

Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: Room 219, Building 5, Heda Creative Park, No.1, No.8 Street, Qiantang District, Hangzhou, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## SCHEDULE 5 ACCREDITED CALIBRATION AND MEASUREMENT CAPABILITY SCOPE

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

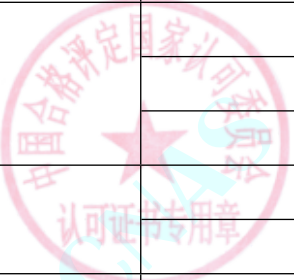
| No     | Instrument                 | Measurand | Calibration Method                                                 | Range                                           | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|--------|----------------------------|-----------|--------------------------------------------------------------------|-------------------------------------------------|-------------------------------|------|----------------|
| Length |                            |           |                                                                    |                                                 |                               |      |                |
| 1      | *Gear Measuring<br>centere | Length    | Calibration Specification for<br>Gear Measuring Centers<br>JJF1561 | m(1~10)mm Gear<br>outline: $\Phi(20\sim400)$ mm | $U=2.3\mu\text{m}$            |      |                |
|        |                            | Length    |                                                                    | m(1~10)mm Gear<br>Helix: db(20~400)mm           | $U=2.3\mu\text{m}$            |      |                |



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| № | Instrument                                                                  | Measurand | Calibration Method                                                                                                     | Range                         | Expanded Uncertainty<br>( $k=2$ )   | Note                                                                                    | Effective Date |
|---|-----------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------|----------------|
| 2 | *Coordinate Measuring Machines                                              | length    | Calibration Specification for Coordinate Measuring Machine JJF 1064                                                    | (0~3000) mm                   | $U=0.42 \mu m+1.1 \times 10^{-6} L$ | No measurement 2D probe、Image measuring head、Rotary working table、Multiple probe system |                |
| 3 | Feeler Gauges                                                               | Length    | Verification Regulation of Feeler Gauges JJG 62                                                                        | (0.02~1.00)mm                 | $U=2.0 \mu m$                       |                                                                                         |                |
|   |                                                                             |           |                                                                                                                        | (1.00~3.00)mm                 | $U=2.7 \mu m$                       |                                                                                         |                |
| 4 | Plain Limit Gauges                                                          | Length    | Verification Regulation of Plain Limit Gauges JJG 343                                                                  | (0.1~500) mm                  | $U=2.0 \mu m$                       |                                                                                         |                |
| 5 | *Contact Instruments of Surface Roughness Measurement by the Profile Method | Length    | Calibration Specification for Contact (Stylus) Instruments of Surface Roughness Measurement by Profile Method JJF 1105 | (0.1~4.0) $\mu m$             | $U_{rel}=3.1\%$                     |                                                                                         |                |
| 6 | *Magnetic and Eddy Current Measuring Instrument for Coating Thickness       | Length    | Verification Regulation of Magnetic and Eddy Current Measuring Instrument for Coating Thickness JJG 818                | (10~100) $\mu m$              | $U=0.2 \mu m$                       |     |                |
|   |                                                                             |           |                                                                                                                        | (100~500) $\mu m$             | $U=1.1 \mu m$                       |                                                                                         |                |
|   |                                                                             |           |                                                                                                                        | (500~1000) $\mu m$            | $U=2.2 \mu m$                       |                                                                                         |                |
| 7 | *Linear Displacement Sensors                                                | Length    | Calibration Specification for Linear Displacement Sensors JJF 1305                                                     | (0~1000) mm                   | $U=0.22 \mu m+10^{-6} L$            |                                                                                         |                |
|   |                                                                             |           |                                                                                                                        | (0~1000) mm                   | $U=0.36 \mu m$                      |                                                                                         |                |
| 8 | Gauge for cylindrical thread                                                | Length    | Calibration Specification for Cylindrical Thread Gauges                                                                | Thread plug gauge: (1~150) mm | $U=3.1 \mu m+10^{-5} L$             |                                                                                         |                |

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| №  | Instrument                                        | Measurand | Calibration Method                                                                             | Range                                | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------|------|----------------|
|    |                                                   |           | JJF 1345                                                                                       | Thread ring gauge:<br>(2.5~160) mm   | $U=3.6 \mu\text{m}+10^{-5}L$      |      |                |
|    |                                                   |           |                                                                                                | Falling distance: (0~10)mm           | $U=0.8 \mu\text{m}$               |      |                |
|    |                                                   | Angle     |                                                                                                | (0~90)°                              | $U=1.4'$                          |      |                |
| 9  | *Imaging Probe Measuring Machines                 | Length    | Calibration Specification for Imaging Probe Measuring Machines JJF 1318                        | (0~200) mm                           | $U=0.9 \mu\text{m}$               |      |                |
| 10 | *Projectors                                       | Length    | Calibration Specification for Projectors JJF 1093                                              | (0~200) mm                           | $U=2.4 \mu\text{m}$               |      |                |
| 11 | Projectors for Detecting The Notch of Test Sample | Length    | Calibration Specification for Projectors for Detecting The Notch of Test Sample JJF (Zhe) 1133 | Radius: (0~150) mm                   | $U=5 \mu\text{m}$                 |      |                |
|    |                                                   | Angle     |                                                                                                | 43° ~47°                             | $U=2'$                            |      |                |
| 12 | *Toolmakers Microscope                            | Length    | Verification Regulation of Toolmaker's Microscope JJG 56                                       | (0~200)mm                            | $U=0.82 \mu\text{m}$              |      |                |
| 13 | *Reading, Measuring microscope                    | Length    | Verification Regulation of Reading Microscope and Measuring Microscope JJG 571                 | Microscope of measurement: (0~50) mm | $U=1.7 \mu\text{m}$               |      |                |
|    |                                                   |           |                                                                                                | Reading microscope: (0~8) mm         | $U=0.26 \mu\text{m}$              |      |                |
| 14 | *Metallographic Microscope                        | Length    | Calibration Specification for Metallurgical Microscopes JJF1914                                | 20×~2000×                            | $U_{\text{rel}}=1.4\%$            |      |                |
|    |                                                   |           |                                                                                                | (0~10) mm                            | $U=1.2 \mu\text{m}$               |      |                |
| 15 | *Biological Microscopes                           | Length    | Calibration Specification for Biological Microscopes JJF 1402                                  | 20×~2000×                            | $U_{\text{rel}}=1.2\%$            |      |                |
|    |                                                   |           |                                                                                                | (0.5~10) mm                          | $U=4 \mu\text{m}$                 |      |                |



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| №  | Instrument                        | Measurand | Calibration Method                                                      | Range                            | Expanded Uncertainty<br>( $k=2$ )           | Note                                                                | Effective Date |
|----|-----------------------------------|-----------|-------------------------------------------------------------------------|----------------------------------|---------------------------------------------|---------------------------------------------------------------------|----------------|
| 16 | *Ultrasonic Thickness Instruments | Length    | Calibration Specification for Ultrasonic Thickness Instruments JJF 1126 | (0.5~200) mm                     | $U=(28\sim44) \mu\text{m}$                  |                                                                     |                |
| 17 | Test Sieves                       | Length    | Calibration Specification for Test Sieves JJF 1175                      | (0.04~5) mm                      | $U=2 \mu\text{m}$                           |                                                                     |                |
|    |                                   |           |                                                                         | (5~125) mm                       | $U=35 \mu\text{m}$                          |                                                                     |                |
| 18 | *Microcator                       | Length    | Verification Regulation of Microcator JJG 118                           | (-100~+100) $\mu\text{m}$        | $U=0.1 \mu\text{m}$                         | No measurement Indexing value 0.1 $\mu\text{m}$ , 0.2 $\mu\text{m}$ |                |
| 19 | *Comparators of Machine Type      | Length    | Verification Regulation of Comparators of Machine Type JJG 39           | (-100~+100) $\mu\text{m}$        | $U=0.16 \mu\text{m}$                        | No measurement Indexing value 0.5 $\mu\text{m}$                     |                |
| 20 | *Length Measuring Instrument      | Length    | Calibration Specification for Length Measuring Instrument JJF 1189      | (0~1000) mm                      | $U=0.5 \mu\text{m}$                         |                                                                     |                |
| 21 | *Length Measuring Machine         | Length    | Calibration Specification for Length Measuring Machine JJF 1066         | (0~6000) mm                      | $U=0.13 \mu\text{m} + 4.9 \times 10^{-6} L$ |                                                                     |                |
| 22 | *Optimeter                        | Length    | Verification Regulation of Optimeter JJG 45                             | (-100~100) mm                    | $U=0.10 \mu\text{m}$                        |                                                                     |                |
| 23 | Frame level and Shaft Level       | Angle     | Calibration Specification for Frame Levels and Shaft Levels JJF 1084    | division value: (0.02~0.10) mm/m | $U_{\text{rel}}=5.4\%$                      |                                                                     |                |
| 24 | *Square                           | Length    | Verification Regulation of Squares JJG 7                                | H:(63~500)mm                     | $U=2.0 \mu\text{m}$                         |                                                                     |                |
| 25 | Internal Micrometers              | Length    | Verification Regulation of Internal Micrometers JJG 22                  | (50~1000)mm                      | $U=(2\sim6) \mu\text{m}$                    |                                                                     |                |



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| №  | Instrument                               | Measurand | Calibration Method                                                                    | Range                                                         | Expanded Uncertainty<br>(k=2)           | Note | Effective Date |
|----|------------------------------------------|-----------|---------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------|------|----------------|
| 26 | *General Bevel Protractors               | Angle     | Calibration Specification for General Bevel Protractors JJF 1959                      | (0° ~ 320° )                                                  | U=1'                                    |      |                |
|    |                                          |           |                                                                                       | (320° ~ 360° )                                                | U=2'                                    |      |                |
| 27 | Calibrators for the Levels               | Angle     | Verification Regulation of Calibrators for Levels JJG 191                             | division value:<br>(0.005mm/m ~ 0.01mm/m)                     | $U_{rel}=2.4\%$                         |      |                |
| 28 | Screw Templates                          | Length    | Verification Regulation of Screw Templates JJG 60                                     | Screw pitch: (0.40 ~ 6.350) mm                                | $U=3.3 \mu m$                           |      |                |
|    |                                          | Angle     |                                                                                       | 55° 、 60°                                                     | U=2'                                    |      |                |
| 29 | *Testers for Dial Gauges                 | Length    | Verification Regulation of Tester for Dial Gauges JJG 201                             | Tester for Dial Indicator Gauges Reading in 0.01mm: (0~50) mm | $U=0.68 \mu m$                          |      |                |
|    |                                          |           |                                                                                       | Tester for Dial Indicator Gauges Reading in 0.001mm: (0~5) mm | $U=0.26 \mu m$                          |      |                |
|    |                                          |           |                                                                                       | Tester for Dial Raster Indicator Gauges: (0~50) mm            | $U=1.1 \mu m$                           |      |                |
|    |                                          |           |                                                                                       | Tester for Dial Raster Indicator Gauges: (50~100) mm          | $U=2.2 \mu m$                           |      |                |
| 30 | *Contact (Stylus) Surface Contour Tester | Length    | Calibration Specification for Contact (Stylus) Surface Contour Tester JJF (Ming) 1043 | vertical pcomponent: (0~50) mm                                | $U=1.0 \mu m$                           |      |                |
|    |                                          |           |                                                                                       | radius: (0~50) mm                                             | $U=2.2 \mu m$                           |      |                |
|    |                                          | Angle     |                                                                                       | Angle: 0~180°                                                 | U=41"                                   |      |                |
| 31 | Gauge Blocks                             | length    | Verification Regulation of Gauge Blocks JJG 146                                       | (0.5~1000) mm                                                 | $U=0.12 \mu m + 1.2 \times 10^{-6} L_n$ |      |                |



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| №  | Instrument                                        | Measurand | Calibration Method                                                                      | Range                            | Expanded Uncertainty<br>( $k=2$ ) | Note                                            | Effective Date |
|----|---------------------------------------------------|-----------|-----------------------------------------------------------------------------------------|----------------------------------|-----------------------------------|-------------------------------------------------|----------------|
| 32 | *Height Measuring Instrument with Digital Display | length    | Calibration Specification for Height Measuring Instrument with Digital Display JJF 1254 | (0~500) mm                       | $U=1.5 \mu\text{m}$               |                                                 |                |
| 33 | *Grating Micrometers                              | length    | Calibration Specification for Grating Micrometers JJF 1682                              | (0~50) mm                        | $U=0.3 \mu\text{m}$               | No measurement                                  |                |
|    |                                                   |           |                                                                                         | (0~100) mm                       | $U=0.4 \mu\text{m}$               | 0.1 $\mu\text{m}$ grade~0.1 $\mu\text{m}$ grade |                |
| 34 | Cylindrical measuring Pin                         | length    | Calibration Specification for Cylindrical Measuring Pin JJF1207                         | Needle gauge: (0.1~25) mm        | $U=0.3 \mu\text{m}$               | No measurement                                  |                |
|    |                                                   |           |                                                                                         | Three-wine Set: (0.118~6.212) mm | $U=0.3 \mu\text{m}$               | The standard needle gauge                       |                |
| 35 | *Micrometer                                       | length    | Verification Regulation of Micrometer JJG 21                                            | (0~25) mm                        | $U=1 \mu\text{m}$                 |                                                 |                |
|    |                                                   |           |                                                                                         | (25~500) mm                      | $U=2 \mu\text{m}$                 |                                                 |                |
|    |                                                   |           |                                                                                         | Proofreading rod (25~475) mm     | $U=(0.17\sim1.4) \mu\text{m}$     |                                                 |                |
| 36 | *Depth Micrometers                                | length    | Verification Regulation of Depth Micrometers JJG 24                                     | (0~25) mm                        | $U=1 \mu\text{m}$                 |                                                 |                |
|    |                                                   |           |                                                                                         | (25~300) mm                      | $U=3 \mu\text{m}$                 |                                                 |                |
|    |                                                   |           |                                                                                         | Proofreading rod (25~275) mm     | $U=(0.17\sim0.81) \mu\text{m}$    |                                                 |                |
| 37 | *Micrometers with Gauge                           | length    | Verification Regulation of Micrometers with Gauge JJG 427                               | (0~100) mm                       | $U=1 \mu\text{m}$                 |                                                 |                |
| 38 | *Common Normal Micrometer                         | length    | Verification Regulation of Common Normal Micrometer JJG 82                              | (0~25) mm                        | $U=1 \mu\text{m}$                 |                                                 |                |
|    |                                                   |           |                                                                                         | (25~200) mm                      | $U=2 \mu\text{m}$                 |                                                 |                |



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| №  | Instrument                                              | Measurand | Calibration Method                                                                           | Range                                         | Expanded Uncertainty<br>( $k=2$ )  | Note                                                     | Effective Date |
|----|---------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------|----------------------------------------------------------|----------------|
|    |                                                         |           |                                                                                              | Proofreading rod (25~175) mm                  | $U = (0.17 \sim 0.53) \mu\text{m}$ |                                                          |                |
| 39 | *Screw Thread Micrometers                               | length    | Verification Regulation of Screw Thread Micrometers JJG 25                                   | (0~200) mm                                    | $U=1 \mu\text{m}$                  | No measurement Proofreading Measuring rod                |                |
| 40 | *Micrometers with Dial Comparator、Indicating Snap Gauge | length    | Verification Regulation of Micrometers with Dial Comparator and Indication Snap Gauge JJG 26 | Micrometers with Dial Comparator: (0~25) mm   | $U=0.5 \mu\text{m}$                |                                                          |                |
|    |                                                         |           |                                                                                              | Micrometers with Dial Comparator: (25~100) mm | $U=1 \mu\text{m}$                  |                                                          |                |
|    |                                                         |           |                                                                                              | Indicating Snap Gauge: (0~200)mm              | $U=0.4 \mu\text{m}$                |                                                          |                |
| 41 | *Micrometers for Measuring Inside Dimension             | length    | Calibration Specification of Micrometers for Measuring Inside Dimension JJF 1411             | (30~200)mm                                    | $U=2.5 \mu\text{m}$                | No measurement Three point inside micrometer above 100mm |                |
|    |                                                         |           |                                                                                              | (5~30)mm                                      | $U=0.9 \mu\text{m}$                |                                                          |                |
| 42 | *Micrometers with Measuring Range from (500~3000)mm     | length    | Calibration Specification for Large Dimension Outside Micrometers JJF 1088                   | Micrometer head: (0~25)mm                     | $U=1 \mu\text{m}$                  |                                                          |                |
|    |                                                         |           |                                                                                              | (500~1000)mm                                  | $U=(6 \sim 7) \mu\text{m}$         |                                                          |                |
|    |                                                         |           |                                                                                              | Proofreading rod (525~1000) mm                | $U = (1.5 \sim 2.9) \mu\text{m}$   |                                                          |                |
| 43 | *Current Calipers                                       | length    | Verification Regulation of Current Calipers JJG 30                                           | (0~300)mm                                     | $U=0.01 \text{ mm}$                |                                                          |                |
|    |                                                         |           |                                                                                              | (500~1000)mm                                  | $U=0.03 \text{ mm}$                |                                                          |                |

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| №  | Instrument                           | Measurand | Calibration Method                                          | Range                                             | Expanded Uncertainty<br>( $k=2$ ) | Note                  | Effective Date |
|----|--------------------------------------|-----------|-------------------------------------------------------------|---------------------------------------------------|-----------------------------------|-----------------------|----------------|
|    |                                      |           |                                                             | (300~500)mm                                       | $U=0.02$ mm                       |                       |                |
|    |                                      |           |                                                             | (1000~2000)mm                                     | $U=0.05$ mm                       |                       |                |
| 44 | *Height Caliper                      | length    | Verification Regulation of Height Caliper JJG 31            | (0~300)mm                                         | $U=0.01$ mm                       |                       |                |
|    |                                      |           |                                                             | (300~500)mm                                       | $U=0.02$ mm                       |                       |                |
|    |                                      |           |                                                             | (500~1000)mm                                      | $U=0.03$ mm                       |                       |                |
|    |                                      |           |                                                             | (1000~2000)mm                                     | $U=0.05$ mm                       |                       |                |
| 45 | *Gear Tooth Calipers                 | length    | Calibration Specification for Gear Tooth Calipers JJF 1072  | M(1~50)mm                                         | $U=0.01$ mm                       |                       |                |
| 46 | *Dial Gauges (dial and digital)      | length    | Verification Regulation of Dial Gauges JJG 34               | (0~1) mm                                          | $U=1.2$ $\mu$ m                   |                       |                |
|    |                                      |           |                                                             | (1~10) mm                                         | $U=3.5$ $\mu$ m                   |                       |                |
|    |                                      |           |                                                             | (10~30) mm                                        | $U=4.7$ $\mu$ m                   |                       |                |
|    |                                      |           |                                                             | (30~50) mm                                        | $U=7.0$ $\mu$ m                   |                       |                |
|    |                                      |           |                                                             | (50~100) mm                                       | $U=4$ $\mu$ m                     |                       |                |
| 47 | *dial Test Indicator                 | length    | Verification Regulation of Dial Test Indicator JJG 35       | lever indicator: (0~1)mm                          | $U=3.7$ $\mu$ m                   |                       |                |
|    |                                      |           |                                                             | Lever micrometer: (0~0.4) mm                      | $U=0.8$ $\mu$ m                   |                       |                |
| 48 | *Wide Range Dagues Reading in 0.01mm | length    | Verification Regulation of Dial Gauges JJG 34               | (10~100)mm                                        | $U=8\mu$ m                        | 合格评定 国家认可 委员会 认可证书专用章 |                |
| 49 | *Bore Dial Indicators                | length    | Calibration Specification for Bore Dial Indicators JJF 1102 | Bore Dial Indicators Reading in 0.01mm: (2~250)mm | $U=2.7$ $\mu$ m                   |                       |                |



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|    |                      |              |                                                            | Bore Dial Indicators<br>Reading in 0.001mm:<br>(10~250)mm | $U=1.2\text{ }\mu\text{m}$            |                               |                |
| 50 | Straight Edge        | Straightness | Verification Regulation of<br>Straight Edge JJG 63         | (75~100) mm                                               | $U=0.4\text{ }\mu\text{m}$            |                               |                |
|    |                      |              |                                                            | (100~200) mm                                              | $U=0.6\text{ }\mu\text{m}$            |                               |                |
|    |                      |              |                                                            | (200~500) mm                                              | $U=1.4\text{ }\mu\text{m}$            |                               |                |
| 51 | *Surface Plates      | Flaneness    | Verification Regulation of<br>Surface Plates JJG 117       | 160mm×100mm~<br>2500mm×1600mm                             | $U=(1.9\sim9.7)\text{ }\mu\text{m}$   | No<br>measurement<br>0 Level  |                |
| 52 | *Straight Edges      | Straightness | Calibration Specification for<br>Straight Edges JJF 1097   | (300~4000)mm                                              | $U=2\times10^{-6}L$                   | No<br>measurement<br>00 level |                |
| 53 | *Thickness<br>Gauges | length       | Calibration Specification for<br>Thickness Gauges JJF 1255 | Reading in 0.01mm:<br>(0~30)mm                            | $U=5\text{ }\mu\text{m}$              |                               |                |
|    |                      |              |                                                            | Reading in 0.001mm:<br>(0~10) mm                          | $U=1.9\text{ }\mu\text{m}$            |                               |                |
| 54 | *Dial Snap Gauges    | length       | Calibration Specification for<br>Dial Snap Gauges JJF 1253 | range: (5~100)mm                                          | $U=(5.2\sim15)\text{ }\mu\text{m}$    |                               |                |
| 55 | *Depth Dial Gauge    | length       | Verification Regulation of<br>Depth Dial Gauge JJG 830     | Depth Dial Gauge<br>Reading in 0.01mm:<br>(0~300)mm       | $U=2.6\text{ }\mu\text{m}$            |                               |                |
|    |                      |              |                                                            | Depth Dial Gauge<br>Reading in 0.001mm(0~<br>300)mm       | $U=1.3\text{ }\mu\text{m}$            |                               |                |
|    |                      |              |                                                            | Proofreading measuring<br>tool (1~300) mm                 | $U=(0.13\sim0.88)\text{ }\mu\text{m}$ |                               |                |
| 56 | Steel Rule           | length       | Verification Regulation of<br>Steel Rule JJG 1             | (0~2000)mm                                                | $U=0.04\text{ mm}$                    |                               |                |



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| 57 | *Extensometer                           | length    | Verification Regulation of<br>Extensometer JJG 762                          | (0.1~0.5) mm                    | $U=0.8\mu\text{m}$            |      |                |
|    |                                         |           |                                                                             | (0.5~10) mm                     | $U_{\text{rel}}=0.2\%$        |      |                |
| 58 | Sine Bars                               | angle     | Verification Regulation of<br>Sine Bars JJG 37                              | 30°                             | $U=2.3''$                     |      |                |
| 59 | *Callipers for<br>Welding<br>Inspection | length    | Verification Regulation of<br>Callipers for Welding<br>Inspection JJG 704   | (0~60) mm                       | $U=0.03\text{mm}$             |      |                |
|    |                                         | angle     |                                                                             | (0~60) °                        | $U=8'$                        |      |                |
| 60 | Fineness of<br>Grind Gage               | length    | Verification Regulation of<br>Fineness of Grind Gage JJG<br>905             | (0~100) $\mu\text{m}$           | $U=0.5\mu\text{m}$            |      |                |
|    |                                         |           |                                                                             | (100~150) $\mu\text{m}$         | $U=1.1\mu\text{m}$            |      |                |
| 61 | *Wedge-Shape<br>Filler Gauges           | length    | Calibration Specification for<br>Wedge-Shape Filler Gauges<br>JJF 1548      | (0~60) mm                       | $U=11\mu\text{m}$             |      |                |
| 62 | *Brick Calipers                         | length    | Calibration Specification for<br>Brick Calipers JJF (zhe)<br>1109           | (0~30) mm                       | $U=0.03\text{mm}$             |      |                |
|    |                                         |           |                                                                             | (40~500) mm                     | $U=0.14\text{mm}$             |      |                |
| 63 | *Inside Calipers                        | length    | Calibration Specification for<br>Inside Calipers JJF (zhe)<br>1091          | (0~500) mm                      | $U=0.01\text{ mm}$            |      |                |
| 64 | *Point<br>Micrometers                   | length    | Calibration Specification for<br>Point Micrometers JJF<br>(zhe) 1045        | (0~25) mm                       | $U=1\mu\text{m}$              |      |                |
|    |                                         |           |                                                                             | (25~150) mm                     | $U=2\mu\text{m}$              |      |                |
|    |                                         |           |                                                                             | Proofreading rod(25~<br>125) mm | $U=(0.17\sim0.39)\mu\text{m}$ |      |                |
| 65 | *Circle Sample<br>Cutters               | length    | Calibration Specification for<br>Circle Sample Cutters JJF<br>(Textile) 061 | (0~200) mm                      | $U=0.25\text{ mm}$            |      |                |



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| №  | Instrument                                            | Measurand     | Calibration Method                                                                                | Range                                                         | Expanded Uncertainty<br>( $k=2$ )                                                             | Note | Effective Date |
|----|-------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------|----------------|
| 66 | *Stereomicroscope                                     | Magnification | Calibration Specification for Stereomicroscope JJF (ming) 1063                                    | $(0.5\times\sim5\times)$                                      | $U_{rel}=(0.5\%\sim0.9\%)$                                                                    |      |                |
| 67 | *Instrument for Steel Bar Gauge Length                | length        | Calibration Specification for Rebar Gauge Punching Machine JJF (Su) 67                            | whole level range:(100~500) mm<br>dividing error: 5mm or 10mm | $U_{rel}=0.02\%$<br>$U=0.01\text{mm}$                                                         |      |                |
| 68 | *Wide Randc Electronic Digital Display Dial Indicator | Length        | Calibration Specification for Wide Randc Electronic Digital Display Dial Indicator JJF (Zhe) 1135 | (0~50) mm                                                     | $U=3.5\text{ }\mu\text{m}$                                                                    |      |                |
| 69 | Micrometer With $\mu\text{m}$ Reading                 | Length        | Calibration Specification for Micrometer With $\mu\text{m}$ Reading JJF(zhe) 1134                 | (0~100)mm<br>Proofreading rod (25~75) mm                      | $U=1.0\text{ }\mu\text{m}$<br>$U=(0.15\sim0.26)\text{ }\mu\text{m}$                           |      |                |
| 70 | Blade Micrometer                                      | Length        | Calibration Specification for Blade Micrometer JJF (zhe) 1090                                     | (0~100)mm<br>(100~200)mm<br>Proofreading rod (25~175) mm      | $U=2\text{ }\mu\text{m}$<br>$U=3\text{ }\mu\text{m}$<br>$U=(0.17\sim0.53)\text{ }\mu\text{m}$ |      |                |
| 71 | *Tirt Tread Depth Gauges                              | Length        | Calibration Specification for Tirt Tread Depth Gauges JJF1477                                     | (0~50)mm                                                      | $U=0.02\text{mm}$                                                                             |      |                |
| 72 | Coil of Generator                                     | Length        | Vernier Caliper for Coil of Generator JJG 566                                                     | (0~60)mm                                                      | $U=13\text{ }\mu\text{m}$                                                                     |      |                |
| 73 | Step Gauges                                           | Length        | Calibration Specification for Step Gauges JJF(ji)154                                              | (0~40)mm                                                      | $U=0.01\text{mm}$                                                                             |      |                |
| 74 | Steel Measuring Tapes                                 |               | Verification Regularion of Steel Measuring Tapes JJG 4                                            | (0~100) m                                                     | $U=0.2\text{mm}+10^{-5}L$                                                                     |      |                |



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| №  | Instrument                         | Measurand    | Calibration Method                                                     | Range                                       | Expanded Uncertainty<br>( $k=2$ )            | Note | Effective Date |
|----|------------------------------------|--------------|------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------|------|----------------|
| 75 | Fiber Tapes And Measuring Ropes    |              | Verification Regularion of Fiber Tapes And Measuring Ropes JJG 5       | (0~200) m                                   | $U=0.2\text{mm}+10^{-4}L$                    |      |                |
| 76 | Paint Film Scriber                 | length       | Calibration Specification for Paint Film Scriber JJF (Ji) 137          | Thickness: (0~0.5) mm                       | $U=6\text{ }\mu\text{m}$                     |      |                |
|    |                                    |              |                                                                        | Tooth spacing: (0~5) mm                     | $U=2.2\text{ }\mu\text{m}$                   |      |                |
|    |                                    | Angle        |                                                                        | width (0~1) mm                              | $U=1.4\text{ }\mu\text{m}$                   |      |                |
|    |                                    | Straightness |                                                                        | (20~35) °                                   | $U=7'$                                       |      |                |
| 77 | *Slump Cone                        | length       | Calibration Specification for Slump Cone JJF (Gui) 53                  | (0~500) mm                                  | $U=0.09\text{mm}$                            |      |                |
| 78 | Radius Gauges                      | length       | Verification Regulation of Radius Gauges JJG58                         | R (1~25) mm                                 | $U=4\text{ }\mu\text{m}$                     |      |                |
| 79 | *Rubber and Plastic Film Gage      | length       | Calibration Specification for Rubber and Plastic Film Gage JJF 1488    | (0~1) mm                                    | $U=1.4\text{ }\mu\text{m}$                   |      |                |
|    |                                    |              |                                                                        | (1~30) mm                                   | $U=1.8\text{ }\mu\text{m}$                   |      |                |
| 80 | *Laser Diameter Measuring Gauges   | length       | Calibration Specification for Laser Diameter Measuring Gauges JJF 1250 | (0.1~10) mm                                 | $U=0.6\text{ }\mu\text{m}$                   |      |                |
|    |                                    |              |                                                                        | (10~25) mm                                  | $U=0.8\text{ }\mu\text{m}$                   |      |                |
|    |                                    |              |                                                                        | (25~30) mm                                  | $U=1.2\text{ }\mu\text{m}$                   |      |                |
|    |                                    |              |                                                                        | Standard rules for self-schooling (1~30) mm | $U=0.11\text{ }\mu\text{m}+5\times 10^{-5}L$ |      |                |
| 81 | *Capacity Cylinder (Volume liters) | length       | Calibration Specification for Capacity Cylinder JJF (Gui) 58           | (0~500) mm                                  | $U=0.13\text{mm}$                            |      |                |



