

Name: Liaoning Institute of Measurement

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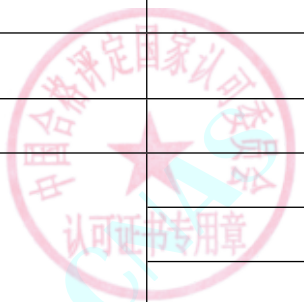
Registration No. CNAS L0954

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

Effective Date: 2024-05-16 Expiry Date: 2030-06-05

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
I Geometric							
1	Gauge Blocks	Length	V.R.of Gauge Blocks JJG146	(0.5~1000)mm	$U=0.10\text{ }\mu\text{ m}+1\times10^{-6}\times\ln(k=2.6)$		
2	Standard Metallic Scale	Length	V.R.of Standard Metallic Scale(Grade III) JJG71	(0~1000)mm	$U=2\text{ }\mu\text{ m}+5\times10^{-6}\text{ }L$		
3	Standard Steel Tapes	Length	V.R. of Standard Steel Tapes JJG741	(0~50)m	$U=5\mu\text{m}+5\times10^{-6}\text{ }L$		
4	Steel Measuring Tapes	Length	V.R.of Steel Measuring Tapes JJG4	(0~200)m	$U=0.2\text{mm}+5\times10^{-6}\text{ }L$		
5	Steel Rule	Length	V.R.of Steel Rule JJG1	(0~2000)mm	$U=0.05\text{mm}+2\times10^{-5}\text{ }L$		
6	Current Calipers	Length	V.R.of Current Calipers JJG30	(0~600)mm	$U=0.01\text{mm}$		
				(> 600~1500)mm	$U=0.02\text{mm}$		
				(> 1500~2000)mm	$U=0.03\text{mm}$		



No. CNAS L0954

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7	Height Caliper	Length	V.R.of Height Caliper JJG31	(0~600)mm	$U=0.01\text{mm}$		
				(> 600~1500)mm	$U=0.02\text{mm}$		
				(> 1500~2000)mm	$U=0.03\text{mm}$		
8	Micrometer	Length	V.R.of Micrometer JJG 21	External Micrometer (0~500) mm	$U=0.9\mu\text{m}+7\times 10^{-6}L$		
				Digimatic Micrometer:(0~500) mm	$U=0.6\mu\text{m}+4\times 10^{-6}L$		
				Calibration lever: (0~ 50) mm	$U=0.19\mu\text{m}$		
				Calibration lever: (> 50~100) mm	$U=0.22\mu\text{m}$		
				Calibration lever: (> 100~200) mm	$U=0.26\mu\text{m}$		
				Calibration lever: (> 200~300) mm	$U=0.33\mu\text{m}$		
				Calibration lever: (> 300~400) mm	$U=0.41\mu\text{m}$		
				校对用量杆: (>400~ 500) mm	$U=0.50\mu\text{m}$		
9	Internal Micrometers	Length	V.R.of Internal Micrometers JJG22	(50~3000)mm	$U=0.6\mu\text{m}+2.6\times 10^{-6}L$		
10	Micrometers of Measuring Inside Dimension	Length	C.S.for Micrometers of Measuring Inside Dimension JJF1411	Internal Micrometers with Two-point Contact : (5~150)mm	$U=1.1\mu\text{m}+6\times 10^{-6}L$		
				Three-point Internal Micrometer : (6~150)mm	$U=1.1\mu\text{m}+5\times 10^{-6}L$		



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No. CNAS L0954

第 2 页 共 177 页

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

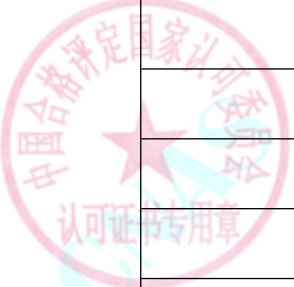
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
11	*Dial Gauges	Length	V.R.of Dial Gauges JJG34	Graduation value 0.1mm: (0~100)mm	$U=0.01\text{mm}$		
				Graduation value 0.01mm: (0~10)mm	$U=4\text{ }\mu\text{m}$		
				Graduation value 0.01mm: (0~100)mm; $10\text{mm} < S \leq 100\text{mm}$	$U=8\text{ }\mu\text{m}$		
				Graduation value 0.002mm(0~2)mm	$U=2.0\text{ }\mu\text{m}$		
				Graduation value 0.002mm: (0~10)mm; $2\text{mm} < S \leq 10\text{mm}$	$U=3.0\text{ }\mu\text{m}$		
				Graduation value 0.001mm(0~1)mm	$U=1.3\text{ }\mu\text{m}$		
				Graduation value 0.001mm (0~2)mm; $1\text{mm} < S \leq 2\text{mm}$	$U=1.8\text{ }\mu\text{m}$		
				Graduation value 0.001mm(0~5)mm; $2\text{mm} < S \leq 5\text{mm}$	$U=2.5\text{ }\mu\text{m}$		
				Resolution 0.01mm: (0~100)mm	$U=0.01\text{mm}$		
				Resolution 0.005mm: (0~50)mm	$U=5\text{ }\mu\text{m}$		
				Resolution 0.001mm: (0~1)mm	$U=1\text{ }\mu\text{m}$		



No. CNAS L0954

第 3 页 共 177 页

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

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				Resolution 0.001mm: (0~10)mm; $1\text{mm} < S \leq 10\text{mm}$	$U=2\text{ }\mu\text{m}$		
				Resolution 0.001mm: (0~30)mm; $10\text{mm} < S \leq 30\text{mm}$	$U=3\text{ }\mu\text{m}$		
12	Dial Test Indicator	Length	V.R.of Dial Test Indicator JJG35	Reading in 0.001mm: (0~0.4)mm	$U=1.2\text{ }\mu\text{m}$		
				Reading in 0.01mm(0~1)mm	$U=2\text{ }\mu\text{m}$		
13	Bore Dial Indicators	Length	C.S.of Bore Dial Indicators JJF1102	$\Phi(6\sim450)\text{mm}$	$U=1.2\text{ }\mu\text{m}$		
14	Depth Dial Gauge	Length	V.R.of Depth Dial Gauge JJG830	Reading in 0.001mm: (0~3)mm	$U=2\text{ }\mu\text{m}$		
				Reading in 0.01mm(0~100)mm	$U=3\text{ }\mu\text{m}$		
15	Fineness of Grind Gage	Length	V.R.of Fineness of Grind Gage JJG905	(0~150) μm	$U=0.50\text{ }\mu\text{m}$		
16	Standard Ring Gauge	Length	V.R.of Standard Ring Gauge JJG894	(1~200)mm	$U=0.7\text{ }\mu\text{m}+6\times 10^{-6}L$		
17	Cylindrical Thread Gauges	Length	V.R.of Cylindrical Screw thread Gauges JJF1345	Ring Gauges: (3~50)mm	$U=2.4\text{ }\mu\text{m}$		
				Ring Gauges: (>50~100)mm	$U=2.5\text{ }\mu\text{m}$		
				Ring Gauges: (>100~150)mm	$U=2.8\text{ }\mu\text{m}$		
				Ring Gauges: (>150~200)mm	$U=3.3\text{ }\mu\text{m}$		
				Ring Gauges: (>200~300)mm	$U=4.1\text{ }\mu\text{m}$		



No. CNAS L0954

第 4 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Plug Gauges: (1~50)mm	$U=2.4 \mu\text{m}$		
				Plug Gauges: (>50~100)mm	$U=2.5 \mu\text{m}$		
				Plug Gauges: (>100~150)mm	$U=2.8 \mu\text{m}$		
				Plug Gauges: (>150~200)mm	$U=3.3 \mu\text{m}$		
18	Plain Limit Gauges	Length	V.R.of Plain Limit Gauges JJG343	Plug Gauge: (1~260)mm	$U=0.4\mu\text{m}+6.8 \times 10^{-6} L$		
				Caliper: (14~260)mm	$U=0.7\mu\text{m}+6 \times 10^{-6} L$		
				Ring Gauge: (14~100)mm	$U=0.7\mu\text{m}+6 \times 10^{-6} L$		
19	Test Sieves	Length	C.S.for Test Sieves JJF1175	(0.020~4)mm	$U=1.8\mu\text{m}$		
				(>4~125)mm	$U=26\mu\text{m}$		
20	*Coordinate Measuring Machine	Length	C.S.for Coordinate Measuring Machine JJF1064	(0~20)m	$U=0.10\mu\text{m}+1.6 \times 10^{-6} L$		
21	*Toolmaker's Microscope	Length	V.R.of Toolmaker's Microscope JJG56	(0~200) mm	$U=0.5\mu\text{m}+2 \times 10^{-6} L$		
22	*Projectors	Length	C.S.for Projectors JJF1093	(0~200)mm	$U=1.0\mu\text{m}+2.2 \times 10^{-6} L$		
23	*Length Measuring Machine	Length	C.S.for Length Measuring Machine JJF1066	(-100~+100) μm	$U=0.10 \mu\text{m}$		
				(0~100)mm	$U=0.3\mu\text{m}+0.5 \times 10^{-6} L$		
				(0~3)m	$U=0.4\mu\text{m}+2 \times 10^{-6} L$		



No. CNAS L0954

第 5 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
24	*Length Measuring Instrument	Length	C.S.for Length Measuring Instrument JJF1189	(0~100)mm	$U=0.1\mu\text{m}+2\times 10^{-6}L$		
25	*Optimeter	Length	V.R.of Optimeter JJG45	(-100~+100) μm	$U=0.1\mu\text{m}$		
26	*Contact -type Interferometers	Length	V.R.of Contact-Type Interferometers JJG101	(-10~+10) μm	$U=0.01\mu\text{m}$		
27	Inductive Micrometers	Length	C.S.for Inductive Micrometers JJF1331	(-1000~+1000) μm	$U=0.02\mu\text{m}$,		
28	Ultrasonic Thickness Instruments	Length	C.S.for Ultrasonic Thickness Instrument JJF1126	(0~200)mm	$U=0.03\text{mm}$		
29	Hand-held Laser Distance Meters	Length	V.R.of Hand-held Laser Distance Meters JJG966	(0.2~40)m	$U=0.5\text{mm}$		
30	Pi Tapes	Length	C.S.for Pi Tapes JJF1423	9mm~16m	$U=3\mu\text{m}+4\times 10^{-6}L$		
31	Depth Micrometers	Length	V.R.of Depth Micrometers JJG24	(0~300)mm	$U=1.0\mu\text{m}$		
32	Common Normal Micrometer	Length	V.R.of Common Normal Micrometer JJG82	(0~200)mm	$U=1\mu\text{m}+6\times 10^{-6}L$		
33	Cylindrical Measuring Pin	Length	C.S. for Cylindrical Measuring Pin JJF1207	Pin Gauge Φ (0.1~25)mm	$U=0.6\mu\text{m}$		
				Three-wire Set Φ (0.118~6.585)mm	$U=0.3\mu\text{m}$		
34	*Biological Microscopes	Length	C.S.for Biological Microscopes JJF1402	(0~1)mm	$U=4\mu\text{m}$		
35	Angular Polygon	Angle	V.R.of Angular Polygon JJG283	$0^\circ \sim 360^\circ$	$U=0.2''$		
36	Angle Gauge Blocks	Angle	V.R. of Angle Gauge Blocks JJG70	$10^\circ \sim 100^\circ$	$U=0.6''$		

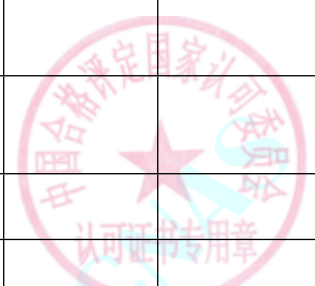


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No. CNAS L0954

第 6 页 共 177 页

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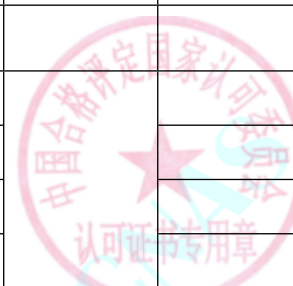
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
37	Universal Bevel Protractors	Angle	C.S. for General Bevel Protractors JJF1959	0° ~ 360°	U=1.6'		
38	Squares	Verticality	V.R. of Squares JJG7	(40~400)mm	U=1.2μm		
39	Electronic Levels and Coincidence Levels	Angle	V.R. of Electronic Levels and Coincidence Levels JJG103	Electronic Level: (-2~+2)mm/m	U=0.6 μ m/m		
				Coincidence Level: (-5~5)mm/m	U=0.6 μ m/m		
40	Frame Level and Shaft Level	Angle	C.S. for Frame Levels and Shaft Levels JJF1084	(0.02~0.10)mm/m	U _{rel} =5.0% nominal dividing value		
41	Autocollimators	Angle	V.R. of Autocollimators JJG202	0' ~ 10'	U=0.2''		
42	Calibrators for the Levels	Angle	V.R. of Calibrators for the Levels JJG191	(0.001~1.5)mm/m	U _{rel} =1.9% nominal dividing value		
43	Theodelites	Angle	V.R. of Optical Theodolites JJG414, V.R. of Electronic Tachometer Total Station JJG100	0° ~ 360°	U=0.22''		
44	Levels	Angle	V.R. of Levels JJG425	-25''~+25'' (directrix: 2m~∞)	U=1.8''		
45	*Theodolite Verification Device	Angle	V.R. of Theodolite Verification Device JJG949	0° ~ 360°	U=0.06''		
46	*Level Verification System	Angle	V.R. of Level Verification System JJG960	-25''~+25''	U=0.52''		
47	Rotating Lasers	Angle	C.S. for Rotating Lasers JJF1166	-8' ~ +8'	U=3.6''		
48	Box Plate	Verticality	V.R. of Box Plates JJG194	(100~400)mm	U=3μm		
49	Optical Flats	Parallelism	V.R. of Optical Flats JJG28	(15~41)mm	U=0.1 μ m		



No. CNAS L0954

第 7 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(65~91)mm	$U=0.2\text{ }\mu\text{m}$		
		Flatness		$\Phi(30\sim150)\text{mm}$	$U=0.01\text{ }\mu\text{m}$		
50	Surface Plates	Flatness	V.R. of Surface Plates JJG117	160mmx100mm~ 2000mm×1500mm	$U=1.8\times10^{-3}L(2n)^{1/2}$, L diagonal span, n The number of segments		
51	Straight Edge	Straightness	V.R. of Straight Edge JJG63	(75~175)mm	$U=0.33\text{ }\mu\text{m}$		
				(200~300)mm	$U=0.50\text{ }\mu\text{m}$		
52	X-Ray Fluorescence Coating Thickness Instruments	Length	C.S. for X-Ray Fluorescence Coating Thickness Instruments JJF1306	(0.11~19.3) μm	$U_{\text{rel}}=6\%$		
53	Master Gears	Length	V.R. of Master Gears JJG1008	$f_p, F_p: (0\sim40)\text{ }\mu\text{m}$	$U=2.0\text{ }\mu\text{m}$	Accredited only for gears diameter (20~ 400)mm and $m\geq0.3\text{mm}$	
				$F_\beta:(0\sim17)\text{ }\mu\text{m}$	$U=1.2\text{ }\mu\text{m}$		
				$F_\alpha:(0\sim24)\text{ }\mu\text{m}$	$U=1.2\text{ }\mu\text{m}$		
54	Gear Helix Master	Length	V.R. of Gear Helix Master JJG408	$\beta:(15\sim45)^\circ$	$U=5.0''$		
55	Gear Involute Masters	Length	V.R. of Gear Involute Masters JJG332	(20~60) mm	$U=1.0\text{ }\mu\text{m}$		
				(60~100) mm	$U=1.2\text{ }\mu\text{m}$		
				(100~150) mm	$U=1.4\text{ }\mu\text{m}$		
				(150~200) mm	$U=1.8\text{ }\mu\text{m}$		



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56	Angular-Position Transducers/Sensors	angle	C.S. for Angular-Position Transducers/Sensors JJF1352	$0^{\circ} \sim 360^{\circ}$	$U=0.06\%FS$		
57	Linear Displacement Sensors	Length	C.S. for Linear Displacement Sensors JJF1305	(0~500)mm	$U=0.08\%FS$		
58	Global Positioning System(GPS)Receiver	Length	C.S. for Global Positioning System(GPS)Receiver JJF1118	6m	$U=0.7mm$		
				104m	$U=0.8mm$		
				15km	$U=2.8mm$		
59	Thickness Gauges	Length	C.S. for Thickness Gauges JJF1255	(0~30) mm	$U=2 \mu m$		
60	Feeler Gauge	Length	V.R.of Feeler Gauge JJG 62	(0.02~0.10)mm	$U=2.0 \mu m$		
				(0.15~1.00)mm	$U=2.7 \mu m$		
				(1.00~3.00)mm	$U=3.0 \mu m$		
61	Magnetic and Eddy Current Measuring Instrument for Coating Thickness	Length	V.R.of Magnetic and Eddy Current Measuring Instrument for Coating Thickness JJG 818	Measuring Instrument for Coating Thickness: (0~50) μm	$U=0.4 \mu m$		
				Measuring Instrument for Coating Thickness: (>50~500) μm	$U=2.9 \mu m$		
				Measuring Instrument for Coating Thickness: (>500~1000) μm	$U=5.8 \mu m$		
				Measuring Instrument for Coating Thickness: (>1000~1250) μm	$U=7.2 \mu m$		



No. CNAS L0954

第 9 页 共 177 页

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

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				Thickness sheet: (0~50) μm	$U=0.4 \mu\text{m}$		
				Thickness sheet: (50~2000) μm	$U=0.2 \mu\text{m}+0.6\%H$		
62	Contact (Stylus) Instruments of Surface Roughness Measurement by Profile Method	Roughness	C.S. for Contact (Stylus) Instruments of Surface Roughness Measurement by Profile Method JJF1105	Ra(0.025~15) μm	$U_{\text{rel}}=3\%$		
63	Roughness Comparison Specimens	Roughness	C.S. of Roughness Comparison Specimens JJF1099	Ra(0.001~10) μm	$U_{\text{rel}}=6\%$		
64	Radius Gauges	Length	V.R. of Radius Gauges JJG58	R (1~25) mm	$U=3 \mu\text{m}+0.2 \times 10^{-6}R$		
65	*Gear Measuring Centers	Length	C.S. for Gear Measuring Centers JJF1561	Tooth Profile $r_b =$ (50mm, 100mm, 150mm)	$U=1.7\mu\text{m}$	Accredited only for D(0~1000)mm	
				helix: $\beta = (0^\circ, 15^\circ)$	$U=1.7\mu\text{m}$		
				total cumulative pitch error: (0~0.646) mm	$U=1.7\mu\text{m}$		
66	Dial Snap Gauges	Length	C.S. for Dial Snap Gauges JJF1253	(5~20)mm	$U=0.005\text{mm}$		
				(>20~40)mm	$U=0.006\text{mm}$		
				(>40~60)mm	$U=0.007\text{mm}$		
				(>60~90)mm	$U=0.008\text{mm}$		
				(>90~110)mm	$U=0.009\text{mm}$		
				(>110~130)mm	$U=0.010\text{mm}$		



No. CNAS L0954

第 10 页 共 177 页

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

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				(>130~150)mm	$U=0.011\text{mm}$		
				(>150~170)mm	$U=0.012\text{mm}$		
				(>170~200)mm	$U=0.013\text{mm}$		
67	Reinforced Concrete Covermeter and Floorslab Thickness Tester	Length	C.S. for Reinforced Concrete Covermeter and Floorslab Thickness Tester JJF1224	Reinforced Concrete Covermeter: (0~100) mm Floorslab Thickness Tester : (0~500) mm	$U=1\text{mm}$ $U=1\text{mm}$		
68	Micrometers With Dial Comparator	Length	V.R.of Micrometers With Dial Comparator and Indication Snap Gauge JJG26	(0~50)mm (>50~100)mm	$U=0.5\mu\text{m}$ $U=1.0\mu\text{m}$		
69	Articulated Arm Coordinate Measuring Machines	Length	C.S. for Articulated Arm Coordinate Measuring Machines JJF1408	(0~2500) mm	$U=12\mu\text{m}$		
70	Laser Diameter Measuring Gauges	Length	C.S. for Laser Diameter Measuring Gauges JJF1250	(1~30) mm	$U=0.4\mu\text{m}$		
71	*Metallurgical Microscopes	Length	C.S. for Metallurgical Microscopes JJF1914	(0~10) mm	$U=1.2\mu\text{m}$		
72	Tire Tread Depth Gauges	Length	C.S. for Tire Tread Depth Gauges JJF1477	(0~50) mm	$U=0.01\text{mm}$		
73	Screw Templates	Length	V.R.of Screw Templates JJG60	P (0.4~6.35) mm	$U=3.3\mu\text{m}$		
74	Height Measuring Instrument with Digital Display	Length	C.S. for Height Measuring Instrument with Digital Display JJF1254	(0~1000) mm	$U=0.22\mu\text{m}+1.5\times 10^{-6}L$		
75	Casing Coupling	Length	V.R.of Casing Coupling	(600~3400) mm	$U=0.2\text{mm}$		

No. CNAS L0954

第 11 页 共 177 页



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

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	Meter		Meter JJG473	(> 3400 ~ 4500) mm	U=0.3mm		
76	Wedge-Shape Filler Gauges	Length	C.S. for Wedge-Shape Filler Gauges JJF1548	(0~60)mm	U=11 μ m		
77	Coordinate Measuring Spheres	Length	C.S. for Coordinate Measuring Spheres JJF 1422	Diameter: (10~50) mm Roundness: (10~50) mm	U=0.5μm U=0.05μm		
78	*Optical Digital Dividing Head	Angle	V. R. of Optical Digital Dividing Head JJG 57	(0~360)°	U=0.8"	Except For Optical Digital Dividing Head (Division Value 0.1 ")	
79	Reading Microscope and Measuring Microscope	Length	V. R. of Reading Microscope and Measuring Microscope JJG 571	Measuring Microscope: (0~50)mm	U=1.5 μ m	Only Calibration Measuring Microscope	
80	Clinometers	Angle	C.S. for Clinometers JJF 1915	optics: (-120~+120)° Digital display: (0~360)°	U=4" U=0.006°		
81	Comparators of Machine Type	Length	V. R. of Comparators of Machine Type JJG 39	Division Value 0.5 μ m: (-50~+50) μ m Division Value 1 μ m: (-100~+100) μ m Division Value 2 μ m: (-200~+200) μ m	U=0.08 μ m U=0.16 μ m U=0.3 μ m		



No. CNAS L0954

第 12 页 共 177 页

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

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				Division Value 5 μm : (-500~+500) μm	$U=0.6\mu\text{m}$		
				Division Value 10 μm : (-1000~+1000) μm	$U=1.4\mu\text{m}$		
82	Microcator	Length	V.R. of Microcator JJG 118	Division Value 0.5 μm : (-50~+50) μm	$U=0.08\mu\text{m}$		
				Division Value 1 μm : (-100~+100) μm	$U=0.16\mu\text{m}$		
				Division Value 2 μm : (-60~+60) μm	$U=0.3\mu\text{m}$		
				Division Value 5 μm : (-150~+150) μm	$U=0.6\mu\text{m}$		
				Division Value 10 μm : (-300~+300) μm	$U=1.4\mu\text{m}$		
83	Carbonization Depth Measuring Instruments and Calipers	Length	C. S. for Carbonization Depth Measuring Instruments and Calipers JJF 1721	Calipers: (0~70)mm	$U=0.01\text{mm}$		
				Carbonization Depth Measuring Instruments: (0~8)mm	$U=0.08\text{mm}$		
84	Plumb Instruments	Angle	C.S. for Plumb Instruments JJF 1081	(0~50)"	$U=0.6''$		
85	*Straight Edges	Straightness	C.S. for Straight Edges JJF 1097	(0~1000)mm	$U=0.6\mu\text{m}$		
				(1000~2000)mm	$U=1.0\mu\text{m}$		
				(2000~3000)mm	$U=1.4\mu\text{m}$		
86	Blocks used in Ultrasonic Testing	Length	C.S. for Blocks used in Ultrasonic Testing JJF 1487	(0~300)mm	$U=4\mu\text{m}$		
87	Fiber Tapes And Measuring Ropes	Length	V.R. of Fiber Tapes And Measuring Ropes JJG 5	(0~200)m	$U=0.2\text{mm}+1\times 10^{-4}L$	Only Calibration Fiber Tapes	



No. CNAS L0954

第 13 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
88	Wooden Rule (Wooden Folded Rule)	Length	V.R.of Wooden Rule (Wooden Folded Rule) JJG 2	(0~1000)mm	U=0.3mm		
				(> 1000~2000)mm	U=0.4mm		
				(> 2000~3000)mm	U=0.5mm		
89	Level Rod	Length	V. R.of Level Rod JJG 8	(0~5)m	U=0.2mm	Only Calibration Tower Scale	
90	*Pneumatic Measuring Instrument for Micrometers	Length	V.R.of Pneumatic Measuring Instrument for Micrometers JJG 356	Electron Column/Division Value 0.2 μ m:(-10~+10) μ m	U=0.1 μ m		
				Electron Column/Division Value 0.5 μ m:(-25~+25) μ m	U=0.3 μ m		
				Electron Column/Division Value 1 μ m:(-50~+50) μ m	U=0.6 μ m		
				Buoy type/Division Value 0.5 μ m:(-8~+8) μ m	U=0.2 μ m		
				Buoy type/Division Value 1 μ m:(-15~+15) μ m	U=0.3 μ m		
				Buoy type/Division Value 2 μ m:(-40~+40) μ m	U=0.6 μ m		
				Buoy type/Division Value 5 μ m:(-160~+160) μ m	U=1.0 μ m		
91	Calibrator of Extensometers	length	V.R. for Calibrator of Extensometers JJF1096	(0~0.3)mm	U=0.18 μ m		



No. CNAS L0954

第 14 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(>0.3~25)mm	$U_{rel}=0.05\%$		
92	*Roundness Meter	circular degree	V.R.of Measurement Standard Instrument of Roundness and Cylindricity JJG 429	(12.5~193.8) μm	$U_{rel}=2.2\%$		
				Radial : ϕ 50mm	$U=0.05 \mu m$		
93	Surface Profile Gauges	Length	C.S.for Surface Profile Gauges JJF 1476	(0~6.5)mm	$U=2 \mu m$		
94	Gear Tooth Calipers	Length	C.S.for Gear Tooth Calipers JJF 1072	Modulus:(1~50)mm	$U=0.01mm$		
95	*Scanning Probe Microscopes	Length	C.S.for Scanning Probe Microscopes JJF 1351	H :10nm~50 μm	$U=4nm+5 \times 10^{-3}H$		
96	Large Dimension Outside Micrometers	Length	C.S.for Large Dimension Outside Micrometers JJF 1088	Micrometers(500~3000)mm	$U=1.1\mu m+2.1 \times 10^{-6}L$		
				Calibration lever: (500~3000) mm	$U=0.3\mu m+1.8 \times 10^{-6}L$		
97	Welding Inspection	Length	V.R.of Callipers for Welding Inspection JJG 704	Linear Scale:(0~50)mm	$U=0.06mm$		
				Height Gauge:(0~20)mm	$U=0.1mm$		
				Depth gauge :(0~30)mm	$U=0.05mm$		
				Width Gauge:(0~60)mm	$U=0.1mm$		
				Gap Gauge:(0~7)mm	$U=0.05mm$		
		Angle		Angle Template and Angle ruler: (0~160) $^{\circ}$	$U=8'$		
98	Micrometers with Prismatically Arranged Measuring Faces	Length	V.R.of Micrometers with Prismatically Arranged Measuring Faces JJG 182	(1~50)mm	$U=1.3 \mu m$	Only Calibration Three-Channel Micrometer	



No. CNAS L0954

第 15 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
99	*Testers for Dial Gauges	Length	V.R.of Testers for Dial Gauges JJG 201	Tester for Dial Indicator with Scale Division of 0.01mm:(0~10)mm	$U=0.9 \mu m$		
				Tester for Dial Indicator with Scale Division of 0.01mm:(0~25)mm	$U=1.2 \mu m$		
				Tester for Dial Indicator with Scale Division of 0.01mm:(0~50)mm	$U=1.8 \mu m$		
				Tester for Dial Indicator with Scale Division of 0.001mm:(0~2)mm	$U=0.3 \mu m$		
				Tester for Dial Indicator with Scale Division of 0.001mm:(0~5)mm	$U=0.6 \mu m$		
				Grating Type Indicator Calibrator:(0~10)mm	$U=0.3 \mu m$		
				Grating Type Indicator Calibrator:(0~30)mm	$U=0.5 \mu m$		
				Grating Type Indicator Calibrator:(0~50)mm	$U=0.8 \mu m$		
100	Sine Bars	Angle	V.R.of Sine Bars JJG 37	30°	$U=6.3''$		
101	Wet Film Thickness Gauges	Length	C.S.for Wet Film Thickness Gauges JJF 1484	Comb Gauge:(5~100) μm	$U=1.2 \mu m$		
				Comb Gauge:(>100~3000) μm	$U_{rel}=1.6\%$		
				Wheel Gauge :(0~50) μm	$U=0.6 \mu m$		



No. CNAS L0954

第 16 页 共 177 页

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

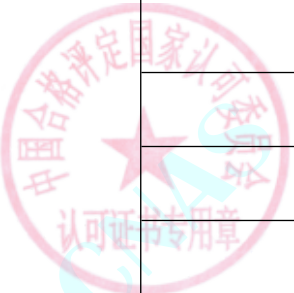
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Wheel Gauge: ($>50 \sim 250$) μm	$U=1.7 \mu\text{m}$		
				Wheel Gauge: ($>250 \sim 500$) μm	$U=2.5 \mu\text{m}$		
				Wheel Gauge: ($>500 \sim 1500$) μm	$U=3.4 \mu\text{m}$		
102	Step Gauges	Length	C.S. for Step Gauges JJF 1258	($0 \sim 1200$)mm	$U=0.50\mu\text{m}+1 \times 10^{-6}L$		
103	Laser Tracker 3-Dimensional Measuring System	Length	C.S. for Laser Tracker 3-Dimensional Measuring System JJF 1242	($0 \sim 24$)m	$U=0.5\mu\text{m}+0.4 \times 10^{-6}L$		
104	Brick Calipers	Length	C.S. for Brick Calipers JJF (辽) 227	Vertical ruler: ($0 \sim 500$)mm	$U=0.03\text{mm}$		
				Main ruler: ($0 \sim 500$)mm	$U=0.15\text{mm}$		
105	Internal Groove Caliper	Length	C.S. for Internal Groove Caliper JJF (辽) 229	($0 \sim 500$)mm	$U=0.01\text{mm}$		
106	*Stylus Surface Contour Tester	Length	C.S. for Stylus Surface Contour Tester JJF (辽) 285	Z axis: ($0 \sim 100$)mm	$U=1.0\mu\text{m}+1.3 \times 10^{-5}L$		
				R: 80mm	$U=1.4 \mu\text{m}$		
107	*Optical 3D Measuring SystemsBased on Structured Light Scanning	Length	C.S. for Optical 3D Measuring SystemsBased on Structured Light Scanning JJF1951	($0 \sim 500$)mm	$U=5 \mu\text{m}$		
				($>500\text{mm} \sim 1000$)mm	$U=9 \mu\text{m}$		
				($>1000\text{mm} \sim 1500$)mm	$U=13 \mu\text{m}$		
108	*General Bevel Protractors	Length	C.S. for General Bevel Protractors JJF1950	radial: ($0 \sim 200$)mm	$U=0.4\mu\text{m}+2.7 \times 10^{-6}D$		
				thread: ($0 \sim 200$)mm	$U=2.1 \mu\text{m}$		
		Angle		taper: ($0 \sim 60$) °	$U=2.6''$		



