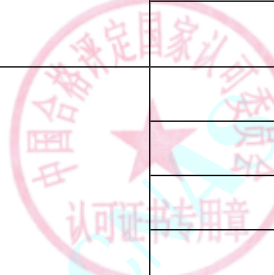
| №  | Instrument                | Measurand                                      | Calibration Method                                      | Range                 | Expanded Uncertainty<br>( <i>k</i> =2)      | Note                                                                                 | Effective Date |
|----|---------------------------|------------------------------------------------|---------------------------------------------------------|-----------------------|---------------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                           |                                                |                                                         | 10A~20A(45Hz~100Hz)   | <i>U</i> <sub>rel</sub> =2×10 <sup>-3</sup> |                                                                                      |                |
|    |                           | DC Resistance                                  |                                                         | 100 Ω ~1M Ω           | <i>U</i> <sub>rel</sub> =7×10 <sup>-4</sup> |                                                                                      |                |
|    |                           | DC Powermeter                                  |                                                         | (1~3000)W             | <i>U</i> <sub>rel</sub> =0.09%              |                                                                                      |                |
|    |                           | AC Powermeter                                  |                                                         | (1~3000)W (45Hz~65Hz) | <i>U</i> <sub>rel</sub> =0.10%              |                                                                                      |                |
|    |                           |                                                |                                                         | 1M Ω ~10M Ω           | <i>U</i> <sub>rel</sub> =1×10 <sup>-3</sup> |                                                                                      |                |
| 57 | *DC Voltage Stable Source | DC Voltage                                     | Calibration specification for DC Stable Source JJF 1597 | 0.1V~100V             | <i>U</i> <sub>rel</sub> =0.007%             |  |                |
|    |                           |                                                |                                                         | 100V~1000V            | <i>U</i> <sub>rel</sub> =0.008%             |                                                                                      |                |
|    |                           | DC Current                                     |                                                         | 10 μ A~200A           | <i>U</i> <sub>rel</sub> =0.07%              |                                                                                      |                |
|    |                           |                                                |                                                         | 200A~2000A            | <i>U</i> <sub>rel</sub> =0.09%              |                                                                                      |                |
|    |                           | Regulated power supply adjustment rate         |                                                         | 0.01%~10%             | <i>U</i> <sub>rel</sub> =0.008%             |                                                                                      |                |
|    |                           | Regulation rate of steady current power supply |                                                         | 0.01%~10%             | <i>U</i> <sub>rel</sub> =0.09%              |                                                                                      |                |
|    |                           | Regulated load adjustment rate                 |                                                         | 0.01%~10%             | <i>U</i> <sub>rel</sub> =0.008%             |                                                                                      |                |
|    |                           | Steady current load regulation rate            |                                                         | 0.01%~10%             | <i>U</i> <sub>rel</sub> =0.09%              |                                                                                      |                |



No. CNAS L2336

第 69 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                | Measurand                         | Calibration Method                                                                  | Range                              | Expanded Uncertainty<br>( <i>k</i> =2)                           | Note                                                                                 | Effective Date |
|----|-------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                           | Ripple voltage                    |                                                                                     | 0.1mV～1000mV                       | <i>U</i> <sub>rel</sub> =2%                                      |                                                                                      |                |
|    |                                           | Ripple current                    |                                                                                     | 0.1mA～10A                          | <i>U</i> <sub>rel</sub> =2.4%                                    |                                                                                      |                |
| 58 | Resistance strain gauge indicators        | Strain Gauge Indication Stability | Resistance strain gauge indicators JJG 623                                          | (10～100000) μ ε<br>(10～100000) μ ε | <i>U</i> <sub>rel</sub> =0.09%<br><i>U</i> <sub>rel</sub> =0.09% |                                                                                      |                |
| 59 | *High-voltage Withstanding Voltage Tester | DC Voltage                        | Verification Regulation of High-voltage Withstanding Voltage Tester JJG(jungong) 18 | (1～15)kV                           | <i>U</i> <sub>rel</sub> =0.9%                                    |                                                                                      |                |
|    |                                           |                                   |                                                                                     | (15～50)kV(45～65)Hz                 | <i>U</i> <sub>rel</sub> =1.0%                                    |                                                                                      |                |
|    |                                           | AC Voltage                        |                                                                                     | (1～15)kV(45～65)Hz                  | <i>U</i> <sub>rel</sub> =0.9%                                    |                                                                                      |                |
|    |                                           |                                   |                                                                                     | (15～50)kV(45～65)Hz                 | <i>U</i> <sub>rel</sub> =1.0%                                    |                                                                                      |                |
|    |                                           | DC Current                        |                                                                                     | (0.1～100) mA                       | <i>U</i> <sub>rel</sub> =1.0%                                    |                                                                                      |                |
|    |                                           | AC Current                        |                                                                                     | (0.1～100) mA(45～65)Hz              | <i>U</i> <sub>rel</sub> =1.2%                                    |                                                                                      |                |
|    |                                           | Time                              |                                                                                     | (0.01～999.99)s                     | <i>U</i> =0.8% <i>T</i> +0.03s                                   |                                                                                      |                |
| 60 | *Strength Detector of Insulating Oils     | AC Voltage                        | V. R. of Dielectric Strength Detector of Insulating Oils JJG (ji)112                | (0.01～50)kV(45Hz～65Hz)             | <i>U</i> <sub>rel</sub> =1.5%                                    |                                                                                      |                |
|    |                                           | Speed of pressure Rise            |                                                                                     | (0.2～10)kV/s                       | <i>U</i> <sub>rel</sub> =2%                                      |                                                                                      |                |
| 61 | *DC High Voltage Test Device              | DC Voltage                        | Calibration Specification for DC High Voltage Test Device JJF(zhe)1146              | (10～50)kV                          | <i>U</i> <sub>rel</sub> =0.9%                                    |  |                |
|    |                                           |                                   |                                                                                     | (50～100)kV                         | <i>U</i> <sub>rel</sub> =1.2%                                    |                                                                                      |                |
|    |                                           | ripple voltage                    |                                                                                     | (0.1～50)V                          | <i>U</i> <sub>rel</sub> =0.9%                                    |                                                                                      |                |
|    |                                           | DC Current                        |                                                                                     | (0.1～100) mA                       | <i>U</i> <sub>rel</sub> =1.0%                                    |                                                                                      |                |



No. CNAS L2336

第 70 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                   | Measurand                             | Calibration Method                                                      | Range                      | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|----|------------------------------|---------------------------------------|-------------------------------------------------------------------------|----------------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                              | Short Term Stability                  |                                                                         | (10~100)kV                 | $U_{rel}=0.9\%$                   |                                                                                      |                |
| 62 | *AC High Voltage Test Device | AC Voltage                            | Calibration Specification for AC High Voltage Test Device JJF(zhe)1144  | (10~50)kV(45Hz~65Hz)       | $U_{rel}=0.9\%$                   |                                                                                      |                |
|    |                              |                                       |                                                                         | (50~100)kV(45Hz~65Hz)      | $U_{rel}=1.2\%$                   |                                                                                      |                |
|    |                              | Frequency                             |                                                                         | (45~65)Hz                  | $U_{rel}=0.02\%$                  |                                                                                      |                |
|    |                              | Total Harmonic Distortion             |                                                                         | (0.1~100)%                 | $U_{rel}=0.9\%$                   |                                                                                      |                |
|    |                              | Short Term Stability                  |                                                                         | (10~100)kV                 | $U_{rel}=0.9\%$                   |                                                                                      |                |
| 63 | *Magnetic Partical Detector  | DC current                            | Calibration specification for Magnetic Particle Flaw Detectors JJF 1273 | (100~2000)A                | $U_{rel}=1.2\%$                   |                                                                                      |                |
|    |                              | AC current                            |                                                                         | (200~10000)A, (50Hz~400Hz) | $U_{rel}=1.2\%$                   |                                                                                      |                |
|    |                              | Residual magnetic induction intensity |                                                                         | (0.01~0.2)mT               | $U=0.05mT$                        |                                                                                      |                |
|    |                              | Magnetization time                    |                                                                         | (0.4~20)s                  | $U=0.03s$                         |                                                                                      |                |
| 64 | Fluxgate Magnetometer        | magnetism                             | Calibration Specification for Fluxgate Magnetometer JJF 1519            | -250 $\mu$ T~250 $\mu$ T   | $U=1\%B+1 \mu$ T                  |  |                |
| 65 | Magnetometer                 | magnetism                             | Calibration Specification for Magnetometers JJF 1656                    | (0.05~10) mT               | $U_{rel}=1.6\%$                   |                                                                                      |                |
| 66 | Pointer Magnetometer         | magnetism                             | Calibration Specification for Pointer Magnetometer JJF (military) 75    | 50 $\mu$ T~5mT             | $U=1\%B+1 \mu$ T                  |                                                                                      |                |



No. CNAS L2336

第 71 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                                      | Measurand                    | Calibration Method                                                                                       | Range                     | Expanded Uncertainty<br>( <i>k</i> =2)        | Note | Effective Date |  |  |
|----|---------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------|------|----------------|--|--|
| 67 | Tesla meter                                                                     | magnetism                    | Calibration Specification<br>for(1 mT~2.5 T)<br>Magnetometers JJF 1832                                   | 1mT~2.5T                  | <i>U</i> <sub>rel</sub> =0.3%                 |      |                |  |  |
| 68 | Alternating<br>magnetometer                                                     | magnetism                    | Verification regulation of<br>weak magnetic field<br>alternating magnetometer JJG<br>1049                | 1pT~1mT                   | <i>U</i> <sub>rel</sub> =1%                   |      |                |  |  |
| 69 | *Voltage Dips<br>,Short<br>Interruptions and<br>Voltage Variations<br>Generator | Output<br>voltage            | C.S. for Voltage Dips ,Short<br>Interruptions and Voltage<br>Variations Generator<br>JJF(Electron) 30802 | (0.01~1)kV                | <i>U</i> <sub>rel</sub> =1%                   |      |                |  |  |
|    |                                                                                 | Time                         |                                                                                                          | 0.01 s~50s                | <i>U</i> <sub>rel</sub> =0.6%                 |      |                |  |  |
| 70 | *Eddy current<br>conductivity meter                                             | Eddy current<br>conductivity | C. S. fHr Eddy current<br>chnductivity meter JJF 1692                                                    | (0.58~58)MS/m             | <i>U</i> = (0.11~0.36 ) MS/m                  |      |                |  |  |
| 71 | *Data acquisition<br>system                                                     | DC Voltage                   | Calibration Specification for<br>Multi-Parameter Data<br>Acquisition Instrument JJF<br>(通信) 041          | (10~100)mV                | <i>U</i> <sub>rel</sub> =9.0×10 <sup>-5</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | (100mV~1V)                | <i>U</i> <sub>rel</sub> =2.0×10 <sup>-5</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | (1~10)V                   | <i>U</i> <sub>rel</sub> =1.8×10 <sup>-5</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | (10~1000)V                | <i>U</i> <sub>rel</sub> =3.0×10 <sup>-5</sup> |      |                |  |  |
|    |                                                                                 | AC Voltage                   |                                                                                                          | (10~100)mV                | <i>U</i> <sub>rel</sub> =8.6×10 <sup>-4</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | 100mV~1V(45Hz~<br>10kHz)  | <i>U</i> <sub>rel</sub> =2.6×10 <sup>-4</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | 1V~10V(45Hz~10kHz)        | <i>U</i> <sub>rel</sub> =2.2×10 <sup>-4</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | 10V~100V(45Hz~<br>10kHz)  | <i>U</i> <sub>rel</sub> =2.4×10 <sup>-4</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | 100~1000V(45Hz~<br>10kHz) | <i>U</i> <sub>rel</sub> =2.4×10 <sup>-4</sup> |      |                |  |  |
|    |                                                                                 |                              |                                                                                                          | DC Current                | (100μA~1mA)                                   |      |                |  |  |

No. CNAS L2336

第 72 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                              | Measurand                  | Calibration Method                                                                                                  | Range                | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-----------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------|------|----------------|
|    |                                         | AC Current                 | ilac-MRA<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | (1~100)mA            | $U_{rel}=2.0\times 10^{-4}$            |      |                |
|    |                                         |                            |                                                                                                                     | (100mA~3A)           | $U_{rel}=4.0\times 10^{-4}$            |      |                |
|    |                                         |                            |                                                                                                                     | (3~20)A              | $U_{rel}=1.0\times 10^{-3}$            |      |                |
|    |                                         |                            |                                                                                                                     | 100μA~1mA(45Hz~5kHz) | $U_{rel}=2.6\times 10^{-3}$            |      |                |
|    |                                         |                            |                                                                                                                     | 1mA~100mA(45Hz~5kHz) | $U_{rel}=7.0\times 10^{-4}$            |      |                |
|    |                                         |                            |                                                                                                                     | 100mA~3A(45Hz~5kHz)  | $U_{rel}=6.0\times 10^{-4}$            |      |                |
|    |                                         |                            |                                                                                                                     | 3A~20A(45Hz~5kHz)    | $U_{rel}=1.2\times 10^{-3}$            |      |                |
|    |                                         | DC Resistance              |                                                                                                                     | (10~100) Ω           | $U_{rel}=7.8\times 10^{-5}$            |      |                |
|    |                                         |                            |                                                                                                                     | 100 Ω ~10k Ω         | $U_{rel}=3.2\times 10^{-5}$            |      |                |
|    |                                         |                            |                                                                                                                     | 10k Ω ~1M Ω          | $U_{rel}=4.2\times 10^{-5}$            |      |                |
|    |                                         |                            |                                                                                                                     | (1~100)M Ω           | $U_{rel}=5.0\times 10^{-4}$            |      |                |
|    |                                         | Temperature (TC)           |                                                                                                                     | (-100~1300) °C       | $U=0.3^{\circ}\text{C}$                |      |                |
|    |                                         | Temperature (RTD)          |                                                                                                                     | (0~800) °C           | $U=0.2^{\circ}\text{C}$                |      |                |
|    |                                         | Average relative frequency |                                                                                                                     | 10Hz~10MHz           | $U_{rel}=1.4\times 10^{-5}$            |      |                |
| 72 | *Online Winding Temperature Rise Tester | Resistance                 | Calibration Specification For Online Winding Temperature Rise Tester JJF 1540                                       | (0.1~1) Ω            | $U_{rel}=0.6\%$                        |      |                |
|    |                                         |                            |                                                                                                                     | (1~10) Ω             | $U_{rel}=0.07\%$                       |      |                |
|    |                                         |                            |                                                                                                                     | (10 Ω ~10k Ω         | $U_{rel}=0.06\%$                       |      |                |



No. CNAS L2336

第 73 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

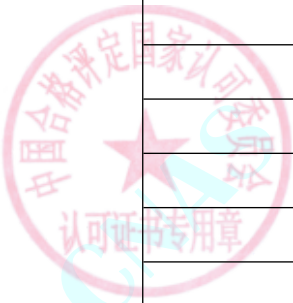
| №  | Instrument                          | Measurand     | Calibration Method                                                              | Range                          | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|-------------------------------------|---------------|---------------------------------------------------------------------------------|--------------------------------|-------------------------------|------|----------------|
| 73 | *Wire Spark Tester                  | AC Voltage    | V.R.of Wire Spark Tester<br>JJG(Su) 74                                          | AC: (0.1kV~20kV)、<br>50Hz      | $U_{rel}=0.7\%$               |      |                |
|    |                                     | AC Voltage    |                                                                                 | AC: (0.1kV~20kV)、<br>60Hz~1MHz | $U_{rel}=3\%$                 |      |                |
|    |                                     | DC Voltage    |                                                                                 | DC: (0.1kV~30kV)               | $U_{rel}=0.6\%$               |      |                |
| 74 | *Battery Resistance Test Instrument | Resistance    | Calibration Specifcation for<br>Battery Internal Resistance<br>Testers JJF 1620 | 1m Ω ~10m Ω                    | $U_{rel}=0.15\%$              |      |                |
|    |                                     |               |                                                                                 | 10m Ω ~ 10k Ω                  | $U_{rel}=0.07\%$              |      |                |
|    |                                     | Voltage       |                                                                                 | (0.1~10)V                      | $U_{rel}=0.03\%$              |      |                |
|    |                                     |               |                                                                                 | (10~800)V                      | $U_{rel}=0.02\%$              |      |                |
| 75 | *Proof Tracking Index Testers       | Test voltage  | Calibration Specification for<br>Proof Tracking Index Testers<br>JJF(Zhe) 1087  | (0.1~750)V(45Hz~<br>60Hz)      | $U_{rel}=0.3\%$               |      |                |
|    |                                     | Test current  |                                                                                 | (0.01~1)A(45Hz~<br>60Hz)       | $U_{rel}=0.2\%$               |      |                |
|    |                                     | Time          |                                                                                 | (0.01~999.9)s                  | $U_{rel}=0.3\%$               |      |                |
| 76 | *DC Electronic Load                 | DC Voltage    | C.S. forDC Electronic Load<br>JJF 1462                                          | 0.1V~100V                      | $U_{rel}=0.02\%$              |      |                |
|    |                                     |               |                                                                                 | 100V~1000V                     | $U_{rel}=0.04\%$              |      |                |
|    |                                     | DC Current    |                                                                                 | 0.01A~20A                      | $U_{rel}=0.05\%$              |      |                |
|    |                                     |               |                                                                                 | 20A~120A                       | $U_{rel}=0.07\%$              |      |                |
|    |                                     |               |                                                                                 | 120A ~200A                     | $U_{rel}=0.12\%$              |      |                |
|    |                                     | DC Resistance |                                                                                 | 1 Ω ~ 1k Ω                     | $U_{rel}=0.10\%$              |      |                |
|    |                                     | DC Power      |                                                                                 | 1W ~100W                       | $U_{rel}=0.12\%$              |      |                |



No. CNAS L2336

第 74 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

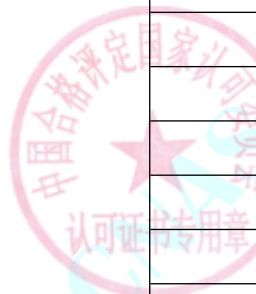
| №  | Instrument    | Measurand                                  | Calibration Method                                                   | Range               | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|----|---------------|--------------------------------------------|----------------------------------------------------------------------|---------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |               |                                            |                                                                      | 100W ~2kW           | <i>U</i> <sub>rel</sub> =0.10%         |                                                                                      |                |
|    |               | Current rise and fall rate                 |                                                                      | 0.1mA/ μ s~10A/ μ s | <i>U</i> <sub>rel</sub> =1.6%          |                                                                                      |                |
|    |               | Current loading time and unloading time    |                                                                      | 10 μ s~10s          | <i>U</i> <sub>rel</sub> =0.7%          |                                                                                      |                |
|    |               | Constant voltage mode load regulation rate |                                                                      | 0.01%~10%           | <i>U</i> <sub>rel</sub> =0.04%         |                                                                                      |                |
|    |               | Constant current mode load regulation rate |                                                                      | 0.01%~10%           | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                      |                |
|    |               |                                            |                                                                      |                     |                                        |                                                                                      |                |
| 77 | *Loop tester  | loops                                      | C.S. for Coil Number Testing<br>Instructing JJF(zhe)1065             | (1~11110) loops     | <i>U</i> <sub>rel</sub> =0.3%          |                                                                                      |                |
| 78 | *source meter | DC voltage (output)                        | Calibration specification for<br>source meter<br>JJF(Electronic)0024 | (0.5~1)mV           | <i>U</i> <sub>rel</sub> =0.5%          |  |                |
|    |               |                                            |                                                                      | (1~10)mV            | <i>U</i> <sub>rel</sub> =0.2%          |                                                                                      |                |
|    |               |                                            |                                                                      | (10~200)mV          | <i>U</i> <sub>rel</sub> =0.0018%       |                                                                                      |                |
|    |               |                                            |                                                                      | (0.2~200)V          | <i>U</i> <sub>rel</sub> =0.0017%       |                                                                                      |                |
|    |               |                                            |                                                                      | (200~1000)V         | <i>U</i> <sub>rel</sub> =0.0018%       |                                                                                      |                |
|    |               | DC current (output)                        |                                                                      | (10~20) μ A         | <i>U</i> <sub>rel</sub> =0.16%         |                                                                                      |                |
|    |               |                                            |                                                                      | 20 μ A~200mA        | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                      |                |
|    |               |                                            |                                                                      | (0.2~20)A           | <i>U</i> <sub>rel</sub> =0.07%         |                                                                                      |                |
|    |               |                                            |                                                                      |                     |                                        |                                                                                      |                |



No. CNAS L2336

第 75 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                       | Measurand                      | Calibration Method                                                                                                  | Range                 | Expanded Uncertainty<br>( <i>k</i> =2)           | Note                                                                                 | Effective Date |
|----|----------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                  | DC voltage<br>(measured)       | ilac-MRA<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | (10~200)mV            | <i>U</i> <sub>rel</sub> =0.0091%                 |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (0.2~200)V            | <i>U</i> <sub>rel</sub> =0.0022%                 |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (200~1000)V           | <i>U</i> <sub>rel</sub> =0.0025%                 |                                                                                      |                |
|    |                                  | DC current<br>(measurement)    |                                                                                                                     | (10~200) μ A          | <i>U</i> <sub>rel</sub> =0.11%                   |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (0.2~200)mA           | <i>U</i> <sub>rel</sub> =0.012%                  |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (0.2~2)A              | <i>U</i> <sub>rel</sub> =0.019%                  |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (2~10)A               | <i>U</i> <sub>rel</sub> =0.061%                  |                                                                                      |                |
|    |                                  | DC resistance<br>(measurement) |                                                                                                                     | (100 Ω ~ 1M Ω )       | <i>U</i> <sub>rel</sub> =0.007%                  |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (1M Ω ~ 10M Ω )       | <i>U</i> <sub>rel</sub> =0.023%                  |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (10M Ω ~ 100M Ω )     | <i>U</i> <sub>rel</sub> =0.07%                   |                                                                                      |                |
| 79 | *Magnetic FLUX Meter             | Magnetic FLUX                  | Calibration Specification for Magnetic Flux Meters JJF 1905                                                         | 0.1mWb~1mWb           | <i>U</i> <sub>rel</sub> =0.4%                    |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | 1mWb~10Wb             | <i>U</i> <sub>rel</sub> =0.07%                   |                                                                                      |                |
| 80 | *hand - held digital Multimeters | DC voltage                     | Calibration Specification for hand - held digital Multimeters JJF(Electronic) 0023                                  | (10~330)mV            | <i>U</i> =0.005% <i>V</i> <sub>X</sub> +0.78 μ V |  |                |
|    |                                  |                                |                                                                                                                     | (0.33~3.3)V           | <i>U</i> =0.006% <i>V</i> <sub>X</sub> +1.6 μ V  |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (3.3~33)V             | <i>U</i> =0.006% <i>V</i> <sub>X</sub> +16 μ V   |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (33~330)V             | <i>U</i> =0.007% <i>V</i> <sub>X</sub> +0.12mV   |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (330~1000)V           | <i>U</i> =0.007% <i>V</i> <sub>X</sub> +1.2mV    |                                                                                      |                |
|    |                                  | AC voltage                     |                                                                                                                     | (10~33)mV(20~45)Hz    | <i>U</i> =0.10% <i>V</i> <sub>X</sub> +7 μ V     |                                                                                      |                |
|    |                                  |                                |                                                                                                                     | (10~33)mV(45Hz~10kHz) | <i>U</i> =0.018% <i>V</i> <sub>X</sub> +7 μ V    |                                                                                      |                |