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| №  | Instrument                                       | Measurand | Calibration Method                                                                   | Range                                                                    | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|--------------------------------------------------|-----------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------|------|----------------|
| 82 | *Tester for Expansion of Le Chatelier Needles    | length    | V.R.of Le Chatelier , Tester for Expansion of Le Chatelier Needles JJG (Traffic) 093 | Mold base arc radius:<br>(18~22) mm                                      | $U=1.0\text{mm}$                  |      |                |
|    |                                                  |           |                                                                                      | The radius of the ruler baseline arc: (145~180) mm                       | $U=0.08\text{mm}$                 |      |                |
|    |                                                  |           |                                                                                      | Ruler scale : (-25~25) mm                                                | $U_{\text{rel}}=0.48\%$           |      |                |
|    |                                                  | Mass      |                                                                                      | (299~301) g                                                              | $U=0.018\text{g}$                 |      |                |
| 83 | *Pneumatic Measuring Instruments for Micrometers | length    | Verification Regulation of Pneumatic Measuring Instruments for Micrometers JJG 356   | Buoy type (index value 0.5 $\mu\text{m}$ ) (-8~+8) $\mu\text{m}$         | $U=0.13 \mu\text{m}$              |      |                |
|    |                                                  |           |                                                                                      | Buoy type (index value 1 $\mu\text{m}$ ) (-15~+15) $\mu\text{m}$         | $U=0.2 \mu\text{m}$               |      |                |
|    |                                                  |           |                                                                                      | Buoy type (index value 2 $\mu\text{m}$ ) (-40~+40) $\mu\text{m}$         | $U=0.4 \mu\text{m}$               |      |                |
|    |                                                  |           |                                                                                      | Buoy type (index value 5 $\mu\text{m}$ ) (-80~+80) $\mu\text{m}$         | $U=1.2 \mu\text{m}$               |      |                |
|    |                                                  |           |                                                                                      | Electron column (index value 0.2 $\mu\text{m}$ ) (-10~+10) $\mu\text{m}$ | $U=0.10 \mu\text{m}$              |      |                |
|    |                                                  |           |                                                                                      | Electron column (index value 0.5 $\mu\text{m}$ ) (-25~+25) $\mu\text{m}$ | $U=0.17 \mu\text{m}$              |      |                |
|    |                                                  |           |                                                                                      | Electron column (index value 1 $\mu\text{m}$ ) (-50~+50) $\mu\text{m}$   | $U=0.3 \mu\text{m}$               |      |                |
| 84 | *Moulds                                          | length    | Calibration Specification for Moulds JJF1307                                         | (0~600) mm                                                               | $U=0.04\text{mm}$                 |      |                |
|    |                                                  | Flatness  |                                                                                      | (0~600) mm                                                               | $U=0.01\text{mm}$                 |      |                |



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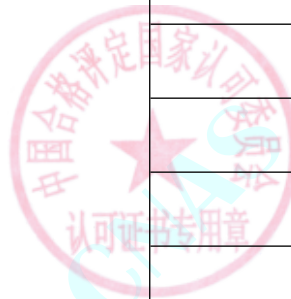
| №  | Instrument                                              | Measurand   | Calibration Method                                                                            | Range                                               | Expanded Uncertainty<br>( $k=2$ )   | Note             | Effective Date |
|----|---------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------|------------------|----------------|
|    |                                                         | verticality |                                                                                               | (0~600) mm                                          | $U=0.01\text{mm}$                   |                  |                |
| 85 | *Carbonization Depth Measuring Instruments and Calipers | length      | Calibration Specification for Carbonization Depth Measuring Instruments and Calipers JJF1721  | Carbonization Depth Measuring Instruments (0~12) mm | $U=0.08\text{mm}$                   |                  |                |
|    |                                                         |             |                                                                                               | Carbonization Depth Measuring Calipers (0~70) mm    | $U=0.01\text{mm}$                   |                  |                |
| 86 | *Concentricity Tester                                   | length      | Calibration Specification for Concentricity Tester JJF 1109                                   | (0~1000)mm Runout<br>(0~30) $\mu\text{m}$           | $U=1.0\mu\text{m}$                  |                  |                |
| 87 | Micropattern Standards                                  | length      | Calibration Specification for Micropattern Standards JJF 1917                                 | (0~10)mm                                            | $U=1.3\mu\text{m}$                  | 只做分度值 0.01mm 及以下 |                |
| 88 | Needle and Flake Gages                                  | length      | Calibration Specification for Needle and Flake Gages JJF 1593                                 | Needle: (0~100) mm                                  | $U=0.04\text{mm}$                   |                  |                |
|    |                                                         |             |                                                                                               | Flake Gages: (0~100) mm                             | $U=8\mu\text{m}$                    |                  |                |
| 89 | Taper Thread Gauges                                     | length      | Calibration Specification for Taper Thread Gauges JJF (chuan) 185                             | plug gauge: (1~150)mm                               | $U=3.1\mu\text{m}+1\times 10^{-5}L$ |                  |                |
|    |                                                         |             |                                                                                               | ring gauge: (2.5~160)mm                             | $U=3.6\mu\text{m}+1\times 10^{-5}L$ |                  |                |
|    |                                                         |             |                                                                                               | Falling distance: (0~10)mm                          | $U=0.8\mu\text{m}$                  |                  |                |
|    |                                                         |             |                                                                                               | Step height: (0~50)mm                               | $U=1.1\mu\text{m}$                  |                  |                |
|    |                                                         | angle:      |                                                                                               | Dental lateral angle: (0~90)°                       | $U=1.4'$                            |                  |                |
| 90 | Measurement on Geometrical Size between One and Two     | length      | Calibration Specification for Measurement on Geometrical Size between One and Two Dimensional | Contact method (0~100)mm                            | $U=1.7\mu\text{m}$                  |                  |                |
|    |                                                         |             |                                                                                               | Contact method (100~1000)mm                         | $U=2.3\mu\text{m}+10^{-5}L$         |                  |                |



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| No         | Instrument              | Measurand   | Calibration Method                                                                              | Range                      | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|------------|-------------------------|-------------|-------------------------------------------------------------------------------------------------|----------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|            | Dimensional             |             | JJF(xin)68                                                                                      | Imaging method (0~50)mm    | U=3.9 μ m                     |                                                                                      |                |
|            |                         |             |                                                                                                 | Imaging method (50~200)mm  | U=4.9 μ m                     |                                                                                      |                |
|            |                         |             |                                                                                                 | Imaging method (200~300)mm | U=5.6 μ m                     |                                                                                      |                |
|            |                         | Angle       | (0~360)°                                                                                        | U=3.3′                     |                               |                                                                                      |                |
| 91         | Level Rules             | Angle       | Calibration Specification for Level Rules JJF 1085                                              | Resolution: (0.5~10) mm/m  | U <sub>rel</sub> =3.0%        |                                                                                      |                |
|            |                         | length      |                                                                                                 | (0~1000) mm                | U=0.8mm                       |                                                                                      |                |
| Thermology |                         |             |                                                                                                 |                            |                               |                                                                                      |                |
| 1          | *Temperature Calibrator | Temperature | C.S. of Temperature Indicators and Simulators by Electrical Simulation and Measurement JJF 1309 | source:K typ: (-200~0) °C  | U=0.17 °C                     |  |                |
|            |                         |             |                                                                                                 | source:K typ: (0~1300) °C  | U=0.09 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:T type:(-200~0) °C  | U=0.17 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:T type:(0~400) °C   | U=0.09 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:E type:(-200~0) °C  | U=0.11 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:E type:(0~1000) °C  | U=0.08 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:N type:(-200~0) °C  | U=0.26 °C                     |                                                                                      |                |
|            |                         |             |                                                                                                 | source:N type:(0~1300) °C  | U=0.12 °C                     |                                                                                      |                |

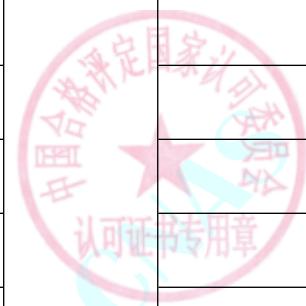


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| No | Instrument | Measurand | Calibration Method | Range                      | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------|-----------|--------------------|----------------------------|-------------------------------|------|----------------|
|    |            |           |                    | source:J type:(-200~0)°C   | U=0.13°C                      |      |                |
|    |            |           |                    | source:J type:(0~1200)°C   | U=0.09°C                      |      |                |
|    |            |           |                    | source:S type:(-50~0)°C    | U=0.6°C                       |      |                |
|    |            |           |                    | source:S type:(0~1700)°C   | U=0.4°C                       |      |                |
|    |            |           |                    | source:R type:(-50~0)°C    | U=0.9°C                       |      |                |
|    |            |           |                    | source:R type:(0~1700)°C   | U=0.4°C                       |      |                |
|    |            |           |                    | source:PT100:(-200~100)°C  | U=0.08°C                      |      |                |
|    |            |           |                    | source:PT100:(100~800)°C   | U=0.16°C                      |      |                |
|    |            |           |                    | source:PT1000:(-200~300)°C | U=0.09°C                      |      |                |
|    |            |           |                    | source:Cu50:(-50~150)°C    | U=0.08°C                      |      |                |
|    |            |           |                    | measure:K type:(-200~0)°C  | U=0.045°C                     |      |                |
|    |            |           |                    | measure:K type:(0~1300)°C  | U=0.03°C                      |      |                |
|    |            |           |                    | measure:T type:(-200~0)°C  | U=0.045°C                     |      |                |
|    |            |           |                    | measure:T type:(0~400)°C   | U=0.019°C                     |      |                |
|    |            |           |                    | smeasure:E type:(-200~0)°C | U=0.028°C                     |      |                |



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| № | Instrument | Measurand | Calibration Method | Range                        | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|------------|-----------|--------------------|------------------------------|-----------------------------------|------|----------------|
|   |            |           |                    | measure:E type:(0~1000)°C    | $U=0.013^{\circ}\text{C}$         |      |                |
|   |            |           |                    | measure:E type:(1000~1300)°C | $U=0.028^{\circ}\text{C}$         |      |                |
|   |            |           |                    | measure:N type:(-200~0)°C    | $U=0.08^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:N type:(0~1300)°C    | $U=0.03^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:J type:(-200~0)°C    | $U=0.032^{\circ}\text{C}$         |      |                |
|   |            |           |                    | measure:J type:(0~1200)°C    | $U=0.02^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:S type:(-50~100)°C   | $U=0.16^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:S type:(100~1700)°C  | $U=0.08^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:R type:(-50~0)°C     | $U=0.32^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:R type:(0~100)°C     | $U=0.2^{\circ}\text{C}$           |      |                |
|   |            |           |                    | measure:R type:(100~1700)°C  | $U=0.09^{\circ}\text{C}$          |      |                |
|   |            |           |                    | measure:PT100:(-200~0)°C     | $U=0.002^{\circ}\text{C}$         |      |                |
|   |            |           |                    | measure:PT100:(0~200)°C      | $U=0.007^{\circ}\text{C}$         |      |                |
|   |            |           |                    | measure:PT100:(200~800)°C    | $U=0.015^{\circ}\text{C}$         |      |                |



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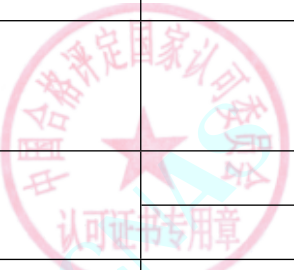
| № | Instrument                                                           | Measurand                   | Calibration Method                                                                                                           | Range                       | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|---|----------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------|------|----------------|
|   |                                                                      |                             |                                                                                                                              | measure: Cu50: (-50~150) °C | U=0.006 °C                    |      |                |
| 2 | *Equipment of the Environmental Testing for Temperature and Humidity | Temperature                 | C.S. for the Equipment of the Environmental Testing for Temperature and Humidity JJF 1101                                    | (-80~300) °C                | U=0.37 °C                     |      |                |
|   |                                                                      | Humidity                    |                                                                                                                              | (20~95) %RH                 | U=1.5%RH                      |      |                |
| 3 | *Salt Spray Test Chamber                                             | Temperature                 | V. R. of Salt Mist Testing Equipments JJG (dianzi) 31507                                                                     | (35~50) °C                  | U=0.18 °C                     |      |                |
|   |                                                                      | salt fog sedimentation rate |                                                                                                                              | (0.5~3) mL/80cm²h           | U=0.3mL/80cm²h                |      |                |
| 4 | *Recorder for Industrial - Process Measurement                       | Temperature                 | V. R. of Recorders for Industrial - Process Measurement JJG 74                                                               | Pt100: (-200~600) °C        | U=0.37 °C                     |      |                |
|   |                                                                      |                             |                                                                                                                              | Cu50: (-50~150) °C          | U=0.30 °C                     |      |                |
|   |                                                                      |                             |                                                                                                                              | E: (0~1000) °C              | U=0.7 °C                      |      |                |
|   |                                                                      |                             |                                                                                                                              | J: (0~1200) °C              | U=0.7 °C                      |      |                |
|   |                                                                      |                             |                                                                                                                              | S: (0~1600) °C              | U=1.7 °C                      |      |                |
|   |                                                                      |                             |                                                                                                                              | K: (0~1300) °C              | U=0.7 °C                      |      |                |
| 5 | *Digital Temperature Indicators and Controllers                      | Temperature                 | V.R. of Digital Temperature Indicators and Controllers JJG617, Calibration Specification for Temperature Indicators JJF 1664 | RTD: (-200~0) °C            | U=0.08 °C                     |      |                |
|   |                                                                      |                             |                                                                                                                              | RTD: (0~600) °C             | U= (0.08~0.4) °C              |      |                |
|   |                                                                      |                             |                                                                                                                              | TC: (0~600) °C              | U= (0.4~1.0) °C               |      |                |
|   |                                                                      |                             |                                                                                                                              | TC: (600~1300) °C           | U= (1.0~1.6) °C               |      |                |
| 6 | *Analogue Temperature                                                | Temperature                 | V.R. of Analogue Temperature Indicators and Controllers                                                                      | K type: (0~400) °C          | U=0.8 °C                      |      |                |

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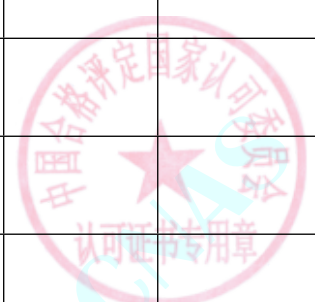
| No | Instrument                                           | Measurand   | Calibration Method                                                                     | Range               | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|------------------------------------------------------|-------------|----------------------------------------------------------------------------------------|---------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|    | Controllers                                          |             | JJG951, Calibration Specification for Temperature Indicators JJF 1664                  | K type: (400~1200)℃ | U= (0.8~1.3) °C               |                                                                                      |                |
|    |                                                      |             |                                                                                        | E type: (0~300) °C  | U=0.7℃                        |                                                                                      |                |
|    |                                                      |             |                                                                                        | RTD: (0~400) °C     | U=0.4℃                        |                                                                                      |                |
| 7  | Filled System Thermometers                           | Temperature | Calibration Specification for Filled System Thermometers JJF 1909                      | -80℃~300℃           | U= (0.2~1.2) °C               |                                                                                      |                |
| 8  | Liquid-in-Glass Thermometers for Working             | Temperature | Verification Regularion of Liquid-in-Glass Thermometers for Working JJG130             | -80℃~300℃           | U= (0.04~0.06) °C             |                                                                                      |                |
| 9  | Industry Platinum and Copper Resistance Thermometers | Temperature | Verification Regularion of Industry Platinum and Copper Resistance Thermometers JJG229 | -80℃~300℃           | U=0.06℃                       |                                                                                      |                |
| 10 | Bimetallic Thermometer                               | Temperature | Calibration Specification for Bimetallic Thermometers JJF 1908-2021                    | -80℃~300℃           | U= (0.18~1.2) °C              |                                                                                      |                |
| 11 | Temperature transmitter                              | Temperature | Calibration Specification of the Temperature Transmitter JJF1183                       | -80℃~300℃           | U= (0.11~0.41) °C             |                                                                                      |                |
| 12 | *Thermostatic bath                                   | Temperature | Measurement and Test Norm of Thermostatic bath's Metrological Characteristics JJF 1030 | (-80~300)℃          | U=0.003℃                      |  |                |
| 13 | Digital Thermo-hygrometer                            | Temperature | Calibration Specification for Digital Thermo-hygrometers JJF 1076                      | (-10~50) °C         | U=0.4℃                        |                                                                                      |                |
|    |                                                      | Humidity    |                                                                                        | (10~95) %RH         | U= (1.3~2.0) %RH              |                                                                                      |                |
| 14 | Temperature and Humidity transmitter                 | Temperature | Calibration Specification of Temperature and Humidity                                  | (0~50) °C           | U=0.4℃                        |                                                                                      |                |

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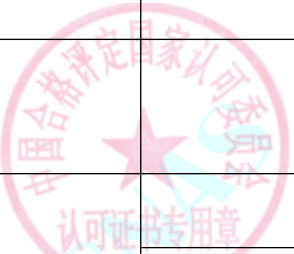
| №  | Instrument                                   | Measurand   | Calibration Method                                                                       | Range         | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|----------------------------------------------|-------------|------------------------------------------------------------------------------------------|---------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                              | Humidity    | transmitter JJF (Zhe)1035                                                                | (10~90) %RH   | U=1.5%RH                      |                                                                                      |                |
| 15 | Mechanical Thermo-hygro meters               | Temperature | Verification Regulation of Mechanical                                                    | (0~50) °C     | U=0.7 °C                      |                                                                                      |                |
|    |                                              | Humidity    | Thermohygrometers JJG205                                                                 | (10~95)%RH    | U=2%RH                        |                                                                                      |                |
| 16 | Temperature Itinerant Detecting Instrument   | Temperature | Calibration Specification for Temperature Itinerant Detecting Instrument JJF1171         | (-80~300) °C  | U=(0.04~0.06) °C              |                                                                                      |                |
| 17 | *colour fastness to washing testers          | Temperature | colour fastness to washing testers JJF (纺织) 026                                          | 0 °C ~ 150 °C | U=0.7 °C                      |                                                                                      |                |
|    |                                              | Speed       |                                                                                          | (0~50) r/min  | U=0.7r/min                    |                                                                                      |                |
|    |                                              | Time        |                                                                                          | (0~60) min    | U=0.2min                      |                                                                                      |                |
| 18 | Digital temperatrue meter                    | Temperature | Verification Regularion of Digital Temperatrue Meter JJG (浙) 76                          | (-80~300) °C  | U= (0.04~0.06) °C             |                                                                                      |                |
| 19 | Thermistor Thermometers                      | Temperature | Calibration Specification of Thermistor Thermometers JJF1379                             | (-50~200) °C  | U= (0.2~0.7) °C               |                                                                                      |                |
| 20 | Electric contact glass mercury thermometer   | Temperature | Verification Regularion of the Electric Contact Mercury-in-Glass Thermometers JJG131     | (-30~300) °C  | U= (0.07~0.60) °C             |                                                                                      |                |
| 21 | Working base metal thermometer               | Temperature | Calibration Specification for Base Metal Thermocouples JJF1637                           | (-40~1100) °C | U= (0.3~1.2) °C               |  |                |
| 22 | Sheathed Thermocouples                       | Temperature | Calibration Specification for Sheathed Thermocouples JJF1262                             | (-40~1100) °C | U= (0.3~1.2) °C               |                                                                                      |                |
| 23 | *Electrically-heated Thermostatic Water Bath | Temperature | Calibration Specification for Electrically-heated Thermostatic Water Bath JJF (Liao) 118 | (5~100) °C    | U=0.2 °C                      |                                                                                      |                |

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| №  | Instrument                                                                | Measurand            | Calibration Method                                                                                             | Range                                 | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|---------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
| 24 | *Steam sterilizer                                                         | Temperature          | Calibration Specification for Temperature and Pressure Parameter of Steam Sterilizer JJF (zhe) 1120            | (100~140) °C                          | U=0.34°C                      |                                                                                      |                |
|    |                                                                           | Pressure             |                                                                                                                | (10~400) kPa                          | U=1.3kPa                      |                                                                                      |                |
| 25 | Data Acquisition Instruments                                              | Temperature          | Calibration Specification of Temperature Data Acquisition Instruments JJF1366                                  | (-80~300)°C                           | U=(0.04~0.06)°C               |                                                                                      |                |
| 26 | *Drug Stability Illumination Test Chambers                                | Temperature          | Calibration Specification of Drug Stability Illumination Test Chambers JJF(Chuan) 175                          | (10~65) °C                            | U=0.22°C                      |                                                                                      |                |
|    |                                                                           | Humidity             |                                                                                                                | (20~90) %RH                           | U=1.5%                        |                                                                                      |                |
|    |                                                                           | Illuminance          |                                                                                                                | (30~6500) lx                          | U=170lx                       |                                                                                      |                |
|    |                                                                           | UV irradiance        |                                                                                                                | (20~100) μ W/cm <sup>2</sup>          | U=10.4 μ W/cm <sup>2</sup>    |                                                                                      |                |
| 27 | *Temperature Performance of Liquid Constant Temperature Testing Equipment | Temperature          | Measurement Specification for Temperature Performance of Liquid Constant Temperature Testing Equipment JJF2019 | Temperature deviation : (-80~300) °C  | U=0.22°C                      |                                                                                      |                |
|    |                                                                           |                      |                                                                                                                | temperature uniformity: (-80~300) °C  | U=0.10°C                      |                                                                                      |                |
|    |                                                                           |                      |                                                                                                                | Temperature fluctuation: (-80~300) °C | U=0.04°C                      |                                                                                      |                |
| 28 | *Thermal Conductivity Tester of guarded hot plate                         | Thermal Conductivity | Calibration Specification for Thermal Conductivity Tester of guarded hot plate JJF (Zhe) 1141                  | 0.0328W/ (m • K)                      | U <sub>rel</sub> =2.0%        |  |                |
| 29 | *Dry Bath Incubator for biological experiments                            | Temperature          | Calibration specification for Dry Bath Incubator for biological experiments JJF (Zhe) 1149                     | Temperature deviation : (-10~150) °C  | U=0.10°C                      |                                                                                      |                |
|    |                                                                           |                      |                                                                                                                | Temperature uniformity: (-10~150) °C  | U=0.08°C                      |                                                                                      |                |

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| №         | Instrument                                                 | Measurand        | Calibration Method                                                                                    | Range                                                    | Expanded Uncertainty<br>( $k=2$ )   | Note | Effective Date |
|-----------|------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------|------|----------------|
|           |                                                            |                  |                                                                                                       | Temperature fluctuation: $(-10 \sim 150) ^\circ\text{C}$ | $U=0.08^\circ\text{C}/20\text{min}$ |      |                |
| 30        | *Rotary Evaporators                                        | Temperature      | Calibration Specification of Rotary Evaporators JJF (E) 80                                            | $(10 \sim 200) ^\circ\text{C}$                           | $U=0.15^\circ\text{C}$              |      |                |
|           |                                                            | Pressure         |                                                                                                       | $(-0.1 \sim 0) \text{MPa}$                               | $U=0.10\text{kPa}$                  |      |                |
|           |                                                            | Rotational speed |                                                                                                       | $(20 \sim 280) \text{r/min}$                             | $U=0.6\text{r/min}$                 |      |                |
| 31        | *Heat Distortion and Vicat Softening Temperature Apparatus | Temperature      | Calibration Specification of Heat Distortion and Vicat Softening Temperature Apparatus JJF (Zhe) 1051 | $(10 \sim 300) ^\circ\text{C}$                           | $U=0.2^\circ\text{C}$               |      |                |
|           |                                                            | Heat rate        |                                                                                                       | $(1 \sim 120) ^\circ\text{C/h}$                          | $U=0.2^\circ\text{C/h}$             |      |                |
|           |                                                            | Length           |                                                                                                       | $(0.5 \sim 10) \text{mm}$                                | $U=4 \mu\text{m}$                   |      |                |
|           |                                                            | Quality          |                                                                                                       | $(0.01 \sim 5500)\text{g}$                               | $U=0.18\text{g}$                    |      |                |
| 32        | *Box-type Resistance Furnace                               | Temperature      | Calibration Specification of Box-type Resistance Furnace JJF1376                                      | Temperature deviation : $(300 \sim 1100) ^\circ\text{C}$ | $U=1.8^\circ\text{C}$               |      |                |
|           |                                                            |                  |                                                                                                       | Temperature uniformity $(300 \sim 1100) ^\circ\text{C}$  | $U= (0.5 \sim 1.3) ^\circ\text{C}$  |      |                |
| 33        | *Vacuum Ovens                                              | Temperature      | Calibration Specification for Vacuum Ovens JJF(Min) 1093                                              | $(0 \sim 300) ^\circ\text{C}$                            | $U=0.20^\circ\text{C}$              |      |                |
|           |                                                            |                  |                                                                                                       | $(300 \sim 400) ^\circ\text{C}$                          | $U=1.5^\circ\text{C}$               |      |                |
|           |                                                            | Pressure         |                                                                                                       | $(-0.1 \sim 0) \text{MPa}$                               | $U=0.5\text{kPa}$                   |      |                |
| 34        | Refrigerator Thermometers                                  | Temperature      | Refrigerator Thermometers JJG (Yue) 073                                                               | $(-40 \sim 60) ^\circ\text{C}$                           | $U=(0.2 \sim 0.3)^\circ\text{C}$    |      |                |
| Mechanics |                                                            |                  |                                                                                                       |                                                          |                                     |      |                |
| 1         | *Analogue Indicating Weighing                              | Mass             | Verification Regulation of Analogue Indicating Weighing Instruments JJG13                             | $(0.1 \sim 2)\text{kg}$                                  | $U=0.3\text{g}$                     |      |                |
|           |                                                            |                  |                                                                                                       | $(2 \sim 10)\text{kg}$                                   | $U= (0.3 \sim 7) \text{g}$          |      |                |



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| № | Instrument                               | Measurand | Calibration Method                                                         | Range         | Expanded Uncertainty<br>( $k=2$ )  | Note | Effective Date |
|---|------------------------------------------|-----------|----------------------------------------------------------------------------|---------------|------------------------------------|------|----------------|
|   | Instruments                              |           |                                                                            | (10~30)kg     | $U=(7\sim30)\text{ g}$             |      |                |
|   |                                          |           |                                                                            | (30~100)kg    | $U=(30\sim60)\text{ g}$            |      |                |
|   |                                          |           |                                                                            | (100~120)kg   | $U=(60\sim1.3\times10^2)\text{ g}$ |      |                |
|   |                                          |           |                                                                            | (120~200)kg   | $U=(0.13\sim0.30)\text{ kg}$       |      |                |
| 2 | *Digital Indicating Weighing Instruments | Mass      | Verification Regulation for Digital Indicating Weighing Instruments JJG539 | (0.1~1000)g   | $U=(0.06\sim0.09)\text{ g}$        |      |                |
|   |                                          |           |                                                                            | (1~5)kg       | $U=(0.09\sim0.41)\text{ g}$        |      |                |
|   |                                          |           |                                                                            | (5~50)kg      | $U=(0.41\sim4.1)\text{ g}$         |      |                |
|   |                                          |           |                                                                            | (50~100)kg    | $U=(4.1\sim8.2)\text{ g}$          |      |                |
|   |                                          |           |                                                                            | (100~200)kg   | $U=(8.2\sim17)\text{ g}$           |      |                |
|   |                                          |           |                                                                            | (200~500)kg   | $U=(17\sim40)\text{ g}$            |      |                |
|   |                                          |           |                                                                            | (500~1000)kg  | $U=(40\sim82)\text{ g}$            |      |                |
|   |                                          |           |                                                                            | (1000~2000)kg | $U=(0.082\sim0.18)\text{ kg}$      |      |                |
|   |                                          |           |                                                                            | (2000~3000)kg | $U=(0.18\sim0.37)\text{ kg}$       |      |                |
|   |                                          |           |                                                                            | (3000~5000)kg | $U=(0.37\sim0.43)\text{ kg}$       |      |                |
| 3 | *Mechanical Balance                      | Mass      | Mechanical Balance JJG98                                                   | 1mg~20g       | $U=0.04\text{ mg}$                 |      |                |
|   |                                          |           |                                                                            | >20g~200g     | $U=0.30\text{ mg}$                 |      |                |
|   |                                          |           |                                                                            | >200g~1kg     | $U=0.66\text{ mg}$                 |      |                |
|   |                                          |           |                                                                            | (>1~5) kg     | $U=1.8\text{ mg}$                  |      |                |
| 4 | *Torsion balance                         | Mass      | Verification Regulation of Torsion Balance JJG 46                          | (1~25)mg      | $U=(0.006\sim0.018)\text{ mg}$     |      |                |



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| № | Instrument                                          | Measurand | Calibration Method                                                                  | Range         | Expanded Uncertainty<br>( $k=2$ ) | Note                        | Effective Date |
|---|-----------------------------------------------------|-----------|-------------------------------------------------------------------------------------|---------------|-----------------------------------|-----------------------------|----------------|
|   |                                                     |           |                                                                                     | (25~500)mg    | $U=(0.06\sim0.52)\text{mg}$       |                             |                |
|   |                                                     |           |                                                                                     | (500~2500)mg  | $U=(1.7\sim2.9)\text{mg}$         |                             |                |
| 5 | *Table Balances                                     | Mass      | Verification Regulation for<br>Table Balances JJG156                                | (0.1~100)g    | $U=34\text{mg}$                   |                             |                |
|   |                                                     |           |                                                                                     | (>100~200)g   | $U=56\text{mg}$                   |                             |                |
|   |                                                     |           |                                                                                     | (>200~500)g   | $U=0.14\text{g}$                  |                             |                |
|   |                                                     |           |                                                                                     | (>500~1000)g  | $U=0.3\text{g}$                   |                             |                |
|   |                                                     |           |                                                                                     | (>1~2)kg      | $U=0.6\text{g}$                   |                             |                |
|   |                                                     |           |                                                                                     | (>2~5)kg      | $U=1.5\text{g}$                   |                             |                |
|   |                                                     |           |                                                                                     |               |                                   |                             |                |
| 6 | *Non-self-<br>indicating<br>Weighing<br>Instruments | Mass      | Verification Regulation of<br>Non-self-indicating Weighing<br>Instruments JJG 14    | (1~5)kg       | $U=0.4\text{g}$                   |                             |                |
|   |                                                     |           |                                                                                     | (5~50)kg      | $U=(0.4\sim8)\text{g}$            |                             |                |
|   |                                                     |           |                                                                                     | (50~100)kg    | $U=(8\sim16)\text{g}$             |                             |                |
|   |                                                     |           |                                                                                     | (100~200)kg   | $U=(16\sim34)\text{g}$            |                             |                |
|   |                                                     |           |                                                                                     | (200~500)kg   | $U=(34\sim90)\text{g}$            |                             |                |
|   |                                                     |           |                                                                                     | (500~1000)kg  | $U=(90\sim2.2\times10^2)\text{g}$ |                             |                |
| 7 | *Torque Wrenches                                    | Torque    | Verification Regulation of<br>Torque Wrenches JJG707                                | (0.1~3000) Nm | $U_{\text{rel}}=0.4\%$            | 合格评定 国家认可<br>委员会<br>认可证书专用章 |                |
| 8 | *Calibration<br>Instrument for<br>Torque Wrenches   | Torque    | Verification Regulation of<br>Calibration Instrument for<br>Torque Wrenches JJG 797 | (0.1~500) Nm  | $U_{\text{rel}}=0.3\%$            |                             |                |
| 9 | *Metallic<br>Rockwell<br>Hardness Testing           | Hardness  | Verification Regulation of<br>Metallic Rockwell Hardness<br>Testing Machines JJG112 | (75~88)HRA    | $U=0.4\text{HRA}$                 |                             |                |
|   |                                                     |           |                                                                                     | (80~100)HRBW  | $U=0.5\text{HRBW}$                |                             |                |