No. CNAS L0954

第 17 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
109	Recess Measuring Micrometer	Length	C.S. for Recess Measuring Micrometer JJF (Liao) 369	(0~50)mm	$U=2\text{ }\mu\text{m}$		
110	Small Anvil Micrometer	Length	C.S. for Small Anvil Micrometer JJF (Liao) 366	(0~100)mm	$U=2\text{ }\mu\text{m}$		
111	Circle Anvil Micrometer	Length	C.S. for Circle Anvil Micrometer JJF (辽) 368	(0~100)mm	$U=2\text{ }\mu\text{m}$		
112	*Image-type Ruler Calibrator	Length	C.S. for Image-type Ruler Calibrator JJF (辽) 477	(0~500)mm	$U=9\text{ }\mu\text{m}$		
				(>500~1000)mm	$U=11\text{ }\mu\text{m}$		
113	Screw Thread Micrometer	Length	V.R.of Screw Thread Micrometer JJG 25	(0~50)mm	$U=2\text{ }\mu\text{m}$		
				(>50~100)mm	$U=3\text{ }\mu\text{m}$		
				(>100~150)mm	$U=4\text{ }\mu\text{m}$		
				(>150~200)mm	$U=5\text{ }\mu\text{m}$		
114	Concentricity Tester	Length	C.S. for Concentricity Tester JJF 1109	(20~30) μm	$U=1.5\text{ }\mu\text{m}$		
115	Capacitance Comparators	Length	C.S. for Capacitance Comparators JJF 1944	20 μm ~10mm	$U=0.036\%\text{FS}$		
116	Concrete Crack Width and Depth Measuring Instruments	Length	C.S. for Concrete Crack Width and Depth Measuring Instruments JJF 1334	Concrete Crack Width: (0.02~6)mm	$U=8\text{ }\mu\text{m}$		
				Concrete Crack Depth: (35~100)mm	$U=3\text{mm}$		
				Width standard plate: (0.01~10)mm	$U=3\mu\text{m}$		
				Depth standard block: (35~500)mm	$U=1\text{mm}$		



No. CNAS L0954

第 18 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
117	Micropattern Standards	Length	C.S. for Micropattern Standards JJF 1917	(0~10)mm	$U=0.5 \mu m$		
118	*Stereo microscope	Magnification	C.S. for Stereo microscope JJF (Liao) 284	Magnification: 0.75X~100X	$U_{rel}=1.0\%$		
119	*Imaging Probe Measuring Machines	Length	Imaging Probe Measuring Machines JJF 1318	X\Y: (0~500)mm Z: (0~500)mm	$U=0.38\mu m+1.9\times 10^{-6}L$ $U=1.5\mu m+0.5\times 10^{-6}L$		
120	*Laser Interferometric Comparators	Length	C.S. for Laser Interferometric Comparators JJF 1933	radial: (0~150)mm axial: (50~850)mm	$U=0.8\mu m+4.4\times 10^{-6}d$ $U=1.6\mu m+5.8\times 10^{-6}L$		
121	*Scanning Electronic Microscopes	Length	C.S. for Scanning Electronic Microscopes (SEM) JJF1916	28.5nm 57.4nm 110.9nm 10060nm	$U=6.4nm$ $U_{rel}=20\%$ $U_{rel}=11\%$ $U=31nm$		
122	Straight Cylindrical Involute Spline Gauges	Length	C.S. for Straight Cylindrical Involute Spline Gauges JJF1557	Plug gauge's measurement over two pins(tooth thickness): $m(0.5\sim 3)mm$, Pitch diameter: (5~180) mm Ring gauge's measurement over two pins(space width): $m(0.5\sim 3)mm$, Pitch diameter: (18~180) mm	$U=1.3 \mu m$ $U=1.8 \mu m$		



No. CNAS L0954

第 19 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Total profile deviation: $m(0.5\sim 3)\text{mm}$,Pitch diameter: ($5\sim 180$) mm	$U=1.5\text{ }\mu\text{m}$		
				Total helix deviation: $m(0.5\sim 3)\text{mm}$,Pitch diameter: ($5\sim 180$) mm	$U=1.4\text{ }\mu\text{m}$		
				Total cumulative pitch deviation: $m(0.5\sim 3)\text{mm}$,Pitch diameter: ($5\sim 180$) mm	$U=1.2\text{ }\mu\text{m}$		
123	Laser Markers	Angle	C.S. for Laser Markers JJF2002	($-5\sim 5$) mm/m; $L(2000\sim 5000)\text{mm}$	$U=0.2\text{mm/m}$		
124	Standard Ball Bars	Length	C.S. for Standard Ball Bars JJF1859	Centroid distance:($50\sim 1200$)mm	$U=0.9\text{ }\mu\text{m}+1.7\times 10^{-6}L$		
125	*Cable Length Meter	Length	V.R. of Cable Length Meter JJG987	($0\sim 100$)m	$U=0.18\text{m}$		
				($100\sim 2000$)m	$U_{\text{rel}}=0.18\%$		
126	*Square Tester	Length	C.S. for Square Tester JJF1140	$H:(63\sim 500)\text{mm}$	$U=0.3\text{ }\mu\text{m}+1.5\times 10^{-6}H$		
127	*Rubber and Plastic Film Gage	Length	C.S. for Rubber and Plastic Film Gage JJF1488	Rubber Gage: ($0\sim 30$)mm	$U=2.8\text{ }\mu\text{m}$		
				Plastic Film Gage: ($0\sim 1$)mm	$U=2.8\text{ }\mu\text{m}$		
128	The Impact Specimen Notch Projector	Length	C.S. for The Impact Specimen Notch Projector JJF(liao)228	($0\sim 200$)mm	$U=15\text{ }\mu\text{m}$		
			Extensometer JJG 762,Standard Practice for	($0\sim 0.3$)mm	$U=0.9\text{ }\mu\text{m}$		



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No. CNAS L0954

第 20 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
			Verification and Classification of Extensometer Systems ASTM E83, verification of extensometers used in uniaxial testing JIS B 7741, Metallic materials — Calibration of extensometer systems used in uniaxial testing ENISO9513	(0.3~100)mm	$U_{rel}=0.3\%$		
II Thermotechnical							
1	Standard lamps	Temperature	V.R. of Standard Tungsten Ribbon Lamp JJG110	(800~1400)°C	$U=(1.2\sim1.4)^{\circ}\text{C}$		
				(1400~2000)°C	$U=(1.6\sim2.2)^{\circ}\text{C}$		
2	Working Disappearance Filament Pyrometer	Temperature	V.R. of working Disappearance Filament Pyrometer JJG68	(800~1400)°C	$U=7^{\circ}\text{C}$		
				(1400~2000)°C	$U=(7\sim8)^{\circ}\text{C}$		
3	Radiation Thermometers		Vegulation Rerification of Radiation Thermometers JJG856	(-50~1500)°C	$U=(0.2\sim3.9)^{\circ}\text{C}$		
4	Standard PtRh10-Pt Thermocouples	Temperature	V.R. of Standard Platinum-10%Rhodium/ Platinum thermocouples JJG75	419.527°C	$U=0.3^{\circ}\text{C}$		
				660.323°C	$U=0.3^{\circ}\text{C}$		
				1084.62°C	$U=0.4^{\circ}\text{C}$		
5	Industrial PtRh10-Pt thermocouple	Temperature	V.R. of Working Noble Mental Thermocouple JJG141	S type: (300~1100)°C	$U=(0.32\sim0.47)^{\circ}\text{C}$		
				B type level 2(1100~1500)°C	$U=(1.8\sim2.0)^{\circ}\text{C}$		



No. CNAS L0954

第 21 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				B type level 3(1100~1500)°C	$U=(2.4\sim 2.5)^{\circ}\text{C}$		
6	Grade 2 standard PtRh30-PtRh6 Thermocouple	Temperature	V.R.of Standard Platinum-30%Rhodium/ Platinum-6%Rhodium Thermocouple JJG167	(1100~1500)°C	$U=(2.1\sim 2.2)^{\circ}\text{C}$		
7	Thermal Imagers	Temperature	C.S. for Thermal Imagers JJF 1187	(-50~1500)°C	$U=(0.2\sim 3.9)^{\circ}\text{C}$		
8	*Blackbody radiation source	Temperature	Calibration Specification of Surface Radiation Source in Radiation Thermometry JJF(Liao)135	Radiation temperature (-10~1600)°C	$U=(0.2\sim 0.6)^{\circ}\text{C}$		
		Temperature		Temperature uniformity (-10~1600)°C	$U=(0.2\sim 0.7)^{\circ}\text{C}$		
		Temperature		Temperature stability (-10~1600)°C	$U=(0.2\sim 0.8)^{\circ}\text{C}$		
9	Working Liquid-in-glass Thermometers	Temperature	V.R.of Liquid-in-Glass Thermometers for Working JJG 130	(-100~-60)°C	$U=(0.08\sim 0.05)^{\circ}\text{C}$		
				(-60~0)°C	$U=(0.05\sim 0.008)^{\circ}\text{C}$		
				(0~100)°C	$U=(0.008\sim 0.010)^{\circ}\text{C}$		
				(100~150)°C	$U=(0.010\sim 0.08)^{\circ}\text{C}$		
				(150~300)°C	$U=(0.08\sim 0.10)^{\circ}\text{C}$		
				(300~500)°C	$U=(0.1\sim 0.4)^{\circ}\text{C}$		
				(500~600)°C	$U=0.4^{\circ}\text{C}$		
10	Industry Platinum and Copper Resistance Thermometers	Temperature	V.R.of Industry Platinum and Copper Resistance Thermometers JJG 229	(-200~300)°C	$U=0.04^{\circ}\text{C}$		
				(>300~660)°C	$U=0.2^{\circ}\text{C}$		
11	Filled System	Temperature	C.S. for Filled System	(-80~300)°C	$U=0.4^{\circ}\text{C}$		

No. CNAS L0954

第 22 页 共 177 页



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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Thermometers		Thermometers JJF 1909	(>300~500)°C	U=1.0°C		
12	Standard Platinum Resistance Thermometer	Temperature	V.R.of Standard Platinum Resistance Thermometer JJG 160	(-196~0)°C	U= (5.6~0.5) mK		
				(0~660)°C	U= (0.5~5.0) mK		
13	Mercury-in-glass Thermometer	Temperature	V.R.of Standard Mercury-in-glass Thermometer JJG161	(-60~100)°C	U=0.030°C		
				(100~300)°C	U=0.060°C		
14	Temperature Transmitter	Temperature	C.S. of the Temperature Transmitter JJF1183	Resistance Thermometers: (-196~300)°C	U=0.10°C		
				Thermocouple Thermometers: (0~700)°C	U=0.20°C		
				Resistance: (-196~300)°C	U=0.04°C		
				Thermocouple: (0~700)°C	U=0.8°C		
15	Surface Thermometers	Temperature	C.S. for Surface Thermometers JJF1409	Temperature source (50~400)°C	U=0.6°C		
				(50~400) °C	U=(0.8~2.7) °C		
16	Temperature Itinerant Detecting Instrument	Temperature	C.S.for Temperature Itinerant Detecting Instrument JJF 1171	(-196~100)°C	U=0.04°C		
				(>100~300)°C	U=0.07°C		
				(>300~660)°C	U=0.2°C		
				(>660~1100)°C	U=1.3°C		



No. CNAS L0954

第 23 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
17	*Thermal conductivity Tester	Thermal conductivity	Calibration Specification of Guarded hot plate apparatus thermal Tester JJF(Liao)130	(0.0374~0.0391)W/(m·K)	$U_{rel}=3\%$		
18	Temperature Data Acquisition Instruments	Temperature	Calibration Specification of Temperature Data Acquisition Instruments JJF1366	(-80~300)°C	$U=0.05^{\circ}\text{C}$		
19	Heat Flux Meter	heat flux	Calibration Specification of Heat Flux Meter JJF(Liao)168	(0.01~200) W/m ²	$U_{rel}=5\%$		
20	*Medical Cold Storage and Transportation Equipment	Temperature	C.S.of Medical Cold Storage and Transportation Equipment JJF(Liao)310	(-30~20)°C	$U=0.3^{\circ}\text{C}$		
21	*Electrically-heated Thermostatic Water bath	Temperature	Calibration Specification of Electrically-heated Thermostatic Water bath JJF(Liao)118	(10~100)°C	$U=0.3^{\circ}\text{C}$		
22	Oil-surface Thermometers for Transformers	Temperature	Calibration Specification of Oil-surface Thermometers JJF(Liao)246	(-20~160)°C	$U=0.4^{\circ}\text{C}$		
23	*Microwave digestion meter	Temperature	Calibration Specification for Microwave Digestion Instrument Temperature Parameter JJF (chuan) 142	(30~200)°C	$U=0.3^{\circ}\text{C}$		
24	Sheathed Thermocouples	Temperature	C.S. for Sheathed Thermocouples JJF1262	(-40~400) °C (SPRT as Standard))	$U=(0.2\sim0.3)^{\circ}\text{C}$		
				(300~1100) °C (Tc S as Standard))	$U=(0.6\sim0.9)^{\circ}\text{C}$		
25	*Box-type Resistance Furnace	Temperature	C.S.for Box-type Resistance Furnace JJF1376	(300~1100) °C	$U=(1.2\sim1.6)^{\circ}\text{C}$		



No. CNAS L0954

第 24 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
26	PrecisionDew-pointHygrometers	Temperature	V.R.of PrecisionDew-point Hygrometers JJG499	Dew point temperature(-70~+20)℃	<i>U</i> =0.36℃		
27	Mechanical Thermo-hygrometers	Temperature	V.R.of Mechanical Thermo-hygrometers JJG205	(5~50)℃	<i>U</i> =0.6℃		
		Relative Humidity		(15~30)℃， 30%~95%	<i>U</i> =1.0%		
28	Digital Thermo-hygrometers	Temperature	C.S.for DigitalThermo-hygrometers JJF1076	(0~50)℃	<i>U</i> =0.2℃		
		Relative Humidity		(0~50)℃， 5%~95%	<i>U</i> =0.9%		
29	*Auto-measuting System of Thermocouples	Temperature	C.S. for Auto-measuting System of Thermocouples and Resistance Thermometers JJF1098	Thermal resistance: (0~100)℃	<i>U</i> =0.1℃		
				Thermocouple (300~1200)℃	<i>U</i> =0.6℃		
		Potential		Parasitic electromotance of scannin switch (0~5) μV	<i>U</i> =0.1 μV		
				Measurement repeatability(Thermocouple) (0~10) μV	<i>U</i> =0.1 μV		
				Data acquisition difference between channels(electromotance) (0~10) μV	<i>U</i> =0.1 μV		
		Resistance		Measurement repeatability(Thermal resistance) (0~12) mΩ	<i>U</i> =1.2 mΩ		



No. CNAS L0954

第 25 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Data acquisition difference between channels(resistance) (0~10) m Ω	$U=1.0$ m Ω		
30	Temperature parameters of temperature switches	Temperature	C.S. for temperature parameters of temperatures JJF1632	(-80~300) $^{\circ}\text{C}$	$U=0.3^{\circ}\text{C}$		
31	Themperature Block Calibrators	Temperature	Calibration Guideline of the Themperature Block Calibrators JJF 1257	(-90~420) $^{\circ}\text{C}$ (SPRT as Standard))	$U=0.14^{\circ}\text{C}$		
				(300~1100) $^{\circ}\text{C}$ (Tc B as Standard))	$U=2.5^{\circ}\text{C}$		
				(300~1100) $^{\circ}\text{C}$ (Tc S as Standard))	$U=(0.6\sim0.9)^{\circ}\text{C}$		
32	Industrial-Process Measurement	Temperature	Recorders for Industrial-Process Measurement JJG74	(-200~1600) $^{\circ}\text{C}$	$U= (0.1\sim0.6)^{\circ}\text{C}$		
33	Base Metal Temermocouples	Temperature	C.S. for Base Metal Temermocouples JJF 1637	(-40~400) $^{\circ}\text{C}$ (SPRT as Standard))	$U=(0.2\sim0.3)^{\circ}\text{C}$		
				(300~1100) $^{\circ}\text{C}$ (Tc S as Standard))	$U=(0.6\sim0.9)^{\circ}\text{C}$		
				Compensation wire (20~100) $^{\circ}\text{C}$	$U=0.2^{\circ}\text{C}$		
34	*The Equipment of the Environmental	Temperature	Calibration Specification for Environmental Testing Equipment for Temperature and Humidity Parameters JJF1101	(-100~300) $^{\circ}\text{C}$	$U=0.10^{\circ}\text{C}$	合格评定国家认可委员会 认可证书专用章	
		Relative Humidity		(5~85) $^{\circ}\text{C}$, 5%~95%	$U=1.4\%$		
35	Bimetallic Thermometer	Temperature	C. S. for Bimetallic Thermometer JJF 1908	(-80~500) $^{\circ}\text{C}$	$U=0.2^{\circ}\text{C}$		



No. CNAS L0954

第 26 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
36	Digital Thermometer	Temperature	C.S.for Digital Thermometer JJF(Chuan) 139	(-196~660)°C (Fixed point method))	$U=(0.008\sim0.012)^{\circ}\text{C}$		
				(-196~660)°C (Comparison method))	$U=(0.012\sim0.028)^{\circ}\text{C}$		
37	*Polymerase Chain Reaction Analyzers	Temperature	C.S. for Polymerase Chain Reaction Analyzers JJF 1527	(0~100)°C	$U=0.15^{\circ}\text{C}$		
				(1.11~1.04×10 ⁷)Copy/uL	$U_{\text{rel}}=10\%$		
38	*for High-temperature Sterilization Instrument	Temperature	Calibration Specification of Sterilization parameters for High-temperature Sterilization Instrument JJF(Liao)92	(0~140)°C	$U=0.2^{\circ}\text{C}$		
		Pressure		(0~0.5)Mpa	$U=0.01\text{MPa}$		
		time		(0~30)min	$U=1\text{min}$		
39	Refrigerator Thermometer	Temperature	Calibration Specification for the Refrigerator Thermometer JJF (辽) 377	(-40~60) °C	$U=0.3^{\circ}\text{C}$		
40	*Thermostatic Bath's	Temperature	C.S.for Measurement and Test Norm of Thermostatic Bath's Metrological Characteristics JJF1030	(-196~660)°C	$U=0.004^{\circ}\text{C}$		
41	Dew-point Hygrometers	Temperature	Calibration Specification for Resistance and Capacitance Dew Point Hygrometer JJF1272	Dew point temperature(-70~20)°C	$U=0.4^{\circ}\text{C}$	合格评定国家认可委员会 认可证书专用章	
42	Humidity Generator	Relative humidity	V.R. for Secondary Standard Divided Flow Humidity Generator JJG 826	20°C: 10%~95%	$U=0.4\%$		



No. CNAS L0954

第 27 页 共 177 页

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

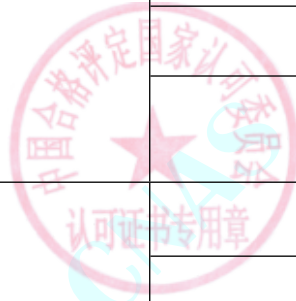
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
43	Temperature Calibration Devices for Polymerase Chain Reaction Analyzers	Temperature	C.S. for Temperature Calibration Devices for Polymerase Chain Reaction Analyzers JJF 1821	(0~120) °C	$U=0.04^{\circ}\text{C}$		
44	*Metallic Materials High-temperature Tension, Creep Testing Heating Device Temperature Parameters	Temperature	C.S. for Metallic Materials High-temperature Tension, Creep Testing Heating Device Temperature Parameters JJF(Liao) 188	(100~1100) °C	$U=1.5^{\circ}\text{C}$		
45	Thermistor Thermometers	Temperature	C.S. of Thermistor Thermometers JJF 1379	(-50~200) °C	$U=0.02^{\circ}\text{C}$		
46	Parameter of Passive Medical Cold Boxes	Temperature	C.S. for Temperature Parameter of Passive Medical Cold Boxes JJF 1676	(-20~20) °C	$U=0.3^{\circ}\text{C}$		
47	Clinical Electronic Thermometers	Temperature	V.R. of Clinical Electronic Thermometers JJG 1162	(35~42) °C	$U=0.07^{\circ}\text{C}$		
48	Thermometers for Transformer Windings	Temperature	C.S. of Thermometers for Transformer Windings JJF(Liao) 378	(-40~160) °C	$U=0.4^{\circ}\text{C}$		
49	*Cryostat of Impact Test	Temperature	C.S. for Cryostat of Impact Test JJF(Liao) 154	(-196~30) °C	$U=0.3^{\circ}\text{C}$		
50	Fiber-optic Distributed Thermometers	Temperature	C.S. for Fiber-optic Distributed Thermometers JJF 1630	(-80~300) °C	$U=0.2^{\circ}\text{C}$		



No. CNAS L0954

第 28 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
51	Working Copper/Copper-Nickel Thermocouple	Temperature	V.R. of Working Copper/Copper-Nickel Thermocouple JJG 368	(-196~300) °C	U=0.3℃		
52	*Infrared Thermometers for Measurement of Human Temperature	Temperature	C.S. of Infrared Thermometers for Measurement of Human Temperature JJF 1107	(22~40) °C	U=0.2℃		
53	Infrared Ear Thermometers	Temperature	V.R. of Infrared Ear Thermometers JJG 1164	(35~42) °C	U=0.04℃		
54	*Pot-type Tube Furnace	Temperature	C.S. for Pot-type Tube Furnace JJF(Liao) 402	(300~1100) °C	U= (1.2~1.6) °C		
55	*Temperature and Humidity Standard Chambers	Temperature	C.S. for Temperature and Humidity Standard Chambers JJF 1564	Temperature uniformity (5~50) °C	U=0.05℃		
				Temperature fluctuation (5~50) °C	U=0.02℃		
				Temperature change rate (5~50) °C/min	U=0.02℃/min		
		Relative humidity		Relative humidity uniformity 10%~90%	U=0.5%		
				Relative humidity fluctuation 10%~90%	U=0.1%		
				Relative humidity change rate (10%~90%) /min	U=0.2% /min		
56	*Temperature Indicators	Temperature	C.S. for Temperature Indicators JJF 1664	RTD Input (-200~850) °C	U=(0.1~0.2)℃		
				Tc K,N,J Input (-200~1200) °C	U=0.2℃		



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No. CNAS L0954

第 29 页 共 177 页

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

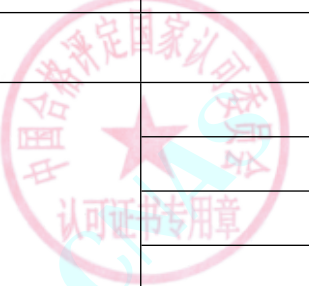
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
57	Temperature Indicators and Simulators by Electrical Simulation and Measurement	Temperature	C.S. of Temperature Indicators and Simulators by Electrical Simulation and Measurement JJF 1309	Tc S Input (0~1600) °C	$U=(0.4\sim0.7)^\circ\text{C}$		
				Tc B Input (600~1800) °C	$U=0.5^\circ\text{C}$		
				Tc T Input (-200~400) °C	$U=(0.1\sim0.3)^\circ\text{C}$		
				Tc E Input (-200~1000) °C	$U=0.2^\circ\text{C}$		
				RTD Input (-200~850) °C	$U=(0.05\sim0.07)^\circ\text{C}$		
				Tc K,N,J Input (-200~1200) °C	$U=0.12^\circ\text{C}$		
				Tc S Input (0~1600) °C	$U=0.12^\circ\text{C}$		
				Tc B Input (600~1800) °C	$U=0.10^\circ\text{C}$		
				Tc T Input (-200~400) °C	$U=0.08^\circ\text{C}$		
				Tc E Input (-200~1000) °C	$U=0.10^\circ\text{C}$		
				RTD Output (-200~850) °C	$U=(0.05\sim0.07)^\circ\text{C}$		
				Tc K,N,J Output (-200~1200) °C	$U=0.2^\circ\text{C}$		
				Tc S output (0~1600) °C	$U=0.2^\circ\text{C}$		
				Tc B Output (600~1800) °C	$U=0.2^\circ\text{C}$		



No. CNAS L0954

第 30 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Tc T Output (-200~400) °C	U=0.2°C		
				Tc E Output (-200~1000) °C	U=0.2°C		
58	*Thermocouple Calibration Furnace	Temperature	Testing Specification of Temperature Uniformity in Thermocouple Calibration JJF 1184	(300~1300) °C	U=0.3°C		
59	*Thermocouple annealing furnace	Temperature	C.S. for Thermocouple annealing furnace JJF(Liao) 448	(300~1100) °C	U=0.8°C		
60	*Flat sample forming machine temperature parameter	Temperature	C.S. for Flat sample forming machine temperature parameter JJF(Liao) 401	Room temperature~300 °C	U=0.7°C		
61	*Furnace temperature curve tester	Temperature	C.S. for Furnace temperature curve tester JJF(Liao) 447	Tc K,N Input (-200~1200) °C	U=0.2°C		
				Tc T Input (-200~400) °C	U=0.3°C		
62	soldering iron thermometer	Temperature	C.S. for soldering iron thermometer JJF1629	(50~600) °C	U= (1.0~1.4) °C		
63	*Medical refrigerated freezer	Temperature	C.S. for Medical refrigerated freezer JJF (Liao) 499	(-164~-25) °C	U=0.8°C		
64	*Liquid Constant Temperature Testing Equipment	Temperature Deviation	Measurement Specification for Temperature Performance of Liquid Constant Temperature Testing Equipment JJF 2019	(-80~0)°C	U=(0.10~0.06)°C		
				(0~300)°C	U=(0.06~0.10)°C		
		temperature uniformity		(-80~0)°C	U=(0.10~0.06)°C		
				(0~300)°C	U=(0.06~0.10)°C		



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No. CNAS L0954

第 31 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Temperature Fluctuation		(-80~0)℃ (0~300)℃	<i>U</i> =(0.04~0.02)℃ <i>U</i> =(0.02~0.04)℃		
65	Short Base Metal Thermocouples	Temperature	C.S. for Short Base Metal Thermocouples JJF 1991	(-40~300)℃ (300~1100)℃	<i>U</i> =0.3℃ <i>U</i> =1.7℃		
66	*High-temperature furnace	Temperature	Pyrometry AMS2750	(300~1100)℃	<i>U</i> =(1.2~1.6)℃		
67	*Blackbody Radiation Sources of Radiation Thermometry	Temperature	C.S.for Blackbody Radiation Sources of Radiation Thermometry JJF(Liao) 498	(-50~0)℃ （Standard blackbody source as standard ）	<i>U</i> =(1.0~0.4)℃		
				(0~1000)℃ （Standard blackbody source as standard ）	<i>U</i> =(0.4~2.3)℃		
				(600~3000)℃ （Standard photoelectric pyrometers as standard)	<i>U</i> =(0.8~2.8)℃		
68	*Vacuum Oven	Temperature	C.S. for Vacuum Ovens' Measurement Characteristic JJF （Liao） 192	(0~100)℃	<i>U</i> =0.2℃	accredited only for 0.4m3 or less	
		Pressure		(-0.1~0) MPa	<i>U</i> =0.4%F.S		
III Mechanics							
1	*Wrench for Measuement of Torque	Torque	V.R.of Wrench for Measuement of Torque JJG 707	(0.035~3000)Nm	<i>U</i> _{rel} =(0.38~0.76)%		
2	*Calibrating Instrument for Torque Wrenchs	Torque	V.R.of Calibrating Instrument for Torque Wrenchs JJG 797	(0.035~3000)Nm	<i>U</i> _{rel} =(0.10~0.21)%		



No. CNAS L0954

第 32 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
3	Revoition Speed Standard Equipment	Turn speed	V.R.of Standard Revoition Speed Equipment JJG 326	(20～33000)r/min	$U_{rel}=1 \times 10^{-4}(k=3)$			
4	Tachometers	Turn speed	V.R.of Tachometers JJG 105	(20～33000)r/min	$U_{rel}=0.01\%$			
5	Second-class Standard glass hydrometers	Density	V.R.of Standard Glass Hydrometers JJG 86	(650～1500)kg/m ³	$U=0.13\text{kg/m}^3$			
				(650～1100) kg/m ³	$U=0.12\text{kg/m}^3$			
		Alcohol degree		q:0～100%	$U=0.05\%$			
6	Working glass hydrometers	Density	V.R.of Working Glass Hydrometers JJG 42	(650～800) kg/m ³	$U=0.12\text{kg/m}^3$			
				(810～1100) kg/m ³	$U=0.13\text{kg/m}^3$			
				(650～800)kg/m ³	$U=0.088\text{kg/m}^3$			
				(810～1100)kg/m ³	$U=0.090\text{kg/m}^3$			
		Density		(650～1000)kg/m ³	$U=0.12\text{ kg/m}^3$			
				(1000～1500) kg/m ³	$U=0.13\text{ kg/m}^3$			
				(1500～1830)kg/m ³	$U=0.23\text{ kg/m}^3$			
				(1840～2000)kg/m ³	$U=0.22\text{ kg/m}^3$			
				Alcohol degree	q:0～100%			$U=0.05\%$
					q:0～25%			$U=0.3\%$
					q:26%～100%			$U=0.2\%$
7	Standard Capacity Measures(glass)	capacity	V.R.of Standard Capacity Measures(glass) JJG 20	0.05mL～10mL	$U=0.0005\text{mL}$			
				>10mL～100mL	$U=0.001\text{mL}$			



No. CNAS L0954

第 33 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				>100mL~500mL	$U=0.003\text{mL}$		
				>500mL~1000mL	$U=0.009\text{mL}$		
				>1000mL~2000mL	$U=0.034\text{mL}$		
				>2000mL~5000mL	$U=0.21\text{mL}$		
				>5000mL~10000mL	$U=0.81\text{mL}$		
8	Working Glass Container	capacity	V.R.Working Glass Container JJG 196	0.1mL~1mL	$U=0.002\text{mL}$		
				>1mL~10mL	$U=0.003\text{mL}$		
				>10mL~20mL	$U=0.004\text{mL}$		
				>20mL~100mL	$U=0.013\text{mL}$		
				>100mL~200mL	$U=0.03\text{mL}$		
				>200mL~500mL	$U=0.07\text{mL}$		
				>500mL~1000mL	$U=0.13\text{mL}$		
				>1000mL~2000mL	$U=0.26\text{mL}$		
9	*Quantitative Filling Machine for Liquid Material	capacity	V.R.of Quantitative Filling Machine for Liquid Material JJG 687	5mL~100mL	$U_{\text{rel}}=0.19\%$		
				>100mL~1000mL	$U_{\text{rel}}=0.08\%$		
				>1000mL~10000mL	$U_{\text{rel}}=0.03\%$		
				>10000mL~50000mL	$U_{\text{rel}}=0.01\%$		
10	Measuring Instruments for Cereals Density	capacity	V.R.of Measuring Instruments for Cereals Density JJG 264	1000mL	$U=0.1\text{mL}$		
		mass		1000g	$U=0.09\text{g}$		