No. CNAS L2336

第 76 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand  | Calibration Method | Range                   | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|------------|--------------------|-------------------------|-----------------------------------|------|----------------|
|    |            |            |                    | (33~330)mV(20Hz~45Hz)   | $U=0.040\%V_x + 7 \mu V$          |      |                |
|    |            |            |                    | (33~330)mV(45Hz~10kHz)  | $U=0.018\%V_x + 9 \mu V$          |      |                |
|    |            |            |                    | (0.33~3.3)V(20Hz~45Hz)  | $U=0.04\%V_x + 38 \mu V$          |      |                |
|    |            |            |                    | (0.33~3.3)V(45Hz~10kHz) | $U=0.014\%V_x + 46 \mu V$         |      |                |
|    |            |            |                    | (3.3~33)V(20Hz~45Hz)    | $U=0.04\%V_x + 0.7mV$             |      |                |
|    |            |            |                    | (3.3~33)V(45Hz~10kHz)   | $U=0.014\%V_x + 0.5mV$            |      |                |
|    |            |            |                    | (33~330)V(45Hz~1kHz)    | $U=0.022\%V_x + 5mV$              |      |                |
|    |            |            |                    | (33~330)V(1kHz~10kHz)   | $U=0.03\%V_x + 12mV$              |      |                |
|    |            |            |                    | (330~1000)V(40Hz~1kHz)  | $U=0.04\%V_x + 12mV$              |      |                |
|    |            |            |                    | (330~1000)V(1kHz~5kHz)  | $U=0.03\%V_x + 12mV$              |      |                |
|    |            | DC current |                    | (10~330) $\mu A$        | $U=0.033\%I_x + 0.04 \mu A$       |      |                |
|    |            |            |                    | (0.33~3.3)mA            | $U=0.020\%I_x + 0.039 \mu A$      |      |                |
|    |            |            |                    | (3.3~33)mA              | $U=0.030\%I_x + 1.9 \mu A$        |      |                |
|    |            |            |                    | (33~330)mA              | $U=0.030\%I_x + 1.9 \mu A$        |      |                |
|    |            |            |                    | (0.33~1.1)A             | $U=0.03\%I_x + 31 \mu A$          |      |                |
|    |            |            |                    | (1.1~3)A                | $U=0.03\%I_x + 32 \mu A$          |      |                |
|    |            |            |                    | (3~11)A                 | $U=0.04\%I_x + 0.26mA$            |      |                |
|    |            |            |                    | (11~20)A                | $U=0.008\%I_x + 0.9mA$            |      |                |

No. CNAS L2336

第 77 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument | Measurand  | Calibration Method | Range                       | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|------------|------------|--------------------|-----------------------------|-----------------------------------|------|----------------|
|   |            | AC current |                    | (30~330) $\mu$ A(20~45)Hz   | $U=0.22\%I_x + 0.2 \mu$ A         |      |                |
|   |            |            |                    | (30~330) $\mu$ A(45Hz~1kHz) | $U=0.16\%I_x + 0.2 \mu$ A         |      |                |
|   |            |            |                    | (0.33~3.3)mA(45Hz~1kHz)     | $U=0.15\%I_x + 0.3 \mu$ A         |      |                |
|   |            |            |                    | (0.33~3.3mA(100Hz~1kHz)     | $U=0.12\%I_x + 0.3 \mu$ A         |      |                |
|   |            |            |                    | (3.3~33)mA(45Hz~1kHz)       | $U=0.11\%I_x + 3 \mu$ A           |      |                |
|   |            |            |                    | (3.3~33)mA(45Hz~1kHz)       | $U=0.06\%I_x + 3 \mu$ A           |      |                |
|   |            |            |                    | (33~330)mA(20~45)Hz         | $U=0.11\%I_x + 30 \mu$ A          |      |                |
|   |            |            |                    | (33~330)mA(45Hz~1kHz)       | $U=0.06\%I_x + 30 \mu$ A          |      |                |
|   |            |            |                    | (0.33~1.1)A(20~45)Hz        | $U=0.2\%I_x + 0.3$ mA             |      |                |
|   |            |            |                    | (0.33~1.1)A(45Hz~1kHz)      | $U=0.07\%I_x + 0.3$ mA            |      |                |
|   |            |            |                    | 1.1A~3A(20~45)Hz            | $U=0.2\%I_x + 0.6$ mA             |      |                |
|   |            |            |                    | 1.1A~3A(45Hz~1kHz)          | $U=0.07\%I_x + 0.6$ mA            |      |                |
|   |            |            |                    | 3A~11A(20~100)Hz            | $U=0.07\%I_x + 3$ mA              |      |                |
|   |            |            |                    | 3A~11A(100Hz~1kHz)          | $U=0.12\%I_x + 3$ mA              |      |                |
|   |            |            |                    | 11A~20A(20~45)Hz            | $U=0.14\%I_x + 6$ mA              |      |                |
|   |            |            |                    | 11A~20A(45Hz~1kHz)          | $U=0.17\%I_x + 6$ mA              |      |                |
|   |            | Resistance |                    | 1 $\Omega$ ~11 $\Omega$     | $U=0.07\%R_x + 0.04 \Omega$       |      |                |
|   |            |            |                    | 11 $\Omega$ ~33 $\Omega$    | $U=0.06\%R_x + 0.06 \Omega$       |      |                |



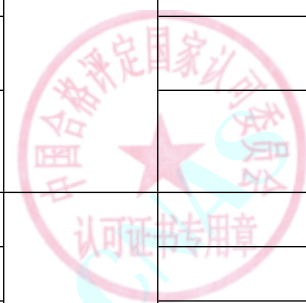
No. CNAS L2336

第 78 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



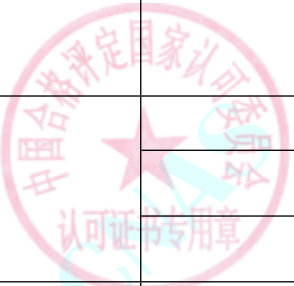
| No | Instrument    | Measurand           | Calibration Method                                                                                                  | Range                                           | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------|---------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------|------|----------------|
|    |               |                     | ilac-MRA<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | 33 Ω ~1.1M Ω                                    | U=0.06%Rx +0.08 Ω             |      |                |
|    |               |                     |                                                                                                                     | 1.1M Ω ~3.3M Ω                                  | U=0.08%Rx +0.1 Ω              |      |                |
|    |               |                     |                                                                                                                     | 3.3M Ω ~33M Ω                                   | U=0.3%Rx +0.3 Ω               |      |                |
|    |               |                     |                                                                                                                     | 33M Ω ~100M Ω                                   | U=2.4%Rx +0.4 Ω               |      |                |
|    |               | Frequency           |                                                                                                                     | 10Hz~100kHz                                     | U=0.0003%Rx +6 μ Hz           |      |                |
|    |               | Capacitors          |                                                                                                                     | 1nF ~10nF                                       | U=0.6%Cx+0.02nF               |      |                |
|    |               |                     |                                                                                                                     | 10nF ~100nF                                     | U=0.3%Cx+0.1nF                |      |                |
|    |               |                     |                                                                                                                     | 100nF ~1000nF                                   | U=0.3%Cx+0.7nF                |      |                |
|    |               |                     |                                                                                                                     | 1 μ F ~10 μ F                                   | U=0.3%Cx+6nF                  |      |                |
|    |               |                     |                                                                                                                     | 10 μ F~100 μ F                                  | U=0.5%Cx+60nF                 |      |                |
|    |               |                     |                                                                                                                     | 100 μ F~1000 μ F                                | U=0.5%Cx+0.6 μ F              |      |                |
|    |               |                     |                                                                                                                     | 1mF~10mF                                        | U=0.5%Cx+6 μ F                |      |                |
|    |               |                     |                                                                                                                     | 10mF~100mF                                      | U=1.3%Cx+60 μ F               |      |                |
|    |               | Temperature         |                                                                                                                     | With Thermocouple: : (-200~ 1200)° C            | U=0.5℃                        |      |                |
|    |               | Temperature         |                                                                                                                     | With Platinum thermal resistance:(-200~ 800)° C | U=0.3℃                        |      |                |
| 81 | *Cable Tester | Cable DC resistance | Calibration for Cable Tester JJF1457                                                                                | 0.1 Ω ~1 Ω                                      | U <sub>rel</sub> =2%          |      |                |
|    |               |                     |                                                                                                                     | 1 Ω ~10 Ω                                       | U <sub>rel</sub> =1.2%        |      |                |
|    |               |                     |                                                                                                                     | 10 Ω ~100k Ω                                    | U <sub>rel</sub> =1.0%        |      |                |



No. CNAS L2336

第 79 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №      | Instrument                                    | Measurand                                   | Calibration Method                                                                                                  | Range                              | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|--------|-----------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
|        |                                               | Insulation alarm resistance                 | ilac-MRA<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | 1M $\Omega$ ~ 100M $\Omega$        | $U_{rel}=1.2\%$                   |                                                                                      |                |
|        |                                               |                                             |                                                                                                                     | 100M $\Omega$ ~ 1000M $\Omega$     | $U_{rel}=1.5\%$                   |                                                                                      |                |
|        |                                               | AC output voltage                           |                                                                                                                     | (50~2000)V, (45Hz~65Hz)            | $U_{rel}=1.3\%$                   |                                                                                      |                |
|        |                                               | AC output voltage Total harmonic distortion |                                                                                                                     | 0.1%~10%                           | $U_{rel}=3\%$                     |                                                                                      |                |
|        |                                               | Capacitance between wires                   |                                                                                                                     | 100pF~100 $\mu$ F                  | $U_{rel}=0.3\%$                   |                                                                                      |                |
|        |                                               | Leakage current                             |                                                                                                                     | (0.01~20)mA, (45Hz~65Hz)           | $U_{rel}=1.3\%$                   |                                                                                      |                |
|        |                                               | Charging Voltage                            |                                                                                                                     | 50V~2000V                          | $U_{rel}=1.2\%$                   |                                                                                      |                |
| 82     | Electric spark leak detectors                 | Pulse voltage                               | Calibration Specification for electric spark leak detectors JJF(1u) 101                                             | (0.5~20) kV                        | $U_{rel}=3.0\%$                   |                                                                                      |                |
| Optics |                                               |                                             |                                                                                                                     |                                    |                                   |                                                                                      |                |
| 1      | Optical Power Meter in Telecommunication      | Optical Power                               | V.R. of Optical Power Meter in Telecommunication JJG965                                                             | (-50~0)dBm (850nm, 1310nm, 1550nm) | $U=0.18\text{dB}$                 |  |                |
| 2      | Stabilized Laser Sources for Optical Transmit | Output Power                                | V.R. of Stabilized Laser Sources for Optical Transmitt JJG958                                                       | (-50~0)dBm                         | $U=0.18\text{dB}$                 |                                                                                      |                |
|        |                                               | Light Wavelength                            |                                                                                                                     | (1270~1580)nm                      | $U=0.06\text{nm}$                 |                                                                                      |                |
|        |                                               | Spectral bandwidth                          |                                                                                                                     | (0.2~10) nm                        | $U=0.06\text{nm}$                 |                                                                                      |                |
| 3      | Optical Attenuator for                        | Insertion Loss                              | C.S. of Optical Attenuator for Telecommunications JJF1199                                                           | (0.01~3)dB                         | $U=0.18\text{dB}$                 |                                                                                      |                |



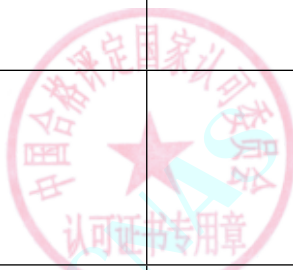
| №  | Instrument                                | Measurand              | Calibration Method                                       | Range                                                              | Expanded Uncertainty<br>( $k=2$ ) | Note                              | Effective Date |
|----|-------------------------------------------|------------------------|----------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------|-----------------------------------|----------------|
|    | Telecommunications                        | Attenuation Indication |                                                          | (0.01~50)dB (850nm, 1310nm, 1550nm)                                | $U=0.18\text{dB}$                 |                                   |                |
| 4  | Illuminance Meter                         | Illumination           | V.R. of Illuminance Meter JJG 245                        | (50~3000) lx                                                       | $U_{\text{rel}}=1.5\%$            |                                   |                |
| 5  | Color Temperature Meter                   | Color temperature      | V.R. of Colour Temperature Meters JJG 212                | (2300~3400)K<br>(3400~9000)K                                       | $U=16\text{K}\sim 26\text{K}$     |                                   |                |
| 6  | *Clarity Test Equipment                   | Illumination           | C.S. for Clarity Test Equipment JJF 1287                 | (100~3000) lx                                                      | $U_{\text{rel}}=8\%$              |                                   |                |
|    |                                           | Time                   |                                                          | (0~30) s                                                           | $U=0.2\text{s}$                   |                                   |                |
| 7  | Luminance Meter                           | luminance              | V.R. of Luminance Meter JJG 211                          | (50~1000)cd/m <sup>2</sup>                                         | $U_{\text{rel}}=2.2\%$            | Do not make shading cylinder type |                |
|    |                                           | chroma                 |                                                          | Panchromatic Gamut                                                 | $U=0.005$                         |                                   |                |
| 8  | *Whiteness Meter                          | Whiteness              | V.R. of the Whiteness Meters JJG 512                     | 50~100                                                             | $U(R_{457})=1.8$                  |                                   |                |
| 9  | *Colorimeters and Color Difference Meters | Chroma                 | V.R. of Colorimeters and Color Difference Meters JJG 595 | Y:0~100<br>Panchromatic Gamut                                      | $U(Y)=2.2$<br>$U=0.0060$          |                                   |                |
| 10 | *Water Colorimeters                       | chroma                 | C. S. for Water Colorimeters JJF 1689                    | Digital Instrument:<br>(1~70) PCU<br>Visual Instrument: (1~70) PCU | 1 PCU<br>6 PCU                    |                                   |                |
| 11 | Ultraviolet Radiometers                   | UV Irradiance          | V.R. of Ultraviolet Radiometers JJG 879                  | (0.1~100) mW/cm <sup>2</sup>                                       | $U_{\text{rel}}=20\%$             |                                   |                |
|    |                                           | UV Irradiance J        |                                                          | (0.01~10) J/cm <sup>2</sup>                                        | $U_{\text{rel}}=20\%$             |                                   |                |
| 12 | *Abbe Refractometer                       | Refraction Ratio       | V.R. of Abbe Refractometer JJG 625                       | $n_D$ : 1.47000~1.67000                                            | $U(n_D)=6\times 10^{-5}$          |                                   |                |
|    |                                           | Average dispersion     |                                                          | $n_F-n_C$ : 0.0070~0.0210                                          | $U(n_F-n_C)=1.5\times 10^{-4}$    |                                   |                |



No. CNAS L2336

第 81 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                                   | Measurand            | Calibration Method                                                                           | Range                             | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|----|------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
| 13 | *Reflection Densitometers                                                    | optical density      | C.S. for Reflection Densitometers JJF 1492                                                   | $0.00 < D \leq 1.00$              | $U=0.03$                          |                                                                                      |                |
|    |                                                                              |                      |                                                                                              | $1.00 < D \leq 2.00$              | $U=0.04$                          |                                                                                      |                |
| 14 | *Diffuse Transmission Visual Densitometers                                   | Transmission density | V.R. of Diffuse Transmission Visual Densitometers JJG 920                                    | $0.0 < D \leq 2.0$                | $U=0.020$                         |                                                                                      |                |
|    |                                                                              |                      |                                                                                              | $2.0 < D \leq 4.0$                | $U=0.024$                         |                                                                                      |                |
|    |                                                                              |                      |                                                                                              | $4.0 < D \leq 5.0$                | $U=0.032$                         |                                                                                      |                |
| 15 | *Specular Gloss Meters                                                       | Specular Gloss       | V.R. of Specular Gloss Meters and Gloss Plates JJG 696                                       | (0.0~120.0)GU                     | 1.4GU                             |                                                                                      |                |
| 16 | *Reflectometers                                                              | reflectivity         | C.S. for Reflectometers JJF 1232                                                             | (50~100)%                         | $U=2.3\%$                         |                                                                                      |                |
| 17 | *Hazemeter                                                                   | Haze                 | C.S. for Hazemeters JJF 1303                                                                 | 0.1~35.0                          | $U=0.30$                          |                                                                                      |                |
|    |                                                                              | Transmission         |                                                                                              | (10~100)%                         | $U=0.8\%$                         |                                                                                      |                |
| 18 | *Standard Light Sources Boxes                                                | Illumination         | C.S.(FZ) for Standard Light Source Boxes JJF(FZ) 055                                         | (200~3000)lx                      | $U_{rel}=6\%$                     |                                                                                      |                |
|    |                                                                              | Color temperature    |                                                                                              | (2300~7500)K                      | $U=37K \sim 1.4 \times 10^2 K$    |                                                                                      |                |
| 19 | *Transmittance Meter of Automobile                                           | Transmittance        | C.S. for Transmittance Meter of Automobile JJF 1225                                          | (0~100) %                         | $U=0.7\%$                         |                                                                                      |                |
| 20 | *Irradiance of Artificial Accelerated Weathering Apparatus of Xenon Arc Lamp | UV Irradiance        | C.S. for Irradiance of Artificial Accelerated Weathering Apparatus of Xenon Arc Lamp JJF1525 | (0.01~1000)W/m <sup>2</sup>       | $U_{rel}=14\%$                    |  |                |
| 21 | *UV Analyzers                                                                | Irradiance           | C.S. for UV Analyzers JJF 1936                                                               | (10~1000) $\mu$ W/cm <sup>2</sup> | $U_{rel}=22\%$                    |                                                                                      |                |



No. CNAS L2336

第 82 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No    | Instrument                                    | Measurand                                     | Calibration Method                                                       | Range                       | Expanded Uncertainty<br>(k=2)          | Note | Effective Date |  |
|-------|-----------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------|-----------------------------|----------------------------------------|------|----------------|--|
|       |                                               | wavelength                                    |                                                                          | (254~365)nm                 | U=0.7nm                                |      |                |  |
| 22    | *Electrical Light Source Spectrum Test System | wavelength                                    | C.S. for Electrical Light Source Spectrum Test System JJF(苏) 153         | (250~580)nm                 | U=0.13nm                               |      |                |  |
|       |                                               | Luminous flux                                 |                                                                          | (1 ~2000)lm                 | U <sub>rel</sub> =2%                   |      |                |  |
|       |                                               | chromaticity coordinates                      |                                                                          | Panchromatic Gamut          | U=0.005                                |      |                |  |
|       |                                               | Correlated color temperature                  |                                                                          | (2000~3400)K                | U=26K                                  |      |                |  |
| 23    | Cathode Ray Tubes (CRT) Color Analyzers       | Brightness                                    | C.S. for Cathode Ray Tubes (CRT) Color Analyzers JJF 1079                | (20~400)cd/m <sup>2</sup>   | U <sub>rel</sub> =2.6%                 |      |                |  |
|       |                                               | Chroma                                        |                                                                          | Panchromatic Gamut          | U=0.004                                |      |                |  |
| Radio |                                               |                                               |                                                                          |                             |                                        |      |                |  |
| 1     | *Passive Intermodulation Analyzers            | Carrier Output Frequency                      | Calibration Specification for Passive Intermodulation Analyzers JJF 1463 | 800MHz~3GHz                 | U <sub>rel</sub> =1.2×10 <sup>-7</sup> |      |                |  |
|       |                                               | Carrier output level                          |                                                                          | 20dBm~46dBm(800MHz~3GHz)    | U=0.5dB                                |      |                |  |
|       |                                               | The Receiver Displays the Average Noise Level |                                                                          | -120dBm~-60dBm(800MHz~3GHz) | U=0.7dB                                |      |                |  |
|       |                                               | Passive Intermodulation                       |                                                                          | -170dBc~-90dBc(800MHz~3GHz) | U=0.5dB                                |      |                |  |
|       |                                               | System residual intermodulation               |                                                                          | -170dBc~-90dBc              | U=0.7dB                                |      |                |  |



No. CNAS L2336

第 83 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument             | Measurand                          | Calibration Method                                                                                                             | Range                            | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                                            | Effective Date |
|---|------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------|
| 2 | *Power Meter           | power                              | Verification Regulation of<br>Pulse Power Meter JJG<br>1024, Verification Regulation<br>of Power Meter<br>JJF(Electronic)30202 | (0.01~25) mW,<br>(0.01~2)GHz     | $U_{rel}=1.9\%$                   | JJG 1024:<br>except<br>Instrument<br>Accuracy; JJ<br>G<br>(ELECTR<br>ONIC)<br>30202: Instru<br>ment<br>Accuracy |                |
|   |                        |                                    |                                                                                                                                | (0.01~25) mW, (2.1<br>~12.4) GHz | $U_{rel}=2.6\%$                   |                                                                                                                 |                |
|   |                        |                                    |                                                                                                                                | (0.01~25) mW,<br>(12.75 ~18)GHz  | $U_{rel}=3.3\%$                   |                                                                                                                 |                |
|   |                        | VSWR                               |                                                                                                                                | 1.0~2.0, (10MHz~<br>18GHz)       | $U=0.07$                          |                                                                                                                 |                |
|   |                        | Instrument<br>Accuracy             |                                                                                                                                | 3.16 $\mu$ W~100mW               | $U_{rel}=0.5\%$                   |                                                                                                                 |                |
|   |                        | Power<br>Reference                 |                                                                                                                                | 1mW(50MHz)                       | $U_{rel}=1.9\%$                   |                                                                                                                 |                |
|   |                        | Source<br>Frequency<br>Accuracy    |                                                                                                                                | 50MHz                            | $U_{rel}=1 \times 10^{-4}$        |                                                                                                                 |                |
| 3 | *Function<br>Generator | Frequency                          | V.R. of Function Generator<br>JJG 840                                                                                          | 1Hz~225MHz                       | $U_{rel}=4.6 \times 10^{-7}$      |                                                                                                                 |                |
|   |                        | Voltage                            |                                                                                                                                | 10mV~20V(p-p),<br>(1Hz~225MHz)   | $U_{rel}=1.2\%$                   |                                                                                                                 |                |
|   |                        | DC Offset                          |                                                                                                                                | 0.01V~5V                         | $U_{rel}=0.1\%$                   |                                                                                                                 |                |
|   |                        | Attenuation                        |                                                                                                                                | (0~80)dB, 1kHz                   | $U=0.10$ dB                       |                                                                                                                 |                |
|   |                        | Distortion                         |                                                                                                                                | (0.03~10)%, (20Hz~<br>20kHz)     | $U_{rel}=12\%$                    |                                                                                                                 |                |
|   |                        | Sine wave<br>amplitude<br>flatness |                                                                                                                                | 100mV~10V<br>(1kHz~225MHz)       | $U=0.10$ dB                       |                                                                                                                 |                |
|   |                        | Pulse duty<br>cycle                |                                                                                                                                | 1%~99%                           | $U_{rel}=0.14\%$                  |                                                                                                                 |                |
|   |                        | Overshoot                          |                                                                                                                                | 0.001%~20%                       | $U_{rel}=1.8\%$                   |                                                                                                                 |                |

No. CNAS L2336

第 84 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.



| № | Instrument                           | Measurand                  | Calibration Method                                               | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|--------------------------------------|----------------------------|------------------------------------------------------------------|------------------------------|-----------------------------------|------|----------------|
|   |                                      | rise time                  |                                                                  | 1ns~10 $\mu$ s               | $U_{rel}=5.5\%$                   |      |                |
| 4 | *Electrical Fast Transient Generator | Impulse Peak Voltage       | C.S.for Electrical Fast Transient Generator JJF(Electron) 30804  | (0.01~5)kV                   | $U_{rel}=3\%$                     |      |                |
|   |                                      | Burst Duration             |                                                                  | (0.1~200)ms                  | $U_{rel}=1.5\%$                   |      |                |
|   |                                      | Rise time of pulse voltage |                                                                  | (2~10)ns                     | $U_{rel}=4.3\%$                   |      |                |
|   |                                      | Pulse voltage duration     |                                                                  | (10~200)ns                   | $U_{rel}=4\%$                     |      |                |
|   |                                      | Pulse repetition rate      |                                                                  | 0.1kHz~1MHz                  | $U_{rel}=0.7\%$                   |      |                |
|   |                                      | Pulse group period         |                                                                  | 10ms~1000ms                  | $U_{rel}=0.6\%$                   |      |                |
| 5 | *Low-frequency Volt-meters           | Voltage                    | Calibration Specification for Low-frequency Volt-meters JJF 1925 | 10mV ~300V, (10Hz~500kHz)    | $U_{rel}=0.6\%\sim 1.0\%$         |      |                |
|   |                                      | Frequency Response         |                                                                  | 10Hz ~ 500kHz                | $U_{rel}=0.9\%$                   |      |                |
| 6 | *Low Power Meter                     | power                      | V.R.for lower power mount GJB/J3598                              | (0.01~25) mW, (0.01~2)GHz    | $U_{rel}=1.9\%$                   |      |                |
|   |                                      |                            |                                                                  | (0.01~25) mW, (2.1~12.4) GHz | $U_{rel}=2.6\%$                   |      |                |
|   |                                      |                            |                                                                  | (0.01~25) mW, (12.75 ~18)GHz | $U_{rel}=3.3\%$                   |      |                |
|   |                                      | VSWR                       |                                                                  | 1.0~2.0, (10MHz~18GHz)       | $U=0.07$                          |      |                |
| 7 | *Attenuators                         | Attenuation                | V.R. of Coaxial Resistive Attenuators JJG 387                    | 0dB~110dB, (10MHz~18GHz)     | $U=0.3dB$                         |      |                |
|   |                                      | VSWR                       |                                                                  | 1.0~2.0, (10MHz~18GHz)       | $U=0.07$                          |      |                |