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| №  | Instrument                         | Measurand | Calibration Method                                                            | Range          | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------------|-----------|-------------------------------------------------------------------------------|----------------|-----------------------------------|------|----------------|
|    | Machines                           |           |                                                                               | (20~30)HRC     | $U=0.4\text{HRC}$                 |      |                |
|    |                                    |           |                                                                               | (30~60)HRC     | $U=0.7\text{HRC}$                 |      |                |
|    |                                    |           |                                                                               | (60~70)HRC     | $U=0.5\text{HRC}$                 |      |                |
| 10 | *Metallic Rockwell Hardness        | Hardness  | Verification Regulation of Metallic Rockwell Hardness Testing Machines JJG112 | (85~94) HR15N  | $U=0.5\text{HR15N}$               |      |                |
|    |                                    |           |                                                                               | (60~80) HR30N  | $U=0.5\text{HR30N}$               |      |                |
|    |                                    |           |                                                                               | (35~60) HR45N  | $U=0.5\text{HR45N}$               |      |                |
|    |                                    |           |                                                                               | (85~93) HR15TW | $U=0.6\text{HR15TW}$              |      |                |
|    |                                    |           |                                                                               | (60~80) HR30TW | $U=0.6\text{HR30TW}$              |      |                |
|    |                                    |           |                                                                               | (35~60) HR45TW | $U=0.6\text{HR45TW}$              |      |                |
| 11 | *Metallic Vickers Hardness Testers | Hardness  | Verification Regulation of Metallic Vickers Hardness Testers JJG 151          | (100~225) HV5  | $U_{\text{rel}}=1.9\%$            |      |                |
|    |                                    |           |                                                                               | (225~800) HV5  | $U_{\text{rel}}=1.3\%$            |      |                |
|    |                                    |           |                                                                               | (400~800) HV10 | $U_{\text{rel}}=1.2\%$            |      |                |
|    |                                    |           |                                                                               | (400~800) HV30 | $U_{\text{rel}}=1.2\%$            |      |                |
| 12 | *Equotip Hardness Testers          | Hardness  | Equotip Hardness Testers JJG747                                               | (490~570) HLD  | $U=5\text{HLD}$                   |      |                |
|    |                                    |           |                                                                               | (590~670) HLD  | $U=6\text{HLD}$                   |      |                |
|    |                                    |           |                                                                               | (750~630) HLD  | $U=6\text{HLD}$                   |      |                |
| 13 | *Metallic Vickers Hardness Testers | Hardness  | Verification Regulation of Metallic Vickers Hardness Testers JJG 151          | (400~500)HV0.1 | $U_{\text{rel}}=2.7\%$            |      |                |
|    |                                    |           |                                                                               | (400~500)HV0.2 | $U_{\text{rel}}=2.8\%$            |      |                |
|    |                                    |           |                                                                               | (400~500)HV0.3 | $U_{\text{rel}}=2.8\%$            |      |                |



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| №  | Instrument                                              | Measurand | Calibration Method                                                                                  | Range                    | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|---------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------|------|----------------|
|    |                                                         |           |                                                                                                     | (700~800)HV0.5           | $U_{rel}=2.5\%$                   |      |                |
|    |                                                         |           |                                                                                                     | (700~800) HV1.0          | $U_{rel}=2.6\%$                   |      |                |
| 14 | *Metallic brinell<br>Hardness Testers                   | Hardness  | Verification Regulation of<br>Metallic Brinell JJG150                                               | (20~450)<br>HBW2.5/187.5 | $U_{rel}=0.7\%$ ;                 |      |                |
|    |                                                         |           |                                                                                                     | (20~125) HBW5/250        | $U_{rel}=0.9\%$ ;                 |      |                |
|    |                                                         |           |                                                                                                     | (20~450) HBW5/750        | $U_{rel}=0.9\%$                   |      |                |
|    |                                                         |           |                                                                                                     | (20~125)<br>HBW10/1000   | $U_{rel}=0.9\%$                   |      |                |
|    |                                                         |           |                                                                                                     | (20~450)<br>HBW10/3000   | $U_{rel}=0.7\%$                   |      |                |
|    |                                                         |           |                                                                                                     | (20~120)<br>HBW2.5/62.5  | $U_{rel}=1.2\%$                   |      |                |
| 15 | *Pointer Type<br>Micro-differential<br>Pressure Gauge   | Pressure  | Verification Regulation of<br>Pointer Type Micro-<br>differential Pressure Gauge<br>JJG (Yue) 020   | (-25 ~25) kPa            | $U=0.8\%FS$                       |      |                |
| 16 | *Elastic Element<br>Precise gauges and<br>Vacuum Gauges | Pressure  | Verification Regulation of<br>Elastic Element Precise<br>Pressure Gauges and Vacuum<br>Gauges JJG49 | (-0.1 ~100)MPa           | $U=0.07\%FS$                      |      |                |
| 17 | *Digital Pressure<br>Gauges                             | Pressure  | Verification Regulation of<br>Digital Pressure Gauges<br>JJG875                                     | (-0.1 ~6)MPa             | $U=0.012\%FS$                     |      |                |
|    |                                                         |           |                                                                                                     | (>6~100) MPa             | $U=0.06\%FS$                      |      |                |



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| №  | Instrument                                                                         | Measurand                           | Calibration Method                                                                                                 | Range                                              | Expanded Uncertainty<br>( $k=2$ )                                    | Note | Effective Date |
|----|------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------|------|----------------|
| 18 | *Elastic Element Pressure Gauges , Pressure Vacuum Gauges and Vacuum for Gener use | Pressure                            | Verification Regulation of Elastic Element Pressure Gauges , Pressure Vacuum Gauges and Vacuum for Gener use JJG52 | (-0.1 ~ 100 )MPa                                   | $U=0.40\%FS$                                                         |      |                |
| 19 | *Pressure Transmitter                                                              | Pressure                            | Verification Regulation of Pressure Transmitter JJG 882                                                            | (-0.1 ~ 6)MPa<br>( >6 ~ 100 ) MPa                  | $U=0.012\%FS$<br>$U=0.06\%FS$                                        |      |                |
| 20 | Pressure Transducer(Static)                                                        | Pressure                            | Verification Regulation of Pressure Transducer(Static) JJG 860                                                     | -0.1 MPa~100MPa                                    | $U=0.08\%FS$                                                         |      |                |
| 21 | *Working Dynamometers                                                              | Force                               | Verification Regulation of Working Dynamometers JJG455                                                             | 0.2N~1kN<br>>1kN~10kN                              | $U_{rel}=0.10\%$<br>$U_{rel}=0.26\%$                                 |      |                |
| 22 | *Calibration Specification for Working Force Measure Machine for Special Purposes  | Force                               | Calibration Specification for Working Force Measure Machine for Special Purposes JJF1134                           | 0.2N~300kN<br>>300kN~1MN                           | $U_{rel}=0.20\%$<br>$U_{rel}=0.4\%$                                  |      |                |
| 23 | *Tension,Compression and universal Test machines                                   | Force<br>Displacement<br>Coaxiality | Verification Regulation of Tension,Compression and universal Test machines JJG 139                                 | 0.2N~1MN<br>>1MN~3MN<br>( 0.5~300 ) mm<br>0.1%~20% | $U_{rel}=0.16\%$<br>$U_{rel}=0.4\%$<br>$U_{rel}=0.11\%$<br>$U=2.5\%$ |      |                |
| 24 | *Electronic Universal Testing Machine                                              | Force                               | Verification Regulation of Electronic Universal Testing Machine JJG 475                                            | 0.2N~1MN<br>>1MN~3MN                               | $U_{rel}=0.16\%$<br>$U_{rel}=0.4\%$                                  |      |                |



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| №  | Instrument                            | Measurand        | Calibration Method                                                                       | Range             | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |  |
|----|---------------------------------------|------------------|------------------------------------------------------------------------------------------|-------------------|----------------------------------------|------|----------------|--|
|    |                                       | Displacement     |                                                                                          | (0.5～50) mm       | <i>U</i> <sub>rel</sub> =0.06%         |      |                |  |
|    |                                       |                  |                                                                                          | (>50～1000) mm     | <i>U</i> <sub>rel</sub> =0.25%         |      |                |  |
|    |                                       | Coaxiality       |                                                                                          | 0.1%～20%          | <i>U</i> =2.5%                         |      |                |  |
|    |                                       |                  |                                                                                          | Velocity          | (0.01～10) mm/min                       |      |                |  |
|    |                                       | (>10～500) mm/min |                                                                                          |                   | <i>U</i> <sub>rel</sub> =0.16%         |      |                |  |
| 25 | *Dynamometer for Measuring instrument | Force            | Calibration Specification for Working Force Measure Machine for Special Purposes JJF1134 | (0.2～14) N        | <i>U</i> <sub>rel</sub> =0.14%         |      |                |  |
| 26 | Locomotive pipette                    | Capacity         | Verification Regulation of Locomotive pipette JJG 646                                    | (0.1～1) μ L       | <i>U</i> =0.04 μ L                     |      |                |  |
|    |                                       |                  |                                                                                          | (>1～10) μ L       | <i>U</i> =0.06 μ L                     |      |                |  |
|    |                                       |                  |                                                                                          | (>10～25) μ L      | <i>U</i> =0.11 μ L                     |      |                |  |
|    |                                       |                  |                                                                                          | (>25～50) μ L      | <i>U</i> =0.18 μ L                     |      |                |  |
|    |                                       |                  |                                                                                          | (>50～100) μ L     | <i>U</i> =0.26 μ L                     |      |                |  |
|    |                                       |                  |                                                                                          | (>100～250) μ L    | <i>U</i> =0.4 μ L                      |      |                |  |
|    |                                       |                  |                                                                                          | (>250～500) μ L    | <i>U</i> =0.7 μ L                      |      |                |  |
|    |                                       |                  |                                                                                          | (>500～2500) μ L   | <i>U</i> =1.6 μ L                      |      |                |  |
|    |                                       |                  |                                                                                          | (>2500～5000) μ L  | <i>U</i> =4 μ L                        |      |                |  |
|    |                                       |                  |                                                                                          | (>5000～10000) μ L | <i>U</i> =8 μ L                        |      |                |  |
| 27 | *Pressure Controllners                | Pressure         | Verification Regulation of Pressure Controllners JJG 544                                 | (-0.1 ～100) MPa   | <i>U</i> =0.06%FS                      |      |                |  |



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| №  | Instrument                                                               | Measurand      | Calibration Method                                                           | Range               | Expanded Uncertainty<br>( $k=2$ ) | Note                                                                                 | Effective Date |
|----|--------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
| 28 | *Cement Mortars Mixer                                                    | rotation speed | Verification regulation of cement mortars mixer JJG(building materials)102   | (20~300)r/min       | $U_{rel}=0.20\%$                  |                                                                                      |                |
|    |                                                                          | Time           |                                                                              | (30~360)s           | $U=0.4s$                          |                                                                                      |                |
|    |                                                                          | Length         |                                                                              | (0~300) mm          | $U=0.07mm$                        |                                                                                      |                |
| 29 | *Model Planet Cement Mortar Mixer                                        | rotation speed | Verification regulation of Cement Mortar Mixer JJF(building materials) 123   | (20~300)r/min       | $U_{rel}=0.20\%$                  |                                                                                      |                |
|    |                                                                          | time           |                                                                              | (30~360) s          | $U=0.4s$                          |                                                                                      |                |
|    |                                                                          | Length         |                                                                              | (0~15) mm           | $U=0.07mm$                        |                                                                                      |                |
| 30 | *Mixer for Cement Paste                                                  | rotation speed | Verification regulation of Mixer for Cement Paste JJF(building materials)104 | (20~300)r/min       | $U_{rel}=0.20\%$                  |                                                                                      |                |
|    |                                                                          | time           |                                                                              | (30~360) s          | $U=0.4s$                          |                                                                                      |                |
|    |                                                                          | Length         |                                                                              | (0~10) mm           | $U=0.07mm$                        |                                                                                      |                |
| 31 | *Power Measuring                                                         | rotation speed | Verification regulation of Equipment of Power Measuring JJG653               | (20~30000)r/min     | $U_{rel}=0.05\%$                  |                                                                                      |                |
|    |                                                                          | Torque         |                                                                              | (0.1~500)Nm         | $U_{rel}=0.05\%$                  |                                                                                      |                |
| 32 | *Calibration device for motor vehicle engine speed measuring instruments | rotation speed | Verification Regulation of Standard Equipment for Revolution Speed JJG326    | (20~30000)r/min     | $U_{rel}=0.03\%$                  | Accredited only for:level0.1                                                         |                |
| 33 | *constant speed source                                                   | rotation speed | Calibration specification of constant speed source JJF (J) 146-2018          | (20~30000)r/min     | $U_{rel}=0.03\%$                  |  |                |
| 34 | *Flow Display Meter                                                      | Flowrate       | Verification Regulation of Flow Intergration Meters JJG 1003                 | (0.0025~30000) m³/h | $U_{rel}=0.04\%$                  |                                                                                      |                |
| 35 | *Electro-hydraulic                                                       | A strength     | Verification Regulation of Electro-hydraulic Servo                           | (0.1~1000) kN       | $U_{rel}=0.16\%$                  |                                                                                      |                |



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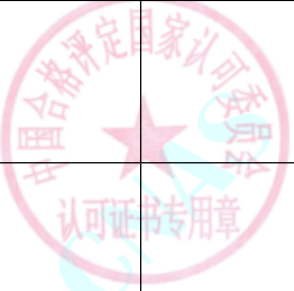
| №  | Instrument                                     | Measurand         | Calibration Method                                                                   | Range          | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|----------------|----------------------------------------|------|----------------|
|    | Testing Machines                               |                   | Universal Testing Machines JJG1063                                                   | (1~3) MN       | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|    |                                                | Coaxiality        |                                                                                      | (0.1~20)%      | <i>U</i> =2.5%                         |      |                |
| 36 | *Falling Weight Impact Testing Machines        | Length            | Calibration Specification for Falling Weight Impact Testing Machines JJF 1445        | (10~300) mm    | <i>U</i> =0.06mm                       |      |                |
|    |                                                | Drop the quality  |                                                                                      | (>300~5000) mm | <i>U</i> =1.2mm                        |      |                |
|    |                                                |                   |                                                                                      | (0~5) kg       | <i>U</i> =0.3g                         |      |                |
|    |                                                |                   |                                                                                      | loss energy    | (>5~30) kg                             |      |                |
| 37 | *Chassis Dynamometers for Automobile Emissions |                   | Calibration Specification for Chassis Dynamometers for Automobile Emissions JJF 1221 | (1~100)km/h    | <i>U</i> <sub>rel</sub> =0.8%          |      |                |
|    |                                                | Torque            |                                                                                      | (1~2000)N      | <i>U</i> <sub>rel</sub> =0.82%         |      |                |
| 38 | *Automobile Side Slip Tester                   | Sideslip quantity | Verification Regulation of Automobile Side Slip Tester JJG908                        | (0~10)m/km     | <i>U</i> =0.05m/km                     |      |                |
| 39 | Working Glass Container (glass)                | Capacity          | Working Glass Container JJG196                                                       | (0.05~0.5)mL   | <i>U</i> =0.7 μ L                      |      |                |
|    |                                                |                   |                                                                                      | (>0.5~2)mL     | <i>U</i> =2 μ L                        |      |                |
|    |                                                |                   |                                                                                      | (>2~10)mL      | <i>U</i> =5 μ L                        |      |                |
|    |                                                |                   |                                                                                      | (>10~25) mL    | <i>U</i> =8 μ L                        |      |                |
|    |                                                |                   |                                                                                      | >(25~100)mL    | <i>U</i> =0.020mL                      |      |                |
|    |                                                |                   |                                                                                      | (>100~250) mL  | <i>U</i> =0.05mL                       |      |                |
|    |                                                |                   |                                                                                      | (>250~500)mL   | <i>U</i> =0.07mL                       |      |                |
|    |                                                |                   |                                                                                      | (>500~1000)mL  | <i>U</i> =0.13mL                       |      |                |



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| №  | Instrument                                                            | Measurand | Calibration Method                                                                                         | Range             | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|-----------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                                                       |           |                                                                                                            | (≥1000~2000)mL    | U=0.20mL                      |                                                                                      |                |
| 40 | *Shore A Durometers                                                   | Hardness  | Verification Regulation of Shore A Durometers JJG304                                                       | (20~100) HA       | U=0.2HA                       |                                                                                      |                |
| 41 | *Shore D Durometer                                                    | Hardness  | Verification Regulation of Shore D Durometers JJG1039                                                      | (20~100) HD       | U=0.2HD                       |                                                                                      |                |
| 42 | *shore AO durometers                                                  | Hardness  | Calibration Specification for shore AO durometers JJF1312                                                  | (20~100) HAO      | U=0.2HAO                      |                                                                                      |                |
| 43 | *Working Torque-meters                                                | Torque    | Verification Regulation of Working Torque-meters JJG 1146                                                  | (0.1~500) Nm      | U <sub>rel</sub> =0.3%        |                                                                                      |                |
| 44 | *Tilting Tube Micromanometers                                         | pressure  | Verification Regulation of Tilting Tube Micromanometers JJG172                                             | (-2~2) kPa        | U=0.37%FS                     |                                                                                      |                |
| 45 | *Liquid Manometers of for working                                     | pressure  | Verification Regulation of Liquid Manometers of for working JJG540                                         | (0~20) kPa        | U=0.20%FS                     |                                                                                      |                |
| 46 | *Calibration Specification for Medical Centrifuge                     | speed     | Calibration Specification for Medical Centrifuge JJF (浙) 1117                                              | (100~30000) r/min | U <sub>rel</sub> =0.28%       |                                                                                      |                |
| 47 | *Testing Machines of Resistance to Internal Pressure of Plastics Pipe | pressure  | Calibration Specification for Testing Machines of Resistance to Internal Pressure of Plastics Pipe JJF1628 | (0~25) MPa        | U=0.13%FS                     |  |                |
| 48 | *Gas pressure reducer                                                 | pressure  | Calibration Specification for Pressure Regulators with Bourdon Tube Pressure Gauge JJF 1328                | (0~25) MPa        | U=0.5%FS                      |                                                                                      |                |



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| №  | Instrument                                              | Measurand             | Calibration Method                                                               | Range                | Expanded Uncertainty<br>( $k=2$ )      | Note                      | Effective Date |
|----|---------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------|----------------------|----------------------------------------|---------------------------|----------------|
| 49 | *Tire pressure gauge                                    | pressure              | Verification Regulation of Tyre Pressure Gauges JJG 927                          | (0~2.5) MPa          | $U=0.5\%FS$                            |                           |                |
| 50 | *Calibration Specification for Friability Surveyometers | speed                 | Calibration Specification for Friability Surveyometers JJF(冀)168                 | (20~100) r/min       | $U_{rel}=0.53\%$                       |                           |                |
|    |                                                         | Time                  |                                                                                  | (0~360) s            | $U=1.0s$                               |                           |                |
| 51 | *Paper (board) bursting tester                          | pressure              | Calibration Specification of Bursting Strength Testers for Paper(Board) JJF 1811 | (0~6) MPa            | $U=0.07\%FS$                           |                           |                |
| 52 | *portable Brinell hardness tester;                      | Hardness              | Calibration Specification for Portable Brinell Hardness Testers JJF 1595         | (125~450) HBW10/3000 | $U_{rel}=0.8\%$                        |                           |                |
|    |                                                         |                       |                                                                                  | (75~250) HBW10/1000  | $U_{rel}=1.3\%$                        |                           |                |
|    |                                                         |                       |                                                                                  | (125~450) HBW5/750   | $U_{rel}=0.9\%$                        |                           |                |
|    |                                                         | force                 |                                                                                  | (0.5~30)kN           | $U_{rel}=0.22\%$                       |                           |                |
| 53 | *Magnetic Yoke Detectors                                | Current               | Calibration Specification for Magnetic Yoke Detectors JJF 1458                   | (1~20)A              | $U=0.26A$                              |                           |                |
|    |                                                         | Elevating Force       |                                                                                  | (1~300) N            | $U_{rel}=3.7\%$                        |                           |                |
| 54 | ISA 1932 nozzle for Differential Rressure Flowmeter     | throat diameter       | Verification Regulation of Differential Rressure Flowmeter JJG 640               | (0.5~200)mm          | $U=(3+0.005D) \mu m \quad D\text{-mm}$ | Geometric quantity method |                |
|    |                                                         | discharge coefficient |                                                                                  | 0.899~0.989          | $U_{rel}=1.2\%$                        |                           |                |
| 55 | long radius nozzle for Differential Rressure Flowmeter  | throat diameter       | Verification Regulation of Differential Rressure Flowmeter JJG 640               | (0.5~200)mm          | $U=(3+0.005D) \mu m \quad D\text{-mm}$ | Geometric quantity method |                |
|    |                                                         | discharge coefficient |                                                                                  | 0.938~0.996          | $U_{rel}=2.0\%$                        |                           |                |



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| №  | Instrument                                                 | Measurand             | Calibration Method                                                                              | Range             | Expanded Uncertainty<br>( $k=2$ ) | Note                                         | Effective Date |
|----|------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------|-------------------|-----------------------------------|----------------------------------------------|----------------|
| 56 | Venturi nozzle for Differential Pressure Flowmeter         | throat diameter       | Verification Regulation of Differential Pressure Flowmeter JJG 640                              | (0.5~200)mm       | $U=(3+0.005D) \mu m$ $D$ -mm      | Geometric quantity method                    |                |
|    |                                                            | discharge coefficient |                                                                                                 | 0.923~0.985       | $U_{rel}=1.8\%$                   |                                              |                |
| 57 | classical Venturi tube for Differential Pressure Flowmeter | throat diameter       | Verification Regulation of Differential Pressure Flowmeter JJG 640                              | (0.5~200)mm       | $U=(3+0.005D) \mu m$ $D$ -mm      | Geometric quantity method                    |                |
|    |                                                            | discharge coefficient |                                                                                                 | 0.960~1.010       | $U_{rel}=1.5\%$                   |                                              |                |
| 58 | orifice plate for Differential Pressure Flowmeter          | orifice diameter      | Verification Regulation of Differential Pressure Flowmeter JJG 640                              | (0.5~200)mm       | $U=(3+0.005D) \mu m$ $D$ -mm      | Geometric quantity method                    |                |
|    |                                                            | discharge coefficient |                                                                                                 | 0.588~0.675       | $U_{rel}=0.75\%$                  |                                              |                |
| 59 | *Tachometer                                                | Rotational speed      | Verification Regulation of Tachometer JJG 105                                                   | (60~20000) r/min  | $U_{rel}=0.03\%$                  | Accredited only for Photoelectric tachometer |                |
| 60 | *Liquid Level Gauges                                       | Length                | Verification Regulation of Liquid Level Gauges JJG 971                                          | Pressure: (0~50)m | $U=0.11\%FS$                      |                                              |                |
|    |                                                            |                       |                                                                                                 | (0~10)m           | $U=0.25mm$                        |                                              |                |
| 61 | *Electronic Balances                                       | quality               | Calibration Specification for Electronic Balances JJF 1847, V.R. of Electronic Balances JJG1036 | 0~20g             | $U=3 \mu g \sim 23 \mu g$         |                                              |                |
|    |                                                            |                       |                                                                                                 | 20g~220g          | $U=23 \mu g \sim 35 \mu g$        |                                              |                |
|    |                                                            |                       |                                                                                                 | 220g~510g         | $U=35 \mu g \sim 0.8mg$           |                                              |                |
|    |                                                            |                       |                                                                                                 | 510g~10kg         | $U=0.8mg \sim 0.05g$              |                                              |                |
|    |                                                            |                       |                                                                                                 | 10kg~30kg         | $U=0.05g \sim 0.2g$               |                                              |                |
|    |                                                            |                       |                                                                                                 | 30kg~300kg        | $U=0.2g \sim 50g$                 |                                              |                |
|    | Calibration                                                | Pressure              | Calibration Specification for                                                                   | (0~25) MPa        | $U=1.0\%FS$                       |                                              |                |

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| №  | Instrument                                           | Measurand | Calibration Method                                                                            | Range                                                                     | Expanded Uncertainty<br>( $k=2$ ) | Note                        | Effective Date |
|----|------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------|-----------------------------|----------------|
|    | Specification for Pressure Regulators with Flowmeter | Flow      | Pressure Regulator with Flowmeter JJF(Ji)177                                                  | (0~25) L/min                                                              | $U=2.0\%FS$                       |                             |                |
| 63 | Electromagnetic Flowmeters                           | Flow      | Verification Regulation of Electromagnetic Flowmeters JJG 1033                                | (0.1~8) m <sup>3</sup> /h                                                 | $U_{rel}=0.14\%$                  |                             |                |
| 64 | Float Meter                                          | Flow      | Verification Regulation of Float Meter JJG 257                                                | (0~8) m <sup>3</sup> /h                                                   | $U=0.5\%FS$                       | Accredited only for liquid. |                |
| 65 | *Piping Liquid Flowmeters                            | Flow      | Online Calibration<br>Specification for Piping Liquid Flowmeters(proposed regulation) ZCJF001 | (0.001~3)m <sup>3</sup> /h volume method                                  | $U_{rel}=0.18\%$                  |                             |                |
|    |                                                      | Flow      |                                                                                               | (0.001~6)m <sup>3</sup> /h Weighing method                                | $U_{rel}=0.17\%$                  |                             |                |
|    |                                                      | Flow      |                                                                                               | (0.3~40)m <sup>3</sup> /h Standard instrument method                      | $U_{rel}=0.30\%$                  |                             |                |
|    |                                                      | Flow      |                                                                                               | (0.6~2700)m <sup>3</sup> /h Method by ultrasonic external clamp flowmeter | $U_{rel}=1.1\%$                   |                             |                |
| 66 | Micro sampling syringe                               | capacity  | Verification Regulation of Micro sampling syringe JJG (ji) 166                                | (0.1~1) μL                                                                | $U=0.04 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>1~10) μL                                                                | $U=0.06 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>10~25) μL                                                               | $U=0.11 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>25~50) μL                                                               | $U=0.18 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>50~100) μL                                                              | $U=0.26 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>100~250) μL                                                             | $U=0.36 \mu L$                    |                             |                |
|    |                                                      |           |                                                                                               | (>250~500) μL                                                             | $U=0.7 \mu L$                     |                             |                |

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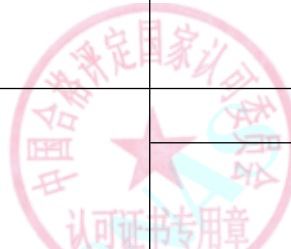
| №  | Instrument                          | Measurand        | Calibration Method                                                     | Range                   | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|-------------------------------------|------------------|------------------------------------------------------------------------|-------------------------|----------------------------------------|------|----------------|
|    |                                     |                  |                                                                        | (>500~1000) μ L         | <i>U</i> =1.2 μ L                      |      |                |
| 67 | *Weights                            | Mass             | Verification Regulation of weights JJG99                               | 1mg~500mg               | <i>U</i> =0.004mg~0.010mg              |      |                |
|    |                                     |                  |                                                                        | 500mg~500g              | <i>U</i> =0.010mg~0.34mg               |      |                |
|    |                                     |                  |                                                                        | 500g~5kg                | <i>U</i> =0.34mg~9.5mg                 |      |                |
|    |                                     |                  |                                                                        | 5kg~25kg                | <i>U</i> =9.5mg~56mg                   |      |                |
| 68 | Ralative Density Balance for Liquid | ralative density | Ralative Density Balance for Liquid JJG 171                            | 0~2.0000                | <i>U</i> =0.0007                       |      |                |
| 69 | *Film Impact Testers                | Mass             | Calibration Specification for Film Impact Testers JJF (shihua) 002     | (0~2000) g              | <i>U</i> =0.30g                        |      |                |
|    |                                     | Length           |                                                                        | (0~600) mm              | <i>U</i> =0.07mm                       |      |                |
| 70 | *Pencil hardness tester             | Mass             | Calibration Specification for Pencil Hardness Testers JJF (shihua) 007 | (0~2000) g              | <i>U</i> =0.30g                        |      |                |
|    |                                     | angle            |                                                                        | (40~50) °               | <i>U</i> =0.12°                        |      |                |
| 71 | *Dissoluti on meter                 | speed            | Calibration Specification for Drug Dissolution Tester JJF (e) 42       | (20~200) rpm            | <i>U</i> <sub>rel</sub> =0.20%         |      |                |
|    |                                     | Temperature      |                                                                        | (30~50) °C              | <i>U</i> =0.12°C                       |      |                |
|    |                                     | Length           |                                                                        | coaxiality: (0.01~5) mm | <i>U</i> =0.12mm                       |      |                |
|    |                                     |                  |                                                                        | depth: (23~27) mm       | <i>U</i> =0.12mm                       |      |                |
|    |                                     |                  |                                                                        | Swing: (0.01~5) mm      | <i>U</i> =0.12mm                       |      |                |
|    |                                     | angle            |                                                                        | (0~180) °               | <i>U</i> =0.20°                        |      |                |
| 72 | *Tablet Hardness Tester             | Force            | Calibration Specification for Tablet Hardness Tester JJF (e) 46        | (0.2~500) N             | <i>U</i> <sub>rel</sub> =0.4%          |      |                |