No. CNAS L0954

第 34 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
11	Special Glassware	capacity	V.R.of Special Glassware JJG 10	(1~10)mL	$U=0.003\text{mL}$		
				(>10~25)mL	$U=0.004\text{mL}$		
				(>25~50)mL	$U=0.04\text{mL}$		
				(>50~100)mL	$U=0.1\text{mL}$		
12	Locomotive Pipette	capacity	V.R.of Locomotive Pipette JJG 646	$0.1\text{ }\mu\text{L}\sim 10\text{ }\mu\text{L}$	$U=0.024\text{ }\mu\text{L}$		
				$>10\text{ }\mu\text{L}\sim 20\text{ }\mu\text{L}$	$U=0.16\text{ }\mu\text{L}$		
				$>20\text{ }\mu\text{L}\sim 100\text{ }\mu\text{L}$	$U=0.4\text{ }\mu\text{L}$		
				$>100\text{ }\mu\text{L}\sim 200\text{ }\mu\text{L}$	$U=0.6\text{ }\mu\text{L}$		
				$>200\text{ }\mu\text{L}\sim 500\text{ }\mu\text{L}$	$U=1\text{ }\mu\text{L}$		
				$>500\text{ }\mu\text{L}\sim 1000\text{ }\mu\text{L}$	$U=2\text{ }\mu\text{L}$		
				$>1000\text{ }\mu\text{L}\sim 10000\text{ }\mu\text{L}$	$U=12\text{ }\mu\text{L}$		
				$>10000\text{ }\mu\text{L}\sim 100000\text{ }\mu\text{L}$	$U=60\text{ }\mu\text{L}$		
13	Soap Film Flow meter	volume	V.R.of Soap Film Flow meter JJG 586	10mL~100mL	$U_{\text{rel}}=0.02\%$		
				150mL~1000mL	$U_{\text{rel}}=0.013\%$		
				1500mL~6000mL	$U_{\text{rel}}=0.013\%$		
14	*Weights	Mass	V.R.of Weights JJG 99	$M_1:(1\sim 500)\text{mg}$	$U=(0.007\sim 0.026)\text{mg}$	Field calibration is limited to M1 grade and below	
				$M_1:(1\sim 500)\text{g}$	$U=(0.029\sim 0.85)\text{mg}$		
				$M_1:(1\sim 1000)\text{kg}$	$U=3.8\text{mg}\sim 5.5\text{g}$		
				$F_2:(1\sim 500)\text{mg}$	$U=0.008\text{mg}\sim 0.030\text{mg}$		



No. CNAS L0954

第 35 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				F ₂ : (1~500)g	$U=0.032\text{mg}\sim 0.85\text{mg}$		
				F ₂ : (1~20)kg	$U=2.5\text{mg}\sim 40\text{mg}$		
				F ₁ : (1~500)mg	$U=0.003\text{mg}\sim 0.009\text{mg}$		
				F ₁ : (1~500)g	$U=0.009\text{mg}\sim 0.35\text{mg}$		
				F ₁ : (1~20)kg	$U=0.72\text{mg}\sim 24\text{mg}$		
				E ₂ : (1~500) mg	$U=0.6\text{ }\mu\text{g}\sim 1.7\text{ }\mu\text{g}$		
				E ₂ : (1~500) g	$U=0.02\text{mg}\sim 0.13\text{mg}$		
				E ₂ : (1~20) kg	$U=0.17\text{mg}\sim 3.4\text{g}$		
15	*Mechanical Balance	mass	Mechanical Balance JJG 98	Max:(0~20)g d=0.01mg	$U=(0.0021\sim 0.079)\text{mg}$		
				Max:(0~200)g d=0.1mg	$U=(0.012\sim 5.5)\text{mg}$		
				Max:(0~20)kg d>0.1mg	$U=(0.021\sim 5.6)\text{mg}$		
16	*Electronic Balance	mass	V.R. of Electronic Balance JJG 1036,C.S. for Electronic Balances JJF 1847	Max:(0~500)g (0~5×10 ⁴)e (e=0.001mg~0.1mg)	$U=(0.0020\sim 0.063)\text{mg}$		
				Max:(0~500)g (5×10 ⁴ ~2×10 ⁵)e (e=0.001mg~0.1mg)	$U=(0.0040\sim 0.12)\text{mg}$		
				Max:(0~500)g >2×10 ⁵ e (e=0.001mg~0.1mg)	$U=(0.0058\sim 0.24)\text{mg}$		



No. CNAS L0954

第 36 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Max:500g~5kg (0~5×10 ⁴)e (e=1mg~10mg)	$U=(0.56\sim0.61)\text{mg}$		
				Max:500g~5kg (5×10 ⁴ ~2×10 ⁵)e (e=1mg~10mg)	$U=(0.56\sim3.0)\text{mg}$		
				Max:500g~5kg >2×10 ⁵ e (e=1mg~10mg)	$U=(0.58\sim7.8)\text{mg}$		
				Max:(5~30)kg (0~5×10 ⁴)e (e=20mg~50mg)	$U=(1.1\sim4.6)\text{mg}$		
				Max:(5~30)kg (5×10 ⁴ ~2×10 ⁵)e (e=20mg~50mg)	$U=(1.2\sim15)\text{mg}$		
				Max:(5~30)kg >2×10 ⁵ e (e=20mg~50mg)	$U=(2.2\sim29)\text{mg}$		
17	*Analogue Indicating Weighing Instrument	Mass	Analogue Indicating Weighing Instrument JJG 13	Max:(0~10)kg (0~50)e (e=10g~50g)	$U=(1.1\sim5.7)\text{g}$		
				Max:(0~10)kg (50~200)e (e=10g~50g)	$U=(1.1\sim5.7)\text{g}$		
				Max:(0~10)kg (200~1000)e (e=10g~50g)	$U=(1.1\sim5.7)\text{g}$		
				Max:10kg~120kg (0~50)e (e=100g~500g)	$U=(11\sim57)\text{g}$		
				Max:10kg~120kg (50~200)e (e=100g~500g)	$U=(11\sim57)\text{g}$		



No. CNAS L0954

第 37 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Max:10kg~120kg (200~1000)e (e=100g~500g)	$U=(11\sim57)g$		
18	*Nonself-indicating Weighing Instrument	Mass	Nonself-indicating Weighing Instrument JJG 14	Max:(0~100)kg (0~500)e (e=5g~50g)	$U=(0.57\sim6.0)g$		
				Max:(0~100)kg (500~2000)e (e=5g~50g)	$U=(0.5\sim8.0)g$		
				Max:(0~100)kg (2000~10000)e (e=5g~50g)	$U=(0.81\sim8.0)g$		
				Max:(100~1000)kg (0~500)e (e=50g~500g)	$U=(5.7\sim59)g$		
				Max:(100~1000)kg (500~2000)e (e=50g~500g)	$U=(5.9\sim81)g$		
				Max:(100~1000)kg (2000~10000)e (e=50g~500g)	$U=(8.0\sim81)g$		
				Max:(1~10)t (0~500)e (e=1kg~5kg)	$U=(0.12\sim0.60)kg$		
				Max:(1~10)t (500~2000)e (e=1kg~5kg)	$U=(0.12\sim0.82)kg$		
				Max:(1~10)t (2000~10000)e (e=1kg~5kg)	$U=(0.16\sim0.82)kg$		
				Max:(10~50)t (0~500)e (e=10kg~20kg)	$U=(1.3\sim2.5)kg$		



No. CNAS L0954

第 38 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
19	*Digital Indication Weighting Instrument	Mass	Digital Indication Weighting Instrument JJG 539	Max:(10~50)t (500~2000)e (e=10kg~20kg)	$U=(1.3\sim3.4)\text{kg}$		
				Max:(10~50)t (2000~10000)e (e=10kg~20kg)	$U=(1.5\sim3.6)\text{kg}$		
				Max:(0~30)kg (0~500)e (e=1g~10g)	$U=(0.057\sim0.64)\text{g}$		
				Max:(0~30)kg (500~2000)e (e=1g~10g)	$U=(0.064\sim1.4)\text{g}$		
				Max:(0~30)kg (2000~10000)e (e=1g~10g)	$U=(0.14\sim1.9)\text{g}$		
				Max:(30~1000)kg (0~500)e (e=20g~500g)	$U=(1.3\sim33)\text{g}$		
				Max:(30~1000)kg (500~2000)e (e=20g~500g)	$U=(1.4\sim64)\text{g}$		
				Max:(30~1000)kg (2000~10000)e (e=20g~500g)	$U=(1.5\sim64)\text{g}$		
				Max:(1~10)t (0~500)e (e=1kg~5kg)	$U=(0.058\sim0.32)\text{kg}$		
				Max:(1~10)t (500~2000)e (e=1kg~5kg)	$U=(0.060\sim0.65)\text{kg}$		
				Max:(1~10)t (2000~10000)e (e=1kg~5kg)	$U=(0.13\sim0.65)\text{kg}$		
				Max:(10~100)t (0~500)e (e=10kg~20kg)	$U=(0.59\sim1.4)\text{kg}$		



No. CNAS L0954

第 39 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Max:(10~100)t (500~2000)e (e=10kg~20kg)	$U=(0.63\sim 2.5)\text{kg}$		
				Max:(10~100)t (2000~10000)e (e=10kg~20kg)	$U=(1.4\sim 5.8)\text{kg}$		
				Max:(100~150)t (0~500)e (e=50kg)	$U=(3.0\sim 3.3)\text{kg}$		
				Max:(100~150)t (500~2000)e (e=50kg)	$U=(3.3\sim 6.6)\text{kg}$		
				Max:(100~150)t (2000~10000)e (e=50kg)	$U=(6.6\sim 9.5)\text{kg}$		
20	Standard Dynamometers	Force value	V.R.of Standard Dynamometer JJG 144	(0.001~1000)kN (Calibrate strain form of Standard Dynamometer)	$U_{\text{rel}}=0.07\%$		
				(0.01~1000)kN (Calibrate Dagues Reading in 0.01mm form of Standard Dynamometer)	$U_{\text{rel}}=0.13\%$		
				(1~10) MN	$U_{\text{rel}}=0.16\%$		
21	*Material testing machine	Force value	Flexture testing machine JJG 476	(0.002~20)kN	$U_{\text{rel}}=0.2\%$		
		Load Speed		(0~100)N/s	$U=0.4\text{N/s}$		
22	Force Transducers	Force value	V.R.of Force Transducers JJG 391	(0.0025~1000)kN	$U_{\text{rel}}=0.04\%$		
				(1~10)MN	$U_{\text{rel}}=0.14\%$		
23	*Working Dynamometers	Force value	V.R.of Working Dynamometers JJG 455	0.01N~1000kN	$U_{\text{rel}}=0.3\%$		



No. CNAS L0954

第 40 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(1~10) MN	$U_{rel}=0.3\%$		
24	*Equotip Hardness Tester	Hardness	V.R.of Equotip Hardness Tester JJG 747	(490~830) HLD	$U=4HLD$		
				(460~630)HLG	$U=3HLG$		
25	*Metal Brinell Hardness Tester	Hardness	V.R.of Metal Brinell Hardness Tester JJG 150, Calibration Specification For Portable Brinell Hardness Testers JJF 1595, Brinell hardness test-Verification of testing machines JIS B7724, Standard Test Method for Brinell Hardness of Metallic Materials ASTM E10, Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines ISO 6506-2	(>90~125)HBW	$U_{rel}=1.5\%$		
				(>125~225)HBW	$U_{rel}=1.0\%$		
				(>225~400)HBW	$U_{rel}=0.9\%$		
		Force value	JJF 1595, Brinell hardness test-Verification of testing machines JIS B7724, Standard Test Method for Brinell Hardness of Metallic Materials ASTM E10, Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines ISO 6506-2	(1~29420)N	$U_{rel}=0.26\%$		
		Time		(0~60)s	$U=0.18s$		
		Indentation		(0.1~10)mm	$U_{rel}=0.14\%$		
		Indenter Diameter		(0.1~10)mm	$U=0.001mm$		
26	Piezoelectric Accelerometer	acceleration	V.R.of Piezoelectric Accelerometer JJG 233	(0.05~100)m/s ² , 160Hz	$U_{rel}=0.9\%$		
				(0.00005~0.1) m/s ² , (0.1~0.4) Hz	$U_{rel}=2.3\%$		
				(0.1~100) m/s ² , (0.4~160) Hz	$U_{rel}=1.5\%$		
				(0.1~100) m/s ² , (160~2000) Hz	$U_{rel}=1.5\%$		
				(0.1~100)m/s ² , (160~5000)Hz	$U_{rel}=2.3\%$		



No. CNAS L0954

第 41 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				(0.1~100)m/s ² , (5000~15000)Hz	U _{rel} =3.2%		
27	Measuring Instrument for Shock	Acceleration	C. S. for Shock Measuring Instruments JJF 1943	(100~20000)m/s ²	U _{rel} =3.3%		
28	Vibration Meters	acceleration	V.R.of Vibration Meters JJG 676	(0.05~100) m/s ²)	U _{rel} =2.2%		
		frequency		(0.1~5000) Hz	U _{rel} =0.08%		
		Velocity		(0.2~150) mm/s (0.1~1000) Hz	U _{rel} =2.2%		
		Displacement		(0.01~1.50) mmpp (0.1~400) Hz	U _{rel} =2.2%		
29	*Shock and Bump Testing Machines	Acceleration	V.R.of Shock and Bump Testing Machines JJG 1174	(50~50000)m/s ²	U _{rel} =5.0%		
		Change of speed		(0.1~10) m/s	U _{rel} =5.0%		
		Pulse duration		(0.1~50) ms	U _{rel} =4.8%		
		Repeat rate		(30~100) times/min	U=1 times/min		
30	*Shore Durometer	Length	Shore A Durometer JJG 304,Shore D Durometer JJG 1039	1.25mm, 2.54mm, 2.46mm	U=4 μ m		
		Force value		(2.05~8.05) N or (20~100) HA	U=0.017N		
				(8.90~44.5) N or (20~100) HD	U=0.089N		
31	*Standard Vibrators	Frequency	V.R.of Standard Vibrators JJG 298	(5~80)Hz	U=0.02Hz		
				(>80~320)Hz	U=0.06Hz		
				(>320~1280)Hz	U=0.23Hz		



No. CNAS L0954

第 42 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(>1280~4000)Hz	$U=0.70\text{Hz}$		
		Acceleration		(2~100)m/s ² (5~4000)Hz	$U_{\text{rel}}=3.3\%$		
		Distortion		0.01%~100%	$U_{\text{rel}}=2.5\%$		
32	*Electrodynamic Vibration Testing Systems	Frequency	V.R.of Electrodynamic Vibration Testing Systems JJG 948	(5~40)Hz	$U=0.016\text{Hz}$		
				(>40~160)Hz	$U=0.024\text{Hz}$		
				(>160~1280)Hz	$U=0.15\text{Hz}$		
				(>1280~4000)Hz	$U=0.46\text{ Hz}$		
		Acceleration		(5~4000)Hz, (1~1000)m/s ²	$U_{\text{rel}}=5.2\%$		
		Distortion		0.01%~100%	$U_{\text{rel}}=2.5\%$		
		sweep frequency accuracy		(0.01~10) dB	$U=0.2\text{ dB}$		
		Dynamic Range		(10~80)dB	$U=0.3\text{ dB}$		
		Control accuracy		(0.01~5)dB	$U=0.3\text{ dB}$		
		Grms		(10~600)m/s ²	$U_{\text{rel}}=3.4\%$		
		Power Spectral Density		(1~100)m ² /s ³	$U_{\text{rel}}=7.0\%$		
		Shock acceleration amplitude		(30~500)m/s ²	$U_{\text{rel}}=5.0\%$		



No. CNAS L0954

第 43 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		changing quantity of speed		(0.1~10.0)m/s	$U_{rel}=5.0\%$		
		Pulse Duration		(0.1~50)ms	$U_{rel}=4.8\%$		
33	Electromagnetic Velocity Transducer	Velocity	Electromagnetic Velocity Transducer JJG 134	(3~100)mm/s,(5~20)Hz	$U_{rel}=3\%$		
				(3~100)mm/s,($>20\sim1000$)Hz	$U_{rel}=2.5\%$		
				(3~100)mm/s,($>1000\sim2000$)Hz	$U_{rel}=3\%$		
34	Vibration Displacement Transducer	Displacement	V.R.of Vibration Displacement Transducer JJG 644	Dynamic State: (0.01~1.0)mm,(5~20)Hz	$U_{rel}=3\%$		
				Dynamic State: (0.01~1.0)mm,($>20\sim1000$)Hz	$U_{rel}=2.5\%$		
				Dynamic State:(0.01~1.0)mm,($>1000\sim2000$)Hz	$U_{rel}=3\%$		
35	Pile Dynamic Measuring Instrument	Acceleration	V.R.of Pile Dynamic Measuring Instrument JJG 930	(2~100)m/s ² , (10~2000)Hz	$U_{rel}=2.5\%$		
		Frequency		(10~2000)Hz	$U_{rel}=0.1\%$		
		Time		(0.2~200)ms	$U_{rel}=0.1\%$		
36	*Electronic Universal Testing Machine	Force value	V.R.of Electronic Universal Testing Machine JJG 475, Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing	(0.0025~0.5)kN	$U_{rel}=0.1\%$		
				($>0.5\sim1000$)kN	$U_{rel}=0.2\%$		
		concentricity		(0.1~3) mm	$U_{rel}=1.2\%$		
				(1~2000) μm	$U_{rel}=1.2\%$		



No. CNAS L0954

第 44 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Displacement rate	machines — Calibration and	(1~500)mm /min	$U_{rel}=0.2\%$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		displacement	verification of the force-measuring system ISO 7500-1, Standard Practices for Verification of Speed for Material Testing Machines ASTM E2658, Standard Practices for Verification of Displacement Measuring Systems and Devices Used in Material Testing Machines ASTM E2309/E2309M, Standard Practices for Force Verification of Testing Machines ASTM E4, Verification and calibration of the force measuring system of the tension / compression testing JIS B 7721, Metallic materials — Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force ISO 7500-2, Standard Practice for Verification of Test Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application 1 ASTM E1012	1mm~1000mm	$U_{rel}=0.2\%$		



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No. CNAS L0954

第 46 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
37	*Universal Tension and Compression Testing Machine	Force value	V.R.of Universal Tension and Compression Testing Machine JJG 139,Calibration and verification of static uniaxial testing machines —	(0.0025~0.5)kN	$U_{rel}=0.1\%$		
			Part 1: Tension/compression	(>0.5~1000)kN	$U_{rel}=0.2\%$		
			testing machines	(>1000~10000)kN	$U_{rel}=0.4\%$		
		displacement	Calibration and verification of the force-measuring system ISO 7500-	1mm~1000mm	$U_{rel}=0.2\%$		
		Displacement rate		(1~500)mm /min	$U_{rel}=0.2\%$		
		concentricity		(0.1~3) mm	$U_{rel}=1.2\%$		



No. CNAS L0954

第 47 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
			1,Standard Practices for Verification of Speed for Material Testing Machines ASTM E2658,Standard Practices for Verification of Displacement Measuring Systems and Devices Used in Material Testing Machines ASTM E2309/E2309M,Standard Practices for Force Verification of Testing Machines ASTM E4,Metallic materials — Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force ISO 7500-2,Verification and calibration of the force measuring system of the tension / compression testing JIS B 7721,Standard Practice for Verification of Test Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application1 ASTM E1012	(1~2000) $\mu\epsilon$	$U_{rel}=1.2\%$		
			Electro-hydraulic Servo	(0.0025~0.5)kN	$U_{rel}=0.1\%$		



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No. CNAS L0954

第 48 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Servo Universal Testing Machines		Universal Testing Machines JJG 1063, Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force- measuring system ISO	$>0.5 \sim 1000$ kN	$U_{\text{rel}}=0.2\%$		
				$>1000 \sim 10000$ kN	$U_{\text{rel}}=0.4\%$		
		displacement		1 mm $\sim$ 1000 mm	$U_{\text{rel}}=0.2\%$		
		Displacement rate		(1 $\sim$ 500) mm /min	$U_{\text{rel}}=0.2\%$		
		concentricity		(0.1 $\sim$ 3) mm	$U_{\text{rel}}=1.2\%$		



No. CNAS L0954

第 49 页 共 177 页

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

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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
			7500-1,Standard Practices for Verification of Speed for Material Testing Machines ASTM E2658,Standard Practices for Verification of Displacement Measuring Systems and Devices Used in Material Testing Machines ASTM E2309/E2309M,Standard Practices for Force Verification of Testing Machines ASTM E4,Metallic materials — Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force ISO 7500-2,Verification and calibration of the force measuring system of the tension / compression testing machines JIS B 7721,Standard Practice for Verification of Test Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application ASTME1012	(1~2000) $\mu\epsilon$	$U_{rel}=1.2\%$		
		Force value	V.R.of High-temperature	(0.5~500)kN	$U_{rel}=0.2\%$		



No. CNAS L0954

第 50 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	creep, enduring strength tester verification procedures	Temperature	creep, enduring strength tester verification procedures JJG 276, Calibration and verification of static uniaxial	(300~1100)℃	$U_{rel}=1.0^{\circ}\text{C}$		
		concentricity	276, Calibration and verification of static uniaxial	0.5%~40%	$U_{rel}=1.2\%$		
				(1~2000) μm	$U_{rel}=1.2\%$		

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SCHEDULE OF ACCREDITATION CERTIFICATE



No. CNAS L0954

第 51 页 共 177 页

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

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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		time	testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system ISO 7500-1,Standard Practices for Verification of Speed for Material Testing Machines ASTM E2658,Standard Practices for Verification of Displacement Measuring Systems and Devices Used in Material Testing Machines ASTM E2309/E2309M,Standard Practices for Force Verification of Testing Machines ASTM E4,Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force ISO 7500-2,Verification and calibration of the force measuring system of the tension / compression testing JIS B 7721,Standard Practice for Verification of Test Frame and Specimen Alignment Under Tensile and Compressive	(0.01~24)h	$U_{rel}=0.1\%$		



No. CNAS L0954

Axial Force Application1
ASTME1012

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
40	*Metallic Rockwell Hardness Testing Machines	Hardness	V.R.of Metallic Rockwell Hardness Testing Machines (A,B,C,D,E,F,G,H,K,N,T) JJG 112, Metallic materials — Rockwell hardness test — Part 1: Test method ISO 6508-2, Standard Test Methods for Rockwell Hardness of Metallic Materials ASTM E18, Rockwell hardness test -- Verification of testing machines JIS B7726	(20~88)HRA	$U=0.5\text{HRA}$		
				(20~100)HRB	$U=0.8\text{HRB}$		
				(20~70)HRC	$U=0.5\text{HRC}$		
				(32~91)HRN	$U=0.7\text{HRN}$		
				(55~93)HRTW	$U=1.1\text{HRTW}$		
		Force		(29.42~1471)N	$U_{\text{rel}}=0.16\%$		
		Time		(0~60)s	$U=0.18\text{s}$		
		Length		(0.1~10)mm	$U=0.001\text{mm}$		
41	*Metal Vickers Hardness Tester	Angle	V.R.of Metallic Vickers Hardness Tester JJG 151, Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines ISO 6507-2, Standard Test Method for Microindentation Hardness of Materials ASTM E384, Standard Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials ASTM E92, Vickers hardness test-Verification of testing machines JIS B7725	(0~360)°	$U=3'$		
		Indentation Depth		(20~220) μm	$U=0.2 \mu\text{m}$		
		Hardness		(175~800)HV	$U_{\text{rel}}=1.5\%$		
		Force value		(0.5~980.7)N	$U_{\text{rel}}=0.26\%$		
		Time		(0~60)s	$U=0.18\text{s}$		
		Indentation		(0.1~1)mm	$U_{\text{rel}}=0.14\%$		



No. CNAS L0954

第 53 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
42	*Pendulum Impact Testing Machines	energy	Metallic Materials-Charpy Pendulum Impact Test-Part2:	$0.1J \leq K_R < 30J$	$U=1.1J$		
				$30J \leq K_R < 110J$	$U_{rel}=3.9\%$		
				$110J \leq K_R < 220J$	$U_{rel}=3.8\%$		
				$220J \leq K_R \leq 1000J$	$U_{rel}=3.8\%$		
		Distance of center of percussion	Verification of Testing Machines EN ISO 148-2, Pendulum Impact Testing Machines JJG 145, Metallic materials - Charpy pendulum impact test - Part 2:	(50~1000)mm	$U_{rel}=0.14\%$		
		Physical dimension		(0.1~1000)mm	$U_{rel}=0.13\%$		
		Anvil span	Verification of test machines ISO 148-2, Standard Test Methods for Notched Bar Impact Testing of Metallic Materials ASTM E23, Charpy pendulum impact test --	(0~150)mm	$U=0.04mm$		
		Angle	Verification of testing machines JIS B7722	(0~180)°	$U=1.5$ ‘		
		Transverse play		(0~0.5)mm	$U=0.006mm$		
		Radial play		(0~0.2)mm	$U=0.006mm$		
43	*rock-bolt drawing dynamometer	Force value	Calibration Specification for rock-bolt drawing dynamometer JJF (辽) 298	(0.1~1000)kN	$U_{rel}=0.1\%$		
44	*Working Force Measuring Machines For Special Purposes	Force value	Calibration Specification for Working Force Measuring Machines For Special Purposes JJF 1134	2.5N~1000kN	$U_{rel}=0.3\%$		
				1000kN~10MN	$U_{rel}=0.4\%$		

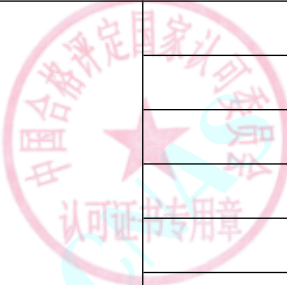


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No. CNAS L0954

第 54 页 共 177 页

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

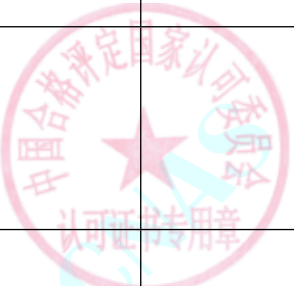
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
45	*Falling Weight Impact Testing Machines	Mass	Calibration Specification for Falling Weight Impact Testing Machines JJF 1445,	(0.001～5000)kg	<i>U</i> _{rel} =0.2%		
		Height	Standard Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels ASTM E208	(0.1～1000)mm	<i>U</i> _{rel} =0.2%		
46	*Cantilever-Beam(Izod-Type)Impace Testing Machine	Pendulum length	Verification Regulation of Cantilever-Beam(Izod-Type)Impace Testing Machine JJG608	(0.1～1000)mm	<i>U</i> =0.6mm		
		Initial potential energy		(0.01～ 50)J	<i>U</i> _{rel} =0.2%		
		Impact Velocity		(0.1～ 10)m/s	<i>U</i> _{rel} =0.2%		
47	*Table Balance	Mass	Table Balances JJG156	(0～40) kg	<i>U</i> =0.01g		
48	*Table Torsion Balance	Mass	Table Torsion Balance JJG1130	(0～100) g	<i>U</i> =0.2mg		
49	*Ralative Density Balance for Liquid	Mass	Ralative Density Balance for Liquid JJG171	(0～2.0000)	<i>U</i> =0.0002		
50	*Calibration Specification for Mass Comparators	Mass	Calibration Specification for Mass Comparators JJF1326	1mg～1g	<i>U</i> =0.00018mg		
				1g～1kg	<i>U</i> =0.10mg		
				(1～1000) kg	<i>U</i> =3g		
				(1000～3000) kg	<i>U</i> =7g		
		Mass		1mg～1g	<i>U</i> =0.00025mg		
				1g～1kg	<i>U</i> =0.20mg		



No. CNAS L0954

第 55 页 共 177 页

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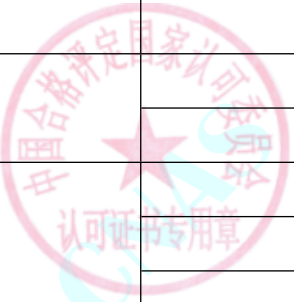
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Mass		(1~1000) kg	$U=4g$		
				(1000~3000) kg	$U=7g$		
				1mg~1g	$U=0.00027mg$		
				1g~1kg	$U=0.21mg$		
				(1~1000) kg	$U=4g$		
				(1000~3000) kg	$U=8g$		
51	*Automatic Instruments for Weighing Road Vehicles in Motion	Mass	Automatic Instruments for Weighing Road Vehicles in Motion JJG 907	10kg~100t	$U_{rel}=0.18\%$		
52	*Discontinuous Totalizing Automatic Weighing Instruments (Totalizing Hopper Weighers)	Mass	Discontinuous Totalizing Automatic Weighing Instruments (Totalizing Hopper Weighers) JJG648	100kg~50t	$U_{rel}=0.15\%$		
53	*Continuous Totalizing Automatic Weighing Instruments (Belt Weighers)	Mass	Continuous Totalizing Automatic Weighing Instruments (Belt Weighers) JJG195	100kg~50t	$U_{rel}=0.18\%$		
54	*Automatic Gravimetric Filling Instruments	Mass	Automatic Gravimetric Filling Instruments JJG564	0.1g~5000kg	$U_{rel}=0.18\%$		



No. CNAS L0954

第 56 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
55	Calibration device of escalator synchrometer	speed	Calibration Specification for escalator synchronization rate testers JJF(liao)248	(0.01~20) m/s	$U=0.002\text{m/s}$		
56	*Nuclear Conveyor Belt Scales	mass	Calibration Specification for Nuclear Conveyor Belt Scales JJF 1848	10kg~100t	$U=(0.02\sim 2\times 10^2)\text{kg}$		
57	*Portable Weighing Instruments for Axles of Vehicle Motion	mass	Calibration Specification for Portable Weighing Instruments for Axles of Vehicle Motion JJF 1212	100kg~100t	$U=(0.2\sim 2\times 10^2)\text{kg}$		
58	*Torsion Balance	mass	V.R. of Torsion Balance JJG 46	(1~2500)mg	$U=(0.002\sim 0.02)\text{mg}$		
59	*Taking Blood Electronic Scale	mass	V.R. of Taking Blood Electronic Scale JJG 815	(2~1000) g	$U=0.2\text{g}$		
60	*Fixed Radar Vehicle Speed Measurement Devices	speed	Verification Regulation of Fixed Radar Vehicle Speed Measurement Devices JJG 527	(20~180)km/h	$U=1\text{km/h}$		
61	*Mobile Radar Vehicle Speed Measurement Devices	speed	Verification Regulation of Mobile Radar Vehicle Speed Measurement Devices JJG 528	(20~180)km/h	$U=1\text{km/h}$		
62	*Hardness Tester	Force value	Calibration Specification for the Hardness Tester JJF(liao) 424	(2.5~500) N	$U_{\text{rel}}=0.2\%$		
		Length value		(1~30) mm	$U=0.02\text{mm}$		
63	*Calibrating Steel Anvil	Hardness	Calibration Specification for Calibrating Steel Anvil JJF(liao) 421	(20~70) HR	$U=0.8\text{HR}$		
		Mass		(0.4~60)kg	$U=0.04\text{kg}$		
		Diameter		(0~200) mm	$U=0.04\text{mm}$		



