

Name: Shandong Institute of Metrology

Address: No.28, Qianfoshan East Road, Jinan, Shandong, China

Registration No. CNAS L0854

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

Effective Date: 2026-04-21 Expiry Date: 2030-02-03

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 ($k=2$)	Note	Effective Date
1、Geometric measuring instrument							
1	Standard Metallic Scale (Grade III)	Length	Verification Regulation of Standard Metallic Scale (Grade III) JJG 71	(0.001~1000) mm	$U=6\ \mu\text{m}$		
2	Steel Rule	Length	Verification Regulation of Steel Rule JJG 1	(0.01~300)mm	$U=0.03\text{mm}$		
				(300~1000)mm	$U=0.04\text{mm}$		
				(1000~2000)mm	$U=0.06\text{mm}$		
3	Steel Measuring Tapes	Length	Verification Regulation of Steel Measuring Tapes JJG 4	(0.0001~5)m	$U=0.1\text{mm}+2\times 10^{-5}L$		
				(5~100)m	$U=0.1\text{mm}+7\times 10^{-5}L$		
4	Roughness Comparison Specimens	Roughness	Calibration Specification for Roughness Comparison Specimens JJF 1099	$Ra: (0.012\sim 6.3)\ \mu\text{m}$	$U_{\text{rel}}=7\%$		
5	Casing Coupling	Length	Verification Regulation of	(600~3000)mm	$U=0.2\text{mm}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Meter		Casing Coupling Meter JJG 473	(3000~4500)mm	$U=0.4\text{mm}$		
6	Level Rod	Length	Verification Regulation of Level Rod JJG 8	(0.0001~5)m	$U=0.3\text{mm}$	Accredited only for Pagoda ruler	
7	Feeler Gauges	Length	Verification Regulation of Feeler Gauges JJG 62	(0.02~0.10) mm	$U=1.5\text{ }\mu\text{m}$		
				(0.10~1.00) mm	$U=2.7\text{ }\mu\text{m}$		
8	Radius Gauges	Length	Calibration Specification for Radius Gauges JJF 2187	$R: (0.1\sim1)\text{mm}$	$U=4.2\text{ }\mu\text{m}$		
				$R: (1\sim25)\text{mm}$	$U=4.3\text{ }\mu\text{m}+0.4\times10^{-3}R$		
				$R: (25\sim50)\text{mm}$	$U=30\text{ }\mu\text{m}$		
				$R: (50\sim100)\text{mm}$	$U=37\text{ }\mu\text{m}$		
				$R: (100\sim150)\text{mm}$	$U=43\text{ }\mu\text{m}$		
9	*Welding Inspection Callipers	Length	Calibration Specification for Welding Inspection Callipers JJF 2161	(0~80)mm	$U=0.05\text{mm}$		
		angle		$0^{\circ}\sim320^{\circ}$	$U=5'$		
10	Fiber Tapes and Measuring Ropes	Length	Verification Regulation of Fiber Tapes and Measuring Ropes JJG 5	(0~5)m	$U=0.3\text{mm}+8\times10^{-5}L$		
				(5~100)m	$U=0.2\text{mm}+1.3\times10^{-4}L$		
11	Cylindrical Measuring Pin	Length	Calibration Specification for Cylindrical Measuring Pin JJF 1207	Thread Measuring Wires (0.118~6.212) mm	$U=0.2\text{ }\mu\text{m}$		
				Pin Gage (0.1~25) mm	$U=0.3\text{ }\mu\text{m}$		
12	*Length Measuring Instrument	Length	Calibration Specification for length Measuring Instrument JJF 1189	(0~500) mm	$U=0.06\text{ }\mu\text{m}+1.3\times10^{-6}L$		

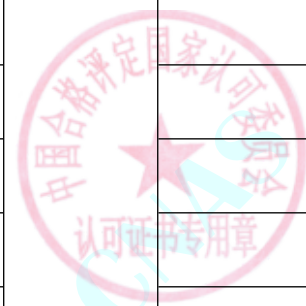


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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
13	**Contact(Stylus) Instrument of Surface Roughness Measurement by the Profile Method	Roughness	Calibration Specification for Contact(Stylus) Instruments of Surface Roughness Measurement by the Profile Method JJF 1105	Ra: (0.01~0.1) μm	$U_{\text{rel}}=5.1\%$		
				Ra: (0.1~0.4) μm	$U_{\text{rel}}=4.1\%$		
				Ra: (0.4~4.09) μm	$U_{\text{rel}}=3.0\%$		
14	*Inductive Micrometers	Length	Calibration Specification for Inductive Micrometers JJF 1331	Digital display: (0.01~ 10) μm	$U=0.03 \mu\text{m}$		
				Digital display: (10~ 100) μm	$U=0.2 \mu\text{m}$		
				Digital display: (100~ 1000) μm	$U=1 \mu\text{m}$		
				Pointer type: (0.01~10) μm	$U=0.06 \mu\text{m}$		
				Pointer type: (10~30) μm	$U=0.13 \mu\text{m}$		
				Pointer type: (30~100) μm	$U=0.29 \mu\text{m}$		
				Pointer type: (100~300) μm	$U=0.90 \mu\text{m}$		
				Electronic column: (0~ 10) μm	$U=0.06 \mu\text{m}$		
				Electronic column: (10~25) μm	$U=0.14 \mu\text{m}$		
				Electronic column: (25~50) μm	$U=0.26 \mu\text{m}$		
				Electronic column: (50~100) μm	$U=0.43 \mu\text{m}$		
				Electronic column: (100~500) μm	$U=2.3 \mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
15	*Magnetic and Eddy Current Measuring Instrument for Coating Thickness	Length	Verification Regulation of Magnetic and Eddy Current Measuring Instrument for Coating Thickness JJG 818	(0~30)mm	$U=0.4 \mu\text{m}+1 \times 10^{-3}H$		
				Thickness Sheet: (0~50) μm	$U=0.2 \mu\text{m}$		
				Thickness Sheet: (50~30000) μm	$U_{\text{rel}}=0.2\%$		
16	*Coordinate Measuring Machines	Length	Calibration Specification for Coordinate Measuring Machines JJF 1064	(0~15) m	$U=0.3 \mu\text{m}+1 \times 10^{-6}L$		
17	*Wedge-feet Calibrator for Micrometers	Length	Verification Regulation of Wedge-feet Calibrator for Micrometers JJG 525	(0~10) μm	$U=0.05 \mu\text{m}$		
				(10~40) μm	$U=0.08 \mu\text{m}$		
				(40~200) μm	$U=0.15 \mu\text{m}$		
				(200~2000) μm	$U=0.2 \mu\text{m}$		
18	*Concentricity Tester	Length	Calibration Specification for Concentricity Tester JJF 1109	$L:(100 \sim 1000)\text{mm}$	$U=1.1 \mu\text{m}$		
19	*Digital Height Measuring Instrument with Digital Display	Length	Calibration Specification for Digital Height Measuring Instrument with Digital Display JJF 1254	(0~50)mm	$U=0.2 \mu\text{m}$		
				(50~1000)mm	$U=0.2 \mu\text{m}+2 \times 10^{-6}L$		
20	*Metallurgical Microscope	Length	Calibration Specification for Metallurgical Microscope JJF 1914	(0~1) mm	$U=1.2 \mu\text{m}$		
		Magnification times		5X~100X	$U_{\text{rel}}=1.2\%$		
21	*Reading Microscope and Measuring Microscope	Length	Verification Regulation of Reading Microscope and Measuring Microscope JJG 571	Reading Microscope: (0~8) mm	$U=1 \mu\text{m}$		
				Measuring Microscope: (0~50) mm	$U=1.3 \mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
22	*Contact- type Interferometers	Length	Verification Regulation of Contact- type Interferometers JJG 101	$(-10 \sim 10) \mu\text{m}$	$U=0.014 \mu\text{m}$		
23	*Flat Equal Thickness Interferometers	Flatness	Calibration Specification for Flat Equal Thickness Interferometers JJF 1100	$D: 150\text{mm}$	$U=0.01 \mu\text{m}$		
24	*Measurement Standard Instrument of Roundness	Roundness	Verification Regulation of Measurement Standard Instrument of Roundness and Cylindricity JJG 429	$(1 \sim 5) \mu\text{m}$	$U_{\text{rel}}=3.1\%$		
				$(5 \sim 50.2) \mu\text{m}$	$U_{\text{rel}}=2.1\%$		
25	*Gear Involute Measuring Instruments	Length	Calibration Specification for Gear Involute Measuring Instruments JJF 1124	$r_b: (24 \sim 100)\text{mm}$	$U=1.4 \mu\text{m}$		
				$r_b: (100 \sim 200)\text{mm}$	$U=1.7 \mu\text{m}$		
26	*Ultrasonic Thickness Instruments	Length	Calibration Specification for Ultrasonic Thickness Instruments JJF 1126	$(0.5 \sim 200)\text{mm}$	$U=0.02\text{mm}$		
27	*Light-Section Microscopes	Length	Calibration Specification for Light-Section Microscopes JJF 1092	$7\times$ objective: $(0.2 \sim 50) \mu\text{m}$	$U_{\text{rel}}=1.5\%$		
				$14\times$ objective: $(0.8 \sim 80) \mu\text{m}$	$U_{\text{rel}}=1.8\%$		
				$30\times$ 物镜: $(0.2 \sim 50) \mu\text{m}$	$U_{\text{rel}}=2.3\%$		
				$60\times$ objective: $(0.2 \sim 50) \mu\text{m}$	$U_{\text{rel}}=4.0\%$		
28	Standard Ring Gauge	Length	Standard Ring Gauge JJG 894	$(2 \sim 100)\text{mm}$	$U=0.6 \mu\text{m}$		
				$(100 \sim 200)\text{mm}$	$U=1.0 \mu\text{m}$		
29	Depth Micrometers	Length	Verification Regulation of Depth Micrometers JJG 24	$(0 \sim 100) \text{mm}$	$U=1 \mu\text{m}$		
				$(100 \sim 300) \text{mm}$	$U=3 \mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
30	*Common Normal Micrometer	Length	Verification Regulation of Common Normal Micrometer JJG 82	(0~200) mm	$U=2 \mu\text{m}$		
31	Micrometers of Measuring Inside Dimension	Length	Calibration Specification for Micrometers of Measuring Inside Dimension JJF 1411	Internal Measuring Micrometer: (5~50) mm	$U=1 \mu\text{m}$		
				Internal Measuring Micrometer: (50~150) mm	$U=2 \mu\text{m}$		
				Pore diameter Micrometer: (6~200) mm	$U=2 \mu\text{m}$		
32	*Microcator	Length	Verification Regulation of Microcator JJG 118	(0~20) μm	$U=0.06 \mu\text{m}$		
				(20~100) μm	$U=0.12 \mu\text{m}$		
				(100~300) μm	$U=0.3 \mu\text{m}$		
33	*Bore Dial Indicators	Length	Calibration Specification for Bore Dial Indicators JJF 1102	dial bore gauge: (6~250) mm	$U=6 \mu\text{m}$		
				inside dial indicator: (10~100) mm	$U=2.0 \mu\text{m}$		
34	*Thickness Gauge	Length	Calibration Specification for Thickness Gauges JJF 1255	(0~1) mm	$U=1.9 \mu\text{m}$		
				(1~30) mm	$U=5 \mu\text{m}$		
35	Straight Edge	Linearity	Verification Regulation of Straight Edge JJG 63	(75~175) mm	$U=0.4 \mu\text{m}$		
				(175~300) mm	$U=0.7 \mu\text{m}$		
				(300~500) mm	$U=0.9 \mu\text{m}$		



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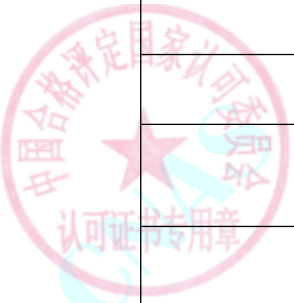
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
36	*Testers for Dial Indicator Gauges	Length	Verification Regulation of Testers for Dial Indicator Gauges JJG 201	Tester For Dial Gauge Reading in 0.01mm: (0~25) mm	$U=1.3 \mu m$		
				Dial Gauge Reading in 0.001mm: (0~5)mm	$U=0.25 \mu m$		
				Grating indicator calibrator:(0~50)mm	$U=0.3 \mu m$		
				Grating indicator calibrator:(50~100)mm	$U=1.1 \mu m$		
37	*Gear Tooth Calipers	Length	Calibration Specification for Gear Tooth Calipers JJF 1072	Module (1~50) mm	$U=0.01mm$		
38	Angle Gauge Blocks	Angle	Verification Regulation of Angle Gauge Blocks JJG70	$0^{\circ} \sim 120^{\circ}$	$U=1.8''$		
39	*Micrometer	Length	Verification Regulation of Micrometer JJG 21	(0~125) mm	$U=1 \mu m$		
				(125~250) mm	$U=2 \mu m$		
				(250~400) mm	$U=3 \mu m$		
				(400~500) mm	$U=5 \mu m$		
				Calibration rod : (25~475)mm	$U=0.3 \mu m+6 \times 10^{-6}L$		
40	*Large Dimension Outside Micrometers	Length	Calibration Specification for Large Dimension Outside Micrometers JJF 1088	Micrometer head:(0~50)mm	$U=1 \mu m$		
				(500~700) mm	$U=6 \mu m$		
				(700~800) mm	$U=7 \mu m$		
				(800~900) mm	$U=8 \mu m$		
				(900~1000) mm	$U=9 \mu m$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				(1000~1200) mm	$U=10 \mu m$		
				(1200~2000) mm	$U=12 \mu m$		
				(2000~3000) mm	$U=18 \mu m$		
				calibrating stem :(500~1000)mm	$U=5 \mu m$		
				calibrating stem :(1000~2000)mm	$U=6 \mu m$		
				calibrating stem :(2000~3000)mm	$U=7 \mu m$		
41	Internal Micrometer	Length	Verification Regulation of Internal Micrometer JJG22	(50~3000) mm	$U=1.1 \mu m+4.6 \times 10^{-6}L$		
42	*Dial Gauge	Length	Verification Regulation of Dial Gauges JJG 34	Dial Gauge Reading in 0.01mm: (0~10) mm	$U=4 \mu m$		
				Dial Gauge Reading in 0.01mm: (10~30) mm	$U=5 \mu m$		
				Dial Gauge Reading in 0.01mm: (30~50) mm	$U=10 \mu m$		
				Dial Gauge Reading in 0.01mm: (50~100) mm	$U=10 \mu m$		
				Dial Gauge Reading in 0.001mm: (0~1)mm	$U=1.0 \mu m$		
				Dial Gauge Reading in 0.001mm: (1~2) mm	$U=2.5 \mu m$		
				Dial Gauge Reading in 0.001mm: (2~5) mm	$U=3.3 \mu m$		



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				Dialindicator: (5~30) mm	$U=3.7 \mu\text{m}$		
43	*Interference Microscope	Roughness	Verification Regulation of Interference Microscope JJG 77	(0.05~0.20) μm	$U_{\text{rel}}=6.9\%$		
				(0.20~1.00) μm	$U_{\text{rel}}=1.7\%$		
44	*Toolmaker's Microscope	Length	Verification Regulation of Toolmaker's Microscope JJG 56	(0~200)mm	$U=0.3 \mu\text{m}+5 \times 10^{-6}L$		
45	*Optical Digital Dividing Head	Angle	Verification Regulation of Optical Digital Dividing Head JJG 57	0° ~360°	$U=0.8''$		
46	*Length Measuring Machine	Length	Calibration Specification for Length Measuring machine JJF 1066	Decimetre Scale: (0~6000)mm	$U=0.4 \mu\text{m}+2.9 \times 10^{-6}L$		
				Millimetre Scale: (0~100) mm	$U=0.2 \mu\text{m}+1.7 \times 10^{-6}L$		
				Micron Scale: (-100~100) μm	$U=0.1 \mu\text{m}$		
47	*Optimeter	Length	Verification Regulation of Optimeter JJG 45	(0~20) μm	$U=0.05 \mu\text{m}$		
				(20~40) μm	$U=0.07 \mu\text{m}$		
				(40~80) μm	$U=0.09 \mu\text{m}$		
				(80~100) μm	$U=0.10 \mu\text{m}$		
48	Electronic Level and Coincidence Levels	Angle	Verification Regulation of Electronic Level and Coincidence Levels JJG103	Electronic Levels:(-10~10)mm/m	$U=1 \mu\text{m/m}$		
				Coincidence Levels :(-5~5)mm/m	$U=3 \mu\text{m/m}$		
49	Calibrators for Levels	Angle	Verification Regulation of Calibrators for Levels JJG191	division:(0.005~0.01)mm/m	$U=2.5 \mu\text{m/m}$		



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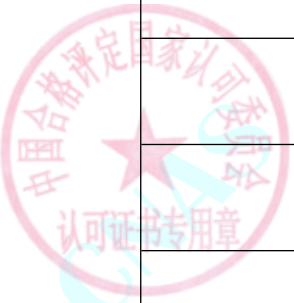
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
50	Angular Polygon	Angle	Verification Regulation of Angular Polygon JJG283	0° ~ 360°	U=0.3 "		
51	*Surface Plates	Flatness	Verification Regulation of Surface Plates JJG117	(160mm×100mm~400mm×250mm)	U=0.8 μ m		
				(400mm×250mm~630mm×400mm)	U=1.0 μ m		
				(630mm×400mm~1600mm×1000mm)	U=1.8 μ m		
				(1600mm×1000mm~2500mm×1600mm)	U=2.5 μ m		
				(2500mm×1600mm~4000mm×2500mm)	U=4.0 μ m		
52	Autocollimators	Angle	Verification Regulation of Autocollimators JJG202	0~1000 "	U=0.2 "		
53	*Straight Edges	linearity	Calibration Specification for Straight Edges JJF1097	(300~5000)mm	U=0.5 μ m+0.3×10 ⁻⁶ L		
54	*Measuring System of Coordinate Position (Numerical ly controlled machine tools)	Length	Calibration Specification for Measuring System of Coordinate Position JJF 1251	(0~25) m	U=1 μ m+0.8×10 ⁻⁶ L		
		Angle		0° ~ 360°	U=1.4 "		
55	Optical Flats	Eveness	Verification Regulation of Optical Flats JJG 28	D: (30~100) mm	U=0.02 μ m		
		Parallelism		H: (15~91)mm	U=0.1 μ m		
56	Dial Test Indicator	Length	Verification Regulation of Dial Test Indicator JJG 35	Fine dial test indicator (0~0.4) mm	U=0.7 μ m		