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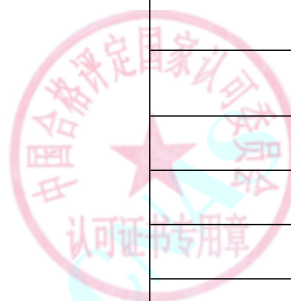
| №  | Instrument                                        | Measurand        | Calibration Method                                                                                         | Range                        | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |  |
|----|---------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|--|
| 73 | *Rotating speed device                            | Speed            | Calibration Specification for Equipment for Revolution Speed JJF (e) 17                                    | (20~30000)r/min              | <i>U</i> <sub>rel</sub> =0.07%         |                                                                                      |                |  |
| 74 | *Cardboard compression strength tester            | Force value      | Verification regulation of compression strength tester for board JJG (粤) 018                               | (50~5000) N                  | <i>U</i> <sub>rel</sub> =0.16%         |                                                                                      |                |  |
| 75 | *Pendulum Impact Testing Machines                 | length           | Verification Regulation of Pendulum Impact Testing Machines JJG 145                                        | (30~900) mm                  | <i>U</i> <sub>rel</sub> =0.08          |                                                                                      |                |  |
|    |                                                   |                  |                                                                                                            | (0.01~0.30) mm               | <i>U</i> =5 μ m                        |                                                                                      |                |  |
|    |                                                   | energy           |                                                                                                            | Direct measure: (0.1~750) J  | <i>U</i> <sub>rel</sub> = (0.06~0.3) % |                                                                                      |                |  |
|    |                                                   |                  |                                                                                                            | Indirect measure: (10~40) J  | <i>U</i> =0.63J                        |                                                                                      |                |  |
|    |                                                   |                  |                                                                                                            | Indirect measure: (40~250) J | <i>U</i> <sub>rel</sub> =1.8%          |                                                                                      |                |  |
| 76 | *Peristaltic Pumps                                | Rotational speed | Calibration Specification for Peristaltic Pumps JJF (min) 1115                                             | (20~600) r/min               | <i>U</i> <sub>rel</sub> =0.4%          |                                                                                      |                |  |
|    |                                                   | flow             |                                                                                                            | (0.01~30) L/min              | <i>U</i> <sub>rel</sub> =0.6%          |                                                                                      |                |  |
| 77 | *Concrete Permeability Apparatus                  | pressure         | Calibration Specification for Apparatus to Measure Water Permeability of Concrete JJF1812                  | (0~4)MPa                     | <i>U</i> =0.2%FS                       |                                                                                      |                |  |
| 78 | *Tacho-torque Measuring System Used on Test Bench | Torque           | On-station Calibration Specification for Tacho-torque Measuring System Used on Test Bench JJF (military)50 | (0.1~3500) Nm                | <i>U</i> <sub>rel</sub> =0.37%~0.11%   |  |                |  |
|    |                                                   | Rotational speed |                                                                                                            | (20~20000) r/min             | <i>U</i> <sub>rel</sub> =0.11%~0.13%   |                                                                                      |                |  |
| 79 | *Differential pressure air leakage testers        | Pressure         | Calibration Specification for differential pressure air leakage testers JJF1986                            | (-100~700) kPa               | <i>U</i> =0.4kPa                       |                                                                                      |                |  |



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| No               | Instrument                                      | Measurand                        | Calibration Method                                                               | Range                    | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|------------------|-------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------|--------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|                  |                                                 |                                  |                                                                                  | (0~2500) Pa              | U=3Pa                         |                                                                                      |                |
|                  |                                                 | Leakage rate                     |                                                                                  | (0.5~5.5) mL/min         | U <sub>rel</sub> =5.1%        |                                                                                      |                |
| 80               | *Compression Strength Tester for Corrugated Box | Force                            | Verification Regulation of Carton Box Tester of Crush Resistance JJG(Yue) 043    | 50N~50kN                 | U <sub>rel</sub> =0.2%        |                                                                                      |                |
|                  |                                                 | Speed                            |                                                                                  | (1~60) mm/min            | U <sub>rel</sub> =1.0%        |                                                                                      |                |
| 81               | *Flexure Testing Machine                        | Force                            | Verification Regulation of Flexure Testing Machine JJG 476                       | (0.05~100) kN            | U <sub>rel</sub> =0.20%       |                                                                                      |                |
|                  |                                                 | Accelerated speed of apply force |                                                                                  | (45~55)N/s               | U=1.0N/s                      |                                                                                      |                |
| 82               | *Thermogravimetric moisture meters              | Mass                             | Verification regulation of thermogravimetric moisture meters JJG658              | (0~500) g                | U= (0.022~3.0) mg             |                                                                                      |                |
|                  |                                                 | moisture content                 |                                                                                  | (0.1~100) %              | U=0.06%                       |                                                                                      |                |
| 83               | *Electrodynamic Vibration Testing Systems       | Accelerated speed                | Verification Regulation of Electrodynamic Vibration Testing Systems JJG 948-2018 | (2~1000)m/s <sup>2</sup> | U <sub>rel</sub> =2.0%        |                                                                                      |                |
|                  |                                                 | Frequency                        |                                                                                  | (2~5000) Hz              | U <sub>rel</sub> =0.02%       |                                                                                      |                |
| Electromagnetism |                                                 |                                  |                                                                                  |                          |                               |                                                                                      |                |
| 1                | *Earth-Continuity Testers                       | DC current measuring             | V.R.of Earth-Continuity Testers JJG984                                           | (5~30)A                  | U <sub>rel</sub> =0.3%        |  |                |
|                  |                                                 | AC current measuring             |                                                                                  | (5~30)A, 50Hz            | U <sub>rel</sub> =0.4%        |                                                                                      |                |
|                  |                                                 | DC resistance                    |                                                                                  | (1~10) mΩ                | U <sub>rel</sub> =3%          |                                                                                      |                |
|                  |                                                 |                                  |                                                                                  | (>10~100) mΩ             | U <sub>rel</sub> =0.3%        |                                                                                      |                |
|                  |                                                 |                                  |                                                                                  | (>100~1000) mΩ           | U <sub>rel</sub> =0.12%       |                                                                                      |                |
|                  |                                                 | AC resistance                    |                                                                                  | (1~10) mΩ, 50Hz          | U <sub>rel</sub> =5%          |                                                                                      |                |



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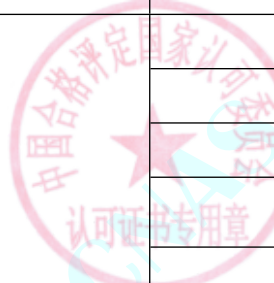
| №          | Instrument                                             | Measurand                     | Calibration Method                                                     | Range                                  | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|------------|--------------------------------------------------------|-------------------------------|------------------------------------------------------------------------|----------------------------------------|----------------------------------------|------|----------------|
|            |                                                        |                               |                                                                        | (>10～100) mΩ ,<br>50Hz                 | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|            |                                                        |                               |                                                                        | (>100～1000) mΩ ,<br>50Hz               | <i>U</i> <sub>rel</sub> =0.2%          |      |                |
| 2          | *D.C. low<br>Resistance Meters                         | Resistance                    | V.R.of D.C. low Resistance<br>Meters JJG837                            | 10 <sup>-3</sup> Ω                     | <i>U</i> <sub>rel</sub> =0.018%        |      |                |
|            |                                                        |                               |                                                                        | 10 <sup>-2</sup> Ω                     | <i>U</i> <sub>rel</sub> =0.018%        |      |                |
|            |                                                        |                               |                                                                        | (10 <sup>-1</sup> ～10 <sup>5</sup> ) Ω | <i>U</i> <sub>rel</sub> =0.018%        |      |                |
|            |                                                        | Insulation<br>Resistance      |                                                                        | (0.1～500) MΩ , 500V                    | <i>U</i> <sub>rel</sub> =12%           |      |                |
| 3          | *Loop Resistance<br>Tester and DC<br>Resistance Meters | DC current<br>measuring       | V.R. of Loop Resistance<br>Tester and DC Resistance<br>Meters JJG 1052 | 0.1A～600A                              | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
|            |                                                        | Resistance                    |                                                                        | 1 μ Ω ～10 μ Ω                          | <i>U</i> <sub>rel</sub> =1.1%          |      |                |
|            |                                                        |                               |                                                                        | 10 μ Ω ～100 μ Ω                        | <i>U</i> <sub>rel</sub> =0.4%          |      |                |
|            |                                                        |                               |                                                                        | 100 μ Ω ～100m Ω                        | <i>U</i> <sub>rel</sub> =0.06%         |      |                |
|            |                                                        |                               |                                                                        | 100m Ω ～10 Ω                           | <i>U</i> <sub>rel</sub> =0.017%        |      |                |
|            |                                                        |                               |                                                                        | 10 Ω ～100k Ω                           | <i>U</i> <sub>rel</sub> =0.012%        |      |                |
|            |                                                        |                               |                                                                        | 4                                      | *Withstanding<br>Voltage Tester        |      |                |
| AC Voltage | (1～15)kV,50Hz                                          | <i>U</i> <sub>rel</sub> =0.6% |                                                                        |                                        |                                        |      |                |
| DC Current | (0.1～200)mA                                            | <i>U</i> <sub>rel</sub> =0.7% |                                                                        |                                        |                                        |      |                |
| AC Current | (0.1～200)mA,50Hz                                       | <i>U</i> <sub>rel</sub> =0.7% |                                                                        |                                        |                                        |      |                |
| Time       | (1～10) s                                               | <i>U</i> <sub>rel</sub> =0.9% |                                                                        |                                        |                                        |      |                |
|            | (10.1～999) s                                           | <i>U</i> <sub>rel</sub> =0.6% |                                                                        |                                        |                                        |      |                |



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| № | Instrument                              | Measurand                          | Calibration Method                                     | Range                    | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|---|-----------------------------------------|------------------------------------|--------------------------------------------------------|--------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
| 5 | *Digital AC Electrical Parameters Meter | AC Voltage                         | C.S.for digital ac electrical parameters meter JJF1491 | 100mV~1000V(40Hz~1kHz)   | <i>U</i> <sub>rel</sub> =0.08%         |                                                                                      |                |
|   |                                         | AC Current                         |                                                        | 100 μ A~30A(40Hz~1kHz)   | <i>U</i> <sub>rel</sub> =0.21%         |                                                                                      |                |
|   |                                         | Power                              |                                                        | 1W~50kW(40Hz~1kHz)       | <i>U</i> <sub>rel</sub> =0.20%         |                                                                                      |                |
|   |                                         | Power Factor                       |                                                        | 0.001~1                  | <i>U</i> <sub>rel</sub> =0.11%         |                                                                                      |                |
|   |                                         | Frequency                          |                                                        | 40Hz~1kHz                | <i>U</i> <sub>rel</sub> =0.004%        |                                                                                      |                |
| 6 | *Clamp Ammeters                         | DC Current                         | C.S. for Clamp Ammeters JJF 1075                       | 100 μ A~20A              | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                      |                |
|   |                                         | AC Current                         |                                                        | 20A~1500A                | <i>U</i> <sub>rel</sub> =1.0%          |                                                                                      |                |
|   |                                         |                                    |                                                        | 100 μ A~20A(30Hz~1kHz)   | <i>U</i> <sub>rel</sub> =0.25%         |                                                                                      |                |
|   |                                         |                                    |                                                        | 20A~1500A(30Hz~1kHz)     | <i>U</i> <sub>rel</sub> =1.0%          |                                                                                      |                |
| 7 | *Leakage Current Tester                 | Voltage                            | V. R. of Leakage Current Tester JJG 843                | 100mV~100V               | <i>U</i> <sub>rel</sub> =0.08%         |                                                                                      |                |
|   |                                         | Current                            |                                                        | >100V~1000V              | <i>U</i> <sub>rel</sub> =0.25%         |                                                                                      |                |
|   |                                         |                                    |                                                        | 100 μ A~200mA            | <i>U</i> <sub>rel</sub> =0.14%         |                                                                                      |                |
| 8 | *Electrical Surge generator             | Peak Voltage of Open Circuit       | C.S. for Electrical Surge generator JJF(DZ)30803       | (-14~-0.05)kV            | <i>U</i> <sub>rel</sub> =4%            |  |                |
|   |                                         | Voltage pulse time of open circuit |                                                        | (0.05~14)kV              | <i>U</i> <sub>rel</sub> =4%            |                                                                                      |                |
|   |                                         |                                    |                                                        | rise time:0.5ns~100s     | <i>U</i> <sub>rel</sub> =5%            |                                                                                      |                |
|   |                                         |                                    |                                                        | duration time:0.5ns~100s | <i>U</i> <sub>rel</sub> =4%            |                                                                                      |                |
|   |                                         | peak current of Short circuit      |                                                        | (-3~-0.1)kA              | <i>U</i> <sub>rel</sub> =4%            |                                                                                      |                |



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| №  | Instrument                                     | Measurand                                 | Calibration Method                                                                | Range                        | Expanded Uncertainty<br>( <i>k</i> =2)                      | Note | Effective Date |
|----|------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------|------|----------------|
|    |                                                |                                           |                                                                                   | (0.1~3)kA                    | <i>U</i> <sub>rel</sub> =4%                                 |      |                |
|    |                                                | current pulse<br>time of Short<br>circuit |                                                                                   | rise time:0.5ns~100s         | <i>U</i> <sub>rel</sub> =4%                                 |      |                |
|    |                                                |                                           |                                                                                   | duration time:0.5ns~100s     | <i>U</i> <sub>rel</sub> =4%                                 |      |                |
|    |                                                |                                           |                                                                                   | (0.001~5) kV                 | <i>U</i> <sub>rel</sub> =1.5%                               |      |                |
| 9  | *Electronic<br>Insulation<br>Resistance Meters | Voltage                                   | V. R. of Electronic Insulation<br>Resistance Meters JJG1005                       | 100 Ω ~100M Ω                | <i>U</i> <sub>rel</sub> =0.6%                               |      |                |
|    |                                                | Insulation<br>Resistance                  |                                                                                   | >100M Ω ~1G Ω                | <i>U</i> <sub>rel</sub> =1.4%                               |      |                |
|    |                                                |                                           |                                                                                   | >1G Ω ~100G Ω                | <i>U</i> <sub>rel</sub> =2.4%                               |      |                |
|    |                                                |                                           |                                                                                   |                              |                                                             |      |                |
| 10 | *Wire Spark<br>Tester                          | Voltage                                   | C.S.for Wire Spark Tester JJF<br>(Lu) 63,V.R.of Wire Spark<br>Tester JJG (Zhe) 84 | (1~200)kV (DC、<br>50Hz、60Hz) | <i>U</i> <sub>rel</sub> =0.6%                               |      |                |
| 11 | *Digital<br>Multimeter                         | DC voltage<br>measuring                   | C.S. for Multimeter JJF 1587                                                      | 20mV~200mV                   | <i>U</i> =2×10 <sup>-5</sup> <i>V</i> <sub>x</sub> +2.6 μ V |      |                |
|    |                                                |                                           |                                                                                   | >0.2V~2V                     | <i>U</i> =1×10 <sup>-5</sup> <i>V</i> <sub>x</sub> +3 μ V   |      |                |
|    |                                                |                                           |                                                                                   | >2V~20V                      | <i>U</i> =1×10 <sup>-5</sup> <i>V</i> <sub>x</sub> +3 μ V   |      |                |
|    |                                                |                                           |                                                                                   | >20V~200V                    | <i>U</i> =2×10 <sup>-5</sup> <i>V</i> <sub>x</sub> +0.2mV   |      |                |
|    |                                                |                                           |                                                                                   | >200V~1000V                  | <i>U</i> =1×10 <sup>-5</sup> <i>V</i> <sub>x</sub> +3mV     |      |                |
|    |                                                | AC voltage<br>measuring                   |                                                                                   | 20mV~200mV<br>(10Hz~45Hz)    | <i>U</i> =9×10 <sup>-4</sup> <i>V</i> <sub>x</sub> + 18 μ V |      |                |
|    |                                                |                                           |                                                                                   | 20mV~<br>200mV(45Hz~1kHz)    | <i>U</i> =2×10 <sup>-4</sup> <i>V</i> <sub>x</sub> +17 μ V  |      |                |
|    |                                                |                                           |                                                                                   | 20mV~200mV(1kHz~<br>20kHz)   | <i>U</i> =2×10 <sup>-4</sup> <i>V</i> <sub>x</sub> +40 μ V  |      |                |
|    |                                                |                                           |                                                                                   |                              |                                                             |      |                |



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| No | Instrument | Measurand | Calibration Method | Range                             | Expanded Uncertainty<br>( $k=2$ )     | Note | Effective Date |
|----|------------|-----------|--------------------|-----------------------------------|---------------------------------------|------|----------------|
|    |            |           |                    | 20mV~<br>200mV(20kHz~100kHz)      | $U=1.2 \times 10^{-3} V_x + 50 \mu V$ |      |                |
|    |            |           |                    | 20mV~<br>200mV(100kHz~<br>500kHz) | $U=5 \times 10^{-3} V_x + 0.12mV$     |      |                |
|    |            |           |                    | >0.2V~2V (10Hz~<br>45Hz)          | $U=6 \times 10^{-4} V_x + 0.2mV$      |      |                |
|    |            |           |                    | >0.2V~2V (45Hz~<br>1kHz)          | $U=2 \times 10^{-4} V_x + 0.1mV$      |      |                |
|    |            |           |                    | >0.2V~2V (1kHz~<br>20kHz)         | $U=2 \times 10^{-4} V_x + 0.2mV$      |      |                |
|    |            |           |                    | >0.2V~2V (20kHz~<br>100kHz)       | $U=8 \times 10^{-4} V_x + 0.4mV$      |      |                |
|    |            |           |                    | >0.2V~2V (100kHz~<br>500kHz)      | $U=3.6 \times 10^{-3} V_x + 0.5mV$    |      |                |
|    |            |           |                    | >0.2V~2V (500kHz~<br>1MHz)        | $U=5.8 \times 10^{-3} V_x + 0.8mV$    |      |                |
|    |            |           |                    | >2V~20V (10Hz~<br>45Hz)           | $U=6 \times 10^{-4} V_x + 1.9mV$      |      |                |
|    |            |           |                    | >2V~20V (45Hz~<br>1kHz)           | $U=2 \times 10^{-4} V_x + 1.2mV$      |      |                |
|    |            |           |                    | >2V~20V (1kHz~<br>20kHz)          | $U=2 \times 10^{-4} V_x + 1.9mV$      |      |                |
|    |            |           |                    | >2V~20V (20kHz~<br>100kHz)        | $U=7 \times 10^{-4} V_x + 4mV$        |      |                |
|    |            |           |                    | >20V~200V (30Hz~<br>45Hz)         | $U=6 \times 10^{-4} V_x + 25mV$       |      |                |



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| № | Instrument | Measurand            | Calibration Method | Range                                            | Expanded Uncertainty<br>( $k=2$ )            | Note | Effective Date |
|---|------------|----------------------|--------------------|--------------------------------------------------|----------------------------------------------|------|----------------|
|   |            |                      |                    | >20V~200V (45Hz~1kHz)                            | $U=2 \times 10^{-4} V_x + 14\text{mV}$       |      |                |
|   |            |                      |                    | >20V~200V (1kHz~10kHz)                           | $U=2 \times 10^{-4} V_x + 19\text{mV}$       |      |                |
|   |            |                      |                    | >20V~200V (10kHz~40kHz)                          | $U=4 \times 10^{-4} V_x + 40\text{mV}$       |      |                |
|   |            |                      |                    | >200V~1000V (30Hz~45Hz)                          | $U=7 \times 10^{-4} V_x + 0.23\text{V}$      |      |                |
|   |            |                      |                    | >200V~1000V (45Hz~1kHz)                          | $U=2 \times 10^{-4} V_x + 0.08\text{V}$      |      |                |
|   |            |                      |                    | >200V~1000V (1kHz~10kHz)                         | $U=3 \times 10^{-4} V_x + 0.14\text{V}$      |      |                |
|   |            | DC current measuring |                    | 20 $\mu\text{A}$ ~200 $\mu\text{A}$              | $U=1.0 \times 10^{-4} I_x + 13\text{nA}$     |      |                |
|   |            |                      |                    | >0.2mA~2mA                                       | $U=6.0 \times 10^{-5} I_x + 0.04\mu\text{A}$ |      |                |
|   |            |                      |                    | >2mA~20mA                                        | $U=6.0 \times 10^{-5} I_x + 0.3\mu\text{A}$  |      |                |
|   |            |                      |                    | >20mA~200mA                                      | $U=3.0 \times 10^{-4} I_x + 5\mu\text{A}$    |      |                |
|   |            |                      |                    | >0.2A~2A                                         | $U=2.0 \times 10^{-4} I_x + 30\mu\text{A}$   |      |                |
|   |            |                      |                    | >2A~20A                                          | $U=3.0 \times 10^{-4} I_x + 0.5\text{mA}$    |      |                |
|   |            | AC current measuring |                    | 20 $\mu\text{A}$ ~200 $\mu\text{A}$ (10Hz~45Hz)  | $U=2.3 \times 10^{-3} I_x + 0.3\mu\text{A}$  |      |                |
|   |            |                      |                    | 20 $\mu\text{A}$ ~200 $\mu\text{A}$ (45Hz~1kHz)  | $U=9 \times 10^{-4} I_x + 0.2\mu\text{A}$    |      |                |
|   |            |                      |                    | 20 $\mu\text{A}$ ~200 $\mu\text{A}$ (1kHz~10kHz) | $U=9.1 \times 10^{-3} I_x + 0.3\mu\text{A}$  |      |                |



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| № | Instrument | Measurand | Calibration Method | Range                    | Expanded Uncertainty<br>( $k=2$ )      | Note | Effective Date |
|---|------------|-----------|--------------------|--------------------------|----------------------------------------|------|----------------|
|   |            |           |                    | >0.2mA~2mA (10Hz~45Hz)   | $U=2.4 \times 10^{-3} I_x + 0.3 \mu A$ |      |                |
|   |            |           |                    | >0.2mA~2mA (45Hz~1kHz)   | $U=7 \times 10^{-4} I_x + 0.3 \mu A$   |      |                |
|   |            |           |                    | >0.2mA~2mA (1kHz~10kHz)  | $U=6 \times 10^{-3} I_x + 0.4 \mu A$   |      |                |
|   |            |           |                    | >2mA~20mA (10Hz~45Hz)    | $U=2.3 \times 10^{-3} I_x + 4 \mu A$   |      |                |
|   |            |           |                    | >2mA~20mA (45Hz~1kHz)    | $U=5 \times 10^{-4} I_x + 2.4 \mu A$   |      |                |
|   |            |           |                    | >2mA~20mA (1kHz~10kHz)   | $U=2.9 \times 10^{-3} I_x + 4 \mu A$   |      |                |
|   |            |           |                    | >20mA~200mA (10Hz~45Hz)  | $U=2.3 \times 10^{-3} I_x + 34 \mu A$  |      |                |
|   |            |           |                    | >20mA~200mA (45Hz~1kHz)  | $U=5 \times 10^{-4} I_x + 24 \mu A$    |      |                |
|   |            |           |                    | >20mA~200mA (1kHz~10kHz) | $U=6 \times 10^{-3} I_x + 50 \mu A$    |      |                |
|   |            |           |                    | >0.2A~2A (10Hz~45Hz)     | $U=2.3 \times 10^{-3} I_x + 0.3 mA$    |      |                |
|   |            |           |                    | >0.2A~2A (45Hz~1kHz)     | $U=7 \times 10^{-4} I_x + 0.2 mA$      |      |                |
|   |            |           |                    | >0.2A~2A (1kHz~5kHz)     | $U=6 \times 10^{-3} I_x + 0.5 mA$      |      |                |
|   |            |           |                    | >2A~20A (30Hz~45Hz)      | $U=2.4 \times 10^{-3} I_x + 4 mA$      |      |                |
|   |            |           |                    | >2A~20A (45Hz~100Hz)     | $U=9 \times 10^{-4} I_x + 2.5 mA$      |      |                |



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| №  | Instrument          | Measurand  | Calibration Method                | Range               | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|---------------------|------------|-----------------------------------|---------------------|----------------------------------------|------|----------------|
|    |                     |            |                                   | >2A~20A（100Hz~1kHz） | $U=4\times 10^{-3}I_x+5mA$             |      |                |
|    |                     | Resistance |                                   | 1 Ω                 | $U_{rel}=0.24\%$                       |      |                |
|    |                     | 10 Ω       |                                   | $U_{rel}=0.06\%$    |                                        |      |                |
|    |                     | 100 Ω      |                                   | $U_{rel}=0.008\%$   |                                        |      |                |
|    |                     | 1k Ω       |                                   | $U_{rel}=0.0028\%$  |                                        |      |                |
|    |                     | 10k Ω      |                                   | $U_{rel}=0.0016\%$  |                                        |      |                |
|    |                     | 100k Ω     |                                   | $U_{rel}=0.0027\%$  |                                        |      |                |
|    |                     | 1M Ω       |                                   | $U_{rel}=0.004\%$   |                                        |      |                |
|    |                     | 10M Ω      |                                   | $U_{rel}=0.012\%$   |                                        |      |                |
|    |                     | 100M Ω     |                                   | $U_{rel}=0.22\%$    |                                        |      |                |
| 12 | *megohmmeter        | DC voltage | V.R.of megohmmeter JJG 622        | (250~5000)V         | $U_{rel}=2.1\%$                        |      |                |
|    |                     | Resistance |                                   | 100 Ω ~100M Ω       | $U_{rel}=0.4\%$                        |      |                |
|    |                     |            |                                   | >100M Ω ~1G Ω       | $U_{rel}=0.7\%$                        |      |                |
|    |                     |            |                                   | (>1~100)G Ω         | $U_{rel}=2.6\%$                        |      |                |
| 13 | *D.C.Resistance Box | Resistance | V.R.of D.C.Resistance Box JJG 982 | (1~10)m Ω           | $U_{rel}=0.8\%$                        |      |                |
|    |                     |            |                                   | (>10~100)m Ω        | $U_{rel}=0.13\%$                       |      |                |
|    |                     |            |                                   | >100m Ω ~1 Ω        | $U_{rel}=0.011\%$                      |      |                |
|    |                     |            |                                   | (>1~10) Ω           | $U_{rel}=0.003\%$                      |      |                |
|    |                     |            |                                   | >10 Ω ~1M Ω         | $U_{rel}=0.002\%$                      |      |                |



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| №  | Instrument                                                | Measurand  | Calibration Method                                                    | Range                  | Expanded Uncertainty<br>(k=2)                                | Note                   | Effective Date |
|----|-----------------------------------------------------------|------------|-----------------------------------------------------------------------|------------------------|--------------------------------------------------------------|------------------------|----------------|
|    |                                                           |            |                                                                       | (≥1～10)M Ω             | U <sub>rel</sub> =0.003%                                     |                        |                |
| 14 | *Earth Resistance Meters                                  | Resistance | V.R.of Earth Resistance Meters JJG 366                                | (0.1～1) Ω              | U <sub>rel</sub> =1.4%                                       |                        |                |
|    |                                                           |            |                                                                       | (≥1～10000) Ω           | U <sub>rel</sub> =0.2%                                       |                        |                |
| 15 | *Amperemeters、<br>Voltmeters、<br>Ohmmeters、<br>Wattmeters | DC current | V.R.of Amperemeters<br>Voltmeters Wattmeters and<br>Ohmmeters JJG 124 | 10mA～20A               | U <sub>rel</sub> =0.15%                                      |                        |                |
|    |                                                           | AC current |                                                                       | 10mA～20A,50Hz～1kHz     | U <sub>rel</sub> =0.20%                                      |                        |                |
|    |                                                           | DC voltage |                                                                       | 0.1V～20V               | U <sub>rel</sub> =0.12%                                      |                        |                |
|    |                                                           | AC voltage |                                                                       | >20V～1000V             | U <sub>rel</sub> =0.12%                                      |                        |                |
|    |                                                           |            |                                                                       | 0.1V～2.0V,50Hz～1kHz    | U <sub>rel</sub> =0.65%                                      |                        |                |
|    |                                                           |            |                                                                       | >2V～1000V,50Hz～1kHz    | U <sub>rel</sub> =0.14%                                      |                        |                |
|    |                                                           |            |                                                                       | Resistance             | 10 Ω ～100k Ω                                                 | U <sub>rel</sub> =0.6% |                |
|    |                                                           | power      | 20W～6kW,50Hz～1kHz                                                     | U <sub>rel</sub> =0.3% |                                                              |                        |                |
| 16 | *DC Standard Voltage Source                               | DC voltage | C.S.for Multifunction Standard Sources JJF1638                        | 20mV～100mV             | U <sub>rel</sub> =1.4×10 <sup>-5</sup> ～3×10 <sup>-5</sup>   |                        |                |
|    |                                                           |            |                                                                       | (≥0.1～100)V            | U <sub>rel</sub> =1.4×10 <sup>-5</sup> ～2.4×10 <sup>-5</sup> |                        |                |
|    |                                                           |            |                                                                       | (≥100～1000)V           | U <sub>rel</sub> =2.4×10 <sup>-5</sup>                       |                        |                |
| 17 | *DC Standard Current Source                               | DC current | C.S.for Multifunction Standard Sources JJF1638                        | (20～100) μ A           | U <sub>rel</sub> =2×10 <sup>-5</sup> ～9×10 <sup>-5</sup>     |                        |                |
|    |                                                           |            |                                                                       | (≥0.1～1)mA             | U <sub>rel</sub> =1.7×10 <sup>-5</sup> ～7×10 <sup>-5</sup>   |                        |                |
|    |                                                           |            |                                                                       | (≥1～10)mA              | U <sub>rel</sub> =2.6×10 <sup>-5</sup> ～9×10 <sup>-5</sup>   |                        |                |
|    |                                                           |            |                                                                       | (≥10～100)mA            | U <sub>rel</sub> =5×10 <sup>-5</sup> ～1.2×10 <sup>-4</sup>   |                        |                |