No. CNAS L0954

第 57 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
64	*Bend Testing Machines	angle	Calibration Specification for Bend Testing Machines JJF(liao) 426	(1~90)°	<i>U</i> =11′		
		displacement		(1~1000)mm	<i>U</i> =0.2mm		
		Diameter		(1~150)mm	<i>U</i> =0.06mm		
		distance		(10~500)mm	<i>U</i> =0.5mm		
		Force value		(0.1~1000)kN	<i>U</i> _{rel} =0.6%		
65	Portable Vibration Calibrator	Acceleration	V.R. of Portable Vibration Calibrator JJG 1062	(1~1000) m/s ² (5~160) Hz	<i>U</i> _{rel} =1.2%		
				(1~1000) m/s ² 160Hz	<i>U</i> _{rel} =0.8%		
				(1~1000) m/s ² (160~4000) Hz	<i>U</i> _{rel} =1.2%		
		Frequency		(5~2000) Hz	<i>U</i> =0.04Hz		
				(>2000~4000) Hz	<i>U</i> =0.06Hz		
		Distortion		0.01%~100.0%	<i>U</i> _{rel} =3.6%		
66	*Electrodynamic Horizontal Vibration Generator for Testing	Frequency	V.R. of Electrodynamic Horizontal Vibration Generator for Testing JJG 1000	(5~40) Hz	<i>U</i> =0.016 Hz		
				(>40~160) Hz	<i>U</i> =0.024 Hz		
				(>160~1280)	<i>U</i> =0.15 Hz		
				(>1280~4000) Hz	<i>U</i> =0.46 Hz		
		Acceleration		(1~1000) m/s ² (5~4000) Hz	<i>U</i> _{rel} =3.3%		
				Displacement	(0.01~50.0) mm		
		Distortion		0.01%~100.0%	<i>U</i> _{rel} =3.6%		



No. CNAS L0954

第 58 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
67	*Axial Force Fatigue Testing Machines	concentricity	Verification Regulation of Axial Force Testing System	(1~2000) μm	$U_{\text{rel}}=1.2\%$		
		Static force	JJG 556, Verification of Constant Amplitude Dynamic Loadson	(1~600) kN	$U_{\text{rel}}=0.2\%$		
		Dynamic force	Displacements in an Axial Load Fatigue Testing System ASTM E 467, Standard Practice for Verification of Test Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application ASTM E 1012, Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force ISO 7500- 1, Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system ISO 4965-1	(1~600) kN	$U_{\text{rel}}=0.2\%$		
68	*Liquid level gauge (in the field)	Liquid level	Field calibration Specification for liquid level measuring system JJF(Liao) 419	(0~30) m	$U=(0.8\sim 2.8)\text{ mm}$		

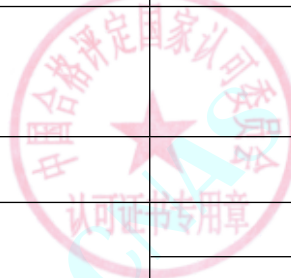


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No. CNAS L0954

第 59 页 共 177 页

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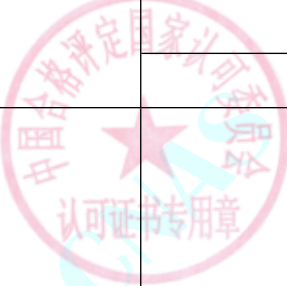
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
69	*weirs for Flow Measurement	Flow	Weirs and Flumes for Flow Measurement JJG 711	(0.00009～93) m³/s	U _{rel} =1.7%		
70	Digital Barometers	pressure	Verification Regulation of Digital Barometers JJG 1084	(10～120) kPa	U=0.022%FS		
71	Environmental Vibration Instruments	Acceleration Level	V.R.of Environmental Vibration Instruments JJG 921	(1～80) Hz, (0.1～20) m/s²	U=0.19dB		
72	*Rebound Test Hammer Calibrators	Length	C.S. for the Rebound Test Hammer Calibrators JJF (Liao) 486	(0～300) mm	U=0.04mm		
		Hardness		(10～80)HRC	U=0.8HR		
		Mass		(0.4～60) kg	U=U =0.04kg		
				(1～5000)g	U=0.4g		
73	Liquid Manometers for Working	pressure	V.R.of Liquid Manometers for Working JJG540	(-20000～20000)Pa	U=7Pa		
74	*Digital Pressure Indicators	pressure	C.S. of the Digital Pressure Indicators JJF(Liao)480	-0.1MPa～250MPa	U=0.05%FS		
75	Pressure Transducer	Pressure	V.R.of Pressure Transducer (Static) JJG860	(-0.1～2)MPa	U=0.010%FS		
				(2～250)MPa	U=0.014%FS		
76	Working Thermal Conducting Vacuum Gauge	Vacuum	C.S.of Working Thermal Conducting Vacuum Gauge JJF1050	(1.0×10 ⁵ ～1.0×10 ⁻¹)Pa	U _{rel} =13%		
77	*Ionization Vacuum Gauge	Vacuum	C.S.of Ionization Vacuum Gauge JJF 1062	(1.0×10 ⁻⁴ ～1.0×10 ⁻¹)Pa	U _{rel} =13%		
78	Compen- sated micro- manometer	Pressure	V.R.of Compensaated Micromanomet-er JJG158	(-2.5～<-1.5)kPa	U=0.5Pa(k=1.65)		
				(-1.5～1.5)kPa	U=0.4Pa(k=1.65)		



No. CNAS L0954

第 60 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(1.5~2.5)kPa	$U=0.5\text{Pa}(k=1.65)$		
79	Tilting Tube Micro-mano-meter	Pressure	V.R.of Tilting Tube Micro-manome-ter JJG172	(-2~2)kPa	$U=2\text{Pa}$		
80	Pressure Vacuum Gauge	Pressure	V.R.of Elastic Element Precise Pressure Gauge and Vacuum Gauge JJG49,V.R.of Elastic Element Pressure Gauge ,Pressure Vacuum Gauge and Vacuum Gauge for General Use JJG52	(-100~100)kPa	$U=0.1\%\text{FS}$		
81	Piston Type Pressure Gauge	Pressure	V.R.of Liquid-medium Piston Gauge JJG 59	(0.04~250)MPa	$U_{\text{rel}}=0.005\%$		
82	Pressure regulator	Pressure	C.S.of Pressure Regulators with Bourdon Tube Pressure Gauge JJF1328	(0.04~25)MPa	$U=0.5\%\text{FS}$		
83	Densimeter Controller	Pressure	V.R.of Pressure Type DF6 Gas Density Monitors JJG1073	(0.04~25)MPa	$U=0.4\%\text{FS}$		
84	Aneroid Barometer	Pressure	V.R. of Aneroid barograph & Aneroid barometer JJG272	(500~1060)hPa	$U=0.3\text{hPa}(k=1.84)$		
85	Piston Pressure Vacuum Gauges	Pressure	V.R.of Piston Pressure Vacuum Gauges JJG236	(-0.1~-0.001) MPa	$U_{\text{rel}}=0.005\%$		
				(0.001~0.6) MPa	$U_{\text{rel}}=0.005\%$		
86	Verification Instrument for Oxygen Inhalator	Pressure	V.R.of Elastic Element Precise Pressure Gauge and Vacuum Gauge JJG49,V.R.of Elastic Element Pressure Gauge ,Pressure Vacuum Gauge and Vacuum Gauge for General Use JJG52,Float	(0.04~25)MPa	$U=0.1\%\text{FS}$		

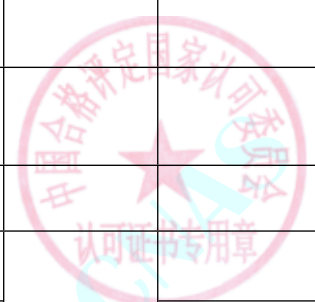


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No. CNAS L0954

第 61 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Flow	Meter JJG257	(1~10)L/min	$U=0.7\%FS$		
87	Liquid Level Measuring Devices	Length	V.R.of the Liquid Level	(1~2000)mm	$U_{rel}=0.06\%$		
		Pressure	Measuring Devices JJG971	(2~250)kPa	$U_{rel}=0.08\%$		
88	Velocity Flow Meter	flow	V.R.of Velocity Flow Meter JJG198	液体(mass method): (0.5~630)m ³ /h (DN15- DN150)	$U_{rel}=0.12\%$		
				液体 (master meter method) : (25~ 800)m ³ /h (DN 100- DN500)	$U_{rel}=0.25\%$		
				气体 (nozzle) : (120~6000)m ³ /h (DN 20-DN300)	$U_{rel}=0.28\%$		
				气体 (2000L Bell) : (60~120)m ³ /h (DN 2~DN50)	$U_{rel}=0.24\%$		
				气体 (1000L Bell) : (0.001~60)m ³ /h (DN 2- DN50)	$U_{rel}=0.16\%$		
89	Ball Pneumatic Dead Weight Tester	Pressure	V.R.of Ball Pneumatic Dead Weight Tester JJG942	0.1kPa~6MPa	$U_{rel}=0.005\%$		
90	Digital Pressure Gauges	Pressure	V.R.of Digital Pressure Gauges JJG875	-0.1MPa~250MPa	$U=0.03\%FS$		
91	Pressure Transmitters	Pressure	V.R.of Pressure Transmitters JJG882	(-100~100)kPa/(4~ 20)mA	$U=0.017\%FS$		
				(-100~100)kPa/(1~5)V	$U=0.015\%FS$		



No. CNAS L0954

第 62 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.1~200)MPa/(4~20)mA	$U=0.015\%FS$		
				(0.1~200)MPa/(1~5)V	$U=0.007\%FS$		
				(200~640)MPa/(4~20)mA	$U=0.024\%FS$		
				(200~640)MPa/(1~5)V	$U=0.025\%FS$		
92	Precision Pressure Gauge (Sphygmomanometer standard)	Pressure	V.R. of Elastic Element Precise Pressure Gauge and Vacuum Gauge JJG49	(0.04~250)MPa	$U=0.1\%FS$		
				(2~50)kPa	$U=0.07\%FS$		
93	*Rotameter	Flow	V.R. of Float Meter JJG257	气体 (nozzle) : (120~6000)m ³ /h (DN100~DN300)	$U=0.46\%FS$		
				气体 (2000L Bell) : (60~120)m ³ /h (DN40~DN100)	$U=0.46\%FS$		
				Gas (1000L Bell) : (0.001~60)m ³ /h (DN10~DN40)	$U=0.42\%FS$		
				Gas (Soap Film Flow meter) : (0.001~30)L/min	$U=0.58\%FS$		
94	Tyre pressure gauge	Pressure	V.R. of Tyre Pressure Gauge JJG927	0~2.5MPa	$U=0.4\%FS$	合格评定 国家认可 委员会 认可证书专用章	
95	Vortex-shedding Flowmeter	Flow	V.R. of Vortex-shedding Flowmeter JJG1029	Liquid(mass method): (0.5~630)m ³ /h (DN15~DN150)	$U_{rel}=0.12\%$		



No. CNAS L0954

第 63 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Liquid (master meter method) : (25~800)m ³ /h (DN100~DN500)	$U_{rel}=0.25\%$		
				Gas (nozzle) : (120~6000)m ³ /h (DN20~DN300)	$U_{rel}=0.28\%$		
				Gas (2000L Bell) : (60~120)m ³ /h (DN2~DN50)	$U_{rel}=0.24\%$		
				Gas (1000L Bell) : (0.001~60)m ³ /h (DN2~DN50)	$U_{rel}=0.16\%$		
96	Goriolis Mass Flow Meters	Flow	V.R. of Goriolis Mass Flow Meters JJG1038	Liquid(mass method): (0.5~630)m ³ /h (DN15~DN150)	$U_{rel}=0.06\%$		
97	Diaphragm Gas Meter	Flow	V.R. of Diaphragm Gas Meters JJG577	Gas (nozzle) : (100~160)m ³ /h (G40~G100)	$U_{rel}=0.30\%$		
				(2000L Bell) : (60~100)m ³ /h (G16~G40)	$U_{rel}=0.24\%$		
				Gas (20L-1000L Bell) : (0.016~60)m ³ /h (G1.6~G16)	$U_{rel}=0.20\%$		
98	Cold Water Meter	Flow	V.R. of Cold Water Meter JJG162	Liquid(mass method): (0.02~585)m ³ /h (DN15-DN150)	$U_{rel}=0.2\%$		



No. CNAS L0954

第 64 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
99	Gas Displacement Meters	Flow	V.R. of Gas Displacement Meter JJG633	Gas (nozzle) : (120~6000)m ³ /h (DN 20-DN300)	$U_{rel}=0.28\%$		
				Gas (2000L Bell) : (60~120)m ³ /h (DN2-DN50)	$U_{rel}=0.22\%$		
				Gas (1000L Bell) : (0.001~60)m ³ /h (DN2-DN50)	$U_{rel}=0.15\%$		
100	Differential Pressure Flowmeters		V.R. of Differential Pressure Type Flowmeter JJG640	Gas (1000L Bell) : (1~6000)m ³ /h (DN20-DN300)	$U_{rel}=0.35\%$		
				Liquid(mass method): (0.5~630)m ³ /h (DN15-DN150)	$U_{rel}=0.29\%$		
				Liquid (master meter method) : (25~800)m ³ /h (DN 100-DN500)	$U_{rel}=0.39\%$		
101	*Liquid flow measurement system	Flow	C.S. for calibration specification for online liquid flow measurement system JJF(Liao)84	(0.05~100000) m ³ /h	$U_{rel}=0.68\%$		
102	General pressure gauge	Pressure	V.R. of Elastic Element Pressure Gauge ,Pressure Vacuum Gauge and Vacuum Gauge for General Use JJG52	(0~400)MPa	$U=0.4\%FS$		



No. CNAS L0954

第 65 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
103	Turbine Flowmeter	Flow	V.R. of Turbine Flowmeter JJG1037	Liquid(mass method): (0.5~630)m ³ /h (DN15~DN150)	$U_{rel}=0.09\%$		
				Liquid (master meter method): (25~800)m ³ /h (DN100~DN500)	$U_{rel}=0.24\%$		
				Gas (nozzle): (120~6000)m ³ /h (DN20~DN300)	$U_{rel}=0.28\%$		
				Gas (2000L Bell): (60~120)m ³ /h (DN2~DN50)	$U_{rel}=0.22\%$		
				Gas (1000L Bell): (0.001~60)m ³ /h (DN2~DN50)	$U_{rel}=0.14\%$		
104	*pressure controller	pressure	Verification Regulation of pressure controllers JJG544-2011	(-0.1~70) MPa	$U=0.2\%FS$		
105	*Standard Facilities for Liquid Flowrate	Flow	V.R. of Standard Facilities for Liquid Flowrate JJG 164	Mass method:(20~50000)kg	$U_{rel}=0.03\%$		
				Volumetric method:(0.01~380)m ³	$U_{rel}=0.05\%$		
106	*standard bell porvers of gas flow	standard volume	V.R. of standard bell porvers of gas flow JJG 165	(20~2000)L	$U_{rel}=0.046\%$	dimensional metrology	
107	Flow switch meter	Flow	C.S. for the folw parameter of flow switch meter JJF (Liao) 389	(0.5~600)m ³ /h	$U=0.10m^3/h$		



No. CNAS L0954

第 66 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
108	Orifice Flow Meter	Flow	C.S. for the orifice Flow meter JJF (Liao) 289	(20~5000)L/min	$U_{rel}=0.25\%$		
109	Gas burette	volume	C.S. for the Gas Burette JJF(liao) 390	(0.1~100) mL	$U=(0.01\text{mL}\sim0.025\text{mL})$		
110	Micro sampling syringe	volume	C.S. for Micro Sampling Syringe JJF(liao) 293	(100~200) mL	$U=(0.025\text{mL}\sim0.1\text{mL})$		
				(0.1~1) μL	$U=(0.002\sim0.003) \mu\text{L}$		
				(1~500) μL	$U=(0.003\sim1.2) \mu\text{L}$		
				(500~1000) μL	$U=(1.2\sim2.4) \mu\text{L}$		
111	Weighing water container	volume	C.S. for the Weighing Water Container JJF(liao) 484	(170~250) mL	$U=0.1\text{mL}$		
112	Syringes for medical use	volume	V.R. of Syringes for Medical Use JJG 18	(0.01~100) mL			
113	Moisture receiver	volume	C.S. for Moisture Receiver JJF(Lu) 126	(0.03~25) mL			
114	Pyknometers (cup)	volume	Paints and varnishes- Determination of density- Pyknometer method GB/T 6750-2007 Appendix A	0.1mL~500mL	$U=(0.01\sim0.12)\text{mL}$		
115	*Oil consumption meters of mass method	mass	C.S. for oil consumption meters of mass method JJF 1670	(0~2000) g	$U=0.2\text{g}$		
116	*Cancrete batching scales	mass	V.R. of Cancrete batching scales JJG 1171	10kg~100t	$U_{rel}=0.2\%$		
117	*Weighing device	mass	C.S. for the Weighing Device JJF(Liao) 485	1g~20000kg	$U=0.03\text{mg}\sim0.4\text{kg}$		
118	*Point-to-Point VehicleSpeed Monitor Systems	Time	Calibration	(1~86400)s	$U_{rel}=0.1\%$		
		Distance	Specification for Point-to-Point Vehicle Speed Monitor	(1~100)km	$U_{rel}=0.6\%$		



No. CNAS L0954

第 67 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Speed	Systems JJF(Liao) 355, Motor Vehicle Point-to-point Speed Measurement Systems JJG (Min) 1107	(20~180)km/h	$U=2\text{km/h}$		
119	*Metallic Material Torsion Testers	rotary speed	Calibration Specification for Metallic Material Torsion Testers JJF(Liao) 489	(10~200)r/min	$U_{\text{rel}}=0.07\%$		
		mass		(100~2000)g	$U_{\text{rel}}=0.01\%$		
120	Electric and Pneumatic Torque wrenches	Torque	Calibration Specification for Electric and Pneumatic Torque wrenches JJF 1610	(0.03~5000)Nm	$U_{\text{rel}}=1.0\%$		
121	Hydraulic Torque Wrenches	Torque	Calibration Specification for Hydraulic Torque Wrenches JJF(Liao) 516	(100~20000)Nm	$U_{\text{rel}}=1.1\%$		
122	*Non-contact Tonometers	Pressure	Non-contact Tonometers JJG1143	(0.00~8.00) kPa	$U=0.1\text{kPa}$		
123	Sphygmomanometer	Pressure	V.R. of Sphygmomanometer JJG270	(0~40)kPa	$U=0.2\text{kPa}$		
124	Non-invasive automated Sphygmomanometers	Pressure	V.R. of Non-invasive Automated Sphygmomanometer JJG692	(0~50)kPa	$U=0.1\text{kPa}$		
125	*Special Axle(Wheel) Load Scale for Motor Vehicle Test	Mass	V.R. of Special Axle(Wheel) Load Scale for Motor Vehicle Test JJG 1014	(0~500)kg	$U=2\text{kg}$		
				(500~5000)kg	$U_{\text{rel}}=0.4\%$		
126	Electromagnetic Flowmeter	flow	V.R. of Electromagnetic Flowmeter JJG1033	Liquid(mass method): (0.5~630)m ³ /h (DN15~DN150)	$U_{\text{rel}}=0.08\%$		



No. CNAS L0954

第 68 页 共 177 页

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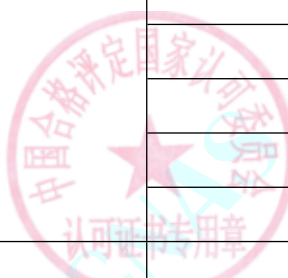
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Liquid(mass method): (25~800)m ³ /h (DN100~DN500)	$U_{rel}=0.28\%$		
127	*Thermal Mass Gas Flowmeters		V.R.of Thermal Mass Flow meters JJG1132	Gas (nozzle) : (1~6000)m ³ /h (DN20~DN300)	$U_{rel}=0.3\%$		
				Gas (2000L Bell) : (1~120)m ³ /h (DN2~DN50)	$U_{rel}=0.27\%$		
				Gas (Soap Film Flow meter) : (0.001-30)L/min (DN1~DN10)	$U_{rel}=0.53\%$		
128	Ultrasonic Flowmeter	flow	V.R.of Ultrasonic Flowmeter JJG1030	Liquid(mass method): (0.5~630)m ³ /h (DN15~DN150)	$U_{rel}=0.13\%$		
				Liquid (master meter method) : (25~800)m ³ /h (DN100~DN500)	$U_{rel}=0.34\%$		
				Gas (nozzle) : (1~6000)m ³ /h (DN20~DN300)	$U_{rel}=0.28\%$		
129	Vacuum Helium Leaks	leak rate	C.S. for Vacuum Helium Leaks JJF1833	($5.0 \times 10^{-10} \sim 5.0 \times 10^{-6}$) Pa•m ³ /s	$U_{rel}=15\%$		
130	*Soap Film Flow meter	flow	V.R.of Soap Film Flow meter JJG586	(0.001~30)L/min	$U_{rel}=0.5\%$		



No. CNAS L0954

第 69 页 共 177 页

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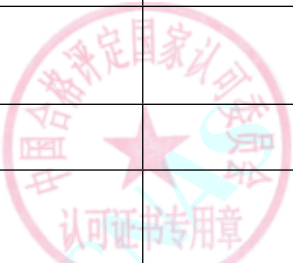
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date	
131	*Dynamometers for Steel-Wires	Force	V.R.of Dynamometers for Steel-Wires JJG 911	(0.01~25)kN	U _{rel} =0.6%	Except for digital displays		
132	*Parking Brake Performance Testers	Force	C.S. for Parking Brake Performance Testers for Vehicles JJF 1671	0.1kN~100kN	U _{rel} =0.4%			
133	*measure system of hot water and heat	flow	Online Calibration Specification for Heat Exchange Circle Measurement System JJF(Liao)191	(0.05~1000000) m ³ /h	U _{rel} =0.71%			
		heat		(10~1000000) kWh	U _{rel} =0.95%			
134	*Cupping Testing Machine	Force	V.R.of Cupping Testing Machine JJG 583	(1~20) kN	U _{rel} =0.3%			
		Length		Displacement: (0.1~50)mm	U=0.005mm			
				Dimension: (0.5~150) mm	U=0.04mm			
135	*Flow Master	flow	Calibration Specification for the Fixed Flow Master JJF (辽) 133-2012	1ml/min~30L/min	U _{rel} =0.62%			
136	Spring Hammers	Energy	C.S. for Spring Hammers JJF 1475	0.200J	U=0.007J			
				(0.200~0.800)J	U=0.018J			
				(0.800~1.300)J	U=0.027J			
				(1.300~2.000)J	U=0.042J			
		Length		(9.8~10.2)mm	U=0.06mm			
137	Vortex Precession Flowmeters	flow	Vortex Precession Flowmeters JJG1121-2015	(1~6000) m ³ /h	U _{rel} =0.28%			



No. CNAS L0954

第 70 页 共 177 页

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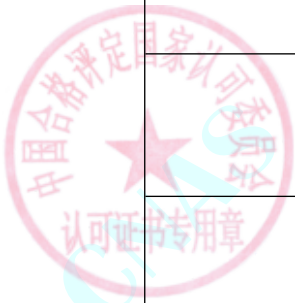
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
138	Dynamical Signal Analyzer	Frequency	V.R.of Dynamical Signal Analyzer JJG 834	0.1Hz~100kHz	$U_{rel}=1.2\times 10^{-5}$		
		frequency scope		1mV~10V, 0.1Hz~ 100kHz	$U_{rel}=0.2\%$		
139	Air Volume Cover	flow	Calibration Specification for the Air Volume Cover JJF (辽) 230-2015	(50~5600) m ³ /h	$U_{rel}=0.7\%$		
140	*Medical Centrifuges	Rotational Speed	C.S. for Medical Centrifuges JJF 2004	(20~10000)r/min	$U_{rel}=0.3\%$		
				(10000~100000)r/min	$U_{rel}=0.2\%$		
		Time		(0~3600) s	$U=1s$		
		Temperature		(-20~70)°C	$U=0.6^{\circ}C$		
141	*Calibration Specification for Automatic Catchweighing Instruments	mass	C. S. for Automatic Catchweighing Instruments JJF(shan)023	non-automatic run 1mg~100kg	$U=0.04mg\sim0.33g$		
				automatic run: 1mg~ 100kg	$U=0.75mg\sim1.53g$		
142	*Electronic Instruments for Front-end Lorder	mass	V. R. of Electronic Instruments for Front-end Lorder JJG 1123	0.1kg~10t	$U=0.97g\sim47kg$		
143	*Analogua Indicating Body Health Scale	mass	C. S. for the Body Health Scale JJF(Liao) 370	1g~500kg	$U=0.03g\sim0.18kg$		
144	*Digital Body Health Scale	mass	C. S. for the Digital Body Health Scale JJF(Liao) 425	1g~500kg	$U=0.03g\sim0.18kg$		
145	BottleTopDispense r	volume	C. S. for BottleTop Dispenser JJF(Ji) 181	(0.1~200) mL	$U=(3.9\sim4.9)\mu L$		
IV Acoustics							



No. CNAS L0954

第 71 页 共 177 页

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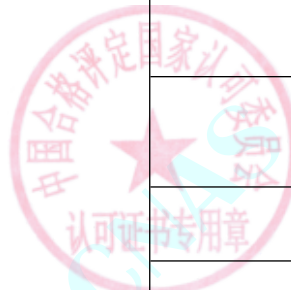
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
1	Sound Calibrators	Sound pressure level	V.R. of Sound Calibrators JJG 176	40dB~130dB (20 Hz~160 Hz)	<i>U</i> =0.19dB		
				40dB~130dB (160Hz~1250 Hz)	<i>U</i> =0.09dB		
				40dB~130dB (>1250 Hz~4000 Hz)	<i>U</i> =0.22dB		
				40dB~130dB (>4000 Hz~8000Hz)	<i>U</i> =0.31dB		
				40dB~130dB(>8000 Hz~20000 Hz)	<i>U</i> =0.49dB		
		Frequency		20Hz~20000 Hz	<i>U</i> _{rel} =0.06%		
		Total distortion		0.01%~100%(20 Hz~160 Hz)	<i>U</i> =0.52%		
				0.01%~100%(160 Hz~1250 Hz)	<i>U</i> =0.29%		
				0.01%~100%(>1250 Hz~20000 Hz)	<i>U</i> =0.51%		
2	Sound Level Meters	Frequency Weighting(Sound pressure level)	V.R. of Sound Level Meters JJG 188	Acoustic Signal : (20dB~140dB) ,(10Hz~200Hz)	<i>U</i> =0.5dB		
				Acoustic Signal : (20dB~140dB),(250Hz~1.25kHz)	<i>U</i> =0.4dB		
				Acoustic Signal : (20dB~140dB),(1.6kHz~10kHz)	<i>U</i> =0.6dB		



No. CNAS L0954

第 72 页 共 177 页

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

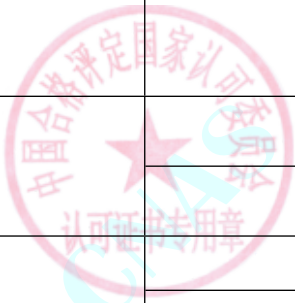
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				Acoustic Signal : (20dB~140dB),(12.5kHz~20kHz)	<i>U</i> =1.0dB		
		Level linearity		(20~140)dB,10dB stepping	<i>U</i> =0.26dB		
				(20~140)dB,1dB stepping	<i>U</i> =0.17dB		
		F and S Time weighting		F:(1~50)dB/s	<i>U</i> =3.0dB/s		
				S:(1~50)dB/s	<i>U</i> =0.40dB/s		
		Toneburst response		(20~140)dB,(0.25ms~1000ms)	<i>U</i> =0.27dB		
		Repetitive toneburst response		(20~140)dB,(0.25ms~1000ms)	<i>U</i> =0.28dB		
3	Noise Level Statistical Analyzer	Sound Pressure Level	V.R. of Noise Level Statistical Analyzer JJG 778	Acoustic Signal : (30dB~130dB),(10Hz~200Hz)	<i>U</i> =0.5dB		
				Acoustic Signal :(30dB~130dB), (250Hz~1.25kHz)	<i>U</i> =0.4dB		
				Acoustic Signal : (30dB~130dB),(1.6kHz~10kHz)	<i>U</i> =0.6dB		
		Percent Levels		(10~130) dB, (10Hz~20kHz)	<i>U</i> =0.2dB		
		Time-aver sound Level		(10~130) dB, (10Hz~20kHz)	<i>U</i> =0.2dB		



No. CNAS L0954

第 73 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
4	Audiometer	RETSPL	V.R. of Audiological Equipment Pure-tone Audiometers JJG 388	(5~120)dB,125Hz	<i>U</i> =0.9dB		
				(5~120)dB,(250~4000)Hz	<i>U</i> =0.8dB		
				(5~120)dB,6000Hz	<i>U</i> =1.0dB		
				(5~120)dB,8000Hz	<i>U</i> =1.1dB		
		RETFL		(5~120)dB,250Hz	<i>U</i> =1.2dB		
				(5~120)dB,500Hz	<i>U</i> =2.5dB		
				(5~120)dB,750Hz	<i>U</i> =1.7dB		
				(5~120)dB,1000Hz	<i>U</i> =1.4dB		
				(5~120)dB,1500Hz	<i>U</i> =1.6dB		
				(5~120)dB,(2000~3000)Hz	<i>U</i> =2.4dB		
				(5~120)dB,4000Hz	<i>U</i> =2.2dB		
5	*Ultrasonic Source for Medical Ultrasonic Diagnostic Equipment	P	V.R. of Ultrasonic Source for Medical Ultrasonic Diagnostic Equipment JJG 639	(1.0~500)mW	<i>U</i> _{rel} =11%		
6	*Ultrasonic Flaw Detectors	Attenuation	V.R. of Ultrasonic Flaw Detectors JJG 746	(1~100)dB,(2.5~5.0)MHz	<i>U</i> =0.5dB		
		Vertical Linear		5%~100%,(2.5~5.0)MHz	<i>U</i> =1.7%		
7	Sonic Belt Tension Meters	Frequency	C.S. for Sonic Belt Tension Meters JJF 1216	10Hz	<i>U</i> _{rel} =0.8%		
				(20Hz~100Hz)	<i>U</i> _{rel} =0.3%		

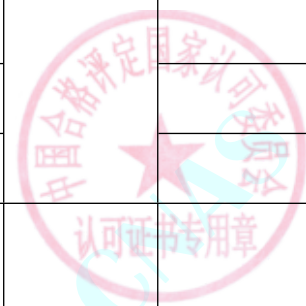


No. CNAS L0954

第 74 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				(>100Hz~600Hz)	<i>U</i> _{rel} =0.4%		
8	Octave-Band and Fractional-Octave-Band Filters	relative attenuation	V.R. of Octave-Band and Fractional-Octave-Band Filters JJG 449	(-5~2) dB,(10Hz~20kHz)	<i>U</i> =0.07dB		
				(>2~40) dB,(10Hz~20kHz)	<i>U</i> =0.13dB		
				(>40~130) dB,(10Hz~20kHz)	<i>U</i> =0.14dB		
		Level linearity		(10~40) dB,(10Hz~20kHz)	<i>U</i> =0.14dB		
				(>40~130) dB,(10Hz~20kHz)	<i>U</i> =0.24dB		
9	Working Standard Microphones(Electrostatic Actuator Method)	Sensitivity level	V.R. of Working Standard Microphones(Electrostatic Actuator Method) JJG 175	((-70~20)dB,(250Hz~1kHz)	<i>U</i> =0.15dB		
		Frequency response		(-70~20)dB,(20Hz~80Hz)	<i>U</i> =0.18dB		
				(-70~20)dB,(>80Hz~1kHz)	<i>U</i> =0.16dB		
				(-70~20)dB,(>1kHz~4kHz)	<i>U</i> =0.19dB		
				(-70~20)dB,(>4kHz~8kHz)	<i>U</i> =0.25dB		
				(-70~20)dB,(>8kHz~20kHz)	<i>U</i> =0.48dB		
				(-70~20)dB,(>20kHz~40kHz)	<i>U</i> =0.66dB		
				10	Working Standard Microphones(Coupler Comparison Method)		