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				Lever dial gauge (0~1) mm	$U=3 \mu\text{m}$		
57	General Bevel Protractors	Angle	Calibration Specification for General Bevel Protractors JJF 1959	$0^\circ \sim 360^\circ$	$U=1'$		
58	Level Rules	Angle	Calibration Specification for Level Rules JJF1085	division: (0.5~10) mm/m	$U_{\text{rel}}=8\%$		
59	Frame Levels and shaft levels	Angle	Calibration Specification for Frame Levels and Shaft Levels JJF1084	division: (0.02~0.10) mm/m	$U_{\text{rel}}=5.8\%$		
60	Fineness of Grind Gage	Length	Verification Regulation of Fineness of Grind Gage JJG905	(0~150) μm	$U=0.6 \mu\text{m}$		
61	*Pneumatic Measuring Instrument for Micrometers	Length	Verification Regulation of Pneumatic Measuring Instrument for Micrometers JJG 356	Float-type:division0.5 μm : (20~100) μm	$U=0.2 \mu\text{m}$		
				Float-type:division1 μm : (-15~15) μm	$U=0.3 \mu\text{m}$		
				Float-type:division2 μm : (-40~40) μm	$U=1.2 \mu\text{m}$		
				Float-type:division5 μm : (-80~80) μm	$U=2.8 \mu\text{m}$		
				Electronic Column Type:division0.2 μm : (-10~10) μm	$U=0.2 \mu\text{m}$		
				Electronic Column Type:division0.5 μm : (-25~25) μm	$U=0.3 \mu\text{m}$		
				Electronic Column Type:division1 μm : (-50~50) μm	$U=0.6 \mu\text{m}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
62	Blocks used in Ultrasonic Testing	Length	Calibration Specification for Blocks used in Ultrasonic Testing JJF 1487	(0~500) mm	$U=14\text{ }\mu\text{m}$		
63	Cable Length Meter	Length	Verification Regulation of Cable Length Meter JJG 987	(1~9999) m	$U_{\text{rel}}=0.04\%$		
64	*Calibrator of Extensometers	Length	Calibration Specification for Calibrator of Extensometers JJF 1096	(0~0.3) mm	$U=0.06\text{ }\mu\text{m}$		
				(0.3~1)mm	$U_{\text{rel}}=0.02\%$		
				(1~50)mm	$U_{\text{rel}}=0.04\%$		
65	*Square Testers	Perpendicularity	Calibration Specification for Square Testers JJF 1140	H : (0~400) mm	$U=0.8\text{ }\mu\text{m}$		
66	Squares	Perpendicularity	Verification Regulation of Pneumatic Measuring Instrument for Micrometers JJG7	Cylindrical Square H : (200~500)mm	$U=1.6\text{ }\mu\text{m}$		
				Stand Square H : (63~1000)mm	$U=0.5\text{ }\mu\text{m}+3.6\times 10^{-6}L$		
				Edge Square H : (50~200)mm	$U=2.2\text{ }\mu\text{m}$		
				Graduated Steel Square H : (150~500)mm	$U=0.05\text{mm}$		
67	Square Gauge	Perpendicularity	Verification Regulation of Square Gauge JJG1046	H : (100~630)mm	$U=0.7\text{ }\mu\text{m}+0.8\times 10^{-6}L$		
68	Box Plates	Perpendicularity	Verification Regulation of Box Plates JJG194	H : (100~400) mm	$U=0.9\text{ }\mu\text{m}+3.2\times 10^{-6}L$		
69	Clinometers	Angle	Calibration Specification for Clinometers JJF 1915	Optical clinometer: 0° ~360°	$U=3''$		
				Electronic digital inclinometer: 0° ~360°	$U=0.013^\circ$		



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70	GNSS Receivers (Geodetic or Navigational Type)	Length	Verification Regulation of GNSS Receivers (Geodetic or Navigational Type) JJG 1200	Antenna phase center consistency: 6m	$U=1.3\text{mm}$	Calibration location: Zhangqiu District Zaoyuan Baseline, etc	
				Short Baseline Horizontal Distance: (24~1224) m	$U=1.8\text{mm}$		
				Medium to Long Baseline Horizontal Distance: (1224m~42.1km)	$U=4.6\text{mm}$		
				Short Baseline Height Difference: (24~1224) m	$U=7.6\text{ mm}$		
				RTK Surveying Accuracy: (0~42.1) km	$U=13\text{mm}$		
				Positioning Accuracy: (0~42.1) km	$U=0.5\text{m}$		
71	*Measuring Instrument for Laser Parallelism of Micrometers	Parallelism	Calibration Specification for Measuring Instrument for Laser Parallelism of Micrometers JJF 1252	(150~1000) mm	$U=0.7\text{mm}$		
72	Step Gauges	Length	Calibration Specification for Step Gauges JJF 1258	(10~1000)mm	$U=0.45\text{ }\mu\text{m}+1\times 10^{-6}L$		
73	Angle gauge	Angle	Calibration Specification for Angle gauge SDIM/CJGCD027	$0^{\circ} \sim 180^{\circ}$	$U=4'$		
74	Gauges	Length	Calibration Specification for Gauges SDIM/CJGCD 024	(0~300)mm	$U=5\text{ }\mu\text{m}$		
75	Taper Thread Gauges	Length	Calibration Specification for Taper Thread Gauges JJF 2279	(2~80)mm	$U=6\text{ }\mu\text{m}$		
					$U=6\text{ }\mu\text{m}$		
76	Levels	Angle	Verification Regulation of levels JJG 425	$-25'' \sim +25''$	$U=2.2''$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
77	Electronic Tachometer Total Station、Electro-optical Distance Meter (EDM Instruments)	Angle	Verification Regulation of Electronic Tachometer Total Station JJG 100, Verification Regulation of Electro-optical Distance Meter (EDM Instruments) JJG 703	HA: $0^{\circ} \sim 360^{\circ}$	$U=0.2''$	Calibration location: Zaoyuan total station baseline field	
		Length		VA: $-30^{\circ} \sim 30^{\circ}$	$U=1.0''$		
				$(24 \sim 1224)\text{m}$	$U=0.4\text{mm}+0.7 \times 10^{-6}D$		
78	Screw Templates	Length	Verification Regulation of Screw Templates JJG 60	$P: (0.4 \sim 6)\text{mm}$	$U=5 \mu\text{m}$		
79	Micrometer with Dial Comparator and Indication Snap Gauge	Length	Verification Regulation of Micrometer with Dial Comparator and Indication Snap Gauge JJG 26	Lever-type Micrometer: $(0 \sim 40)\text{mm}$	$U=0.7 \mu\text{m}$		
				Lever-type Dial Caliper: $(0 \sim 200)\text{mm}$	$U=0.7 \mu\text{m}$		
80	Gauge Blocks	Length	Verification Regulation of Gauge Blocks JJG 146	$(0.5 \sim 100)\text{mm}$	$U=0.10 \mu\text{m}+1 \times 10^{-6}l_n(k=2.62)$		
				$(100 \sim 1000)\text{mm}$	$U=0.10 \mu\text{m}+1 \times 10^{-6}l_n(k=2.62)$		
81	*Current Calipers	Length	Verification Regulation of Current Calipers JJG 30	$(0 \sim 200)\text{mm}$	$U=0.01\text{mm}$		
				$(200 \sim 500)\text{mm}$	$U=0.02\text{mm}$		
				$(500 \sim 1000)\text{mm}$	$U=0.03\text{mm}$		
				$(1000 \sim 2000)\text{mm}$	$U=0.04\text{mm}$		
82	Height Caliper	Length	Verification Regulation of Height Caliper JJG 31	$(0 \sim 200)\text{mm}$	$U=0.01\text{mm}$		
				$(200 \sim 500)\text{mm}$	$U=0.02\text{mm}$		
				$(500 \sim 1000)\text{mm}$	$U=0.03\text{mm}$		
				$(1000 \sim 2000)\text{mm}$	$U=0.04\text{mm}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
83	Cylindrical Thread Gauges	Length	Calibration Specification for Cylindrical Screw Thread Gauges JJF 1345	Ring gauge with cylindrical thread: (3~100) mm	$U=3 \mu\text{m}$		
				Ring gauge with cylindrical thread: (100~200) mm			
				Cylindrical thread plug gauge: (2~100) mm	$U=3 \mu\text{m}$		
				Cylindrical thread plug gauge: (100~200) mm	$U=4 \mu\text{m}$		
84	Optical Theodolites	Angle	Verification Regulation of Optical Theodolites JJG 414	HA: (0~360)°	$U=0.3''$		
				VA: (-30°~30°)	$U=1.0''$		
85	*Scanning Electronic Microscopes(SEM)	Length	Calibration Specification for Scanning Electronic Microscopes(SEM) JJF 1916	(0~250) nm	$U=4.5\text{nm}$		
				(250~500) nm	$U=5.6\text{nm}$		
				(500~2000) nm	$U=13.2\text{nm}$		
				(2~1000) μm	$U=0.08 \mu\text{m}$		
86	*Scanning Probe Microscopes	Length	Calibration Specification for Scanning Probe Microscopes JJF 1351	X、Y direction: (0~50) μm	$U=0.15 \mu\text{m}$		
				Z 方向: (0~180)nm	$U=9.0\text{nm}$		
				Z 方向: (180~1000)nm	$U=15\text{nm}$		
87	*Imaging Probe Measuring Machines	Length	Calibration Specification for Imaging Probe Measuring Machines JJF 1318	(0~500)mm	$U=0.6 \mu\text{m}+0.7 \times 10^{-6}L$		



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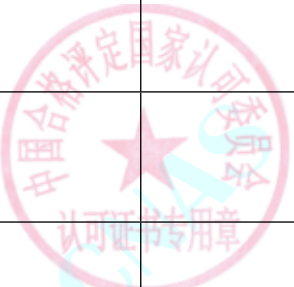
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
88	*Articulated Arm Coordinate Measuring Machines	Length	Calibration Specification for Articulated Arm Coordinate Measuring Machines JJF 1408	$R: (0 \sim 1500) \text{ mm}$	$U=6 \mu\text{m}+1.0 \times 10^{-6}L$		
89	*Gauge Block comparators	Length	Calibration Specification for Gauge Block comparators JJF 1304	$(-100 \sim +100) \mu\text{m}$	$U=0.017 \mu\text{m}$		
90	*Laser Diameter Measuring Gauges	Length	Calibration Specification for Laser Diameter Measuring Gauges JJF 1250	$(0 \sim 10)\text{mm}$	$U=0.3 \mu\text{m}+7 \times 10^{-6}D$		
				$(10 \sim 30)\text{mm}$	$U=0.5 \mu\text{m}+11 \times 10^{-6}D$		
91	*The Tool Presetting Instrument	Length	Verification Regulation Of The Tool Presetting Instrument JJG 938	$(0 \sim 1000)\text{mm}$	$U=3.0 \mu\text{m}+1.7 \times 10^{-6}L$		
92	Plumb Instruments	Angle	Calibration Specification for Plumb Instruments JJF 1081	$-25'' \sim +25''$	$U=0.6''$		
93	Plain Limit Gauges	Length	Verification Regulation of Plain Limit Gauges JJG 343	$(1 \sim 50) \text{ mm}$	$U=0.5 \mu\text{m}$		
				$(50 \sim 150)\text{mm}$	$U=0.9 \mu\text{m}$		
				$(150 \sim 200)\text{mm}$	$U=1.4 \mu\text{m}$		
94	Pi Tapes	Length	Calibration Specification for Pi Tapes JJF1423	$9\text{mm} \sim 16\text{m}$	$U=0.01\text{mm}+8 \times 10^{-6}L$		
95	*Projectors	Length	Calibration Specification for Projectors JJF1093	$(0 \sim 500)\text{mm}$	$U=0.7 \mu\text{m}+1 \times 10^{-5}L$		
96	Electronic Tachometer Total Station	Angle	Verification Regulation of Electronic Tachometer Total Station JJG 100	$HA: 0^\circ \sim 360^\circ$	$U=0.3''$		
97	*Contact (Stylus)Surface Contour Tester	Length	Calibration Specification for Contact (Stylus) Surface Contour Tester JJF(Lu)127	$(0 \sim 200)\text{mm}$	$U=0.3 \mu\text{m}+3 \times 10^{-5}L$		
		Angle		$0^\circ \sim 180^\circ$	$U=40''$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
98	*Gear Measuring Centers	Length	Calibration Specification for Gear Measuring Centers JJF 1561	Tooth profiler r_b : (24~100)mm	$U=1.2 \mu m$		
				Tooth profiler r_b : (100~200)mm	$U=1.9 \mu m$		
				Spiral: β (0~30)°	$U=1.4 \mu m$		
				pitch: m (0.5~10)mm	$U=1.4 \mu m$		
99	*Gear Helix Measuring Instruments	Length	Calibration Specification for Gear Helix Measuring Instruments JJF 1122	Spiral: β (0~30)°	$U=1.4 \mu m$		
100	*Squarness measuring device	Verticality	Calibration Specification for Squarness measuring device SDIM/CJGCD 030	H : (0~1000) mm	$U=0.25 \mu m+0.25 \times 10^{-6}L$		
101	Material Measures of Length Measuring Instrument with Optical Principle	Angle	Calibration Specification for Material Measures of Length Measuring Instrument with Optical Principle JJF 1941	Cone angle: (0~45) °	$U=1.5''$		
				Cube: 90°	$U=0.5''$		
				Knife Edge Square: 90°	$U=0.9''$		
		Eveness		Square Template Straight Edge (50~200) mm	$U=0.1 \mu m$		
		length		Cross wire core shaft: L (100~200) mm Φ 15mm×122mm	$U=2.6 \mu m$		
102	Sounding Steel Measuring Tapes Zero Test Device	Length	Calibration Specification for Sounding Steel Measuring Tapes Zero Test Device SDIM/CJGCD 028	(0~500) mm	$U=0.05mm$		
103	Telescope Rangefinders	Length	Calibration Specification for Telescope Rangefinders JJF 1704	(0~1224) m	$U=0.2m$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
104	Linear displacement sensor	Length	Calibration Specification for Linear Displacement Sensors JJF 1305	(0~100) mm	$U=1 \mu m$		
				(100~200) mm	$U=3 \mu m$		
105	Dial Snap Gauges	Length	Calibration Specification for Dial Snap Gauges JJF 1253	Range: (0~100) mm	$U=9 \mu m$		
106	Comparators of Machine Type	Length	Verification Regulation of Comparators of Machine Type JJG 39	(0~1000) μm	$U=0.08 \mu m$		
107	Micrometers with Gauge	length	Verification Regulation of Micrometers with Gauge JJG 427	(0~100)mm	$U=2.0 \mu m$		
108	*Projectors for Detecting the notch of test sample	length	C.S.for Projectors for Detecting The Notch of Test Sample JJF(Zhe)1133	radius of the arc: (11.25~53.5) mm	$U=5.2 \mu m$		
				workbench scale: (0~75)mm	$U=0.1mm$		
		Angle		43° ~47°	$U=2'$		
		Magnification ratio		50X	$U_{rel}=0.34\%$		
109	*bottom wall thickness measuring instrument	Length	Calibration Specification for bottom wall thickness measuring instrument JJF(Ji) 152	(0~20) mm	$U=2.2 \mu m$		
110	*Small Angle Testers	Length	Calibration Specification for Optical 3D Measuring SystemsBased on Structured Light Scanning JJF 1951	(16~320)mm	$U=1 \mu m+5 \times 10^{-6}L$		
				(320~500)mm	$U=6 \mu m$		
				(500~1500)mm	$U=2 \mu m+5 \times 10^{-5} L$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
111	Verification Regulation of Small Angle Testers	Angle	Verification Regulation of Small Angle Testers JJG 300	(0~20)mm/m	$U=0.2 \mu\text{m/m}$		
112	Creepage Distance (Clearance) Test Card	Length	Calibration Specification for Creepage Distance (Clearance) Test Card JJF(Shan)105	(0~25mm)	$U=8 \mu\text{m}$		
113	Standard Block of Ultrasonic Thickness Instruments	Length	Calibration Specification for Standard Block of Ultrasonic Thickness Instruments JJF(Wan) 139	(0~200) mm	$U=2 \mu\text{m}$		
114	Test Finger for Safety Regulationr	Length	Calibration Specification of Test Finger for Safety Regulationr JJF (Yu) 324	(0~200) mm	$U=0.01\text{mm}$		
		Angle		(0~360) °	$U=10'$		
115	Screw Thread Micrometers	Length	Verification Regulation of Screw Thread Micrometers JJG 25	(0~50)mm	$U=1 \mu\text{m}$		
				(50~200)mm	$U=2 \mu\text{m}$		
				Proof bar: (25~50)mm	$U=0.7 \mu\text{m}$		
				Proof bar: (50~100)mm	$U=0.9 \mu\text{m}$		
				Proof bar: (100~175)mm	$U=1.0 \mu\text{m}$		
116	*Optical Shaft Measuring Instrument	Length	Calibration Specification for Optical Shaft Measuring Instrument JJF 1933	D (0~110) mm	$U=0.8 \mu\text{m}+2.4 \times 10^{-6}D$		
		Length		L : (0~300) mm	$U=1.6 \mu\text{m}+4.0 \times 10^{-6}L$		
117	*White Light Interference Profiler	Length	Calibration Specification for Quick Video Measuring Machines JJF (Wan) 146	vertical direction: (0~1) μm	$U=11\text{nm}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				horizontal direction: (0~10) μm	$U=9.1\text{nm}$		
		Roughness		$R_a: (0.01\sim4.09) \mu\text{m}$	$U=0.11 \mu\text{m}$		
118	*Quick Video Measuring Machines	Length	Calibration Specification for Quick Video Measuring Machines JJF (皖) 146	(0~200) mm	$U=0.7 \mu\text{m}$		
119	Concentricity detector	Concentricity	Calibration Specification for Concentricity Testers JJF(Su)279	(0~50mm)	$U=1.5 \mu\text{m}$		
120	Rubber and plastic film thickness gauge	Length	Calibration specification for rubber and plastic film ges JJF1488	Plastic Film Gage: (0~1)mm Rubber Film Gage: (0~30)mm	$U=2 \mu\text{m}$ $U=3 \mu\text{m}$		
121	Depth dial gauge	Length	Verification Regulation of Depth Dial Gauge JJG830	(0~300)mm	$U=2.4 \mu\text{m}$		
122	Plugs And Socket-outlets Guages for Household and Similar Purposes	Length	Calibration Specification for Plugs And Socket-outlets Guages for Household and Similar Purposes JJF (Zhe) 1119	(0~100) mm	$U=5 \mu\text{m}$		
		Angle		(0~360)°	$U=10'$		
123	Putty film flexibility tester	Length	Calibration Specification for Putty Film Flexibility Testers JJF (Petrochemicals)003	(0~10) mm	$U=0.2\text{mm}$		
124	Three-pin Thickness Gauges	Length	Calibration Specification for Three-pin Thickness Gauges SDIM/CJGCD34	(0~50)mm	$U=0.4\text{mm}$		
125	Standard Sample Sampler for Quantitative Determination	Length	Calibration Specification for Standard Sample Sampler for Quantitative Determination JJF(Lu)205	(0~150) mm	$U=0.10\text{mm}$		



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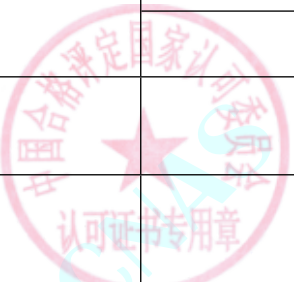
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date	
126	Thickness Tester for Paper and Board	Length	Thickness Tester for Paper and Board JJG (Light Industry) 50.1	(0~4) mm	U=0.6 μ m			
127	Center Distance Calipers	Length	Calibration Specification for Center Distance Calipers JJF (Lu) 162	(0~500) mm	U=0.03mm			
128	Inside Calipers	Length	Calibration Specification for Inside Calipers JJF (Zhe) 1091	(0~500) mm	U=0.01mm			
129	*Laser Confocal Microscopes	Length	Calibration Specification for Laser Confocal Microscopes JJF 2160	horizontal direction: (500nm~5 μ m)	U _{rel} =1.0%			
				horizontal direction: (5 μ m~20 μ m)	U _{rel} =0.9%			
				vertical direction: (500nm~10 μ m)	U _{rel} =1.1%			
130	*Building Glass Optical Thickness Gauge	Length	Calibration Specification for Optical Thickness Meters of Building Glass JJF(Building materials) 159	(0~35) mm	U=0.08mm			
131	*Biological microscope	Magnification	Calibration Specification of biohgical Miconscope JJF 1402	4X~100X	U _{rel} =1.2%			
		Length		(0~10) mm	U=4 μ m			
2、Mechanics measuring instrument								
1	Cold Potable Water Meter	Flow	Verification Regulation of Cold Potable Water Meters JJG 162	DN50~DN300: (0.1~600)m³/h, Master meter method	U _{rel} =0.27%			
				DN50~DN300: (0.1~120)m³/h, Mass Method	U _{rel} =0.20%			