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| №  | Instrument                                | Measurand       | Calibration Method                                           | Range                         | Expanded Uncertainty<br>(k=2)                      | Note | Effective Date |
|----|-------------------------------------------|-----------------|--------------------------------------------------------------|-------------------------------|----------------------------------------------------|------|----------------|
|    |                                           |                 |                                                              | (>0.1~1)A                     | $U_{rel}=1.9 \times 10^{-4} \sim 4 \times 10^{-4}$ |      |                |
|    |                                           |                 |                                                              | (>1~10)A                      | $U_{rel}=5 \times 10^{-4} \sim 1.0 \times 10^{-3}$ |      |                |
|    |                                           |                 |                                                              | (>10~20)A                     | $U_{rel}=9 \times 10^{-4} \sim 1.1 \times 10^{-3}$ |      |                |
| 18 | *Clamp Earth Resistance Meters            | Resistance      | V.R. of Clamp Earth Resistance Meters JJG 1054               | (0.01~1000) $\Omega$          | $U_{rel}=(0.6 \sim 1.8)\%$                         |      |                |
| 19 | *Proof Tracking Index Testers             | AC Voltage      | C.S.for Proof Tracking Index Testers JJF (Zhe) 1087          | (1~750)V, 45Hz~65Hz           | $U_{rel}=0.5\%$                                    |      |                |
|    |                                           | AC Current      |                                                              | (0.1~1)A, 45Hz~65Hz           | $U_{rel}=0.6\%$                                    |      |                |
|    |                                           | Time            |                                                              | (10~3600)s                    | $U=0.26s$                                          |      |                |
| 20 | *Battery Internal Resistance Testers      | Voltage         | C.S.for Battery Internal Resistance Testers JJF 1620         | (0.01~1000)V                  | $U_{rel}=(0.002 \sim 0.012)\%$                     |      |                |
|    |                                           | Resistance      |                                                              | (1~1000)m $\Omega$            | $U_{rel}=0.012\%$                                  |      |                |
| 21 | *High-Voltage withstanding Voltage Tester | AC Voltage      | V.R. of High-voltage Withstanding Voltage Tester JJG (JG) 18 | (0.1~100) kV                  | $U_{rel}=0.6\%$                                    |      |                |
|    |                                           | DC Voltage      |                                                              | (0.1~100) kV                  | $U_{rel}=0.6\%$                                    |      |                |
|    |                                           | Leakage current |                                                              | (45~65) Hz                    |                                                    |      |                |
|    |                                           | Duration        |                                                              | (0.1~200)mA                   | $U_{rel}=0.2\%$                                    |      |                |
| 22 | *High Insulation Resistance Meters        | resistance      | V.R.of High Insulation Resistance Meters JJG690              | (10~999.99)s                  | $U_{rel}=1.2\%$                                    |      |                |
|    |                                           |                 |                                                              | 100 $\Omega$ ~ 100M $\Omega$  | $U_{rel}=0.7\%$                                    |      |                |
|    |                                           |                 |                                                              | >100M $\Omega$ ~ 1G $\Omega$  | $U_{rel}=1.2\%$                                    |      |                |
|    |                                           |                 |                                                              | >1G $\Omega$ ~ 10G $\Omega$   | $U_{rel}=3\%$                                      |      |                |
|    |                                           |                 |                                                              | >10G $\Omega$ ~ 100G $\Omega$ | $U_{rel}=8\%$                                      |      |                |
|    |                                           | DC Voltage      |                                                              | (100~5000)V                   | $U_{rel}=1.3\%$                                    |      |                |



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| №  | Instrument                                  | Measurand                   | Calibration Method                                          | Range                 | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|---------------------------------------------|-----------------------------|-------------------------------------------------------------|-----------------------|----------------------------------------|------|----------------|
| 23 | *Electrical Fast Transient/Burst Simulators | Single pulse voltage peak   | C.S.for Electrical Fast Transient/Burst Simulators JJF 1672 | (0.1~4) kV(50 Ω)      | <i>U</i> <sub>rel</sub> =4.7%          |      |                |
|    |                                             | rise time                   |                                                             | (0.1~4) kV(1000 Ω)    | <i>U</i> <sub>rel</sub> =5%            |      |                |
|    |                                             | Group of cycle              |                                                             | 1ns~500ms             | <i>U</i> <sub>rel</sub> =6.8%          |      |                |
|    |                                             |                             |                                                             | (100~500)ms           | <i>U</i> <sub>rel</sub> =6.8%          |      |                |
| 24 | *X-ray Flaw Detectors                       | Air kerma rate              | V.R. of X-ray Flaw Detectors JJG 40                         | 1 μ Gy/min~100cGy/min | <i>U</i> <sub>rel</sub> =3.8%          |      |                |
| 25 | *Ultrasonic Flaw Detectors                  | Error for Horizontal linear | V.R. of Ultrasonic Flaw Detectors JJG 746                   | 0.01%~10%(0.4~15)MHz  | <i>U</i> <sub>rel</sub> =0.7%          |      |                |
|    |                                             | Error for vertical linear   |                                                             | 0.01%~30%(0.4~15)MHz  | <i>U</i> <sub>rel</sub> =1.9%          |      |                |
|    |                                             | Attenuator                  |                                                             | (0~81)dB (0.4~15)MHz  | <i>U</i> =0.1dB+(0.06/10dB) <i>X</i>   |      |                |
| 26 | *Magnetic Particle Flaw Detectors           | Current                     | C.S.for Magnetic Particle Flaw Detectors JJF 1273           | (500~5000)A           | <i>U</i> <sub>rel</sub> =(1.4~2.0)%    |      |                |
|    |                                             | Remanence                   |                                                             | (0.1~1)mT             | <i>U</i> =(0.02mT                      |      |                |
| 27 | *DC Electronic Loads                        | Voltage                     | C.S.for DC Electronic Loads JJF 1462                        | (0.1~2) V             | <i>U</i> <sub>rel</sub> =0.052%        |      |                |
|    |                                             |                             |                                                             | (>2~20) V             | <i>U</i> <sub>rel</sub> =0.021%        |      |                |
|    |                                             |                             |                                                             | (>20~200) V           | <i>U</i> <sub>rel</sub> =0.021%        |      |                |
|    |                                             |                             |                                                             | (>200~1000) V         | <i>U</i> <sub>rel</sub> =0.010%        |      |                |
|    |                                             | Current                     |                                                             | (0.01~0.2) A          | <i>U</i> <sub>rel</sub> =0.014%        |      |                |
|    |                                             |                             |                                                             | (>0.2~2) A            | <i>U</i> <sub>rel</sub> =0.062%        |      |                |
|    |                                             |                             |                                                             | (>2~20) A             | <i>U</i> <sub>rel</sub> =0.066%        |      |                |



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| №  | Instrument                                                | Measurand           | Calibration Method                                                        | Range                                                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------------|---------------------|---------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------|------|----------------|
|    |                                                           | Resistance<br>power |                                                                           | ( $>20 \sim 120$ ) A                                   | $U_{rel}=0.03\%$                  |      |                |
|    |                                                           |                     |                                                                           | ( $1 \sim 10$ ) $\Omega$                               | $U_{rel}=0.1\%$                   |      |                |
|    |                                                           |                     |                                                                           | ( $>10 \sim 1000$ ) $\Omega$                           | $U_{rel}=0.05\%$                  |      |                |
|    |                                                           |                     |                                                                           | 1W $\sim$ 6kW                                          | $U_{rel}=0.05\%$                  |      |                |
| 28 | *Impulse Voltage Testers for Winding Interturn Insulation | Peak Voltage        | C.S.for Impulse Voltage Testers for Winding Interturn Insulation JJF 1691 | ( $0.1 \sim 14$ ) kV                                   | $U_{rel}=2.8\%$                   |      |                |
|    |                                                           | Wave Front Time     |                                                                           | ( $0.1 \sim 3000$ ) $\mu s$                            | $U=0.015 \mu s$                   |      |                |
| 29 | Electronic Stopwatch                                      | Time                | V.R.of Stopwatches JJG 237                                                | ( $1 \sim 3600$ )s                                     | $U=0.008s$                        |      |                |
| 30 | Mechanical Stopwatch                                      | Time                | V.R.of Stopwatches JJG 237                                                | ( $1 \sim 1800$ )s                                     | $U=0.06s$                         |      |                |
| 31 | *High Voltage Switch Operation Characteristic Testers     | Time                | V.R.of High Voltage Switch Operation Characteristic Testers JJG1120       | 5ms、100ms、500ms                                        | $U=0.12ms$                        |      |                |
| 32 | *Surface Resistance Tester                                | Resistance          | C.S.for Surface Resistance Tester JJF 1285                                | $1 \times 10^3 \Omega \sim 1 \times 10^8 \Omega$       | $U_{rel}=1.0\% \sim 1.8\%$        |      |                |
|    |                                                           |                     |                                                                           | $1 \times 10^8 \Omega \sim 1 \times 10^9 \Omega$       | $U_{rel}=1.2\% \sim 1.9\%$        |      |                |
|    |                                                           |                     |                                                                           | $1 \times 10^9 \Omega \sim 1 \times 10^{10} \Omega$    | $U_{rel}=2.4\% \sim 2.7\%$        |      |                |
|    |                                                           |                     |                                                                           | $1 \times 10^{10} \Omega \sim 1 \times 10^{11} \Omega$ | $U_{rel}=6\%$                     |      |                |
| 33 | *D.C.Resistors                                            | Resistance          | V.R.of D.C.Resistors JJG 166                                              | ( $1 \sim 10$ )m $\Omega$                              | $U_{rel}=0.8\%$                   |      |                |
|    |                                                           |                     |                                                                           | ( $>10 \sim 100$ )m $\Omega$                           | $U_{rel}=0.13\%$                  |      |                |
|    |                                                           |                     |                                                                           | ( $>0.1 \sim 1$ ) $\Omega$                             | $U_{rel}=0.011\%$                 |      |                |
|    |                                                           |                     |                                                                           | ( $>1 \sim 10$ ) $\Omega$                              | $U_{rel}=0.003\%$                 |      |                |



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| №  | Instrument                                                             | Measurand                | Calibration Method                                                                                                                                                             | Range                                                     | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------|------|----------------|
|    |                                                                        |                          |                                                                                                                                                                                | >10 Ω ~ 1M Ω                                              | <i>U</i> <sub>rel</sub> =0.002%        |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>1 ~ 10)M Ω                                              | <i>U</i> <sub>rel</sub> =0.003%        |      |                |
| 34 | *DC Stabilized Power Supplies                                          | Voltage                  | C.S.for DC Stabilized Power Supplies JJF 1597                                                                                                                                  | (0.1 ~ 10) V                                              | <i>U</i> <sub>rel</sub> =0.02%         |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>10 ~ 100) V                                             | <i>U</i> <sub>rel</sub> =0.05%         |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>100 ~ 1000) V                                           | <i>U</i> <sub>rel</sub> =0.08%         |      |                |
|    |                                                                        | Current                  |                                                                                                                                                                                | (0.01 ~ 3) A                                              | <i>U</i> <sub>rel</sub> =0.03%         |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>3 ~ 10) A                                               | <i>U</i> <sub>rel</sub> =0.05%         |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>10 ~ 20) A                                              | <i>U</i> <sub>rel</sub> =0.07%         |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (>20 ~ 600) A                                             | <i>U</i> <sub>rel</sub> =0.3%          |      |                |
| 35 | *Electrical Meters for Measuring Alternating-current Electrical Energy | Energy                   | V.R.of Electrical Meters for Measuring Alternating-current Electrical Energy JJG 596                                                                                           | 3 × (50 ~ 400)V, 3 × (0.015 ~ 25)A                        | <i>U</i> <sub>rel</sub> =0.1%          |      |                |
| 36 | Current Transformers                                                   | current error            | Verification Regulation of Instrument Current Transformers JJG 313, Verification Regulation of Instrument Transformers Part 3: Current Transformers in Power System JJG 1189.3 | 1% Rated Current: (5 ~ 10000)A / (1, 5) A                 | <i>U</i> =0.024%                       |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (5%、20%、100%、120%) Rated Current: (5 ~ 10000)A / (1, 5) A | <i>U</i> =0.012%                       |      |                |
|    |                                                                        | current phase difference |                                                                                                                                                                                | 1% Rated Current: 0.05' ~ 500'                            | <i>U</i> =0.70'                        |      |                |
|    |                                                                        |                          |                                                                                                                                                                                | (5%、20%、100%、120%) Rated Current: 0.05' ~ 500'            | <i>U</i> =0.36'                        |      |                |



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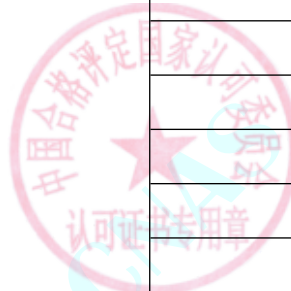
| №  | Instrument             | Measurand                | Calibration Method                                                                                                                                  | Range                                                      | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date |
|----|------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------|------|----------------|
|    |                        | Insulation Resistance    |                                                                                                                                                     | (0.1~500) MΩ , 500V                                        | <i>U</i> <sub>rel</sub> =12%           |      |                |
|    |                        |                          |                                                                                                                                                     | (0.1~2500) MΩ , 2500V                                      | <i>U</i> <sub>rel</sub> =24%           |      |                |
| 37 | Voltage Transformers   | voltage error            | Verification Regulation of Instrument Voltage Transformers JJG 314, Instrument Transformers —Part4: Voltage Transformers in Power System JJG 1189.4 | 20%Rated Voltage: (6/√3~110) kV/(100/√3、100)V              | <i>U</i> =0.024%                       |      |                |
|    |                        |                          |                                                                                                                                                     | 50%Rated Voltage: (6/√3~110) kV/(100/√3、100)V              | <i>U</i> =0.018%                       |      |                |
|    |                        |                          |                                                                                                                                                     | (80%、100%、120%) Rated Voltage: (6/√3~110) kV/(100/√3、100)V | <i>U</i> =0.012%                       |      |                |
|    |                        | voltage phase difference |                                                                                                                                                     | 20%Rated Voltage:0.05'~500'                                | <i>U</i> =0.70'                        |      |                |
|    |                        |                          |                                                                                                                                                     | 50%Rated Voltage:0.05'~500'                                | <i>U</i> =0.52'                        |      |                |
|    |                        |                          |                                                                                                                                                     | (80%、100%、120%) Rated Voltage:0.05'~500'                   | <i>U</i> =0.34'                        |      |                |
| 38 | *Electronic time relay | Time                     | Calibration Specification for Electronic time relay JJF1282                                                                                         | 10ms~9999.99s                                              | <i>U</i> =0.004s~0.30s                 |      |                |
| 39 | *Timer                 | Time                     | Verification Regulation of Stopwatches JJG237                                                                                                       | 1s~3600s                                                   | <i>U</i> =0.007s~0.11s                 |      |                |
| 40 | *D.C. Bridges          | Resistances              | Verification Regulation of D.C. Bridges JJG125                                                                                                      | 0.0001 Ω                                                   | <i>U</i> <sub>rel</sub> =0.12%         |      |                |
|    |                        |                          |                                                                                                                                                     | 0.001 Ω                                                    | <i>U</i> <sub>rel</sub> =0.06%         |      |                |
|    |                        |                          |                                                                                                                                                     | 0.01 Ω                                                     | <i>U</i> <sub>rel</sub> =0.032%        |      |                |
|    |                        |                          |                                                                                                                                                     | 0.1 Ω ~1.1 Ω                                               | <i>U</i> <sub>rel</sub> =0.028%        |      |                |

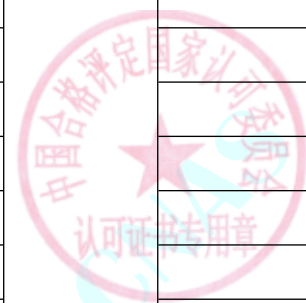


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| №  | Instrument           | Measurand                 | Calibration Method                                        | Range           | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|----|----------------------|---------------------------|-----------------------------------------------------------|-----------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                      |                           |                                                           | 1 Ω ~ 11 Ω      | <i>U</i> <sub>rel</sub> =0.020%        |                                                                                      |                |
|    |                      |                           |                                                           | 10 Ω ~ 110 Ω    | <i>U</i> <sub>rel</sub> =0.023%        |                                                                                      |                |
|    |                      |                           |                                                           | 1 Ω ~ 10 Ω      | <i>U</i> <sub>rel</sub> =0.12%         |                                                                                      |                |
|    |                      |                           |                                                           | 10 Ω ~ 100 Ω    | <i>U</i> <sub>rel</sub> =0.023%        |                                                                                      |                |
|    |                      |                           |                                                           | 100 Ω ~ 100k Ω  | <i>U</i> <sub>rel</sub> =0.012%        |                                                                                      |                |
|    |                      |                           |                                                           | 100k Ω ~ 10M Ω  | <i>U</i> <sub>rel</sub> =0.058%        |                                                                                      |                |
| 41 | *Process Calibrators | DC voltage measurement    | Calibration Specification for Process Calibrators JJF1472 | 10mV~100V       | <i>U</i> <sub>rel</sub> =0.004%        |  |                |
|    |                      | DC current measurement    |                                                           | 1mA~10mA        | <i>U</i> <sub>rel</sub> =0.01%         |                                                                                      |                |
|    |                      | DC resistance measurement |                                                           | 10mA~100mA      | <i>U</i> <sub>rel</sub> =0.007%        |                                                                                      |                |
|    |                      |                           |                                                           | 10 Ω ~ 100 Ω    | <i>U</i> <sub>rel</sub> =0.06%         |                                                                                      |                |
|    |                      |                           |                                                           | 100 Ω ~ 500 Ω   | <i>U</i> <sub>rel</sub> =0.008%        |                                                                                      |                |
|    |                      | Frequency measurement     |                                                           | 500 Ω ~ 5000 Ω  | <i>U</i> <sub>rel</sub> =0.003%        |                                                                                      |                |
|    |                      |                           |                                                           | ( 1~110 ) Hz    | <i>U</i> =0.01Hz                       |                                                                                      |                |
|    |                      |                           |                                                           | ( 100~1100 ) Hz | <i>U</i> =0.1Hz                        |                                                                                      |                |
|    |                      |                           |                                                           | ( 1.1~11 ) kHz  | <i>U</i> =0.001kHz                     |                                                                                      |                |
|    |                      |                           |                                                           | ( 11~50 ) kHz   | <i>U</i> =0.01kHz                      |                                                                                      |                |
|    |                      | Thermocouple measurement  |                                                           | ( -200~0 ) °C   | <i>U</i> =0.2 °C                       |                                                                                      |                |
|    |                      |                           |                                                           | ( 0~1300 ) °C   | <i>U</i> =0.1 °C                       |                                                                                      |                |
|    |                      | Thermal resistance        |                                                           | ( -200~0 ) °C   | <i>U</i> =0.01 °C                      |                                                                                      |                |



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| №  | Instrument     | Measurand                                       | Calibration Method                                     | Range                | Expanded Uncertainty<br>( <i>k</i> =2) | Note | Effective Date                  |
|----|----------------|-------------------------------------------------|--------------------------------------------------------|----------------------|----------------------------------------|------|---------------------------------|
|    |                | measurement                                     |                                                        | (0～100) °C           | <i>U</i> =0.04℃                        |      |                                 |
|    |                |                                                 |                                                        | (100～500) °C         | <i>U</i> =0.10℃                        |      |                                 |
|    |                |                                                 |                                                        | (500～800) °C         | <i>U</i> =0.14℃                        |      |                                 |
|    |                | DC voltage<br>output                            |                                                        | 10mV～30V             | <i>U</i> <sub>rel</sub> =0.003%        |      |                                 |
|    |                |                                                 |                                                        | DC current<br>output | 1mA～30mA                               |      | <i>U</i> <sub>rel</sub> =0.01%  |
|    |                | DC resistance<br>measurement                    |                                                        |                      | 10 Ω ～100 Ω                            |      | <i>U</i> <sub>rel</sub> =0.01%  |
|    |                |                                                 |                                                        |                      | 100 Ω ～4000 Ω                          |      | <i>U</i> <sub>rel</sub> =0.002% |
|    |                | Frequency<br>output                             |                                                        | (1～110) Hz           | <i>U</i> =0.01Hz                       |      |                                 |
|    |                |                                                 |                                                        | (100～11000) Hz       | <i>U</i> =0.1Hz                        |      |                                 |
|    |                |                                                 |                                                        | (1.1～50) kHz         | <i>U</i> =0.001kHz                     |      |                                 |
|    |                | Thermocouple<br>output                          |                                                        | (-200～0)℃            | <i>U</i> =0.04℃                        |      |                                 |
|    |                |                                                 |                                                        | (0～1300) °C          | <i>U</i> =0.03℃                        |      |                                 |
|    |                | Thermal<br>resistance<br>output                 |                                                        | (-200～0)℃            | <i>U</i> =0.02℃                        |      |                                 |
|    |                |                                                 |                                                        | (0～100) °C           | <i>U</i> =0.01℃                        |      |                                 |
|    |                |                                                 |                                                        | (200～800) °C         | <i>U</i> =0.02℃                        |      |                                 |
| 42 | *Analog Clocks | Diurnal<br>difference<br>Voltage<br>coefficient | Calibration Specification for<br>Analog Clocks JJF1901 | (-10.00～10.00)s      | <i>U</i> =0.02s                        |      |                                 |
|    |                |                                                 |                                                        | (-10.000～10.000)s/V  | <i>U</i> =0.08s/V                      |      |                                 |
|    |                | Coil Number                                     | Calibration Specification of<br>Coil Number Meters     | (1～60000) Turns      | <i>U</i> = (0.6～35) Turns              |      |                                 |



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| No        | Instrument                                | Measurand     | Calibration Method                                                                          | Range                                                                                           | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|-----------|-------------------------------------------|---------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------|------|----------------|
|           |                                           | DC resistance | JJF(Dianzi) 0041, Calibration Specification of Coil Number Testing Instructing JJF(Zhe)1065 | 0.001 $\Omega$ ~ 100k $\Omega$                                                                  | $U_{rel}=0.015\% \sim 0.06\%$ |      |                |
| Chemistry |                                           |               |                                                                                             |                                                                                                 |                               |      |                |
| 1         | *the Alarmer detectors of Combustible Gas | Concentration | V.R. of the Alarmer detectors of Combustible Gas JJG 693                                    | Methane、Propane:<br>(0.1~100) %LEL                                                              | $U_{rel}=1.0\%$               |      |                |
|           |                                           |               |                                                                                             | Isobutane: (0.1~100) %LEL                                                                       | $U_{rel}=1.7\%$               |      |                |
|           |                                           |               |                                                                                             | hydrogen: (0.1~100) %LEL                                                                        | $U_{rel}=1.2\%$               |      |                |
|           |                                           |               |                                                                                             | Acetylene(0.1~100) %LEL                                                                         | $U_{rel}=2.1\%$               |      |                |
| 2         | *Electrochemical Oxygen Detector          | Concentration | V. R. of Electrochemical Oxygen Meter JJG 365                                               | (0.1~30)%                                                                                       | $U_{rel}=1.0\%$               |      |                |
| 3         | *Carbon monoxide Detector                 | Concentration | V.R. of Carbon monoxide Detector JJG915                                                     | (1~1000) $\mu$ mol/mol                                                                          | $U_{rel}=1.0\%$               |      |                |
| 4         | *Sulfur Hydrogen Gas Detectors            | Concentration | V. R. of Sulfur Hydrogen Gas Detectors JJG695                                               | (0~100) $\mu$ mol/mol                                                                           | $U_{rel}=1.4\%$               |      |                |
| 5         | *Gas Chromatography-Mass Spectrometers    | Sensitivity   | Calibration Specification for Gas Chromatography-Mass Spectrometries JJF1164                | EI <sup>+</sup> 、CI <sup>+</sup> (Ion trap, single quadrupole, triple quadrupole) : $\geq 10:1$ | $U_{rel}=5.1\%$               |      |                |
|           |                                           |               |                                                                                             | EI <sup>+</sup> (Time of flight, electrostatic field orbital trap): $\geq 50:1$                 | $U_{rel}=5.1\%$               |      |                |
|           |                                           |               |                                                                                             | CI <sup>+</sup> (Ion trap, single quadrupole) : $\geq 10:1$                                     | $U_{rel}=5.1\%$               |      |                |
| 6         | *Ammonia gas detectors                    | Concentration | V. R. of Ammonia Gas Detectors JJG1105                                                      | (0.1~100) $\mu$ mol/mol                                                                         | $U_{rel}=3.2\%$               |      |                |



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| №  | Instrument                                | Measurand             | Calibration Method                                              | Range                                                | Expanded Uncertainty<br>(k=2) | Note                        | Effective Date |
|----|-------------------------------------------|-----------------------|-----------------------------------------------------------------|------------------------------------------------------|-------------------------------|-----------------------------|----------------|
| 7  | *Chlorine Alarm Detectors                 | Concentration         | Calibration Specification for Chlorine Alarm Detectors JJF 1433 | (0.1~10) μ mol/mol                                   | U <sub>rel</sub> =2.2%        |                             |                |
|    |                                           |                       |                                                                 | (>10~50) μ mol/mol                                   | U <sub>rel</sub> =2.6%        |                             |                |
| 8  | *ELISA Analytical Instruments             | Absorbance            | V.R. for ELISA Analytical Instruments JJG 861                   | (0.1~1.6)                                            | U=0.006                       | Out of alignment wavelength |                |
| 9  | *Liquid Chromatography-Mass Spectrometers | Signal to noise ratio | C.S for Liquid Chromatography-Mass Spectrometers JJF1317        | Triple quadrupole (ESI+、APCI+) ≥ 30: 1               | U <sub>rel</sub> =4%          |                             |                |
|    |                                           |                       |                                                                 | Triple quadrupole (ESI-) ≥10: 1                      | U <sub>rel</sub> =4%          |                             |                |
|    |                                           |                       |                                                                 | Single quadrupole, ion trap (ESI+、ESI-、APCI+) ≥10: 1 | U <sub>rel</sub> =4%          |                             |                |
| 10 | *On-line pH Meter                         | pH                    | C.S for On-line pH Meter JJF1547                                | Electronic unit: 0~14                                | U=0.01                        |                             |                |
|    |                                           | Temperature           |                                                                 | Instrument: 4~13                                     | U=0.02                        |                             |                |
|    |                                           |                       |                                                                 | (0~60) °C                                            | U=0.2 °C                      |                             |                |
| 11 | *Fourier Transform Infrared Spectrometers | Wave number           | C.S for Fourier Transform Infrared Spectrometers JJF1319        | (3100~600)cm <sup>-1</sup>                           | U=0.3cm <sup>-1</sup>         |                             |                |
| 12 | *Atomic Absorption Spectrophotometer      | Detection limit       | V.R. of Atomic Absorption Spectrophotometer JJG694              | Cu≤0.02 μ g/mL                                       | U=0.003 μ g/mL                |                             |                |
|    |                                           |                       |                                                                 | Cd≤4pg                                               | U=0.3pg                       |                             |                |
| 13 | *Total Organic Carbon Analyzer            | Concentration         | V.R. of Total Organic Carbon Analyzer JJG821                    | (0.01~1)mg/L                                         | U <sub>rel</sub> =4.0%        |                             |                |
|    |                                           |                       |                                                                 | (>1~1000)mg/L                                        | U <sub>rel</sub> =2.7%        |                             |                |
| 14 | *Melting-Point-Measuring                  | Melting point         | V.R. of Melting-Point-Measuring Instruments                     | 0.2 °C/min:Room (50~300) °C                          | U=0.13 °C                     |                             |                |



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| №  | Instrument                         | Measurand                | Calibration Method                                | Range                                                            | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------------------------------|--------------------------|---------------------------------------------------|------------------------------------------------------------------|-------------------------------|------|----------------|
|    | Instruments                        |                          | JJG701                                            | 1.0℃/min:Room (50~300)℃                                          | $U=0.21^{\circ}\text{C}$      |      |                |
| 15 | *Analyzer for Oil Content in Water | Concentration            | V. R. of Analyzer for Oil Content in Water JJG950 | (0.1~10)mg/L                                                     | $U=0.14\text{ mg/L}$          |      |                |
|    |                                    |                          |                                                   | (>10~1000)mg/L                                                   | $U_{\text{rel}}=2.1\%$        |      |                |
| 16 | *Electrolytic Conductivity Meter   | Electrolytic Conductance | V.R.of Electrolytic Conductivity Meter JJG376     | The electric meter:<br>(0.05~2×10 <sup>5</sup> ) μ S/cm          | $U_{\text{rel}}=0.2\%$        |      |                |
|    |                                    |                          |                                                   | Instrument: (100~1.2×10 <sup>5</sup> ) μ S/cm                    | $U_{\text{rel}}=0.3\%$        |      |                |
|    |                                    | Temperature              |                                                   | (0~50) °C                                                        | $U=0.2^{\circ}\text{C}$       |      |                |
| 17 | *Gas Chromatograph                 | Sensitivity              | V.R. of Gas Chromatograph JJG700                  | TCD(Benzene in Toluene、Methane gas in nitrogen): ≥800 mV•mL/mg   | $U_{\text{rel}}=4.1\%$        |      |                |
|    |                                    |                          |                                                   | FID(N-Hexadecane in Isooctane、Methane gas in nitrogen): ≤0.5ng/s | $U_{\text{rel}}=4.4\%$        |      |                |
|    |                                    |                          |                                                   | FPD(Nethlparthion in Ethanol): ≤0.5ng/s (S)                      | $U_{\text{rel}}=4.4\%$        |      |                |
|    |                                    | detection limit          |                                                   | FPD(Nethlparthion in Ethanol): ≤0.1ng/s (P)                      | $U_{\text{rel}}=4.4\%$        |      |                |
|    |                                    |                          |                                                   | NPD (Malathion Mixture、Azobenzene) : ≤5pg/s (N)                  | $U_{\text{rel}}=4.4\%$        |      |                |