No. CNAS L0954

第 75 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Frequency response		(-70~20)dB,(20Hz~80Hz)	<i>U</i> =0.18dB		
				(-70~20)dB,(>80Hz~6.3kHz)	<i>U</i> =0.15dB		
				(-70~20)dB,(>6.3Hz~10kHz)	<i>U</i> =0.18dB		
				(-70~20)dB,(>10kHz~20kHz)	<i>U</i> =0.21dB		
11	Microphone Preamplifiers	Frequency response	C.S. for Microphone Preamplifiers JJF 1137	(-0.5dB~0.5dB),(10Hz~20kHz)	<i>U</i> =0.22dB		
		Insertion loss		(-0.5dB~0.5dB),1000Hz	<i>U</i> =0.08dB		
12	Multi-Channels Sound Analyzers	Frequency weighting and frequency response (electrical signal)	C.S. for Multi-Channels Sound Analyzers JJF 1288	(-80~20) dB,1000Hz	<i>U</i> =0.1dB		
				(-80~20) dB,Other frequencies	<i>U</i> =0.2dB		
		Level linearity		(20~40) dB,(10Hz~20kHz)	<i>U</i> =0.14dB		
				(>40~140) dB,(10Hz~20kHz)	<i>U</i> =0.24dB		
		Time weighting		F:(1~50)dB/s,4kHz	<i>U</i> =3.0dB/s		
				S:(1~50)dB/s,4kHz	<i>U</i> =0.20dB/s		
				Deviation between F and S:(-0.5dB~0.5dB),1kHz	<i>U</i> =0.10dB		
	Toneburst response		(20~140)dB,(0.10~1000)ms	<i>U</i> =0.20dB			



No. CNAS L0954

第 76 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Repetitive toneburst response		(20~140)dB,(0.10~1000)ms	<i>U</i> =0.20dB		
		Frequency		10Hz~50kHz	<i>U</i> _{rel} =5.6×10 ⁻⁵		
		Amplitude		(2mV~1V)	<i>U</i> _{rel} =0.2%		
				(1V~10V)	<i>U</i> _{rel} =0.1%		
		Total distortion		(0.01%~100%),(10Hz~50kHz)	<i>U</i> _{rel} =2.4%		
		Spectral		(20~140) dB,(20Hz~20kHz)	<i>U</i> =1.3dB		
13	Personal Sound Exposure Meters	Sound pressure level	V.R. of Personal Sound Exposure Meters JJG 980	30dB~130dB(20Hz~200Hz)	<i>U</i> =0.5dB		
				30dB~130dB(250Hz~400Hz)	<i>U</i> =0.4dB		
				30dB~130dB(500Hz~1250Hz)	<i>U</i> =0.4dB		
				30dB~130dB(1600Hz~10000Hz)	<i>U</i> =0.6dB		
		Acoustic Exposure		0.30Pa ² h~40.00Pa ² h(63~8000)Hz	<i>U</i> =0.40Pa ² h		
				40.00Pa ² h~80.00Pa ² h(63~8000)Hz	<i>U</i> =0.65Pa ² h		
				80.0Pa ² h~100.0Pa ² h(63~8000)Hz	<i>U</i> =1.6Pa ² h		
14	*Anechoic Rooms and Hemi-Anechoic Rooms	Sound pressure level	C.S.for Acoustic Performance of Anechoic Rooms and Hemi-anechoic Rooms JJF 1147	5.7dB~130dB(50Hz~8000Hz)	<i>U</i> =0.6dB		
				5.7dB~130dB(8000Hz~20000Hz)	<i>U</i> =0.9dB		



No. CNAS L0954

第 77 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Background noise		-10dB~50dB(20Hz~20000Hz)	<i>U</i> =0.5dB~0.9dB		
V Electrics							
1	Standard Cell	Electric potential	V.R. of Standard Cell JJG 153	(1.0186000~1.0186700)V	<i>U</i> =0.8 μV		
2	D.C. Potentiometer	DC Voltage	V.R. of D.C. Potentiometers JJG 123	0.1 μV~2.111110 V	<i>U</i> _{rel} =1×10 ⁻⁵		
3	DC Resistive Volt Radio Box	Voltage ratio	V.R. of the DC Resistive Volt Radio Box JJG 531	100 μV : 1.0 kV~1.0 kV : 100 μV	<i>U</i> _{rel} =1×10 ⁻⁵		
4	*Low-frequency Signal Generator	Frequency	V.R. of Low-frequency Signal Generators JJG 602	1 Hz~1 MHz	<i>U</i> _{rel} =1×10 ⁻⁷		
				10mHz~1MHz	<i>U</i> _{rel} =3×10 ⁻⁶		
		Amplitude		0.01V~20V	<i>U</i> _{rel} =0.5%		
		Amplitude frequency characteristics		(-6.0%~6.0%)(10mHz~50 kHz)	<i>U</i> =0.05dB		
				(-6.0%~6.0%)(50 kHz~300 kHz)	<i>U</i> =0.10dB		
				(-6.0%~6.0%)(300 kHz~1MHz)	<i>U</i> =0.30dB		
				Sine wave distortion	0.03%~1.0%(0.1 kHz~20 kHz)		
5	Earth Resistance Meter	Resistance	V.R. of Earth Resistance Meters JJG 366	Analog: (0.1~1) Ω	<i>U</i> _{rel} =0.7%		
				Analog: (1~10) Ω	<i>U</i> _{rel} =0.5%		
				Analog: (10~1000) Ω	<i>U</i> _{rel} =0.2%		
				Digital: (2~10000) Ω	<i>U</i> _{rel} =0.3%		
6	D.C. Resistor	Resistance	V.R. of D.C. Resistors JJG	100 μ Ω ~500 μ Ω	<i>U</i> _{rel} =3×10 ⁻⁶		

No. CNAS L0954

第 78 页 共 177 页



在线扫码获取验证

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			166	$500\ \mu\ \Omega \sim 1\ \Omega$	$U_{\text{rel}}=1 \times 10^{-6}$		
				$1\ \Omega$	$U_{\text{rel}}=4 \times 10^{-7}$		
				$1\ \Omega \sim 100\ \Omega$	$U_{\text{rel}}=5 \times 10^{-7}$		
				$100\ \Omega \sim 100\text{k}\ \Omega$	$U_{\text{rel}}=1.5 \times 10^{-6}$		
				$100\text{k}\ \Omega \sim 10\text{M}\ \Omega$	$U_{\text{rel}}=3 \times 10^{-6}$		
				$10\text{M}\ \Omega \sim 100\text{M}\ \Omega$	$U_{\text{rel}}=4.5 \times 10^{-6}$		
				$100\text{M}\ \Omega \sim 2\text{G}\ \Omega$	$U_{\text{rel}}=2 \times 10^{-5}$		
				$2\text{G}\ \Omega \sim 20\text{G}\ \Omega$	$U_{\text{rel}}=4.1 \times 10^{-4}$		
				$20\text{G}\ \Omega \sim 200\text{G}\ \Omega$	$U_{\text{rel}}=6.1 \times 10^{-4}$		
				$200\text{G}\ \Omega \sim 2\text{T}\ \Omega$	$U_{\text{rel}}=1.1 \times 10^{-3}$		
				$2\text{T}\ \Omega \sim 20\text{T}\ \Omega$	$U_{\text{rel}}=2.6 \times 10^{-3}$		
				$20\text{T}\ \Omega \sim 100\text{T}\ \Omega$	$U_{\text{rel}}=5 \times 10^{-3}$		
7	D.C. Bridges for Measuring Temperature	Resistance	V.R. of D.C. Bridges for Measuring Temperature JJG 484	$(10^{-3} \sim 10^{-1})\ \Omega$	$U_{\text{rel}}=1.7 \times 10^{-5}$		
				$(10^{-1} \sim 10^4)\ \Omega$	$U_{\text{rel}}=1.4 \times 10^{-5}$		
				$(10^4 \sim 10^5)\ \Omega$	$U_{\text{rel}}=1.7 \times 10^{-5}$		
8	D.C. Resistance Box	Resistance	V.R. of D.C. Resistance Box JJG 982	$1\text{m}\ \Omega \sim 100\text{m}\ \Omega$	$U_{\text{rel}}=3 \times 10^{-5}$		
				$100\text{m}\ \Omega \sim 100\text{k}\ \Omega$	$U_{\text{rel}}=1.5 \times 10^{-5}$		
				$100\text{k}\ \Omega \sim 100\text{M}\ \Omega$	$U_{\text{rel}}=3 \times 10^{-5}$		
9	D.C Bridge	Resistance	V.R. of D.C. Bridges JJG 125	$(10^{-3} \sim 10^{-1})\ \Omega$	$U_{\text{rel}}=1.7 \times 10^{-5}$		



No. CNAS L0954

第 79 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				(10 ⁻¹ ~10 ⁴) Ω	<i>U</i> _{rel} =1.4×10 ⁻⁵		
				(10 ⁴ ~10 ⁵) Ω	<i>U</i> _{rel} =1.7×10 ⁻⁵		
10	Leakage Current Tester	Current	V.R. of Leakage Current Tester JJG 843	10 μ A~100 mA	<i>U</i> _{rel} =0.06%		
				AC:100 μ A~100 mA(50 Hz)	<i>U</i> _{rel} =0.06%		
				100 μ A~50mA (20Hz~1MHz)	<i>U</i> _{rel} =0.7%		
		Voltage		10V~1000V	<i>U</i> _{rel} =1.2×10 ⁻³		
				10V~1000V(50Hz)	<i>U</i> _{rel} =1.2×10 ⁻³		
		Resistance		500 Ω ~2.5k Ω	<i>U</i> _{rel} =1.3×10 ⁻⁴		
				200 Ω ~2.5k Ω (20Hz~1M Hz)	<i>U</i> _{rel} =1.3×10 ⁻³		
11	DC Magnetoelectric Galvanometer	Current Constant	V.R. of DC Magnetoelectric Galvanometers JJG 495	(1×10 ⁻⁸ ~1×10 ⁻¹²)A/mm	<i>U</i> _{rel} =1.4%		
12	*Megohmmeter	Resistance	V.R. of Megohmmeter JJG 622	0.01 M Ω ~20 M Ω	<i>U</i> _{rel} =0.7%		
				20 M Ω ~200 M Ω	<i>U</i> _{rel} =0.9%		
				200 M Ω ~2 G Ω	<i>U</i> _{rel} =1.4%		
				2 G Ω ~5 G Ω	<i>U</i> _{rel} =2.6%		
		DC Voltage		(0.25~5)kV	<i>U</i> _{rel} =1.2%		
13	*Verification Equipment for AC Electrical Energy Meter	Electrical energy	V.R. of Verification Equipment for AC Electrical Energy Meters JJG 597	3P4W:3×(50~400)V, 3×(0.005~100)A, 0° ~360°	<i>U</i> _{rel} =0.012%		



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No. CNAS L0954

第 80 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		power	C.S. for Burden Box of Instrument Transformers JJF	Single-phase: (50~400)V, (0.005~100)A, 0° ~ 360°	$U_{rel}=0.012\%$		
				3P3W: 3×(50~400)V, 3×(0.005~100)A, 0° ~ 360°	$U_{rel}=0.013\%$		
				single phase: (50~400)V, (0.005~100)A, 0° ~ 360°	$U_{rel}=0.012\%$		
				3×(50~400)V, 3P4W: 3×(0.005~100)A, 0° ~ 360°	$U_{rel}=0.012\%$		
				3×(50~400)V, 3P3W: 3×(0.005~100)A, 0° ~ 360°	$U_{rel}=0.013\%$		
		AC voltage		(50~400)V	$U_{rel}=0.012\%$		
		AC current		(0.005~100)A,	$U_{rel}=0.012\%$		
		phase		0° ~ 360°	$U=0.012\%$		
		frequency		(45~65)Hz	$U_{rel}=0.012\%$		
		Voltage Total Harmonic Distortion		0.001%~50%	$U_{rel}=0.06\%$		
		Current Total Harmonic Distortion		0.001%~50%	$U_{rel}=0.06\%$		
14	*Burden Box of Instrument	Resistance reactance	C.S. for Burden Box of Instrument Transformers JJF	(0.1~10)Ω, (1 A, 5 A)	$U_{rel}=1.2 \times 10^{-2}$		



No. CNAS L0954

第 81 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Transformers	conductance susceptance	1264	(0.1~100)mS	$U_{rel}=1.2 \times 10^{-2}$		
15	Transformers Turn Ratio Test Set	Voltage ratio	V.R. of Transformers Turn Ratio Test Sets JJG 970	1~10000	$U_{rel}=0.012\%$		
16	High Voltage Electrostatic Voltmeter	Voltage	V.R. of High Voltage Electrostatic Voltmeters JJG 494	DC: (0.6~50)kV (0.6~50)kV, (50 Hz)	$U_{rel}=0.3\%$ $U_{rel}=0.2\%$		
17	*Testing Transformer Operating Box	Voltage	Calibration Specification for Testing Transformer	(1~200)kV	$U_{rel}=0.5\%$		
		Current	Operating Box JJF (Liao) 495	(0.5~200)mA	$U_{rel}=0.6\%$		
		Time		(1~999)s	$U_{rel}=1.3\%$		
18	*Three-phase Power Frequency Standard Source	AC Voltage	C.S. for Three-phase Power Frequency Standard Source JJF (Liao) 391	10 V~400 V, (50 Hz, 60 Hz)	$U_{rel}=0.012\%$		
		AC Current		0.1 A~100 A, (50 Hz, 60 Hz)	$U_{rel}=0.012\%$		
		AC Power		1 W~120 kW, (50 Hz, 60 Hz)	$U_{rel}=0.012\%$		
		phase		$0^\circ \sim 360^\circ$	$U=0.012^\circ$		
		Power Factor		0~1	$U=0.0002$		
		frequency		(45~65)Hz	$U_{rel}=0.012\%$		
		Voltage Total Harmonic Distortion		0.001%~50%	$U_{rel}=0.06\%$		
		Current Total Harmonic Distortion		0.001%~50%	$U_{rel}=0.06\%$		



No. CNAS L0954

第 82 页 共 177 页

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

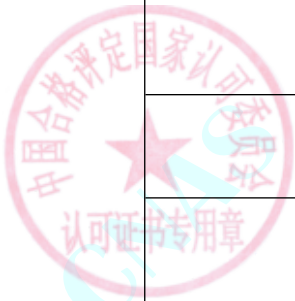
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
19	Reference Meters for Electrical Energy	Electrical energy	V.R. of Reference Meters for Electrical Energy JJG 1085	3P3W:3×(50~400)V, 3 ×(0.1~100)A, 0° ~ 360°	$U_{rel}=0.011\%$		
				single phase:(50~400)V, (0.1~100)A, 0° ~360	$U_{rel}=0.008\%$		
				3P4W:3×(50~400)V, 3 ×(0.1~100)A, 0° ~ 360°	$U_{rel}=0.008\%$		
				Unbalance load:3×(50~ 400)V, 3×(0.1~100)A, 0° ~360° ,cos φ =0.5(C)	$U_{rel}=0.018\%$		
				Unbalance load:3×(50~ 400)V, 3×(0.1~100)A, 0° ~360°	$U_{rel}=0.012\%$		
20	*Electronic Insulating Resistance Meter	Resistance	V.R. of Electronic Insulating Resistance Meters JJG 1005	0.2 MΩ ~10 MΩ	$U_{rel}=0.4\%$		
				10 MΩ ~200 MΩ	$U_{rel}=0.6\%$		
				200 MΩ ~2 GΩ	$U_{rel}=1.2\%$		
				2 GΩ ~20 GΩ	$U_{rel}=2.4\%$		
				20 GΩ ~100 GΩ	$U_{rel}=6.0\%$		
		DC Voltage		100 V~5000 V	$U_{rel}=0.7\%$		
21	*Withstanding Voltage Tester	Voltage	V.R. of Withstanding Voltage Testers JJG 795	(1~15)kV	$U_{rel}=0.7\%$		
		Current		(0.5~200)mA	$U_{rel}=0.6\%$		
		Time		(1~999)s	$U_{rel}=1.3\%$		



No. CNAS L0954

第 83 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
22	*Instrument Current Transformer	Ratio error	V.R. of Instrument Current Transformers JJG 313	-2~2, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, (1% <i>I</i> _n)	<i>U</i> =0.000024		
				-2~2, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, (5% <i>I</i> _n)	<i>U</i> =0.000018		
				-2~2, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, ((20~120)% <i>I</i> _n)	<i>U</i> =0.000012		
		Angle error		(-0.1~0.1)rad, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, (1% <i>I</i> _n)	<i>U</i> =0.000024 rad		
				(-0.1~0.1)rad, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, (5% <i>I</i> _n)	<i>U</i> =0.000018 rad		
				(-0.1~0.1)rad, (0.05~5)A/(0.1~5) A, (1~10000)A/(1~5) A, ((20~120)% <i>I</i> _n)	<i>U</i> =0.000012 rad		
23	*Instrument Voltage Transformer	Ratio error	V.R. of Instrument Voltage Transformers JJG 314	-0.5~0.5, (500~35000)V/(100/√3,100) V, (20% <i>U</i> _n)	<i>U</i> =0.00005		
				-0.5~0.5, (500~35000)V/(100/√3,100) V, (50% <i>U</i> _n)	<i>U</i> =0.00004		
				-0.5~0.5, (500~35000)V/(100/√3,100) V, ((80~120)% <i>U</i> _n)	<i>U</i> =0.00003		



No. CNAS L0954

第 84 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				-0.5~0.5,(35000~50000)V/100 V ₂ (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V ₂ (20%U _n)	U=0.00012		
				-0.5~0.5,(35000~50000)V/100 V ₂ (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V ₂ (50%U _n)	U=0.00009		
				-0.5~0.5,(35000~50000)V/100 V ₂ (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V ₂ ((80~120)%U _n)	U=0.00006		
				(-50~50)', ((500~35000)V/(100/ $\sqrt{3}$,100) V ₂ (20%U _n)	U=0.16'		
				(-50~50)', ((500~35000)V/(100/ $\sqrt{3}$,100) V ₂ (50%U _n)	U=0.12'		
				(-50~50)', ((500~35000)V/(100/ $\sqrt{3}$,100) V ₂ ((80~120)%U _n)	U=0.08'		
				(-50~50)', ((35000~50000)V/100 V ₂ (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V ₂ (20%U _n)	U=0.40'		
				(-50~50)', ((35000~50000)V/100 V ₂ (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V ₂ (50%U _n)	U=0.30'		
		Angle error					



No. CNAS L0954

第 85 页 共 177 页

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

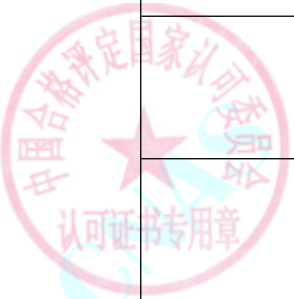
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				(-50~50)', ((35000~50000)V/100 V; (66000/ $\sqrt{3}$ ~110000/ $\sqrt{3}$)V/(100/ $\sqrt{3}$) V, ((80~120)% <i>U_n</i>)	<i>U</i> =0.20'		
24	*Standard Capacitor (Box)	Capacitance	V.R. of Standard Capacitors JJG 183	100 pF~100 μF, (1 kHz)	<i>U_{rel}</i> =0.03%		
25	*Standard Inductor (Box)	Inductance	V.R. of Standard Inductors JJG 726	20 μH~10 H, (1 kHz)	<i>U_{rel}</i> =0.03%		
26	*Voltmeter, Amperemeter, Wattmeter	DC Voltage	V.R. of Amperemeters, Voltmeters, Wattmeters, and Ohmmeters JJG 124	15 mV~1000 V	<i>U_{rel}</i> =1.3×10 ⁻⁴		
		AC Voltage		15 mV~1000 V, (40 Hz~10 kHz)	<i>U_{rel}</i> =2.7×10 ⁻⁴		
		DC Current		10 μA~50 A	<i>U_{rel}</i> =2×10 ⁻⁴		
		AC Current		10 μA~15 A, (40 Hz~10 kHz)	<i>U_{rel}</i> =5.3×10 ⁻⁴		
				15 A~100 A, (50 Hz)	<i>U_{rel}</i> =5.3×10 ⁻⁴		
		DC Power		(5~18000)W	<i>U_{rel}</i> =2.4×10 ⁻⁴		
		AC Power		(5~37500)VA, (40 Hz~10 kHz)	<i>U_{rel}</i> =5.8×10 ⁻⁴		
				(7500~37500)VA, (40 Hz~10 kHz)	<i>U_{rel}</i> =7.5×10 ⁻⁴		
27	Electromechanical Meter for Measuring Alternating-current Electrical Energy	Electrical energy	V.R. of Electromechanical Meters for Measuring Alternating-current Electrical Energy JJG 307	Single-phase & balance load:3×(50~400)V, 3×(0.1~100)A, 0° ~360° (cos φ=1.0)	<i>U_{rel}</i> =0.08%		



No. CNAS L0954

第 86 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Single-phase & balance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $((\cos \phi = 0.5(L), 0.8(C))$	$U_{\text{rel}} = 0.10\%$		
				Single-phase & balance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $(\cos \phi = 0.5(C))$	$U_{\text{rel}} = 0.13\%$		
				Tri-phase unbalance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $(\cos \theta = 1.0)$	$U_{\text{rel}} = 0.09\%$		
				Tri-phase unbalance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $\cos \theta = 0.5(L)$	$U_{\text{rel}} = 0.11\%$		
28	Electrical Meters for Measuring Alternating-current Electrical Energy	Electrical energy	V.R. of Electrical Meters for Measuring Alternating- current Electrical Energy JJG 596	Single-phase & balance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $((\cos \phi = 0.5(L), 0.8(C))$	$U_{\text{rel}} = 0.08\%$		
				Single-phase & balance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $(\cos \phi = 1.0)$	$U_{\text{rel}} = 0.06\%$		
				Single-phase & balance load: $3 \times (50 \sim 400)\text{V}$, $3 \times (0.1 \sim 100)\text{A}$, $0^\circ \sim 360^\circ$ $(\cos \phi = 0.5(C))$	$U_{\text{rel}} = 0.12\%$		



No. CNAS L0954

第 87 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			C.S. for Tri-phase unbalance load: $3 \times (50 \sim 400)V$, $3 \times (0.1 \sim 100)A$, $0^\circ \sim 360^\circ$ ($\cos \theta = 1.0$)	Tri-phase unbalance load: $3 \times (50 \sim 400)V$, $3 \times (0.1 \sim 100)A$, $0^\circ \sim 360^\circ$ ($\cos \theta = 1.0$)	$U_{rel}=0.08\%$		
				Tri-phase unbalance load: $3 \times (50 \sim 400)V$, $3 \times (0.1 \sim 100)A$, $0^\circ \sim 360^\circ$ ($\cos \theta = 0.5(L)$)	$U_{rel}=0.10\%$		
		Daily Clock Time Difference		$(-50 \sim 50)s/d$	$U=0.01s/d$		
29	Digital AC Electrical Parameters Meter	AC Voltage	C.S. for Digital AC Electrical Parameters Meter JJF 1491	$(50 \sim 500)V$, (45 Hz~65 Hz)	$U_{rel}=0.012\%$		
		AC Current		$(0.2 \sim 100)A$, (45 Hz~65 Hz)	$U_{rel}=0.012\%$		
		AC Power		10 W~120 kW, (45 Hz~65 Hz)	$U_{rel}=0.012\%$		
		Frequency		(45~65)Hz	$U_{rel}=0.012\%$		
		Power Factor		0~1	$U=0.0002$		
		phase		$0^\circ \sim 360^\circ$	$U=0.012^\circ$		
30	*DC High Voltage Generator	DC Voltage	Calibration Specification for DC High Voltage Generator JJF (辽) 240	$(1 \sim 200)kV$	$U_{rel}=0.12\%$		
		DC Current		$(0.01 \sim 100)mA$	$U_{rel}=0.1\%$		
31	*DC High Voltage Divider	DC Voltage	V.R. of DC High Voltage Dividers JJG 1007	$(10 \sim 200)kV/(1 \sim 100)V$	$U_{rel}=0.12\%$		
32	*High Voltage Divider at Power Frequency	AC Voltage	V.R. of High Voltage Divider at Power Frequency JJG 496	$(10 \sim 200)kV/(1 \sim 100)V$, (45 Hz~55 Hz)	$U_{rel}=0.24\%$		



No. CNAS L0954

第 88 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
33	*Vector Network Analyzer	Internal signal source frequency	C.S. for Vector Network Analyzers JJF 1495	9 kHz~26.5 GHz	$U_{rel}=1 \times 10^{-8}$		
		Internal signal source power		(-100~+20)dBm, (9 kHz~26.5 GHz)	$U_{rel}= (0.18 \sim 0.22) \text{ dB}$		
		Trace noise		Magnitude: (0.0001~0.1)dB, 9kHz~26.5GHz	$U=0.0013\text{dB}$		
		Noise floor		Phase:(0~1)°, 9kHz~26.5GHz	$U=0.014^\circ$		
		Cross talk		(-140~-60)dBm, 9kHz~26.5GHz	$U_{rel}=2.3\text{dB}$		
		"Dynamic accuracy magnitude"		(-150~-70)dB 9kHz~26.5GHz	$U=0.9\text{dB}$		
		"Cal kit reflection coefficient magnitude"		(0~-100)dB, 9kHz~6GHz	$U=0.36\text{dB}$		
		"Cal kit reflection coefficient phase"		0~1, 10MHz~26.5GHz	$U=0.014$		
		"Transmission coefficient magnitude measurement accuracy"		(-180~180)°, 10MHz~26.5GHz	$U=2.0^\circ$		
				20dB, 50dB, 9kHz~5GHz	$U=0.10\text{dB}$		
				20dB, 50dB, 5GHz~9GHz	$U=0.12\text{dB}$		
				20dB, 50dB, 9GHz~14GHz	$U=0.20\text{dB}$		



No. CNAS L0954

第 89 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			ilac-M	20dB,50dB,14GHz~26.5GHz	$U=0.22\text{dB}$		
		"Transmission coefficient phase measurement accuracy"		$(-180\sim 180)^\circ$,40MHz~26.5GHz	$U=1.5^\circ$		
		"Reflection coefficient magnitude measurement accuracy"		0~1,50MHz~8GHz	$U=0.012$		
		"Reflection coefficient phase measurement accuracy"		0~1,8GHz~26.5GHz	$U=0.010$		
34	*Voltage tips, short interruptions and voltage variations test generator	Voltage	C.S. of Voltage tips, short interruptions and voltage variations test generators JJF 1673	(10~220)V	$U_{\text{rel}}=2\%$		
		Phase angle		$0^\circ \sim 180^\circ$	$U=8.0^\circ$		
		Time		$180^\circ \sim 360^\circ$	$U=8.4^\circ$		
		Peak surge current		1 μs ~60 s	$U_{\text{rel}}=2\%$		
35	Electrostatic Discharge Simulator	Output voltage	C.S. for Electrostatic Discharge Simulators JJF 1397	(2~30)kV	$U_{\text{rel}}=3\%$		
		Contact discharge current		(1~30)A	$U_{\text{rel}}=5\%$		



No. CNAS L0954

第 90 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Current rising time		0.1 ns~1.2 ns	$U_{\text{rel}}=5\%$		
36	*Transformers Test Set	Ratio error	V.R. of Transformers Test Set JJG 169	$\pm(0.001\sim100)\%$, (50 Hz)	$U_{\text{rel}}=3\times10^{-3}$		
		Phase error		$\pm(0.05\sim500)'$, (50 Hz)	$U_{\text{rel}}=3\times10^{-3}$		
37	Inductive Voltage Divider	Ratio error	V.R. of Inductive Voltage Divider JJG 244	-0.1~0.1, (1~1000)V/(1~1000) V	$U=2.3\times10^{-6}$		
		Phase error		(-0.1~0.1)rad, (1~1000)V/(1~1000) V	$U=2.3\times10^{-6}$ rad		
38	*Earth-Continuity Tester	Resistance	V.R. of Earth-Continuity Testers JJG 984	(10~1000)m Ω	$U_{\text{rel}}=0.12\%$		
		Current		(2~30)A	$U_{\text{rel}}=0.24\%$		
39	Clamp Earth Resistance Meter	Resistance	V.R. of Clamp Earth Resistance Meters JJG 1054	(0.1~1) Ω	$U_{\text{rel}}=5.8\times10^{-3}$		
				(1~1000) Ω	$U_{\text{rel}}=1.5\times10^{-3}$		
40	*Tester for Relaying Protection	Frequency	V.R. of Testers for Relaying Protection JJG 1112	10 Hz~1 kHz	$U_{\text{rel}}=0.0005\%$		
		AC Current		(0.1~100)A, (10 Hz~1 kHz)	$U_{\text{rel}}=0.03\%$		
		AC Voltage		(2~380)V, (10 Hz~1 kHz)	$U_{\text{rel}}=0.03\%$		
		Phase		0°~360°	$U=0.024^\circ$		
		DC Voltage		(2~600)V	$U_{\text{rel}}=0.02\%$		
		DC Current		(0.1~30)A	$U_{\text{rel}}=0.06\%$		
		Time		1ms~9999.999s	$U_{\text{rel}}=0.012\%$		



No. CNAS L0954

第 91 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
41	*Power Frequency Cable and Wire Spark Tester	Voltage	C.S. of Power Frequency Cable and Wire Spark Tester JJF (Liao) 108	(0.5~50)kV, (50 Hz)	$U_{rel}=1.3\%$		
42	Contactless Electrostatic Voltage Measuring Instrument	Voltage	C.S. for Contactless Electrostatic Voltage Measuring Instruments JJF 1517	(0.1~20)kV	$U_{rel}=1.3\%$		
43	*Antistatic Wrist Strap and Antistatic Shoes Test Set	Resistance	C.S. of Antistatic Wrist Strap and Antistatic Shoes Test Set JJF (Liao) 151	(0.1~1000)M Ω	$U_{rel}=1.2\%$		
44	*Partial Discharge Tester Based Pulse Current Method	Apparent charge magnitude	C.S. for Partial Discharge Testers Based Pulse Current Method JJF 1616	1 pC~500 pC	$U_{rel}=2.6\%$		
		Shift impulse response gain value		(1~500) pC	$U_{rel}=1.5\%$		
		Upper and lower cut-off frequency		10kHz~500kHz	$U_{rel}=2\%$		
		Asymmetry of positive and negative impulse response		(1~500) pC	$U_{rel}=1.5\%$		
		Low repetition rate impulse response		50~1000	$U_{rel}=1.5\%$		
		Measurement sensitivity		(0.2~10) pC	$U=0.2pC$		