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				DN15~DN50: (0.002~50)m ³ /h, Mass Method	$U_{rel}=0.30\%$		
2	Hot Water Meter	Flow	Verification Regulation of Hot Water Meters JJG 686	DN15~DN50: (0.006~30)m ³ /h, Mass Method	$U_{rel}=0.21\%$		
				DN50~DN300: (0.1~120)m ³ /h, Mass Method	$U_{rel}=0.18\%$		
				DN50~DN300: (0.5~600)m ³ /h, Master meter Method	$U_{rel}=0.25\%$		
3	Heat Meter	Flow	Verification Regulation of Heat Meters JJG 225	DN50~DN300: (0.1~120)m ³ /h, Mass method	$U_{rel}=0.16\%$		
				DN50~DN300: (0.5~600)m ³ /h, Master meter Method	$U_{rel}=0.23\%$		
				DN15~DN50: (0.006~30)m ³ /h, Mass method	$U_{rel}=0.21\%$		
		Heat		(0.01~999999999) kWh	$U_{rel}=0.12\%$		
		Temperature		(0.1~300)°C	$U=0.014^{\circ}\text{C}$		
		temperature difference		(2~175)K	$U=0.021\text{K}$		
4	*Verification Facilities for Heat Meters	Flow	Verification Regulation of Verification Facilities for Heat Meters JJG(Lu) 65	(0.006~30)m ³ /h	$U_{rel}=0.1\%$		
5	Ultrasonic Flowmeters	Flow	Verification Regulation of Ultrasonic Flowmeters JJG 1030	Liquid, DN50~DN100: (0.1~120)m ³ /h, Mass Method	$U_{rel}=0.16\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Liquid, Master meter method: DN50~ DN300, (0.1~ 600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		
6	Electromagnetic Flowmeters	Flow	Verification Regulation of Electromagnetic Flowmeters JJG 1033	DN50~DN100: (0.1~ 120)m ³ /h, Mass method	$U_{rel}=0.16\%$		
				DN50~DN300: (0.1~ 600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		
7	Liquid Positive Displacement Flowmeter	Flow	Verification Regulation of Liquid positive displacement flowmeter JJG 667	DN50~DN100: (0.1~ 120)m ³ /h, Mass method	$U_{rel}=0.16\%$		
				DN50~DN300: (0.1~ 600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		
8	Goriolis Mass Flowmeter	Flow	Verification Regulation of Goriolis Mass Flow Meters JJG 1038	liquid, DN50~ DN100: (0.1~ 120)m ³ /h, Mass method	$U_{rel}=0.15\%$		
				gas, DN2~DN15: (0.016~6)m ³ /h	$U_{rel}=0.6\%$		
9	Differential pressure flowmeters	Flow	Verification Regulation of Differential pressure flowmeters JJG 640	Liquid, DN50~ DN100: (0.1~ 120)m ³ /h, Mass method	$U_{rel}=0.16\%$		
				Liquid, DN50~ DN300: (0.1~ 600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Gas, DN25~DN200: (1~4200) m ³ /h	$U_{rel}=0.5\%$		
10	*Compressed natural gas dispensers	Flow	Verification Regulation of Compressed natural gas dispensers JJG996	(1~25)kg/min	$U_{rel}=0.28\%$		
11	*Weirs and Flumes for Flow Measurement	Flow	Verification Regulation of Weirs and Flumes for Flow Measurement JJG711	(0.25~1000) m ³ /h	$U_{rel}=1.2\%$		
12	Vertical metal tank	capacity	Verification Regulation of Vertical Metal Tank Capacity JJG 168	(20~100)m ³	$U_{rel}=0.3\%$		
				(10~700)m ³	$U_{rel}=0.20\%$		
				(700~100000)m ³	$U_{rel}=0.10\%$		
13	Road Tankers	Capacity	Verification Regulation of Tank cars capacity JJG133	(20~100)m ³	$U_{rel}=0.21\%$		
14	Float Meter	Flow	Verification Regulation of Float Meter JJG 257	Gas, (0.0006~0.016) m ³ /h	$U=0.6\%FS$		
				Gas, (0.016~6) m ³ /h	$U=0.28\%FS$		
				Gas, (6~30) m ³ /h	$U=0.6\%FS$		
				Liquid, DN15~DN50: (0.002~50) m ³ /h	$U_{rel}=0.10\%FS$		
15	Flow Integration Meters	Flow	Verification Regulation of Flow Integration Meters JJG 1003	(0.00001~999999)m ³ /h	$U_{rel}=0.023\%$		
16	Vortex-shedding Flowmeter	Flow	Verification Regulation of Vortex-shedding Flowmeter JJG 1029	Gas, DN2~DN15: (0.016~1) m ³ /h	$U_{rel}=0.4\%$		
				Gas, DN25~DN200: (1~4200) m ³ /h	$U_{rel}=0.5\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
17	turbine flowmeters	Flow	Verification Regulation of Turbine Flowmeter JJG 1037	Liquid, DN50~DN100: (0.1~120)m ³ /h, Mass Method	$U_{rel}=0.16\%$		
				Liquid, DN50~DN300: (0.1~600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		
				Gas, DN2~DN15: (0.016~1) m ³ /h	$U_{rel}=0.28\%$		
				Gas, DN25~DN200: (1~4200) m ³ /h	$U_{rel}=0.4\%$		
18	Thermal Mass Gas Flowmeter	Flow	Verification Regulation of Thermal Mass Gas Flowmeters JJG 1132	liquid, DN50~DN100: (0.1~120)m ³ /h, Mass Method	$U_{rel}=0.16\%$		
				Liquid, DN50~DN300: (0.1~600)m ³ /h, Master meter method	$U_{rel}=0.3\%$		
19	Gas Displacement Meters	Flow	Verification Regulation of Gas Displacement Meters JJG 633	DN2~DN15: (0.016~1) m ³ /h	$U_{rel}=0.4\%$		
				DN25~DN200: (1~4200) m ³ /h	$U_{rel}=0.4\%$		
20	Wet Gas Meters	Flow	Calibration Specification for Wet Gas Meters JJF 1357	DN2~DN15: (0.016~6)m ³ /h	$U_{rel}=0.28\%$		



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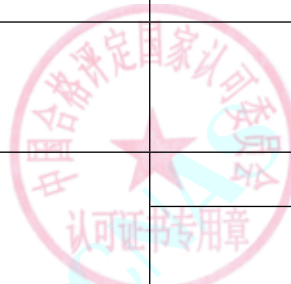
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
21	Soap Film Flowmeter	Flow	Verification Regulation of Soap Film Flowmeter JJG 586	100mL/min~40L/min	$U_{rel}=0.3\%$		
22	Leaks	Leak Rates	Calibration Specification for Reference Leaks by Soap Film Flowmeter JJF 1627	1mL/min~4L/min	$U_{rel}=2.6\%$		
23	Orifice Flowmeter	Flow	Calibration Specification for Orifice Flowmeters JJF 2033	DN15~DN200: (0.016~4200)m ³ /h	$U_{rel}=0.48\%$		
24	Working Glass Container	capacity	Verification Regulation of Glass Measuring Apparatus in common use JJG196	0.1mL~2000mL	$U_{rel}=0.034\%$		
25	Digital titrators	capacity	Calibration Specification for Digital titrators JJF(鲁) 172	(1~100)mL	$U=(1.1\sim9.7)\mu L$		
26	micro sampling syringes	capacity	Calibration Specification of Micro Sampling Syringes JJF(鲁) 173	(0.1~1000) μL	$U=(0.006\sim0.68)\mu L$		
27	Plastic Containers	capacity	Calibration Specification for Plastic Containers JJF(吉) 108	(0.1~5000) mL	$U=(0.001\sim6)mL$		
28	Locomotive Pipette	capacity	Verification Regulation of Locomotive Pipette JJG 646	0.1 μL ~10mL	$U=(0.007\sim8)\mu L$		
29	Ultrasonic gas meters	flow	Verification Regulation of Ultrasonic gas meters JJG 1190	(0.016~40) m ³ /h	$U_{rel}=0.4\%$		
30	Diaphragm Gas Meters	flow	Verification Regulation of Diaphragm Gas Meters JJG 577	(0.016~40) m ³ /h	$U_{rel}=1.1\%$		
31	*Standard Facilities for Liquid Flowrate	Flow	Verification Regulation of Standard Facilities for Liquid Flowrate JJG 164	DN6~DN1000: (0.002~10000) m ³ /h	$U_{rel}=0.04\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
32	*Flow Standard Facilities by Master Meter Method	Flow	Verification Regulation of Flow Standard Facilities by Master Meter Method JJG 643	DN6~DN1000: (0.002~10000) m³/h	U _{rel} =0.08%		
33	*Verification Facility for Water Meters	Flow	Verification Regulation of Verification Facility for Water Meters JJG 1113	DN6~DN1000: (0.002~10000) m³/h	U _{rel} =0.10%		
34	Plate washer	Time	Calibration Specificaion of Plate washer SDIM/CJGYL 13	(1~ 600)s	U=1.9s		
		Volume		(0.1~300) μ L	U=0.1 μ L		
35	*Cupping Testing Machine	Length	CupVerification Regulation of ping Testing Machine JJG 583	(0~16)mm	U=0.01mm		
		Force		(0.1~10)kN	U=1%		
36	*Bending testing machine	Angle	Calibration Specification for Bending Tester JJF(陕) 065	(0~90) °	U=0.5°		
37	Standard orifice plate	Length	Verification Regulation of Differential pressure flowmeters JJG 640	Diameter: (12.5~300) mm	U=(3+0.005L) μ m,L-mm		
				Diameter: (300~800) mm	U=(18+0.012L) μ m,L-mm		
3、Acoustics measuring instrumen							
1	*Medical Ultrasonic Diagnostic Ultrasonic Source	Sound Power	V.R.of Medical Ultrasonic Diagnostic Ultrasonic Source JJG 639	(10~100) mW	U _{rel} =10%		
2	Pure-tone Audiometers	Frequency	V.R.of Audiological Equipment Pure-tone Audiometers JJG 388	(125~8000)Hz	U _{rel} =0.1%		
		Total harmonic distortion		0.1%~10%	U=12%FS		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Reference equivalent threshold sound pressure levels		(2~130) dB, 125Hz~8kHz	$U=1.1\text{dB}$		
		Reference equivalent threshold force level		(20~90) dB, 250Hz~8kHz	$U=1.4\text{dB}$		
3	Aural Impedance Audiometers	Sound pressure level	Verification Regulation of Audiometric Equipment— Instruments for the Measurement of Aural Acoustic Impedance/Admittance JJG 991	(40~90)dB, 226Hz	$U=0.9\text{dB}$		
		Pressure		(-8~8)kPa	$U=0.04\text{kPa}$		
		Frequency		(125~8000)Hz	$U_{\text{rel}}=0.1\%$		
		Volume		(0.2~5) cm^3	$U_{\text{rel}}=1.6\%$		
4	*Ultrasonic source for ultrasonic Doppler foetal monitor	Sound Power	V.R.of Ultrasonic Source for Ultrasonic Doppler Fetal Monitor JJG 394	(10~100) mW	$U_{\text{rel}}=10\%$		
5	Ultrasonic Power Meter for Milliwatt Level	Ultrasonic Power	V.R.of Ultrasonic Power Meter for Milliwatt Level JJG 665	(1~500)mW	$U_{\text{rel}}=6\%$		
6	*Ultrasonic Bone Sonometers	Sound velocity	Calibration Specifications for Ultrasonic Bone Sonometers JJF 1649	Radius: (2500~3000) m/s	$U=28\text{m/s}$		
		Sound velocity		Calcaneus: (1400~1700) m/s	$U=16\text{m/s}$		
7	*Ultrasonic flaw detectors	Attenuation	Verification Regulation of Ultrasonic flaw detectors JJG 746	(1~81)dB	$U=0.2\text{dB}$		
		Frequency		(0.5~25)MHz	$U_{\text{rel}}=1\%$		



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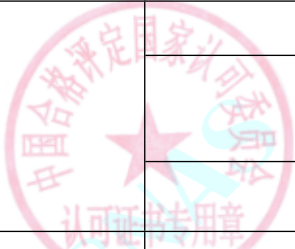
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Linearity of time base		20%~80%	$U=1.0\%$		
		Linearity of vertical display		5%~90%	$U=1.5\%$		
8	*Ultrasonic phased array flaw detectors	Length	Calibration Specification for Ultrasonic Phased Array Flaw Detectors JJF 1338	Imaging resolution: (0~5)mm	$U=0.02\text{mm}$		
				Imaging geometric dimension:(0~60)mm	$U=0.02\text{mm}$		
		Angle		15° ~120°	$U=1^\circ$		
9	Acoustic Detector	Time of transmitted sound	Verification regulation of Acoustic Detector JJG 990	Sound signal:(10~2000) μs	$U_{\text{rel}}=0.3\%$		
				Electric signal:(10~2000) μs	$U_{\text{rel}}=0.15\%$		
4、Optics measuring instrument							
1	*Beer Colorimeters	Chroma	Verification Regulation of Beer Colorimeters JJG 923	(1.75~5.25)EBC	$U=0.7\text{EBC}$		
				(5.5~11.5)EBC	$U=0.8\text{EBC}$		
2	*Reflectometers	Reflectivity	Calibration Specification for Reflectometers JJF 1232	$R_Y:60\sim90$	$U=1.3$		
3	*Diffuse Transmission Visual Densitometer	transmission density	Verification Regulation of Diffuse Transmission Visual Densitometer JJG 920	D:0~2.0	$U=0.02$		
				D:2~5.0	$U=0.03$		
4	*Black and White Step Tablet	transmission density	Verification Regulation of Black and White Step Tablet JJG 452	D:0~2	$U=0.018$		
				D:2~4	$U=0.024$		
				D:4~5	$U=0.030$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
5	Optical Power Meters	Optical Power	Verification Regulation of Optical Power Meters in Telecommunication JJG 965	(-90~-0.1)dBm (1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
				(0.1~10)dBm (1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
6	Stabilized Laser Sources for Optical Transmit	Optical Power	Verification Regulation of Stabilized Laser Sources for Optical Transmit JJG 958	(-90~-0.1)dBm (1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
				(0.1~10)dBm (1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
		Center Wavelength	(600~1700)nm	<i>U</i> =0.19nm			
7	*Optical Time Domain Reflectometer	Center Wavelength	Verification Regulation of Optical Time Domain Reflectometer JJG 959	(600~1700)nm	<i>U</i> =0.18m		
		Position		13km (1310nm, 1550nm)	<i>U</i> =0.6m		
		Loss		1310nm: (4~5) dB, 1550nm: (2~3) dB	<i>U</i> =0.04dB/dB		
8	Optical Attenuator for Telecommunication	Amount of Attenuation	Calibration Specification for Optical Attenuator for Telecommunications JJF 1199	(0~80) dB (1310nm, 1550nm)	<i>U</i> =0.19 dB		
9	Optical Spectrum Analyzers in Telecommunication	Wavelength	Verification Regulation of Optical Spectrum Analyzers in Telecommunication JJG 1035	(600~1700)nm	<i>U</i> =0.18nm		
		Optical Power		(-90~-0.1)dBm(1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
				(0.1~3)dBm(1310nm, 1550nm)	<i>U</i> _{rel} =2.4%		
10	*Whiteness Meter	Whiteness	Verification Regulation of Whiteness Meter JJG 512	Whiteness Meters R ₄₅₇ : 60~90	<i>U</i> =1.2		



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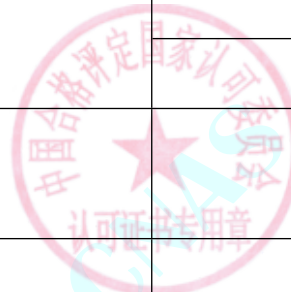
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Whiteness-plate R ₄₅₇ : 0~100	U=1.2		
11	*Colorimeters and Color Difference Meters	Chroma	Verification Regulation of Colorimeters and Color Difference Meters JJG 595	Tristimulus Values Y:(1~80), Color Coordinnate x,y:All Color Areas	Tristimulus Values Y:U=0.9; Color Coordinnate x,y: U=0.007		
12	*Specular Gloss Meters and Gloss Plates	Gloss (Specular Gloss Meters)	Verification Regulation of Specular Gloss Meters and Gloss Plates JJG 696	(0.0~120)GU	U=1.1 GU		
		Gloss (Gloss Plates)		(0.0~120)GU	U=1.2GU		
13	Illuminance Mete	Illuminance	Verification Regulation of Illuminance Mete JJG 245	(30~200)lx	U _{rel} =1.4%		
				(200~2000)lx	U _{rel} =1.9%		
				(2000~3000)lx	U _{rel} =2.1%		
14	Ultraviolet Radiometers	Irradiance	Verification Regulation of Ultraviolet Radiometers JJG 879	UVA ₁ : (10~1000)μW/cm ²	U _{rel} =21%		
				UVC: (10~800)μW/cm ²	U _{rel} =20%		
15	Cathode Ray Tubes(CRT) Color Analyzers	Chroma	Calibration Specification of Cathode Ray Tubes(CRT) Color Analyzers JJF 1079	Color Coordinnatex,y:All Color Areas	U _x =0.004, U _y =0.004		
		Luminance		(20~240)cd/m ²	U _{rel} =3.1%		
16	Luminance Meter	Luminance	Verification Regulation of Luminance Meter JJG 211	(10~20)cd/m ²	U _{rel} =2.6%		
				(20~200)cd/m ²	U _{rel} =2.8%		
				(200~800)cd/m ²	U _{rel} =3.0%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
17	*Particulate Analyzer	Particle Count	Calibration Specification for Particulate Analyzer JJF 1290	(1000~1500)grain/mL	<i>U</i> _{rel} =4.9%		
18	*Clarity Test Equipment	Illuminance	Calibration Specification for Clarity Test Equipment JJF 1287	(20~3000)lx	<i>U</i> _{rel} =6.4%		
19	*Hazemeter	Haze	Calibration Specification for Hazemeter JJF 1303	1~30	<i>U</i> =0.32		
		Transmittance		0.7~0.9	<i>U</i> =0.008		
20	Lamp for Total Luminous Flux	Luminous Flux	Verification Regulation of Standard Incandescent Lamp for Total Luminous Flux JJG 247	(100~2000)lm	<i>U</i> _{rel} =2.7%		
21	Lamp of Luminous Intensity	Luminous Intensity	Verification Regulation of Standard Lamp of Luminous Intensity JJG 246	(100~1000)cd	<i>U</i> _{rel} =1.2%		
22	Radiation Fluxmeters	Radiation	Calibration Specification for Radiation Fluxmeters JJF 1572	(0.1~2)kW/m ²	<i>U</i> _{rel} =4.4%		
23	UV Analyzer	Peak Wavelength	Calibration Specification for UV Analyzers JJF 1936	(200~400)nm	<i>U</i> =0.7 nm		
		Irradiance		UVA ₁ : (10~2000)μW/cm ²	<i>U</i> _{rel} =21%		
				UVC: (10~1000)μW/cm ²	<i>U</i> _{rel} =20%		
24	*Industrial radiographic illuminators	Luminance	Calibration Specification for Industrial Radiographic Illuminators SDIM/CJGGH 09	(1~3×10 ⁴)cd/m ²	<i>U</i> _{rel} =4.2%		
25	*Standard Light-box Sources	Illuminance	Verification Regulation of Standard Light-box Sources JJG(Textile) 066	(20~3000)lx	D65: <i>U</i> _{rel} =2.0%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Correlated Color Temperature		(2300~9500)K	$U_{rel}=2.0\%$		
26	*Diamond Lamps	Correlated Color Temperature	Calibration Specification for Diamond Lamps SDIM/CJGGH 22	(5000~8000)K	$U_{rel}=1.4\%$		
		Illuminance		(20~3000)lx	$U_{rel}=2.0\%$		
27	*Lovibond Comparable Colorimeter	Chroma (Lovibond)	Verification Regulation of Lovibond Comparable Colorimeter JJG 758	R:0.1~9.9; Y:0.1~9.9; B:0.1~9.9	R: $U=0.4$; Y: $U=0.4$; B: $U=0.4$	Except for: Bulb pairing	
				R:10.0~79.9; Y:10.0~79.9; B:10.0~49.9	R: $U=1.1$; Y: $U=1.1$; B: $U=0.8$		
28	*Gel Documentation Systems	Illuminance	Calibration Specification for Gel Documentation Systems JJF 1530	(20~3000)lx	$U_{rel}=5\%$	Except for: Resolution; Gray scale; Signal-to-noise ratio	
29	*Reflection Densitometer	optical density	Calibration Specification for Reflection Densitometer JJF 1492	Dv:0.08~1.0	$U=0.02$		
				Dv:1.0~2.0	$U_{rel}=2.0\%$		
				D _C ,D _M ,D _Y :0.08~1.0	$U=0.03$		
				D _C ,D _M ,D _Y :1.0~2.0	$U=0.04$		
30	Color Standard Plates	Chroma	Verification Regulation of Color Standard Plates JJG 453	tristimulus values Y: values Y:(0.0~100.0); color coordinate x,y:all color areas	tristimulus values Y: $U=1.2$, color coordinate x,y: $U=0.0050$		
31	*Semiconductor Lasers	Optical Power	Calibration Specification for Semiconductor Lasers SDIM/CJGGH 23	1W~110W	$U_{rel}=4.5\%$		