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| №  | Instrument             | Measurand                        | Calibration Method                   | Range                                                                                             | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|------------------------|----------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------|------|----------------|
|    |                        |                                  |                                      | NPD (Malathion Mixture、Azobenzene) : $\leq 10\text{pg/s}$ (P)                                     | $U_{\text{rel}}=4.4\%$        |      |                |
|    |                        |                                  |                                      | ECD(gamma-Hexachlorocyclohexana in Isooctane): $\leq 5\text{pg/mL}$                               | $U_{\text{rel}}=4.1\%$        |      |                |
| 18 | *Liquid Chromatography | Minimum detectable concentration | V.R. of Liquid Chromatography JJG705 | UV-Vis、Dial-array Detector(Naphthalene in Methanol) : $\leq 5 \times 10^{-8}\text{g/mL}$          | $U_{\text{rel}}=4.6\%$        |      |                |
|    |                        |                                  |                                      | Fluorence Detector(Naphthalene in Methanol) : $\leq 5 \times 10^{-9}\text{g/mL}$                  | $U_{\text{rel}}=4.6\%$ ;      |      |                |
|    |                        |                                  |                                      | Differential Detector(Cholesterol in Methanol): $\leq 5 \times 10^{-6}\text{g/mL}$                | $U_{\text{rel}}=6.6\%$        |      |                |
|    |                        |                                  |                                      | EvaporativeLight-scattering Detector(Cholesterol in Methanol): $\leq 5 \times 10^{-6}\text{g/mL}$ | $U_{\text{rel}}=6.2\%$        |      |                |
|    |                        |                                  |                                      | (0~60) °C                                                                                         | $U=0.4^{\circ}\text{C}$       |      |                |
|    |                        | Temperature                      |                                      | (0.2~5) mL/min                                                                                    | $U_{\text{rel}}=0.8\%$        |      |                |
| 19 | *Ion Chromatograph     | Minimum detectable concentration | V. R. of Ion Chromatograph JJG823    | $\text{Cl}^{-} \leq 0.02 \mu\text{g/mL}$                                                          | $U_{\text{rel}}=2.9\%$        |      |                |
|    |                        |                                  |                                      | $\text{Li}^{+} \leq 0.02 \mu\text{g/mL}$                                                          | $U_{\text{rel}}=2.9\%$        |      |                |



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| №  | Instrument                                       | Measurand           | Calibration Method                                                                     | Range                                                 | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----|--------------------------------------------------|---------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------|------|----------------|
|    |                                                  |                     | JJG 814                                                                                | $\text{NO}_2 \leq 0.02 \mu\text{g/mL}$                | $U_{\text{rel}}=3.4\%$        |      |                |
|    |                                                  |                     |                                                                                        | $\text{I} \leq 0.02 \mu\text{g/mL}$                   | $U_{\text{rel}}=3.4\%$        |      |                |
|    |                                                  | Temperature         |                                                                                        | $(15 \sim 45)^\circ\text{C}$                          | $U=0.4^\circ\text{C}$         |      |                |
|    |                                                  | Capacity            |                                                                                        | $(0.2 \sim 5) \text{ mL/min}$                         | $U_{\text{rel}}=0.8\%$        |      |                |
| 20 | *Automatic Potentiometric Titrator               | Potential           | V.R. for Automatic Potentiometric Titrator                                             | $(-1999 \sim 1999) \text{ mV}$                        | $U=0.24 \text{ mV}$           |      |                |
|    |                                                  | Concentration       | JJG 814                                                                                | $0.1 \text{ mol/L}$                                   | $U_{\text{rel}}=0.4\%$        |      |                |
| 21 | *Laboratory pH Meter                             | pH                  | V.R. of Laboratory pH Meter<br>JJG 119                                                 | Instrument: $4 \sim 13$                               | $U=0.02$                      |      |                |
|    |                                                  |                     |                                                                                        | Electronic unit: $0 \sim 14$                          | $U=0.01$                      |      |                |
|    |                                                  | Potential           |                                                                                        | $(-1999 \sim 1999) \text{ mV}$                        | $U=0.4 \text{ mV}$            |      |                |
|    |                                                  | Temperature         |                                                                                        | $(0 \sim 60)^\circ\text{C}$                           | $U=0.2^\circ\text{C}$         |      |                |
| 22 | *Flame Photometer                                | Detection Limit     | V.R. of Flame Photometer<br>JJG 630                                                    | K: $\leq 0.004 \text{ mmol/L}$                        | $U_{\text{rel}}=7.2\%$        |      |                |
|    |                                                  |                     |                                                                                        | Na: $\leq 0.008 \text{ mmol/L}$                       | $U_{\text{rel}}=5.4\%$        |      |                |
| 23 | *Static Light Scattering Particle Size Analyzers | Particle Size       | Calibration Specification for Static Light Scattering Particle Size Analyzers JJF 1211 | $(2 \sim 10) \mu\text{m}$                             | $U_{\text{rel}}=9.1\%$        |      |                |
|    |                                                  |                     |                                                                                        | $(>10 \sim 50) \mu\text{m}$                           | $U_{\text{rel}}=2.5\%$        |      |                |
|    |                                                  |                     |                                                                                        | $(>50 \sim 110) \mu\text{m}$                          | $U_{\text{rel}}=2.1\%$        |      |                |
| 24 | *Osmometers                                      | Osmotic pressure    | V.R. of Osmometers JJG 1089                                                            | $(100 \sim 400) \text{ mOsmol/kg}$                    | $U=2.4 \text{ mOsmol/kg}$     |      |                |
|    |                                                  | molar concentration |                                                                                        | $(>400 \sim 700) \text{ mOsmol/kg}$                   | $U_{\text{rel}}=0.6\%$        |      |                |
| 25 | *Particle Detector                               | Particle counting   | C.S. for Particle Detector JJF 1290—2011 JJF 1290                                      | $(2000 \sim 3000) \text{ particulate per milliliter}$ | $U_{\text{rel}}=4.2\%$        |      |                |



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| №  | Instrument                                                            | Measurand          | Calibration Method                                                               | Range                                                  | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------|------|----------------|
| 26 | *Polarimeter and<br>Polarimetric<br>Saccharimeter                     | Polarimeter        | V.R.of Polarimeter and<br>Polarimetric Saccharimeter                             | $-35^{\circ} \sim 35^{\circ}$                          | $U=0.004^{\circ}$                 |      |                |
|    |                                                                       | Sugar              | JJG 536                                                                          | $-20^{\circ} Z \sim 105^{\circ} Z$                     | $U=0.010^{\circ} Z$               |      |                |
| 27 | *Atomic<br>Fluorescence<br>Spectrophotometer                          | Detection<br>Limit | V. R. of Atomic Fluorescence<br>Spectrometer JJG939                              | As: $\leq 0.4 \text{ ng}$                              | $U_{\text{rel}}=24\%$             |      |                |
|    |                                                                       |                    |                                                                                  | Sb: $\leq 0.4 \text{ ng}$                              | $U_{\text{rel}}=23\%$             |      |                |
| 28 | *Turbidimeter                                                         | Turbidity          | V. R. of Turbidimeter<br>JJG880                                                  | $(0.1 \sim 400) \text{ NTU}$                           | $U_{\text{rel}}=3.2\%$            |      |                |
| 29 | *Hand<br>Saccharimeter<br>(Content-meter)                             | Sugar content      | V. R. of Hand Saccharimeter<br>(Content-meter) and Hand<br>Refractometer JJG 820 | $(10 \sim 50) \%$                                      | $U_{\text{rel}}=1.1\%$            |      |                |
| 30 | *Determinators for<br>Total Sulfur in<br>Coal                         | Content            | V. R. of Determinators for<br>Total Sulfur in Coal JJG1006                       | $(0.4 \sim 1) \%$                                      | $U=0.04\%$                        |      |                |
|    |                                                                       |                    |                                                                                  | $(>1 \sim 4) \%$                                       | $U=0.08\%$                        |      |                |
|    |                                                                       |                    |                                                                                  | $(>4 \sim 4.6) \%$                                     | $U=0.15\%$                        |      |                |
| 31 | *Zirconia Oxygen<br>Analyzers                                         | Concentration      | V.R. of Zirconia Oxygen<br>Analyzers JJG 535                                     | $(0.1 \sim 25) \%$                                     | $U_{\text{rel}}=1.1\%$            |      |                |
| 32 | *Carbon<br>Monoxide and<br>Carbon Dioxide<br>Infrared Gas<br>Analyzer | Concentration      | V.R. of Carbon Monoxide<br>and Carbon Dioxide Infrared<br>Gas Analyzer JJG635    | CO: $(0.1 \sim 50) \mu \text{ mol/mol}$                | $U_{\text{rel}}=1.7\%$            |      |                |
|    |                                                                       |                    |                                                                                  | CO <sub>2</sub> : $(1 \sim 40000) \mu \text{ mol/mol}$ | $U_{\text{rel}}=1.7\%$            |      |                |
| 33 | *Sulfur Dioxide<br>Gas Detectors                                      | Concentration      | V. R. of Sulfur Dioxide Gas<br>Detectors JJG551                                  | $(0.1 \sim 20) \mu \text{ mol/mol}$                    | $U_{\text{rel}}=2\%$              |      |                |
| 34 | *Chemical Oxygen<br>Demand(COD)<br>Meters                             | Concentration      | V. R. of Chemical Oxygen<br>Demand (COD) Meters<br>JJG 975                       | $(50 \sim 1000) \text{ mg/L}$                          | $U_{\text{rel}}=2.7\%$            |      |                |
|    |                                                                       | Temperature        |                                                                                  | $(100 \sim 200)^{\circ}\text{C}$                       | $U=0.3^{\circ}\text{C}$           |      |                |
|    |                                                                       | Digestion<br>Time  |                                                                                  | $(0.01 \sim 3600) \text{ s}$                           | $U_{\text{rel}}=0.2\%$            |      |                |



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| №  | Instrument                                                      | Measurand        | Calibration Method                                                                                        | Range                              | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-----------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|------|----------------|
| 35 | *On-line Automatic Determinator of Chemical Oxygen Demand(COD)  | Concentration    | V. R.of On-line Automatic Detector of Chemical Oxygen Demand (COD) JJG 1012                               | (50~500) mg/L                      | $U_{rel}=2.4\%$                   |      |                |
| 36 | *Extrusion Plastometer                                          | Melt Flow Rate   | Verification Regulation for Extrusion Plastometer JJG 878                                                 | (1~10) g/10min                     | $U_{rel}=4.8\%$                   |      |                |
|    |                                                                 | Time             |                                                                                                           | (5~120) s                          | $U_{rel}=0.19\%$                  |      |                |
| 37 | *Differential Scanning Calorimeters                             | Melt Temperature | V. R.of the Differential Scanning Calorimeters JJG 936                                                    | (150~430)°C                        | $U=(0.3\sim0.7)^\circ\text{C}$    |      |                |
|    |                                                                 | Heat             |                                                                                                           | (20~110)J/g                        | $U_{rel}=(1.1\sim1.8)\%$          |      |                |
| 38 | *Ultraviolet, Visible, Spectrophotome                           | Wavelength       | V.R. of Ultraviolet, Visible, Near-Infrared Spectrophotometer JJG178                                      | (190~900)nm                        | $U=0.5\text{nm}$                  |      |                |
|    |                                                                 | Transmittance    |                                                                                                           | 5%~55%                             | $U=0.4\%$                         |      |                |
| 39 | Dissolved Oxygen Meter                                          | Concentration    | Verification Regulation of Dissolved Oxygen Meter JJG291                                                  | (0.01~12) mg/L                     | $U=0.06\text{mg/L}$               |      |                |
| 40 | *Water Quality Analyzers of Total Phosphorus and Total Nitrogen | Concentration    | Verification Regulation of Water Quality On-line Analyzers of Total Phosphorus and Total Nitrogen JJG1094 | Total Phosphorus: (0.001~0.5) mg/L | $U=0.013\text{ mg/L}$             |      |                |
|    |                                                                 |                  |                                                                                                           | Total Phosphorus: (0.500~500) mg/L | $U_{rel}=2.9\%$                   |      |                |
|    |                                                                 |                  |                                                                                                           | Total Nitrogen: (0.001~2.0) mg/L   | $U=0.043\text{ mg/L}$             |      |                |
|    |                                                                 |                  |                                                                                                           | Total Nitrogen: (2.000~500) mg/L   | $U_{rel}=2.9\%$                   |      |                |
| 41 | *Ammonia-Nitrogen Automatic Analyzers                           | Concentration    | Verification Regulation of Ammonia-Nitrogen Automatic Analyzers JJG631                                    | (0.01~2) mg/L                      | $U=0.07\text{mg/L}$               |      |                |
|    |                                                                 |                  |                                                                                                           | (2~500) mg/L                       | $U_{rel}=2.3\%$                   |      |                |



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|----|-----------------------------------------|-----------------|---------------------------------------------------------------------------|----------------------------------|-----------------------------------|------|----------------|
| 42 | *Bomb Calorimeter                       | Calorific value | Verification Regulation of Bomb Calorimeter JJG672                        | (26430~26490) J/g                | $U=32$ J/g                        |      |                |
| 43 | *Instrument for KF Coulometry Titration | Water mass      | Verification Regulation of Instrument for KF Coulometry Titration JJG1044 | 10 $\mu$ g~5mg                   | $U_{rel}=3.6\%\sim 1.3\%$         |      |                |
| 44 | *Emission Spectrometer                  | Detection Limit | V.R.of Emission Spectrometer JJG768                                       | ICP Zn: $\leq 0.003$ mg/L        | $U=0.0004$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | ICP Ni: $\leq 0.01$ mg/L         | $U=0.0008$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | ICP Mn: $\leq 0.002$ mg/L        | $U=0.0007$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | ICP Cr: $\leq 0.007$ mg/L        | $U=0.0002$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | ICP Cu: $\leq 0.007$ mg/L        | $U=0.0005$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | ICP Ba: $\leq 0.001$ mg/L        | $U=0.0001$ mg/L                   |      |                |
|    |                                         |                 |                                                                           | Direct reading C: $\leq 0.02\%$  | $U=0.0018\%$                      |      |                |
|    |                                         |                 |                                                                           | Direct reading Si: $\leq 0.02\%$ | $U=0.0018\%$                      |      |                |
|    |                                         |                 |                                                                           | Direct reading Mn: $\leq 0.02\%$ | $U=0.0018\%$                      |      |                |
|    |                                         |                 |                                                                           | Direct reading Cr: $\leq 0.01\%$ | $U=0.0018\%$                      |      |                |
| 45 | *Air Samplers                           | Flow            | V. R. of Air Samplers JJG956                                              | (0.1~6) L/min                    | $U_{rel}=1.2\%$                   |      |                |
|    |                                         | Time            |                                                                           | (0.1~3600) s                     | $U=0.04$ s                        |      |                |

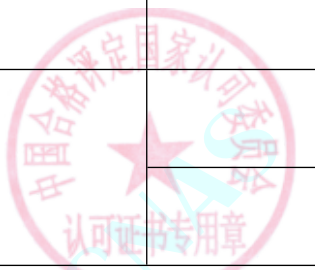


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|----|---------------------------------------|---------------------------------|------------------------------------------------------|-------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|----------------|
| 46 | *Dust Sampler                         | Flow                            | V. R. of Dust Sampler                                | (0.1~80) L/min                            | $U_{rel}=1.4\%$                   |                                                                                      |                |
|    |                                       | Time                            | JJG520                                               | (0.1~1800)s                               | $U=0.18s$                         |                                                                                      |                |
| 47 | *Samplers for Stack Dust              | Flow                            | V. R. of Samplers for Stack Dust JJG680              | (0.1~100) L/min                           | $U_{rel}=1.3\%$                   |                                                                                      |                |
|    |                                       | Time                            |                                                      | (0.1~1800)s                               | $U=0.18s$                         |                                                                                      |                |
|    |                                       | Temperature                     |                                                      | (0~200)°C                                 | $U=0.3^{\circ}C$                  |                                                                                      |                |
|    |                                       | Pressure                        |                                                      | (-50~50) kPa                              | $U=1.2\%FS$                       |                                                                                      |                |
| 48 | *Total Suspended Particulates Sampler | Flow                            | V. R. of Total Suspended Particulates Sampler JJG943 | (80~120) L/min                            | $U_{rel}=1.2\%$                   |                                                                                      |                |
|    |                                       |                                 |                                                      | (800~1200) L/min                          | $U_{rel}=1.2\%$                   |                                                                                      |                |
|    |                                       | Time                            |                                                      | (0.1~1800)s                               | $U=0.24s$                         |                                                                                      |                |
|    |                                       | Temperature                     |                                                      | (0~50)°C                                  | $U=0.3^{\circ}C$                  |                                                                                      |                |
|    |                                       | Length                          |                                                      | (0.01~200)mm                              | $U_{rel}=0.18\%$                  |                                                                                      |                |
| 49 | Rotational Viscometers                | Viscosity                       | V. R. of Rotational Viscometers JJG1002              | (1~1×10 <sup>5</sup> ) mPa·s              | $U_{rel}=(1.0\sim1.2)\%$          |                                                                                      |                |
| 50 | Routine Capillary Viscometers         | Capillary Constant              | V. R. of Routine Capillary Viscometers JJG155        | (1~1×10 <sup>5</sup> ) mm <sup>2</sup> /s | $U_{rel}=(0.4\sim0.7)\%$          |                                                                                      |                |
| 51 | *Flue Gas Analyzers                   | Sulfur Dioxide Concentration    | V. R. of Flue Gas Analyzers JJG968                   | (1~1000)μmol/mol                          | $U_{rel}=1.7\%$                   |  |                |
|    |                                       | Nitrogen monoxide concentration |                                                      | (1~100)μmol/mol                           | $U_{rel}=1.7\%$                   |                                                                                      |                |



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| №  | Instrument                                                | Measurand                     | Calibration Method                                                                              | Range                                                                                          | Expanded Uncertainty<br>( $k=2$ )                                          | Note | Effective Date |
|----|-----------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------|----------------|
|    |                                                           | Carbon monoxide concentration |                                                                                                 | (1~100) $\mu\text{mol/mol}$                                                                    | $U_{\text{rel}}=1.1\%$                                                     |      |                |
|    |                                                           | Oxygen concentration          |                                                                                                 | (0.01~25)%                                                                                     | $U_{\text{rel}}=1.1\%$                                                     |      |                |
| 52 | *Residual Chlorine Meters                                 | Concentration                 | C.S. for Residual Chlorine Meters JJF1609                                                       | The free residual chlorine: (0.1~50) mg/L<br>The total residual chlorine: (0.1~50) mg/L        | $U_{\text{rel}}=1.9\%$<br>$U_{\text{rel}}=1.9\%$                           |      |                |
| 53 | *Alarmer Detectors of Benzene                             | Concentration                 | Calibration Specification for Alarmer Detectors of Benzene JJF 1674                             | (0.1~100) $\mu\text{mol/mol}$                                                                  | $U_{\text{rel}}=2.4\%$                                                     |      |                |
| 54 | *Alarmer and Detectors of Combustible Gas                 | Concentration                 | V.R. of Alarmer and Detectors of Combustible Gas JJG1125                                        | (0.1~100) $\mu\text{mol/mol}$                                                                  | $U_{\text{rel}}=2.2\%$                                                     |      |                |
| 55 | *Micro Oxygen Analyzers                                   | Concentration                 | V.R. of Micro Oxygen Analyzers JJG945                                                           | (0.1~10) $\mu\text{mol/mol}$<br>(10~100) $\mu\text{mol/mol}$<br>(100~1000) $\mu\text{mol/mol}$ | $U_{\text{rel}}=1.8\%$<br>$U_{\text{rel}}=1.8\%$<br>$U_{\text{rel}}=1.3\%$ |      |                |
| 56 | *Quadrupole Inductively Coupled Plasma Mass Spectrometers | Detection limit               | Calibration Specification for Quadrupole Inductively Coupled Plasma Mass Spectrometers JJF 1159 | Be $\leq$ 30ng/L<br>In $\leq$ 10ng/L<br>Bi $\leq$ 10ng/L                                       | $U_{\text{rel}}=12\%$<br>$U_{\text{rel}}=12\%$<br>$U_{\text{rel}}=12\%$    |      |                |
| 57 | *Karl Fischer Volumetric Titrators for Water Content      | Moisture content              | Verification Regulation of Karl Fischer Volumetric Titrators for Water Content JJG 1154         | 0.1%~1.5%                                                                                      | $U_{\text{rel}}=2.8\%$                                                     |      |                |



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| №  | Instrument                                                  | Measurand     | Calibration Method                                                                                | Range                                                                       | Expanded Uncertainty<br>(k=2)               | Note | Effective Date |
|----|-------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------|------|----------------|
| 58 | *Elemental Analyzers                                        | Content       | Calibration Specification for Elemental Analyzers JJF 1321                                        | The oxygen in the alloy:<br>(0~0.005) × 10 <sup>-2</sup> × 10 <sup>-2</sup> | $U = (0.00021 \sim 0.00031) \times 10^{-2}$ |      |                |
|    |                                                             |               |                                                                                                   | The nitrogen in the alloy:<br>(0~0.06) × 10 <sup>-2</sup>                   | $U = (0.0011 \sim 0.0023) \times 10^{-2}$   |      |                |
|    |                                                             |               |                                                                                                   | Hydrogen in the alloy:<br>(0~0.0002) × 10 <sup>-2</sup>                     | $U = 0.000035 \times 10^{-2}$               |      |                |
|    |                                                             |               |                                                                                                   | The carbon in the coal:<br>(50~80) %                                        | $U_{rel} = (0.5 \sim 1.0) \%$               |      |                |
|    |                                                             |               |                                                                                                   | Hydrogen in the coal:<br>(2~6) %                                            | $U_{rel} = (2.1 \sim 3.6) \%$               |      |                |
|    |                                                             |               |                                                                                                   | The nitrogen in the coal:<br>(0.1~2) %                                      | $U_{rel} = (3.4 \sim 5.6) \%$               |      |                |
|    |                                                             |               |                                                                                                   | Kjeldahl nitrogen determination:<br>(30~47) %                               | $U_{rel} = 1.4\%$                           |      |                |
| 59 | *Thin Layer Chromatography Scanner                          | Concentration | Calibration Specification for Thin Layer Chromatography Scanners JJF 1712                         | (0.01~0.04) mg/mL                                                           | $U = 0.0018 \text{ mg/mL}$                  |      |                |
| 60 | *Total Organic Carbon Analyzer With Conductivity Measurment | Concentration | Verification Regulation of Total Organic Carbon Analyzer With Conductivity Measurment JJG(Zhe) 98 | (0.001~1) mg/L                                                              | $U_{rel} = (2.2 \sim 6.6)\%$                |      |                |
| 61 | *Flue gas samplers                                          | Flow          | V. R. of Flue Gas Samplers JJG 1169                                                               | (0.1~2) L/min                                                               | $U_{rel} = 1.3\%$                           |      |                |
|    |                                                             | Time          |                                                                                                   | (0.01~1200)s                                                                | $U = 0.18 \text{ s}$                        |      |                |
|    |                                                             | Temperature   |                                                                                                   | (0~50) °C                                                                   | $U = 0.3 \text{ °C}$                        |      |                |



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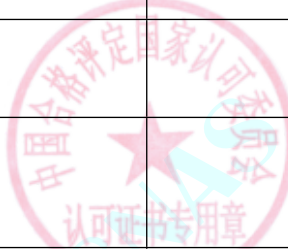
| №  | Instrument                                                     | Measurand             | Calibration Method                                                                                     | Range                                                                                       | Expanded Uncertainty<br>(k=2)                | Note | Effective Date |
|----|----------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------|------|----------------|
|    |                                                                | Pressure              |                                                                                                        | Front pressure of flowmeter: (-40~40) kPa<br>Atmospheric pressure: (96~105) kPa             | $U=1.2\%FS$<br>$U=0.3kPa$                    |      |                |
| 62 | *Thermogravimetric moisture meters                             | Mass moisture content | Verification regulation of thermogravimetric moisture meters JJG658                                    | 1mg~500g<br>(0.1~100) %                                                                     | $U=(0.022\sim3.0) \text{ mg}$<br>$U=0.06\%$  |      |                |
| 63 | *Volatile Organic Compounds Photo Ionization Detector          | Concentration         | Calibration Specification for Volatile Organic Compounds Photo Ionization Detectors JJF 1172           | Isobutylene: (0~100) $\times 10^{-6}\text{mol/mol}$                                         | $U=1.6\%FS$                                  |      |                |
| 64 | *Fluorescence Spectrophotometer                                | Detection limit       | Verification Regulation of Fluorescence Spectrophotometer JJG 537                                      | Class A: $\leq 5 \times 10^{-10}\text{g/mL}$<br>Class B: $\leq 1 \times 10^{-8}\text{g/mL}$ | $U_{\text{rel}}=6\%$<br>$U_{\text{rel}}=6\%$ |      |                |
| 65 | *Laboratory Ion Meter                                          | pX<br>Potential       | Verification Regulation of Laboratory Ion Meters JJG 757                                               | Electronic unit: 0~14<br>Meter: F <sup>-</sup> (2~4)<br>(-1999~1999)mV                      | $U=0.01$<br>$U=0.02$<br>$U=0.8\text{mV}$     |      |                |
| 66 | *Online Dissolved Oxygen Meter with Covered-Membrane-Electrode | Concentration         | Verification Regulation of Online Dissolved Oxygen Meter with Covered-Membrane-Electrode JJG (Zhe) 111 | (0.01~15)mg/L                                                                               | $U=0.1\text{mg/L}$                           |      |                |
| 67 | Flow Cup Viscometer                                            | Viscosity             | Verification Regulation of Flow Cup Viscometers JJG 743                                                | (10~2000)mm <sup>2</sup> /s                                                                 | $U_{\text{rel}}=3\%$                         |      |                |
| 68 | *Industrial Analyzer                                           | Ash                   | Verification Regulation of Industrial Analyzers JJG                                                    | (8~30) %                                                                                    | $U=(0.09\sim0.30) \%$                        |      |                |



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| №  | Instrument                                             | Measurand                        | Calibration Method                                                                              | Range                                    | Expanded Uncertainty<br>(k=2) | Note                                                                                 | Effective Date |
|----|--------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|----------------|
|    |                                                        | Volatile                         | 1140                                                                                            | (10~30) %                                | U= (0.19~0.31) %              |                                                                                      |                |
|    |                                                        | Temperature                      |                                                                                                 | 105℃~110℃                                | U=0.4℃                        |                                                                                      |                |
|    |                                                        |                                  |                                                                                                 | 800℃~1000℃                               | U=2℃                          |                                                                                      |                |
|    |                                                        |                                  |                                                                                                 | m                                        | 1g                            |                                                                                      |                |
| 69 | *Thermogravimetric Analyzer                            | Temperature                      | Verification Regulation of Thermogravimetric Analyzers JJG 1135                                 | (150~780) ℃                              | U= (0.35~2.3) ℃               |                                                                                      |                |
| 70 | *Energy Dispersive X-Ray Fluorescence Spectrometer     | Detection limit                  | Calibration Specification for Energy Dispersive X-Ray Fluorescence Spectrometers JJF (Min) 1047 | Cr: ≤30mg/kg                             | U <sub>rel</sub> =8%          |                                                                                      |                |
| 71 | *Carbon-sulfur Analyzer                                | Content                          | Verification Regulation of Carbon-sulfur Analyzers JJG 395                                      | C: 0.09%~2.5%                            | U=0.003%~0.04%                |                                                                                      |                |
|    |                                                        |                                  |                                                                                                 | S: 0.009%~0.2%                           | U=0.0006%~0.005%              |                                                                                      |                |
| 72 | *Liquid Chromatograph-Atomic Fluorescence Spectrometer | Minimum detectable concentration | Verification Regulation of Liquid Chromatograph-Atomic Fluorescence Spectrometers JJG 1151      | As(V): <1.0ng                            | U <sub>rel</sub> =8%          |                                                                                      |                |
|    |                                                        | Flow                             |                                                                                                 | DMA、MMA: <0.7ng                          | U <sub>rel</sub> =8%          |                                                                                      |                |
|    |                                                        |                                  |                                                                                                 | (0.5~1.5)mL/min                          | U <sub>rel</sub> =0.8%        |                                                                                      |                |
| 73 | *Capillary Electrophoresis Instrument                  | Detection limit                  | Verification Regulation of Capillary Electrophoresis Instrument JJG 964                         | VB <sub>6</sub> ≤1×10 <sup>-6</sup> g/mL | U <sub>rel</sub> =6%          |  |                |
| 74 | *Hydrogen Chloride Gas Detectors and Alarms            | Concentration                    | Calibration Specification for Hydrogen Chloride Gas Detectors and Alarms JJF 1888               | (0.01~100) μ mol/mol                     | U <sub>rel</sub> =2.4%        |                                                                                      |                |
| 75 | *Water Hardness Meters                                 | Hardness                         | Calibration Specification for Water Hardness Meters JJF 1949                                    | CaCO <sub>3</sub> : (0.1~3000) mg/L      | U <sub>rel</sub> =1.8%        |                                                                                      |                |



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| №  | Instrument                            | Measurand                         | Calibration Method                                                                | Range                                                                   | Expanded Uncertainty<br>(k=2)     | Note | Effective Date |
|----|---------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------|------|----------------|
|    |                                       | Temperature                       |                                                                                   | (10~30) °C                                                              | $U=0.2^{\circ}\text{C}$           |      |                |
| 76 | *Silicate Analyzers                   | Concentration                     | Calibration Specification for Silicate Analyzers JJF 1539                         | (0.1~100) $\mu\text{g/L}$                                               | $U_{\text{rel}}=2.6\%$            |      |                |
|    |                                       |                                   |                                                                                   | (100~2000) $\mu\text{g/L}$                                              | $U_{\text{rel}}=2.3\%$            |      |                |
| 77 | *Phosphate Analyzers                  | Concentration                     | Calibration Specification for Phosphate Analyzers JJF 1567                        | (0.1~1000) $\text{mg/L}$                                                | $U_{\text{rel}}=1.5\%$            |      |                |
| 78 | *Oxidation-reduction Potential Meters | Potential                         | Calibration Specification For Oxidation-reduction Potential Meters JJF (Liao) 474 | Electronic unit: (-1000~1000) mV                                        | $U=0.04\%\text{FS}$               |      |                |
|    |                                       |                                   |                                                                                   | Instrument: (0.1~250) mV                                                | $U_{\text{rel}}=0.4\%$            |      |                |
| 79 | *Gas Transmittance Meter              | Transmittance                     | Calibration Specification for Gas Transmittance Meter JJF (Qian) 42               | (4~12) $\text{cm}^3/(\text{m}^2 \cdot 24\text{h} \cdot 0.1\text{M Pa})$ | $U_{\text{rel}}=19\%$             |      |                |
|    |                                       | Temperature                       |                                                                                   | (10~40) °C                                                              | $U=0.3^{\circ}\text{C}$           |      |                |
| 80 | *Polymerase Chain Reaction Analyzers  | Temperature                       | Calibration Specification for Polymerase Chain Reaction Analyzers JJF 1527        | (10~100) °C                                                             | $U=0.2^{\circ}\text{C}$           |      |                |
|    |                                       | Concentration                     |                                                                                   | (10~10 <sup>7</sup> ) copies/ $\mu\text{L}$                             | $U_{\text{rel}}=(4.6\%\sim 12\%)$ |      |                |
| 81 | *Carbon Dioxide Incubator             | Temperature                       | Calibration Specification for Carbon Dioxide Incubator JJF(Liao) 463              | (15~55) °C                                                              | $U=0.2^{\circ}\text{C}$           |      |                |
|    |                                       | Concentration                     |                                                                                   | (1~10) %                                                                | $U=0.5\%$                         |      |                |
| 82 | *Gel Documentation Systems            | Illuminance                       | Calibration Specification for Gel Documentation Systems JJF 1530                  | (30~6500) lx                                                            | $U_{\text{rel}}=5\%$              |      |                |
| 83 | *UV Analyzers                         | Wavelength                        | Calibration Specification for UV Analyzers JJF 1936                               | (250~380) nm                                                            | $U=1.2\text{nm}$                  |      |                |
|    |                                       | Ultraviolet radiation illuminance |                                                                                   | (20~1000) $\mu\text{W}/\text{cm}^2$                                     | $U_{\text{rel}}=17\%$             |      |                |