No. CNAS L2336

第 85 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument         | Measurand                                                             | Calibration Method                                                 | Range                            | Expanded Uncertainty<br>(k=2)                        | Note | Effective Date |
|----|--------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------|------------------------------------------------------|------|----------------|
| 8  | *Spectrum Analyzer | Frequency                                                             | C.S.for Spectrum Analyzers<br>JJF 1396                             | 9kHz~18GHz                       | $U_{rel}=1.2 \times 10^{-7} \sim 3.2 \times 10^{-5}$ |      |                |
|    |                    | Electrical Level                                                      |                                                                    | (-120~30)dBm                     | $U=0.3\text{dB}$                                     |      |                |
|    |                    | Frequency Response                                                    |                                                                    | (-120~30)dBm, 9kHz~18GHz         | $U=0.38\text{dB}$                                    |      |                |
|    |                    | Sweep frequency                                                       |                                                                    | 100Hz~18GHz                      | $U_{rel}=0.02\%$                                     |      |                |
|    |                    | Resolution bandwidth                                                  |                                                                    | 1Hz~30MHz                        | $U_{rel}=0.9\%$                                      |      |                |
|    |                    | Influence of resolution bandwidth conversion on amplitude measurement |                                                                    | 0dB~2dB(1Hz~30MHz)               | $U=0.02\text{dB}$                                    |      |                |
|    |                    | Reference level                                                       |                                                                    | (-90~10)dBm                      | $U=0.22\text{dB}$                                    |      |                |
|    |                    | Vertical display scale                                                |                                                                    | 1dB/div~10dB/div<br>(9kHz~18GHz) | $U=0.22\text{dB}$                                    |      |                |
|    |                    | Display average noise                                                 |                                                                    | (-160~0)dBm                      | $U=1.4\text{dB}$                                     |      |                |
|    |                    | Calibration signal level                                              |                                                                    | (-40~0)dBm                       | $U=0.2\text{dB}$                                     |      |                |
|    |                    | Calibration signal frequency                                          |                                                                    | 150kHz~1000MHz                   | $U_{rel}=1.2 \times 10^{-7}$                         |      |                |
| 9  | *Network Analyzer  | Frequency                                                             | C.S. for network analyzer<br>JJF(Electronic)<br>30501, Calibration | 9kHz~40GHz                       | $U_{rel}=1.2 \times 10^{-7}$                         |      |                |
|    |                    | Electrical Level                                                      |                                                                    | (-55 ~ 10)dBm ,<br>(9kHz~18GHz)  | $U=0.20\text{dB}$                                    |      |                |

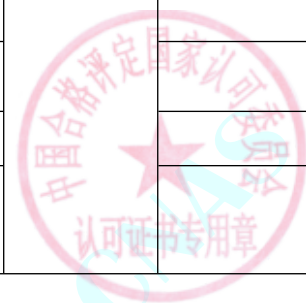


No. CNAS L2336

第 86 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument | Measurand                                                      | Calibration Method                                     | Range                             | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|------------|----------------------------------------------------------------|--------------------------------------------------------|-----------------------------------|-----------------------------------|------|----------------|
|   |            |                                                                | Specification for Vector<br>Network Analyzers JJF 1495 | (-25 ~ 10)dBm,<br>(18GHz~26.5GHz) | $U=0.22\text{dB}$                 |      |                |
|   |            |                                                                |                                                        | (-25 ~ 10)dBm,<br>(26.5GHz~40GHz) | $U=0.26\text{dB}$                 |      |                |
|   |            | Transmission<br>Amplitude                                      |                                                        | 20dB, 50dB,<br>(50MHz~18GHz)      | $U=0.54\text{dB}$                 |      |                |
|   |            | VSWR                                                           |                                                        | 1.0~2.0, (10MHz~<br>2GHz)         | $U_{\text{rel}}=4\%$              |      |                |
|   |            |                                                                |                                                        | 1.0~2.0, (2GHz~<br>12GHz)         | $U_{\text{rel}}=4.2\%$            |      |                |
|   |            |                                                                |                                                        | 1.0~2.0, (12GHz~<br>18GHz)        | $U_{\text{rel}}=5.2\%$            |      |                |
|   |            | Modular<br>dynamic<br>accuracy                                 |                                                        | (0~-100)dB, 1MHz~<br>18GHz        | $U=(0.06\sim0.40)\text{dB}$       |      |                |
|   |            | Sweep noise<br>(modulus)                                       |                                                        | 0~1(9KHz~18GHz)                   | $U=0.02\text{dB}$                 |      |                |
|   |            | Sweep noise<br>(phase)                                         |                                                        | (0~1)° (9kHz~18GHz)               | $U=0.02^\circ$                    |      |                |
|   |            | Background<br>noise                                            |                                                        | -140dBm~-<br>60dBm(9kHz~ 18GHz)   | $U=2.3\text{dB}$                  |      |                |
|   |            | Crosstalk                                                      |                                                        | -140dBm~-<br>60dBm(9kHz~ 18GHz)   | $U=2.0\text{dB}$                  |      |                |
|   |            | Calibration<br>piece<br>reflection<br>coefficient<br>(modulus) |                                                        | 0~1,300kHz~18GHz                  | $U=0.004\sim0.014$                |      |                |
|   |            |                                                                |                                                        | 0~1,300kHz~18GHz                  | $U=0.020\sim0.044$                |      |                |



No. CNAS L2336

第 87 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                         | Measurand                                        | Calibration Method                                                                                                    | Range                                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------|------|----------------|
|    |                                    | Calibration piece reflection coefficient (phase) | ilac-MRA<br>CNAS<br>NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | $(-180 \sim 180)^\circ$ , 300kHz~18GHz | $U=(1.1 \sim 2.5)^\circ$          |      |                |
|    |                                    | Scattering parameters( $S_{21}/S_{12}$ modulus)  |                                                                                                                       | $(-20 \sim -50)$ dB, 10MHz~18GHz       | $U=0.26$ dB                       |      |                |
|    |                                    | Scattering parameters( $S_{21}/S_{12}$ phase)    |                                                                                                                       | $(-180 \sim 180)^\circ$ , 10MHz~18GHz  | $U=1.5^\circ$                     |      |                |
|    |                                    | Scattering parameters(modulus)                   |                                                                                                                       | 0~1, 10MHz~18GHz                       | $U=0.03$                          |      |                |
|    |                                    | Scattering parameters(phase)                     |                                                                                                                       | $(-180 \sim 180)^\circ$ , 10MHz~18GHz  | $U=1.5^\circ$                     |      |                |
| 10 | Electrostatic Discharge Simulators | Output voltage                                   | C.S. for Electrostatic Discharge Simulators JJF 1397                                                                  | (1~40) kV                              | $U_{rel}=0.8\%$                   |      |                |
|    |                                    | Contact discharge current                        |                                                                                                                       | (1~100)A                               | $U_{rel}=6.6\%$                   |      |                |
|    |                                    | Rise Time                                        |                                                                                                                       | 0.1 ns~100 ns                          | $U_{rel}=13\%$                    |      |                |
| 11 | *543-1 noise signal generator      | Sound pressure level                             | 543-1 noise signal generator calibration with SBJZ-ZB-D001                                                            | (75~118)dB                             | $U=2.4$ dB                        |      |                |
|    |                                    | AC Voltage                                       |                                                                                                                       | (0.05V~1.1V), 14kHz                    | $U=0.01$ V                        |      |                |
| 12 | *Pulse Generator                   | Output Level                                     | Verification Regulation of Pulse Generator JJG 490                                                                    | 10mV~200V, (1kHz)                      | $U_{rel}=0.15\%$                  |      |                |
|    |                                    | Rise/Fall time                                   |                                                                                                                       | (1~100) ns                             | $U_{rel}=4.2\%$                   |      |                |



No. CNAS L2336

第 88 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                         | Measurand            | Calibration Method                                                                | Range                                          | Expanded Uncertainty<br>( $k=2$ )                  | Note | Effective Date |
|----|--------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------|------|----------------|
| 13 | *Low frequency<br>Signal Generator                                 | Pulse Width          | V.R. of Low Frequency<br>Signal Generator JJG 602                                 | (0.5~100) ns                                   | $U_{rel}=4.2\%$                                    |      |                |
|    |                                                                    | Output Frequency     |                                                                                   | 5Hz~300MHz                                     | $U_{rel}=4.2 \times 10^{-6}$                       |      |                |
|    |                                                                    | DC Offset            |                                                                                   | 0.1V~20V                                       | $U_{rel}=0.12\%$                                   |      |                |
|    |                                                                    | Frequency            |                                                                                   | 1Hz~1MHz                                       | $U_{rel}=6 \times 10^{-6}$                         |      |                |
|    |                                                                    | Voltage              |                                                                                   | 10mV~100V, (1Hz~1MHz)                          | $U_{rel}=0.1\% \sim 1.2\%$                         |      |                |
|    |                                                                    | Attenuation          |                                                                                   | (0~60)dB, (10Hz~300kHz)                        | $U=0.10\text{dB} \sim 0.12\text{dB}$               |      |                |
| 14 | *Impulse Voltage<br>Testers for<br>Winding Interturn<br>Insulation | Distortion           | C. S. for Impulse Voltage<br>Testers for Winding Interturn<br>Insulation JJF 1691 | (0.001~10)%, (20Hz~20kHz)                      | $U_{rel}=12\%$                                     |      |                |
|    |                                                                    | Impulse Peak Voltage |                                                                                   | (0.01~15)kV                                    | $U_{rel}=1.2\%$                                    |      |                |
|    |                                                                    | Front time           |                                                                                   | (0.1~10) $\mu$ s                               | $U_{rel}=5\%$                                      |      |                |
| 15 | *High frequency<br>Signal Generator                                | Frequency            | C.S. for Signal Generators<br>JJF 1931                                            | 150kHz~18GHz                                   | $U_{rel}=6 \times 10^{-9} \sim 1.8 \times 10^{-6}$ |      |                |
|    |                                                                    | Electrical Level     |                                                                                   | (30~-110)dBm(2.5MHz~18GHz)                     | $U=0.38\text{dB}$                                  |      |                |
|    |                                                                    | AM                   |                                                                                   | 5%~99%, (150kHz~18GHz), (0.01~100) Hz          | $U_{rel}=2.6\% \sim 1.5\%$                         |      |                |
|    |                                                                    | FM                   |                                                                                   | (0.4 ~ 400)kHz, (150kHz~18GHz), (0.01~200) kHz | $U_{rel}=2.7\% \sim 1.2\%$                         |      |                |
|    |                                                                    | PM                   |                                                                                   | (0.4 ~ 400)rad, (150kHz~18GHz)                 | $U_{rel}=3.5\% \sim 5.0\%$                         |      |                |



No. CNAS L2336

第 89 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument        | Measurand                 | Calibration Method                                                                             | Range                          | Expanded Uncertainty<br>( <i>k</i> =2)        | Note | Effective Date |                   |                       |                                |
|----|-------------------|---------------------------|------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------|------|----------------|-------------------|-----------------------|--------------------------------|
| 16 | *Distortion Meter | Distortion                | V.R. of Electronic Voltmeter JJG 250, Calibration Specification for Distortion Meters JJF 1852 | 0.03%~100%(10Hz~10kHz)         | <i>U</i> <sub>rel</sub> =2.5%~1.2%            |      |                |                   |                       |                                |
|    |                   | Voltage                   |                                                                                                | 10mV ~300V(10Hz~500kHz)        | <i>U</i> <sub>rel</sub> =0.6%~1.0%            |      |                |                   |                       |                                |
|    |                   | Frequency Response        |                                                                                                | 10Hz ~ 500kHz                  | <i>U</i> <sub>rel</sub> =0.9%                 |      |                |                   |                       |                                |
| 17 | *Audio Analyzer   | Output Frequency          | Calibration Specification for Audio Analyzer JJF 1395                                          | 10Hz~200kHz                    | <i>U</i> <sub>rel</sub> =2.0×10 <sup>-6</sup> |      |                |                   |                       |                                |
|    |                   | Output Level              |                                                                                                | 10mV~20V (10Hz~20kHz)          | <i>U</i> <sub>rel</sub> =0.10%                |      |                |                   |                       |                                |
|    |                   |                           |                                                                                                | 10mV~20V (20kHz~50kHz)         | <i>U</i> <sub>rel</sub> =0.11%                |      |                |                   |                       |                                |
|    |                   |                           |                                                                                                | 10mV~20V (50kHz~100kHz)        | <i>U</i> <sub>rel</sub> =0.14%                |      |                |                   |                       |                                |
|    |                   |                           |                                                                                                | 10mV~20V (100kHz~200kHz)       | <i>U</i> <sub>rel</sub> =0.36%                |      |                |                   |                       |                                |
|    |                   |                           |                                                                                                | (0.03%~0.3%)<br>(20Hz~20kHz)   | <i>U</i> <sub>rel</sub> =12%                  |      |                |                   |                       |                                |
|    |                   | Total Harmonic Distortion |                                                                                                | 10Hz~200kHz                    | <i>U</i> <sub>rel</sub> =6×10 <sup>-4</sup>   |      |                | level Measurement | 10mV~300V (10Hz~45Hz) | <i>U</i> <sub>rel</sub> =0.22% |
|    |                   | Frequency Measurement     |                                                                                                | 10mV~300V (45Hz~10kHz)         | <i>U</i> <sub>rel</sub> =0.10%                |      |                |                   |                       |                                |
|    |                   | 10mV~300V (10kHz~20kHz)   |                                                                                                | <i>U</i> <sub>rel</sub> =0.14% |                                               |      |                |                   |                       |                                |
|    |                   | 10mV~300V (20kHz~50kHz)   |                                                                                                | <i>U</i> <sub>rel</sub> =0.22% |                                               |      |                |                   |                       |                                |
|    |                   |                           |                                                                                                |                                |                                               |      |                |                   |                       |                                |



No. CNAS L2336

第 90 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.



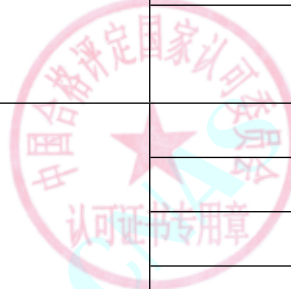
| №  | Instrument              | Measurand              | Calibration Method                                           | Range                     | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date  |
|----|-------------------------|------------------------|--------------------------------------------------------------|---------------------------|----------------------------------------|------|-----------------|
|    |                         |                        | ilac-M                                                       | 10mV~300V (50kHz~100kHz)  | <i>U</i> <sub>rel</sub> =0.5%          |      |                 |
|    |                         |                        |                                                              | 10mV~300V (100kHz~200kHz) | <i>U</i> <sub>rel</sub> =0.9%          |      |                 |
|    |                         | Distortion Measurement |                                                              | 0.03%~0.05% (10Hz~200kHz) | <i>U</i> <sub>rel</sub> =2.3%          |      |                 |
|    |                         |                        |                                                              | 0.05%~0.1% (10Hz~200kHz)  | <i>U</i> <sub>rel</sub> =1.6%          |      |                 |
|    |                         |                        |                                                              | 0.1%~0.3% (10Hz~200kHz)   | <i>U</i> <sub>rel</sub> =0.8%          |      |                 |
|    |                         |                        |                                                              | 0.3%~100% (10Hz~200kHz)   | <i>U</i> <sub>rel</sub> =0.6%          |      |                 |
|    |                         |                        |                                                              |                           |                                        |      |                 |
| 18 | *Oscilloscopes Recorder | Input Impedance        | Calibration standards on Oscilloscopes Recorder JJF(min)1061 | 50 Ω ,1M Ω                | <i>U</i> <sub>rel</sub> =0.12%         |      |                 |
|    |                         | Voltage                |                                                              | 6mV~0.3V(1M Ω )           | <i>U</i> <sub>rel</sub> =1.0%          |      |                 |
|    |                         |                        |                                                              | 0.6V~120V(1M Ω )          | <i>U</i> <sub>rel</sub> =0.37%         |      |                 |
|    |                         |                        |                                                              | 6mV~ 6V(50 Ω )            | <i>U</i> <sub>rel</sub> =1.1%          |      |                 |
|    |                         | Time                   |                                                              | 2ns ~ 200ms               | <i>U</i> <sub>rel</sub> =0.16%         |      |                 |
|    |                         |                        |                                                              | 400ms ~ 5s                | <i>U</i> <sub>rel</sub> =0.5%          |      |                 |
|    |                         | RiseTime               |                                                              | 500ps ~ 50ns              | <i>U</i> <sub>rel</sub> =4.2%          |      |                 |
|    |                         | Bandwidth              |                                                              | 10MHz ~ 100MHz            | <i>U</i> <sub>rel</sub> =3.2%          |      |                 |
|    |                         |                        |                                                              | 100MHz ~300MHz            | <i>U</i> <sub>rel</sub> =3.6%          |      |                 |
|    |                         |                        |                                                              | 300MHz ~600M              | <i>U</i> <sub>rel</sub> =5.4%          |      |                 |
|    |                         |                        |                                                              |                           |                                        |      |                 |
|    |                         |                        |                                                              |                           | C.S. of Digital Storage                |      | 6mV~0.3V(1M Ω ) |

No. CNAS L2336

第 91 页 共 137 页



The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument             | Measurand                    | Calibration Method                                                               | Range             | Expanded Uncertainty<br>( <i>k</i> =2)        | Note                                                                                 | Effective Date |  |
|----|------------------------|------------------------------|----------------------------------------------------------------------------------|-------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|----------------|--|
|    | Oscilloscope           |                              | Oscilloscope JJF 1057, Verification regulation for digital oscilloscope GJB 7691 | 0.6V~120V(1M Ω )  | <i>U</i> <sub>rel</sub> =0.37%                |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 6mV~ 6V(50 Ω )    | <i>U</i> <sub>rel</sub> =1.1%~0.45%           |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 2ns ~ 200ms       | <i>U</i> <sub>rel</sub> =0.16%                |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 400ms ~ 5s        | <i>U</i> <sub>rel</sub> =0.17%~0.49%          |                                                                                      |                |  |
|    |                        | RiseTime                     |                                                                                  | 30ps ~ 500ns      | <i>U</i> <sub>rel</sub> =4.2%                 |                                                                                      |                |  |
|    |                        | Bandwidth                    |                                                                                  | 10MHz ~ 100MHz    | <i>U</i> <sub>rel</sub> =3.2%                 |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 100MHz ~300MHz    | <i>U</i> <sub>rel</sub> =3.6%                 |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 300MHz ~600M      | <i>U</i> <sub>rel</sub> =5.4%                 |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 600MHz ~2GHz      | <i>U</i> <sub>rel</sub> =5.0%                 |                                                                                      |                |  |
|    |                        |                              |                                                                                  | 2GHz ~6GHz        | <i>U</i> <sub>rel</sub> =5.3%                 |                                                                                      |                |  |
|    |                        | Input Impedance              |                                                                                  | 50 Ω ,1M Ω        | <i>U</i> <sub>rel</sub> =0.12%                |                                                                                      |                |  |
|    |                        | Calibration signal frequency |                                                                                  | 5Hz ~300kHz       | <i>U</i> <sub>rel</sub> =1.2×10 <sup>-7</sup> |                                                                                      |                |  |
|    |                        | Calibration signal amplitude |                                                                                  | 10mV~10V          | <i>U</i> <sub>rel</sub> =0.5%                 |                                                                                      |                |  |
| 20 | *Analogue Oscilloscope | Voltage                      | V.R. of Analogue Oscilloscope JJG 262                                            | 12mV~ 0.3V(1M Ω ) | <i>U</i> <sub>rel</sub> =0.56%~0.28%          |  |                |  |
|    |                        |                              |                                                                                  | 0.6V~30V(1M Ω )   | <i>U</i> <sub>rel</sub> =0.27%                |                                                                                      |                |  |
|    |                        | Time                         |                                                                                  | 20ns ~500ms       | <i>U</i> <sub>rel</sub> =0.25%                |                                                                                      |                |  |
|    |                        | RiseTime                     |                                                                                  | 500ps ~ 50ns      | <i>U</i> <sub>rel</sub> =4.2%                 |                                                                                      |                |  |



No. CNAS L2336

第 92 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                         | Measurand              | Calibration Method                                                     | Range                                          | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------|------------------------|------------------------------------------------------------------------|------------------------------------------------|-----------------------------------|------|----------------|
|    |                                    | Bandwidth              |                                                                        | 10MHz ~ 100MHz                                 | $U_{rel}=3.2\%$                   |      |                |
|    |                                    |                        |                                                                        | 100MHz ~ 300MHz                                | $U_{rel}=3.6\%$                   |      |                |
|    |                                    |                        |                                                                        | 300MHz ~ 600M                                  | $U_{rel}=5.4\%$                   |      |                |
|    |                                    | Input Impedance        |                                                                        | 50 $\Omega$ , 1M $\Omega$                      | $U_{rel}=0.12\%$                  |      |                |
| 21 | *Television video Signal Generator | level                  | C.S. for Television video Signal Generator JJF 1235                    | Luminance : (1 ~ 1000)mV; Chroma: (1 ~ 1000)mV | $U=4.1\text{mV}$                  |      |                |
|    |                                    | Time                   |                                                                        | 1ns ~ 100ms                                    | $U=0.06 \mu\text{s}$              |      |                |
|    |                                    | phase                  |                                                                        | (0 ~ 360)°                                     | $U=0.6^\circ$                     |      |                |
|    |                                    | Drive signal frequency |                                                                        | 10Hz ~ 10MHz                                   | $U_{rel}=1.6 \times 10^{-7}$      |      |                |
|    |                                    | Drive signal amplitude |                                                                        | (0.1 ~ 10) V                                   | $U_{rel}=2.1\%$                   |      |                |
|    |                                    |                        |                                                                        |                                                |                                   |      |                |
| 22 | *Impedance/Material Analyzers      | DC voltage             | Calibration Specification for RF Impedance/Material Analyzers JJF 1127 | (0.01 ~ 40)V                                   | $U_{rel}=0.10\%$                  |      |                |
|    |                                    | signal level           |                                                                        | -40dBm ~ 20dBm                                 | $U=0.3\text{dB}$                  |      |                |
|    |                                    | Test signal frequency  |                                                                        | 100kHz ~ 3GHz                                  | $U_{rel}=4 \times 10^{-7}$        |      |                |
|    |                                    | Admittance             |                                                                        | (1MHz ~ 3GHz) 1 $\mu\text{S}$ ~ 13mS           | $U_{rel}=2.2\%$                   |      |                |
|    |                                    | Impedance              |                                                                        | (1MHz ~ 3GHz) 1m $\Omega$ ~ 22k $\Omega$       | $U_{rel}=2.2\%$                   |      |                |
|    |                                    | phase                  |                                                                        | (1MHz ~ 3GHz) (-1.57 ~ 1.57)rad                | $U=16\text{mrad}$                 |      |                |
| 23 | *Standard Capacitors(Box)          | Capacitors             | Verification Regulation of Standard Capacitors JJG 183                 | 1pF ~ 10 $\mu\text{F}$ (100Hz ~ 10kHz)         | $U_{rel}=0.03\%$                  |      |                |