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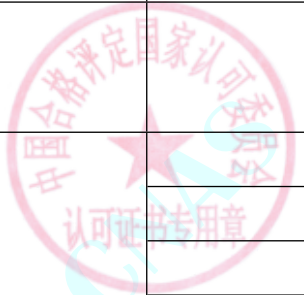
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
32	*Water Colorimeters	Chroma	Calibration Specification for Water Colorimeters JJF 1689	Digital Instruments: (5~500) PCU	$U_{rel}=2.0\%$		
				Visual Instruments: (5~500) PCU	$U=7PCU$		
33	*Petroleum Products Colorimeters & Filters	Chroma	Calibration Specification for Petroleum Products Colorimeters & Filters JJF 1526	Petroleum Products Colorimeters: Automatic Instruments: (0.5~8.0) Color number	$U=0.4$ Color number		
				Petroleum Products Colorimeters: Visual Instruments: (0.5~8.0) Color	$U=0.7$ Color		
				Saibote Colorimeter: Automatic Instruments: (-7~26) Color number	$U=1.2$ Color number		
				Petroleum Products Colorimeters Filters: Color Coordinnate x,y:	$U=0.004$		
				Saibote Colorimeter Filters: Color Coordinnate x,y: All Color Areas	$U=0.004$		
		Wavelength		(400~900) nm	$U=0.7nm$		
		Transmittance		(5~35) %	$U=0.2\%$		
34	UV Fashlight	Irradiance	Calibration Specification for UV Fashlights SDIM/CJGGH 31	$1 \mu W/cm^2 \sim 20mW/cm^2$	$U_{rel}=17\%$		
		Wavelength		(250~400)nm	$U=0.7nm$		
		Angle		(0~80) °	$U=1.6^\circ$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
35	*Smoke Telescopes	Ringemann blackness	Calibration Specification for Ringemann smoke blackness monitoring equipment JJF(Jing)95	1~5	$U=0.12$		
36	*Laser Power Meters	laser power	Verification Regulation of 0.1mW~200W Laser Power Meters JJG 249	660nm: 0.1mW~300mW; 1064nm: 0.1mW~300mW	$U_{rel}=4\%$		
37	Haze Tablets	Haze	Calibration Specification for Haze Tablets JJF 1814	1~30	$U=0.31$		
		Transmittance		0.000~1.000	$U=0.008$		
38	Calibrators for Headlamp Tester of Motor Vehicle	luminous intensity	Verification Regulation of Calibrators for Headlamp Tester of Motor Vehicle JJG 967	(80~300000)cd	$U_{rel}=2.0\%$		
		axis angle		-2° ~2°	$U=1.2'$		
39	*Polarimeters	phase retardation	Calibration Specification for Polarimeters JJF 1497	0° ~540°	$U=2^\circ$		
		Light Source Spectrum		(380~780)nm	$U=0.5\text{ nm}$		
40	*Platinum-Cobalt Colorimeters	Platinum-Cobalt Chroma	Platinum-Cobalt Colorimeters JJF 1947	(0.1~500) PCU	$U_{rel}=2.4\%$		
41	Standard Neutral Filter for Automobile Test Equipment	Transmittance	Calibration Specification of Standard Neutral Filter for Automobile Test Equipment JJF 2046	(0~100) %	$U=0.5\%$		
42	*Illuminance and Ultraviolet Irradiance Test Chamber	Illuminance	Calibration Specification of Illuminance and Ultraviolet Irradiance Test Chamber JJF(Jin) 103	(10~5000) lx	$U_{rel}=3.2\%$		
		UV irradiance		(200~1000) $\mu\text{W}/\text{cm}^2$	$U_{rel}=9.7\%$		
		Temperature		(10~100) °C	$U=0.3^\circ\text{C}$		
		Humidity		40%RH~95%RH	$U=2.2\%\text{RH}$		



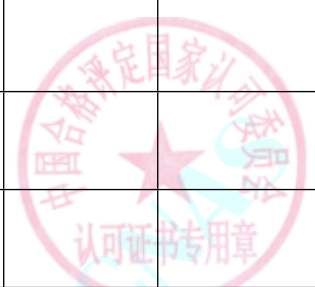
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
43	Ultraviolet Radiant Exposure Meters	Radiant exposure	Calibration Specification for Ultraviolet Radiant Exposure Meter JJF 2130	UVA1: (10~ 1800)mJ/cm ² UVC: (10~360)mJ/cm ²	$U_{rel}=18\%$ $U_{rel}=18\%$		
44	*The Light and Color Comprehensive Testing System of Integrating Sphere	Wavelength Luminous Flux Color Coordinnate Color Temperature	Calibration Specification for The Light and Color Comprehensive Testing System of Integrating Sphere JJF (Shan) 082	(400~800)nm (100~5000)lm (x,y):(0.4300,0.4000)~ (0.4500,0.4100) (2800~3100)K	$U=0.2nm$ $U_{rel}=2.0\%$ $U=0.0020$ $U=22K$		
45	Filter(Weakener)for Linear beam Smoke Detectors	value of light reducing	Filter(Weakener)for Linear beam Smoke Detectors JJG(Jin) 69	0.04dB~1dB 1dB~12dB 12dB~20dB	$U=0.06dB$ $U=0.6dB$ $U=3.0dB$		
46	Spectra Illuminance Meters	Illuminance Wavelength Chroma	Calibration Specification for Spectra Illuminance Meters JJF 1989	(5~1000)lx (1000~3000)lx (400~650)nm Color Coordinnate (x,y):(0.4500, 0.4100), (A standard light source)	$U_{rel}=1.4\%$ $U_{rel}=1.8\%$ $U=0.0020$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Color Coordinant (x,y) : (0.1500,0.0200)~ (0.7300,0.4700), (A standard light source and standard color- plate)	U=0.0050		
47	*Smoke Density Meter of Building Materials	Smoke Density	Calibration Specification for Smoke Density Meter of Building Materials SDIM/CJGGH33	0.05~0.95	U=0.008		
48	Reference Filter	Wavelength	Verification Regulation of Reference Filter for Calibration Spectrophotometer JJG 1034	(190~900) nm	U=0.3nm		
		Transmittance		(0~100) %	U=0.2%		
		Absorbance		0.2~4	Standard filter stray light absorbance: U=0.01		
49	*Abbe Refractometer	Refractive index	Verification Regulation of Abbe Refractometer JJG 625	n _D :1.4700~1.6725	U=4.9× 10 ⁻⁵		
5、Chemistry measuring instrument							
1	Routine Capillary Viscometers	Viscosity	Verification Regulation of Routine Capillary Viscometers JJG 155	(1~10 ⁵)mm ² /s	U _{rel} =0.3%~0.7%		
2	Rotational Viscometers	Viscosity	Verification Regulation of Rotational Viscometers JJG 1002	(1~100000)mPa·s	U _{rel} =1.0%		
3	Flow Cups Viscometers	Viscosity	Verification Regulation of Flow Cups Viscometers JJG 743	(10~1000)mm ² /s	U _{rel} =0.5%~0.7%		
4	*Turbidimeters	Turbidity	Verification Regulation of Turbidimeters JJG 880	(0.1~10)NTU	U _{rel} =3.4%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(10~400)NTU	$U_{rel}=3.2\%$		
5	*Analyzers for Oil Content in Water	Concentration	Verification Regulation of Analyzers for Oil Content in Water JJG 950	(0.1~10)mg/L	$U=0.2\text{mg/L}$		
				(10~1000)mg/L	$U_{rel}=3.3\%$		
6	*Melting-Point Measurement Instruments	Melting-Point	Verification Regulation of Melting-Point Measurement Instruments JJG 701	(40~300)°C	$U=0.2^{\circ}\text{C}$ (0.2 °C/min)		
				(40~300)°C	$U=0.3^{\circ}\text{C}$ (1.0 °C/min)		
7	*Carbon-sulfur Analyzers	Content	Verification Regulation for Carbon-sulfur Analyzers JJG 395	C: 0.005%~0.010%	$U=0.001\%$		
				C: 0.010%~0.100%	$U=0.004\%$		
				C: 0.100%~1.000%	$U=0.007\%$		
				C: 1.00%~4.00%	$U=0.02\%$		
				S: 0.003%~0.010%	$U=0.0005\%$		
				S: 0.010%~0.100%	$U=0.002\%$		
				S: 0.100%~0.200%	$U=0.004\%$		
8	*Extrusion Plastometer	Melt Flow Rate	Verification Regulation for Extrusion Plastometer JJG 878	Polyethylene: (1~3)g/10min	$U=0.17\text{g}/10\text{min}$		
				Polyethylene: (3~5)g/10min	$U=0.19\text{g}/10\text{min}$		
				Polyethylene: (5~10)g/10min	$U=0.36\text{g}/10\text{min}$		
				Polypropylene: (1~3)g/10min	$U=0.16\text{g}/10\text{min}$		
				Polypropylene: (3~5)g/10min	$U=0.24\text{g}/10\text{min}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
9	*Bomb Calorimeter	Calorific value	Verification Regulation of The Bomb Calorimeter JJG 672	(26430~26490) J/g	$U=36\text{J/g}$		
10	*Fourier Transform Infrared Spectrometers	Wave number	Calibration Specification for Fourier Transform Infrared Spectrometers JJF 1319	(4000~3000) cm^{-1}	$U=0.05\text{cm}^{-1}$		
				(3000~2000) cm^{-1}	$U=0.09\text{cm}^{-1}$		
				(2000~1100) cm^{-1}	$U=0.04\text{cm}^{-1}$		
				(1100~400) cm^{-1}	$U=0.08\text{cm}^{-1}$		
11	*Static Light Scattering Partical Size Analyzers	Particle size	Calibration Specification for Static Light Scattering Partical Size Analyzers JJF 1211	$D_{50}: (1\sim5) \mu\text{m}$	$U_{\text{rel}}=3.3\%$		
				$D_{50}: (5\sim20) \mu\text{m}$	$U_{\text{rel}}=3.1\%$		
				$D_{50}: (20\sim100) \mu\text{m}$	$U_{\text{rel}}=2.8\%$		
				$D_{50}: (100\sim120) \mu\text{m}$	$U_{\text{rel}}=2.6\%$		
12	*Oscilloscopic Polarograph	Detection Limit	Verification Regulation of Oscilloscopic Polarograph JJG 748	$\text{Cd}: \leq 20 \mu\text{g/L}$	$U=4 \mu\text{g/L}$	Except for: Resolution	
13	*Emission Spectrometer	Detection Limit	Verification Regulation of Emission Spectrometer JJG 768	C by direct reading spectrometer: $\leq 0.02\%$	$U=0.0008\%$		
				Si by direct reading spectrometer: $\leq 0.02\%$	$U=0.0009\%$		
				Mn by direct reading spectrometer: $\leq 0.02\%$	$U=0.0007\%$		
				Cr by direct reading spectrometer: $\leq 0.01\%$	$U=0.0005\%$		
				Ni by direct reading spectrometer: $\leq 0.02\%$	$U=0.0005\%$		
				V by direct reading spectrometer: $\leq 0.01\%$	$U=0.0003\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Zn by ICP-AES: $\leq 0.01\text{mg/L}$	$U=0.002\text{mg/L}$		
				Ni by ICP-AES: $\leq 0.03\text{mg/L}$	$U=0.003\text{mg/L}$		
				Mn by ICP-AES: $\leq 0.005\text{mg/L}$	$U=0.0005\text{mg/L}$		
				Cr by ICP-AES: $\leq 0.02\text{mg/L}$	$U=0.002\text{mg/L}$		
				Cu by ICP-AES: $\leq 0.02\text{mg/L}$	$U=0.002\text{mg/L}$		
				Ba by ICP-AES: $\leq 0.005\text{mg/L}$	$U=0.0003\text{mg/L}$		
14	*Gas Chromatography-Mass Spectrometers	Signal to Noise Ratio	Calibration Specification for Gas Chromatography-Mass Spectrometers JJF 1164	Ion trap (EI ⁺ ; CI ⁺ ; CI ⁻): $\geq 10:1$	$U_{\text{rel}}=15\%$		
				Single quadrupole (EI ⁺ ; CI ⁺ ; CI ⁻): $\geq 10:1$	$U_{\text{rel}}=15\%$		
				Triple quadrupole (EI ⁺ ; CI ⁺): $\geq 10:1$	$U_{\text{rel}}=15\%$		
				Time of flight (EI ⁺): $\geq 50:1$	$U_{\text{rel}}=15\%$		
				Electrostatic field track trap (EI ⁺): $\geq 50:1$	$U_{\text{rel}}=15\%$		
15	*Ultraviolet, Visible, Near-Infrared Spectrophotometers	Wavelength	Verification Regulation of Ultraviolet, Visible, Near-Infrared Spectrophotometers JJG 178	(190~900) nm	$U=0.2\text{nm}$		
				(900~2600) nm	$U=0.5\text{nm}$		
		Transmittance		10%、20%、30%	$U=0.3\%$		
16	*Atomic Absorption	Detection Limits	Verification Regulation of Atomic Absorption	Cu by flame: $\leq 0.02 \mu\text{g/mL}$	$U=0.006\mu\text{g/mL}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Spectrophotometers		Spectrophotometers JJG 694	Cd by graphite furnace: $\leq 4\text{pg}$	$U=0.5\text{pg}$		
17	*Flame Photometer	Detection Limit	Verification Regulation of Flame Photometer JJG 630	K: $\leq 0.004\text{mmol/L}$ Na: $\leq 0.008\text{mmol/L}$	$U=0.0016\text{mmol/L}$ $U=0.0026\text{mmol/L}$		
18	*Fluorescence Spectrophotometer	Detection Limit	Verification Regulation of Fluorescence Spectrophotometer JJG 537	Quinine sulphate: $\leq 5 \times 10^{-10}\text{g/ml}$	$U=7 \times 10^{-11}\text{g/ml}$	Except for Class B	
19	*Polarimeter	Optical Rotation	Verification Regulation of Polarimeter and Polarimetric Saccharimeters JJG 536	$-72^\circ \sim +72^\circ$	$U=0.003^\circ$	Except for Polarimetric Saccharimeters	
20	*Electrochemical Oxygen Meter	Concentration	Verification Regulation of Electrochemical Oxygen Meter JJG 365	$(0.1 \sim 10)\%\text{mol/mol}$ $(10 \sim 100)\%\text{mol/mol}$	$U_{\text{rel}}=1.3\%$ $U_{\text{rel}}=1.2\%$		
21	*Laboratory pH Meters	Acidity	Verification Regulation of Laboratory pH Meters JJG 119	Electrical measuring part(pH): $0 \sim 14$ Instrument(pH): $4 \sim 10$	$U=0.01$ $U=0.02$	Except for 0.001 grade	
22	*Electrolytic Conductivity Meters	Electrolytic Conductance	Verification Regulation of Electrolytic Conductivity Meters JJG 376	Electrical: $(0.1 \sim 10^4) \mu\text{S/cm}$ Instrument: $(100 \sim 2000) \mu\text{S/cm}$	$U_{\text{rel}}=0.1\%$ $U_{\text{rel}}=0.3\%$	Except for 0.2 grade	
23	Verifying Meter for pH Meters	Acidity Potential	Verification Regulation of Verifying Meter for pH Meters JJG 919	pH: $0 \sim 14$ $-2000\text{mV} \sim +2000\text{mV}$	$U=0.00006$ $U=0.01\text{mV}$		
24	*Liquid Chromatographs	Minimum detection concentration	Verification Regulation of Liquid Chromatographs JJG 705	naphthalene by UVD and DAD: $\leq 5 \times 10^{-8}\text{g/ml}$ naphthalene by FLD: $\leq 5 \times 10^{-9}\text{g/ml}$	$U_{\text{rel}}=4.5\%$ $U_{\text{rel}}=4.5\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				cholesterol by DRD: $\leq 5 \times 10^{-6} \text{g/ml}$	$U_{\text{rel}}=5.4\%$		
				cholesterol by ESD: $\leq 5 \times 10^{-6} \text{g/ml}$	$U_{\text{rel}}=5.4\%$		
25	*Mercury Analyzers	Detection Limits	Verification Regulation of Mercury Analyzers JJG 548	Absorption Type: $\leq 1.0 \text{ng}$	$U=0.1 \text{ng}$		
				Fluorescence Type: $\leq 0.1 \text{ng}$	$U=0.01 \text{ng}$		
26	*Determinators for Total Sulfur in Coal	Content	Verification Regulation of Determinators for Total Sulfur in Coal JJG 1006	0.2%~1.00%	$U=0.07\%$		
				1.00%~4.00%	$U=0.13\%$		
				4.00%~6.00%	$U=0.25\%$		
27	*Ion Chromatographs	Minimum detection concentration	Verification Regulation of Ion Chromatographs JJG 823	Chloride ion by Conductivity detector: $\leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=8.2\%$		
				Lithium ion by Conductivity detector: $\leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=8.4\%$		
				nitrite by UV detector: $\leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=8.4\%$		
				Iodide ion by Electrochemical detector: $\leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=8.3\%$		
28	*Atomic Fluorescence Spectrophotometers	Detection Limits	Verification Regulation of Atomic Fluorescence Spectrophotometers JJG 939	As: $\leq 0.4 \text{ng}$	$U=0.04 \text{ng}$		
				Sb: $\leq 0.4 \text{ng}$	$U=0.04 \text{ng}$		
29	*Gas Chromatographs	Detection Limits	Verification Regulation of Gas Chromatographs JJG 700	FID (Normal sixteen alkane): $\leq 0.5 \text{ng/s}$	$U_{\text{rel}}=3.3\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				FPD (Methyl parathion / Sulfur) : $\leq 0.5\text{ng/s}$	$U_{\text{rel}}=3.2\%$		
				FPD (Methyl parathion / Phosphorus) : $\leq 0.1\text{ng/s}$	$U_{\text{rel}}=3.4\%$		
				NPD (Azobenzene) : $\leq 5\text{pg/s}$	$U_{\text{rel}}=3.4\%$		
				NPD (Malathion / Phosphorus) : $\leq 10\text{pg/s}$	$U_{\text{rel}}=3.4\%$		
				ECD (Hexa-hexa-c) : $\leq 5\text{pg/mL}$	$U_{\text{rel}}=3.6\%$		
		Sensitivity		TCD (benzene) : $\geq 800\text{mV}\cdot\text{mL/mg}$	$U_{\text{rel}}=3.4\%$		
30	*Flue Gas Analyzers	Concentration	Verification Regulation of Flue Gas Analyzers JJG 968	O ₂ : (0.1~21)%mol/mol	$U_{\text{rel}}=1.2\%$		
				CO: (1~2000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.2\%$		
				SO ₂ : (1~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
				NO: (1~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.2\%$		
31	*Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer	Concentration	Verification Regulation of Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer JJG 635	CO: (10~10000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.3\%$		
				CO ₂ : (0.1~5)%mol/mol	$U_{\text{rel}}=1.3\%$		
32	*Alarmer Detectors of Combustible Gas	Concentration	Verification Regulation of Alarmer Detectors of Combustible Gas JJG 693	CH ₄ 、i-C ₄ H ₁₀ 、H ₂ (0.1~100)%LEL	$U_{\text{rel}}=1.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
33	*Total Organic Carbon Analyzer	Concentration	Verification Regulation of Total Organic Carbon Analyzer JJG 821	(0.1~1000)mg/L	$U_{rel}=1.2\%$		
34	*Electrophoresis Instrument	Detection limit	Verification Regulation of Capillary Electrophoresis Instrument JJG 964	Vitamin B ₆ : 1×10^{-6} g/ml	$U=2 \times 10^{-8}$ g/ml		
35	*Automatic Potentiometric Titrators	Electric Potential	Verification Regulation of Automatic Potentiometric Titrators JJG 814	(-2000~2000) mV	$U=0.3$ mV		
		Volume		(0~100)mL	$U=0.003$ mL		
		Concentration		0.1mol/L	$U_{rel}=0.5\%$		
36	*Alarmer Detector of Toxic and Harmful gases	Concentration	Calibration Specification for The Alarmer Detector of Toxic and Harmful gases SDIM/CJGGH 08	Nitrogen dioxide: (1~1000) μ mol/mol	$U_{rel}=2.3\%$		
				toluene: (1~1000) μ mol/mol	$U_{rel}=2.7\%$		
				nitric oxide: (1~3000) μ mol/mol	$U_{rel}=1.4\%$		
				Hydrogen fluoride: (1~100) μ mol/mol	$U_{rel}=3.3\%$		
				Ethanol: (1~500) μ mol/mol	$U_{rel}=1.9\%$		
				Acrylonitrile: (2~5) μ mol/mol	$U_{rel}=9.7\%$		
				formaldehyde: (1~20) μ mol/mol	$U_{rel}=3.9\%$		
37	Dissolved Oxygen Meters	Concentration	Verification Regulation of Dissolved Oxygen Meters JJG 291	(1~16)mg/L	$U=0.08$ mg/L		
38	*Quadrupole Inductively	Detection limit	Calibration Specification for Quadrupole Inductively	Be: ≤ 30 ng/L	$U_{rel}=6.2\%$		