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| №  | Instrument                                        | Measurand              | Calibration Method                                                                   | Range                                                | Expanded Uncertainty<br>(k=2)                     | Note                                         | Effective Date |
|----|---------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------|----------------------------------------------|----------------|
| 84 | *Open/Closed Cup Flash Point Testers              | Open Cup Flash Point   | Calibration Specification for Open/Closed Cup Flash Point Testers JJF 1384           | (90~250)°C                                           | $U = (6.4 \sim 8.9) ^\circ\text{C}$               |                                              |                |
|    |                                                   | Closed Cup Flash Point |                                                                                      | (40~180)°C                                           | $U = (3.9^\circ\text{C} \sim 4.7) ^\circ\text{C}$ |                                              |                |
| 85 | *Oxygen Index Instrument                          | Oxygen Concentration   | Verification Regulation for Oxygen Index Instrument JJG (JUN GONG)-16                | 20%~40%                                              | $U_{\text{rel}} = 1.5\% \sim 1.1\%$               |                                              |                |
|    |                                                   | Oxygen Index           |                                                                                      | 15%~50%                                              | $U_{\text{rel}} = 3.3\% \sim 4.2\%$               |                                              |                |
| 86 | *Dynamic Light Scattering Particle Size Analyzers | Particle Size          | Verification Regulation of Dynamic Light Scattering Particle Size Analyzers JJG 1104 | (50~900)nm                                           | $U_{\text{rel}} = 2.7\%$                          |                                              |                |
|    |                                                   | Temperature            |                                                                                      | (0~90)°C                                             | $U = 0.2^\circ\text{C}$                           |                                              |                |
| 87 | Airborne Particle Counter                         | Flow Rate              | Calibration Specification for Airborne Particle Counter JJF 1190                     | (2.83~100)L/min                                      | $U_{\text{rel}} = 1.4\%$                          |                                              |                |
|    |                                                   | Time                   |                                                                                      | (0~600)s                                             | $U = 0.2\text{s}$                                 |                                              |                |
|    |                                                   | Particle Concentration |                                                                                      | (4000~60000)个/28.3L                                  | $U_{\text{rel}} = 17\%$                           |                                              |                |
|    |                                                   | Size                   |                                                                                      | (0.4~0.6)nm                                          | $U_{\text{rel}} = 11\%$                           |                                              |                |
| 88 | Working Glass Hydrometers                         | Density                | Verification Regulation of Working Glass Hydrometers JJG 42                          | Alcohol meter: q: (0~100) %                          | $U = 0.4\text{d}(\text{d:division})$              | Accredited only for direct comparison method |                |
|    |                                                   |                        |                                                                                      | Densitometer: (650~1830) kg/m <sup>3</sup>           | $U = 0.4\text{d}(\text{d:division})$              |                                              |                |
|    |                                                   |                        |                                                                                      | Petroleum densitometer: (650~1100) kg/m <sup>3</sup> | $U = 0.3\text{d}(\text{d:division})$              |                                              |                |
|    |                                                   |                        |                                                                                      | Baume meter: 0~70Bh                                  | $U = 0.4\text{d}(\text{d:division})$              |                                              |                |
|    |                                                   |                        |                                                                                      | Soil meter: (1000~1030) g/cm <sup>3</sup>            | $U = 0.4\text{d}(\text{d:division})$              |                                              |                |
|    |                                                   |                        |                                                                                      | Lactometer: (1010~1040) kg/cm <sup>3</sup>           | $U = 0.4\text{d}(\text{d:division})$              |                                              |                |



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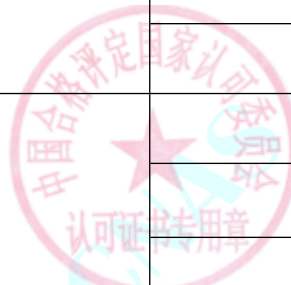
| No       | Instrument                                                                       | Measurand                       | Calibration Method                                                                                                             | Range                                             | Expanded Uncertainty<br>(k=2) | Note | Effective Date |
|----------|----------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------|------|----------------|
| 89       | *Monitoring Instrument(Electrical Conductivity) of Pure & Ultrapure Water System | Electrolytic Conductance        | Calibration Specification for Monitoring Instrument(Electrical Conductivity) of Pure & Ultrapure Water System JJF (Xiang) 0909 | Electronic unit: (0.05~2×10 <sup>5</sup> ) μ S/cm | U <sub>rel</sub> =0.2%        |      |                |
|          |                                                                                  |                                 |                                                                                                                                | Instrument: (1.00~80) μ S/cm                      | U <sub>rel</sub> =3.0%        |      |                |
|          |                                                                                  |                                 |                                                                                                                                | Instrument: (>80~200) μ S/cm                      | U <sub>rel</sub> =0.3%        |      |                |
|          |                                                                                  |                                 |                                                                                                                                | Instrument: (0.05~200) μ S/cm                     | U <sub>rel</sub> =7%          |      |                |
| Medicine |                                                                                  |                                 |                                                                                                                                |                                                   |                               |      |                |
| 1        | *Ventilators                                                                     | Tidal Volume                    | Calibration Specification for Ventilators JJF 1234                                                                             | (50~1000) mL                                      | U=11mL                        |      |                |
|          |                                                                                  | Frequency                       |                                                                                                                                | (1~80) Times/min                                  | U=1.3 Times/min               |      |                |
|          |                                                                                  | Inhalation oxygen concentration |                                                                                                                                | (21~100) %                                        | U=1.7%                        |      |                |
|          |                                                                                  | Pressure                        |                                                                                                                                | (0.2~3) kPa                                       | U=0.16kPa                     |      |                |
| 2        | *Syringe Pumps and Infusion Pumps                                                | Flowrate                        | Calibration Specification for Syringe Pumps and Infusion Pumps JJF 1259                                                        | (5~19.9) mL/h                                     | U <sub>rel</sub> =1.5%        |      |                |
|          |                                                                                  |                                 |                                                                                                                                | (20~200) mL/h                                     | U <sub>rel</sub> =1.3%        |      |                |
|          |                                                                                  |                                 |                                                                                                                                | (201~1000) mL/h                                   | U <sub>rel</sub> =1.4%        |      |                |
|          |                                                                                  | Blocking pressure               |                                                                                                                                | (0.5~200)kPa                                      | U=1.6 kPa                     |      |                |
| 3        | *Hemodialysis Equipment                                                          | Electrolytic Conductivity       | C.S. for Hemodialysis Equipment JJF1353                                                                                        | (12.5~15.5) mS/cm                                 | U=0.14mS/cm                   |      |                |
|          |                                                                                  | Temperature                     |                                                                                                                                | (25~50)℃                                          | U=0.15 ℃                      |      |                |
|          |                                                                                  | pH                              |                                                                                                                                | 6~10                                              | U=0.06                        |      |                |



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| №          | Instrument                 | Measurand                          | Calibration Method                           | Range                   | Expanded Uncertainty<br>( <i>k</i> =2) | Note                                                                                 | Effective Date |
|------------|----------------------------|------------------------------------|----------------------------------------------|-------------------------|----------------------------------------|--------------------------------------------------------------------------------------|----------------|
|            |                            | Pressure                           |                                              | (0 ～450) mmHg           | <i>U</i> =2.5 mmHg                     |                                                                                      |                |
|            |                            | Flowrate                           |                                              | ( 200～800 ) mL/min      | <i>U</i> <sub>rel</sub> =2.1%          |                                                                                      |                |
| 4          | *Cardiac defibrillators    | Energy                             | C.S. for Cardiac Defibrillators JJF1149      | ( 1～100 ) J             | <i>U</i> =1.1J~2.8J                    |                                                                                      |                |
|            |                            |                                    |                                              | ( 100～360 ) J           | <i>U</i> <sub>rel</sub> =2.4%          |                                                                                      |                |
|            |                            | Pulse Frequency                    |                                              | ( 40～100 ) Times/min    | <i>U</i> =1 Times/min                  |                                                                                      |                |
|            |                            |                                    |                                              | ( 100～200 ) Times/min   | <i>U</i> <sub>rel</sub> =0.8%          |                                                                                      |                |
|            |                            | Pulse Duration                     |                                              | ( 20～50 ) ms            | <i>U</i> =0.63ms                       |                                                                                      |                |
|            |                            | Pulse Current Amplitude            |                                              | (1～100)mA               | <i>U</i> =1.3mA                        |                                                                                      |                |
|            |                            |                                    |                                              | (>100～150)mA            | <i>U</i> <sub>rel</sub> =1.4%          |                                                                                      |                |
|            |                            | ECG Voltage                        |                                              | 0.5mV～2mV               | <i>U</i> <sub>rel</sub> =2.7%          |                                                                                      |                |
|            |                            | Scanning Speed                     |                                              | 25mm/s                  | <i>U</i> <sub>rel</sub> =1.4%          |                                                                                      |                |
|            |                            | Amplitude Frequency Characteristic |                                              | 1mV (1Hz～25Hz)          | <i>U</i> <sub>rel</sub> =4.0%          |                                                                                      |                |
| Heart Rate | 30Times/min～200Times/min   | <i>U</i> <sub>rel</sub> =1.7%      |                                              |                         |                                        |                                                                                      |                |
| 5          | *Electrosurgical generator | Power                              | C.S. for Electrosurgical Generator JJF1217   | (1～100)W, 300kHz~5MHz   | <i>U</i> <sub>rel</sub> =(3.0～2.6)%    |  |                |
|            |                            |                                    |                                              | (100～400)W, 300kHz～5MHz | <i>U</i> <sub>rel</sub> =2.6%          |                                                                                      |                |
|            |                            | ACI                                |                                              | ( 20～220 ) mA           | <i>U</i> <sub>rel</sub> =(3.5～1.5)%    |                                                                                      |                |
| 6          | *Baby incubator            | Temperature                        | Calibration Specification for baby incubator | (20～50)℃                | <i>U</i> =0.12℃                        |                                                                                      |                |

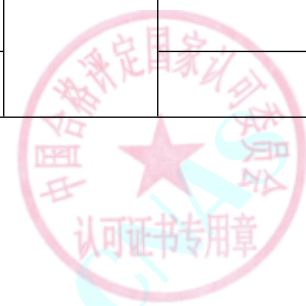
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| No     | Instrument                               | Measurand          | Calibration Method                                                          | Range                  | Expanded Uncertainty<br>(k=2)          | Note                 | Effective Date |
|--------|------------------------------------------|--------------------|-----------------------------------------------------------------------------|------------------------|----------------------------------------|----------------------|----------------|
|        |                                          | humidity           | JJF 1260                                                                    | (30~85)%RH             | U=1.5%RH                               |                      |                |
| Optics |                                          |                    |                                                                             |                        |                                        |                      |                |
| 1      | *Equipment of the lighting Testing       | Temperature        | Calibration Specificaiton for Equipment of Biological Artificial Climate    | (5~40)°C               | U=0.2°C                                | only for $\leq 2m^3$ |                |
|        |                                          | Humidity           | JJF(Zhe)1102                                                                | (50~90)%RH             | U=2.0%RH                               |                      |                |
|        |                                          | Illuminance        | JJF(Zhe)1102                                                                | (30~6000)lx            | U=2×10 <sup>2</sup> lx                 |                      |                |
| 2      | *Whiteness Meter                         | Whiteness          | V.R. of Whiteness Meter JJG512                                              | 0.1~100                | U=1.9                                  |                      |                |
| 3      | *Clarity Test Tquipment                  | illuminance        | C.S.for clarity test equipment JJF1287                                      | (30~6500)lx            | U <sub>rel</sub> =9%                   |                      |                |
| 4      | *Colormeter                              | Chromaticity       | Calibration Specification for Water Colormeters JJF 1689                    | (1~80) 度               | U=2Degree (Digital display instrument) |                      |                |
|        |                                          |                    |                                                                             | (1~500) 度              | U=10Degree (Visual Instrument)         |                      |                |
| 5      | *Colorimeters and Color Difference Meter | Chromaticity       | Verification Regulation of Colorimeters and Color Difference Meters JJG 595 | Y:5~90                 | U=1.2                                  |                      |                |
|        |                                          |                    |                                                                             | x、y:Panchromatic Gamut | U=0.007                                |                      |                |
| 6      | *Abbe Refractometer                      | Refractive Index   | Verification Regulation of Abbe Refractometer JJG 625                       | 1.4700~1.6700          | U=1.0×10 <sup>-4</sup>                 |                      |                |
|        |                                          | Average Dispersion |                                                                             | 0.0070~0.0210          | U=1.0×10 <sup>-4</sup>                 |                      |                |



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Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: No.1, Caihong Road, Yuyao, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## 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 |
|----|----------------------------------|-----------|--------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|------|----------------|
| 1  | Liquid Vortex-shedding Flowmeter | Flowrate  | Verification Regulation of Vortex-shedding Flowmeter JJG1029 | (0.002~0.2)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.22\%$                  |      |                |
|    |                                  |           |                                                              | >(0.2~100)m <sup>3</sup> /h<br>Static volume method      | $U_{rel}=0.09\%$                  |      |                |
|    |                                  |           |                                                              | (>100~1800)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.12\%$                  |      |                |
|    |                                  |           |                                                              | (>1800~2700)m <sup>3</sup> /h<br>Static volume method    | $U_{rel}=0.13\%$                  |      |                |
|    |                                  |           |                                                              | (40~6700)m <sup>3</sup> /h<br>Standard instrument method | $U_{rel}=0.20\%$                  |      |                |
| 2  | Gas Vortex-shedding Flowmeter    | Flowrate  | Verification Regulation of Vortex-shedding Flowmeter JJG1029 | (0.05~0.5)m <sup>3</sup> /h                              | $U_{rel}=0.50\%$                  |      |                |
|    |                                  |           |                                                              | >(0.5~1)m <sup>3</sup> /h                                | $U_{rel}=0.49\%$                  |      |                |
|    |                                  |           |                                                              | (>1~7500)m <sup>3</sup> /h                               | $U_{rel}=0.30\%$                  |      |                |



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| № | Instrument                 | Measurand | Calibration Method                                            | Range                                                               | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|---|----------------------------|-----------|---------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------|------|----------------|
|   |                            |           |                                                               | $(>7500 \sim 13747) \text{ m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 3 | Liquid Turbine Flowmeter   | Flowrate  | Verification Regulation of Turbine Flowmeter JJG1037          | $(0.002 \sim 0.2) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |
|   |                            |           |                                                               | $(>0.2 \sim 100) \text{ m}^3/\text{h}$<br>Static volume method      | $U_{\text{rel}}=0.09\%$           |      |                |
|   |                            |           |                                                               | $(>100 \sim 1800) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.12\%$           |      |                |
|   |                            |           |                                                               | $(>1800 \sim 2700) \text{ m}^3/\text{h}$<br>Static volume method    | $U_{\text{rel}}=0.13\%$           |      |                |
|   |                            |           |                                                               | $(40 \sim 6700) \text{ m}^3/\text{h}$<br>Standard instrument method | $U_{\text{rel}}=0.20\%$           |      |                |
| 4 | Gas Turbine Flowmeter      | Flowrate  | Verification Regulation of Turbine Flowmeter JJG1037          | $(0.05 \sim 0.5) \text{ m}^3/\text{h}$                              | $U_{\text{rel}}=0.50\%$           |      |                |
|   |                            |           |                                                               | $(>0.5 \sim 1) \text{ m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|   |                            |           |                                                               | $(>1 \sim 7500) \text{ m}^3/\text{h}$                               | $U_{\text{rel}}=0.30\%$           |      |                |
|   |                            |           |                                                               | $(>7500 \sim 13747) \text{ m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 5 | Electromagnetic Flowmeters | Flowrate  | Verification Regulation of Electromagnetic Flowmeters JJG1033 | $(0.002 \sim 0.2) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |
|   |                            |           |                                                               | $(>0.2 \sim 100) \text{ m}^3/\text{h}$<br>Static volume method      | $U_{\text{rel}}=0.09\%$           |      |                |
|   |                            |           |                                                               | $(>100 \sim 1800) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.12\%$           |      |                |
|   |                            |           |                                                               | $(>1800 \sim 2700) \text{ m}^3/\text{h}$<br>Static volume method    | $U_{\text{rel}}=0.13\%$           |      |                |
|   |                            |           |                                                               | $(40 \sim 6700) \text{ m}^3/\text{h}$<br>Standard instrument method | $U_{\text{rel}}=0.20\%$           |      |                |



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| №  | Instrument                   | Measurand | Calibration Method                                       | Range                                                    | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------------------------|-----------|----------------------------------------------------------|----------------------------------------------------------|-----------------------------------|------|----------------|
| 6  | Liquid Ultrasonic Flowmeters | Flowrate  | Verification Regulation of Ultrasonic Flowmeters JJJ1030 | (0.002~0.2)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.22\%$                  |      |                |
|    |                              |           |                                                          | (>0.2~100)m <sup>3</sup> /h<br>Static volume method      | $U_{rel}=0.09\%$                  |      |                |
|    |                              |           |                                                          | (>100~1800)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.12\%$                  |      |                |
|    |                              |           |                                                          | (>1800~2700)m <sup>3</sup> /h<br>Static volume method    | $U_{rel}=0.13\%$                  |      |                |
|    |                              |           |                                                          | (40~6700)m <sup>3</sup> /h<br>Standard instrument method | $U_{rel}=0.20\%$                  |      |                |
| 7  | Gas Ultrasonic Flowmeters    | Flowrate  | Verification Regulation of Ultrasonic Flowmeters JJJ1030 | (0.05~0.5)m <sup>3</sup> /h                              | $U_{rel}=0.50\%$                  |      |                |
|    |                              |           |                                                          | (>0.5~1)m <sup>3</sup> /h                                | $U_{rel}=0.49\%$                  |      |                |
|    |                              |           |                                                          | (>1~7500)m <sup>3</sup> /h                               | $U_{rel}=0.30\%$                  |      |                |
|    |                              |           |                                                          | (>7500~13747)m <sup>3</sup> /h                           | $U_{rel}=0.31\%$                  |      |                |
| 8  | Oil Ultrasonic Flowmeters    | Flowrate  | Verification Regulation of Ultrasonic Flowmeters JJJ1030 | (0.002~60)m <sup>3</sup> /h                              | $U_{rel}=0.13\%$                  |      |                |
| 9  | Liquid Float Meter           | Flowrate  | Verification Regulation of Float Meter JJJ257            | (0.002~0.2)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.22\%$                  |      |                |
|    |                              |           |                                                          | (>0.2~100)m <sup>3</sup> /h<br>Static volume method      | $U_{rel}=0.09\%$                  |      |                |
|    |                              |           |                                                          | (>100~1800)m <sup>3</sup> /h<br>Static volume method     | $U_{rel}=0.12\%$                  |      |                |
|    |                              |           |                                                          | (>1800~2700)m <sup>3</sup> /h<br>Static volume method    | $U_{rel}=0.13\%$                  |      |                |
|    |                              |           |                                                          |                                                          |                                   |      |                |
| 10 | Gas Float Meter              | Flowrate  | Verification Regulation of Float Meter JJJ257            | (0.05~0.5)m <sup>3</sup> /h                              | $U_{rel}=0.50\%$                  |      |                |



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| №  | Instrument              | Measurand | Calibration Method                                         | Range                                                               | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|-------------------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------|------|----------------|
|    |                         |           |                                                            | $(>0.5 \sim 1) \text{ m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|    |                         |           |                                                            | $(>1 \sim 7500) \text{ m}^3/\text{h}$                               | $U_{\text{rel}}=0.30\%$           |      |                |
|    |                         |           |                                                            | $(>7500 \sim 13747) \text{ m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 11 | Gas Displacement Meters | Flowrate  | Verification Regulation for Gas Displacement Meters JJG633 | $(0.05 \sim 0.5) \text{ m}^3/\text{h}$                              | $U_{\text{rel}}=0.50\%$           |      |                |
|    |                         |           |                                                            | $(>0.5 \sim 1) \text{ m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|    |                         |           |                                                            | $(>1 \sim 7500) \text{ m}^3/\text{h}$                               | $U_{\text{rel}}=0.30\%$           |      |                |
|    |                         |           |                                                            | $(>7500 \sim 13747) \text{ m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 12 | Liquid Target flowmeter | Flowrate  | Verification Regulation of Target Flowmeter JJG 461        | $(0.002 \sim 0.2) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |
|    |                         |           |                                                            | $(>0.2 \sim 100) \text{ m}^3/\text{h}$<br>Static volume method      | $U_{\text{rel}}=0.09\%$           |      |                |
|    |                         |           |                                                            | $(>100 \sim 1800) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.12\%$           |      |                |
|    |                         |           |                                                            | $(>1800 \sim 2700) \text{ m}^3/\text{h}$<br>Static volume method    | $U_{\text{rel}}=0.13\%$           |      |                |
|    |                         |           |                                                            | $(40 \sim 6700) \text{ m}^3/\text{h}$<br>Standard instrument method | $U_{\text{rel}}=0.20\%$           |      |                |
| 13 | Gas Target flowmeter    | Flowrate  | Verification Regulation of Target Flowmeter JJG 461        | $(0.05 \sim 0.5) \text{ m}^3/\text{h}$                              | $U_{\text{rel}}=0.50\%$           |      |                |
|    |                         |           |                                                            | $(>0.5 \sim 1) \text{ m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|    |                         |           |                                                            | $(>1 \sim 7500) \text{ m}^3/\text{h}$                               | $U_{\text{rel}}=0.30\%$           |      |                |
|    |                         |           |                                                            | $(>7500 \sim 13747) \text{ m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 14 | Liquid differential     | Flowrate  | Verification Regulation of Differential Rressure           | $(0.002 \sim 0.2) \text{ m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |

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| №  | Instrument                                   | Measurand | Calibration Method                                                       | Range                                                       | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|----------------------------------------------|-----------|--------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------|------|----------------|
|    | pressure<br>flowmeter                        |           | Flowmeter JJG 640                                                        | (>0.2~100)m <sup>3</sup> /h<br>Static volume method         | $U_{rel}=0.09\%$                  |      |                |
|    |                                              |           |                                                                          | (>100~1800)m <sup>3</sup> /h<br>Static volume method        | $U_{rel}=0.12\%$                  |      |                |
|    |                                              |           |                                                                          | (>1800~2700)m <sup>3</sup> /h<br>Static volume method       | $U_{rel}=0.13\%$                  |      |                |
|    |                                              |           |                                                                          | (40~6700)m <sup>3</sup> /h<br>Standard instrument<br>method | $U_{rel}=0.20\%$                  |      |                |
| 15 | Gas<br>differential<br>pressure<br>flowmeter | Flowrate  | Verification Regulation of<br>Differential Pressure<br>Flowmeter JJG 640 | (0.05~0.5)m <sup>3</sup> /h                                 | $U_{rel}=0.50\%$                  |      |                |
|    |                                              |           |                                                                          | (>0.5~1)m <sup>3</sup> /h                                   | $U_{rel}=0.49\%$                  |      |                |
|    |                                              |           |                                                                          | (>1~7500)m <sup>3</sup> /h                                  | $U_{rel}=0.30\%$                  |      |                |
|    |                                              |           |                                                                          | (>7500~13747)m <sup>3</sup> /h                              | $U_{rel}=0.31\%$                  |      |                |
| 16 | Liquid Vortex<br>Precession<br>Flowmeter     | Flowrate  | Verification Regulation of<br>Vortex Precession<br>Flowmeter JJG 1121    | (0.002~0.2)m <sup>3</sup> /h<br>Static volume method        | $U_{rel}=0.22\%$                  |      |                |
|    |                                              |           |                                                                          | (>0.2~1)m <sup>3</sup> /h<br>Static volume method           | $U_{rel}=0.15\%$                  |      |                |
|    |                                              |           |                                                                          | (>1~100)m <sup>3</sup> /h<br>Static volume method           | $U_{rel}=0.09\%$                  |      |                |
|    |                                              |           |                                                                          | (>100~1800)m <sup>3</sup> /h<br>Static volume method        | $U_{rel}=0.12\%$                  |      |                |
|    |                                              |           |                                                                          | (>1800~2700)m <sup>3</sup> /h<br>Static volume method       | $U_{rel}=0.13\%$                  |      |                |
|    |                                              |           |                                                                          | (40~6700)m <sup>3</sup> /h<br>Standard instrument<br>method | $U_{rel}=0.20\%$                  |      |                |
|    |                                              |           |                                                                          |                                                             |                                   |      |                |
| 17 | Gas Vortex<br>Precession                     | Flowrate  | Verification Regulation of<br>Vortex Precession Flowmeter                | (0.05~0.5)m <sup>3</sup> /h                                 | $U_{rel}=0.50\%$                  |      |                |



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| №  | Instrument                       | Measurand | Calibration Method                                                 | Range                                                             | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|----------------------------------|-----------|--------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------|------|----------------|
|    | Flowmeter                        |           | JJG 1121                                                           | $(>0.5 \sim 1)\text{m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|    |                                  |           |                                                                    | $(>1 \sim 7500)\text{m}^3/\text{h}$                               | $U_{\text{rel}}=0.30\%$           |      |                |
|    |                                  |           |                                                                    | $(>7500 \sim 13747)\text{m}^3/\text{h}$                           | $U_{\text{rel}}=0.31\%$           |      |                |
| 18 | Cold Water Meter                 | Flowrate  | Cold Potable Water Meters<br>JJG162                                | $(0.002 \sim 0.2)\text{m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |
|    |                                  |           |                                                                    | $(>0.2 \sim 100)\text{m}^3/\text{h}$<br>Static volume method      | $U_{\text{rel}}=0.09\%$           |      |                |
|    |                                  |           |                                                                    | $(>100 \sim 1800)\text{m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.12\%$           |      |                |
|    |                                  |           |                                                                    | $(>1800 \sim 2700)\text{m}^3/\text{h}$<br>Static volume method    | $U_{\text{rel}}=0.13\%$           |      |                |
|    |                                  |           |                                                                    | $(40 \sim 6700)\text{m}^3/\text{h}$<br>Standard instrument method | $U_{\text{rel}}=0.20\%$           |      |                |
|    |                                  |           |                                                                    |                                                                   |                                   |      |                |
| 19 | Diaphragm Gas Meter              | Flowrate  | Verification Regulation of<br>Diaphragm Gas Meters<br>JJG577       | $(0.05 \sim 0.5)\text{m}^3/\text{h}$                              | $U_{\text{rel}}=0.50\%$           |      |                |
|    |                                  |           |                                                                    | $(>0.5 \sim 1)\text{m}^3/\text{h}$                                | $U_{\text{rel}}=0.49\%$           |      |                |
|    |                                  |           |                                                                    | $(>1 \sim 120)\text{m}^3/\text{h}$                                | $U_{\text{rel}}=0.30\%$           |      |                |
| 20 | Liquid Goriolis Mass Flow meters | Flowrate  | Verification Regulation of<br>Goriolis Mass Flow meters<br>JJG1038 | $(0.002 \sim 0.2)\text{m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.22\%$           |      |                |
|    |                                  |           |                                                                    | $(>0.2 \sim 100)\text{m}^3/\text{h}$<br>Static volume method      | $U_{\text{rel}}=0.09\%$           |      |                |
|    |                                  |           |                                                                    | $(>100 \sim 1800)\text{m}^3/\text{h}$<br>Static volume method     | $U_{\text{rel}}=0.12\%$           |      |                |
|    |                                  |           |                                                                    | $(>1800 \sim 2700)\text{m}^3/\text{h}$<br>Static volume method    | $U_{\text{rel}}=0.13\%$           |      |                |
|    |                                  |           |                                                                    |                                                                   |                                   |      |                |



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| №  | Instrument                       | Measurand | Calibration Method                                                   | Range                                                       | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|----------------------------------|-----------|----------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------|------|----------------|
|    |                                  |           |                                                                      | (40~6700)m <sup>3</sup> /h<br>Standard instrument<br>method | $U_{rel}=0.20\%$                  |      |                |
| 21 | Gas Goriolis<br>Mass Flow meters | Flowrate  | Verification Regulation of<br>Goriolis Mass Flow Meters<br>JJG1038   | (0.05~0.5)m <sup>3</sup> /h                                 | $U_{rel}=0.50\%$                  |      |                |
|    |                                  |           |                                                                      | (>0.5~1)m <sup>3</sup> /h                                   | $U_{rel}=0.49\%$                  |      |                |
|    |                                  |           |                                                                      | (>1~7500)m <sup>3</sup> /h                                  | $U_{rel}=0.30\%$                  |      |                |
|    |                                  |           |                                                                      | (>7500~13747)m <sup>3</sup> /h                              | $U_{rel}=0.31\%$                  |      |                |
| 22 | Thermal Mass<br>Gas Flowmeters   | Flowrate  | Verification Regulation of<br>Thermal Mass Gas<br>Flowmeters JJG1132 | (0.05~0.5)m <sup>3</sup> /h                                 | $U_{rel}=0.50\%$                  |      |                |
|    |                                  |           |                                                                      | (>0.5~1)m <sup>3</sup> /h                                   | $U_{rel}=0.49\%$                  |      |                |
|    |                                  |           |                                                                      | (>1~7500)m <sup>3</sup> /h                                  | $U_{rel}=0.30\%$                  |      |                |
|    |                                  |           |                                                                      | (>7500~13747)m <sup>3</sup> /h                              | $U_{rel}=0.31\%$                  |      |                |