No. CNAS L2336

第 93 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

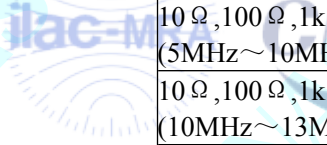
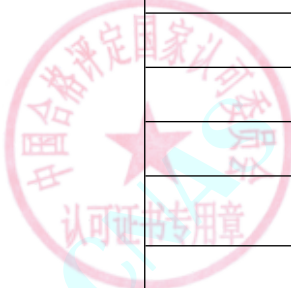
| №  | Instrument          | Measurand  | Calibration Method                                                                                                                                    | Range                                                   | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------|------|----------------|
|    |                     |            |                                                                                                                                                       | 10 $\mu$ F ~ 10mF (1kHz)                                | $U_{rel}=0.05\%$                  |      |                |
| 24 | *Standard Inductors | Inductors  | Verification Regulation of Standard inductors JJG 726                                                                                                 | 1 $\mu$ H ~ 10 $\mu$ H (1kHz)                           | $U_{rel}=0.6\%$                   |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\mu$ H ~ 100 $\mu$ H (1kHz)                         | $U_{rel}=0.10\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 100 $\mu$ H ~ 100H (1kHz)                               | $U_{rel}=0.04\%$                  |      |                |
| 25 | *LCR meter          | Resistance | V.R. of GR1658 Digital Bridge JJG(Electronic) 05020, Alternating Current Bridge JJG 441, Verification Regulation for wide digital RLC meter GJB/J5412 | 1 $\Omega$ ~ 10 $\Omega$ (1kHz)                         | $U_{rel}=0.06\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ ~ 100 $\Omega$ (1kHz)                       | $U_{rel}=0.04\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 100 $\Omega$ ~ 100k $\Omega$ (1kHz)                     | $U_{rel}=0.03\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 1m $\Omega$ (100Hz, 1kHz)                               | $U_{rel}=0.8\%$                   |      |                |
|    |                     |            |                                                                                                                                                       | 10m $\Omega$ (100Hz ~ 10kHz)                            | $U_{rel}=0.6\%$                   |      |                |
|    |                     |            |                                                                                                                                                       | 100m $\Omega$ (100Hz ~ 1000kHz)                         | $U_{rel}=0.3\%$                   |      |                |
|    |                     |            |                                                                                                                                                       | 1 $\Omega$ (100Hz ~ 1kHz)                               | $U_{rel}=0.03\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 1 $\Omega$ (1kHz ~ 1MHz)                                | $U_{rel}=0.06\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ , 100 $\Omega$ , 1k $\Omega$ (100Hz ~ 1kHz) | $U_{rel}=0.03\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ , 100 $\Omega$ , 1k $\Omega$ (1kHz ~ 1MHz)  | $U_{rel}=0.06\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ , 100 $\Omega$ , 1k $\Omega$ (1MHz ~ 3MHz)  | $U_{rel}=0.17\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ , 100 $\Omega$ , 1k $\Omega$ (3MHz ~ 4MHz)  | $U_{rel}=0.23\%$                  |      |                |
|    |                     |            |                                                                                                                                                       | 10 $\Omega$ , 100 $\Omega$ , 1k $\Omega$ (4MHz ~ 5MHz)  | $U_{rel}=0.29\%$                  |      |                |



No. CNAS L2336

第 94 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

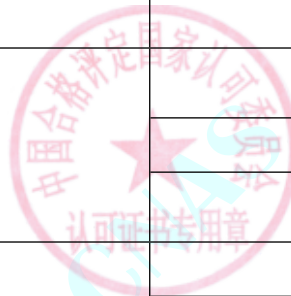
| No | Instrument | Measurand   | Calibration Method                                                                                                                                                                                         | Range                                 | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                                        | Effective Date |
|----|------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------|
|    |            |             | <br>ilac-MEAS<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF A CALIBRATION CERTIFICATE | 10 Ω ,100 Ω ,1k Ω<br>(5MHz~10MHz)     | <i>U</i> <sub>rel</sub> =0.8%          | <br>合格评定国家认可<br>认证证书专用章 |                |
|    |            |             |                                                                                                                                                                                                            | 10 Ω ,100 Ω ,1k Ω<br>(10MHz~13MHz)    | <i>U</i> <sub>rel</sub> =1.2%          |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 10k Ω ,100k Ω (100Hz~1kHz)            | <i>U</i> <sub>rel</sub> =0.03%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 10k Ω ,100k Ω (1kHz~100kHz)           | <i>U</i> <sub>rel</sub> =0.06%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 10k Ω ,100k Ω (100kHz~1MHz)           | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                                             |                |
|    |            | Capacitance |                                                                                                                                                                                                            | 100pF~1 μ F (1kHz)                    | <i>U</i> <sub>rel</sub> =0.06%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 1 μ F~100 μ F(1kHz)                   | <i>U</i> <sub>rel</sub> =0.07%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 1pF,10pF,100pF,1000pF<br>(100Hz~1MHz) | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 10nF,100nF(100Hz~100kHz)              | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 1000nF(100Hz~10kHz)                   | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                                             |                |
|    |            | Inductance  |                                                                                                                                                                                                            | 1 μ H~10 μ H (1kHz)                   | <i>U</i> <sub>rel</sub> =0.6%~6%       |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 10 μ H~100 μ H (1kHz)                 | <i>U</i> =0.09%~0.6%                   |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 100 μ H~1H (1kHz)                     | <i>U</i> <sub>rel</sub> =0.07%~0.09%   |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 1 μ H (100Hz~1MHz)                    | <i>U</i> <sub>rel</sub> =1%            |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 5 μ H,10 μ H (100Hz~5MHz)             | <i>U</i> <sub>rel</sub> =1%            |                                                                                                             |                |
|    |            |             |                                                                                                                                                                                                            | 50 μ H,100 μ H (100Hz~5MHz)           | <i>U</i> <sub>rel</sub> =0.5%          |                                                                                                             |                |



No. CNAS L2336

第 95 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                              | Measurand             | Calibration Method                                                              | Range                            | Expanded Uncertainty<br>( <i>k</i> =2)      | Note                                                                                 | Effective Date |  |
|----|---------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------|----------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|----------------|--|
|    |                                                         | Frequency             |                                                                                 | 500 μ H,1000 μ H<br>(100Hz~1MHz) | <i>U</i> <sub>rel</sub> =0.3%               |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | 5mH (100Hz~500kHz)               | <i>U</i> <sub>rel</sub> =0.3%               |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | 10Hz~1MHz                        | <i>U</i> <sub>rel</sub> =6×10 <sup>-6</sup> |                                                                                      |                |  |
|    |                                                         | Voltage               |                                                                                 | 10mV~100V(10Hz~20kHz)            | <i>U</i> <sub>rel</sub> =0.2%               |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | 10mV~100V(20kHz~100kHz)          | <i>U</i> <sub>rel</sub> =0.8%               |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | 10mV~100V(100kHz~2MHz)           | <i>U</i> <sub>rel</sub> =1.4%               |                                                                                      |                |  |
|    |                                                         | loss                  |                                                                                 | 1~10 <sup>-5</sup>               | <i>U</i> =0.4%R+0.0002                      |                                                                                      |                |  |
| 26 | *r A. C. Resistance Boxes                               | AC Resistance         | C. S.for AC Resistance Boxes<br>JJF 1636                                        | (0.01~0.1) Ω (100Hz~1kHz)        | <i>U</i> <sub>rel</sub> =0.15%              |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | (0.1~1000) Ω (60Hz~10kHz)        | <i>U</i> <sub>rel</sub> =0.08%              |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | (1~100)k Ω (60Hz~10kHz)          | <i>U</i> <sub>rel</sub> =0.03%              |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | (100~1000)k Ω (1kHz)             | <i>U</i> <sub>rel</sub> =0.08%              |                                                                                      |                |  |
| 27 | *RF Coaxial Impedance Standard<br>(Calibration Modules) | Impedance(short,load) | Verification Regulation of RF Coaxial Impedance Standard JJG(Electronic) 306001 | (0.01~34) Ω (1MHz~3GHz)          | <i>U</i> =0.5 Ω                             |  |                |  |
|    |                                                         | admittance(open)      |                                                                                 | 50 Ω (1MHz~3GHz)                 | <i>U</i> =0.8 Ω                             |                                                                                      |                |  |
|    |                                                         |                       |                                                                                 | 10 μ S~71 μ S(1MHz~3GHz)         | <i>U</i> =6 μ S                             |                                                                                      |                |  |
| 28 | *Transistor Character Graphic Meter                     | Step Current          | C.S.for Semiconductor Device Curve Tracers JJF 1236                             | 100 μ A~10A                      | <i>U</i> <sub>rel</sub> =1.4%               |                                                                                      |                |  |
|    |                                                         | Step Voltage          |                                                                                 | 20mV~10V                         | <i>U</i> <sub>rel</sub> =1.4%               |                                                                                      |                |  |





| №  | Instrument             | Measurand                        | Calibration Method                                                                                                                                                                                                                                                                                                                                      | Range                          | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------|------|----------------|
| 29 | *Communication Testers | Collector Voltage                | C.S. for TDMA-GSM Radio Communication Testers JJF 1131, C.S. for CDMA Digital Radio Communication Testers JJF 1177, C.S. for LTE Digital Radio Communication Testers JJF 1443, C.S. for TD-SCDMA Digital Radio Communication Testers JJF 1204, C.S. for WCDMA Digital Radio Communication Testers JJF 1276, C.S. for RF Communication Test Set JJF 1065 | 20mV~1000V                     | $U_{rel}=1.4\%$                   |      |                |
|    |                        | Base Voltage                     |                                                                                                                                                                                                                                                                                                                                                         | 20mV~100V                      | $U_{rel}=1.6\%$                   |      |                |
|    |                        | Collector Current                |                                                                                                                                                                                                                                                                                                                                                         | 100 $\mu$ A~20A                | $U_{rel}=1.5\%$                   |      |                |
|    |                        | Calibration Voltage              |                                                                                                                                                                                                                                                                                                                                                         | 20mV~100V                      | $U_{rel}=0.12\%$                  |      |                |
|    |                        | RF SignalSource Frequency        |                                                                                                                                                                                                                                                                                                                                                         | 30MHz~3.8GHz                   | $U_{rel}=1.2 \times 10^{-7}$      |      |                |
|    |                        | RF SignalSource Electrical Level |                                                                                                                                                                                                                                                                                                                                                         | (-20~ 0)dBm(30MHz~3.8GHz)      | $U=0.20$ dB                       |      |                |
|    |                        | RF SignalSource SpectrumPurity   |                                                                                                                                                                                                                                                                                                                                                         | (-20~ -110)dBm(30MHz~3.8GHz)   | $U=0.38$ dB                       |      |                |
|    |                        | RF SignalSource Phase Noise      |                                                                                                                                                                                                                                                                                                                                                         | (-80~-25)dBc                   | $U=1.5$ dB~2.1dB                  |      |                |
|    |                        | RF AnalyzerFrequency             |                                                                                                                                                                                                                                                                                                                                                         | (-110~-25) dBc/Hz              | $U=3$ dB                          |      |                |
|    |                        | RF AnalyzerElectrical Level      |                                                                                                                                                                                                                                                                                                                                                         | Bias frequency(20~1990)kHz     | $U_{rel}=6 \times 10^{-8}$        |      |                |
|    |                        | AF SignalSource                  |                                                                                                                                                                                                                                                                                                                                                         | 30MHz~3.8GHz                   | $U=0.20$ dB                       |      |                |
|    |                        |                                  |                                                                                                                                                                                                                                                                                                                                                         | (-50dBm ~ 20dBm)(30MHz~3.8GHz) | $U_{rel}=0.035\%$                 |      |                |
|    |                        |                                  |                                                                                                                                                                                                                                                                                                                                                         | 10Hz~ 40Hz                     |                                   |      |                |



No. CNAS L2336

第 97 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand                        | Calibration Method | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|----------------------------------|--------------------|------------------------------|-----------------------------------|------|----------------|
|    |            | Frequency                        |                    | 40Hz~20kHz                   | $U_{rel}=0.012\%$                 |      |                |
|    |            | AF<br>SignalSource<br>Voltage    |                    | 10mV~ 100mV(40Hz~<br>20kHz)  | $U_{rel}=0.054\%\sim 0.12\%$      |      |                |
|    |            |                                  |                    | 100mV~ 1V(40Hz~<br>20kHz)    | $U_{rel}=0.042\%\sim 0.11\%$      |      |                |
|    |            |                                  |                    | 1V~ 5V(40Hz~20kHz)           | $U_{rel}=0.042\%\sim 0.07\%$      |      |                |
|    |            |                                  |                    | (0.001~0.3)%(20Hz~<br>20kHz) | $U_{rel}=12\%$                    |      |                |
|    |            | AF<br>SignalSource<br>Distortion |                    | 20Hz~ 2kHz                   | $U_{rel}=0.015\%\sim 0.003\%$     |      |                |
|    |            | AF<br>AnalyzerFreq<br>uency      |                    | 2kHz ~ 40kHz                 | $U_{rel}=0.003\%$                 |      |                |
|    |            |                                  |                    | 20mV~33mV(10Hz~<br>45Hz)     | $U_{rel}=5\%\sim 3.2\%$           |      |                |
|    |            |                                  |                    | 20mV~33mV(45Hz~<br>10kHz)    | $U_{rel}=5\%\sim 3.2\%$           |      |                |
|    |            |                                  |                    | 20mV~33mV(10kHz~<br>20kHz)   | $U_{rel}=5\%\sim 3.2\%$           |      |                |
|    |            |                                  |                    | 20mV~33mV(20kHz~<br>40kHz)   | $U_{rel}=5\%\sim 3.2\%$           |      |                |
|    |            |                                  |                    | 33mV~330mV(10Hz~<br>45Hz)    | $U_{rel}=3.2\%\sim 0.44\%$        |      |                |
|    |            |                                  |                    | 33mV~330mV(45Hz~<br>10kHz)   | $U_{rel}=3.2\%\sim 0.32\%$        |      |                |
|    |            |                                  |                    | 33mV~330mV(10kHz~<br>20kHz)  | $U_{rel}=3.2\%\sim 0.34\%$        |      |                |
|    |            |                                  |                    | 33mV~330mV(20kHz~<br>40kHz)  | $U_{rel}=3.2\%\sim 0.38\%$        |      |                |
|    |            |                                  |                    |                              |                                   |      |                |
|    |            | AF<br>AnalyzerVolt<br>age        |                    |                              |                                   |      |                |



No. CNAS L2336

第 98 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument | Measurand                   | Calibration Method | Range                   | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date  |
|---|------------|-----------------------------|--------------------|-------------------------|----------------------------------------|------|-----------------|
|   |            |                             | ilac-M             | 0.33V~3.3V(10Hz~45Hz)   | <i>U</i> <sub>rel</sub> =0.42%~0.18%   |      |                 |
|   |            |                             |                    | 0.33V~3.3V(45Hz~10kHz)  | <i>U</i> <sub>rel</sub> =0.32%~0.05%   |      |                 |
|   |            |                             |                    | 0.33V~3.3V(10kHz~20kHz) | <i>U</i> <sub>rel</sub> =0.34%~0.10%   |      |                 |
|   |            |                             |                    | 0.33V~3.3V(20kHz~40kHz) | <i>U</i> <sub>rel</sub> =0.42%~0.18%   |      |                 |
|   |            |                             |                    | 3.3V~5V(10Hz~45Hz)      | <i>U</i> <sub>rel</sub> =0.26%~0.23%   |      |                 |
|   |            |                             |                    | 3.3V~5V(45Hz~10kHz)     | <i>U</i> <sub>rel</sub> =0.08%~0.07%   |      |                 |
|   |            |                             |                    | 3.3V~5V(10kHz~20kHz)    | <i>U</i> <sub>rel</sub> =0.19%~0.16%   |      |                 |
|   |            |                             |                    | 3.3V~5V(20kHz~40kHz)    | <i>U</i> <sub>rel</sub> =0.40%~0.34%   |      |                 |
|   |            |                             |                    | Channel power           | (-70~20)dBm                            |      | <i>U</i> =0.6dB |
|   |            | Adjacent channel power rate |                    | (0.01~90)dBc            | <i>U</i> =0.5dB                        |      |                 |
|   |            | Frequency error             |                    | (-1~1)MHz               | <i>U</i> =9Hz                          |      |                 |
|   |            | EVM                         |                    | (0.01~10)%              | <i>U</i> =0.6%                         |      |                 |
|   |            |                             |                    | (0.01~10%)(CDMA)        | <i>U</i> =1.2%                         |      |                 |
|   |            | Mag error                   |                    | (0.01~10)%              | <i>U</i> =0.6%                         |      |                 |
|   |            | Phase error                 |                    | (0.01~15)°              | <i>U</i> =0.6°                         |      |                 |
|   |            | FSK error                   |                    | (0.01~10)%              | <i>U</i> =2.0%                         |      |                 |



No. CNAS L2336

第 99 页 共 137 页

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument          | Measurand                               | Calibration Method                                                                                                          | Range                           | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------|------|----------------|
|    |                     | Waveform quality factor                 | ilac-MKC<br>CNAS<br>CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | (0.8~1.0)                       | $U_{rel}=0.18\%$                  |      |                |
|    |                     | Frequency Measurement error             |                                                                                                                             | (-1~1)MHz                       | $U=9\text{Hz}$                    |      |                |
|    |                     | Channel power Measurement               |                                                                                                                             | (-70~10)dBm                     | $U=0.6\text{dB}$                  |      |                |
|    |                     | Adjacent channel power rate Measurement |                                                                                                                             | (0.01~90)dBc                    | $U=0.5\text{dB}$                  |      |                |
|    |                     | EVM Measurement                         |                                                                                                                             | (0.01~10)%                      | $U=0.6\%$                         |      |                |
|    |                     |                                         |                                                                                                                             | (0.01~10)%(CDMA)                | $U=1.2\%$                         |      |                |
|    |                     | Phase error Measurement                 |                                                                                                                             | (0.01~15)°                      | $U=0.6^\circ$                     |      |                |
|    |                     | Mag error Measurement                   |                                                                                                                             | (0.01~10)%                      | $U=0.6\%$                         |      |                |
| 30 | *Telephone analyzer | Feed voltage                            | C.S. for Telephone analyzer JJF(Electron) 30702, V.R. of Telephone analyzer JJG(YD) 032                                     | (10~100)V                       | $U_{rel}=0.08\%$                  |      |                |
|    |                     | Feed current                            |                                                                                                                             | (10~150)mA                      | $U_{rel}=0.2\%$                   |      |                |
|    |                     | level                                   |                                                                                                                             | (-50~0)dBm                      | $U=0.2\text{dB}$                  |      |                |
|    |                     | signal frequency                        |                                                                                                                             | 1Hz~20kHz                       | $U_{rel}=0.05\%$                  |      |                |
| 31 | *Bluetooth Test Set | Output Frequency                        | Calibration Specification for Bluetooth Test Set JJF 1278                                                                   | 2.402GHz~2.480GHz               | $U_{rel}=1.2 \times 10^{-7}$      |      |                |
|    |                     | Output Level                            |                                                                                                                             | (0~ - 20)dBm(2.402GHz~2.480GHz) | $U=0.20\text{dB}$                 |      |                |



No. CNAS L2336

第 100 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument | Measurand                    | Calibration Method | Range                                       | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|------------------------------|--------------------|---------------------------------------------|-----------------------------------|------|----------------|
|    |            |                              |                    | (-20 ~ -90) dBm (2.402 GHz ~ 2.480 GHz)     | $U=0.38$ dB                       |      |                |
|    |            | Harmonic                     |                    | (-80 ~ -30) dBc (2.402 GHz ~ 2.480 GHz)     | $U=1.8$ dB                        |      |                |
|    |            | Phase Noise                  |                    | (-110 ~ -30) dBc/Hz (2.402 GHz ~ 2.480 GHz) | $U=1.1$ dB                        |      |                |
|    |            | Frequency Measurement        |                    | (2402 ~ 2480) MHz                           | $U_{\text{rel}}=6 \times 10^{-8}$ |      |                |
|    |            | level Measurement            |                    | (-70 ~ 13) dBm (2.402 GHz ~ 2.480 GHz)      | $U=0.20$ dB                       |      |                |
|    |            | Mag error                    |                    | (0.01 ~ 10)%                                | $U=1.2\%$                         |      |                |
|    |            | Modulation level             |                    | (-50 ~ -10) dBm                             | $U=0.25$ dB                       |      |                |
|    |            | EVM                          |                    | (0.01 ~ 10)%                                | $U=1.2\%$                         |      |                |
|    |            | Frequency error Measurement  |                    | (-1 ~ 1) MHz                                | $U=10$ Hz                         |      |                |
|    |            | Modulation level Measurement |                    | (-50 ~ -10) dBm                             | $U=0.4$ dB                        |      |                |
|    |            | EVM Measurement              |                    | (0.01 ~ 10)%                                | $U=1.2\%$                         |      |                |
|    |            | Frequency error Measurement  |                    | (-1 ~ 1) MHz                                | $U=10$ Hz                         |      |                |



No. CNAS L2336

第 101 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument     | Measurand                   | Calibration Method                                   | Range                               | Expanded Uncertainty<br>(k=2)       | Note | Effective Date |  |
|----|----------------|-----------------------------|------------------------------------------------------|-------------------------------------|-------------------------------------|------|----------------|--|
| 32 | *WLAN Test Set | Output Frequency            | Calibration Specification for WLAN Test Set JJF 1277 | 2.412GHz~5.945GHz                   | $U_{\text{rel}}=1.2 \times 10^{-7}$ |      |                |  |
|    |                | Output Level                |                                                      | (0~-20)dBm(2.412GHz~5.945GHz)       | $U=0.20\text{dB}$                   |      |                |  |
|    |                |                             |                                                      | (-20~-90)dBm(2.412GHz~5.945GHz)     | $U=0.38\text{dB}$                   |      |                |  |
|    |                | Harmonic                    |                                                      | (-80~-25)dBc (2412~2484) MHz        | $U=1.8\text{dB}$                    |      |                |  |
|    |                |                             |                                                      | (-80~-25)dBc (4900~5945) MHz        | $U=2.4\text{dB}$                    |      |                |  |
|    |                | Phase Noise                 |                                                      | (-110~-30)dBc/Hz(2.412GHz~5.945GHz) | $U=1.1\text{dB}$                    |      |                |  |
|    |                | level Measurement           |                                                      | (-50~13) dBm(2.412GHz~5.945GHz)     | $U=0.20\text{dB}$                   |      |                |  |
|    |                | Modulation level            |                                                      | (-50~-10) dBm(2.412GHz~5.945GHz)    | $U=0.25\text{dB}$                   |      |                |  |
|    |                | EVM                         |                                                      | (0.01~10)%                          | $U=1.2\%$                           |      |                |  |
|    |                | Mag error                   |                                                      | (0.01~10)%                          | $U=1.2\%$                           |      |                |  |
|    |                | Frequency error Measurement |                                                      | (-1~1)MHz                           | $U=10\text{Hz}$                     |      |                |  |
|    |                | Phase error                 |                                                      | (0.01~15)°                          | $U=0.6^{\circ}$                     |      |                |  |



No. CNAS L2336

第 102 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                      | Measurand                     | Calibration Method                                                                                            | Range                 | Expanded Uncertainty<br>( $k=2$ )   | Note | Effective Date |
|----|---------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------|------|----------------|
|    |                                 | Modulation level Measurement  | ilac-MRA<br>NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT<br>SCHEDULE OF ACCREDITATION CERTIFICATE | (-50~-10) dBm         | $U=0.25\text{dB}$                   |      |                |
|    |                                 | EVM Measurement               |                                                                                                               | (0.01~10)%            | $U=1.2\%$                           |      |                |
|    |                                 | Frequency error Measurement   |                                                                                                               | (-1~1)MHz             | $U=10\text{Hz}$                     |      |                |
|    |                                 | Phase error Measurement       |                                                                                                               | (0.01~15)°            | $U=0.6^\circ$                       |      |                |
| 33 | *Antenna Analyzers              | Frequency                     | C. S. of Cable and Antenna Analyzers JJF 1740                                                                 | 25Hz~6GHz             | $U_{\text{rel}}=4.3 \times 10^{-7}$ |      |                |
|    |                                 | VSWR                          |                                                                                                               | 1.01~2.0              | $U_{\text{rel}}=6.2\%$              |      |                |
|    |                                 | Terminal load reflection loss |                                                                                                               | (0~50) dB10MHz~6GHz   | $U=0.22\text{dB}$                   |      |                |
|    |                                 | Power                         |                                                                                                               | (-50~20)dBm10MHz~6GHz | $U=0.20\text{dB}$                   |      |                |
| 34 | *Electrical Surge Generator     | Output voltage                | C.S. for Electrical Surge Generator JJF(Electron) 30803                                                       | (0.1~20) kV           | $U_{\text{rel}}=0.8\%$              |      |                |
|    |                                 | Half peak time                |                                                                                                               | 1 ns~1s               | $U_{\text{rel}}=2.5\%$              |      |                |
|    |                                 | Front Time                    |                                                                                                               | 1 ns~1s               | $U_{\text{rel}}=2.5\%$              |      |                |
|    |                                 | Surge current peak            |                                                                                                               | 500A~8kA              | $U_{\text{rel}}=2.5\%$              |      |                |
| 35 | *Current probes of Oscilloscope | DC Current                    | Calibration specification for Current probes of Oscilloscope JJF(Electron) 0036                               | 1A~1000A              | $U_{\text{rel}}=0.7\%$              |      |                |
|    |                                 | AC Current                    |                                                                                                               | 1A~1000A(40Hz~1kHz)   | $U_{\text{rel}}=0.8\%$              |      |                |
|    |                                 | Attenuation coefficient       |                                                                                                               | 1~1000                | $U_{\text{rel}}=0.7\%$              |      |                |