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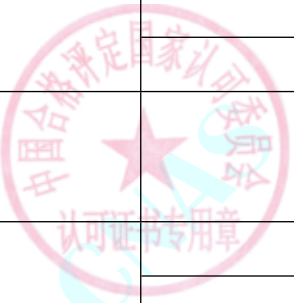
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Coupled Plasma Mass Spectrometers		Coupled Plasma Mass Spectrometers JJF 1159	In: $\leq 10\text{ng/L}$ Bi: $\leq 10\text{ng/L}$	$U_{\text{rel}}=6.0\%$ $U_{\text{rel}}=6.2\%$		
39	Airborne Particle Counter	Particle Concentration Particle size distribution Flow Time	Calibration Specification for Airborne Particle Counter JJF 1190	(1000~100000) particle/28.3L 1%~100% (0.1~100) L/min (0~1800) s	$U_{\text{rel}}=13\%$ $U_{\text{rel}}=10\%$ $U_{\text{rel}}=1.2\%$ $U=0.3\text{s}$		
40	*Liquid Chromatography-Mass Spectrometers	Signal to Noise Ratio	Calibration Specification for Liquid Chromatography-Mass Spectrometers JJF 1317	Triple quadrupole(ESI+, APCI+): $\geq 30: 1$ Triple quadrupole(ESI-): $\geq 10: 1$ Single quadrupole, ion trap (ESI+, ESI-, APCI+): $\geq 10: 1$	$U_{\text{rel}}=10\%$ $U_{\text{rel}}=10\%$ $U_{\text{rel}}=10\%$		
41	*Open/Closed Cup Flash Point Testers	Flash Point	Calibration Specification for Open/Closed Cup Flash Point Testers JJF 1384	Open Flash Point: (90~240)°C Closed Flash Point : (50~190)°C	$U=6.3^{\circ}\text{C} \sim 8.8^{\circ}\text{C}$ $U=3.1^{\circ}\text{C} \sim 4.5^{\circ}\text{C}$		
42	*Kinematic Viscosity Tester	Temperature Viscosity	Calibration Specification for Kinematic Viscosity Tester JJF 1274	(20~100) °C (1~50)mm ² /s (50~5000)mm ² /s	$U=0.012^{\circ}\text{C}$ $U_{\text{rel}}=1.5\% \sim 1.2\%$ $U_{\text{rel}}=1.1\%$		
43	*Gold Gauge Utilizing X-ray Fluorescence Spectrometry	Content	Calibration Specification for Gold Gauge Utilizing X-ray Fluorescence Spectrometry JJF 1133	37.5%~99.994%	$U=0.10\% \sim 0.039\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
44	*Elemental Analyzers	Content	Calibration Specification for Elemental Analyzers JJF 1321	kjeldahl nitrogen、 Dumas nitrogen: (10~47)%	$U_{rel}=1.3\%$		
				Organic compounds(C): (10~80)%	$U_{rel}=1.1\%$		
				Organic compounds(H): (1~10)%	$U_{rel}=1.2\%$		
				Organic compounds(S): (5~20)%	$U_{rel}=1.2\%$		
				Organic compounds(N): (5~50)%	$U_{rel}=1.2\%$		
				Steel, Alloy(O): (0.0025~0.285)%	$U_{rel}=2.8\% \sim 8.1\%$		
				Steel, Alloy(N): (0.0034~0.064)%	$U_{rel}=2.5\%$		
				Steel, Alloy(H): (0.00007~0.027)%	$U_{rel}=6.3\%$		
				Coal(C): 50%~85%	$U_{rel}=1.4\%$		
				Coal(H): 1%~5%	$U_{rel}=2.6\%$		
				Coal(N): 0.2%~2%	$U_{rel}=3.1\%$		
45	*Thermal Conductivity Hydrogen Analyzer	Concentration	Verification Regulation of Thermal Conductivity Hydrogen Analyzer JJG 663	(1~100)%mol/mol	$U_{rel}=1.7\%$		
46	*Chlorine Alarm Detectors	Concentration	Calibration Specification for Chlorine Alarm Detectors JJF 1433	(0.1~10) μ mol/mol (10~1000) μ mol/mol	$U_{rel}=3.4\%$ $U_{rel}=2.4\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
47	*Air Samplers	Flow	Verification Regulation of Air Samplers JJG 956	(0.1~6)L/min	$U_{rel}=1.5\%$		
48	*Dust Sampler	Flow	Verification Regulation of Dust Sampler JJG 520	(5~260)L/min	$U_{rel}=1.5\%$		
49	*Antibiotics Potency Analyzers	Length	Calibration Specification for Antibiotics Potency Analyzers JJF 1614	Tube plate method(diameter): 16mm~19mm	$U=0.01\text{mm}$		
		Absorbance		Turbidity method: 0.2~1.5	$U=0.006$		
50	*Residual Chlorine Meters	Concentration	Calibration Specification for Residual Chlorine Meters JJF 1609	(0.5~50) mg/L	$U_{rel}=2.0\%$		
51	*Flow Analyzers with Spectrophotography	Detection limit	Calibration Specification for Flow Analyzers with Spectrophotography JJF 1568	Volatile phenol: $\leq 0.002\text{mg/L}$	$U=0.0003\text{mg/L}$	Except for wavelength indication error	
				Cr (VI) : $\leq 0.004\text{mg/L}$	$U=0.0005\text{mg/L}$		
				sulfide: $\leq 0.005\text{mg/L}$	$U=0.0005\text{mg/L}$		
				ammonia nitrogen: $\leq 0.04\text{mg/L}$	$U=0.0016\text{mg/L}$		
				Total phosphorus: $\leq 0.01\text{mg/L}$	$U=0.0009\text{mg/L}$		
				total nitrogen: $\leq 0.04\text{mg/L}$	$U=0.0012\text{mg/L}$		
				anionic surfactant: $\leq 0.05\text{mg/L}$	$U=0.0016\text{mg/L}$		
				cyanide: $\leq 0.002\text{mg/L}$	$U=0.0002\text{mg/L}$		
52	*Water Quality On-line Analyzers of Total Phosphorus and	Concentration	Verification Regulation of Water Quality On-line Analyzers of Total Phosphorus and Total	P: (0.1~500)mg/L	$U_{rel}=2.3\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Total Nitrogen		Nitrogen JJG 1094	N: (0.1~500)mg/L	$U_{rel}=2.3\%$		
53	*Water Quality On-line Analyzers of Heavy Metals	Concentration	Calibration Specification for Water Quality On-line Analyzers of Heavy Metals JJF 1565	Cu: (0.1~100) μ g/mL	$U_{rel}=2.7\%$		
				Zn: (0.1~100) μ g/mL	$U_{rel}=2.6\%$		
				Ni: (0.1~100) μ g/mL	$U_{rel}=2.5\%$		
				Fe: (0.1~100) μ g/mL	$U_{rel}=2.6\%$		
				Mn: (0.1~100) μ g/mL	$U_{rel}=2.4\%$		
54	*Phosphate Analyzers	Concentration	Calibration Specification for Phosphate Analyzers JJF 1567	(0.1~20)mg/L	$U_{rel}=1.2\%$		
55	*Silicate Analyzers	Concentration	Calibration Specification for Silicate Analyzers JJF 1539	(0.1~2000) μ g/L	$U_{rel}=1.4\%$		
56	*Bromine Number and Bromine Index Meters	Bromine Index	Calibration Specification for Bromine Number and Bromine Index Meters JJF 1569	(0.2~1000)mg/100g	$U= (0.9\sim 26) \text{ mg/100g}$		
		Bromine Number		(0.1~300)g/100g	$U= (0.8\sim 5.2) \text{ g/100g}$		
57	*Alarms and Detectors of Chloroethylene Gas	Concentration	Verification Regulation of Alarms and Detectors of Chloroethylene Gas JJG 1125	(1~100) μ mol/mol	$U_{rel}=2.6\%$		
58	*Continuous Emission Monitoring Systems of Flue Gas Emitted from Stationary Source	Transmittance	Calibration Specification for Continuous Emission Monitoring Systems of Flue Gas Emitted from Stationary Source JJF 1585	Transmittance: (20~80)%	$U=0.7\%$	Except for Particulate matter and velocity in condition	
		Concentration		SO ₂ : (1~3000) μ mol/mol	$U_{rel}=2.2\%$		
				NO: (1~3000) μ mol/mol	$U_{rel}=1.2\%$		
				O ₂ : (0.1~30)%mol/mol	$U_{rel}=1.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
59	*Cold Filter Plugging Point Testers	Cold Filter Plugging Point	Calibration Specification for Cold Filter Plugging Point Testers SDIM/CJGGH 16	(-40~5) °C	U=3.1 °C		
		Temperature		thermostatic bath Temperature: (-67~ 0) °C	U=0.20 °C		
60	*Benzene Crystal Point Testers	Crystal point	Calibration Specification for Benzene Crystal Point Testers SDIM/CJGGH 19	(5~6) °C	U=0.11 °C		
		Temperature		thermostatic bath Temperature: (-5~ 20) °C	U=0.20 °C		
61	*Automatic Atmospheric Distillation Tester	Temperature	Calibration Specification for Automatic Atmospheric Distillation Testers JJF 2065	(50~350) °C	U=(0.7~4.7) °C		
62	Dust Concentration Measuring Instruments	Concentration	Verification Regulation of Dust Concentration Measuring Instruments JJG 846	(0.1~10)mg/m ³	U _{rel} =5%		
				(10~1000)mg/m ³	U _{rel} =4%		
63	Ozone Gas Analyzers	Concentration	Verification Regulation of Ozone Gas Analyzers JJG 1077	(0.1~1) μ mol/mol	U _{rel} =2.4%		
				(1~400) μ mol/mol	U _{rel} =5.8%		
64	*Total Suspended Particulates Sampler	Flow	Verification Regulation of Total Suspended Particulates Sample JJG 943	(80~120) L/min	U _{rel} =1.3%		
				(800~1200) L/min	U _{rel} =1.3%		
65	*Ammonia Gas Detector	Concentration	Verification Regulation of Ammonia Gas Detectors JJG 1105	(1~1000) μ mol/mol	U _{rel} =2.3%	合格评定 国家认可 CNAS 认可证书专用章	
66	Micro-oxygen Analyze	Concentration	Verification Regulation of Micro Oxygen Analyzers JJG 945	(1~1000) μ mol/mol	U _{rel} =1.3%		