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No. CNAS L0954

第 92 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Pulse resolution time	ilac-MRA	$1\ \mu\text{s} \sim 100\ \mu\text{s}$	$U_{\text{rel}}=4\%$		
		Pulse repetition rate		100	$U_{\text{rel}}=2\%$		
		Number of pulses		$10 \sim 500000$	$U_{\text{rel}}=2\%$		
		Pulse acquisition capability		50Hz	$U_{\text{rel}}=1.5\%$		
		Calibration pulse generator		$1\text{pC} \sim 500\text{pC}$	$U_{\text{rel}}=2\%$		
		Safety performance		$1\text{M}\ \Omega \sim 100\text{M}\ \Omega, 0.5\text{kV} \sim 5\text{kV}$	$U_{\text{rel}}=1.5\%$		
45	Digital Radio Communication Tester	Output frequency	C.S. for TDMA-GSM Radio Communication Testers JJF 1131, C.S. of CDMA Digital Radio Communication Testers JJF 1177, C.S. for TD-SCDMA Digital Radio Communication Testers JJF 1204, C.S. for WCDMA Digital Radio Communication Testers JJF 1276	$10\ \text{Hz} \sim 2.7\ \text{GHz}$	$U_{\text{rel}}=7 \times 10^{-8}$		
		Output Level		$(-120 \sim 0)\text{dBm}, (10\ \text{MHz} \sim 2.7\ \text{GHz})$	$U_{\text{rel}}=0.23\ \text{dB}$		
		Input Level		$(-50 \sim 15)\text{dBm}, (10\ \text{MHz} \sim 2\ \text{GHz})$	$U_{\text{rel}}=0.6\ \text{dB}$		
				$(-50 \sim 15)\text{dBm}, (2\ \text{GHz} \sim 2.7\ \text{GHz})$	$U_{\text{rel}}=0.9\ \text{dB}$		
		SSB phase noise		$(-130 \sim -80)\text{dBc/Hz}$	$U=1.2\text{dB}$		
		Output EVM		$0.1\% \sim 5\% (100\text{MHz} \sim 26.5\text{GHz})$	$U=0.6\%$		
		Output Magnitude Error		$0.1\% \sim 5\% (100\text{MHz} \sim 26.5\text{GHz})$	$U=0.6\%$		



No. CNAS L0954

第 93 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Output Phase error	ilac-M	$(-10 \sim 10)^\circ$ (100MHz~26.5GHz)	$U=0.5^\circ$		
		Output Frequency error		$(-1 \sim 1)$ kHz(100MHz~26.5GHz)	$U=0.5$ Hz		
		Input EVM		0.1%~5%(100MHz~6GHz)	$U=0.25\%$		
		Input Magnitude Error		$(-10 \sim 10)^\circ$ (100MHz~6GHz)	$U=0.3^\circ$		
		Input Frequency error		$(-1 \sim 1)$ kHz(100MHz~6GHz)	$U=0.01$ Hz		
		Input FSK error		$(-10 \sim 10)$ kHz(100MHz~6GHz)	$U_{\text{rel}}=0.31\%$		
		Return Loss		(0~100)dB, 10MHz~26.5GHz	$U=1.3$ dB		
46	*High Frequency Q Meter	Q value	C.S. for HF Q-Meter JJF 1073	100~300, (50 kHz~25 MHz)	$U_{\text{rel}}=2.7\%$		
		frequency		100~300, (25 MHz~50 MHz)	$U_{\text{rel}}=5.8\%$		
		capacitance		10kHz~200MHz	$U_{\text{rel}}=0.02\%$		
				(20~500) pF	$U_{\text{rel}}=0.32\%$		
47	Calibration Device for Tube Voltmeter	Voltage	V.R. of Calibration Device Type DYB-2 for Tube Voltmeter JJG 256	10 mV~300 V, (55 Hz, 400 Hz, 1 kHz)	$U_{\text{rel}}=0.1\%$	合格评定国家认可委员会 认可证书专用章	
48	*Distortion Meter Calibrator	Voltage	C. S. for Distortion Meters JJF1852	10 mV~300 V, (5Hz~1MHz)	$U_{\text{rel}}=0.1\%$		



No. CNAS L0954

第 94 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Distortion degree	C.S. for Modulation Meters JJF 1111	0.01%~1%, (10 Hz~200 kHz)	$U=0.0012\%$		
				1%~5%, (10 Hz~200 kHz)	$U=0.06\%$		
				5%~10%, (10 Hz~200 kHz)	$U=0.12\%$		
				10%~20%, (10 Hz~200 kHz)	$U=0.24\%$		
				20%~30%, (10 Hz~200 kHz)	$U=0.35\%$		
				30%~100%, (10 Hz~200 kHz)	$U=0.47\%$		
		Residual Distortion		0.003%~0.03%, (10 Hz~200 kHz)	$U_{rel}=8\%$		
49	Modulation Meter	Frequency offset of modulation frequency	C.S. for Modulation Meters JJF 1111	1 kHz~200 kHz, (Carrier frequency 1 MHz~26.5 GHz, Modulation frequency 100 Hz~100 kHz)	$U_{rel}=1.5\%$		
				1 kHz~200 kHz, (Carrier frequency 1 MHz~26.5 GHz, Modulation frequency 100 kHz~200 kHz)	$U_{rel}=3.6\%$		
		Amplitude Modulation degree		5%~99%, (Carrier frequency 1 MHz~26.5 GHz, Modulation frequency 100 Hz~50 kHz)	$U_{rel}=1.5\%$		



No. CNAS L0954

第 95 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			ilac-MRA CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	5%~99%, (Carrier frequency 1 MHz~26.5 GHz, Modulation frequency 50 kHz~100 kHz)	$U_{rel}=2.0\%$		
		PM		0.01rad~400rad, (Carrier frequency 0.15MHz~1300MHz, Modulation frequency 0.02kHz~100 kHz)	$U_{rel}=1.2\%$		
		Distortion		0.001%~0.1%	$U_{rel}=15\%$		
50	Verification Instrument for Electrocardiograph and Electroencephalograph	Sine Wave Frequency	V.R. of Verification Instrument for Electrocardiograph and Electroencephalograph JJG 749	1 Hz~200 Hz	$U=0.02$ Hz		
		Square wave voltage		10 mV~3 V, (1 Hz~200 Hz)	$U_{rel}=0.2\%$		
		Sine Wave Voltage		100 mV~3 V, (1 Hz~200 Hz)	$U_{rel}=0.2\%$		
		Frequency		1 Hz~200 Hz	$U_{rel}=1 \times 10^{-3}$		
		Period		0.01s~5s	$U_{rel}=1 \times 10^{-3}$		
		Distortion		20 Hz~200 Hz	$U_{rel}=0.02\%$		
		Attenuation		60 dB	$U=0.5$ dB		
51	*High Voltage Switch Operation Characteristic Tester	Time	V.R. of High Voltage Switch Operation Characteristic Testers JJG 1120	(10~999)ms	$U_{rel}=0.1\%$	合格评定国家认可 证书专用章	
52	Oscilloscope Calibrator	DC voltage	V.R. of Oscilloscope Calibrator JJG 278	5 mV~200 V	$U_{rel}=0.005\%$		



No. CNAS L0954

第 96 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Square wave voltage		5 mV~200 V	$U_{rel}=0.035\%$		
		Time mark		0.5ns~5 s	$U_{rel}=1 \times 10^{-8}$		
		Rise time		25 ps~150 ps	$U_{rel}=7.5\%$		
				150 ps~250 ps	$U_{rel}=4.6\%$		
				250 ps~1 ns	$U_{rel}=4.6\%$		
				1 ns~1 μ s	$U_{rel}=2.6\%$		
		steady amplitude		5mV ~5.5 V	$U_{rel}=0.5\%$		
		fast pluse frequency		1k Hz~10MHz	$U_{rel}=1 \times 10^{-7}$		
		pluse duty ratio		10%~90%	$U_{rel}=3\%$		
		fast plusr Distortion		$\pm 5\%$	$U_{rel}=2\%$		
		Stationary amplitude signal frequency		0.1Hz~3.2GHz	$U_{rel}=1 \times 10^{-7}$		
		harmonic		(10~120)dB, (10kHz~18 GHz)	$U=0.5\text{dB}$		
		waveform generator amplitude		2 mV~50 V	$U_{rel}=0.7\%$		
		waveform generator frequency		10Hz~10kHz	$U_{rel}=1 \times 10^{-7}$		



No. CNAS L0954

第 97 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		waveform generator bias voltage	ilac-MRA CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	10mV~10V	$U_{rel}=0.01\%$		
		waveform generator linearity		$\pm 0.1\%$ (10Hz~10kHz)	$U_{rel}=0.03\%$		
		pulse generator cycle		20ms~200ns	$U_{rel}=1 \times 10^{-7}$		
		pulse width		4ns~500ns	$U_{rel}=1.5\%$		
		DC voltage measurement		10mV~10V	$U_{rel}=0.08\%$		
		resistance measurement		40 Ω ~ 60 Ω , 500k Ω ~ 1.5M Ω	$U_{rel}=0.03\%$		
		capacitance measurement		(5~50)pF	$U_{rel}=1.5\%$		
		output current		88 μ A ~ 111mA, 10Hz~100kHz	$U_{rel}=0.08\%$		
		trigger signal		10mV~4V	$U_{rel}=0.5\%$		
53	*Impedance Analyzer and LCR Meter	Resistance	C.S. for Impedance Analyzers (LCR Meter) JJF (Liao) 195	1 Ω ~ 100 k Ω , (100 Hz~2 MHz)	$U_{rel}=0.1\%$	合格评定国家认可委员会 认可证书专用章	
		Capacitor		10 pF~100 μ F, (100 Hz~2 MHz)	$U_{rel}=0.1\%$		
		Inductors		10 μ H~10 H, (100 Hz~2 MHz)	$U_{rel}=0.1\%$		
		voltage		voltage	$U_{rel}=1 \times 10^{-3}$		
		frequency		frequency	$U_{rel}=2 \times 10^{-6}$		



No. CNAS L0954

第 98 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
54	*Signal generator	Frequency	C.S. for Signal Generators JJF 1931	10 Hz~50 GHz	$U_{rel}=9 \times 10^{-9}$		
		power		-130dBm~ +30dBm(5kHz~26.5GHz,)	$U_{rel}=(0.18 \sim 0.23)\text{dB}$		
				-30dBm~ +30dBm(26.5GHz~50GH Z)			
		SSB phase noise		(-130~- 80)dBc/Hz,(5kHz~26.5G Hz)	$U=1.2\text{ dB}$		
		AM depth		5%~ 99%(5kHz~26.5GHz)	$U_{rel}=1.2\%$		
		Frequency deviation		0.01Hz~ 500kHz(5kHz~26.5GHz)	$U_{rel}=1.2\%$		
		Phase deviation		0.1rad~ 500rad(5kHz~26.5GHz)	$U_{rel}=1.2\%$		
		Demodulation Distortion		0.01%~30%	$U_{rel}=15\%$		
		RiseTime/Fall Time		0.1ns~1s	$U_{rel}=6\%$		
		Amplitude		100mV~10V	$U_{rel}=0.2\%$		
		Harmonic		-130dBm~ +30dBm(5kHz~26.5GHz,)	$U_{rel}=(0.18 \sim 0.23)\text{dB}$		
		Residential AM		5%~ 99%(5kHz~26.5GHz)	$U_{rel}=1.2\%$		
		Residential FM		0.01Hz~ 500kHz(5kHz~26.5GHz)	$U_{rel}=1.2\%$		



No. CNAS L0954

第 99 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
55	*Low-frequency Volt-meters	Voltage	C.S. for Low-frequency Volt-meter JJF 1925	1mV~3.3V,(10Hz~50 kHz)	$U_{rel}=0.3\%$		
				1mV~3.3V,(50 kHz~ 100 kHz)	$U_{rel}=0.5\%$		
				1mV~3.3V,(100 kHz~ 500 kHz)	$U_{rel}=1.0\%$		
				3.3V~330V,(10 Hz~50 kHz)	$U_{rel}=0.3\%$		
				3.3V~330V, (50 kHz~ 100 kHz)	$U_{rel}=0.5\%$		
				330V~1000V,(45Hz~ 10kHz)	$U_{rel}=0.3\%$		
56	Level Oscillator	Frequency	C. S. for Level Oscillator JJF 1982	20Hz~150MHz	$U_{rel}=3 \times 10^{-5}$		
		Level		-84dBm~20dBm (20Hz~150MHz)	$U=0.25 \text{ dB}$		
		Attenuation		0dB~70dB (20Hz~ 150MHz)	$U=0.2\text{dB}$		
		Harmonic		-100dBc~-30dBc (100Hz~500MHz)	$U=1.0\text{dB}$		
		Degree of Balance		-100dB~-40dB (20Hz~150MHz)	$U=1.0\text{dB}$		
57	*Electromagnetic Shielding Enclosure	Shielding Effectiveness	C.S. for the shielding effectiveness of electromagnetic shielding enclosures JJF (Liao) 73	(10~120)dB, (14 kHz~1 GHz)	$U=4 \text{ dB}$		
				(10~120)dB, (1 GHz~ 18 GHz)	$U=6 \text{ dB}$		
58	Magnetometer Based Magnetic Force	Magnization Intensity	C.S. for Magnetometers Based Magnetic Force JJF 1656	(0.1~10)mT	$U_{rel}=1.2\%$		

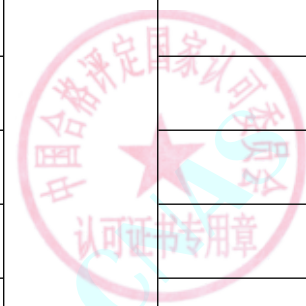


No. CNAS L0954

第 100 页 共 177 页

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

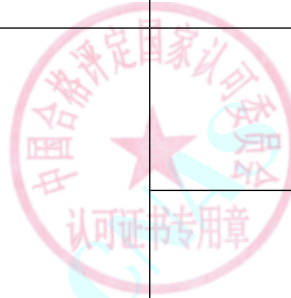
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date		
59	*Coaxial Attenuator	Attenuation	V.R. of Coaxial Attenuator JJG 387	(0~50)dB, (100 kHz~18 GHz)	<i>U</i> =0.06 dB				
				(50~70)dB, (100 kHz~18 GHz)	<i>U</i> =0.10 dB				
				(70~100)dB, (100 kHz~18 GHz)	<i>U</i> =0.60 dB				
		VSWR		1.0~2.0, (10MHz~18GHz)	<i>U</i> =0.020				
60	TV Signal Field Strength Meter	Carrier Frequency	V.R. of TV Signal Field Strength Meter JJG 1057	48 MHz~862 MHz	<i>U</i> =3 kHz				
		Level		(20~120)dB, (48 MHz~862 MHz)	<i>U</i> =0.8 dB				
		3 dB Test bandwidth		(250~350)kHz, (48 MHz~862 MHz)	<i>U</i> =0.8 kHz				
		VSWR		1.0~3.0, (75 Ω)	<i>U</i> =0.3				
61	Measuring Receiver	Frequency	C.S. of Measuring Receivers JJF 1173	150 kHz~26.5 GHz	<i>U</i> _{rel} =1×10 ⁻⁹				
		Level		(-60~20)dBm, (100 kHz~18 GHz)	<i>U</i> _{rel} =0.13 dB				
				(-120~-60)dBm, (100 kHz~18 GHz)	<i>U</i> _{rel} =0.15 dB				
				(-60~20)dBm, (18 GHz~26.5 GHz)	<i>U</i> _{rel} =0.15 dB				
				(-120~-60)dBm, (18 GHz~26.5 GHz)	<i>U</i> _{rel} =0.17 dB				
		PM		0.1rad~500rad, (150 kHz~26.5 GHz)	<i>U</i> _{rel} =1.2%				
		AM		0.01%~99%, (150 kHz~26.5 GHz)	<i>U</i> _{rel} =1.2%				

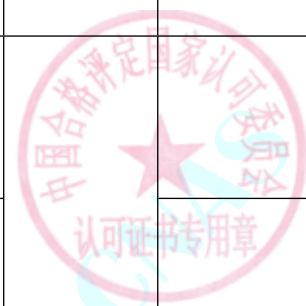


No. CNAS L0954

第 101 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		FM		0.01Hz~500kHz, (150 kHz~26.5 GHz)	<i>U</i> _{rel} =1.2%		
		Distortion		0.01%~0.3%	<i>U</i> _{rel} =15%		
62	*High Voltage Capacitance Bridge	Capacitance ratio	V.R. of High Voltage Capacitance Bridges JJG 563	0.1~1, (50 Hz)	<i>U</i> =1.2×10 ⁻⁵		
				1~10, (50 Hz)	<i>U</i> =1.2×10 ⁻⁴		
				10~100, (50 Hz)	<i>U</i> =1.2×10 ⁻³		
				100~1000, (50 Hz)	<i>U</i> =1.2×10 ⁻²		
		Dielectric Loss Factor		0.00001~0.01, (50 Hz)	<i>U</i> =1.3×10 ⁻⁵		
				0.01~0.1, (50 Hz)	<i>U</i> =0.12% <i>D_x</i> +1.2×10 ⁻⁵		
63	*Loop Resistance Tester and DC Resistance Meter	Resistance	V.R. of Loop Resistance Tester and DC Resistance Meters JJG 1052	0.1 μΩ~1 μΩ	<i>U</i> _{rel} =1.3%		
				1 μΩ~100 μΩ	<i>U</i> _{rel} =0.12%		
				100 μΩ~10 mΩ	<i>U</i> _{rel} =0.06%		
				10 mΩ~100 kΩ	<i>U</i> _{rel} =0.03%		
		DC Current		1 mA~600 A	<i>U</i> _{rel} =0.2%		
64	*Semiconductor Device Curve Tracer	Current deflection coefficient of Y axis collector	C.S. for Semiconductor Device Curve Tracers JJF 1236	0.1 μA/div~0.5 A/div	<i>U</i> _{rel} =1.4%		
		Voltage deflection coefficient of X axis collector		0.005 V/div~50 V/div	<i>U</i> _{rel} =1.4%		



No. CNAS L0954

第 102 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Voltage deflection coefficient of X axis base electrode	ilac-MRA CNAS CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	0.005 V/div~2 V/div	<i>U</i> _{rel} =1.4%		
		Step Voltage		0.02 V/div~2 V/div	<i>U</i> _{rel} =1.4%		
		Resistance		0.5 Ω ~ 10M Ω	<i>U</i> _{rel} =0.05%		
65	*Resistance Strain Gauge Indicator	Resistance strain	V.R. of Resistance Strain Gauge Indicators JJG 623	(10~1000)μ ε	<i>U</i> =0.3 μ ε		
				(1000~100000)μ ε	<i>U</i> _{rel} =0.03%		
		Frequency resiponse		(-5~5)dB, (10 Hz~100 kHz)	<i>U</i> =0.2 dB		
				(-5~5)dB, (100 kHz~200 kHz)	<i>U</i> =0.3 dB		
				(-5~5)dB, (200 kHz~500 kHz)	<i>U</i> =0.6 dB		
66	*Audio Analyzer	Input Voltage	C.S. for Audio Analyzer JJF 1395	10 mV~100 V, (10 Hz~30 kHz)	<i>U</i> _{rel} =0.1%		
				10 mV~100 V, (30 kHz~50 kHz)	<i>U</i> _{rel} =0.2%		
				10 mV~100 V, (50 kHz~200 kHz)	<i>U</i> _{rel} =0.3%		
		Distortion Degree		0.1%~1%, (10 Hz~200 kHz)	<i>U</i> =0.0012%		
				1%~5%, (10 Hz~200 kHz)	<i>U</i> =0.06%		
				5%~10%, (10 Hz~200 kHz)	<i>U</i> =0.12%		



No. CNAS L0954

第 103 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				10%~20%, (10 Hz~200 kHz)	<i>U</i> =0.24%		
				20%~30%, (10 Hz~200 kHz)	<i>U</i> =0.35%		
		Output Frequency		10 Hz~200 kHz	<i>U</i> _{rel} =1×10 ⁻⁶		
		Output voltage		10 mV~20V, (10 Hz~500 Hz)	<i>U</i> _{rel} =0.06%		
				10 mV~20V, (500 Hz~5 kHz)	<i>U</i> _{rel} =0.08%		
				10 mV~20V, (5 kHz~50 kHz)	<i>U</i> _{rel} =0.1%		
				10 mV~20V, (50 kHz~200 kHz)	<i>U</i> _{rel} =0.11%		
		Input frequency		10Hz~200kHz	<i>U</i> _{rel} =1×10 ⁻⁶		
67	*Winding Interturn Impulse Voltage Tester	Peak Voltage	C.S. of Winding Interturn Impulse Voltage Tester JJF (Liao) 107	(1~40)kV	<i>U</i> _{rel} =2.0%		
		Rise Time		0.5 μs, 1.2 μs	<i>U</i> _{rel} =4.5%		
68	*Digital Multimeters	DC Voltage	C.S. for Multimeters JJF 1587	(1~220)mV	<i>U</i> =0.00075% <i>U</i> _x +0.4 μV		
				(0.22~2.2)V	<i>U</i> =0.0005% <i>U</i> _x +0.7 μV		
				(2.2~11)V	<i>U</i> =0.00035% <i>U</i> _x +2.5 μV		
				(11~22)V	<i>U</i> =0.00035% <i>U</i> _x +4 μV		
				(22~220)V	<i>U</i> =0.0005% <i>U</i> _x +40 μV		
				(220~1100)V	<i>U</i> =0.00065% <i>U</i> _x +0.4 mV		
		DC Current		(1~220) μA	<i>U</i> =0.004% <i>I</i> _x +6 nA		



No. CNAS L0954

第 104 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.22~2.2)mA	$U=0.0035\%I_x+7\text{ nA}$		
				(2.2~22)mA	$U=0.0035\%I_x+40\text{ nA}$		
				(22~220)mA	$U=0.0045\%I_x+0.7\text{ }\mu\text{A}$		
				(0.22~2.2)A	$U=0.008\%I_x+12\text{ }\mu\text{A}$		
				(2.2~11)A	$U=0.036\%I_x+0.48\text{ mA}$		
				(11~100)A	$U_{\text{rel}}=0.05\%$		
		DC Resistance		1 Ω ~ 10 Ω	$U_{\text{rel}}=8\times 10^{-6}$		
				10 Ω ~ 10 k Ω	$U_{\text{rel}}=5\times 10^{-6}$		
				10 k Ω ~ 100 k Ω	$U_{\text{rel}}=6\times 10^{-6}$		
				100 k Ω ~ 1 M Ω	$U_{\text{rel}}=1.0\times 10^{-5}$		
				1 M Ω ~ 10 M Ω	$U_{\text{rel}}=4.1\times 10^{-5}$		
				10 M Ω ~ 100 M Ω	$U_{\text{rel}}=6.6\times 10^{-5}$		
		AC Voltage		10 mV~22 mV, (10 Hz~20 Hz)	$U=0.024\%U_x+4\text{ }\mu\text{V}$		
				10 mV~22 mV, (20 Hz~40 Hz)	$U=0.009\%U_x+4\text{ }\mu\text{V}$		
				10 mV~22 mV, (40 Hz~20 kHz)	$U=0.008\%U_x+4\text{ }\mu\text{V}$		
				10 mV~22 mV, (20 kHz~50 kHz)	$U=0.02\%U_x+4\text{ }\mu\text{V}$		
				10 mV~22 mV, (50 kHz~100 kHz)	$U=0.05\%U_x+5\text{ }\mu\text{V}$		



No. CNAS L0954

第 105 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				10 mV~22 mV, (100 kHz~300 kHz)	$U=0.11\%U_x+10 \mu V$		
				10 mV~22 mV, (300 kHz~500 kHz)	$U=0.14\%U_x+20 \mu V$		
				10 mV~22 mV, (500 kHz~1 MHz)	$U=0.27\%U_x+20 \mu V$		
				22 mV~220 mV, (10 Hz~20 Hz)	$U=0.024\%U_x+12 \mu V$		
				22 mV~220 mV, (20 Hz~40 Hz)	$U=0.009\%U_x+7 \mu V$		
				22 mV~220 mV, (40 Hz~20 kHz)	$U=0.008\%U_x+7 \mu V$		
				22 mV~220 mV, (20 kHz~50 kHz)	$U=0.02\%U_x+7 \mu V$		
				22 mV~220 mV, (50 kHz~100 kHz)	$U=0.046\%U_x+17 \mu V$		
				22 mV~220 mV, (100 kHz~300 kHz)	$U=0.09\%U_x+20 \mu V$		
				22 mV~220 mV, (300 kHz~500 kHz)	$U=0.14\%U_x+25 \mu V$		
				22 mV~220 mV, (500 kHz~1 MHz)	$U=0.27\%U_x+45 \mu V$		
				220 mV~2.2 V, (10 Hz~20 Hz)	$U=0.024\%U_x+40 \mu V$		
				220 mV~2.2 V, (20 Hz~40 Hz)	$U=0.009\%U_x+15 \mu V$		
				220 mV~2.2 V, (40 Hz~20 kHz)	$U=0.0045\%U_x+8 \mu V$		



No. CNAS L0954

第 106 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				220 mV~2.2 V, (20 kHz~50 kHz)	$U=0.0075\%U_x+10 \mu V$		
				220 mV~2.2 V, (50 kHz~100 kHz)	$U=0.011\%U_x+30 \mu V$		
				220 mV~2.2 V, (100 kHz~300 kHz)	$U=0.042\%U_x+80 \mu V$		
				220 mV~2.2 V, (300 kHz~500 kHz)	$U=0.1\%U_x+0.2 mV$		
				220 mV~2.2 V, (500 kHz~1 MHz)	$U=0.17\%U_x+0.3 mV$		
				2.2 V~22 V, (10 Hz~20 Hz)	$U=0.024\%U_x+0.4 mV$		
				2.2 V~22 V, (20 Hz~40 Hz)	$U=0.009\%U_x+0.15 mV$		
				2.2 V~22 V, (40 Hz~20 kHz)	$U=0.0045\%U_x+50 \mu V$		
				2.2 V~22 V, (20 kHz~50 kHz)	$U=0.0075\%U_x+0.1 mV$		
				2.2 V~22 V, (50 kHz~100 kHz)	$U=0.01\%U_x+0.2 mV$		
				2.2 V~22 V, (100 kHz~300 kHz)	$U=0.028\%U_x+0.6 mV$		
				2.2 V~22 V, (300 kHz~500 kHz)	$U=0.1\%U_x+2 mV$		
				2.2 V~22 V, (500 kHz~1 MHz)	$U=0.15\%U_x+3.2 mV$		
				22 V~220 V, (10 Hz~20 Hz)	$U=0.024\%U_x+4 mV$		



No. CNAS L0954

第 107 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				22 V~220 V, (20 Hz~40 Hz)	$U=0.009\%U_x+1.5 \text{ mV}$		
				22 V~220 V, (40 Hz~20 kHz)	$U=0.0052\%U_x+0.6 \text{ mV}$		
				22 V~220 V, (20 kHz~50 kHz)	$U=0.008\%U_x+1 \text{ mV}$		
				22 V~220 V, (50 kHz~100 kHz)	$U=0.015\%U_x+2.5 \text{ mV}$		
				22 V~220 V, (100 kHz~300 kHz)	$U=0.09\%U_x+16 \text{ mV}$		
				22 V~220 V, (300 kHz~500 kHz)	$U=0.44\%U_x+40 \text{ mV}$		
				22 V~220 V, (500 kHz~1 MHz)	$U=0.8\%U_x+80 \text{ mV}$		
				220 V~750 V, (15 Hz~50 Hz)	$U=0.03\%U_x+16 \text{ mV}$		
				220 V~750 V, (50 Hz~1 kHz)	$U=0.007\%U_x+3.5 \text{ mV}$		
				220 V~750 V, (1 kHz~20 kHz)	$U=0.017\%U_x+6 \text{ mV}$		
				220 V~750 V, (20 kHz~30 kHz)	$U=0.06\%U_x+11 \text{ mV}$		
				220 V~750 V, (30 kHz~50 kHz)	$U=0.06\%U_x+11 \text{ mV}$		
				220 V~750 V, (50 kHz~100 kHz)	$U=0.23\%U_x+45 \text{ mV}$		
				750 V~1100 V, (15 Hz~50 Hz)	$U=0.03\%U_x+16 \text{ mV}$		



No. CNAS L0954

第 108 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		AC Current		750 V~1100 V, (50 Hz~1 kHz)	$U=0.07\%U_x+3.5 \text{ mV}$		
				750 V~1100 V, (1 kHz~20 kHz)	$U=0.017\%U_x+6 \text{ mV}$		
				750 V~1100 V, (20 kHz~30 kHz)	$U=0.06\%U_x+11 \text{ mV}$		
				10 μA ~220 μA , (10 Hz~20 Hz)	$U=0.025\%I_x+16 \text{ nA}$		
				10 μA ~220 μA , (20 Hz~40 Hz)	$U=0.016\%I_x+10 \text{ nA}$		
				10 μA ~220 μA , (40 Hz~1 kHz)	$U=0.012\%I_x+8 \text{ nA}$		
				10 μA ~220 μA , (1 kHz~5 kHz)	$U=0.028\%I_x+12 \text{ nA}$		
				10 μA ~220 μA , (5 kHz~10 kHz)	$U=0.11\%I_x+65 \text{ nA}$		
				220 μA ~2.2 mA, (10 Hz~20 Hz)	$U=0.025\%I_x+40 \text{ nA}$		
				220 μA ~2.2 mA, (20 Hz~40 Hz)	$U=0.016\%I_x+35 \text{ nA}$		
				220 μA ~2.2 mA, (40 Hz~1 kHz)	$U=0.012\%I_x+35 \text{ nA}$		
				220 μA ~2.2 mA, (1 kHz~5 kHz)	$U=0.02\%I_x+0.11 \mu\text{A}$		
				220 μA ~2.2 mA, (5 kHz~10 kHz)	$U=0.11\%I_x+65 \mu\text{A}$		
				2.2 mA~22 mA, (10 Hz~20 Hz)	$U=0.025\%I_x+0.4 \mu\text{A}$		



No. CNAS L0954

第 109 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2.2 mA~22 mA, (20 Hz~40 Hz)	$U=0.016\%I_x+0.35 \mu A$		
				2.2 mA~22 mA, (40 Hz~1 kHz)	$U=0.012\%I_x+0.35 \mu A$		
				2.2 mA~22 mA, (1 kHz~5 kHz)	$U=0.02\%I_x+0.5 \mu A$		
				2.2 mA~22 mA, (5 kHz~10 kHz)	$U=0.11\%I_x+5 \mu A$		
				22 mA~220 mA, (10 Hz~20 Hz)	$U=0.025\%I_x+4 \mu A$		
				22 mA~220 mA, (20 Hz~40 Hz)	$U=0.016\%I_x+3.5 \mu A$		
				22 mA~220 mA, (40 Hz~1 kHz)	$U=0.012\%I_x+2.5 \mu A$		
				22 mA~220 mA, (1 kHz~5 kHz)	$U=0.02\%I_x+3.5 \mu A$		
				22 mA~220 mA, (5 kHz~10 kHz)	$U=0.11\%I_x+10 \mu A$		
				220 mA~2.2 A, (20 Hz~1 kHz)	$U=0.026\%I_x+35 \mu A$		
				220 mA~2.2 A, (1 kHz~5 kHz)	$U=0.045\%I_x+80 \mu A$		
				220 mA~2.2 A, (5 Hz~10 kHz)	$U=0.7\%I_x+0.16 mA$		
				2.2 A~11 A, (40 Hz~1 kHz)	$U=0.046\%I_x+0.17 mA$		
				2.2 A~11 A, (1 kHz~5 kHz)	$U=0.095\%I_x+0.38 mA$		