No. CNAS L2336

第 103 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №         | Instrument                                 | Measurand                          | Calibration Method                                                                              | Range                               | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|-----------|--------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------|------|----------------|
|           |                                            | Band<br>bandwidth                  |                                                                                                 | 50kHz~120MHz                        | <i>U</i> <sub>rel</sub> =4.2%          |      |                |
|           |                                            | Rise Time                          |                                                                                                 | (3.6~100) ns                        | <i>U</i> <sub>rel</sub> =6%            |      |                |
| 36        | *Higt Voltage<br>probes of<br>Oscilloscope | DC voltage<br>attenuation<br>ratio | Calibration specification for<br>Higt Voltage probes of<br>Oscilloscope JJF(Electron)<br>30304  | DC:1~1000 (100V~<br>20kV)           | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|           |                                            | AC voltage<br>attenuation<br>ratio |                                                                                                 | AC:1~1000 (50V~<br>20kV, 45Hz~65Hz) | <i>U</i> <sub>rel</sub> =0.8%          |      |                |
| 37        | *Higt Voltage<br>probes of<br>Oscilloscope | Attenuation<br>ratio               | Calibration specification for<br>Differential probes of<br>Oscilloscope JJF((Electron)<br>30306 | 1~1000                              | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|           |                                            | frequency<br>response              |                                                                                                 | 10Hz~300MHz                         | <i>U</i> <sub>rel</sub> =0.8%          |      |                |
|           |                                            | Rise Time                          |                                                                                                 | (1.0~100) ns                        | <i>U</i> <sub>rel</sub> =6%            |      |                |
|           |                                            | Input<br>Resistance                |                                                                                                 | 50 Ω ~100M Ω                        | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|           |                                            | CMRR                               |                                                                                                 | 18dB~90dB                           | <i>U</i> =1.9dB                        |      |                |
| 38        | *Oscilloscope<br>Voltage Probe             | Attenuation                        | Calibration Specification for<br>Oscilloscope Voltage Probe<br>JJF 1437                         | 1:1~1000:1                          | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|           |                                            | Frequency<br>Response              |                                                                                                 | 10kHz~300MHz                        | <i>U</i> =0.8dB                        |      |                |
|           |                                            | Rise time                          |                                                                                                 | (1~100)ns                           | <i>U</i> <sub>rel</sub> =6%            |      |                |
|           |                                            | Input<br>impedance                 |                                                                                                 | 50 Ω ~100M Ω                        | <i>U</i> <sub>rel</sub> =0.04%         |      |                |
| Chemistry |                                            |                                    |                                                                                                 |                                     |                                        |      |                |
| 1         | *Extrusion<br>Plastometer                  | Temperature                        | V.R. of Extrusion Plastometer<br>JJG 878                                                        | (125~400)℃                          | <i>U</i> =0.2℃                         |      |                |
|           |                                            | Rate                               |                                                                                                 | Melt Flow Rate:(0.1~<br>25)g/10min  | <i>U</i> <sub>rel</sub> =5.0 %         |      |                |



No. CNAS L2336

第 104 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

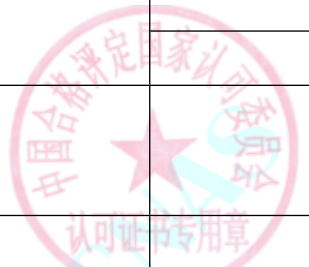
| № | Instrument                           | Measurand    | Calibration Method                                                        | Range                                     | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date          |
|---|--------------------------------------|--------------|---------------------------------------------------------------------------|-------------------------------------------|----------------------------------------|------|-------------------------|
|   |                                      | Length       |                                                                           | (1~3) mm                                  | <i>U</i> =0.001 mm                     |      |                         |
|   |                                      | Mass         |                                                                           | (0~200) g                                 | <i>U</i> =0.002 g                      |      |                         |
|   |                                      |              |                                                                           | (>0.2~20)kg                               | <i>U</i> =3 g                          |      |                         |
|   |                                      |              |                                                                           | Time                                      | (0~10) min                             |      | <i>U</i> =0.2 s         |
| 2 | *Differential Scanning Calorimeters  | Heating rate | V.R.of the Differential Scanning Calorimeters JJG 936                     | (1~20) °C/min                             | <i>U</i> <sub>rel</sub> =6 %           |      |                         |
|   |                                      | Temperature  |                                                                           | Melting temperature:(100~500) °C          | <i>U</i> =(0.3~1.0) °C                 |      |                         |
|   |                                      |              |                                                                           | Phase transition temperature:(100~600) °C | <i>U</i> =(0.8~1.5) °C                 |      |                         |
|   |                                      |              |                                                                           | Heat                                      | Melting heat:(20~110)J/g               |      | <i>U</i> =(0.4~1.5) J/g |
| 3 | *Open/Closed Cup Flash Point Testers | Temperature  | Calibration Specification for Open/Closed Cup Flash Point Testers JJF1385 | Open Cup:(80~200) °C                      | <i>U</i> =8 °C                         |      |                         |
|   |                                      |              |                                                                           | Open Cup:(>200~300) °C                    | <i>U</i> =(8.2~10.2) °C                |      |                         |
|   |                                      |              |                                                                           | Closed Cup: (40~110) °C                   | <i>U</i> =6.4 °C                       |      |                         |
|   |                                      |              |                                                                           | Closed Cup: (>110~300) °C                 | <i>U</i> =6.8 °C                       |      |                         |
| 4 | *Thermogravimetric Analyzers         | Temperature  | V.R.of Thermogravimetric Analyzers JJG 1135                               | Curie point:(20~800) °C                   | <i>U</i> =(1.0~2.0) °C                 |      |                         |
|   |                                      |              |                                                                           | Curie point:(100~500) °C                  | <i>U</i> =(0.3~1.2) °C                 |      |                         |
|   |                                      | Mass         |                                                                           | (1~20) mg                                 | <i>U</i> =(7~12) μg                    |      |                         |



No. CNAS L2336

第 105 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                | Measurand            | Calibration Method                                                     | Range                      | Expanded Uncertainty<br>( <i>k</i> =2)      | Note                                                                                 | Effective Date |
|----|-----------------------------------------------------------|----------------------|------------------------------------------------------------------------|----------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|----------------|
| 5  | *Melting-point Measurement Instruments                    | Temperature          | V.R.of Melting-point Measurement Instruments JJG 701                   | Capillary method:(50~300)℃ | 0.2 ℃/min: <i>U</i> =0.3 ℃                  |                                                                                      |                |
|    |                                                           | Hot stage:(50~300) ℃ |                                                                        | 1.0 ℃/min: <i>U</i> =0.4 ℃ |                                             |                                                                                      |                |
|    |                                                           | Heating rate         |                                                                        | (0.2~2.0) ℃/min            | <i>U</i> <sub>rel</sub> =6 %                |                                                                                      |                |
| 6  | Thermogravimetric Moisture Meters                         | Content              | Verification Regulation of Thermogravimetric Moisture Meters JJG 658   | Water content:5 %~95 %     | <i>U</i> <sub>rel</sub> =0.06 %             |                                                                                      |                |
|    |                                                           | Mass                 |                                                                        | 1 mg~1100 g                | <i>U</i> = (0.06~21) mg                     |                                                                                      |                |
| 7  | *pH Meters                                                | Voltage              | Verification Regulation of pH Meters JJG 919                           | (10~1000) mV               | <i>U</i> <sub>rel</sub> =3×10 <sup>-3</sup> |                                                                                      |                |
|    |                                                           | Resistance           |                                                                        | (1~3) G Ω                  | <i>U</i> <sub>rel</sub> =1.3 %              |                                                                                      |                |
|    |                                                           | pH                   |                                                                        | 0~14                       | <i>U</i> =0.0002                            |                                                                                      |                |
| 8  | *Verficing Meter for Chromatograph                        | DC Voltage           | Verification Regulation of Verficing Meter for Chromatograph JJG 937   | (0.01~10) V                | <i>U</i> <sub>rel</sub> =0.02 %             |                                                                                      |                |
|    |                                                           | Resistence           |                                                                        | (1~1000) Ω                 | <i>U</i> <sub>rel</sub> =0.03 %             |                                                                                      |                |
|    |                                                           | DC Current           |                                                                        | (0.1~10) mA                | <i>U</i> <sub>rel</sub> =0.3 %              |                                                                                      |                |
| 9  | *Ultraviolet, visible and near-infrared spectrophotometer | Wavelength           | V.R. of Ultraviolet, Visible, Near-Infrared Spectrophotometers JJG 178 | (240~900) nm               | <i>U</i> =0.5 nm                            |                                                                                      |                |
|    |                                                           | Wavelength           |                                                                        | (1000~2000) nm             | <i>U</i> =0.8 nm                            |                                                                                      |                |
|    |                                                           | Transmission         |                                                                        | (0~35) %                   | <i>U</i> =0.5 %                             |                                                                                      |                |
| 10 | *Dispersive Infrared Spectrophotometer                    | Wave numbe           | V.R. of Dispersive Infrared Spectrophotometers JJG 681                 | (3100~800)cm <sup>-1</sup> | <i>U</i> =0.4cm <sup>-1</sup>               |  |                |
| 11 | *Carbon - Sulfur Analyzer                                 | Wavelength           | V.R. of Atomic Absorption Spectrophotometers JJG 694                   | (200~900) nm               | <i>U</i> =0.1 nm                            |                                                                                      |                |



No. CNAS L2336

第 106 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument                      | Measurand     | Calibration Method                             | Range                                                                  | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------------------------|---------------|------------------------------------------------|------------------------------------------------------------------------|-------------------------------|------|----------------|
|    |                                 | Concentration |                                                | Flame method (Cu)<br>detection limit: $\leq 0.02$<br>$\mu\text{ g/mL}$ | $U=0.006 \mu\text{ g/mL}$     |      |                |
|    |                                 |               |                                                | Graphite furnace method<br>(Cd) detection limit: $\leq$<br>4pg         | $U=0.3 \text{ pg}$            |      |                |
| 12 | *luorescence Spectro photometer | Concentration | V.R. of Fluorescence Spectrophotometer JJG 537 | Detection Limit:( $1 \times 10^{-12} \sim 1 \times 10^{-6}$ ) g/mL     | $U_{\text{rel}}=2.7 \%$       |      |                |
| 13 | *Emission Spectrometer          | Wavelength    | V.R. of Emission Spectrometer JJG 768          | ICP spectrometer:(190~1100) nm                                         | $U=0.01 \text{ nm}$           |      |                |
|    |                                 | Concentration |                                                | Detection limit of ICP spectrometer(Zn): $\leq 0.01$ mg/L              | $U_{\text{rel}}=7 \%$         |      |                |
|    |                                 |               |                                                | Detection limit of ICP spectrometer(Ni): $\leq 0.03$ mg/L              | $U_{\text{rel}}=7 \%$         |      |                |
|    |                                 |               |                                                | Detection limit of ICP spectrometer(Mn、 Ba): $\leq 0.005$ mg/L         | $U_{\text{rel}}=7 \%$         |      |                |
|    |                                 |               |                                                | Detection limit of ICP spectrometer(Cr、 Cu): $\leq 0.02$ mg/L          | $U_{\text{rel}}=7 \%$         |      |                |
|    |                                 | Content       |                                                | Detection limit of direct reading spectrometer(C、 Mn): $\leq 0.02 \%$  | $U_{\text{rel}}=7 \%$         |      |                |
|    |                                 |               |                                                | Detection limit of direct reading spectrometer(Si、 Ni): $\leq 0.02 \%$ | $U_{\text{rel}}=8 \%$         |      |                |



No. CNAS L2336

第 107 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                | Measurand                    | Calibration Method                                                       | Range                                                                                             | Expanded Uncertainty<br>( $k=2$ )                    | Note | Effective Date |
|----|-----------------------------------------------------------|------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------|------|----------------|
|    |                                                           |                              |                                                                          | Detection limit of direct reading spectrometer(Cr、V): $\leq 0.01\%$                               | $U_{rel}=8\%$                                        |      |                |
| 14 | *Flame photometer                                         | Concentration                | V.R. of Flame Photometer JJG 630                                         | Detection limit(K): $\leq 0.004\text{ mmol/L}$<br>Detection limit(Na): $\leq 0.008\text{ mmol/L}$ | $U=0.0005\text{ mmol/L}$<br>$U=0.0024\text{ mmol/L}$ |      |                |
| 15 | *Polarimeter                                              | Polarimete                   | V.R. of Polarimeter and Saccharimeter JJG 536                            | $(-45\sim 45)^{\circ}$                                                                            | $U=0.003^{\circ}$                                    |      |                |
| 16 | *Hand Saccharimeter(Content-meter) and Hand Refractometer | Saccharimeter(Content-meter) | V.R. of Hand Saccharimeter(Content-meter) and Hand Refractometer JJG 820 | $(5\sim 60)\%$                                                                                    | $U=0.07\%$                                           |      |                |
|    |                                                           | Refractivity                 |                                                                          | 1.3330~1.5200                                                                                     | $U=0.0002$                                           |      |                |
| 17 | *energy dispersive X ray fluorescence spectrometer        | Energy                       |                                                                          | $(10\sim 13)\text{ keV}$                                                                          | $U_{rel}=15\%$                                       |      |                |
|    |                                                           |                              |                                                                          | Detection Limit(Pb、Hg、Cr polymer): $\leq 50\text{ mg/kg}$                                         | $U_{rel}=10\%$                                       |      |                |
|    |                                                           |                              |                                                                          | Detection Limit(Cd polymer): $\leq 5\text{ mg/kg}$                                                | $U_{rel}=10\%$                                       |      |                |
|    |                                                           |                              |                                                                          | Detection Limit(Br polymer): $\leq 50\text{ mg/kg}$                                               | $U_{rel}=10\%$                                       |      |                |
|    |                                                           |                              |                                                                          | Detection Limit(Pb、Hg、Cr metal): $\leq 150\text{ mg/kg}$                                          | $U_{rel}=10\%$                                       |      |                |
|    |                                                           |                              |                                                                          | Detection Limit(Cd metal): $\leq 15\text{ mg/kg}$                                                 | $U_{rel}=10\%$                                       |      |                |
| 18 | *Gas Chromatograph                                        | Flow rate                    | V.R. of Gas Chromatograph JJG 700                                        | Carrier gas flow rate:(20~150) mL/min                                                             | $U_{rel}=5.2\%$                                      |      |                |



No. CNAS L2336

第 108 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument            | Measurand       | Calibration Method                   | Range                                                     | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-----------------------|-----------------|--------------------------------------|-----------------------------------------------------------|----------------------------------------|------|----------------|
|    |                       | Detection limit |                                      | TCD Sensitivity: ≥800 mV•mL/mg                            | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | FID Detection Limit: ≤0.5 ng/s                            | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | FPD Detection Limit(S): ≤0.5ng/s                          | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | FPD Detection Limit(P): ≤0.1 ng/s                         | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | ECD Detection Limit: ≤5 pg/mL                             | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | NPD Detection Limit(N): ≤5 pg/s                           | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | NPD Detection Limit(N):(P) ≤10 pg/s                       | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      |                                                           |                                        |      |                |
| 19 | *Liquid Chromatograph | Flow            | V.R. of Liquid Chromatograph JJG 705 | (0.2~10) mL/min                                           | <i>U</i> <sub>rel</sub> =0.3 %         |      |                |
|    |                       | Detection limit |                                      | UV-VisD and DAD Detection limit: ≤5×10 <sup>-8</sup> g/ml | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | FLD Detection limit: ≤5×10 <sup>-8</sup> g/ml             | <i>U</i> <sub>rel</sub> =9 %           |      |                |
|    |                       |                 |                                      | RID Detection limit: ≤5×10 <sup>-6</sup> g/m              | <i>U</i> <sub>rel</sub> =10 %          |      |                |
|    |                       |                 |                                      | ELSD Detection limit: ≤5×10 <sup>-6</sup> g/ml            | <i>U</i> <sub>rel</sub> =11 %          |      |                |
|    |                       |                 |                                      |                                                           |                                        |      |                |
| 20 | *Ion Chromatographs   | Detection limit | V.R. of Ion Chromatographs JJG 823   | Detection limit of conductivity detector: ≤0.02 μg/mL     | <i>U</i> <sub>rel</sub> =6 %           |      |                |



No. CNAS L2336

第 109 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                              | Measurand       | Calibration Method                                                       | Range                                                                                                         | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|---------------------------------------------------------|-----------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------|------|----------------|
|    |                                                         |                 |                                                                          | Detection limit of UV-visible light detector: ≤ 0.02 μg/mL                                                    | <i>U</i> <sub>rel</sub> =6 %           |      |                |
|    |                                                         |                 |                                                                          | Detection limit of electrochemical detector: ≤0.02 μg/mL                                                      | <i>U</i> <sub>rel</sub> =6 %           |      |                |
| 21 | *Capillary electrophoresis apparatus                    | Wavelength      | V. R. of Capillary electrophoresis apparatus JJG 964                     | (190~360) nm                                                                                                  | <i>U</i> =1 nm                         |      |                |
|    |                                                         | Detection limit |                                                                          | Detection limit: ≤1 μg/mL                                                                                     | <i>U</i> <sub>rel</sub> =15 %          |      |                |
| 22 | *Liquid Chromatography Atomic Fluorescence Spectrometry | Flow            | V. R. of Liquid Chromatography Atomic Fluorescence Spectrometry JJG 1151 | (0.1~10) mL/min                                                                                               | <i>U</i> <sub>rel</sub> =0.3 %         |      |                |
|    |                                                         | Detection limit |                                                                          | Detection limit (As(V)) : <1.0 ng                                                                             | <i>U</i> <sub>rel</sub> =10 %          |      |                |
|    |                                                         |                 |                                                                          | Detection limit (MMA) : <0.7 ng                                                                               | <i>U</i> <sub>rel</sub> =10 %          |      |                |
|    |                                                         |                 |                                                                          | Detection limit (DMA) : <0.7 ng                                                                               | <i>U</i> <sub>rel</sub> =10 %          |      |                |
| 23 | *Chromatography-Mass Spectrometer                       | Mass            | C.S. for Gas Chromatography-Mass Spectrometers JJF 1164                  | (50~350) u                                                                                                    | <i>U</i> <sub>rel</sub> =2 %           |      |                |
|    |                                                         | Concentration   |                                                                          | Electron impact source (EI+) ion trap、single quadrupole、triple quadrupole S/N: ≥10:1                          | <i>U</i> <sub>rel</sub> =15 %          |      |                |
|    |                                                         |                 |                                                                          | Electron bombardment source (EI+) flight time、electrostatic field orbitrap (octafluoronaphthalene) S/N: ≥50:1 | <i>U</i> <sub>rel</sub> =15 %          |      |                |



No. CNAS L2336

第 110 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| No | Instrument                                | Measurand                                                                                               | Calibration Method                                         | Range                                                                                                            | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------|------|----------------|
|    |                                           |                                                                                                         |                                                            | Positive chemical ionization source (CI+) ion trap、single quadrupole、triple quadrupole (benzophenone) S/N: ≥10:1 | <i>U</i> <sub>rel</sub> =15 %          |      |                |
|    |                                           | Negative chemical ionization source (CI-) ion trap、single quadrupole (octafluoronaphthalene) S/N: ≥10:1 |                                                            | <i>U</i> <sub>rel</sub> =15 %                                                                                    |                                        |      |                |
|    |                                           | Temperature                                                                                             |                                                            | (50~300)℃                                                                                                        | <i>U</i> <sub>rel</sub> =0.2 %         |      |                |
| 24 | *liquid chromatography-mass spectrometers | Concentration                                                                                           | C.S. for liquid chromatography-mass spectrometers JJF 1317 | Three pole quadrupole (ESI+、APCI+) S/N: ≥30:1                                                                    | <i>U</i> <sub>rel</sub> =11 %          |      |                |
|    |                                           |                                                                                                         |                                                            | Three pole quadrupole (ESI-) S/N: ≥10:1                                                                          | <i>U</i> <sub>rel</sub> =15 %          |      |                |
|    |                                           |                                                                                                         |                                                            | Single quadrupole (ESI+、APCI+、ESI-) S/N: ≥10:1                                                                   | <i>U</i> <sub>rel</sub> =15 %          |      |                |
|    |                                           | Mass                                                                                                    |                                                            | (1~600) u                                                                                                        | <i>U</i> <sub>rel</sub> =2 %           |      |                |
|    |                                           |                                                                                                         |                                                            | (>600~1000) u                                                                                                    | <i>U</i> <sub>rel</sub> =3 %           |      |                |
|    |                                           |                                                                                                         |                                                            | (>1000~2500) u                                                                                                   | <i>U</i> <sub>rel</sub> =5 %           |      |                |
|    |                                           | Time                                                                                                    |                                                            | Retention time: (0.1~30) min                                                                                     | <i>U</i> <sub>rel</sub> =3 %           |      |                |



No. CNAS L2336

第 111 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                      | Measurand     | Calibration Method                                                                  | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|------------------------------|-----------------------------------|------|----------------|
|    |                                                                 | Abundance     |                                                                                     | Abundance ratio:(40~150) %   | $U_{rel}=10\%$                    |      |                |
| 25 | *Infrared oil measuring instrument                              | Concentration | V.R. of Instrument for measuring oil concentration in water JJG 950                 | (0.1~1000) mg/L              | $U_{rel}=4\%$                     |      |                |
| 26 | *Turbidity Meter                                                | Turbidity     | V.R. of Turbidimeters JJG 880                                                       | (0.1~400) NTU                | $U_{rel}=4\%$                     |      |                |
| 27 | *On-line Dissolved Oxygen Meter with Covered-Membrane-Electrode | Concentration | V.R. of On-line Dissolved Oxygen Meter with Covered-Membrane-Electrode JJG(Zhe) 111 | DO Concentration:(6~15) mg/L | $U=0.12$ mg/L                     |      |                |
|    |                                                                 | Time          |                                                                                     | (0~90) s                     | $U=0.08$ s                        |      |                |
| 28 | Dissolved Oxygen Meter                                          | Concentration | V.R. of Dissolved Oxygen Meter JJG 291                                              | DO Concentration:(6~15) mg/L | $U=0.12$ mg/L                     |      |                |
|    |                                                                 | Time          |                                                                                     | (0~60) s                     | $U=0.08$ s                        |      |                |
|    |                                                                 | Temperature   |                                                                                     | (0~50) °C                    | $U=0.2$ °C                        |      |                |
| 29 | *On-line Automatic Determinator of Chemical Oxygen Demand(COD)  | Concentration | V.R. of On-line Automatic Determinator of Chemical Oxygen Demand(COD) JJG 1012      | (10~1000) mg/L               | $U_{rel}=2.5\%$                   |      |                |
| 30 | *Chemical Oxygen Demand(COD) Meters                             | Temperature   | V.R. of Chemical Oxygen Demand(COD) Meters JJG 975                                  | (0~200) °C                   | $U=0.6$ °C                        |      |                |
|    |                                                                 | Time          |                                                                                     | (1~120) min                  | $U_{rel}=0.2\%$                   |      |                |
|    |                                                                 | Concentration |                                                                                     | (10~2000) mg/L               | $U_{rel}=2.1\%$                   |      |                |
| 31 | *On-line Total Organic Carbon Analyzer                          | Concentration | V.R. of On line Total Organic Carbon Analyzer JJG(Zhe) 132                          | (0.01~20000) mg/L            | $U_{rel}=2.2\%$                   |      |                |