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67	*Zirconia oxygen analyzer	Concentration	Verification Regulation of Zirconia oxygen analyzer JJG 535	(0.1~100)%mol/mol	U _{rel} =1.2%		
68	*Alarmer Detector of Sulfur Hexafluoride	Concentration	Calibration Specification for the Alarmer Detector of Sulfur Hexafluoride JJF 1263	(1~1000) μ mol/mol	U _{rel} =1.8%		
69	*Volatile Organic Compounds Photo Ionization Detectors	Concentration	Calibration specification for volatile organic compound photoionization detector JJF 1172	Isobutylene: (1~2000) μ mol/mol	U _{rel} =2.3%		
70	*Osmometers	Concentration	Verification Regulation of Osmometers JJG 1089	(1~400)mOsmol/kg	U=1.6mOsmol/kg		
				(400~700) mOsmol/kg	U _{rel} =0.6%		
71	*Differential Scanning Calorimetry	Temperature	Verification Regulation of Differential Scanning Calorimetry JJG 936	(100~200) °C	U=0.74 °C		
				(200~300) °C	U=0.68 °C		
				(300~400) °C	U=0.82 °C		
				(400~500) °C	U=0.90 °C		
				(500~600) °C	U=1.2 °C		
		Fusion heat		(10~40)J/g	U _{rel} =1.4%		
				(40~80)J/g	U _{rel} =0.9%		
				(80~120)J/g	U _{rel} =1.5%		
72	*Automatic Amino Acid Analyzer	Detection Limts	Verification Regulation of Automatic Amino Acid Analyzer JJG 1064	histidine: ≤1nmol	U _{rel} =9.0%		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
73	*Spectroscope	Wavelength	Calibration Specification for Spectroscope SDIM/CJGGH 21	(390~700)nm	U=0.4nm		
74	*Thermogravimetric Analyzers	Quality	Verification Regulation of Cylindrical Measuring Pin JJG 1135	(1~20) mg	U=0.011mg		
		Curie point		(100~250) °C	U=1.2℃		
				(250~500) °C	U=1.5℃		
				(500~800) °C	U=2.2℃		
			Melting point	(100~200) °C	U=0.8℃		
		(200~300) °C		U=0.7℃			
		(300~400) °C		U=0.9℃			
		(400~500) °C		U=0.9℃			
75	*Instrument for KF Coulometry Titration	Content	Verification Regulation of Instrument for KF Coulometry Titration JJG 1044	(10~1000) μ g	U _{rel} =2.0%		
				(1000~5000) μ g	U _{rel} =1.3%		
76	*Karl Fischer Volumetric Titrators for Water Content	content	Verification Regulation of Karl Fischer Volumetric Titrators for Water Content JJG 1154	(0.1~20)mg	U _{rel} =1.8%		
77	*Industrial Analyzers	Content	Verification Regulation of Industrial Analyzers JJG 1140	Ash content: (7~15)%	U=0.16%		
				Ash content: (>15~40)%	U=0.19%		
				Volatile content: (6~20)%	U=0.23%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Volatile content: (20~40)%	$U=0.33\%$		
78	*Thin Layer Chromatography Scanners	Contentration	Calibration Specification for Thin Layer Chromatography Scanners JJF 1712	(0.01~0.04)mg/mL	$U=0.0019\text{mg/mL}$		
79	*Bacterial Endotoxin Analyzers	Temperature	Calibration Specification for Bacterial Endotoxin Analyzers JJF 1529	37℃	$U=0.2^\circ\text{C}$		
80	*Alarmer Detectors of Benzene	Contentration	Calibration Specification for Alarmer Detectors of Benzene JJF 1674	(1~100) $\mu\text{mol/mol}$	$U_{\text{rel}}=2.4\%$		
81	*Ultraviolet Fluorescence Sulfur Analyzers	Content	Calibration Specification for Ultraviolet Fluorescence Sulfur Analyzers JJF 1685	(0.1~10)mg/L	$U=0.06\text{mg/L}$		
				(10~100)mg/L	$U_{\text{rel}}=2.4\%$		
				(100~1000)mg/L	$U_{\text{rel}}=1.4\%$		
82	*Saturated Vapor Pressure Tester	Pressure	Calibration Specification for Saturated Vapor Pressure Tester SDIM/CJGGH 25	32 kPa	$U=0.2\text{ kPa}$		
		Temperature		37.8℃	$U=0.14^\circ\text{C}$		
83	*Petroleum Products Carbon Residue Tester	Content	Calibration Specification for Petroleum Products Carbon Residue Tester SDIM/CJGGH 26	(0~10)%	$U=0.14\%\sim 0.32\%$		
84	*Petroleum Product Water-Soluble Acid Tester	Acidity	Calibration Specification for Water-soluble Acid Analyzer JJF 2175	3~7	$U=0.1$		
85	*Petroleum Product Acid Value Tester	Content	Calibration Specification for Petroleum Product Acid Value Tester SDIM/CJGGH 28	(0.052~3) mg/g	$U=(0.012\sim 0.16)\text{ mg/g}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
86	*Spontaneous Combustion Point Tester	Spontaneous Combustion Point	Calibration Specification for Spontaneous Combustion Point Tester SDIM/CJGGH 29	(560~610) °C	U=5.2°C		
		Temperature		(0~600) °C	U=2.4°C		
87	PM2.5 mass concentration measuring instrument	Concentration	Calibration Specification for PM2.5 mass concentration measuring instrument JJF 1659	(10~1000) μg/m ³	U _{rel} =13%		
88	*Pour Point and Cloud Point Tester of Petroleum Products	Pour Point	Calibration Specification for Pour Point and Cloud Point Tester of Petroleum Products JJF 1869	(-55~0) °C	U=2.9°C		
		Cloud Point		(-25~5) °C	U=1.9°C		
89	*Flue Gas Samplers	Flow	Verification Regulation of Flue Gas Samplers JJG 1169	(0.1~2)L/min	U _{rel} =1.2%		
		Time		(0~60)min	U=0.3s		
		Temperature		(0~50)°C	U=0.3°C		
		Pressure		(-40~40) kPa	Instrument front pressure: U=0.08kPa; Atmospheric pressure: U=0.2 kPa		
90	*Samplers for Stack Dust	Flow	Verification Regulation of Samplers for Stack Dust JJG 680	(2~100)L/min	U _{rel} =1.4%		
		Time		(0~60)min	U=0.3s		
		Temperature		(0~300)°C	U=0.3°C		
		Pressure		Front pressure of flowmeter(Static pressure):(-50~50)kPa Dynamic pressure: (0~2500) Pa	U=0.08kPa U=1.0 Pa		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
91	*On-line Automatic Monitors of Permanganate Index	Concentration	Calibration Specification for On-line Automatic Monitors of Permanganate Index JJF 1875	(0.1~300)mg/L	$U_{rel}=3.2\%$		
92	*On-line Analyzers of Volatile Phenols in Water	Concentration	Calibration Specification for On-line Analyzers of Volatile Phenols in Water JJF 1977	(0.01~100)mg/L	$U_{rel}=2.6\%$		
93	*Portable Stripping Voltammetry Heavy Metal Detectors	Concentration	Calibration Specification for Portable Stripping Voltammetry Heavy Metal Detectors JJF 2037	0.1 μg/L~20mg/L	$U_{rel}=4.8\%$		
94	*Hydrogen Chloride Gas Detectors and Alarms	Concentration	Calibration Specification for Hydrogen Chloride Gas Detectors and Alarms JJF 1888	(1~100) μmol/mol	$U_{rel}=3.7\%$		
95	*Methane, Propane, Butane Infrared Gas Analyzers	Concentration	Calibration Specification for Methane, Propane, Butane Infrared Gas Analyzers JJF (Lu) 119	methane: (0.1~5)%	$U_{rel}=1.5\%$		
				propane: (0.1~2.2)%	$U_{rel}=1.4\%$		
				butane: (0.1~1.9)%	$U_{rel}=1.7\%$		
96	*Gas Chromatographs with Sulfur Chemiluminescence Detector	Detection Limits	Calibration Specification for Gas Chromatographs with Sulfur Chemiluminescence Detector JJF 1953	Methyl parathion/S: ≤ 10pg/s	$U_{rel}=25\%$		
				Hydrogen Sulfide in Nitrogen/S: ≤ 10pg/s	$U_{rel}=21\%$		
97	*Oxygen Transmission Rate Testers of Plastic Film and Sheet	Transmission Rate	Calibration Specification for Oxygen Transmission Rate Testers of Plastic Film and Sheet JJF 2181	(1~500)cm ³ /(m ² ·24h·0.1MPa)	$U_{rel}=19\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
98	*Water Vapor Transmission Rate Testor	Transmission Rate	Calibration Specification for Water Vapor Transmission Rate Testor JJF(Ji)191	(1~10)g/ (m ² • 24h)	$U=0.9$ g/ (m ² • 24h)		
		Temperature		(0~50)°C	$U=0.12$ °C		
		Humidity		5%RH~95%RH	$U=1.2\%$ RH		
99	*Micro-spectrophotometers	Concentration	Calibration Specification for Micro-spectrophotometers JJF 1836	(10~2500)ng/ μ L	$U_{rel}=6\%$		
100	*Water Hardness Meters	Concentration	Calibration Specification for Water Hardness Meters JJF 1949	(2~2000)mg/L	$U_{rel}=2\%$		
101	*Laboratory Ion Meters	Concentration	Verification Regulation of Laboratory Ion Meters JJG 757	Electric unit: 0~14	$U=0.001$		
				Instrument: (0.1~10)mmol/L	$U_{rel}=2\%$		
		Potential		-2000mV~+2000mV	$U=0.3$ mV		
102	*On-line pH Meters	Acidity	Calibration Specification for On-line pH Meters JJF 1547	Electric unit: 0~14	$U=0.01$		
				Instrument: 4~10	$U=0.02$		
		Potential		-2000mV~+2000mV	$U=0.3$ mV		
103	*Raw-Milk Freezing Point Testers	Freezing Point	Calibration Specification for Raw-Milk FreezingPoint Testers JJF 1816	(-400~-600)m°C	$U=1$ m°C		
104	*Gas Detectors and Alarms of Hydrogen Fluoride	Concentration	Calibration Specification for Gas Detectors and Alarms of Hydrogen Fluoride JJF(Petrification)047	(1~10) μ mol/mol	$U_{rel}=3.3\%$		
105	*Sulfur Hydrogen Gas Detectors	Concentration	Verification Regulation of sulfur Hydrogen Gas Detectors JJG 695	(1~200) μ mol/mol	$U_{rel}=2.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
106	*Sulfur Dioxide Gas Detectors	Concentration	Verification Regulation of sulfur Dioxide Gas Detectors JJG 551	(1~100) μ mol/mol	$U_{rel}=2.1\%$		
107	*Carbon Monoxide Detectors	Concentration	Verification Regulation of Carbon Monoxide Detectors JJG 915	(1~2000) μ mol/mol	$U_{rel}=2.1\%$		
108	*Basic Nitrogen Meters	Volume	Calibration Specification for Basic Nitrogen Meters JJF (Lu) 114	(0~10)mL	$U=0.003$ mL		
		Content		(1.9~190) μ g/g	$U_{rel}=2.4\%$		
109	*Microcoulometric Sulfur Analyzers	Content	Calibration Specification for Microcoulometric Sulfur Chloride Analyzers JJF 2365	(0.1~10)mg/L	$U=0.08$ mg/L		
				(10~100)mg/L	$U_{rel}=2.4\%$		
				(100~1000)mg/L	$U_{rel}=1.4\%$		
110	*Microcoulometric Chloride Analyzers	Content	Calibration Specification for Microcoulometric Sulfur Chloride Analyzers JJF 2365	(0.1~10)mg/L	$U=0.16$ mg/L		
				(10~100)mg/L	$U_{rel}=2.9\%$		
				(100~1000)mg/L	$U_{rel}=1.4\%$		
111	*Salt Content Meters	Content	Calibration Specification for Salt Content Meters JJF (Lu) 118	(0.1~10)mg/L	$U=0.07$ mg/L		
				(10~1000)mg/L	$U_{rel}=1.2\%$		
112	*Sulfur X-ray Fluorescence Spectrometry Analyzers	Content	Calibration Specification for Sulfur X-ray Fluorescence Spectrometry Analyzers JJF 1952	(5~500)mg/kg	$U=0.48$ mg/kg		
				0.05%~0.5%	$U_{rel}=2.1\%$		
				0.5%~5%	$U_{rel}=1.7\%$		
113	*Gasoline Vapor Recovery Detectors	Pressure	Calibration Specification for Gasoline Vapor Recovery Detectors JJF 1948	(-10~10)kPa	$U=4.9$ Pa		
		Flow		(1~16)m ³ /h	$U_{rel}=0.62\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Time		(0~30)min	$U=0.3s$		
114	Flue Gas Hygrometers	Humidity	Calibration Specification for Flue Gas Hygrometers SDIM/CJGGH32	Volume fraction: (1~5)%	$U=0.16\%$		
				Volume fraction: (5~40)%	$U_{rel}=2.4\%$		
115	*Dust and Noise Online Monitor	Concentration	Calibration Specification for Dust and Noise Online Monitor JJF(Lu)113	Dust: (0.1~20)mg/m ³	$U_{rel}=5\%$		
				PM ₁₀ : (10~10000) μ g/m ³	$U_{rel}=13\%$		
				PM _{2.5} : (10~10000) μ g/m ³	$U_{rel}=13\%$		
		Temperature		(0~60)°C	$U=0.4^{\circ}C$		
		Humidity		30%RH~90%RH	$U=1.0\%RH\sim 1.5\%RH$		
		Wind speed		(0.05~30) m/s	$U=0.03m/s\sim 0.08m/s$		
		Noise		(40~130) dB	$U=0.9dB$		
116	Aerosol Photometers	Flow	Calibration Specification for Aerosol Photometers JJF1800	(1~50)L/min	$U_{rel}=1.5\%$		
		Concentration		(0.01~1) μ g/L	$U=0.07 \mu$ g/L		
				(1~25) μ g/L	$U=2.3 \mu$ g/L		
				(25~100) μ g/L	$U=12 \mu$ g/L		
117	*Energy Dispersive X-Ray Fluorescence Spectrometers	content	Calibration Specification for Energy Dispersive X-Ray Fluorescence Spectrometers JJF 2024	Polymer matrix(Cd): (5~110)mg/kg	$U_{rel}=6\%$		
				Polymer matrix(Cr): (80~1200)mg/kg	$U_{rel}=4\%$		
				Polymer matrix(Hg): (80~1200)mg/kg	$U_{rel}=6\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Polymer matrix(Pb): (80~1200)mg/kg	$U_{rel}=6\%$		
				Alloy matrix (Cr) : (0.094~0.493)%	$U_{rel}=(1.7\sim4.5)\%$		
				Alloy matrix (Ni) : (0.025~0.507)%	$U_{rel}=(1.4\sim9.2)\%$		
				Alloy matrix (Mo) : (0.014~0.399)%	$U_{rel}=(1.8\sim10)\%$		
				Alloy matrix (Mn) : (0.058~1.27)%	$U_{rel}=(1.0\sim4.0)\%$		
				Alloy matrix (V) : (0.048~0.286)%	$U_{rel}=(2.5\sim8.3)\%$		
				Alloy matrix (Si) : (0.031~0.517)%	$U_{rel}=(0.8\sim7.4)\%$		
				Alloy matrix (Ti) : (0.012~0.190)%	$U_{rel}=(1.5\sim12)\%$		
118	*Gel Chromatograph	Molecular weight	Verification Regulation of Gel Permeation Chromatographs JJG 342	Aqueous phase: 1kg/mol~1Mg/mol	$U_{rel}=7.8\%$		
				Organic phase: 10kg/mol~1Mg/mol	$U_{rel}=2.2\%$		
119	*Electrode Salinometer	salinity	Verification Regulation of Electrode Salinometer JJG 761	2~35	$U=0.0015$		
				35~42	$U=0.0035$		
120	*Determinators of Fluorine/Chlorine in Coal	Content	Calibration Specification for Determinators of Fluorine/Chlorine in Coal JJF 1968	F: (50~500) μ g/g	$U=16 \mu$ g/g		
				F: (500~2000) μ g/g	$U_{rel}=3.2\%$		
				Cl: (0.010~0.050)%	$U=0.003\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Cl: (0.050~0.300)%	$U_{rel}=6.0\%$		
121	*Cryoscopes with Refractive Index Method	Temperature	Calibration Specification for Cryoscopes with Refractive Index Method JJF(BGMP) 0008	(-52~0) °C	$U=0.8^{\circ}\text{C}$		
122	*Fluorescence Chlorine Detectors of Petroleum Products	Content	Calibration Specification for Fluorescence Chlorine Detectors of Petroleum Products JJF(Ji) 3021	(1~1000)mg/kg	$U_{rel}=1.1\%$		
123	*Chemiluminescence Nitrogen Analyzers	Content	Calibration Specification for Chemiluminescence Nitrogen Analyzers JJF 2292	(1.0~5.0)mg/L (5~1000)mg/L	$U=0.2\text{ mg/L}$ $U_{rel}=1.7\%$		
124	*Liquid-borne Particle Counters	Volume	Verification Regulation for Liquid-borne Particle Counters JJG 1061	(1~50) mL	$U_{rel}=0.7\%$		
		Particle count		Oil medium: (1~9×10 ⁴) 个/10mL	$U_{rel}=11\%$		
125	*Rotating Disc Electrode Atomic Emission Spectrometers	concentration	Calibration Specification for Rotating Disc Electrode Atomic Emission Spectrometers JJF 1929	Fe: (0.1~100) μg/g Al: (0.1~100) μg/g Cr: (0.1~100) μg/g	$U_{rel}=4\%$ $U_{rel}=5\%$ $U_{rel}=5\%$		
126	*Thermomechanical Analyzers	Temperature	Calibration Specification for Thermomechanical Analyzers JJF 2069	(150~600)°C	$U=0.7^{\circ}\text{C}$		
		Thermal expansion coefficient		$20\times 10^{-6}\text{K}^{-1}\sim 60\times 10^{-6}\text{K}^{-1}$	$U_{rel}=2.3\%\sim 3.2\%$		
127	*Water Activity Meters	Water Activity	Verification Regulation of Water Activity Meters JJG(Yue) 052	0~1	$U=0.007$		
		Temperature		(0~50) °C	$U=0.1^{\circ}\text{C}$		
128	*Coal Ash Analyzers	Temperature	Calibration Specification for Coal Ash Analyzers JJF(Yu)	DT: (1000~1600)°C	$U=12^{\circ}\text{C}$		

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			204	ST: (1000~1600)°C HT: (1000~1600)°C FT: (1000~1600)°C	$U=11^{\circ}\text{C}$ $U=13^{\circ}\text{C}$ $U=12^{\circ}\text{C}$		
129	*Analyzer of Copper Content and Iron Content	Content	Calibration Specification for Analyzer of Copper Content and Iron Content JJF(Qian) 13	(1~200) $\mu\text{g/L}$	$U_{\text{rel}}=1.3\%$		
130	*Electrochemical Workstations	potential	Calibration Specification for Electrochemical Workstations JJF 1910	(0.1~5) V	$U=0.0001\text{V}$		
		current		$(1\sim 50)\times 10^{-7}\text{A}$	$U=1\times 10^{-10}\text{A}$		
131	*Adenosine Triphosphate(ATP) Fluorescence Detectors	concentration	Calibration Specification for Adenosine Triphosphate(ATP) Fluorescence Detectors JJF 1828	$(1\times 10^{-16})\sim 1\times 10^{-10}\text{mol/mL}$	$U_{\text{rel}}=7.0\%$		
		lightness		$(2\sim 2\times 10^{-5})\text{cd/m}^2$	$U_{\text{rel}}=17\%$		
132	*Dynamic Light Scattering Particle Size Analyzers	Particle Size	Dynamic Light Scattering Particle Size Analyzers JJG 1104	(10~100)nm	$U=1.7\text{nm}$		
				(200~300)nm	$U=3.4\text{nm}$		
				(400~500)nm	$U=4.0\text{nm}$		
				(600~800)nm	$U=6.1\text{nm}$		
		temperature		(10~90)°C	$U=0.09^{\circ}\text{C}$		
133	*Time-of-Flight Mass Spectrometers	mass-to-charge ratio	Calibration Specification for Time-of-Flight Mass Spectrometers JJF 1528	180~70000	$U=3.4\times 10^{-6}\sim 3.2\times 10^{-3}$		
134	*Microplate Chemiluminescence Analyzers	Linear error	Calibration Specification for Microplate Chemiluminescence Analyzers JJF 1849	(-20~20)%	$U=5.0\%$		
135	*Alkyl Mercury	Detection	Calibration Specification for	Methylmercury	$U_{\text{rel}}=7\%$		

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	Analyzer	limit	Alkyl Mercury Analyzer JJF(Qian)40	Ethyl mercury	$U_{rel}=7\%$		
136	*Chemical Oxygen Demand (COD) Meters	Concentration	Verification Regulation of Chemical Oxygen Demand (COD) Meters JJG 975	Class A: (16~1000) mg/L	$U_{rel}=2.0\%$		
				Class B: (16~1000) mg/L	$U=0.4\text{mg/L}$		
		Temperature		(0~200)°C	$U=0.2^{\circ}\text{C}$		
137	*On-line Automatic Determinators of Chemical Oxygen Demand (COD)	Concentration	Verification Regulation of On-line Automatic Determinators of Chemical Oxygen Demand (COD) JJG 1012	(16~1000) mg/L	$U_{rel}=2.0\%$		
138	Pitot Tube	Calibration factor	Verification Regulation of Pitot Tubes JJG 518	L-type working-grade pitot tube: 0.99 ~ 1.01; S-type pitot tube: 0.81 ~ 0.86	$U_{rel}=1.4\%$		
139	*Formaldehyde Gas Detectors and Alarms	Concentration	Calibration specification for for maldehyde gas detection alarm JJF(SH) 100	(2~8) μ mol/mol	$U_{rel}=3.2\%$		
140	Integrated Environmental Monitoring System for Pollution Source	temperature	Calibration Specification of Integrated Environmental Monitoring System for Pollution Source JJF(Jing) 90	(0~220) °C	$U=0.4^{\circ}\text{C}$		
		pressure		satic tpressure (-50~ 50) kPa	$U=0.13\text{kPa}$		
				dynamic pressure: (0~ 2500) Pa			
		Velocity of flow		(1.0~30) m/s	$U_{rel}=1.4\%\sim 4.8\%$		
		Moisture content		(0.1~30) %	$U_{rel}=1.8\%\sim 3.0\%$		



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141	*Laser Methane Telemeters	Concentration	Calibration specification for laser methane telemeters JJF(SH) 078	$(0.1 \sim 20) \% \text{LEL} \cdot \text{m}$	$U_{\text{rel}}=4.6\%$		
142	*Halogen leak detectors	Leak rate	Calibration Specification for Halogen Leak Detectors JJF 1964	$(1.0 \times 10^{-6} \sim 1.0 \times 10^{-5}) \text{Pa} \cdot \text{m}^3/\text{s}$	$U_{\text{rel}}=13\%$		
143	*Helium Mass Spectrometer Leak Detector	Leak rate	Calibration Specification of Helium Mass Spectrometer Leak Detector JJF(JG) 186	$(5 \times 10^{-8} \sim 5 \times 10^{-7}) \text{Pa} \cdot \text{m}^3/\text{s}$	$U_{\text{rel}}=11\%$		
144	*Methanol Gas Detectors and Alarms	Concentration	Calibration Specification for Methanol Gas Detectors and Alarms JJF(SH) 058	$(5 \sim 100) \times 10^{-6} \text{mol/mol}$	$U_{\text{rel}}=2.3\%$		
145	*Ethylene oxide Gas Detectors and Alarms	Concentration	Calibration Specification for Ethylene oxide Gas Detectors and Alarms JJF(SH) 059	$(5 \sim 100) \times 10^{-6} \text{mol/mol}$	$U_{\text{rel}}=2.3\%$		
146	*Combustible Gas Detector of Open Circuit Infrared	Concentration	Calibration Specification for the Combustible Gas Detector of Open Circuit Infrared JJF(SH) 085	$(0.1 \sim 5) \% \text{LEL} \cdot \text{m}$	$U_{\text{rel}}=1.3\%$		
147	*Portable Volatile Organic Compounds Leak Detector (Hydrogen Flame Ion Method)	Concentration	Calibration Specification for Portable Volatile Organic Compounds Leak Detector (Hydrogen Flame Ion Method) JJF(SH) 033	$(1 \sim 30000) \times 10^{-6} \text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
148	*Total Hydrocarbon Methane and Non-Methane Total Hydrocarbon Analyzers	Concentration	Calibration Specification for Total Hydrocarbon Methane and Non-Methane Total Hydrocarbon Analyzers JJF(Ji)188	$(1 \sim 2000) \times 10^{-6} \text{mol/mol}$	$U_{\text{rel}}=2.2\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
149	*Nitrogen Dioxide Gas Detectors and Alarms	concentration	Calibration Specification for Nitrogen Dioxide Gas Detectors and Alarms JJF(SH) 090	(50~1000) μ mol/mol	$U_{rel}=2.2\%$		
150	*Plankton Samplers	Flow time	Calibration Specification of Air Plankton Samplers JJF(su) 188	(10~200) L/min 0~60 min	$U_{rel}=1.3\%$ $U=0.3s$		
151	*Carbon Dioxide Gas Detectors and Alarms	concentration	Calibration Specification for Carbon Dioxide Gas Detectors and Alarms JJF(SH) 077	(0.2~5) %	$U_{rel}=1.3\%$		
152	*Environmental Test Chamber for Volatile Organic Compounds Emission from Building Products	Temperature	Calibration Specification for Environmental Test Chamber for Volatile Organic Compounds Emission from Building Products JJF(JC) 182	(0~100) $^{\circ}C$	$U=0.3^{\circ}C$		
		Humidity		10%RH~95%RH	$U=2.2\%RH$		
		Air exchange rate		$0.1h^{-1}\sim 2.0h^{-1}$	$U_{rel}=1.5\%$		
		Air velocity		0.1m/s~0.3m/s	$U=0.08m/s$		
		Micro-pressure difference		(5~25) Pa	$U=1.5Pa$		
		Background concentration		TVOC($\leq 50 \mu g/m^3$)	$U=8 \mu g/m^3$		
				A single VOC($\leq 5 \mu g/m^3$)	$U=0.4 \mu g/m^3$		
				Formaldehyde($\leq 6 \mu g/m^3$)	$U=1 \mu g/m^3$		
		Recovery rate		Formaldehyde test chamber (Toluene: (80%~120%))	$U=16\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				VOCS test chamber (Toluene and N-dodecane: (80%~120%))	$U=16\%$		
153	*Automatic Iodine Analyzers	Concentration	Calibration Specification of Automatic Iodine Analyzers JJF(Lu) 193	Urinary Iodine: (1~1200) $\mu\text{g/L}$ Water Iodine: (1~200) $\mu\text{g/L}$	$U_{\text{rel}}=(4\sim12)\%$ $U_{\text{rel}}=1.6\%$		
154	*Rotational Rheometers	Temperature	Calibration Specification for Rotational Rheometers JJF 2134	(-20~180) $^{\circ}\text{C}$	$U=0.08^{\circ}\text{C}$		
		Shear viscosity		(0.1~1000) $\text{Pa}\cdot\text{s}$	$U_{\text{rel}}=3.0\%$		
155	*Physisorption Analyzers	Specific surface area	Calibration Specification for Physisorption Analyzers JJF 2135	(0.1~500) m^2/g	$U=0.015\text{ m}^2/\text{g}$		
		Total pore volume		Total pore volume:(0.2~1) cm^3/g	$U=0.012\text{ cm}^3/\text{g}$		
				Micropore volume: (0.1~0.5) cm^3/g	$U=0.012\text{ cm}^3/\text{g}$		
		aperture		Average aperture: (5~15) nm	$U=0.20\text{ nm}$		
				Most probable pore size: (4~10) nm	$U=0.08\text{ nm}$		
				Micropore aperture: (0.1~1) nm	$U=0.022\text{ nm}$		
156	*Gas-phase Molecular Absorption Spectrometer	Content	Calibration Specification for Gas-phase Molecular Absorption Spectrometer JJF(Jin) 78	Ammonia nitrogen:(0~100) mg/L	$U=0.002\text{mg/L}$		
				Total nitrogen:(0~100) mg/L	$U=0.005\text{mg/L}$		
				Nitrate nitrogen:(0~100) mg/L	$U=0.004\text{mg/L}$		