No. CNAS L0954

第 110 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				2.2 A~11 A, (5 kHz~10 kHz)	<i>U</i> =0.36% <i>I</i> _x +0.75 mA		
				11 A~20.5 A, (45 Hz~100 Hz)	<i>U</i> =0.1% <i>I</i> _x +5 mA		
				11 A~20.5 A, (100 Hz~1 kHz)	<i>U</i> =0.13% <i>I</i> _x +5 mA		
				11 A~20.5 A, (1 kHz~5 kHz)	<i>U</i> =2.5% <i>I</i> _x +5 mA		
69	*Multifunction Standard Source	DC Voltage	C.S. for Multifunction Standard Sources JJF 1638	(1~200)mV	<i>U</i> =0.0005% <i>U</i> _x +0.1 μV		
				(0.2~2)V	<i>U</i> =0.00035% <i>U</i> _x +0.4 μV		
				(2~20)V	<i>U</i> =0.00035% <i>U</i> _x +4 μV		
				(20~200)V	<i>U</i> =0.00055% <i>U</i> _x +40 μV		
				(200~1050)V	<i>U</i> =0.00055% <i>U</i> _x +0.5 mV		
		AC Voltage		10 mV~200 mV, (10 Hz~40 Hz)	<i>U</i> =0.014% <i>U</i> _x +4 μV		
				10 mV~200 mV, (40 Hz~100 Hz)	<i>U</i> =0.012% <i>U</i> _x +4 μV		
				10 mV~200 mV, (100 Hz~2 kHz)	<i>U</i> =0.011% <i>U</i> _x +2 μV		
				10 mV~200 mV, (2 kHz~10 kHz)	<i>U</i> =0.014% <i>U</i> _x +4 μV		
				10 mV~200 mV, (10 kHz~30 kHz)	<i>U</i> =0.034% <i>U</i> _x +8 μV		
				10 mV~200 mV, (30 kHz~100 kHz)	<i>U</i> =0.077% <i>U</i> _x +20 μV		



No. CNAS L0954

第 111 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				200 mV~2 V, (10 Hz~40 Hz)	$U=0.012\%U_x+20 \mu V$		
				200 mV~2 V, (40 Hz~100 Hz)	$U=0.009\%U_x+20 \mu V$		
				200 mV~2 V, (100 Hz~2 kHz)	$U=0.075\%U_x+20 \mu V$		
				200 mV~2 V, (2 kHz~10 kHz)	$U=0.011\%U_x+20 \mu V$		
				200 mV~2 V, (10 kHz~30 kHz)	$U=0.022\%U_x+40 \mu V$		
				200 mV~2 V, (30 kHz~100 kHz)	$U=0.057\%U_x+0.2 mV$		
				200 mV~2 V, (100 kHz~300 kHz)	$U=0.3\%U_x+2 mV$		
				200 mV~2 V, (300 kHz~1 MHz)	$U=0.1\%U_x+20 mV$		
				2 V~20 V, (10 Hz~40 Hz)	$U=0.012\%U_x+0.2 mV$		
				2 V~20 V, (40 Hz~100 Hz)	$U=0.009\%U_x+0.2 mV$		
				2 V~20 V, (100 Hz~2 kHz)	$U=0.0075\%U_x+0.2 mV$		
				2 V~20 V, (2 kHz~10 kHz)	$U=0.011\%U_x+0.2 mV$		
				2 V~20 V, (10 kHz~30 kHz)	$U=0.022\%U_x+0.4 mV$		
				2 V~20 V, (30 kHz~100 kHz)	$U=0.057\%U_x+2 mV$		



No. CNAS L0954

第 112 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2 V~20 V, (100 kHz~300 kHz)	$U=0.3\%U_x+20 \text{ mV}$		
				2 V~20 V, (300 kHz~1 MHz)	$U=0.1\%U_x+0.2 \text{ V}$		
				20 V~200 V, (10 Hz~40 Hz)	$U=0.012\%U_x+2 \text{ mV}$		
				20 V~200 V, (40 Hz~100 Hz)	$U=0.009\%U_x+2 \text{ mV}$		
				20 V~200 V, (100 Hz~2 kHz)	$U=0.0075\%U_x+2 \text{ mV}$		
				20 V~200 V, (2 kHz~10 kHz)	$U=0.011\%U_x+2 \text{ mV}$		
				20 V~200 V, (10 kHz~30 kHz)	$U=0.022\%U_x+4 \text{ mV}$		
				20 V~200 V, (30 kHz~100 kHz)	$U=0.057\%U_x+20 \text{ mV}$		
				20 V~200 V, (100 kHz~300 kHz)	$U=0.3\%U_x+0.2 \text{ V}$		
				20 V~200 V, (300 kHz~1 MHz)	$U=0.1\%U_x+2 \text{ V}$		
				200 V~1050 V, (10 Hz~40 Hz)	$U=0.012\%U_x+20 \text{ mV}$		
				200 V~1050 V, (40 Hz~10 kHz)	$U=0.012\%U_x+20 \text{ mV}$		
				200 V~1050 V, (10 kHz~30 kHz)	$U=0.023\%U_x+40 \text{ mV}$		
				200 V~1050 V, (30 kHz~100 kHz)	$U=0.058\%U_x+0.2 \text{ V}$		



No. CNAS L0954

第 113 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		DC Current		(1~200) μ A	$U=0.0012\%I_x+0.4$ nA		
				(0.2~2)mA	$U=0.0012\%I_x+4$ nA		
				(2~20)mA	$U=0.0014I_x+40$ nA		
				(20~200)mA	$U=0.0048\%I_x+0.8$ μ A		
				(0.2~2)A	$U=0.018\%I_x+16$ μ A		
				(2~20)A	$U=0.040\%I_x+0.4$ mA		
				(20~100)A	$U_{rel}=0.05\%$		
		AC Current		10 μ A~200 μ A, (1 Hz~10 Hz)	$U=0.05\%I_x+0.02$ μ A		
				10 μ A~200 μ A, (10 Hz~10 kHz)	$U=0.05\%I_x+0.02$ μ A		
				10 μ A~200 μ A, (10 kHz~30 kHz)	$U=0.071\%I_x+0.02$ μ A		
				10 μ A~200 μ A, (30 kHz~100 kHz)	$U=0.4\%I_x+0.02$ μ A		
				200 μ A~2 mA, (1 Hz~10 Hz)	$U=0.031\%I_x+0.2$ μ A		
				200 μ A~2 mA, (10 Hz~10 kHz)	$U=0.03\%I_x+0.2$ μ A		
				200 μ A~2 mA, (10 kHz~30 kHz)	$U=0.071\%I_x+0.2$ μ A		
				200 μ A~2 mA, (30 kHz~100 kHz)	$U=0.4\%I_x+0.2$ μ A		
				2 mA~20 mA, (1 Hz~10 Hz)	$U=0.031\%I_x+2$ μ A		



No. CNAS L0954

第 114 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2 mA~20 mA, (10 Hz~10 kHz)	$U=0.03\%I_x+2 \mu A$		
				2 mA~20 mA, (10 kHz~30 kHz)	$U=0.071\%I_x+2 \mu A$		
				2 mA~20 mA, (30 kHz~100 kHz)	$U=0.4\%I_x+2 \mu A$		
				20 mA~200 mA, (10 Hz~10 kHz)	$U=0.031\%I_x+20 \mu A$		
				20 mA~200 mA, (10 Hz~30 kHz)	$U=0.029\%I_x+20 \mu A$		
				20 mA~200 mA, (30 Hz~100 kHz)	$U=0.063\%I_x+20 \mu A$		
				200 mA~2 A, (10 Hz~2 kHz)	$U=0.062\%I_x+0.2 mA$		
				200 mA~2 A, (2 kHz~10 kHz)	$U=0.074\%I_x+0.2 mA$		
				200 mA~2 A, (10 kHz~30 kHz)	$U=0.3\%I_x+0.2 mA$		
				2 A~20 A, (10 Hz~2 kHz)	$U=0.082\%I_x+2 mA$		
				2 A~20 A, (2 kHz~10 kHz)	$U=0.25\%I_x+2 mA$		
				20 A~100 A, (10 Hz~30 kHz)	$U_{rel}=0.05\%$		
		Resistance		(1~2) Ω	$U=0.0017\%R_x+4 \mu \Omega$		
				(2~20) Ω	$U=0.00095\%R_x+14 \mu \Omega$		
				(20~200) Ω	$U=0.0008\%R_x+50 \mu \Omega$		



No. CNAS L0954

第 115 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
70	*Calibrators for Electrical Meters			(0.2~2)k Ω	$U=0.0008\%R_x+0.5\text{ m}\Omega$		
				(2~20)k Ω	$U=0.0008\%R_x+5\text{ m}\Omega$		
				(20~200)k Ω	$U=0.0008\%R_x+50\text{ m}\Omega$		
				(0.2~2)M Ω	$U=0.0009\%R_x+1\text{ }\Omega$		
				(2~20)M Ω	$U=0.002\%R_x+0.1\text{ k}\Omega$		
				(20~200)M Ω	$U=0.012\%R_x+1\text{ k}\Omega$		
				(0.2~1)G Ω	$U=0.16\%R_x+1\text{ M}\Omega$		
		DC Voltage		(1~200)mV	$U=0.0005\%U_x+0.1\text{ }\mu\text{V}$		
				(0.2~2)V	$U=0.00035\%U_x+0.4\text{ }\mu\text{V}$		
				(2~20)V	$U=0.00035\%U_x+4\text{ }\mu\text{V}$		
				(20~200)V	$U=0.00055\%U_x+40\text{ }\mu\text{V}$		
				(200~1050)V	$U=0.00055\%U_x+0.5\text{ mV}$		
		AC Voltage	C.S. of Calibrators for Electrical Meters JJF 1284	10 mV~200 mV, (10 Hz~40 Hz)	$U=0.014\%U_x+4\text{ }\mu\text{V}$		
				10 mV~200 mV, (40 Hz~100 Hz)	$U=0.012\%U_x+4\text{ }\mu\text{V}$		
				10 mV~200 mV, (100 Hz~2 kHz)	$U=0.011\%U_x+2\text{ }\mu\text{V}$		
				10 mV~200 mV, (2 kHz~10 kHz)	$U=0.014\%U_x+4\text{ }\mu\text{V}$		
				10 mV~200 mV, (10 kHz~30 kHz)	$U=0.034\%U_x+8\text{ }\mu\text{V}$		



No. CNAS L0954

第 116 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				10 mV~200 mV, (30 kHz~100 kHz)	$U=0.077\%U_x+20 \mu V$		
				200 mV~2 V, (10 Hz~40 Hz)	$U=0.012\%U_x+20 \mu V$		
				200 mV~2 V, (40 Hz~100 Hz)	$U=0.009\%U_x+20 \mu V$		
				200 mV~2 V, (100 Hz~2 kHz)	$U=0.075\%U_x+20 \mu V$		
				200 mV~2 V, (2 kHz~10 kHz)	$U=0.011\%U_x+20 \mu V$		
				200 mV~2 V, (10 kHz~30 kHz)	$U=0.022\%U_x+40 \mu V$		
				200 mV~2 V, (30 kHz~100 kHz)	$U=0.057\%U_x+0.2 mV$		
				200 mV~2 V, (100 kHz~300 kHz)	$U=0.3\%U_x+2 mV$		
				200 mV~2 V, (300 kHz~1 MHz)	$U=0.1\%U_x+20 mV$		
				2 V~20 V, (10 Hz~40 Hz)	$U=0.012\%U_x+0.2 mV$		
				2 V~20 V, (40 Hz~100 Hz)	$U=0.009\%U_x+0.2 mV$		
				2 V~20 V, (100 Hz~2 kHz)	$U=0.0075\%U_x+0.2 mV$		
				2 V~20 V, (2 kHz~10 kHz)	$U=0.011\%U_x+0.2 mV$		
				2 V~20 V, (10 kHz~30 kHz)	$U=0.022\%U_x+0.4 mV$		



No. CNAS L0954

第 117 页 共 177 页

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

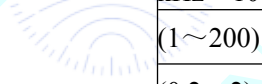
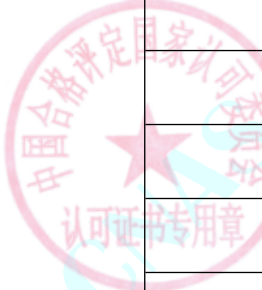
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2 V~20 V, (30 kHz~100 kHz)	$U=0.057\%U_x+2 \text{ mV}$		
				2 V~20 V, (100 kHz~300 kHz)	$U=0.3\%U_x+20 \text{ mV}$		
				2 V~20 V, (300 kHz~1 MHz)	$U=0.1\%U_x+0.2 \text{ V}$		
				20 V~200 V, (10 Hz~40 Hz)	$U=0.012\%U_x+2 \text{ mV}$		
				20 V~200 V, (40 Hz~100 Hz)	$U=0.009\%U_x+2 \text{ mV}$		
				20 V~200 V, (100 Hz~2 kHz)	$U=0.0075\%U_x+2 \text{ mV}$		
				20 V~200 V, (2 kHz~10 kHz)	$U=0.011\%U_x+2 \text{ mV}$		
				20 V~200 V, (10 kHz~30 kHz)	$U=0.022\%U_x+4 \text{ mV}$		
				20 V~200 V, (30 kHz~100 kHz)	$U=0.057\%U_x+20 \text{ mV}$		
				20 V~200 V, (100 kHz~300 kHz)	$U=0.3\%U_x+0.2 \text{ V}$		
				20 V~200 V, (300 kHz~1 MHz)	$U=0.1\%U_x+2 \text{ V}$		
				200 V~1050 V, (10 Hz~40 Hz)	$U=0.012\%U_x+20 \text{ mV}$		
				200 V~1050 V, (40 Hz~10 kHz)	$U=0.012\%U_x+20 \text{ mV}$		
				200 V~1050 V, (10 kHz~30 kHz)	$U=0.023\%U_x+40 \text{ mV}$		

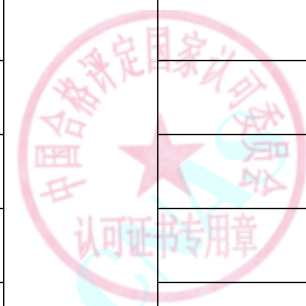


No. CNAS L0954

第 118 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		DC Current	 CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	200 V~1050 V, (30 kHz~100 kHz)	$U=0.058\%U_x+0.2\text{ V}$		
				(1~200) μ A	$U=0.0012\%I_x+0.4\text{ nA}$		
				(0.2~2)mA	$U=0.0012\%I_x+4\text{ nA}$		
				(2~20)mA	$U=0.0014I_x+40\text{ nA}$		
				(20~200)mA	$U=0.0048\%I_x+0.8\text{ }\mu\text{ A}$		
				(0.2~2)A	$U=0.018\%I_x+16\text{ }\mu\text{ A}$		
				(2~20)A	$U=0.040\%I_x+0.4\text{ mA}$		
				(20~100)A	$U_{\text{rel}}=0.05\%$		
		AC Current		10 μ A~200 μ A, (1 Hz~10 Hz)	$U=0.05\%I_x+0.02\text{ }\mu\text{ A}$		
				10 μ A~200 μ A, (10 Hz~10 kHz)	$U=0.05\%I_x+0.02\text{ }\mu\text{ A}$		
				10 μ A~200 μ A, (10 kHz~30 kHz)	$U=0.071\%I_x+0.02\text{ }\mu\text{ A}$		
				10 μ A~200 μ A, (30 kHz~100 kHz)	$U=0.4\%I_x+0.02\text{ }\mu\text{ A}$		
				200 μ A~2 mA, (1 Hz~10 Hz)	$U=0.031\%I_x+0.2\text{ }\mu\text{ A}$		
				200 μ A~2 mA, (10 Hz~10 kHz)	$U=0.03\%I_x+0.2\text{ }\mu\text{ A}$		
				200 μ A~2 mA, (10 kHz~30 kHz)	$U=0.071\%I_x+0.2\text{ }\mu\text{ A}$		
				200 μ A~2 mA, (30 kHz~100 kHz)	$U=0.4\%I_x+0.2\text{ }\mu\text{ A}$		



No. CNAS L0954

第 119 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2 mA~20 mA, (1 Hz~10 Hz)	$U=0.031\%I_x+2 \mu A$		
				2 mA~20 mA, (10 Hz~10 kHz)	$U=0.03\%I_x+2 \mu A \mu A$		
				2 mA~20 mA, (10 kHz~30 kHz)	$U=0.071\%I_x+2 \mu A$		
				2 mA~20 mA, (30 kHz~100 kHz)	$U=0.4\%I_x+2 \mu A$		
				20 mA~200 mA, (10 Hz~10 kHz)	$U=0.031\%I_x+20 \mu A$		
				20 mA~200 mA, (10 Hz~30 kHz)	$U=0.029\%I_x+20 \mu A$		
				20 mA~200 mA, (30 Hz~100 kHz)	$U=0.063\%I_x+20 \mu A$		
				200 mA~2 A, (10 Hz~2 kHz)	$U=0.062\%I_x+0.2 mA$		
				200 mA~2 A, (2 kHz~10 kHz)	$U=0.074\%I_x+0.2 mA$		
				200 mA~2 A, (10 kHz~30 kHz)	$U=0.3\%I_x+0.2 mA$		
				2 A~20 A, (10 Hz~2 kHz)	$U=0.082\%I_x+2 mA$		
				2 A~20 A, (2 kHz~10 kHz)	$U=0.25\%I_x+2 mA$		
				20 A~100 A, (10 Hz~30 kHz)	$U_{rel}=0.05\%$		
				(1~2) Ω	$U=0.0017\%R_x+4 \mu \Omega$		
		Resistance		(2~20) Ω	$U=0.00095\%R_x+14 \mu \Omega$		



No. CNAS L0954

第 120 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(20~200) Ω	$U=0.0008\%R_x+50 \mu \Omega$		
				(0.2~2)k Ω	$U=0.0008\%R_x+0.5 \text{ m} \Omega$		
				(2~20)k Ω	$U=0.0008\%R_x+5 \text{ m} \Omega$		
				(20~200)k Ω	$U=0.0008\%R_x+50 \text{ m} \Omega$		
				(0.2~2)M Ω	$U=0.0009\%R_x+1 \Omega$		
				(2~20)M Ω	$U=0.002\%R_x+0.1 \text{ k} \Omega$		
				(20~200)M Ω	$U=0.012\%R_x+1 \text{ k} \Omega$		
				(0.2~1)G Ω	$U=0.16\%R_x+1 \text{ M} \Omega$		
71	*Oscilloscope	Scanning time coefficient	V.R. of Analogue Oscilloscope JJG 262	1 ns/div~10 s/div	$U_{\text{rel}}=0.2\%$		
		Time		1 ns~55 s	$U_{\text{rel}}=0.06\%$		
		Input Resistance		50 Ω , 75 Ω , 1 M Ω	$U_{\text{rel}}=0.1\%$		
		Vertical deflection coefficient		1 mV/div~20 V/div	$U_{\text{rel}}=0.3\%$		
		Voltage amplitude		1 mV~200 V, (1 M Ω)	$U_{\text{rel}}=0.3\%$		
				1 mV~6.6 V, (50 Ω)	$U_{\text{rel}}=0.3\%$		
		Band width		-3 dB~3 dB, (1 MHz~6.4 GHz)	$U=0.4 \text{ dB}$		
		Impulse transient response		100 ps~350 ns	$U_{\text{rel}}=4\%$		



No. CNAS L0954

第 121 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Calibrated signal voltage amplitude		(0.3~5)V, (0.1 kHz~3 kHz)	<i>U</i> _{rel} =0.2%		
		Calibrated Signal Frequency		0.1 kHz~3 kHz	<i>U</i> _{rel} =0.02%		
72	*Process Calibrator	Output DC Voltage	C.S. for Process Calibrators JJF 1472	1 mV~200 mV	<i>U</i> =4.6×10 ⁻⁶ <i>U</i> _x +0.1 μV		
				0.2 V~2 V	<i>U</i> =3.1×10 ⁻⁶ <i>U</i> _x +0.4 μV		
				2 V~20 V	<i>U</i> =3.1×10 ⁻⁶ <i>U</i> _x +4 μV		
				20 V~100 V	<i>U</i> =4.6×10 ⁻⁶ <i>U</i> _x +20 μV		
		Output DC Current		1 mA~2 mA	<i>U</i> =1.2×10 ⁻⁵ <i>I</i> _x +3.2 nA		
				2 mA~20 mA	<i>U</i> =1.2×10 ⁻⁵ <i>I</i> _x +32 nA		
				20 mA~100 mA	<i>U</i> =3.5×10 ⁻⁵ <i>I</i> _x +0.3 μA		
		Output Frequency		1 Hz~500 kHz	<i>U</i> _{rel} =8×10 ⁻⁶		
		Output Resistance		1 Ω~2 Ω	<i>U</i> =1.5×10 ⁻⁵ <i>R</i> _x +3.9 μΩ		
				2 Ω~20 Ω	<i>U</i> =8.9×10 ⁻⁶ <i>R</i> _x +14 μΩ		
				20 Ω~200 Ω	<i>U</i> =7.4×10 ⁻⁶ <i>R</i> _x +46 μΩ		
				0.2 kΩ~2 kΩ	<i>U</i> =7.4×10 ⁻⁶ <i>R</i> _x +0.46 mΩ		
				2 kΩ~10 kΩ	<i>U</i> =7.4×10 ⁻⁶ <i>R</i> _x +4.6 mΩ		
		DC Voltage		1 mV~220 mV	<i>U</i> =7.5×10 ⁻⁶ <i>U</i> _x +0.4 μV		
				0.22 V~2.2 V	<i>U</i> =5×10 ⁻⁶ <i>U</i> _x +0.7 μV		



No. CNAS L0954

第 122 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
			ilac-MAS CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	2.2 V~11 V	$U=3.5\times 10^{-6}U_x+2.5\ \mu V$			
				11 V~22 V	$U=3.5\times 10^{-6}U_x+4\ \mu V$			
				22 V~220 V	$U=5\times 10^{-6}U_x+40\ \mu V$			
				220 V~300 V	$U=6.5\times 10^{-6}U_x+0.4\ mV$			
		AC Voltage		10 mV~22 mV	$U=8\times 10^{-5}U_x+4\ \mu V$			
				22 mV~220 mV	$U=8\times 10^{-5}U_x+7\ \mu V$			
				220 mV~2.2 V	$U=4.5\times 10^{-5}U_x+8\ \mu V$			
				2.2 V~22 V	$U=4.5\times 10^{-5}U_x+50\ \mu V$			
				22 V~220 V	$U=5.2\times 10^{-5}U_x+0.6\ mV$			
				220 V~300 V	$U=7\times 10^{-5}U_x+3.5\ mV$			
				DC Current	1 mA~2.2 mA		$U=3.5\times 10^{-5}I_x+7\ nA$	
					2.2 mA~22 mA		$U=3.5\times 10^{-5}I_x+40\ nA$	
		22 mA~100 mA			$U=4.5\times 10^{-5}I_x+0.7\ \mu A$			
		AC Current		0.1 mA~0.22 mA	$U=1.2\times 10^{-4}I_x+8\ nA$			
				0.22 mA~2.2 mA	$U=1.2\times 10^{-4}I_x+35\ nA$			
				2.2 mA~22 mA	$U=1.2\times 10^{-4}I_x+0.35\ \mu A$			
				22 mA~200 mA	$U=1.2\times 10^{-4}I_x+1.2\ \mu A$			
		Resistance		1 Ω~10 Ω	$U_{rel}=1\times 10^{-5}$			
				10 Ω~10 k Ω	$U_{rel}=7\times 10^{-6}$			



No. CNAS L0954

第 123 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				10 k Ω ~ 100 k Ω	<i>U</i> _{rel} =8×10 ⁻⁶		
		Frequency		1 Hz~500 kHz	<i>U</i> _{rel} =8×10 ⁻⁶		
73	*Digital Jitter Meter	Jitter	C.S. for Digital Jitter Meter JJF 1454	CD Jitter: 10 ns~60 ns	<i>U</i> _{rel} =1.5%		
				DVD Jitter: 1%~5%	<i>U</i> =0.06%		
				DVD Jitter: 5%~10%	<i>U</i> =0.11%		
				DVD Jitter: 10%~15%	<i>U</i> =0.18%		
		Voltage		Input voltage: 50mV~5V	<i>U</i> _{rel} =1%		
				D.C. Output Voltage: 0.01V~5V	<i>U</i> _{rel} =0.2%		
74	*Radio Frequency Communication Test Set	RF Frequency	Calibration Specification for RF Communication Test Set JJF1065	250kHz~1000MHz	<i>U</i> _{rel} =7×10 ⁻⁹		
		Level		-120dBm~13dBm,(250kHz~1000MHz)	<i>U</i> _{rel} =0.28dB		
				5%~95%,(250kHz~1000MHz)	<i>U</i> _{rel} =1.5%		
		AM		1kHz~75kHz,(250kHz~1000MHz)	<i>U</i> _{rel} =1.5%		
		FM		1Hz~25kHz	<i>U</i> _{rel} =7×10 ⁻⁸		
		AF Frequency		10mV~4V,(1Hz~25kHz)	<i>U</i> _{rel} =0.15%		
		AC Voltage Output		20Hz~400kHz	<i>U</i> _{rel} =7×10 ⁻⁷		
		Frequency Measurement		20mV~30V,(1Hz~25kHz)	<i>U</i> _{rel} =0.12%		
		AC Voltage Measurement					



No. CNAS L0954

第 124 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		DC Voltage Measurement		100mV~42V	<i>U</i> _{rel} =0.02%		
		distortion		0.1%~30%,(10Hz~200kHz)	<i>U</i> _{rel} =2%		
75	*Inductance &Capacitance Tester	Inductance	V.R. for wide range digital RLC meter GJB/J5412	1 μ H~10H, (100 Hz~2 MHz)	<i>U</i> _{rel} =0.2%		
		Capacitance		10pF~100 μ F, (100 Hz~2 MHz)	<i>U</i> _{rel} =0.2%		
76	*Pluse generator	Voltage	V.R. of Pulse Generators JJG 490	10mV~200V, (0.1Hz~500MHz)	<i>U</i> _{rel} =1.5%		
		Frequency		0.1Hz~500MHz	<i>U</i> _{rel} =1×10 ⁻⁷		
		Rise time		75ps~100ps	<i>U</i> _{rel} =10%		
				100ps~300ps	<i>U</i> _{rel} =6%		
				300ps~1ns	<i>U</i> _{rel} =0.6%		
				1ns~1ms	<i>U</i> _{rel} =0.1%		
77	*Part Discharge Calibrator	Discharge capacity	V.R. of Apparent Charge Calibrator for Partial Discharge Measurements JJG 1115	5pC~10pC	<i>U</i> _{rel} =8%		
				10pC~50pC	<i>U</i> _{rel} =6%		
				50pC~1nC	<i>U</i> _{rel} =5%		
		Pluse Voltage		10mV~50V, (1Hz~2kHz)	<i>U</i> _{rel} =1.5%		
		Frequency		1Hz~2kHz	<i>U</i> _{rel} =0.1%		
78	*EMI Testing Receivers	Reference Frequency	C.S. for EMI Testing Receivers JJF 1144	10MHz	<i>U</i> _{rel} =1.2×10 ⁻⁸		
		Frequency Measurement		3Hz~40GHz	<i>U</i> _{rel} =5×10 ⁻⁸		



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No. CNAS L0954

第 125 页 共 177 页

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

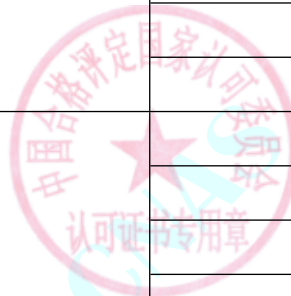
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Voltage		(0~120) dB μ V, (3Hz~30GHz)	<i>U</i> _{rel} =0.15dB		
				(0~120) dB μ V, (30GHz~40GHz)	<i>U</i> _{rel} =0.20dB		
		Attenuation		(0~110) dB, (10MHz~3GHz)	<i>U</i> =0.2dB		
		Indicates Linear		(0~60) dB, (10MHz~3GHz)	<i>U</i> =0.2dB		
		6dB Bandwidth		200Hz~3MHz	<i>U</i> _{rel} =2%		
		Impulse response		-45dB~20dB,(9kHz~ 30MHz ,40dB μ V~60dB μ V)	<i>U</i> =0.7dB		
				-45dB~20dB,(30MHz~ 1GHz ,40dB μ V~60dB μ V)	<i>U</i> =1.0dB		
		VSWR at RF Input		1~3, (9kHz~40GHz)	<i>U</i> =0.03		
		79		*Spectrum Analyzer	Frequency Readout		C.S. for Spectrum Analyzer JJF 1396
3Hz~40GHz (SPAN:10kHz)	<i>U</i> =5.8Hz						
3Hz~40GHz (SPAN:100kHz)	<i>U</i> =58Hz						
3Hz~40GHz (SPAN:1MHz)	<i>U</i> =0.58 kHz						
3Hz~40GHz (SPAN:10MHz)	<i>U</i> =5.8kHz						



No. CNAS L0954

第 126 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				3Hz~40GHz (SPAN:100MHz)	<i>U</i> =58kHz		
		Resolution Bandwidth		1Hz~10MHz	<i>U</i> _{rel} =3.6×10 ⁻³		
		Absolute Amplitude		-30dBm~10dBm, (1MHz~6GHz)	<i>U</i> _{rel} =0.22dB		
		Reference Level		-90dBm~10dBm, (1MHz~6GHz)	<i>U</i> _{rel} =0.10dB		
		Attenuation Conversion Effect		-5dB~5dB, (1MHz~6GHz, 0dB~80dB)	<i>U</i> =0.10dB		
		Vertical Scale		0dB~100dB, (1MHz~6GHz)	<i>U</i> =0.10dB		
		Input Frequency Response		-5dB~5dB,(3Hz~40GHz)	<i>U</i> =0.22dB		
		Calibration Signal Level		-30dBm~0dBm, (1MHz~6GHz)	<i>U</i> _{rel} =0.22dB		
		Reference Frequency		10MHz	<i>U</i> _{rel} =6×10 ⁻⁹		
		VSWR		1~2(9 kHz~8 GHz)	<i>U</i> =0.06		
		Sweep Time		1ms~100s	<i>U</i> _{rel} =1%		
80	*Function Generator	Frequency	V.R. of Function Generators JJG 840	0.1Hz~250MHz	<i>U</i> _{rel} =1×10 ⁻⁷		
		Output Amplitude		5mV~10mV, (1kHz)	<i>U</i> _{rel} =0.15%		
				10mV~55V, (1kHz)	<i>U</i> _{rel} =0.1%		
		Dc Voltage		± (10mV~20V)	<i>U</i> _{rel} =0.1%		