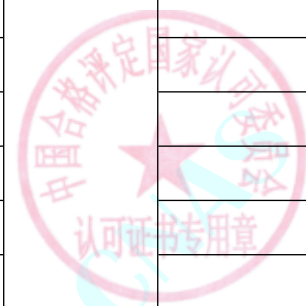


No. CNAS L2336

第 112 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                    | Measurand     | Calibration Method                                                                       | Range                               | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------|---------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------|------|----------------|
| 32 | *Total Organic Carbon Analyzer                | Concentration | V.R. of Total Organic Carbon Analyzer JJG 821                                            | Inorganic carbon:(0.001~1000) mg/L  | $U_{rel}=2.2\%$                   |      |                |
|    |                                               |               |                                                                                          | Organic carbon:(0.001~1000)mg/L     | $U_{rel}=2.2\%$                   |      |                |
| 33 | *Ammonia nitrogen monitor                     | Concentration | V. R. of Ammonia nitrogen automatic monitor JJG 631                                      | (0.1~100) mg/L                      | $U_{rel}=3\%$                     |      |                |
|    |                                               | Time          |                                                                                          | (1~360) s                           | $U=2.0\text{ s}$                  |      |                |
|    |                                               | Voltage       |                                                                                          | (0.1~500) M $\Omega$                | $U_{rel}=16\%$                    |      |                |
| 34 | *Total phosphorus and total nitrogen analyzer | Concentration | V. R. of On-line water quality analyzer for total phosphorus and total nitrogen JJG 1094 | Total phosphorus:(0.1~100) mg/L     | $U=0.01\text{ mg/L}$              |      |                |
|    |                                               |               |                                                                                          | Total phosphorus:(>0.5~100) mg/L    | $U_{rel}=3\%$                     |      |                |
|    |                                               |               |                                                                                          | Total nitrogen:(0.1~2) mg/L         | $U=0.06\text{ mg/L}$              |      |                |
|    |                                               |               |                                                                                          | Total nitrogen:(>2~100) mg/L        | $U_{rel}=3\%$                     |      |                |
| 35 | *Heavy metal water quality analyzer           | Concentration | C. S. for On line analyzer for heavy metal water quality JJF 1565                        | Pb:(0.001~1000) mg/L                | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Cd:(0.0001~1000) mg/L               | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Hg:(0.0001~1000) mg/L               | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | As:(0.001~1000) mg/L                | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Cr:(0.01~1000) mg/L                 | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Cr <sup>6+</sup> :(0.001~1000) mg/L | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Cu:(0.01~1000) mg/L                 | $U_{rel}=2.8\%$                   |      |                |
|    |                                               |               |                                                                                          | Zn:(0.01~1000) mg/L                 | $U_{rel}=2.8\%$                   |      |                |



No. CNAS L2336

第 113 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                           | Measurand     | Calibration Method                                                   | Range                                      | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|------------------------------------------------------|---------------|----------------------------------------------------------------------|--------------------------------------------|----------------------------------------|------|----------------|
|    |                                                      |               |                                                                      | Ni:(0.001~1000) mg/L                       | <i>U</i> <sub>rel</sub> =2.8 %         |      |                |
|    |                                                      |               |                                                                      | Fe:(0.01~1000) mg/L                        | <i>U</i> <sub>rel</sub> =2.8 %         |      |                |
|    |                                                      |               |                                                                      | Mn:(0.01~1000) mg/L                        | <i>U</i> <sub>rel</sub> =2.8 %         |      |                |
| 36 | *Residual Chlorine Meters                            | Concentration | C.S. for Residual Chlorine Meters JJF 1609                           | Free residual chlorine:<br>(0.1~500) mg/L  | <i>U</i> <sub>rel</sub> =1.6 %         |      |                |
|    |                                                      |               |                                                                      | Total residual chlorine:<br>(0.1~500) mg/L | <i>U</i> <sub>rel</sub> =0.9 %         |      |                |
| 37 | Wood moisture content measuring instrument           | Content       | V.R. of moisture content measuring instrument JJG 986                | Content of water: 6 %~28 %                 | <i>U</i> =0.3 %                        |      |                |
| 38 | *Instrument for KF Coulometry Titration              | Content       | V.R. of Carle Fischer Coulomb method micro moisture meter JJG 1044   | Moisture content: (10~5000) μg             | <i>U</i> <sub>rel</sub> =(1.6~0.8) %   |      |                |
|    |                                                      | Time          |                                                                      | Electrolytic rate:(1~180) s                | <i>U</i> =4 s                          |      |                |
|    |                                                      |               |                                                                      | Zero balance:(1~120) s                     | <i>U</i> =4 s                          |      |                |
| 39 | *Karl Fischer Volumetric Titrators for Water Content | Content       | Karl V.R. of Fischer Volumetric Titrators for Water Content JJG 1154 | Moisture content:0.1 %~5.0 %               | <i>U</i> <sub>rel</sub> =1.6 %         |      |                |
| 40 | *Liquid-borne Particle Counters                      | Count         | V.R for Liquid-borne Particle Counters JJG 1061                      | (1~3000) Counter/mL                        | <i>U</i> <sub>rel</sub> =5 %           |      |                |
|    |                                                      | Particle size |                                                                      | (1~50) μm                                  | <i>U</i> <sub>rel</sub> =5 %           |      |                |
| 41 | *Static Light Scattering Particle Size Analyzers     | Particle size | C.S. for Static Light Scattering Particle Size Analyzers JJF 1211    | (1~5) μm                                   | <i>U</i> <sub>rel</sub> =5 %           |      |                |
|    |                                                      |               |                                                                      | (>5~20) μm                                 | <i>U</i> <sub>rel</sub> =5 %           |      |                |
|    |                                                      |               |                                                                      | (>20~100) μm                               | <i>U</i> <sub>rel</sub> =4 %           |      |                |



No. CNAS L2336

第 114 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                | Measurand   | Calibration Method                                       | Range                                            | Expanded Uncertainty<br>(k=2)   | Note | Effective Date |
|----|-------------------------------------------|-------------|----------------------------------------------------------|--------------------------------------------------|---------------------------------|------|----------------|
|    |                                           |             |                                                          | ( $>100\sim200$ ) $\mu\text{m}$                  | $U_{\text{rel}}=3\%$            |      |                |
| 42 | Flow Cups<br>Viscosimeter                 | Time        | V.R. of Flow Cups<br>Viscosimeter JJG 743                | Time of outflow: (15~150) s                      | $U_{\text{rel}}=(0.5\sim0.8)\%$ |      |                |
|    |                                           |             |                                                          | Correction<br>coefficient: 0.95~1.05             | $U_{\text{rel}}=2.9\%$          |      |                |
| 43 | Rotandarl<br>Viscometer                   | Viscosity   | V.R. of Rotational Visometers<br>JJG 1002                | ( $2\sim1\times10^5$ ) $\text{mPa}\cdot\text{s}$ | $U_{\text{rel}}=(0.6\sim0.8)\%$ |      |                |
| 44 | *pH Meter                                 | pH          | V.R. of Laboratory pH<br>Meters JJG 119                  | Meter: 0~14                                      | $U=0.001$                       |      |                |
|    |                                           | Potential   |                                                          | Instrument: 4.0~9.5<br>(-2000~2000) mV           | $U=0.013$<br>$U=0.2\text{ mV}$  |      |                |
|    |                                           | Temperature |                                                          | (0~50) $^{\circ}\text{C}$                        | $U=0.2\text{ }^{\circ}\text{C}$ |      |                |
|    |                                           |             |                                                          |                                                  |                                 |      |                |
| 45 | *Online pH meter                          | pH          | C.S. for On-line pH Meters<br>JJF 1547                   | Meter: 0~14                                      | $U=0.01$                        |      |                |
|    |                                           | Potential   |                                                          | Instrument: 1.6~13.5<br>(-2000~2000) mV          | $U=0.02$<br>$U=0.2\text{ mV}$   |      |                |
|    |                                           | Temperature |                                                          | (0~50) $^{\circ}\text{C}$                        | $U=0.2^{\circ}\text{C}$         |      |                |
|    |                                           |             |                                                          |                                                  |                                 |      |                |
| 46 | *Ion meters                               | Potential   | V.R. Laboratory Ion meters<br>JJG 757                    | (-2000~2000) mV                                  | $U=0.2\text{ mV}$               |      |                |
|    |                                           | pX          |                                                          | Meter: (0~14) pX                                 | $U=0.001$                       |      |                |
|    |                                           |             |                                                          | Instrument: pX: 0~14                             | $U=0.02$                        |      |                |
|    |                                           | Temperature |                                                          | (0~50) $^{\circ}\text{C}$                        | $U=0.2\text{ }^{\circ}\text{C}$ |      |                |
| 47 | *Automatic<br>Potentionmetric<br>Titrator | Potential   | V.R. of Automatic<br>Potentionmetric Titrator JJG<br>814 | (-2000~2000) mV                                  | $U=0.2\text{ mV}$               |      |                |
|    |                                           | Capacity    |                                                          | (1~100) mL                                       | $U=(0.003\sim0.030)\text{ mL}$  |      |                |



No. CNAS L2336

第 115 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                               | Measurand                 | Calibration Method                                                         | Range                                                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|----------------------------------------------------------|---------------------------|----------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------|------|----------------|
|    |                                                          | Concentration             |                                                                            | 0.1 mol/L                                              | $U_{\text{rel}}=0.5\%$            |      |                |
| 48 | *Electrolytic Conductivity Meters                        | Electrolytic Conductivity | V. R. of Electrolytic Conductivity Meters JJG 376                          | Meter: $(0.05 \sim 1 \times 10^5) \mu\text{S/cm}$      | $U=0.1\% \text{FS}$               |      |                |
|    |                                                          | Temperature               |                                                                            | Instrument: $(15 \sim 1700) \mu\text{S/cm}$            | $U=0.5\% \text{FS}$               |      |                |
|    |                                                          |                           |                                                                            | $(0 \sim 50) ^\circ\text{C}$                           | $U=0.2^\circ\text{C}$             |      |                |
| 49 | *Micro oxygen analyzer                                   | Concentration             | V. R. of Micro Oxygen analyzer JJG 945                                     | $(10 \sim 1000) \mu\text{mol/mol}$                     | $U_{\text{rel}}=2\%$              |      |                |
|    |                                                          | time                      |                                                                            | $(1 \sim 180) \text{s}$                                | $U=1.0\text{s}$                   |      |                |
| 50 | *Zirconia oxygen analyzer                                | Concentration             | V. R. of Zirconia Oxygen analyzer JJG 535                                  | $(0.1 \sim 25) \times 10^{-2} \text{mol/mol}$          | $U_{\text{rel}}=1.5\%$            |      |                |
|    |                                                          | time                      |                                                                            | $(1 \sim 180) \text{s}$                                | $U=1.0\text{s}$                   |      |                |
| 51 | *Electrochemical oxygen analyzer                         | Concentration             | V. R. of Electrochemical Oxygen analyzer JJG 365                           | $(0.1 \sim 25) \times 10^{-2} \text{mol/mol}$          | $U_{\text{rel}}=1.5\%$            |      |                |
|    |                                                          | time                      |                                                                            | $(1 \sim 180) \text{s}$                                | $U=1.0 \text{s}$                  |      |                |
| 52 | *Photoionization detector for volatile organic compounds | Concentration             | C. S. for Photoionization detector for volatile Organic compounds JJF 1172 | $(0.1 \sim 2000) \mu\text{mol/mol}$                    | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                          | Time                      |                                                                            | $(1 \sim 180) \text{s}$                                | $U=1.0 \text{s}$                  |      |                |
| 53 | *Carbon monoxide detection alarm                         | Concentration             | V. R. of Carbon monoxide detection alarm JJG 915                           | $(1 \sim 2000) \mu\text{mol/mol}$                      | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                          | Time                      |                                                                            | $(1 \sim 180) \text{s}$                                | $U=1.0 \text{s}$                  |      |                |
| 54 | *Combustible gas detection alarm                         | Concentration             | V. R. of Combustible gas detection alarm JJG 693                           | $\text{CH}_4: (1 \sim 100)\% \text{LEL}$               | $U_{\text{rel}}=2.1\%$            |      |                |
|    |                                                          |                           |                                                                            | $\text{H}_2: (1 \sim 100)\% \text{LEL}$                | $U_{\text{rel}}=2.1\%$            |      |                |
|    |                                                          |                           |                                                                            | $\text{i-C}_4\text{H}_{10}: (1 \sim 100)\% \text{LEL}$ | $U_{\text{rel}}=2.1\%$            |      |                |
|    |                                                          |                           |                                                                            | $\text{C}_3\text{H}_8: (1 \sim 100)\% \text{LEL}$      | $U_{\text{rel}}=2.1\%$            |      |                |



No. CNAS L2336

第 116 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №    | Instrument                     | Measurand       | Calibration Method                            | Range                                      | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|------|--------------------------------|-----------------|-----------------------------------------------|--------------------------------------------|----------------------------------------|------|----------------|
|      |                                |                 |                                               | C <sub>2</sub> H <sub>2</sub> :(1~100)%LEL | <i>U</i> <sub>rel</sub> =2.1 %         |      |                |
|      |                                | time            |                                               | (1~180) s                                  | <i>U</i> =1.0s                         |      |                |
| 55   | *Ammonia detector              | Concentration   | V. R. of Ammonia detector JIG 1105            | (1~100) μ mol/mol                          | <i>U</i> <sub>rel</sub> =2.0 %         |      |                |
|      |                                | time            |                                               | (1~180) s                                  | <i>U</i> =1.8 s                        |      |                |
| 56   | *Hydrogen sulfide gas detector | Concentration   | V. R. of Hydrogen sulfide gas detector JIG695 | (1~200) μ mol/mol                          | <i>U</i> <sub>rel</sub> =2.2 %         |      |                |
|      |                                | time            |                                               | (1~180) s                                  | <i>U</i> =1.0s                         |      |                |
| 57   | *Dust sampler                  | Flow            | V. R. of Dust sampler JIG 520                 | (0.01~80) L/min                            | <i>U</i> <sub>rel</sub> =1.2 %         |      |                |
|      |                                | Time            |                                               | (1~300) s                                  | <i>U</i> =0.3 s                        |      |                |
| 58   | *samplers for stack dust       | Flow            | V. R. of samplers for stack dust JIG 680      | Instantaneous flow rate: (5~100) L/min     | <i>U</i> <sub>rel</sub> =1.5 %         |      |                |
|      |                                |                 |                                               | Cumulative volume flow rate:30 L/min       | <i>U</i> <sub>rel</sub> =1.5 %         |      |                |
|      |                                | Temperature     |                                               | Temperature before flowmeterr: (0~50) °C   | <i>U</i> =0.4 °C                       |      |                |
|      |                                |                 |                                               | Flue gas temperature: (1~300) °C           | <i>U</i> =1.3 °C                       |      |                |
|      |                                | Pressure        |                                               | Dynamic pressure: (0~2000) Pa              | <i>U</i> =0.4 %FS                      |      |                |
|      |                                |                 |                                               | Static pressure: (-30~30) kPa              | <i>U</i> =0.2 %FS                      |      |                |
| Time | (1~600) s                      | <i>U</i> =0.2 s |                                               |                                            |                                        |      |                |
| 59   | *air sampler                   | Flow            | V. R. of air sampler JIG 956                  | (0.01~6) L/min                             | <i>U</i> <sub>rel</sub> =1.2 %         |      |                |
|      |                                | time            |                                               | (1~3600) s                                 | <i>U</i> <sub>rel</sub> =0.06 %        |      |                |



No. CNAS L2336

第 117 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                   | Measurand     | Calibration Method                                    | Range                                        | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------------------------|---------------|-------------------------------------------------------|----------------------------------------------|-------------------------------|------|----------------|
|    |                              | Temperature   |                                                       | ( 0~50 ) °C                                  | U=0.2 °C                      |      |                |
| 60 | *Tsp sampler                 | Flow          | V. R. of Tsp sampler JJG 943                          | (0.3~150) L/min                              | U <sub>rel</sub> =1.2 %       |      |                |
|    |                              | time          |                                                       | (1~1200) s                                   | U=0.3s                        |      |                |
|    |                              | Temperature   |                                                       | ( 0~50 ) °C                                  | U=0.2 °C                      |      |                |
|    |                              | Pressure      |                                                       | ( 800~1060 ) hPa                             | U=2.4 hPa                     |      |                |
|    |                              | Length        |                                                       | (1~200) mm                                   | U <sub>rel</sub> =0.3 %       |      |                |
| 61 | *Planktonic bacteria sampler | Flow          | C. S. for Planktonic bacteria sampler JJF(jiangsu)188 | ( 20~200 ) L/min                             | U <sub>rel</sub> =1.2 %       |      |                |
|    |                              | Time          |                                                       | (1~600) s                                    | U=0.3 s                       |      |                |
| 62 | Dust Particles Counter       | Flow          | C.S. of Dust Particles Counter JJF 1190               | ( 0.3~150 ) L/min                            | U <sub>rel</sub> =1.3 %       |      |                |
|    |                              | Time          |                                                       | ( 0~600 ) s                                  | U=0.30 s                      |      |                |
|    |                              | Concentration |                                                       | Particle size distribution: (0.3~10) μ m     | U <sub>rel</sub> =11 %        |      |                |
|    |                              |               |                                                       | Particle concentration: (10~100000) 个/2.83 L | U <sub>rel</sub> =17 %        |      |                |
| 63 | *Particulate Analyzer        | Volume        | C.S. for Particulate Analyzer JJF 1290                | (0.01~10) mL                                 | U <sub>rel</sub> =0.4 %       |      |                |
|    |                              | Count         |                                                       | (10~100000) counter/mL                       | U <sub>rel</sub> =5 %         |      |                |
| 64 | *flue gas samplers           | flow          | V. R. of flue gas samplers JJG 1169                   | (0.01~2) L/min                               | U <sub>rel</sub> =1.3 %       |      |                |
|    |                              | Time          |                                                       | (1~1200) s                                   | U=0.3 s                       |      |                |
|    |                              | Temperature   |                                                       | ( 0~50 ) °C                                  | U=0.2 °C                      |      |                |



No. CNAS L2336

第 118 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                  | Measurand     | Calibration Method                                         | Range                                                                                | Expanded Uncertainty<br>( $k=2$ )                    | Note | Effective Date |
|----|---------------------------------------------|---------------|------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------|------|----------------|
| 65 | *Fourier Transform Infrared Spectrometers   | Wave number   | C.S. for Fourier Transform Infrared Spectrometers JJF 1319 | (3100~800) $\text{cm}^{-1}$                                                          | $U=(0.09\sim0.13) \text{ cm}^{-1}$                   |      |                |
| 66 | *Atomic Fluorescence Spectrophotometers     | Concentration | V.R. of Atomic Fluorescence Spectrometer JJG 939           | Detection limit(As): $\leq 0.4 \text{ ng}$                                           | $U=0.015 \text{ ng}$                                 |      |                |
|    |                                             |               |                                                            | Detection limit(Sb): $\leq 0.4 \text{ ng}$                                           | $U=0.04 \text{ ng}$                                  |      |                |
| 67 | *Osmotic pressure molar concentration meter | Concentration | V.R. of Osmotic pressure molar concentration meter JJG1089 | Osmotic pressure molar concentration: (100~700) $\text{mOsmol} \cdot \text{kg}^{-1}$ | $U=(1.7\sim3.4) \text{ mOsmol} \cdot \text{kg}^{-1}$ |      |                |
| 68 | *Fixed carbon sulfur analyzer               | Content       | V.R. of Carbon - Sulfur Analyzer JJG 395                   | C: (0.0050~0.0100) %                                                                 | $U=0.0005 \%$                                        |      |                |
|    |                                             |               |                                                            | C: (0.010~0.100) %                                                                   | $U=0.004 \%$                                         |      |                |
|    |                                             |               |                                                            | C: (0.100~0.500) %                                                                   | $U=0.007 \%$                                         |      |                |
|    |                                             |               |                                                            | C: (0.500~1.000) %                                                                   | $U=0.024 \%$                                         |      |                |
|    |                                             |               |                                                            | C: (1.00~4.00) %                                                                     | $U=0.04 \%$                                          |      |                |
|    |                                             |               |                                                            | S: (0.0030~0.0100) %                                                                 | $U=0.0003 \%$                                        |      |                |
|    |                                             |               |                                                            | S: (0.010~0.050) %                                                                   | $U=0.0013 \%$                                        |      |                |
|    |                                             |               |                                                            | S: (0.050~0.100) %                                                                   | $U=0.003 \%$                                         |      |                |
|    |                                             |               |                                                            | S: (大于 0.100~0.200) %                                                                | $U=0.005 \%$                                         |      |                |
|    |                                             | Time          |                                                            | (1~1200) s                                                                           | $U=0.3 \text{ s}$                                    |      |                |
| 69 | *Kjeldahl nitrogen analyzer                 | Content       | C.S. for Element analyzer JJF1321                          | Nitrogen content: (0.01~50) %                                                        | $U_{\text{rel}}=1.4 \%$                              |      |                |
| 70 | *ELISA analytical Instruments               | Wavelength    | V.R. of ELISA Analytical Instruments JJG 861               | (400~630) nm                                                                         | $U=0.5 \text{ nm}$                                   |      |                |



No. CNAS L2336

第 119 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                | Measurand                | Calibration Method                                                         | Range                           | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-----------------------------------------------------------|--------------------------|----------------------------------------------------------------------------|---------------------------------|----------------------------------------|------|----------------|
|    |                                                           | Absorbance               |                                                                            | 0.200～1.600                     | <i>U</i> =0.006                        |      |                |
|    |                                                           |                          |                                                                            | Channel difference:1.000        | <i>U</i> =0.006                        |      |                |
|    |                                                           | Sensitivity              |                                                                            | ≥ 0.01 L/mg                     | <i>U</i> <sub>rel</sub> =5 %           |      |                |
| 71 | *Quadrupole Inductively Coupled Plasma Mass Spectrometers | Detection limit          | C.S. for Quadrupole Inductively Coupled Plasma Mass Spectrometers JJF 1159 | Detection Limit(Be):≤30 ng/L    | <i>U</i> =0.4 ng/L                     |      |                |
|    |                                                           |                          |                                                                            | Detection Limit(In):≤10 ng/L    | <i>U</i> =0.2 ng/L                     |      |                |
|    |                                                           |                          |                                                                            | Detection Limit(Bi):≤10 ng/L    | <i>U</i> =0.2 ng/L                     |      |                |
|    |                                                           |                          |                                                                            | Sensitivity(Be):≥5 Mcps/(mg/L)  | <i>U</i> <sub>rel</sub> =10 %          |      |                |
|    |                                                           |                          |                                                                            | Sensitivity(In):≥30 Mcps/(mg/L) | <i>U</i> <sub>rel</sub> =14 %          |      |                |
|    |                                                           |                          |                                                                            | Sensitivity(Bi):≥20 Mcps/(mg/L) | <i>U</i> <sub>rel</sub> =12 %          |      |                |
| 72 | *Dynamic Light Scattering Particle Size Analyzers         | Particle size            | V.R. of Dynamic Light Scattering Particle Size Analyzers JJG 1104          | ( 10～1000 ) nm                  | <i>U</i> <sub>rel</sub> =1.0 %～2.6 %   |      |                |
|    |                                                           | Temperature              |                                                                            | ( 0～90 ) °C                     | <i>U</i> =0.2 °C                       |      |                |
| 73 | *Micro-spectrophotometers                                 | Concentration            | C.S. for Micro-spectrophotometers JJF 1836                                 | ( 10～2200 ) ng/ μ L             | <i>U</i> <sub>rel</sub> =6 %           |      |                |
| 74 | *Colony Counters                                          | Total number of colonies | C.S. for Colony Counters JJF 1751                                          | (30～300) CFU                    | <i>U</i> <sub>rel</sub> =2.6 %         |      |                |
|    |                                                           | Length                   |                                                                            | (0.10～5.10) mm                  | <i>U</i> =0.04 mm                      |      |                |
|    |                                                           | Color temperature        |                                                                            | (2300～9000)K                    | <i>U</i> =(22～1.9x10 <sup>2</sup> )K   |      |                |