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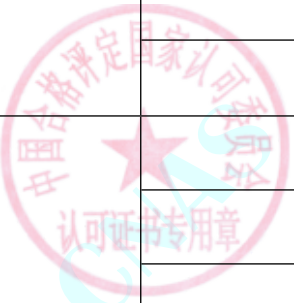
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Nitrite nitrogen:(0~100)mg/L	$U=0.003\text{mg/L}$		
				Sulfide:(0~100)mg/L	$U=0.004\text{mg/L}$		
157	*Multi-parameter Meters by Colorimetry	Wavelength Absorbance	Calibration Specification of Multi-parameter Meters by Colorimetry JJF (Lu) 189	(350~900)nm 0.05~2.0	$U=1.3\text{ nm}$ $U=0.004$		
158	*Oil Content Analyzers of Ultraviolet Spectrophotometric Method	Concentration	Calibration Specification for Oil Content Analyzers of Ultraviolet Spectrophotometric Method JJF(Ji) 202	(1~1000)mg/L	$U_{\text{rel}}=3.0\%$		
159	*Oxidation-Reduction Potential Meters	Oxidation-reduction	Calibration Specification for Oxidation-Reduction Potential Meters JJF(Ji) 3027	Electrical measuring part:(0~1000)mV Instrument:(20~500)mV	$U=0.3\text{mV}$ $U=1\text{mV}$		
160	*Liquid Chromatograph-Atomic Fluorescence Spectrometers	Linimum detectable amount	Verification Regulation of Liquid Chromatograph-Atomic Fluorescence Spectrometers JJG 1151	As(V):<1.0 ng MMA :<0.7 ng DMA: <0.7 ng	$U=0.03\text{ng}$ $U=0.03\text{ng}$ $U=0.03\text{ng}$		
161	*Liquid Chromatography-Inductively Coupled Plasma Mass Spectrometers	Minimum detection concentration(as arsenic)	Calibration Specification for Liquid Chromatography-Inductively Coupled Plasma Mass Spectrometers JJF 2115	$\leq 0.5\text{ ng/g}$	$U_{\text{rel}}=14\%$		
162	*Superconducting Pulsed Fourier Transform Nuclear Magnetic Resonance	Sensitivity	Calibration Specification for Superconducting Pulsed Fourier Transform Nuclear Magnetic Resonance Spectrometers JJF 1448	$^1\text{H} \geq 15$	$U_{\text{rel}}=4.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Spectrometers			$^{13}\text{C} \geq 2$	$U_{\text{rel}}=3.2\%$		
163	*Organic High Resolution Magnetic Sector Mass Spectrometers	Signal-to-noise ratio	Calibration Specification for Organic High Resolution Magnetic Sector Mass Spectrometers JJF 1930	≥ 1000	$U_{\text{rel}}=15\%$		
164	*McFarland Bacterial Turbidity Analyzer	Bacterial Turbidity	Calibration Specification for McFarland Bacterial Turbidity Analyzers JJF 1825	(0.0~4.0)MCF	$U=(0.08 \sim 0.23)\text{MCF}$		
165	*Total Organic Carbon Analyzer based on Conductivity	Concentration	Calibration Specification of Total Organic Carbon Analyzer based on Conductivity JJF (Jing) 112	(0.001~2)mg/L	$U_{\text{rel}}=1.4\%$		
166	*Permanganate Index Analyzers	Concentration	Calibration Specification for Permanganate Index Analyzers JJF 2173	(0.1~300)mg/L	$U_{\text{rel}}=3.2\%$		
167	*Liquid Chromatographs with Charged Aerosol Detector	Minimum detection concentration	Calibration Specification for Liquid Chromatographs with Charged Aerosol Detector JJF (Liao) 553	$\leq 5 \mu\text{g/mL}$	$U=0.06 \mu\text{g/mL}$		
168	*Ammonia-Nitrogen Automatic Analyzers	Concentration	Verification Regulation of Ammonia-Nitrogen Automatic Analyzers JJG 631	(0~2)mg/L	$U=0.08\text{mg/L}$		
				(2~500)mg/L	$U_{\text{rel}}=3.7\%$		
169	*Wavelength Dispersive X-Ray Fluorescence Spectrometers	Sensitivity	Calibration Specification for Wavelength Dispersive X-Ray Fluorescence Spectrometers JJF 2251	Si: $\geq 0.01 \text{ kCPS} \cdot (\text{mg/g}) \cdot \text{mA}^{-1}$	$U_{\text{rel}}=4.6\%$		
				P: $\geq 0.01 \text{ kCPS} \cdot (\text{mg/g}) \cdot \text{mA}^{-1}$	$U_{\text{rel}}=7.8\%$		
				Ni: $\geq 0.02 \text{ kCPS} \cdot (\text{mg/g}) \cdot \text{mA}^{-1}$	$U_{\text{rel}}=1.0\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
170	*Digital Refractometers	Refractive index	Calibration Specification of Digital Refractometers and Digital Content-meters JJF (Zhe) 1207	1.3000~1.7000	$U=0.0003$		
171	*Monitoring Instrument (Electrical Conductivity) of Pure & Ultrapure Water System	Electrical Conductivity	Calibration Specification for Monitoring Instrument (Electrical Conductivity) of Pure & Ultrapure Water System JJF (Xiang) 09	Electronic unit: (0.05~200) $\mu\text{S} \times \text{cm}^{-1}$	$U_{\text{rel}}=0.1\%$		
				Instrument (Conventional method): (1~200) $\mu\text{S} \times \text{cm}^{-1}$	$U=(0.04 \sim 0.9) \mu\text{S} \times \text{cm}^{-1}$		
				Instrument (Comparison method): (0.05~200) $\mu\text{S} \times \text{cm}^{-1}$	$U_{\text{rel}}=2.6\%$		
172	*Colony Counters	Color Temperature	Calibration Specification for Colony Counters JJF 1751	(2000~9000)K	$U_{\text{rel}}=1.7\%$		
		Total Colony Count		(36~290)CFU	$U_{\text{rel}}=3\%$		
173	*Soil Moisture Monitoring Instruments	Moisture	Calibration Specification for Soil Moisture Monitoring Instruments JJF (Lu) 207	3%~45%	$U_{\text{rel}}=1.6\%$		
174	*Oil Conductivity Meter	Conductivity	Verification regulation for the conductivity meter of light fuel oil GJB/J 3049	(10~1999)pS	$U_{\text{rel}}=1.2\%$		
		Conductivity cell constant		0.9~1.1	$U_{\text{rel}}=0.6\%$		
175	*Determinators of Moisture in Coal	Mass	Calibration Specification for Determinators of Moisture in Coal JJF (Meng) 127	1g, 10g	$U=0.2\text{mg}$		
		Temperature		37°C, 107°C	$U=0.3^\circ\text{C}$		
		Moisture		95%	$U=0.1\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
176	*Portable Sulphur Hexafluoride Purity Analyzers	Concentration	Calibration Specification for Portable Sulphur Hexafluoride Purity Analyzers JJF（Yu）253	(90～99.99)%	<i>U</i> _{rel} =2.2%		
177	*Sulfur Hexafluoride Decomposition Products detectors	Concentration	Calibration Specification for Sulfur Hexafluoride Decomposition Products detectors JJF1711	SO ₂ :(0.1～20) μ mol/mol	<i>U</i> _{rel} =3%		
				H ₂ S:(0.1～20) μ mol/mol	<i>U</i> _{rel} =3%		
				CO:(0.1～100) μ mol/mol	<i>U</i> _{rel} =3%		
178	*Oxygen Index Instructment	Oxygen Index	Verification Regulation for Oxygen Index Instructment JJG (JG)16	18%	<i>U</i> _{rel} =2%		
				23%	<i>U</i> _{rel} =3%		
				45%	<i>U</i> _{rel} =4%		
		Oxygen concentration		(20～50)%	<i>U</i> _{rel} =1%		
179	*Polycrystalline X-Ray Diffractometers	Angle	Verification Regulation of Polycrystalline X-Ray Diffractometers JJG 629	2 θ：(15～125)°	<i>U</i> =0.002°		
180	*Raman Spectrometers	Frequency shift	Calibration Specification for Raman Spectrometers JJF 1544	(400～4000)cm ⁻¹	<i>U</i> =0.3cm ⁻¹		
		length		horizontal：(2～20) μ m	<i>U</i> =0.5 μ m		
				vertical：(0.18～1) μ m	<i>U</i> =0.3 μ m		
181	*Energy-Dispersive X-ray Spectrometers	Element content	Calibration Specification for Energy-Dispersive X-ray Spectrometers JJF 2067	20%～99.9%	<i>U</i> =0.8%		
				3%～20%	<i>U</i> =0.26%		
				1%～3%	<i>U</i> =0.12%		
6、Lonizing radiation measuring instrument							



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
1	X-Ray Flaw Detectors	Air KermaRate	Verifacation regulation of X-Ray Flaw Detectors JJG 40	(1~100)cGy/min	$U_{rel}=3.0\%$		
2	Low backgrouound alpha/beta measuring instruments	Surface emissivity rate	Verification Regulation of Low backgrouound alpha/beta measuring instruments JJG 853	$\alpha : (2 \times 10^4 \sim 1.2 \times 10^5) (\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=3.4\%$		
				$\beta : (2 \times 10^4 \sim 1.2 \times 10^5) (\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=4.0\%$		
3	Alpha beta surface contamination instruments	Surface Emission rate	Verification Regulation of Alpha beta surface contamination instruments JJG 478	$\alpha : (10^3 \sim 10^5) (\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=6.2\%$		
				$\beta : (\times 10^4 \sim 10^6) (\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=6.2\%$		
4	*Medical Diagnostic X-ray Radiation Source for Medical Digital Subtraction Angiography	Air Kerma Rate	R.V.of Medical Diagnostic X-ray Radiation Source for Medical Digital Subtraction Angiography JJG 1067	$(6 \times 10^{-5} \sim 1) \text{ Gy/min}$	$U_{rel}=4.6\%$		
		Tube Voltage		(50~150) kV	$U_{rel}=3\%$		
5	*Medical Diagnostical X Ray Radiation Source	Air Kerma	Verification Regulation of Medical Diagnostical X Ray Radiation Source JJG 744	$(6 \times 10^{-5} \sim 1) \text{ Gy/min}$	$U_{rel}=4.8\%$		
		Tube Voltage		(50~150) kV	$U_{rel}=3\%$		
6	*X、 γ -ray Densitometry for Bone Mineral Density	Bone Mineral Density	V.R.of X、 γ -ray Densitometry for Bone Mineral Density JJG 1050	$(0.5 \sim 1.5) \text{ g/cm}^2$	$U_{rel}=0.8\%$		
		Air Kerma Rate		$(0.1 \sim 2) \text{ mGy/h}$	$U_{rel}=10\%$		
7	*Medical Electron Accelerator Radiation Source	AbsorbDosage	V.R.of Medical Electron Accelerator Radiation Source JJG 589	$(0.01 \sim 5) \text{ Gy}$	$U_{rel}=3\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
8	*Medical Diagnostic X-ray Radiation Source for Spiral Computer Tomography(CT)	Dosage Index	V.R.of Medical Diagnostic X-ray Radiation Source for Spiral Computer Tomography(CT) JJG 961	0.1mGy~1Gy	U _{rel} =5%		
9	*Medical Radiation SourceFor 60Co Teletherapy	Absorbed Dose	Verification Regulation of Medical Radiation Source for ⁶⁰ Co Teletherapy JJG 1027	(0.01~5) Gy	U _{rel} =4%		
10	*Gas-Flow Proportional Center Gross Alpha and Gross Beta Measuring Instruments	Surface Emission rate	Verification Regulation of Gas-Flow Proportional Center Gross Alpha and Gross Beta Measuring Instruments JJG 1100	$\alpha : (10^3 \sim 10^5)(\min \bullet 2 \pi \text{ sr})^{-1}$	U _{rel} =4.0%		
				$\beta : (10^4 \sim 10^5)(\min \bullet 2 \pi \text{ sr})^{-1}$	U _{rel} =4.0%		
11	* γ Ray spectrometers of scintillation detectors	Radioactivity	Calibration Specification of γ Ray Spectrometers of Scintillation Detectors JJF 1744	(5~1×10 ⁴)Bq	U _{rel} =6%		
12	Magnetic particle flaw detectors	Direct current	Calibration specification for magnetic particle flaw detectors JJF 1273	(500~2000)A	U _{rel} =1.0%		
		Alternating current		(500~2000)A,(50Hz)	U _{rel} =1.5%		
13	Magnetic yoke detectors	lifting force	Calibration specification for Magnetic yoke detectors JJF 1458	(1~200)N	U _{rel} =5.4%		
		current		(1~30)A	U _{rel} =3%		
7、Thermology measuring instrument							
1	*Carbon dioxide Incubator	temperature	Calibration Specificaion of Carbon dioxide Incubator SDIM/CJGYL 14	37℃	U=0.12℃		
		humidity		30%RH~90%RH	U=1.7%RH		

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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Concentration of Carbon dioxide		5%	U=0.14%		
2	*Ozone Aging Test Chamber	Zone concentration	Calibration Specification for Ozone Aging Test Chamber JJF 2051	(0.1~400) μ mol/mol	U _{rel} =2.7%~5.6%		
		Temperature		(0~100) °C	U=0.2°C		
		Humidity		10%RH~95%RH	U=1.2%RH		
9、Medical specific measuring instruments							
1	*Blood Cell Analyzer	concentration	Verification Regulation of Blood Cell Analyzer JJG 714	WBC: (2.82~16.8)×10 ⁹ /L;	U _{rel} =3.0%		
				RBC:(2.18~5.25)×10 ¹² /L;	U _{rel} =2.6%		
				HGB:(56.9~132)g/L	U _{rel} =2.4%		
				PLT: (80~475) ×10 ⁹ /L;	U _{rel} =3.4%		
2	Pulmonary Function Measuring Instrument	Vital Capacity	Pulmonary Function Measuring Instrument JJF 1213	(1~6)L	U _{rel} =0.8%		
		flow		(3~14)L/s	U _{rel} =3.2%		
		concentration		O ₂ : 2%~30%	U _{rel} =1.2%		
				CO ₂ : 2%~30%			
3	*Medical Magnetic Resonance Imaging Systems	magnetic field strength	Calibration Specification for Medical Magnetic Resonance Imaging Systems JJF 2151	(0.1~3.0) T	U _{rel} =0.4%	No measuring the whole body SAR value	
		layer thickness		(1~30) mm	U _{rel} =5.2%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
4	*Medical Centrifuges	Relative error of speed indication	Calibration Specification for Medical Centrifuges JJF 2004	(20~20000)r/min	$U_{rel}=0.12\%$		
		Temperature deviation		(-20~30) °C	$U=0.6$ °C		
		Time		1s~2 h	$U_{rel}=0.22\%$		
		Noise		(30~140) dB	$U=1.4$ dB		
5	*Haemodialysis equipment	Temperature	Calibration Specification for Hemodialysis Equipment JJF 1353	(25~40)°C	$U=0.23$ °C		
		Conductivity		(12.5~15.5)mS/cm	$U_{rel}=1.2\%$		
		Static (arterial) pulse pressure		(-40~60)kPa	$U=0.6$ kPa		
		Dialysis fluid flow rate		(50~1000) mL/min	$U_{rel}=3.6\%$		
		Injection flow rate of anticoagulant pump		(5~20) mL/h	$U_{rel}=2.6\%$		
		Ultrafiltration Volume		(0.1~5) kg	$U_{rel}=1.7\%$		
		blood flow		(50~1000) mL/min	$U_{rel}=3.8\%$		
6	*Electrocardiograph	Voltage	Verification Regulation of Electrocardiograph and Electroencephalograph JJG 543	0.1mV~6mV	$U_{rel}=1.7\%$		
		Time		2ms~5s	$U_{rel}=0.7\%$		
7	*Urine Analyzers	pH	Urine Analyzers JJF 1129	5.5~8.0	$U_{rel}=4.8\%$		
		PRO		(0.1~3.0)g/L	$U_{rel}=6.0\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		GLU		(0.1~56)mmol/L	$U_{rel}=2.4\%$		
		SG		1.000~1.030	$U=0.004$		
8	* Electrolyte Analyzers	concentration	Verification Regulation of Electrolyte Analyzer JJG 1051	K ⁺ : (1.5~7.5)mmol/L	$U_{rel}=2\%$		
				Na ⁺ : (100~180)mmol/L	$U_{rel}=2\%$		
				Cl ⁻ : (80~160)mmol/L	$U_{rel}=2\%$		
				Li ⁺ : (0.4~2.0)mmol/L	$U_{rel}=2\%$		
				iCa ²⁺ : (0.5~2.5)mmol/L	$U_{rel}=2\%$		
9	*Ventilators	total volume	Calibration Specification for Lung Ventilators JJF 1234	(400~800) mL	$U_{rel}=3.5\%$		
		airway peak pressure		(1.0~3.0)kPa	$U=0.12$ kPa		
		PEEP		(0.2~2.0)kPa	$U=0.12$ kPa		
		Oxygen concentration		21%~100%	$U=2.2\%$		
		respiratory rate		(10~40)min ⁻¹	$U_{rel}=4\%$		
10	*Electroencephalograph	Voltage	Verification Regulation of Electrocardiograph and Electroencephalograph JJG 1043	5.0 μ V~2.0mV	$U_{rel}=1.7\%$		
		Time		0.05s~5s	$U_{rel}=0.7\%$		
11	*Electrosurgical Generator	Power	Calibration Specification for Electrosurgical Generator JJF 1217	(50~200)W	$U_{rel}=3.0\%$		
		current		(1~500)mA	$U_{rel}=2.9\%$		
12	*Anaesthetic Machines	tidal volume	Calibration Specification for Anaesthetic Machines JJF 2149	(400~800)mL	$U_{rel}=3.7\%$		
		frequency		(10~40)bpm	$U_{rel}=3.4\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		pressure		(0.2~3.0) kPa	$U=0.12\text{kPa}$		
		concentration of output oxygen		21%~100%	$U_{\text{rel}}=2.4\%$		
		concentration of anaesthetic gas		1%~8%	$U_{\text{rel}}=0.44\%$		
13	*Medical Suction Equipment	Pressure	Calibration Specification for Medical Suction Equipment JJF 1810	(-100~0) kPa	$U=0.6\text{kPa}$		
14	*Glycated hemoglobin analyzer	concentration	Calibration Specification for Glycohemoglobin Analyzers JJF 1841	4.5%~10.5%	$U=3.3\%$		
15	*Flow Cytometer	concentration	Calibration Specification for Flow Cytometers JJF 1665	78.1%	$U=7.6\%$		
16	*Portable Blood Glucose Meters	Concentration	Calibration Specifications for Portable Blood Glucose Meters JJF 1383	(5.5~14.0) mmol/L	$U_{\text{rel}}=3.8\%$		
17	*Blood Coagulation Analyzers	Temperature	Calibration Specification for Blood Coagulation Analyzers JJF1945	(0~50) °C	$U=0.15^{\circ}\text{C}$	Only temperature control	
		Concentration		(1~5)g/L			
18	*Fully Automated Closed Luminescence Immunoassay Analyzer	Concentration	Calibration Specification for Automatic Closed Luminescence Immunoassay Analyzers JJF 1752	(15.2~ 143.7) pmol/L	$U=(0.7\sim 6.8)\text{ pmol/L}$		
19	*Automatic urine sediment analyzer	concentration	Calibration Specification for Automatic Urinary Sediment Analyzers JJF 1823	RBC: (150~2000) / μL WBC: (150~2000) / μL	$U_{\text{rel}}=9.9\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
20	*Multifunctional Blood Gas Analyzers	Concentration	Calibration Specification for Multifunctional Blood Gas Analyzers JJF 2054	c(K ⁺):(1.5~7.5)mmol/L	U _{rel} =2.7%	No measuring p(CO ₂) , p(O ₂), linear	
				c(Na ⁺):(100.0~180.0)mmol/L	U _{rel} =1.9%		
				c(Ca ²⁺):(0.50~2.50)	U _{rel} =4.4%		
				c(Cl ⁻):(80.0~160.0)mmol/L	U _{rel} =3.0%		
				c _t (Hb):(5.0~18.0)g/dL	U _{rel} =2.8%		
		pH	6.8~7.8	U=0.02			
21	*Syringe Pumps and Infusion Pumps	Flow	Calibration Specification for Syringe Pumps and Infusion pumps JJF 1259	(5~20)mL/h	U _{rel} =2.5%		
				(20~200) mL/h	U _{rel} =1.5%		
				(200~1000) mL/h	U _{rel} =2.5%		
		Pressure		(70~200)kPa	U=2.9kPa		
22	*ELISA Analytical Instruments	Absorbance	Verification Regulation of ELISA Analytical Instruments JJG 861	0.2~1.5	U=0.006		
23	*Fully Automated ELISA Analyzers	volume	Calibration Specification for Fully Automated ELISA Analyzers JJF 2089	(0.1~200) μ L	U=0.07 μ L		
		temperature		(0~50) °C	U=0.2°C		
		absorbance		0.2~2.2	U=0.006		
10、Railway specific measuring instruments							
1	Wheel Contour Gauge for Railway Locomotive and Vehicle	Length	Verification Regulation of Wheel Contour Gauge for Railway Locomotive and Vehicle JJG (TD) 175	(0~200)mm	U=0.010mm		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
2	Means of Ruler for Wheel- Diameter	Length	Verification Regulation of Means of Measuring Instrument for Wheel- Diameter of Railway Locomotives and Vehicles— Part 1: Means of Ruler for Wheel-Diameter JJG 1082.1	measuring tape: (65.2~ 85.8)mm	$U=0.01\text{mm}$		
				dipstick: (760~ 1270)mm	$U=0.02\text{mm}$		
3	Calibrators of Wheel-Checkers for Railway Locomotives and Vehicles	Length	Verification Regulation of Calibrators of Wheel- Checkers for Railway Locomotives and Vehicles JJG 1155	(0~100)mm	$U=0.01\text{mm}$		
4	Means of Measuring Tools for Wheel- Diameter	Length	Verification Regulation of Means of Measuring Instrument for Wheel- Diameter of Railway Locomotives and Vehicles— Part 2: Means of Measuring Tools for Wheel-Diameter JJG 1082.2	(760~1270)mm	$U=0.03\text{mm}$		
5	Calibrators for Gauge of Distance Between Inside Rim Faces of Wheels for Railway Locomotive and Vehicle	Length	Verification Regulation of Calibrators for Gauge of Distance Between Inside Rim Faces of Wheels for Railway Locomotive and Vehicle JJG 1159	Micrometer Device: (0~25)mm	$U=1.2\text{ }\mu\text{m}$		
				Dipstick: (1364.80~ 1365.20)mm	$U=0.02\text{mm}$		
6	Wear Tools for Rail	Length	Verification Regulation of Wear Tools for Rail JJG 1127	(0~50)mm	$U=0.01\text{mm}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
7	Structure height gauges for Railway Frogs	Length	Verification Regulation of Structure height gauges for Railway Frogs JJG 1183	(-15~+15)mm	$U=0.03\text{mm}$		
8	Measuring Gauge for Torsional Displacement of Rail	Length	Calibration Specification for Measuring Gauge for Torsional Displacement of Rail JJF(TZ)008	(0~6)mm	$U=0.02\text{mm}$		
9	Measuring Tools for Wheel-Diameter	Length	Verification Regulation of Measuring Instrument for Wheel- Diameter of Railway Locomotive and Vehicles —part 2: Measuring Tools for Wheel- Diameter JJG 1081.2	(760~860) mm	$U=0.11\text{mm}$	Only for Measuring Tools for Metro Train Wheel-Diameter	
10	Calibrators for Railway Track Gages	Length	Verification Regulation of Calibrators for Railway Track Gages JJG 404	(1410~1470)mm	$U=0.02\text{mm}$		
11	Wheel-Checker for Railway Locomotives and Vehicles	Length	Verification Regulation of Wheel-Checker for Railway Locomotives and Vehicles JJG 1080	(0~95) mm	$U=0.06\text{mm}$		
12	Calibrators for Railway Switch Offset Rule	Length	Verification Regulation of Calibrators for Railway Switch Offset Rule JJG 1109	(0~1500) mm	$U=0.02\text{mm}+2\times 10^{-5}L$		
13	Gauge Used in Measuring the Distance Between Acting Centres of Journal Load of Wheels-set for Coach	Length	Calibration Specification for Regulation of Gauge Used in Measuring the Distance Between Acting Centres of Journal Load of Wheels-set for Coach JJF (CR) 013	(1900~2150) mm	$U=0.08\text{mm}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
11、Petroleum and chemical industry specific measuring instruments							
1	*Demulsibility Testers	Volume	Calibration Specification for Demulsibility Testers JJF(SH) 076	(1~100) mL	$U=0.12$ mL		
		Temperature		(10~90) °C	$U=0.07$ °C		
		Time		(1~300) s	$U_{rel}=0.2\%$		
		Speed		(0~2000) r/min	$U=2$ r/min		
2	*Interface Tensiometers	Tension	Calibration Specification for Interface Tensiometers JJF1464	(15~200) mN/m	$U_{rel}=0.18\% \sim 0.04\%$		
3	*Diesel Fuel Cetane Machines	Cetane Number	Calibration Specification for Diesel Fuel Cetane Machines SDIM/CJGGH 15	CN: 40~56	$U=2.6$		
4	*Gasoline Octane Number Machines	Octane Number	Calibration Specification for Gasoline Octane Number Machines SDIM/CJGGH 14	RON: 80~98	$U=0.2$		
				MON: 80~92	$U=0.2$		
5	Moisture Receiver	Volume	Calibration Specification for Moisture Receiver JJF (Lu) 126	(0.3~25) mL	$U=0.01$ mL		
6	*Constant Temperature Shaking Incubator	Temperature	Calibration Specification for Constant temperature shaking incubator JJF(SH) 086	(10~80) °C	$U=0.2$ °C		
		Frequency		(10~700) min ⁻¹	$U=2$ min ⁻¹		
		Content		CO ₂ : (0~10) %	$U=0.2\%$		
7	*Evaporation Loss of Lubricating Oil Testers (Noack Method)	Content	Calibration Specification for Evaporation Loss of Lubricating Oil Testers (Noack Method) JJF(SH) 084	10%~20%	$U=1.1\% \sim 1.7\%$		
8	*Lubricating Oils Foaming	Temperature	Calibration Specification for Lubricating Oils Foaming	(20~150) °C	$U=0.1$ °C		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Characteristics Tester	Flow	Characteristics Tester JJF(SH) 054	(20~100) mL/min	U=1.4 mL/min		
		Time		(1~300) s	U=0.7 s		
9	*Softening Point Testers (Ring-and-ball Method) for Petrochemical Products	Temperature	Calibration Specification for Lubricating Oils Foaming Characteristics Tester JJF(SH) 034	(10~200) °C	U=0.09 °C		
		Temperature Rate		(1~10) °C/min	U=0.18 °C/min		
10	*Experimental Daylight Presses	Temperature	Calibration Specification for Experimental Daylight Presses JJF(SH)015	(50~200) °C	U=0.18 °C		
		Depth of parallelism		(0~0.3) mm/m	U=0.04 mm/m		
		Time		(1~20) min	U=0.22 s		
11	*Rubber Rotorless Curemeters	Length	Calibration Specification for Rubber Rotorless Curemeters JJF(SH)023	(30~50) mm	U=0.04 mm		
		Frequency		(1~2) Hz	U=0.008 Hz		
		Angle		(0~5) °	U=0.004 °		
		Torque		(0~50) dN•m	U=0.14 dN•m		
		Temperature		(50~200) °C	U=0.11 °C		
12	*Rubber Mooney Viscometer	Rotation speed	Calibration Specification for Rubber Mooney Viscometer JJF(SH)037	(0~20) r/min	U=0.008 r/min		
		Length		(0~0.2) mm	U=0.03 mm		
		Force value		(1~20) kN	U=0.1 kN		
		Temperature		(50~200) °C	U=0.14 °C		
		Mooney viscosity		(0~20) N•m	U=0.006 N•m		