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Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: No.8583, 5/F., Main Building of Huangnikan Electrical and Mechanical Park, Yuhuan, Taizhou, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## 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 |
|-----|-------------------------------------------------|-----------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------|------------------------|----------------|
| 未分组 |                                                 |           |                                                                                   |                                                                      |                                   |                        |                |
| 1   | Current Calipers                                | length    | Verification Regulation of Current Calipers JJG 30                                | (0~300)mm                                                            | $U=0.01\text{mm}$                 |                        |                |
| 2   | Micrometer                                      | length    | Verification Regulation of Micrometer JJG 21                                      | (0~25) mm                                                            | $U=1\mu\text{m}$                  | Except Calibration rod |                |
|     |                                                 |           |                                                                                   | (25~100) mm                                                          | $U=2\mu\text{m}$                  |                        |                |
| 3   | *Pneumatic Measuring Instrument for Micrometers | length    | Verification Regulation of Pneumatic Measuring Instrument for Micrometers JJG 356 | Buoy type (Division value $0.5\mu\text{m}$ ) : (-8~+8) $\mu\text{m}$ | $U=0.2\mu\text{m}$                |                        |                |
|     |                                                 |           |                                                                                   | Buoy type: (Division value $1\mu\text{m}$ ) (-15~+15) $\mu\text{m}$  | $U=0.3\mu\text{m}$                |                        |                |



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| No | Instrument | Measurand | Calibration Method | Range                                                                                             | Expanded Uncertainty<br>( $k=2$ ) | Note | Effective Date |
|----|------------|-----------|--------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|------|----------------|
|    |            |           |                    | Buoy type (Division value $2\mu\text{m}$ ) : $(-40\sim+40)\mu\text{m}$<br>$(0\sim160)\mu\text{m}$ | $U=0.6\mu\text{m}$                |      |                |
|    |            |           |                    | Buoy type (Division value $5\mu\text{m}$ ) : $(-80\sim+80)\mu\text{m}$                            | $U=1.4\mu\text{m}$                |      |                |
|    |            |           |                    | Electronic column type (Division value $0.2\mu\text{m}$ ) : $(-10\sim+10)\mu\text{m}$             | $U=0.2\mu\text{m}$                |      |                |
|    |            |           |                    | Electronic column type (Division value $0.5\mu\text{m}$ ) : $(-25\sim+25)\mu\text{m}$             | $U=0.5\mu\text{m}$                |      |                |
|    |            |           |                    | Electronic column type (Division value $1\mu\text{m}$ ) : $(-50\sim+50)\mu\text{m}$               | $U=1.0\mu\text{m}$                |      |                |



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Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: No.518, No.18 Street, Baiyang Street, Qiantang New District, Hangzhou, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## 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 |
|----|-------------------------|-----------|----------------------------------------------------------------|---------------|-----------------------------------|------|----------------|
| 1  | Standard<br>Dynamometer | Force     | Verification Regulation of<br>Standard Dynamometers JJG<br>144 | 0.1kN~1000kN  | $U_{rel}=0.04\%$                  |      |                |
|    |                         |           |                                                                | 1000kN~2000kN | $U_{rel}=0.15\%$                  |      |                |
| 2  | Force<br>Transducers    | Force     | Verification Regulation of<br>Force Transducers<br>JJG391      | 0.1kN~1000kN  | $U_{rel}=0.05\%$                  |      |                |
|    |                         |           |                                                                | 1000kN~2000kN | $U_{rel}=0.15\%$                  |      |                |
| 3  | Working<br>Dynamometers | Force     | Verification Regulation of<br>Working Dynamometers<br>JJG455   | 0.1kN~1000kN  | $U_{rel}=0.4\%$                   |      |                |
|    |                         |           |                                                                | 1000kN~2000kN | $U_{rel}=0.4\%$                   |      |                |



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Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: Room 219, Building 5, Heda Creative Park, No.1, No.8 Street, Qiantang District, Hangzhou, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## SCHEDULE 3 ACCREDITED TESTING SCOPE

| № | Test Object       | Item/Parameter |                                         | Standard or Method                                                             | Note | Effective Date |
|---|-------------------|----------------|-----------------------------------------|--------------------------------------------------------------------------------|------|----------------|
|   |                   | №              | Item/ Parameter                         |                                                                                |      |                |
| 1 | Insulated shoes   | 1              | Withstanding Voltage in Power frequency | Foot protection-Safety footwear GB 21148-2020 6.4.3                            |      | 2023-09-08     |
|   |                   |                |                                         | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.3.2 |      | 2023-09-08     |
|   |                   | 2              | Leakage current                         | Foot protection-Safety footwear GB 21148-2020 6.4.3                            |      | 2023-09-08     |
|   |                   |                |                                         | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.3.2 |      | 2023-09-08     |
| 2 | Insulating gloves | 1              | Withstanding Voltage in Power frequency | live working-gloves of insulating material GB/T17622-2008 6.4                  |      | 2023-09-08     |
|   |                   |                |                                         | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.3.1 |      | 2023-09-08     |
|   |                   | 2              | Leakage current                         | live working-gloves of insulating material GB/T17622-2008 6.4                  |      | 2023-09-08     |
|   |                   |                |                                         | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.3.1 |      | 2023-09-08     |



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| № | Test Object                                                                      | Item/Parameter |                                                            | Standard or Method                                                                       | Note                          | Effective Date |
|---|----------------------------------------------------------------------------------|----------------|------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------|----------------|
|   |                                                                                  | №              | Item/ Parameter                                            |                                                                                          |                               |                |
| 3 | Electroscope                                                                     | 1              | Withstanding Voltage in Power frequency                    | preventive test code of tools,devixes and equipment for live working DL/T976-2017 8.2    |                               | 2023-09-08     |
|   |                                                                                  |                |                                                            | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.3           |                               | 2023-09-08     |
|   |                                                                                  | 2              | Starting voltage test                                      | preventive test code of tools,devixes and equipment for live working DL/T976-2017 8.2    |                               | 2023-09-08     |
|   |                                                                                  |                |                                                            | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.3           |                               | 2023-09-08     |
| 4 | Earthing and earthing short-circuit device/Portable short-circuit grounding wire | 1              | Withstanding Voltage in Power frequency                    | preventive test code of tools,devixes and equipment for live working DL/T976-2017 9.3    |                               | 2023-09-08     |
|   |                                                                                  |                |                                                            | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.2           |                               | 2023-09-08     |
|   |                                                                                  | 2              | Dc resistance test                                         | preventive test code of tools,devixes and equipment for live working DL/T976-2017 9.3    |                               | 2023-09-08     |
|   |                                                                                  |                |                                                            | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.2           |                               | 2023-09-08     |
| 5 | Insulation mat                                                                   | 1              | Withstanding Voltage in Power frequency                    | preventive test code of tools,devixes and equipment for live working DL/T976-2017 7.7    | Accredited only for (0-50) kV | 2023-01-03     |
|   |                                                                                  |                |                                                            | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.3.3           | Accredited only for (0-50) kV | 2023-01-03     |
| 6 | Nuclear phase apparatus/Nuclear phase meter                                      | 1              | Operating voltage test                                     | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.4           |                               | 2023-09-08     |
|   |                                                                                  | 2              | Power frequency voltage resistance test of insulation part | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.4           |                               | 2023-09-08     |
|   |                                                                                  |                |                                                            | Preventive test code of tools,devices and equipment for live-working DL/T 976-2017 8.1.2 |                               | 2023-09-08     |



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| №  | Test Object                            | Item/Parameter |                                             | Standard or Method                                                                                                                                                   | Note | Effective Date |
|----|----------------------------------------|----------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                                        | №              | Item/ Parameter                             |                                                                                                                                                                      |      |                |
|    |                                        |                |                                             | Lice working -Portable phase comparators DL/T971-2017 5.3.16                                                                                                         |      | 2023-09-08     |
|    |                                        | 3              | Insulation strength test of connecting wire | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.4                                                                                       |      | 2023-09-08     |
|    |                                        |                |                                             | Lice working -Portable phase comparators DL/T971-2017 5.3.15                                                                                                         |      | 2023-09-08     |
|    |                                        | 4              | Resistance tube leakage current test        | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.4                                                                                       |      | 2023-09-08     |
|    |                                        | 5              | self-test                                   | Preventive test code of tools,devices and equipment for live-working DL/T 976-2017 8.1.2                                                                             |      | 2023-09-08     |
| 7  | Insulating safety helmet               | 1              | Ac voltage test                             | Preventive test code of tools,devices and equipment for live-working DL/T 976-2017 7.5                                                                               |      | 2023-09-08     |
| 8  | Insulating lever                       | 1              | Power frequency voltage test                | Preventive test code of electric safety tools and devices; DL/T 1476-2015 6.2.1                                                                                      |      | 2023-09-08     |
|    |                                        | 2              | Power frequency voltage test                | Preventive test code of tools,devices and equipment for live-working DL/T 976-2017 5.1                                                                               |      | 2023-09-08     |
| 9  | Insulation support, pull, boom         | 1              | Power frequency voltage test                | Preventive test code of tools,devices and equipment for live-working DL/T 976-2017 5.2                                                                               |      | 2023-09-08     |
| 10 | Insulating rope                        | 1              | Power frequency voltage test                | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.7                                                                                       |      | 2023-09-08     |
| 11 | Insulation clamp                       | 1              | Power frequency voltage test                | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.2.8                                                                                       |      | 2023-09-08     |
| 12 | Personal security line                 | 1              | Group DC resistance test of ground wires    | Preventive test code of electric safety tools and devices DL/T 1476-2015 6.1.8                                                                                       |      | 2023-09-08     |
| 13 | hand-held screwdrivers impact wrenches | 1              | input power and current                     | Safety of motor- operated hand-held,transportable and garden tools_Part 202:Particular requirements for hand-held screwdrivers impact wrenches GB/T 3883.202-2019 11 |      | 2023-09-08     |
|    |                                        |                |                                             | Safety of motor- operated hand-held,transportable electric tools                                                                                                     |      | 2023-09-08     |



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| № | Test Object                                            | Item/Parameter |                       | Standard or Method                                                                                                                                  | Note | Effective Date |
|---|--------------------------------------------------------|----------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|   |                                                        | №              | Item/ Parameter       |                                                                                                                                                     |      |                |
|   |                                                        | 2              | insulation resistance | and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11                                                                           |      |                |
|   |                                                        |                |                       | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                         |      | 2023-09-08     |
|   |                                                        |                |                       | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3        |      | 2023-09-08     |
|   |                                                        | 3              | Electrical strength   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                         |      | 2023-09-08     |
|   |                                                        |                |                       | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9            |      | 2023-09-08     |
|   |                                                        |                |                       | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                         |      | 2023-09-08     |
|   |                                                        | 4              | start                 | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                         |      | 2023-09-08     |
|   |                                                        | 5              | Leakage current       | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                         |      | 2023-09-08     |
|   | 14<br>grinders,polish<br>ers and disk-<br>type sanders | 1              | electrical strength   | Safety of hand-held,motor- operated electirc tools - Part2:Particular requirements for grinders,polishers and disk-type sanders GB/T 3883.3-2007 11 |      | 2023-09-08     |
|   |                                                        |                |                       | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                         |      | 2023-09-08     |
|   |                                                        |                |                       | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 附录 D        |      | 2023-09-08     |
|   |                                                        |                |                       | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9            |      | 2023-09-08     |



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| №  | Test Object             | Item/Parameter |                         | Standard or Method                                                                                                                                    | Note | Effective Date |
|----|-------------------------|----------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                         | №              | Item/ Parameter         |                                                                                                                                                       |      |                |
|    |                         | 2              | input power and current | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for grinders,polishers and disk-type sanders GB/T 3883.3-2007 13    |      | 2023-09-08     |
|    |                         |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11            |      | 2023-09-08     |
|    |                         |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                           |      | 2023-09-08     |
|    |                         | 3              | Leakage current         | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for grinders,polishers and disk-type sanders GB/T 3883.3-2007 15    |      | 2023-09-08     |
|    |                         |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 附录 C          |      | 2023-09-08     |
|    |                         |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                           |      | 2023-09-08     |
|    |                         | 4              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                           |      | 2023-09-08     |
|    |                         | 5              | insulation resistance   | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3          |      | 2023-09-08     |
|    |                         |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                           |      | 2023-09-08     |
| 15 | hand-held circular saws | 1              | input power and current | Safety of motor- operated hand-held,transportable and garden tools_Part 205:Particular requirements for hand-held circular saws GB/T 3883.205-2019 11 |      | 2023-09-08     |
|    |                         |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11            |      | 2023-09-08     |



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| №  | Test Object                        | Item/Parameter |                         | Standard or Method                                                                                                                                   | Note | Effective Date |
|----|------------------------------------|----------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                                    | №              | Item/ Parameter         |                                                                                                                                                      |      |                |
|    |                                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                          |      | 2023-09-08     |
|    |                                    | 2              | insulation resistance   | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3         |      | 2023-09-08     |
|    |                                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                          |      | 2023-09-08     |
|    |                                    | 3              | Electrical strength     | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9             |      | 2023-09-08     |
|    |                                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                          |      | 2023-09-08     |
|    |                                    | 4              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                          |      | 2023-09-08     |
| 16 | hand-held drills and impact drills | 5              | Leakage current         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                          |      | 2023-09-08     |
|    |                                    | 1              | input power and current | Safety of motor-operated hand-held,transportable and garden tools—Part 2: Particular requirements for drills and impact drills GB/T 3883.201-2017 11 |      | 2023-09-08     |
|    |                                    |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11           |      | 2023-09-08     |
|    |                                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                          |      | 2023-09-08     |
|    |                                    | 2              | insulation resistance   | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3         |      | 2023-09-08     |
|    |                                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                          |      | 2023-09-08     |



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| №  | Test Object       | Item/Parameter |                         | Standard or Method                                                                                                                           | Note | Effective Date |
|----|-------------------|----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                   | №              | Item/ Parameter         |                                                                                                                                              |      |                |
|    |                   | 3              | Electrical strength     | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9     |      | 2023-09-08     |
|    |                   |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                  |      | 2023-09-08     |
|    |                   | 4              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                  |      | 2023-09-08     |
|    |                   | 5              | Leakage current         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |
| 17 | hand-held hammers | 1              | input power and current | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for hammers GB/T 3883.7-2012 11                            |      | 2023-09-08     |
|    |                   |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11   |      | 2023-09-08     |
|    |                   |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                  |      | 2023-09-08     |
|    |                   | 2              | Leakage current         | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for hammers GB/T 3883.7-2012 13                            |      | 2023-09-08     |
|    |                   |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 附录 C |      | 2023-09-08     |
|    |                   |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |
|    |                   | 3              | electrical strength     | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for hammers GB/T 3883.7-2012 15                            |      | 2023-09-08     |
|    |                   |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools Part 1:General requirements GB/T                  |      | 2023-09-08     |



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| №  | Test Object                               | Item/Parameter |                         | Standard or Method                                                                                                                           | Note | Effective Date |
|----|-------------------------------------------|----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                                           | №              | Item/ Parameter         |                                                                                                                                              |      |                |
|    |                                           |                |                         | 3883.1-2014 附录 D                                                                                                                             |      |                |
|    |                                           |                |                         | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9     |      | 2023-09-08     |
|    |                                           |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                  |      | 2023-09-08     |
|    |                                           | 4              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                  |      | 2023-09-08     |
|    |                                           | 5              | insulation resistance   | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3 |      | 2023-09-08     |
|    |                                           |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                  |      | 2023-09-08     |
| 18 | hand-held sheet metal shears and nibblers | 1              | input power and current | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for sheet metal shears and nibblers GB/T 3883.8-2012 11    |      | 2023-09-08     |
|    |                                           |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11   |      | 2023-09-08     |
|    |                                           |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                  |      | 2023-09-08     |
|    |                                           | 2              | Leakage current         | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for sheet metal shears and nibblers GB/T 3883.8-2012 13    |      | 2023-09-08     |
|    |                                           |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 附录 C |      | 2023-09-08     |
|    |                                           |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |



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| №  | Test Object                  | Item/Parameter |                         | Standard or Method                                                                                                                                           | Note | Effective Date |
|----|------------------------------|----------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                              | №              | Item/ Parameter         |                                                                                                                                                              |      |                |
|    |                              | 3              | electrical strength     | Safety of hand-held, motor- operated electric tools Part 2: Particular requirements for sheet metal shears and nibblers GB/T 3883.8-2012 15                  |      | 2023-09-08     |
|    |                              |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                                  |      | 2023-09-08     |
|    |                              |                |                         | Safety of motor- operated hand-held, transportable electric tools and lawn and garden tools Part 1: General requirements GB/T 3883.1-2014 附录 D               |      | 2023-09-08     |
|    |                              |                |                         | Technical safety code for management, operation, inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9                   |      | 2023-09-08     |
|    |                              | 4              | insulation resistance   | Technical safety code for management, operation, inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3               |      | 2023-09-08     |
|    |                              |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                                  |      | 2023-09-08     |
|    |                              | 5              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                                  |      | 2023-09-08     |
| 19 | hand-held reciprocating saws | 1              | input power and current | Safety of motor- operated hand-held, transportable and garden tools Part 211: Particular requirements for hand-held reciprocating saws GB/T 3883.211-2021 11 |      | 2023-09-08     |
|    |                              |                |                         | Safety of motor- operated hand-held, transportable electric tools and lawn and garden tools Part 1: General requirements GB/T 3883.1-2014 11                 |      | 2023-09-08     |
|    |                              |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                                  |      | 2023-09-08     |
|    |                              | 2              | insulation resistance   | Technical safety code for management, operation, inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3               |      | 2023-09-08     |



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| №  | Test Object         | Item/Parameter |                         | Standard or Method                                                                                                                           | Note | Effective Date |
|----|---------------------|----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                     | №              | Item/ Parameter         |                                                                                                                                              |      |                |
| 20 | hand-held tile saws | 3              | Electrical strength     | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                  |      | 2023-09-08     |
|    |                     |                |                         | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9     |      | 2023-09-08     |
|    |                     |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                  |      | 2023-09-08     |
|    |                     | 4              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                  |      | 2023-09-08     |
|    |                     | 5              | Leakage current         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |
|    | hand-held tile saws | 1              | input power and current | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for tile saws GB/T 3883.18-2009 11                         |      | 2023-09-08     |
|    |                     |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 11   |      | 2023-09-08     |
|    |                     |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                  |      | 2023-09-08     |
|    |                     | 2              | Leakage current         | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for tile saws GB/T 3883.18-2009 13                         |      | 2023-09-08     |
|    |                     |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools_Part 1:General requirements GB/T 3883.1-2014 附录 C |      | 2023-09-08     |
|    |                     |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |
|    |                     | 3              | electrical strength     | Safety of hand-held,motor- operated electirc tools _Part2:Particular requirements for tile saws GB/T 3883.18-2009 15                         |      | 2023-09-08     |



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| №  | Test Object        | Item/Parameter |                         | Standard or Method                                                                                                                           | Note | Effective Date |
|----|--------------------|----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                    | №              | Item/ Parameter         |                                                                                                                                              |      |                |
|    |                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                  |      | 2023-09-08     |
|    |                    |                |                         | Safety of motor- operated hand-held,transportable electirc tools and lawn and garden tools Part 1:General requirements GB/T 3883.1-2014 附录 D |      | 2023-09-08     |
|    |                    |                |                         | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.9     |      | 2023-09-08     |
|    |                    | 4              | insulation resistance   | Technical safety code for management,operation,inspection and maintenance of hand-held motor- operated electric tools GB/T 3787-2017 6.3 6.3 |      | 2023-09-08     |
|    |                    |                |                         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                  |      | 2023-09-08     |
|    |                    | 5              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                  |      | 2023-09-08     |
| 21 | hand-held heat gun | 1              | insulation resistance   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.3                  |      | 2023-09-08     |
|    |                    | 2              | start                   | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.4                  |      | 2023-09-08     |
|    |                    | 3              | input power and current | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.5                  |      | 2023-09-08     |
|    |                    | 4              | Leakage current         | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.6                  |      | 2023-09-08     |
|    |                    | 5              | electrical strength     | Inspection regulation of hand-held electric power tools safety performances for electrical engineering DL/T 1191-2012 6.3.7                  |      | 2023-09-08     |
| 22 | Cable reels        | 1              | insulation resistance   | Electircal accessories Cable reels for household and similar purposes GB/T 19637-2017 17                                                     |      | 2023-09-08     |
|    |                    | 2              | electrical strength     | Electircal accessories Cable reels for household and similar purposes GB/T 19637-2017 17                                                     |      | 2023-09-08     |



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| №  | Test Object            | Item/Parameter |                             | Standard or Method                                                                                                                                   | Note | Effective Date |
|----|------------------------|----------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|    |                        | №              | Item/ Parameter             |                                                                                                                                                      |      |                |
| 23 | lectric Wire and Cable | 1              | Electrical resistivity      | Test methods for electrical properties of electric cables and wires<br>Part 2: Test of electrical resistivity of metallic materials GB/T 3048.2-2007 |      | 2023-09-08     |
|    |                        | 2              | DC resistance of conductors | Test methods for electrical properties of electric cables and wires<br>Part 4: Test of DC resistance of conductors GB/T 3048.4-2007                  |      | 2023-09-08     |

SCHEDULE OF ACCREDITATION CERTIFICATE



No. CNAS L9263

在线扫码获取验证

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

Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: Building 4, No.5, lingchi Road, Xinchang County, Shaoxing, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12 Expiry Date: 2028-08-17

## SCHEDULE 3 ACCREDITED TESTING SCOPE

| № | Test Object                                 | Item/Parameter |                                               | Standard or Method                                                                                                                                         | Note | Effective Date |
|---|---------------------------------------------|----------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|   |                                             | №              | Item/ Parameter                               |                                                                                                                                                            |      |                |
| 1 | Carbon steel and low and medium alloy steel | 1              | C、Si、Mn、P、S、Cr、Ni、Cu、Co、As、Al                 | Carbon and low-alloy steel-Determination of multi-element contents- Spark discharge atomic emission spectrometric method ( routine method ) GB/T 4336-2016 |      | 2023-01-03     |
|   |                                             | 2              | C、Si、Mn、P、S、Cr、Ni、Mo、Cu、V、Nb、Ti、W、Co、Sn、Pb、Al | Stainless steel- Determination of multi-element contents-Spark discharge atomic emission spectrometric method ( Routine method ) GB/T 11170-2008           |      | 2023-01-03     |
|   |                                             | 3              | Si、Fe、Cu、Mn、Mg、Cr、Zn、Ti、Ni、V                  | Optical emission spectrometric analysis method of aluminum and aluminum alloys GB/T 7999-2015                                                              |      | 2023-01-03     |
|   |                                             | 4              | Cu、Pb、Zn、P、Fe、Sn、Sb、Bi、Al、Mn、Ni、Si、Ag、S、As    | Methods for analysis of copper and copper alloys-The spark discharge atomic emission spectrometry YS/T 482-2022                                            |      | 2023-12-12     |



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| № | Test Object    | Item/Parameter |                  | Standard or Method                                                                                   | Note                                                        | Effective Date |
|---|----------------|----------------|------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------|
|   |                | №              | Item/ Parameter  |                                                                                                      |                                                             |                |
| 2 | Metal material | 1              | Tensile test     | Metallic materials-Sheet and strip-Determination of plastic strain ratio GB/T 5027-2016              | Accredited only for Force $\leq$ 200kN and room temperature | 2023-01-03     |
|   |                |                |                  | Metallic materials-Tensile testing-Part1:Method of test at room temperature GB/T 228.1-2021          | Accredited only for Force $\leq$ 200kN and room temperature | 2023-01-03     |
|   |                |                |                  | Metallic materials-Sheet and strip-Determination of tensile strain hardening exponent GB/T 5028-2008 | Accredited only for Force $\leq$ 200kN and room temperature | 2023-01-03     |
|   |                | 2              | Compression test | Metallic materials-Compression test method at room temperature GB/T 7314-2017                        | Accredited only for Force $\leq$ 200kN and room temperature | 2023-01-03     |
|   |                | 3              | Bend test        | Metallic materials-Bend test GB/T 232-2010                                                           | Accredited only for Roller support                          | 2023-01-03     |

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| № | Test Object                                         | Item/Parameter |                           | Standard or Method                                                                          | Note                                                                              | Effective Date |
|---|-----------------------------------------------------|----------------|---------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------|
|   |                                                     | №              | Item/ Parameter           |                                                                                             |                                                                                   |                |
|   |                                                     |                |                           |                                                                                             | type, force $\leq 200\text{kN}$ and room temperature                              |                |
|   |                                                     | 4              | Shear test                | Pins and grooved pins-Shear test GB/T 13683-1992                                            | Accredited only for Force $\leq 200\text{kN}$ and room temperature                | 2023-01-03     |
|   |                                                     | 5              | Determination of hardness | Metallic materials-Rockwell hardness test-Part 1 Test method GB/T 230.1-2018                |                                                                                   | 2023-01-03     |
|   |                                                     |                |                           | Metallic materials-Vickers hardness test-Part 1 Test method GB/T 4340.1-2009                |                                                                                   | 2023-01-03     |
|   |                                                     | 6              | Elastic modulus           | Metallic materials-Determination of modulus of elasticity and Poisson ratio GB/T 22315-2008 | Accredited only for static method, force $\leq 200\text{kN}$ and room temperature | 2023-01-03     |
| 3 | Metallic and inorganic materials and their products | 1              | Average grain size        | Determination of estimating the average grain size of metal GB/T 6394-2017                  | Accredited only for Intercept point method                                        | 2023-01-03     |



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| № | Test Object                                                     | Item/Parameter |                                             | Standard or Method                                                                                                                                                                          | Note | Effective Date |
|---|-----------------------------------------------------------------|----------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|
|   |                                                                 | №              | Item/ Parameter                             |                                                                                                                                                                                             |      |                |
|   |                                                                 | 2              | Measurement of length in micron scale       | General rules for measurement of length in micron scale by SEM GB/T 16594-2008                                                                                                              |      | 2023-01-03     |
|   |                                                                 | 3              | Microscopic morphology and element analysis | General rules for analytical methods for scanning electron microscope JY/T 0584-2020                                                                                                        |      | 2023-01-03     |
|   |                                                                 |                |                                             | Paper and board—Qualitative analysis of mineral filler and mineral coating—SEM/EDAX method GB/T 2679.11-2008                                                                                |      | 2023-01-03     |
| 4 | Metallic and inorganic materials and their products (Corrosion) | 1              | Salt spray test                             | Corrosion tests in artificial atmospheres-Salt spray tests GB/T 10125-2021                                                                                                                  |      | 2023-09-08     |
|   |                                                                 |                |                                             | Methods for corrosion testing of metallic and other inorganic coating on metallic substrates-Rating of test specimens and manufactured articles subjected to corrosion tests GB/T 6461-2002 |      | 2023-09-08     |



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

Name: Zhongce Test Science and Technology (Hangzhou) Co., Ltd.

Address: A1/F., INSIGMA Science and Technology Park, No.2288, Jiangxi Road, Cao'e Street, Shangyu District,  
Shaoxing, Zhejiang, China

Registration No. CNAS L9263

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

Effective Date: 2023-12-12      Expiry Date: 2028-08-17

## SCHEDULE 3 ACCREDITED TESTING SCOPE

| № | Test Object       | Item/Parameter |                           | Standard or Method                                                                             | Note              | Effective Date |
|---|-------------------|----------------|---------------------------|------------------------------------------------------------------------------------------------|-------------------|----------------|
|   |                   | №              | Item/ Parameter           |                                                                                                |                   |                |
| 1 | Biosafety cabinet | 1              | Downdraft velocity        | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.7                            | Anemometer method | 2023-01-03     |
|   |                   |                |                           | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.4 | Anemometer method | 2023-01-03     |
|   |                   | 2              | Inflow flow velocity      | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.8                            | Anemometer method | 2023-01-03     |
|   |                   |                |                           | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.6 | Anemometer method | 2023-01-03     |
|   |                   | 3              | Intensity of illumination | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.4                            |                   | 2023-01-03     |
|   |                   |                |                           | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.9 |                   | 2023-01-03     |
|   |                   | 4              | Cleanliness               | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.7 |                   | 2023-01-03     |



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| № | Test Object | Item/Parameter |                                                        | Standard or Method                                                                              | Note                                        | Effective Date |
|---|-------------|----------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------|----------------|
|   |             | №              | Item/ Parameter                                        |                                                                                                 |                                             |                |
|   |             | 5              | Noise                                                  | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.3                             |                                             | 2023-01-03     |
|   |             |                |                                                        | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.8  |                                             | 2023-01-03     |
|   |             | 6              | High efficiency filter leak detection                  | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.2                             | Spectrophotometry                           | 2023-01-03     |
|   |             |                |                                                        | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.10 | Spectrophotometry                           | 2023-01-03     |
|   |             | 7              | Temperature                                            | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.12                            |                                             | 2023-01-03     |
|   |             | 8              | Ultraviolet radiation intensity                        | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.14                            |                                             | 2023-01-03     |
|   |             | 9              | Vibration                                              | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.5                             |                                             | 2023-01-03     |
|   |             | 10             | Air flow pattern                                       | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.9                             |                                             | 2023-01-03     |
|   |             |                |                                                        | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.5  |                                             | 2023-01-03     |
|   |             | 11             | Box static pressure difference                         | Architectural and technical code for biosafety laboratories GB 50346-2011 GB 50346-2011/10.2.12 |                                             | 2023-01-03     |
|   |             | 12             | Protection of people, products and cross contamination | Class II biological safety cabinets YY 0569-2011 YY 0569-2011/6.3.6,3.3                         | Accredited only for Potassium iodide method | 2023-01-03     |
| 2 | Clean bench | 1              | Wind speed                                             | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.3                                                 |                                             | 2023-01-03     |
|   |             | 2              | Inflows wind speed                                     | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.4                                                 |                                             | 2023-01-03     |



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| № | Test Object | Item/Parameter |                             | Standard or Method                               | Note              | Effective Date |
|---|-------------|----------------|-----------------------------|--------------------------------------------------|-------------------|----------------|
|   |             | №              | Item/ Parameter             |                                                  |                   |                |
|   |             | 3              | Air condition               | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.11 |                   | 2023-01-03     |
|   |             | 4              | Air Cleanliness             | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.6  |                   | 2023-01-03     |
|   |             | 5              | Intensity of illumination   | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.9  |                   | 2023-01-03     |
|   |             | 6              | Noise                       | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.8  |                   | 2023-01-03     |
|   |             | 7              | Vibration amplitude         | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.10 |                   | 2023-01-03     |
|   |             | 8              | Scanning the leak detection | Clean bench JG/T 292-2010 JG/T 292-2010/7.4.4.1  | Spectrophotometry | 2023-01-03     |



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