No. CNAS L2336

第 120 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                               | Measurand           | Calibration Method                                        | Range                                                 | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------------|---------------------|-----------------------------------------------------------|-------------------------------------------------------|-----------------------------------|------|----------------|
| 75 | *McFarland Bacterial Turbidity Analyzers | Bacteria turbidity  | C.S. for McFarland Bacterial Turbidity Analyzers JJF 1825 | (0~4) MCF                                             | $U=(0.06\sim0.23)$ MCF            |      |                |
| 76 | *Bacterial Endotoxin Analyzers           | Light transmittance | C.S. for Bacterial Endotoxin Analyzers JJF 1529           | 0~1                                                   | $U=0.002$                         |      |                |
|    |                                          | Temperature         |                                                           | (20~50) °C                                            | $U=0.14$ °C                       |      |                |
|    |                                          | Time                |                                                           | (1~180) s                                             | $U=0.4$ s                         |      |                |
| 77 | *Oxidation-reduct Potential Meters       | Potential           | C.S. for Oxidation-reduct Potential Meters JJF(辽) 474     | 电计: (-2000~2000) mV                                   | $U=0.2$ mV                        |      |                |
|    |                                          |                     |                                                           | 仪器: (-2000~2000) mV                                   | $U=0.4$ mV                        |      |                |
|    |                                          | Resistance          |                                                           | Impedance: (3~10) GΩ                                  | $U_{rel}=12\%$                    |      |                |
| 78 | *Flue Gas Analyzers                      | Concentration       | V.R. of Flue Gas Analyzers JJG 968                        | O <sub>2</sub> : (0.1~100) × 10 <sup>-2</sup> mol/mol | $U_{rel}=1\%$                     |      |                |
|    |                                          |                     |                                                           | CO: (1~4000) × 10 <sup>-6</sup> mol/mol               | $U_{rel}=1.3\%$                   |      |                |
|    |                                          |                     |                                                           | CO <sub>2</sub> : (0.1~20) × 10 <sup>-2</sup> mol/mol | $U_{rel}=1.4\%$                   |      |                |
|    |                                          |                     |                                                           | SO <sub>2</sub> : (1~8000) × 10 <sup>-6</sup> mol/mol | $U_{rel}=1.4\%$                   |      |                |
|    |                                          |                     |                                                           | NO: (10~5000) × 10 <sup>-6</sup> mol/mol              | $U_{rel}=1.4\%$                   |      |                |
|    |                                          |                     |                                                           | NO <sub>2</sub> : (1~500) × 10 <sup>-6</sup> mol/mol  | $U_{rel}=2.3\%$                   |      |                |
|    |                                          | Flow                |                                                           | (5~100) L/min                                         | $U_{rel}=1.2\%$                   |      |                |
|    |                                          | Time                |                                                           | (1~180) s                                             | $U=1.3$ s                         |      |                |
| 79 | *Sulfur Dioxide Gas Detectors            | Concentration       | V.R. of Sulfur Dioxide Gas Detectors JJG 551              | (1~2000) × 10 <sup>-6</sup> mol/mol                   | $U_{rel}=1.5\%$                   |      |                |



No. CNAS L2336

第 121 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                | Measurand     | Calibration Method                                                       | Range                                                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------------|---------------|--------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------|------|----------------|
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.4$ s                         |      |                |
| 80 | *Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer | Concentration | V.R. of Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer JJG 635 | CO: $(1\sim 2000)\times 10^{-6}$ mol/mol               | $U_{\text{rel}}=1.4\%$            |      |                |
|    |                                                           |               |                                                                          | CO <sub>2</sub> : $(0.1\sim 20)\times 10^{-6}$ mol/mol | $U_{\text{rel}}=1.4\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.3$ s                         |      |                |
| 81 | *Nitric Oxide And Nitrogen Dioxide Gas Detectors          | Concentration | V.R. of Nitric Oxide And Nitrogen Dioxide Gas Detectors JJG(新) 01        | NO: $(1\sim 2000) \mu$ mol/mol                         | $U_{\text{rel}}=1.4\%$            |      |                |
|    |                                                           |               |                                                                          | NO <sub>2</sub> : $(1\sim 500) \mu$ mol/mol            | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.1$ s                         |      |                |
| 82 | *Alarmer Detectors of Benzene                             | Concentration | C.S. for Alarmer Detectors of Benzene JJF 1674                           | $(1\sim 100) \mu$ mol/mol                              | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.2$ s                         |      |                |
| 83 | *Hydrogen Chloride Gas Detectors and Alarms               | Concentration | C.S. for Hydrogen Chloride Gas Detectors and Alarms JJF 1888             | $(1\sim 100) \mu$ mol/mol                              | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.1$ s                         |      |                |
| 84 | *Alarms and Detectors of Chloroethylene Gas               | Concentration | V.R. of Alarms and Detectors of Chloroethylene Gas JJG 1125              | $(1\sim 100) \mu$ mol/mol                              | $U_{\text{rel}}=1.3\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.6$ s                         |      |                |
| 85 | *Chlorine Alarm Detectors                                 | Concentration | C.S. for Chlorine Alarm Detectors JJF 1433                               | $(0.1\sim 10) \mu$ mol/mol                             | $U_{\text{rel}}=2.5\%$            |      |                |
|    |                                                           |               |                                                                          | $(>10\sim 1000) \mu$ mol/mol                           | $U_{\text{rel}}=2.3\%$            |      |                |
|    |                                                           | Time          |                                                                          | (1~180) s                                              | $U=1.4$ s                         |      |                |
| 86 | *The Alarmer Detector of Sulfur                           | Concentration | C.S. for the Alarmer Detector of Sulfur Hexafluoride JJF                 | $(1\sim 1000) \mu$ mol/mol                             | $U_{\text{rel}}=2.3\%$            |      |                |

No. CNAS L2336

第 122 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



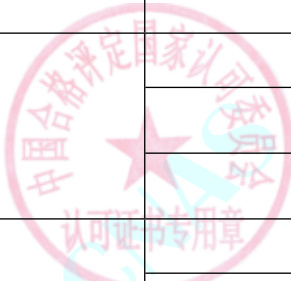
| No                 | Instrument                    | Measurand                                   | Calibration Method                                                                                                                                                | Range                          | Expanded Uncertainty<br>(k=2)          | Note | Effective Date |
|--------------------|-------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------|------|----------------|
|                    | Hexafluoride                  | Time                                        | 1263                                                                                                                                                              | (1~180) s                      | U=1.2 s                                |      |                |
| 87                 | *Raman Spectrometers          | Frequency shift                             | C.S. for Raman Spectrometers JJF 1544                                                                                                                             | ( 300~40000 ) cm <sup>-1</sup> | U=0.3 cm <sup>-1</sup>                 |      |                |
|                    |                               | Resolution of spectrum                      |                                                                                                                                                                   | (0~20) cm <sup>-1</sup>        | U=0.1cm <sup>-1</sup>                  |      |                |
|                    |                               | relative intensity                          |                                                                                                                                                                   | 0~1                            | U=0.01~0.07                            |      |                |
| Time and Frequency |                               |                                             |                                                                                                                                                                   |                                |                                        |      |                |
| 1                  | *Microwave Frequency Counters | Frequency Measurement and input sensitivity | Verification Regulation of Microwave Frequency Counters JJG 841,Verification Regulation of Crystal Oscillator inside the Electrical Measurement Instrumen JJG 180 | 10mV~300mV(0.1Hz~1MHz)         | U=1.8mV                                |      |                |
|                    |                               |                                             |                                                                                                                                                                   | (-33~-20)dBm(1MHz~18GHz)       | U=1dB                                  |      |                |
|                    |                               | Frequency Measurement error                 |                                                                                                                                                                   | 1Hz~18GHz                      | U <sub>rel</sub> =1.5×10 <sup>-8</sup> |      |                |
|                    |                               | Crystal oscillator                          |                                                                                                                                                                   | 10MHz                          | U <sub>rel</sub> =3×10 <sup>-8</sup>   |      |                |
| 2                  | *Universal Counters           | Frequency Measurement and input sensitivity | Verification Regulation of Universal Counters JJG 349,Verification Regulation of Crystal Oscillator inside the Electrical Measurement Instrumen JJG 180           | 10mV~300mV(0.1Hz~1MHz)         | U=1.8mV                                |      |                |
|                    |                               |                                             |                                                                                                                                                                   | (-33~-20)dBm(1MHz~18GHz)       | U=1dB                                  |      |                |
|                    |                               | Frequency Measurement error                 |                                                                                                                                                                   | 1Hz~18GHz                      | U <sub>rel</sub> =1.5×10 <sup>-8</sup> |      |                |
|                    |                               | Period Measurement and input sensitivity    |                                                                                                                                                                   | (-33~-20)dBm(1ps~1 μ s)        | U=1dB                                  |      |                |
|                    |                               |                                             |                                                                                                                                                                   | 10mV~300mV(1 μ s~1s)           | U=1.8mV                                |      |                |



No. CNAS L2336

第 123 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №        | Instrument                                  | Measurand                   | Calibration Method                                            | Range                   | Expanded Uncertainty<br>( <i>k</i> =2)        | Note                                                                                 | Effective Date |  |
|----------|---------------------------------------------|-----------------------------|---------------------------------------------------------------|-------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|----------------|--|
|          |                                             | Frequency Measurement error |                                                               | 1 μ s                   | <i>U</i> <sub>rel</sub> =1.5×10 <sup>-8</sup> |                                                                                      |                |  |
|          |                                             | Crystal oscillator          |                                                               | 10MHz                   | <i>U</i> <sub>rel</sub> =3×10 <sup>-8</sup>   |                                                                                      |                |  |
| 3        | *Frequency Meters                           | Frequency                   | Verification Regulation of Frequency Meters JJG 603           | 10Hz~10kHz              | <i>U</i> <sub>rel</sub> =0.03%                |                                                                                      |                |  |
| 4        | *Watch                                      | Time                        | V.R. of Stop Watch JJG 237                                    | (1~3600)s               | <i>U</i> =15ms                                |                                                                                      |                |  |
|          |                                             | Daily difference            |                                                               | (-10~10)s/d             | <i>U</i> =0.05s                               |                                                                                      |                |  |
|          |                                             | Time                        |                                                               | (1~3600)s               | <i>U</i> =0.11s                               |                                                                                      |                |  |
|          |                                             | Time                        |                                                               | (1~3600)s               | <i>U</i> =5ms                                 |                                                                                      |                |  |
| 5        | *Electronic time relay                      | time error                  | Calibration Specification for Electronic time relay JJF 1282  | 0.01s~10.00s(Div:0.01)  | <i>U</i> =7ms                                 |                                                                                      |                |  |
|          |                                             |                             |                                                               | 10.00s~60.00s(Div:0.01) | <i>U</i> =8ms                                 |                                                                                      |                |  |
|          |                                             |                             |                                                               | 0.1s~60.0s(Div:0.1)     | <i>U</i> =0.06s                               |                                                                                      |                |  |
|          |                                             |                             |                                                               | 1s~2h(Div:1)            | <i>U</i> =0.6s                                |                                                                                      |                |  |
| Acoustic |                                             |                             |                                                               |                         |                                               |                                                                                      |                |  |
| 1        | *Ultrasonic Flaw Detectors                  | Decrement                   | V. R. of Ultrasonic Flaw Detectors JJG 746                    | (0.1~80)dB              | <i>U</i> =0.29dB                              |  |                |  |
|          |                                             | Horizontal linearity        |                                                               | 0.1%~100%               | <i>U</i> <sub>rel</sub> =0.7%                 |                                                                                      |                |  |
|          |                                             | Vertical linearity          |                                                               | 0.1%~100%               | <i>U</i> <sub>rel</sub> =1.7%                 |                                                                                      |                |  |
| 2        | *Electro-acoustical Measurement Instruments | Frequency                   | C. S. for Electro-acoustical Measurement Instruments JJF 1339 | 20Hz~20kHz              | <i>U</i> <sub>rel</sub> =0.01%                |                                                                                      |                |  |
|          |                                             | AC Voltage                  |                                                               | (0.1~30)V,(20Hz~20kHz)  | <i>U</i> <sub>rel</sub> =0.2%                 |                                                                                      |                |  |



No. CNAS L2336

第 124 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №                                                             | Instrument                                                | Measurand          | Calibration Method                                                                                    | Range                  | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|---------------------------------------------------------------|-----------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------|------|----------------|
|                                                               |                                                           | Total distortion   |                                                                                                       | 0.01%~10%,(20Hz~20kHz) | <i>U</i> <sub>rel</sub> =0.1%          |      |                |
|                                                               |                                                           | Frequency response |                                                                                                       | (0.1~30)V,(20Hz~20kHz) | <i>U</i> <sub>rel</sub> =0.2%          |      |                |
| Special measuring instruments for civil aviation and aviation |                                                           |                    |                                                                                                       |                        |                                        |      |                |
| 1                                                             | PRO360/PRO3600 /DP-45 Protactor                           | Angle              | C.S.for PRO360/ PRO3600 / DP-45 Protractor JJF(CAAC)0103                                              | (0~90)°                | <i>U</i> =0.01°                        |      |                |
| 2                                                             | Dynamometer of The Engine Bootstrap Equipment             | Force              | C.S for Dynamometer of The Engine Bootstrap Equipment JJF(CAAC)0122                                   | (0.1~200)kN            | <i>U</i> =0.2%FS                       |      |                |
| 3                                                             | Cable Tensiometer of Direct Reading Type                  | Force              | C.S.for Cable Tensiometer of Direct Reading Type JJF(CAAC)0087                                        | (0.01~5)kN             | <i>U</i> <sub>rel</sub> =1.0%          |      |                |
| Special measuring instrument for building and traffic         |                                                           |                    |                                                                                                       |                        |                                        |      |                |
| 1                                                             | *Boiling testing box for soundness of the portland cement | Power              | V.R.of Boiling testing box for soundness of the portland cement JJG(Construct Materials) 109          | (0~4400)W              | <i>U</i> =20W                          |      |                |
|                                                               |                                                           | Temperature        |                                                                                                       | (20~100)°C             | <i>U</i> =0.2°C                        |      |                |
| 2                                                             | *Standard Curing Chamber for Cement and Concrete          | Temperature        | C. S. for the Equipment of the Environmental Testing for Temperature and Humidity Parameters JJF 1101 | (18~22)°C              | <i>U</i> =0.2°C                        |      |                |
|                                                               |                                                           | Humidity           |                                                                                                       | 80%RH~95%RH            | <i>U</i> =1.5%RH                       |      |                |
| 3                                                             | Rebound Test Hammer                                       | Force              | Verification Regulation of Rebound Test Hammer JJG 817                                                | (0.4~0.8)N             | <i>U</i> <sub>rel</sub> =2.5%          |      |                |
|                                                               |                                                           | Rigidity           |                                                                                                       | (65~820)N/m            | <i>U</i> <sub>rel</sub> =2.6%          |      |                |
|                                                               |                                                           | Rate               |                                                                                                       | 72~82                  | <i>U</i> =1                            |      |                |

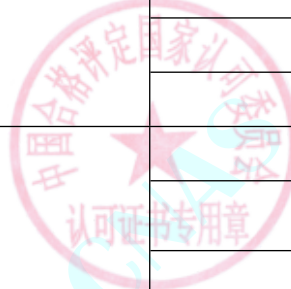


No. CNAS L2336

第 125 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| № | Instrument                                                                | Measurand    | Calibration Method                                                                                                     | Range                                              | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|---|---------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|   |                                                                           | Length       |                                                                                                                        | Pointer length(19.8～20.2)mm                        | U=0.2mm                       |                                                                                      |                |
|   |                                                                           |              |                                                                                                                        | Working length(61～76)mm                            | U=0.2mm                       |                                                                                      |                |
| 4 | *Steel Bottom Rebound Tester                                              | Hardness     | Verification Regulation of Metrology Verification                                                                      | (58～62)HRC                                         | U=1.8HRC                      |                                                                                      |                |
|   |                                                                           | Mass         | Device for Rebound Tester JJG(Su) 59                                                                                   | (0～60)kg                                           | U=0.1kg                       |                                                                                      |                |
| 5 | Metrology Verification Device for Rebound Tester                          | Force        | Verification Regulation of Metrology Verification Device for Rebound Tester JJG(Su) 59                                 | (0.1～1)N                                           | U=0.012N                      |                                                                                      |                |
|   |                                                                           | Hardness     |                                                                                                                        | (58～62)HRC                                         | U=1.8HRC                      |                                                                                      |                |
|   |                                                                           | Mass         |                                                                                                                        | (1999～2001)g                                       | U=0.18g                       |                                                                                      |                |
|   |                                                                           | Length       |                                                                                                                        | Marking value of tension spring instrument(0～80)mm | U=0.1mm                       |                                                                                      |                |
| 6 | *Apparatus to Measure Water Permeability of Concrete                      | Pressure     | Calibration Specificationo for Apparatus to Measure Water Permeability of Concrete JJF 1812                            | (0.1～6)MPa                                         | U=0.7%FS                      |                                                                                      |                |
| 7 | *Air Entrainment Meter of Freshly Mixed Concrete by The Volumetric Method | Pressure     | Verification Regulation of Air Entrainment Meter of Freshly Mixed Concrete by The Volumetric Method JJG(Transport) 094 | (0～0.16)MPa                                        | U=0.7%FS                      |  |                |
|   |                                                                           | Volume       |                                                                                                                        | (6～8)L                                             | U=0.01L                       |                                                                                      |                |
|   |                                                                           | Airtightness |                                                                                                                        | (0～0.01)MPa                                        | U=0.7%FS                      |                                                                                      |                |
| 8 | *Flow Table for Determine Cement Mortar Fluidity                          | Time         | Verification Regulation of Flow Table for Determine Cement Mortar Fluidity JJG(Transport) 096                          | (24～26)s                                           | U=0.24s                       |                                                                                      |                |
|   |                                                                           | Length       |                                                                                                                        | Diameter and die size(59～301)mm                    | U=0.06mm                      |                                                                                      |                |
|   |                                                                           |              |                                                                                                                        | Fall distance(9.8～10.2)mm                          | U=0.01mm                      |                                                                                      |                |



No. CNAS L2336

第 126 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                                                   | Measurand    | Calibration Method                                                                                                        | Range               | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------|------|----------------|
|    |                                                                              | Mass         |                                                                                                                           | (4200~4500)g        | U=3g                          |      |                |
| 9  | *Apparatus for Normal Consistency and Setting Time of Cement Paste           | Mass         | Verification Regulation of Apparatus for Normal Consistency and Setting Time of Cement Paste JJG(Transport) 050           | (290~310)g          | U=12mg                        |      |                |
|    |                                                                              | Length       |                                                                                                                           | Ruler(0~80)mm       | U=0.02mm                      |      |                |
|    |                                                                              | Angle        |                                                                                                                           | (40~50)°            | U=0.2°                        |      |                |
|    |                                                                              |              |                                                                                                                           |                     |                               |      |                |
| 10 | *Mortar Consistency Tester                                                   | Mass         | Calibration Specification for Nonmetal Building Materials Plastic Limit Measuring Instruments JJF 1090                    | (40~310)g           | U=12mg                        |      |                |
|    |                                                                              | Length       |                                                                                                                           | (0~300)mm           | U=0.05mm                      |      |                |
|    |                                                                              | Angle        |                                                                                                                           | (5~50)°             | U=0.1°                        |      |                |
|    |                                                                              | Roughness    |                                                                                                                           | Ra (1~2 ) μ m       | U=0.3 μ m                     |      |                |
| 11 | *Consistency Testing Instrument for Concrete Mixing                          | Length       | Verification Regulation of Consistency Testing Instrument for Concrete Mixing JJG(Su) 50                                  | (1~301)mm           | U=0.3mm                       |      |                |
|    |                                                                              | Mass         |                                                                                                                           | (2700~2800)g        | U=0.6g                        |      |                |
|    |                                                                              |              |                                                                                                                           | (8650~8750)g        | U=0.6g                        |      |                |
|    |                                                                              | Frequency    |                                                                                                                           | (40~60)Hz           | U=0.4Hz                       |      |                |
| 12 | *Apparatus for Time of Setting of Concrete Mixture by Penetration Resistance | Length       | Verification Regulation of Apparatus for Time of Setting of Concrete Mixture by Penetration Resistance JJG(Transport) 095 | Tube size(0~300)mm  | U=0.1mm                       |      |                |
|    |                                                                              |              |                                                                                                                           | Needle size(0~15)mm | U=0.005mm                     |      |                |
|    |                                                                              | Force        |                                                                                                                           | (0.1~2)kN           | U <sub>rel</sub> =0.5%        |      |                |
| 13 | *Mixer for Cement Paste                                                      | Rotate speed | C.S. for Mixer for Cement Paste JJF(Construct Materials) 104                                                              | (57~305)r/min       | U=0.6r/min                    |      |                |
|    |                                                                              | Time         |                                                                                                                           | (10~180)s           | U=0.33s                       |      |                |
|    |                                                                              | Length       |                                                                                                                           | Gap(1.0~3.0)mm      | U=0.1mm                       |      |                |
|    |                                                                              |              |                                                                                                                           | Mixer size(0~161)mm | U=0.1mm                       |      |                |



No. CNAS L2336

第 127 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                       | Measurand    | Calibration Method                                                                                           | Range                                         | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------|------|----------------|
| 14 | *Cementmortar mixer complying with ISO 679                       | Rotate speed | Calibration Specification for Mixer for Mixing Mortars JJF(Construct Materials) 123                          | (50~300)r/min                                 | U=0.6r/min                    |      |                |
|    |                                                                  | Time         |                                                                                                              | (29~91)s                                      | U=0.3s                        |      |                |
|    |                                                                  | Length       |                                                                                                              | Gap(2~4)mm                                    | U=0.1mm                       |      |                |
|    |                                                                  |              |                                                                                                              | Pan and Ye Chicun(0~203)mm                    | U=0.1mm                       |      |                |
| 15 | *Cement mortars mixer                                            | Rotate speed | Verification Regulation of cement mortars mixer JJG(Construct Materials) 102                                 | (60~150)r/min                                 | U=0.6r/min                    |      |                |
|    |                                                                  | Time         |                                                                                                              | (0~5)min                                      | U=0.6s                        |      |                |
|    |                                                                  | Length       |                                                                                                              | Gap(1.0~2.0)mm                                | U=0.05mm                      |      |                |
|    |                                                                  |              |                                                                                                              | Mixer size(0.5~200)mm                         | U=0.05mm                      |      |                |
| 16 | *Apparatus of Abrasion Resistance for Cement Mortar and Concrete | Force        | Verification Regulation ofApparatus of Abrasion Resistance for Cement Mortar and Concrete JJG(Transport) 097 | (200~400)N                                    | U <sub>rel</sub> =0.5%        |      |                |
|    |                                                                  | Rotate speed |                                                                                                              | (15~650)r/min                                 | U=(0.14~0.5)r/min             |      |                |
|    |                                                                  | Length       |                                                                                                              | Spindle stroke and flower wheel size(0~100)mm | U=0.04mm                      |      |                |
| 17 | *Los Angeles Testing Machine                                     | Mass         | Verification Regulation of Los Angeles Testing Machine JJG(Transport) 108                                    | (300~5200)g                                   | U=0.3g                        |      |                |
|    |                                                                  | Length       |                                                                                                              | Roller size(95~715)mm                         | U=0.48mm                      |      |                |
|    |                                                                  |              |                                                                                                              | Diameter of steel ball(40~50)mm               | U=0.05mm                      |      |                |
|    |                                                                  | Rotate speed |                                                                                                              | (30~33)r/min                                  | U=0.42r/min                   |      |                |
| 18 | *Jolting Table for Compacting Mortars Specimen                   | Mass         | C.S. for cement Jolting Table for complying Mortar Specimen JJF(BuildingMaterials) 124                       | (13.5~20.5)kg                                 | U=0.09kg                      |      |                |
|    |                                                                  | Time         |                                                                                                              | (58~62)s                                      | U=1.0s                        |      |                |
|    |                                                                  | Length       |                                                                                                              | (14~801)mm                                    | U=0.12mm                      |      |                |