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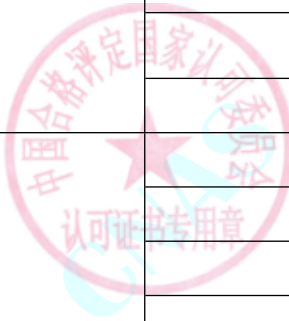
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
13	*Optical Contact Angle Measuring Instruments	Angle	Calibration Specification for Optical Contact Angle Measuring Instruments JJF 2099	(0~180)°	U=0.11°		
14	Bulk density testers	Length	Calibration Specification for Density of Abrasive Grains Testers JJF (JX) 1076	(1~300)mm	U=0.04 mm		
		Volume		(1~300)cm ³	U=0.01cm ³		
		Angle		(10~80)°	U=5'		
15	Film Pendulum Hardness Testers	Length	Calibration Specification for Film Pendulum Hardness Testers JJF (SH)008	(0~500) mm	U=0.07mm		
		Time		100s	U=0.15s		
		Quality		(100~500) g	U=0.06g		
16	*Rubber Flexing Tester	Length	Calibration Specification for Rubber Flexometers JJF(SH) 027	Maximum distance between upper and lower grippers: 200mm	U=0.03mm		
				Stroke Measurement: 100mm	U=0.05mm		
		Frequency		(2.5~1000) Hz	U=0.06Hz		
17	*	Length	C.S. for Coating flexibility testers JJF ((SH) 006	(0~15) mm	U=10 μ m		
18	*Film Impact Testers	Length	C.S. for Film Impact Testers JJF(SH)002	(100~500) mm	U=0.16mm		
		Mass		(900~1000) g	U=0.2g		
19	Paint Film Scriber	Angle	Calibration Specification for Paint Film Scriber JJF 2163	29° ~31°	U=7'		
		Length		(0~4.000)mm	U=0.003mm		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
20	Coating Bend Testers(Cylindrical Mandrel)	Length	Calibration Specification for Coating Bend Testers(Cylindrical Mandrel) JJF(SH) 035	(0~50)mm	U=0.03mm		
21	Wet Film Thickness Gauges	Length	C.S.for Wet Film Thickness Gauges JJF1484	Comb gauge:(5~100) μ m	U=1 μ m		
				Comb gauge:(100~3000) μ m	U _{rel} =1.6%		
				Wheel gauge:(5~125) μ m	U=1 μ m		
				Wheel gauge:(125~1250) μ m	U=2 μ m		
12、Construction and transportation specific measuring instruments							
1	*Concrete Slump Test	Length	C.S.for Apparatus for Concrete Slump Test JJF(Zhe)1093	Slump cone and Rod size : (0~610)mm	U=0.05mm		
				Scale line:(0~280)mm	U=0.05mm		
		parallelism		(0~0.3)mm	U=0.014mm		
		Flatness		(0~0.3)mm	U=0.014mm		
		Proper alignment		(0~2.0)mm	U=0.2mm		
		Verticality		(0~0.5)mm	U=0.05mm		
2	*Compaction Instrument of Soil	Length	V.R.of Compaction Instrument of Soil JJG(JT) 058	Diameter:(0~60)mm	U=0.05mm		
				Drop of High:(0~460)m	U=0.05mm		
				Interval:(2~2.5)mm	U=0.05mm		
		Mass	(2000~5000)g	U=1.0g			



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
3	*Flow Time Tester for Tine Aggregate	Length	V.R. of Flow Time Tester for Tine Aggregate JJG((JT) 109	(12~130)mm	$U=0.05\text{mm}$		
		Angle		(50~70)°	$U=0.2^\circ$		
4	*sand-cone Density Apparatus	Length	V.R. of sand-cone Density Apparatus JJG((JT) 120	(8~25)mm	$U=0.05\text{mm}$		
				(95~210)mm	$U=0.5\text{mm}$		
5	*Flat and Elongaticles Standard Gauge Instrument	Length	C.S. for Needle and Flake Gages JJF1593	(2.5~3.0)mm	$U=8\text{ }\mu\text{m}$		
				(4~90)mm	$U=0.05\text{mm}$		
		Parallelism		(0~0.5)mm	$U=0.014\text{mm}$		
6	*Salt mist testing chambers	Length	V. R. of Calibration Specification for salt mist testing chambers JJG((JT) 082	(0~280)mm	$U=0.05\text{mm}$		
		Angle		(89~91)°	$U=0.1^\circ$		
		Mass		(60~220)g	$U=1.2\text{g}$		
7	*Benkelman Beam Pavement Deflectometer	Length	V. R. of Benkelman Beam Pavement Deflectometer JJG((JT) 025	Indicated value: (0~10)mm	$U=0.008\text{mm}$		
				Leverage ratio: 2:1	$U_{\text{rel}}=0.24\%$		
				The probe size:(9.5~202.0)mm	$U=0.05\text{mm}$		
				Under load:(0~0.1)mm	$U=0.01\text{mm}$		
8	*Measurer for Impact Resistance of Retroreflective Sheeting	Length	V.R. of Measurer for Impact Resistance of Retroreflective Sheeting JJG((JT) 084	(5~255)mm	$U=0.05\text{mm}$		
		Mass		(400~500) g	$U=1.0\text{g}$		
9	Flexibility of Retroreflective Sheeting	Length	V. R. of Flexibility of Retroreflective Sheeting JJG((JT) 098	(3.0~3.5)mm	$U=0.01\text{mm}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
10	*Instrument for Steel Bar Gauge Length	Length	V.R. of Instrument for Steel Bar Gauge Length JJG(Su) 67	(0~500) mm	U=0.06mm		
11	*Apparatus for Normal Consistency and Setting Time of Cement Paste	Length	V.R. of Apparatus for Normal Consistency and Setting Time of Cement Paste JJG(JT) 050	Depth: (0-200) mm	U=0.05mm		
				Length: (0-300) mm	U=0.05mm		
				S-ruler: (1-100) mm	U=0.3mm		
				Diameter: (0-25) mm	U=0.005mm		
		Quality		(298~302)g	U=0.15g		
12	*Measurer for Resistance to Impact of Raised Pavement Markers	Length	V.R. of Measurer for Resistance to Impact of Raised Pavement Markers JJG(JT) 080	(0~2000) mm	U=1mm		
		Mass		(500~2000) g	U=0.1g		
13	Soil Liquid Plastic Limit Measuring Instruments	Length	Calibration Specification for Nonmetal Building Materials Plastic Measuring Instruments JJF 1090	(0~22)mm	U=0.03mm		
14	Construction Quality Tester Sets	Length	Calibration Specification for Construction Quality Tester Sets JJF1110	Diagonal Tester:(1~3)m	U=0.15mm		
				Wedge Gauge:(0~15)mm	U=0.05mm		
				Gridding Tester:(0~240)mm	U=0.14mm		
				Gradient Tester:(0~30)mm/m	U=0.10mm/m		
				Verticality Tester: (0~15)mm/2m	U=0.1mm/2m		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
15	Wedge-Shape Filler Gauges	Length	Calibration Specification for Wedge-Shape Filler Gauges JJF 1548	(0~60)mm	U=10 μ m		
16	Apparatus for Determining Penetration of Bituminous Materials	Length	Calibration Specification for Apparatus for Determining Penetration of Bituminous Materials JJF 1208	surveyor's rod: (0~55)mm	U=0.01mm		
		Angle		Standard needle: (0.1~2)mm	U=3 μ m		
				(8~10)°	U=10'		
				Mass	(3~105)g		
17	Reinforced Concrete Covermeter and Floorslab Thickness Tester	Length	Calibration Specification for Reinforced Concrete Covermeter and Floorslab Thickness Tester JJF 1224	(0~300) mm	U=1mm		
18	Test sieves	Length	Calibration Specification for Test sieves JJF 1175	(0.04~4)mm	U=3 μ m		
				(4~125)mm	U=0.04mm		
19	Standard Block of Reinforced Covermeter and Floorslab Thickness Tester	Length	Calibration Specification for Standard Block of Reinforced Covermeter and Floorslab Thickness Tester JJF (Jing) 76	(0~400) mm	U=0.14mm		
20	*Moulds	Length	C.S for Moulds JJF1307	(0~500)mm	U=0.06mm		
		Verticality		Concrete trial mold:(0.1~0.3)mm/100mm	U=0.02mm/100mm		
				Cement sand test mold:(0.1~0.2)mm/40mm	U=0.02mm/40mm		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
21	*Rapid Measuring Instrument for Chloride Ion of Concrete	Contentration	Verification Regulation of Rapid Measuring Instrument for Chloride Ion of Concrete JJG (JT) 134	(0.001~0.1)mol/L	$U_{rel}=0.4\%$		
22	*Apparatus for Blaine Method	Specific surface area	Calibration Specification for Blaine Permeability JJF(JC) 171	(300 ~400)m ² /kg	$U=2.2 \text{ m}^2/\text{kg}$		
23	Cutting Ring	Length	Calibration Specification for Cutting Ring JJF (LU) 220	(20~80) mm	$U=20 \mu \text{ m}$		
24	Borehole Clinometers	Angle	Calibration Specification for Borehole Clinometers JJF 1550	(-30~30)°	$U=0.4^{\circ}$		
25	Concrete Crack Width and Depth Measuring Instruments	Length	Calibration Specification for Concrete Crack Width and Depth Measuring Instruments JJF 1334	Width: (0.01~2) mm	$U=0.01\text{mm}$		
				Depth: (20~100)mm	$U=4\text{mm}$		
				Width standard board: (0.01~6) mm	$U=3 \mu \text{ m}$		
				Depth Standard Block: (20~900) mm	$U=1\text{mm}$		
26	Carbonation depth measuring instrument	Length	calibration Specification for carbonation depth measuring instruments and calipers JJF 1721	(0~8) mm	$U=0.08\text{mm}$		
27	Brick with caliper	Length	Calibration Specification for Brick with caliper JJF (Jin) 114	main Scale: (0~500) mm	$U=0.2\text{mm}$		
				Vernier Scale: (-10~30) mm	$U=0.1\text{mm}$		
13、Textile and leather specific measuring instruments							
1	*Vertical Combustion	Length	Calibration Specification for Vertical Combustion Testers	(10~40) mm	$U=0.06 \text{ mm}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Testers	Angle	JJF(纺织)068	25°	U=0.3°		
		Mass		(50~500) g	U=0.06 g		
		Time		(10~3600)s	U=0.2 s		
		Speed		45 mm/s	U=1.2 mm/s		
2	*Colour Fastness to Friction Testers	Length	Calibration Specification for Colour Fastness to Friction Testers JJF(FZ)027	(0.5~150)mm	U=0.74mm		
		Force value		9N	U=0.1 N		
3	*Fiber Cutters	Length	Calibration Specification for Fiber Cutters JJF(FZ) 022	(10~30)mm	U=3 μ m		
4	*Fiber Diameter Analyzer	Length	Calibration Specification for Fiber Diameter Analyzer JJF(FZ)065	(0~1000) μ m	U=0.42 μ m		
5	*Fabrics Water Spray Testers	Length	Calibration Specification for Fabrics Water Spray Testers JJF(FZ) 083	(0.01~5)mm	U=0.013mm		
				(5~50)mm	U=0.05mm		
				(50~300)mm	U=0.30mm		
		Angle		(44~46)°	U=0.15°		
		Time		(5~100)s	U=0.6s		
6	*Rolling box type pilling tester	Coefficient of friction	Calibration Specification for Fuzzing and Pilling Tester JJF(FZ) 053	(0.5~1)	U=0.016		
		Rotation speed		60r/min	U=0.5 r/min		
7	*Colour Fastness to Perspiration Testers	Quality	Calibration Specification for Colour Fastness to Perspiration Testers JJF(FZ) 028	(4200~5300)g	U=12g		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
14、MotorVehicle special measuring instrument							
1	*Vehicle Exhaust Emissions Measuring Instruments	Concentration	Verification Regulation of Vehicle Exhaust Emissions Measuring Instruments JJG 688	O ₂ : $(0.1 \sim 30) \times 10^{-2}$ mol/mol	$U_{\text{rel}}=1.2\%$		
				CO: $(0.1 \sim 16) \times 10^{-2}$ mol/mol	$U_{\text{rel}}=1.3\%$		
				C ₃ H ₈ : $(1 \sim 5000) \times 10^{-6}$ mol/mol	$U_{\text{rel}}=1.3\%$		
				CO ₂ : $(0.1 \sim 18) \times 10^{-2}$ mol/mol	$U_{\text{rel}}=1.3\%$		
				NO: $(1 \sim 5000) \times 10^{-6}$ mol/mol	$U_{\text{rel}}=1.3\%$		
2	Tire Tread Depth Gauges	Length	Calibration Specification for Tire Tread Depth Gauges JJF 1477	$(0 \sim 50)$ mm	$U=0.02\text{mm}$		



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