No. CNAS L2336

第 128 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                   | Measurand             | Calibration Method                                                                              | Range                           | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|--------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------|------|----------------|
|    |                                                              |                       |                                                                                                 | Amplitude(14.5~15.5)mm          | $U=0.01\text{mm}$                 |      |                |
| 19 | *Concrete splitting fixture                                  | Length                | Calibration method for concrete splitting fixture TGX031                                        | (0~150)mm                       | $U=0.05\text{mm}$                 |      |                |
| 20 | *Cement compression fixture                                  | Length                | Calibration method for cement compression fixture TGX007                                        | (0~100)mm                       | $U=0.05\text{mm}$                 |      |                |
| 21 | *Building Material Testing Machine of Constant Loading Speed | Force                 | Verification Regulation of Building Material Testing Machine of Constant Loading Speed JJG 1025 | (1~5000)kN                      | $U_{\text{rel}}=0.4\%$            |      |                |
|    |                                                              | Speed                 |                                                                                                 | (0.01~25)kN/s                   | $U_{\text{rel}}=3.0\%$            |      |                |
| 22 | *Sand Equivalent Tester                                      | Length                | Verification Regulation of Sand Equivalent Tester JJG(Transport) 137                            | Oscillating distance(202~204)mm | $U=0.3\text{mm}$                  |      |                |
|    |                                                              |                       |                                                                                                 | Other dimensions(0.1~421)mm     | $U=0.1\text{mm}$                  |      |                |
|    |                                                              | Oscillation frequency |                                                                                                 | (178~182)BPM                    | $U=1.0\text{BPM}$                 |      |                |
|    |                                                              | Time                  |                                                                                                 | (29~1215)s                      | $U=0.6\text{s}$                   |      |                |
|    |                                                              | Mass                  |                                                                                                 | (995~1005)g                     | $U=1.2\text{g}$                   |      |                |
| 23 | *Cement Fineness Negative Pressure Screen Analyzers          | Pressure              | Calibration Specification for Cement Fineness Negative Pressure Screen Analyzers JJF 1827       | (-100~0)hPa                     | $U=0.7\%\text{FS}$                |      |                |
|    |                                                              | Rotate speed          |                                                                                                 | (28~32)r/min                    | $U_{\text{rel}}=0.4\%$            |      |                |
|    |                                                              | Noise                 |                                                                                                 | (30~130)dB(A)                   | $U=1\text{dB(A)}$                 |      |                |
|    |                                                              | Insulation resistance |                                                                                                 | (10~30)M $\Omega$               | $U=1\text{M}\Omega$               |      |                |
| 24 | *Marshall Test Machine for Bituminous                        | Speed                 | Verification Regulation of Marshall Test Machine for Bituminous Mixtures                        | No load(45~55)mm/min            | $U_{\text{rel}}=0.5\%$            |      |                |
|    |                                                              |                       |                                                                                                 | load(45~55)mm/min               | $U_{\text{rel}}=0.7\%$            |      |                |



No. CNAS L2336

第 129 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

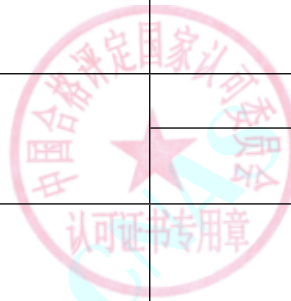
| №  | Instrument                                                      | Measurand | Calibration Method                                                                                           | Range              | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-----------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------|------|----------------|
|    | Mixtures                                                        | Force     | JJG(Transport) 066                                                                                           | (0.1～50)kN         | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|    |                                                                 | Length    |                                                                                                              | (0～80)mm           | <i>U</i> =0.03mm                       |      |                |
|    |                                                                 |           |                                                                                                              | Flow value(0～20)mm | <i>U</i> =0.02mm                       |      |                |
| 25 | *Compaction Instrument of Soil                                  | Mass      | Verification Regulation of Compaction Instrument of Soil JJG(Transport) 058                                  | (2000～5000)g       | <i>U</i> =0.04g                        |      |                |
|    |                                                                 | Length    |                                                                                                              | (1～60)mm           | <i>U</i> =0.06mm                       |      |                |
|    |                                                                 |           |                                                                                                              | (290～460)mm        | <i>U</i> =0.4mm                        |      |                |
| 26 | *Asphalt Mixture's Marshall Compaction Test Apparatus           | Mass      | Verification Regulation of Asphalt Mixture's Marshall Compaction Test Apparatus JJG(Transport) 065           | (4000～15000)g      | <i>U</i> =2g                           |      |                |
|    |                                                                 | Length    |                                                                                                              | (50～500)mm         | <i>U</i> =1mm                          |      |                |
|    |                                                                 | Speed     |                                                                                                              | (50～70)BPM         | <i>U</i> =2BPM                         |      |                |
| 27 | *Instrument for Determining Location of Concrete Reinforced Bar | Length    | Verification Regulation of Instrument for Determining Location of Concrete Reinforced Bar JJG(Transport) 131 | (0～500)mm          | <i>U</i> =0.7mm                        |      |                |
|    |                                                                 | Diameter  |                                                                                                              | (0～50)mm           | <i>U</i> =0.2mm                        |      |                |
| 28 | *Reinforced Concrete Covermeter and Floorslab Thickness Tester  | Length    | Calibration Specification for Reinforced Concrete Covermeter and Floorslab Thickness Tester JJF 1224         | (0～500)mm          | <i>U</i> =0.7mm                        |      |                |
|    |                                                                 | Diameter  |                                                                                                              | (0～50)mm           | <i>U</i> =0.2mm                        |      |                |
| 29 | *Liquid & Plastic Limit Gauge                                   | Mass      | Verification Regulation of Liquid & Plastic Limit Gauge JJG(Transport) 069                                   | (70～110)g          | <i>U</i> =12mg                         |      |                |
|    |                                                                 | Length    |                                                                                                              | (0～60)mm           | <i>U</i> =0.02mm                       |      |                |
|    |                                                                 | Angle     |                                                                                                              | (25～35)°           | <i>U</i> =0.1°                         |      |                |
|    |                                                                 | Time      |                                                                                                              | (3～6)s             | <i>U</i> =0.04s                        |      |                |



No. CNAS L2336

第 130 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                         | Measurand    | Calibration Method                                                                                                        | Range                         | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|----|--------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
| 30 | *Determination Specific Surface Area of Air Permeability Apparatus | Length       | Verification Regulation of Determination Specific Surface Area of Air Permeability Apparatus JJG(Construct Materials) 107 | (2.7~65)mm                    | <i>U</i> =(0.1~1.0)mm                  |                                                                                      |                |
|    |                                                                    | Time         |                                                                                                                           | (0~900)s                      | <i>U</i> =0.3s                         |                                                                                      |                |
|    |                                                                    | Volume       |                                                                                                                           | (1.5~2.5)cm <sup>3</sup>      | <i>U</i> <sub>rel</sub> =1.0%          |                                                                                      |                |
| 31 | *Accelerated Polishing Machine                                     | Length       | Verification Regulation of Accelerated Polishing Machine JJG(Transport) 054                                               | (43~46)mm                     | <i>U</i> =0.02mm                       |                                                                                      |                |
|    |                                                                    |              |                                                                                                                           | (204~407)mm                   | <i>U</i> =0.1mm                        |                                                                                      |                |
|    |                                                                    | Rotate speed |                                                                                                                           | (315~325)r/min                | <i>U</i> =1.2r/min                     |                                                                                      |                |
|    |                                                                    | Hardness     |                                                                                                                           | (60~72)HA                     | <i>U</i> =1.0HA                        |                                                                                      |                |
|    |                                                                    | Rate         |                                                                                                                           | Sand injection(2.5~35)g/min   | <i>U</i> =(0.1~1.5)g/min               |                                                                                      |                |
|    |                                                                    |              |                                                                                                                           | Water injection (50~75)mL/min | <i>U</i> =2.2mL/min                    |                                                                                      |                |
|    |                                                                    | Force        |                                                                                                                           | (705~735)N                    | <i>U</i> =1.2N                         |                                                                                      |                |
| 32 | Le Chatelier Flask for Determining Density of Hydraulic Cement     | Volume       | Verification Regulation of Le Chatelier Flask for Determining Density of Hydraulic Cement JJG(Transport) 092              | (0.01~24)mL                   | <i>U</i> <sub>rel</sub> =2.0%          |                                                                                      |                |
| 33 | *Flow Time Tester for Fine Aggregate                               | Angle        | Verification Regulation of Flow Time Tester for Fine Aggregate JJG(Transport) 109                                         | (55~65)°                      | <i>U</i> =0.2°                         |  |                |
|    |                                                                    | Length       |                                                                                                                           | (10~130)mm                    | <i>U</i> =0.05mm                       |                                                                                      |                |
| 34 | *Le Chatelier                                                      | Length       | Verification Regulation of Le Chatelier, Tester for Determining Expansion of Le Chatelier Needles                         | (0~25)mm                      | <i>U</i> =0.60mm                       |                                                                                      |                |



No. CNAS L2336

第 131 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                    | Measurand       | Calibration Method                                                                         | Range                        | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date           |
|----|-----------------------------------------------|-----------------|--------------------------------------------------------------------------------------------|------------------------------|----------------------------------------|------|--------------------------|
|    |                                               |                 | JJG(Traffic) 093                                                                           | (0.1～160)mm                  | <i>U</i> =0.04mm                       |      |                          |
| 35 | *Needle and Flake Gages                       | Length          | Calibration Specification for Needle and Flake Gages JJF1593                               | (2～90)mm                     | <i>U</i> =0.04mm                       |      |                          |
| 36 | *Testing Instrument for Crushing Value        | Length          | Verification Regulation of Testing Instrument for Crushing Value JJG(Su) 54                | (8～160)mm                    | <i>U</i> =0.06mm                       |      |                          |
| 37 | *The Penetration Test Apparatus of Bituminous | Length          | Verification Regulation of the Penetration Test Apparatus of Bituminous JJG(Transport) 067 | Indication(0～50)mm           | <i>U</i> =0.02mm                       |      |                          |
|    |                                               |                 |                                                                                            | Standard needle size(0～55)mm | <i>U</i> =0.02mm                       |      |                          |
|    |                                               | Mass            |                                                                                            | (40～210)g                    | <i>U</i> =0.02g                        |      |                          |
|    |                                               | Temperature     |                                                                                            | (0.5～55)℃                    | <i>U</i> =0.04℃                        |      |                          |
|    |                                               | Angle           |                                                                                            | (5～15)°                      | <i>U</i> =0.2°                         |      |                          |
|    |                                               | Time            |                                                                                            | (3～65)s                      | <i>U</i> =0.3s                         |      |                          |
| 38 | *Bituminous materials' determining ductility  | Stretching rate | Verification Regulation of Bituminous Materials Determining Ductility JJG(Transport) 023   | (9～11)mm/min                 | <i>U</i> =0.1mm/min                    |      |                          |
|    |                                               |                 |                                                                                            | (40～60)mm/min                | <i>U</i> =0.3mm/min                    |      |                          |
|    |                                               | Temperature     |                                                                                            | (0～30)℃                      | <i>U</i> =0.04℃                        |      |                          |
|    |                                               |                 |                                                                                            | Length                       | (0～1500)mm                             |      | <i>U</i> = (0.03～0.3) mm |
| 39 | *Bitumen softening meter                      | Temperature     | Calibration Code for bitumen softening meter SL414                                         | (0～200)℃                     | <i>U</i> =0.2℃                         |      |                          |
|    |                                               | Length          |                                                                                            | (0～30)mm                     | <i>U</i> =0.04mm                       |      |                          |
|    |                                               | Mass            |                                                                                            | (2～5)g                       | <i>U</i> =0.02g                        |      |                          |
|    |                                               | Speed           |                                                                                            | (1～10)℃/min                  | <i>U</i> =0.2℃/min                     |      |                          |

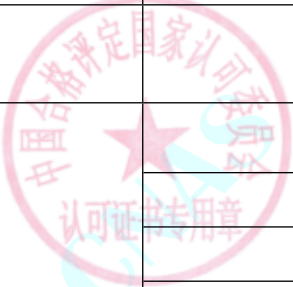


No. CNAS L2336

第 132 页 共 137

The scope of the accreditation in Chinese remains the definitive version.



| №  | Instrument                                                 | Measurand                | Calibration Method                                                                            | Range                              | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|----|------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
| 40 | *Eight-wheel Continuous Vialog                             | Length                   | Verification Regulation of Eight-wheel Continuous Vialog JJG(Transport) 024                   | Indication(-20~20)mm               | <i>U</i> =0.05mm                       |                                                                                      |                |
|    |                                                            |                          |                                                                                               | Diameter(159~161)mm                | <i>U</i> =0.05mm                       |                                                                                      |                |
|    |                                                            | Hardness                 |                                                                                               | Datum length(2970~3030)mm          | <i>U</i> =10mm                         |                                                                                      |                |
|    |                                                            |                          |                                                                                               | (55~70)HA                          | <i>U</i> =0.6HA                        |                                                                                      |                |
| 41 | *Plate Loading,s Test Place                                | Force                    | Calibration method of bearing plate tester TGX082                                             | (0.1~100)kN                        | <i>U</i> <sub>rel</sub> =0.4%          |                                                                                      |                |
|    |                                                            | Length                   |                                                                                               | (0~100)mm                          | <i>U</i> =0.01mm                       |                                                                                      |                |
|    |                                                            |                          |                                                                                               | (299~301)mm                        | <i>U</i> =0.16mm                       |                                                                                      |                |
|    |                                                            | Pressure                 |                                                                                               | (0~60)MPa                          | <i>U</i> =0.5%FS                       |                                                                                      |                |
| 42 | *Benkelman Beam Pavement Deflectometer                     | Length                   | Verification Regulation of Benkelman Beam Pavement Deflectometer JJG(Transport) 025           | (0~300)mm                          | <i>U</i> =(0.005~0.05)mm               |                                                                                      |                |
| 43 | *Pavement Texture Depth Manual Sanding Device              | Length                   | Verification Regulation of Pavement Texture Depth Manual Sanding Device JJG(Transport) 117    | (1~100)mm                          | <i>U</i> =0.02mm                       |                                                                                      |                |
|    |                                                            | Roughness                |                                                                                               | Ra(0.01~100) μ m                   | <i>U</i> =1 μ m                        |                                                                                      |                |
| 44 | Pile Dynamic Measuring Instrument                          | Acceleration             | Verification Regulation of Pile Dynamic Measuring Instrument JJG 930                          | (2~450)m/s <sup>2</sup>            | <i>U</i> <sub>rel</sub> =2.0%          |  |                |
| 45 | Measuring Instrument for Cement Bright Degumming Equipment | Acceleration sensitivity | Verification Regulation of Measuring Instrument for Cement Bright Degumming Equipment JJG 974 | (1~100)m/s <sup>2</sup> (40~100)Hz | <i>U</i> <sub>rel</sub> =1.2%          |                                                                                      |                |
|    |                                                            | Frequency                |                                                                                               | (20~2000)Hz                        | <i>U</i> <sub>rel</sub> =0.3%          |                                                                                      |                |
|    |                                                            | Amplitude                |                                                                                               | (0.01~10)mm                        | <i>U</i> <sub>rel</sub> =1.0%          |                                                                                      |                |
|    |                                                            | Rotate speed             |                                                                                               | (15~20000)r/min                    | <i>U</i> <sub>rel</sub> =0.3%          |                                                                                      |                |



No. CNAS L2336

第 133 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                                                   | Measurand | Calibration Method                                                                                     | Range           | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------|------|----------------|
|    |                                                                              | Time      |                                                                                                        | (0~5)min        | $U=0.2s$                          |      |                |
| 46 | *Concrete bending fixture                                                    | Length    | Calibration method for concrete bending fixture TGX032                                                 | (0~600)mm       | $U=0.05mm$                        |      |                |
| 47 | *Test Apparatus for Theoretical Maximum Specific Gravity of Asphalt Mixtures | Pressure  | V.R. of Test Apparatus for Theoretical Maximum Specific Gravity of Asphalt Mixtures JJG(Transport) 105 | (1~120)kPa      | $U=0.7\%FS$                       |      |                |
|    |                                                                              | Vacuum    |                                                                                                        | (-100~-0.1)kPa  | $U=0.7\%FS$                       |      |                |
|    |                                                                              | Volume    |                                                                                                        | (2000~5000)mL   | $U=(4~8)mL$                       |      |                |
|    |                                                                              | Time      |                                                                                                        | (0~2)min        | $U=0.2s$                          |      |                |
| 48 | *Dynamic penetration tester                                                  | Mass      | V.R. of Dynamic Penetration Tester JJG(Transport)169                                                   | (0~15)kg        | $U=0.04kg$                        |      |                |
|    |                                                                              |           |                                                                                                        | (60~65)kg       | $U=0.2kg$                         |      |                |
|    |                                                                              | Length    |                                                                                                        | (0~800)mm       | $U=0.2mm$                         |      |                |
|    |                                                                              | Angle     |                                                                                                        | (9~16)°         | $U=0.2^{\circ}$                   |      |                |
| 49 | *California Bearing Ratio Instrument                                         | Mass      | Verification Regulation of California Bearing Ratio Instrument JJG(Transport) 106                      | (1200~1300)g    | $U=0.5g$                          |      |                |
|    |                                                                              | Length    |                                                                                                        | (0~200)mm       | $U=0.05mm$                        |      |                |
|    |                                                                              | Force     |                                                                                                        | (0.1~50)kN      | $U_{rel}=0.3\%$                   |      |                |
|    |                                                                              | Speed     |                                                                                                        | (0.5~1.5)mm/min | $U_{rel}=3.0\%$                   |      |                |
| 50 | *Waterproof Roll Material Impervious Instrument                              | Pressure  | Calibration Specification for Waterproof Roll Material Impervious Instrument JJF(Jin)03                | (0~1)MPa        | $U=0.6\%FS$                       |      |                |
| 51 | *Rebar Gauge Punching Machine                                                | Length    | Verification Regulation of Rebar Gauge Punching Machine JJG (交通) 158                                   | (0~400)mm       | $U=0.05mm$                        |      |                |



No. CNAS L2336

第 134 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                                              | Measurand | Calibration Method                                                                            | Range                        | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|---------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------|------------------------------|-------------------------------|------|----------------|
| 52 | *Steel bar cold bending core                            | Length    | Calibration method of Steel bar cold bending core TGX054                                      | (0~300)mm                    | U=0.05mm                      |      |                |
| 53 | *Sand-cone Density Apparatus                            | Length    | Verification Regulation of Sand-cone Density Apparatus JJG(Transport) 120                     | (0~400)mm                    | U=0.05mm                      |      |                |
| 54 | *Annular sword                                          | Length    | Code for calibration of annular sword SL 110                                                  | (0~100)mm                    | U=0.05mm                      |      |                |
|    |                                                         | Angle     |                                                                                               | (9~16)°                      | U=0.1°                        |      |                |
|    |                                                         | Roughness |                                                                                               | Ra(0~4) μm                   | U=0.3 μm                      |      |                |
| 55 | *Carbonization Depth Measuring Instruments and Calipers | Length    | Calibration Specification for Carbonization Depth Measuring Instruments and Calipers JJF 1721 | Measuring Rule(0~8)mm        | U=0.08mm                      |      |                |
|    |                                                         |           |                                                                                               | Measuring instrument(0~26)mm | U=0.01mm                      |      |                |
| 56 | *Mortar layering tester                                 | Length    | Calibration method for Mortar layering tester TGX046                                          | (0~250)mm                    | U=0.05mm                      |      |                |
| 57 | *Cement asphalt mortar expansion cylinder               | Length    | Calibration method for Cement asphalt mortar expansion cylinder TGX092                        | (0~200)mm                    | U=0.05mm                      |      |                |
| 58 | *Unlimited test mold                                    | Length    | Calibration method for Unlimited test mold TGX079                                             | (0~300)mm                    | U=0.05mm                      |      |                |
| 59 | *Core drilling sampler                                  | Length    | Calibration method of core drilling sampler TGX068                                            | (0~800)mm                    | U=0.05mm                      |      |                |
| 60 | *geotextile permeability tester                         | Length    | Calibration method of geotextile permeability tester TGX085                                   | (0~300)mm                    | U=0.05mm                      |      |                |
|    |                                                         | Time      |                                                                                               | (0~2)min                     | U=0.2s                        |      |                |
| 61 | *Relative density meter                                 | Length    | V.R. of Relative density meter JJG1021                                                        | (40~160)mm                   | U=0.05mm                      |      |                |
|    |                                                         | Mass      |                                                                                               | (1200~1300)g                 | U=1g                          |      |                |



在线扫码获取验证

No. CNAS L2336

第 135 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| №  | Instrument                               | Measurand                              | Calibration Method                                                                                            | Range                                              | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------|------|----------------|
| 62 | *vacuum Saturator                        | Pressure                               | Calibration method for vacuum Saturator TGX036                                                                | (-0.1~0)MPa                                        | $U=0.6\%FS$                       |      |                |
|    |                                          | Time                                   |                                                                                                               | (29~31)min                                         | $U=3s$                            |      |                |
| 63 | *Mechanical Sieve Shaker                 | Length                                 | Calibration code for mechanical sieve shaker SL411                                                            | (8~14)mm                                           | $U=0.1mm$                         |      |                |
|    |                                          | Frequency                              |                                                                                                               | (100~300)BPM                                       | $U=5BPM$                          |      |                |
| 64 | Pile Static Load Measuring Instrument    | Force                                  | C.S. for Pile Static Load Measuring Instrument JJF(Hei)01                                                     | (0.1~5000)kN                                       | $U_{rel}=0.4\%$                   |      |                |
|    |                                          | Pressure                               |                                                                                                               | (0~70)MPa                                          | $U=0.6\%FS$                       |      |                |
|    |                                          | Length                                 |                                                                                                               | (0~50)mm                                           | $U=0.02mm$                        |      |                |
| 65 | *Steel Bar Tarnish Measuring Instruments | DC Voltage                             | Verification Regulation of Steel Bar Tarnish Measuring Instruments JJF 1341                                   | (0.01~10)V                                         | $U_{rel}=0.1\%$                   |      |                |
|    |                                          | DC Current                             |                                                                                                               | (0.001~2)A                                         | $U_{rel}=0.2\%$                   |      |                |
| 66 | *Cement Le Chatelier Needles             | Length                                 | Calibration Specification for the Expansion Tester of Cement Le Chatelier Needles JJF(Construct Materials)110 | (0~25)mm                                           | $U=0.04mm$                        |      |                |
|    |                                          | Mass                                   |                                                                                                               | (295~305)g                                         | $U=0.02g$                         |      |                |
| 67 | *Vibrating Talle for Concrte Testing     | Length                                 | V.R. of Vibrating Talle for Concrte Testing JJG(Su)60                                                         | (0.33~0.52)mm                                      | $U=0.012mm$                       |      |                |
|    |                                          | Force                                  |                                                                                                               | (0.1~1000)N                                        | $U=2N$                            |      |                |
|    |                                          | Frequency                              |                                                                                                               | (47~53)Hz                                          | $U=0.2Hz$                         |      |                |
|    |                                          | Time                                   |                                                                                                               | (0~5)s                                             | $U=0.01s$                         |      |                |
| 68 | Retroreflectometer s                     | Retroreflectiv e luminance coefficient | Calibration Specification for Retroreflectometers JJF1809                                                     | (0.1~1999)mcd · m <sup>-2</sup> · lx <sup>-1</sup> | $U_{rel}=15\%$                    |      |                |
| 69 | Asphalt Aging Oven                       | Temperature                            | Asphalt Aging Oven JJG(Transport)056                                                                          | (0~300)°C                                          | $U=0.16^{\circ}C$                 |      |                |



No. CNAS L2336

第 136 页 共 137

The scope of the accreditation in Chinese remains the definitive version.

| № | Instrument | Measurand    | Calibration Method | Range          | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|------------|--------------|--------------------|----------------|-----------------------------------|------|----------------|
|   |            | Length       |                    | (0~300)mm      | $U=0.04\text{mm}$                 |      |                |
|   |            | Rotate speed |                    | (4~20)r/min    | $U=0.08\text{r/min}$              |      |                |
|   |            | Time         |                    | (0~200)min     | $U=5.2\text{s}$                   |      |                |
|   |            | Flow         |                    | (3.5~4.5)L/min | $U=56\text{mL/min}$               |      |                |



No. CNAS L2336

第 137 页 共 137

The scope of the accreditation in Chinese remains the definitive version.