No. CNAS L0954

第 127 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Rise Time		1ns~10 μ s	<i>U</i> =0.3ns		
		Duty ratio		5%~95%	<i>U</i> =1.0%		
		THD		0.02%~3.0%, (20Hz~20kHz)	<i>U</i> =0.01%		
				3.0%~10%, (20Hz~20kHz)	<i>U</i> =0.1%		
		Sine wave flatness		-3dB~3dB,(0.1Hz~250MHz,100mV~10V)	<i>U</i> =0.07dB		
		Harmonic distortion		-70dBc~-5dBc, (2Hz~250MHz)	<i>U</i> =0.5dB		
81	*Directional Coupler and SWR Bridges	Return loss	C.S.for Directional Coupler and SWR Bridges JJF1680	15dB~60dB, (300kHz~18GHz)	<i>U</i> =0.2dB		
		Insertion loss		0dB~10dB, (300kHz~18GHz)	<i>U</i> =0.15dB		
		Coupling coefficient		10dB~40dB, (300kHz~18GHz)	<i>U</i> =0.2dB		
		Directional		20dB~50dB, (300kHz~18GHz)	<i>U</i> =0.3dB		
82	*Artificial Mains Network	Impedance modulus value	Calibration Specification for Artificial Mains Networks JJF 1705	(5~100) Ω , (9 kHz~108 MHz)	<i>U</i> _{rel} =7.2%		
		Impedance phase		-180° ~180° , (9 kHz~108 MHz)	<i>U</i> =3.4°		
		Division Factor		(-40~0)dB, (9 kHz~108 MHz)	<i>U</i> =0.38dB		
83	*Electrical Fast Transient/Burst Simulators	Pulse voltage peak	C.S. for Specification of Electrical Fast Transient/Burst Simulators	±(0.1~4)kV	<i>U</i> _{rel} =5%		



No. CNAS L0954

第 128 页 共 177 页

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

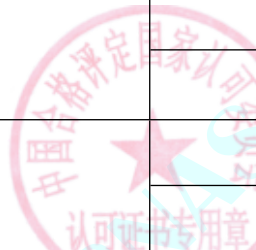
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Pulse repetition frequency	JJF 1672	4kHz~120kHz	$U_{rel}=1\%$		
		Pulse group period		240ms~360ms	$U_{rel}=1\%$		
		Pulse Rise Time		(3~8)ns	$U_{rel}=6\%$		
		Pulse Width		(30~70)ns	$U_{rel}=5\%$		
		Duration		0.6ms~18ms	$U_{rel}=1\%$		
84	*Current Probe & Injection Probe	Insertion loss	Calibration Specification for Current Probes and Injection Probes JJF(Communication) 030	-50dB~0dB, (9 kHz~1000 MHz)	$U=1.1\text{dB}$		
		Transfer Impedance		-34dB Ω ~20dB Ω , (9 kHz~1000 MHz)	$U_{rel}=1.1\text{dB}$		
		Transfer Admittance		-20dBS~34dBS, (9 kHz~1000 MHz)	$U_{rel}=1.1\text{dB}$		
85	*DC Stabilized Power Supplies	DC Voltage	C. S. for DC Stabilized Power Supplies JJF1597	100mV~1000V	$U_{rel}=1 \times 10^{-5}$		
		DC Current		1mA~1000A	$U_{rel}=1 \times 10^{-5}$		
		Peak to Peak Current		1mA~50A (20Hz~20MHz)	$U_{rel}=10\%$		
		Peak to Peak Voltage		1mV~50V (20Hz~20MHz)	$U_{rel}=10\%$		
		Time		10 μs ~1s	$U_{rel}=1\%$		
86	*Single Phase AC Constant Voltage Power Supply	AC Voltage	Calibration Specification for Single Phase AC Constant Voltage Power Supply JJF(liao)194	10V~350V	$U_{rel}=0.01\%$		
		Voltage Total Harmonic Distortion		0.01%~30%	$U=0.01\%$		



No. CNAS L0954

第 129 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Frequency		45Hz~440Hz	$U_{rel}=0.01\%$		
87	*DC Electronic Loads	Current	C.S. for DC Electronic Loads JJF1462	1mA~120A	$U_{rel}=9\times 10^{-4}$		
		Voltage		0.1V~1V	$U_{rel}=8\times 10^{-4}$		
				1V~1000V	$U_{rel}=6\times 10^{-4}$		
		D.C.RESISTANCE		1Ω~10kΩ	$U_{rel}=2\times 10^{-3}$		
		D.C.POWER		1W~10kW	$U_{rel}=2\times 10^{-3}$		
		Time		1μs~10s	$U_{rel}=1\times 10^{-2}$		
		Current raise descend rate		0.1mA/μs~10A/μs	$U_{rel}=2\times 10^{-2}$		
88	*Dc shunts	resistance	V.R. of DC Shunts JJG1069	$10^{-5}\Omega\sim 1\Omega$, (5A~6000A)	$U_{rel}=5\times 10^{-5}$		
89	*D.c low Resistance Meters	resistance	V.R. of D.C. Low Resistance Meters JJG837	$10^{-3}\Omega\sim 10^{-2}\Omega$	$U_{rel}=6\times 10^{-4}$		
				$10^{-2}\Omega\sim 10^5\Omega$	$U_{rel}=2\times 10^{-4}$		
				$10^5\Omega\sim 10^7\Omega$	$U_{rel}=6\times 10^{-4}$		
90	Clamp Ammeters	Current	C.S. for Clamp Ammeters JJF1075	0.1A~2000A(DC)	$U_{rel}=0.2\%$		
				0.1A~2000A, (45Hz~400Hz)	$U_{rel}=0.2\%$		
91	Clamp Meter Calibrator	DC standard current source	Calibration Specification for Clamp Meter Calibrator JJG (Liao) 222	0.1A~1000A	$U_{rel}=0.015\%$		
		AC standard current source		0.1A~1000A, (50Hz)	$U_{rel}=0.015\%$		
92	Measuring Transducers	voltage	V. R. of power frequency a.c.electrical quantities measuring transducers JJG	10V~500V(45Hz~65Hz)	$U_{rel}=0.014\%$		



No. CNAS L0954

第 130 页 共 177 页

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

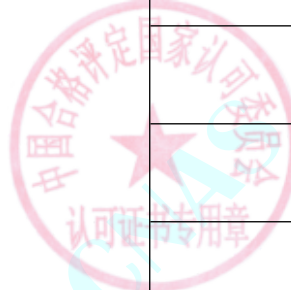
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		current	126	10mA~100A(45Hz~65Hz)	$U_{rel}=0.014\%$		
		power		10V~500V, 10mA~100A(45Hz~65Hz)	$U_{rel}=0.014\%$		
		Power factor		0~1	$U=0.0002$		
		Frequency		45Hz~65Hz	$U_{rel}=0.013\%$		
93	*Welding Power Source of DC Electric Welding Machine	Current	Calibration Specification of Welding Power Source of DC Electric Welding Machine JJF (Liao) 196	(1~2000)A	$U_{rel}=2.4\%$		
		Voltage		(1~1000)V	$U_{rel}=0.6\%$		
94	Digital Clamp Phase Voltage Current Meter	Voltage	Calibration Specification of Digital Clamp Phase Voltage Current Meter JJF (Liao) 199	10V~500V, (45Hz~65Hz)	$U_{rel}=0.1\%$		
		Current		5mA~100A, (45Hz~65Hz)	$U_{rel}=0.02\%$		
		Phase		0°~360°, (45Hz~65Hz)	$U=0.02^\circ$		
95	Harmonics Analyzing Instruments at Power Frequency	Voltage	C.S. for Harmonics Analyzing Instruments at Power Frequency JJF1667	(10~500)V, (45Hz~65Hz)	$U_{rel}=0.012\%$		
		Current		(0.01~100)A, (45Hz~65Hz)	$U_{rel}=0.012\%$		
		Power		0.1W~40kW, (45Hz~65Hz)	$U_{rel}=0.012\%$		
		Frequency		(45~65)Hz	$U_{rel}=0.012\%$		
		Harmonic Voltage		(0~30)% U_N , 16Hz~850Hz	$U=0.011\%U_N$		
				(0~30)% U_N , 850Hz~6000Hz	$U=0.06\%U_N$		



No. CNAS L0954

第 131 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Harmonic Current		(0~30)% <i>I</i> _N ,16Hz~850Hz	<i>U</i> =0.011% <i>I</i> _N		
				(0~30)% <i>I</i> _N ,850Hz~6000Hz	<i>U</i> =0.06% <i>I</i> _N		
96	Surface Resistance Tester	Resistance	C.S. for Surface Resistance Tester JJF1285	1k Ω ~10M Ω	<i>U</i> _{rel} =0.26%		
				10M Ω ~100M Ω	<i>U</i> _{rel} =0.6%		
				100M Ω ~1G Ω	<i>U</i> _{rel} =1.2%		
				1G Ω ~10G Ω	<i>U</i> _{rel} =2.6%		
				10G Ω ~100G Ω	<i>U</i> _{rel} =6%		
		Voltage		9V~250V	<i>U</i> _{rel} =0.14%		
97	Selective Level Meter	Level	C.S. of Selective Level Meter JJF1761	(-60~20)dB, (0.2 kHz~100 kHz)	<i>U</i> =0.03 dB		
		Frequency		(-60~20)dB, (100 kHz~620 kHz)	<i>U</i> =0.06 dB		
				0.2 kHz~620 kHz	<i>U</i> _{rel} =0.1%		
98	*Surge Simulators	Peak voltage of open circuit	Calibration Specification of Surge Simulators JJF1741	±(0.1~5)kV	<i>U</i> _{rel} =4%		
		Front time of open circuit voltage		(0.3~15) μs	<i>U</i> _{rel} =4%		
		Duration of open circuit voltage		(5~850) μs	<i>U</i> _{rel} =3%		
		Undershoot voltage of open circuit		±(1V~1.5kV)	<i>U</i> _{rel} =4%		



No. CNAS L0954

第 132 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Peak current of short circuit		$\pm(0.02\sim 2.5)\text{kA}$	$U_{\text{rel}}=4\%$		
		Front time of short circuit current		$(0.5\sim 15)\ \mu\text{s}$	$U_{\text{rel}}=4\%$		
		Duration of short circuit current		$(5\sim 400)\ \mu\text{s}$	$U_{\text{rel}}=3\%$		
		Undershoot current of short circuit		$\pm(1\text{A}\sim 1.0\text{kA})$	$U_{\text{rel}}=4\%$		
		Phase		$0^\circ\sim 360^\circ$	$U=2^\circ$		
99	*Teet Devices for Action Characteristics of Low Voltage	Current	Calibration Specification for Test Devices for Action Characteristics of Low Voltage Circuit Breakers JJF 1799	$1\text{A}\sim 5\text{kA}$	$U_{\text{rel}}=0.1\%$		
		Harmonic Distortion		$0\%\sim 5\%$	$U=0.06\%$		
		Time		$10\text{ms}\sim 1\text{h}$	$U_{\text{rel}}=1.4\times 10^{-3}$		
100	Multi-channel Data Recorders	DC voltage	Calibration Specification for Multi-channel Data Recorders JJF (liao) 429	$10\text{mV}\sim 500\text{V}$	$U_{\text{rel}}=1.7\times 10^{-6}\sim 8\times 10^{-6}$		
		AC voltage		$10\text{mV}\sim 500\text{V}(10\text{Hz}\sim 500\text{kHz})$	$U_{\text{rel}}=3\times 10^{-5}\sim 6\times 10^{-4}$		
		DC current		$1\text{mA}\sim 1\text{A}$	$U_{\text{rel}}=1.7\times 10^{-5}\sim 4\times 10^{-4}$		
		AC current		$1\text{mA}\sim 1\text{A}, (10\text{Hz}\sim 10\text{kHz})$	$U_{\text{rel}}=1.3\times 10^{-4}\sim 8\times 10^{-3}$		
		DC resistance		$1\ \Omega\sim 100\text{M}\ \Omega$	$U_{\text{rel}}=5\times 10^{-6}\sim 6.6\times 10^{-5}$		
		Frequency		$10\text{Hz}\sim 500\text{kHz}$	$U_{\text{rel}}=1\times 10^{-7}\sim 2\times 10^{-7}$		
101	*Off-board Charger for	electric energy	V.R. of Off-board Charger for Electric Vehicles JJG 1149	$30\text{V}\sim 1000\text{V}, 500\text{mA}\sim 300\text{A}$	$U_{\text{rel}}=0.1\%$		



No. CNAS L0954

第 133 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Electric Vehicles	Time		1s~86400s	$U=1s$		
102	AC Electronic Load	AC voltage	Calibration Specification for AC Electronic Load JJF (dianzi)0002	0.1V~300V, (45Hz~240Hz)	$U_{rel}=6\times 10^{-4}\sim 8\times 10^{-4}$		
		AC current		0.1A~45A, (45Hz~240Hz)	$U_{rel}=9\times 10^{-4}$		
		Frequency		45Hz~240Hz	$U_{rel}=1.4\times 10^{-5}$		
		Resistance		2.5 Ω ~ 1000 Ω	$U_{rel}=2\times 10^{-3}$		
		Power		1VA~5kVA, 50Hz	$U_{rel}=2\times 10^{-3}$		
		Power factor		0.01~1.00	$U=0.002$		
103	*AC Charging Spot for Electric Vehicles	electric energy	V.R. of AC Charging Spot for Electric Vehicles JJG 1148	30V~300V, 10mA~60A, ($\Phi: 0^\circ \sim 360^\circ$, 50Hz)	$U_{rel}=0.1\%$		
		Time		1s~86400s	$U=1s$		
104	generator rotor AC impedance tester	Voltage	calibration specification for generator rotor ac impedance tester JJF (liao) 347	10V~600V	$U_{rel}=0.024\%$		
		Current		0.1A~100A	$U_{rel}=0.024\%$		
		Power		100W~22kW	$U_{rel}=0.024\%$		
		Resistance		1 Ω ~ 6k Ω	$U_{rel}=0.034\%$		
105	DC electrical quantities transducer	DC voltage	calibration specification of dc electrical quantities transducer for measuring JJF (liao) 433	100mV~1000V	$U_{rel}=0.02\%$		
		DC current		5mA~100A	$U_{rel}=0.02\%$		
		DC power		100mV~1000V, 5mA~100A	$U_{rel}=0.02\%$		
		DC resistance		0.1 Ω ~ 10M Ω	$U_{rel}=0.02\%$		



No. CNAS L0954

第 134 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
106	*High Voltage Standard Capacitance	Capacitance Indicate Value	Verification Regulation of Hith Voltage Standard Capacitors JJG 1075	10pF~500nF, 10kV~200kV	$U_{rel}=6 \times 10^{-4}$		
		Dielectric loss		$1 \times 10^{-6} \sim 1 \times 10^{-4}$	$U=3.4 \times 10^{-5}$		
107	*Power Frequency Magnetic Field Simulator	Current	Calibration Specification of Power Frequency Magnetic Field Simulator JJF 1737	0.01A~1200A	$U_{rel}=0.6\%$		
		Magnetic Field Value		1A/m~1000A/m	$U_{rel}=4\%$		
		Magnetic Field Uniformity		10A/m	$U=0.3\text{dB}$		
108	*High Voltage Dielectric loss Tester	Capacitance Indicate Value	V. R. of High Voltage Dielectric loss Tester JJG 1126	100pF~500nF	$U_{rel}=0.7\% \sim 1.2\%$		
		Dielectric loss		0.01%~10%	$U=0.013\% \sim 0.070\%$		
109	AC and DC Resistance Simulator	Resistance	Calibration Specification of AC and DC Resistance Simulator JJF 1723	DC Resistance : $1 \mu \Omega \sim 200 \Omega$	$U_{rel}=5 \times 10^{-3} \sim 1.6 \times 10^{-4}$		
				AC Resiatance : $1 \mu \Omega \sim 200 \Omega$	$U_{rel}=2 \times 10^{-2} \sim 3 \times 10^{-4}$		
		Current		0.1A~1000A	$U_{rel}=3 \times 10^{-4}$		
110	*Isulation Oil Dielectric Dissipation Fator and Volume Resistivity Tester	Dielectric loss	Calibration Specification of Isulation Oil Dielectric Dissipation Fator and Volume Resistivity Tester JJF 1618	0.01%~10%	$U=0.013\% \sim 0.12\%$		
		Capacitance Indicate Value		100pF~500nF	$U_{rel}=0.7\% \sim 1.2\%$		
		Resistance Rate Indicate Value		$(6.78 \times 10^4 \sim 6.78 \times 10^{11}) \Omega \cdot \text{m}$	$U_{rel}=0.3\% \sim 5.8\%$		



No. CNAS L0954

第 135 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Hihg Voltage Power Supply Indicate Value		100V~5000V	$U_{rel}=0.6\%$		
		Temperature Indicate Value		0℃~120℃	$U=0.2^{\circ}\text{C}$		
111	Measuring Direct-current Electrical Energy	Direct-current Electrical Energy	V.R. of Electronic Meters for Measuring Direct-current Electrical Energy JJG 842	0.1mV~1000 V, 1mA~ 500A	$U_{rel}=0.03\%$		
		Daily Clock Time Difference		(-50~50)s/d	$U=0.01\text{s/d}$		
112	*Cable Testers	AC Voltage	Calibration Specification for Cable Tester JJF 1457	10V~500V, 50Hz	$U_{rel}=0.12\%$		
				500V~1.5kV, 50Hz	$U_{rel}=0.6\%$		
		Distortion degree		(0.1~10)%	$U=1.2\%$		
		AC Current		0.1mA~2mA, 50Hz	$U_{rel}=0.4\%$		
		DC Voltage		100V~1.5kV	$U_{rel}=1.2\%$		
		Insurance Resistance		1k Ω ~ 10M Ω	$U_{rel}=0.26\%$		
				50M Ω ~ 200M Ω	$U_{rel}=0.6\%$		
		Resistance		(1~10 ⁶) Ω	$U_{rel}=0.3\%$		
113	*Electromagnetic Clamps	Coupling coefficient	Calibration Specification of Electromagnetic Clamps JJF(electronic) 0031	-20dB~20dB	$U=1.6\text{dB}$		
		Impedance		50 Ω ~ 300 Ω	$U_{rel}=7.0\%$		



No. CNAS L0954

第 136 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
114	*Coupling/ decoupling network	Coupling coefficient	Calibration Specification of Coupling/ Decoupling Network JJF(Su) 213	-15dB~15dB	$U=0.4\text{dB}$		
		Impedance		$80\ \Omega \sim 240\ \Omega$	$U_{\text{rel}}=6.0\%$		
115	*Power amplifier	Rated output	Calibration Specification for RF& Microwave Power Amplifiers JJF 1678	0.1W~500W	$U_{\text{rel}}=0.3\text{dB}$		
		Gain		0dB~60dB	$U=0.3\text{dB}$		
		Gain flatness		$\pm (0.5\text{dB} \sim 12\text{dB})$	$U=0.3\text{dB}$		
		1 db compression point		0dBm~57dBm	$U_{\text{rel}}=0.3\text{dB}$		
		VSWR		1~2(9 kHz~8 GHz)	$U=0.08$		
		Harmonic Distortion		(-80~0)dBc	$U=1.0\text{dB}$		
116	*Continuous Wave Simulator	Frequency	Calibration Specification of Continuous Wave Simulators JJF(Liao) 392	9kHz~1GHz	$U_{\text{rel}}=2 \times 10^{-8}$		
		Harmonic distortion		-10dBc~-70dBc	$U=0.4\text{dB}$		
		Amplitude modulation		5%~99%	$U_{\text{rel}}=2.0\%$		
		flatness		0dB~3dB(9kHz~1GHz)	$U=0.2\text{dB}$		
		Coupling voltage		0.1V~3V	$U_{\text{rel}}=5.0\%$		
117	*Oscilloscope Voltage Probes	DC attenuation ratio	Calibration Specification for Oscilloscope Voltage Probes JJF 1437	1:1~1000:1 (1mV~ 1000V)	$U_{\text{rel}}=0.7\%$		
		frequency response		1:1~1000:1(1~10) kV	$U_{\text{rel}}=2\%$		
				100Hz~100MHz	$U_{\text{rel}}=0.4\text{dB}$		



No. CNAS L0954

第 137 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Rise time		58ps~50ns	$U_{rel}=3\%$		
		Input Resistance		50 Ω ~ 100M Ω	$U_{rel}=0.35\%$		
118	Exposure Coulometers Used in Medical Diagnostic X-ray Radiation Sources	inherent Error	Calibration Specification for Exposure Coulometers Used in Medical Diagnostic X-ray Radiation Sources JJF 1459	2mC~2C	$U_{rel}=0.5\%$		
119	*Charge&Discharge of Battery Test System	voltage	C. S. for Charge&Discharge of Battery Test System JJF (Liao) 329	10mV~1000V	$U_{rel}=7 \times 10^{-4}$		
		current		10 μ A~1000A	$U_{rel}=2 \times 10^{-3}$		
		Resistance		0.1 Ω ~ 1000 Ω	$U_{rel}=2 \times 10^{-3}$		
		Power		10mW~10kW	$U_{rel}=2 \times 10^{-3}$		
		Capacity		0.1Ah~1000Ah	$U_{rel}=2 \times 10^{-3}$		
		Constant current charge rise time		10 μ s~10ms	$U_{rel}=1 \times 10^{-2}$		
120	A.C. Resistance Boxes	A.C. resistance boxes	C. S. for A.C. Resistance Boxes JJF 1636	0.001 Ω ~ 10M Ω , DC~10kHz	$U_{rel}=6 \times 10^{-2} \sim 6 \times 10^{-4}$		
		time constant		1ns~100 μ s	$U_{rel}=6 \times 10^{-2} \sim 6 \times 10^{-4}$		
		residual inductance		1 μ H~100 μ H	$U=0.2 \mu$ H		
121	Magnetometers	field density	Calibration Specification for (1mT~2.5T)Magnetometers JJF 1832	1mT~10mT,20mT~2T	$U_{rel}=0.15\% \sim 0.30\%$		
122	Magnetic Flux Meters	magnetic flux	C. S. for Magnetic Flux Meters JJF 1905	0.1mWb~10Wb	$U_{rel}=6 \times 10^{-3} \sim 3 \times 10^{-4}$		



No. CNAS L0954

第 138 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
123	Medical Leakage Current Testers	Current	V.R. of Medical Leakage Current Testers JJG 1188	10 μ A ~ 20mA	<i>U</i> _{rel} =6 × 10 ⁻⁴		
				100 μ A ~ 20mA(50 Hz,60Hz)	<i>U</i> _{rel} =6 × 10 ⁻⁴		
		Resistance		500 Ω ~ 2k Ω	<i>U</i> _{rel} =1.3 × 10 ⁻⁴		
				500 Ω ~ 2k Ω (10Hz ~ 1MHz)	<i>U</i> _{rel} =1.3 × 10 ⁻³		
		frequency response		-70dB ~ 0dB(10Hz ~ 1MHz)	<i>U</i> =0.09dB		
	Voltage	AC:10V ~ 600V(50 Hz,60Hz)	<i>U</i> _{rel} =1.2 × 10 ⁻³				
124	*Battery internal resistance testers	Resistance	C. S. for battery internal resistance testers JJF 1620	1m Ω ~ 10 m Ω	<i>U</i> _{rel} =0.34%		
				10m Ω ~ 3k Ω	<i>U</i> _{rel} =0.06%		
		DC voltage		± (0.1 ~ 800)V	<i>U</i> _{rel} =0.06%		
125	*Verification Equipment of Electrical Measuring Devices	AC Current	C.S. for Verification Equipment of Electrical Measuring Devices JJF 1923	100uA~5mA(40Hz ~ 70Hz)	<i>U</i> _{rel} =0.12%		
				5mA ~100A(40Hz ~ 70Hz)	<i>U</i> _{rel} =0.012%		
		AC Voltage		10mV ~ 2V(40Hz ~ 70Hz)	<i>U</i> _{rel} =0.024%		
				2V~1000V(40Hz ~ 70Hz)	<i>U</i> _{rel} =0.012%		
		Phase		0° ~ 360°	<i>U</i> =0.02°		
		DC Current		100uA ~ 100A	<i>U</i> _{rel} =0.012%		
		DC Voltage		10mV ~ 1000V	<i>U</i> _{rel} =0.012%		
		Frequency		40 Hz ~ 70Hz	<i>U</i> _{rel} =0.006%		



No. CNAS L0954

第 139 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		AC Active power		75mW~180kW (45 Hz~65Hz)	<i>U</i> _{rel} =0.012%		
		AC Reactive power		75mW~180kW (45 Hz~65Hz)	<i>U</i> _{rel} =0.012%		
126	terminal voltage tester	DC voltage	C. S. for terminal voltage tester JJF (辽)333	(10~10000)V	<i>U</i> _{rel} =0.15%		
		Resistance		(1~10)G Ω	<i>U</i> _{rel} =0.3%		
				(10~50)G Ω	<i>U</i> _{rel} =0.6%		
127	*Bresker Simulate Equipment	DC Voltage	Calibration Method for Breaker Simulate Equipment JJF(QT-04-09)66	100V~300V	<i>U</i> =0.2V		
		Square Current Amplitude		1A~10A	<i>U</i> _{rel} =3×10 ⁻²		
		Time		10ms~500ms	<i>U</i> =2ms		
128	high voltage and value D.C. resistors	high voltage and value D.C. resistance	V. R. of high voltage and value D.C. resistors JJG 1072	100 Ω ~1M Ω	<i>U</i> _{rel} =0.03%		
				1M Ω ~10M Ω	<i>U</i> _{rel} =0.04%		
				10M Ω ~100M Ω	<i>U</i> _{rel} =0.06%		
				100M Ω ~1G Ω	<i>U</i> _{rel} =0.15%		
				1G Ω ~10G Ω	<i>U</i> _{rel} =0.3%		
				10G Ω ~1T Ω	<i>U</i> _{rel} =0.6%		
				1T Ω ~10T Ω	<i>U</i> _{rel} =1.5%		
129	*AC Shunt	AC Resistance	C.S. for AC shunts JJF(Electronics) 0020	10 μ Ω ~10 Ω (500mA~100A,10Hz~40Hz,1W~0.7kW)	<i>U</i> _{rel} =3×10 ⁻⁴		



No. CNAS L0954

第 140 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				$10\ \mu\ \Omega \sim 10\ \Omega$ (500mA~100A) (40Hz~1kHz, 1W~1kW)	$U_{rel}=5 \times 10^{-5}$		
				$10\ \mu\ \Omega \sim 0.1\ \Omega$ (100A~1000A) (50Hz~400Hz, 1W~1kW)	$U_{rel}=1 \times 10^{-3}$		
130	*Triple Frequency Equipments	AC voltage	C. S. for Triple Frequency Equipments JJF (辽) 395	50V~1000V, (150Hz)	$U=0.1V \sim 1V$		
		Frequency		150Hz	$U=0.1Hz$		
		Time		1s~300s	$U=0.3s$		
131	*Charge Meter	Charge	C.S. for Charge Meters JJF2018	0.1nC~20 μ C	$U_{rel}=6 \times 10^{-4}$		
132	Digital Electrometers	DC voltage	C. S. for Digital Electrometers JJF 1726	Measure: $\pm(10mV \sim 1000V)$	$U_{rel}=1.2 \times 10^{-5} \sim 1 \times 10^{-4}$		
		DC current		Output: $\pm(10mV \sim 1000V)$	$U_{rel}=6 \times 10^{-5} \sim 1 \times 10^{-4}$		
		DC resistance		$\pm(0.1pA \sim 100mA)$	$U_{rel}=1.3 \times 10^{-4} \sim 5.0 \times 10^{-3}$		
		Charge		1M $\Omega \sim 100T\ \Omega$	$U_{rel}=3 \times 10^{-4} \sim 1.5 \times 10^{-2}$		
		Charge		0.1nC~20 μ C	$U_{rel}=1.2 \times 10^{-3}$		
133	*electronic control load cabinet and switch/socket tester	AC voltage	C.S. for electronic control load cabinet and switch/socket testers JJF(Liao) 371	1V~500V, 50Hz	$U_{rel}=0.1\%$		
		AC voltage		1A~80A, 50Hz	$U_{rel}=0.1\%$		
		Power factor		0~1	$U=0.002$		
		socket time		1.5s, 3s	$U_{rel}=1.5\%$		



No. CNAS L0954

第 141 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		switch time		2s~8s	$U_{rel}=1.5\%$		
134	Micro Current Sources	DC current	C. S. for Micro Current Sources JJF (Liao) 494	$\pm(1\text{pA}\sim 100\text{mA})$	$U_{rel}=1\times 10^{-4}\sim 2.2\times 10^{-3}$		
		DC voltage		$\pm(1\text{mV}\sim 200\text{V})$	$U_{rel}=1.2\times 10^{-5}\sim 1\times 10^{-3}$		
135	*overcurrent testing equipment	current	C.S.for overcurrent testing equipment JJF(Liao) 394	2A~3000A	$U_{rel}=0.3\%$		
		action time		0.5s~99.9s	$U_{rel}=1.5\%$		
136	*Network CableAnalyzer	Loopresistance	C.S. for Network cable Analyzers JJF 1494	(1~10) Ω	$U_{rel}=1.6\%$		
				(10~50) Ω	$U_{rel}=0.2\%$		
		Time Delay		(1~500)ns	$U_{rel}=1.4\%$		
		Insertion loss		(0~40)dB,(1~250)MHz	$U=0.3\text{ dB}$		
		Near-endcrosstalk		(20~70)dB,(1~250)MHz	$U=0.5\text{ dB}$		
		Equal level Far endcrosstalk		(10~60)dB,(1~250)MHz	$U=0.4\text{ dB}$		
		Return loss		(8~26.5)dB,(1~250)MHz	$U=0.7\text{ dB}$		
		Length		(1~100)m	$U_{rel}=0.6\%$		
137	*Electrochemical Workstation	Voltage	C.S. for Electrochemical Workstations JJF 1910	0.1V~2V	$U=1\times 10^{-4}\text{V}$		
		Current		$1\times 10^{-7}\text{A}\sim 2\times 10^{-6}\text{A}$	$U=1\times 10^{-10}\text{A}$		
138	*Television Video Signal Generator	Luminance Level	C.S. for Television Video Signal Generator JJF 1235	10 $\mu\text{V}\sim 1\text{V}$	$U_{rel}=1.2\%$		
		Chrominance Level		10 $\mu\text{V}\sim 1\text{V}$	$U_{rel}=1.2\%$		



No. CNAS L0954

第 142 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Phase		$(0\sim 360)^\circ$	$U=1.2^\circ$		
		Time		$1\text{ns}\sim 150\ \mu\text{s}$	$U_{\text{rel}}=0.5\%$		
		Frequency		$10\text{Hz}\sim 10\text{MHz}$	$U_{\text{rel}}=1.1\times 10^{-6}$		
139	Telephone Set Dialing Analyzer	Signal output level	C.S.for Telephone Set Dialing Analyzer JJF(Liao) 428	$(-50\sim 0)\text{ dBm}$	$U=0.02\text{dB}$		
		Ringing voltage		$10\text{V}\sim 100\text{V}$	$U_{\text{rel}}=1\%$		
		Feeding voltage		$20\text{V}\sim 60\text{V}$	$U_{\text{rel}}=0.2\%$		
		Feeding current		$18\text{ mA}、35\text{ mA}、80\text{mA}$	$U_{\text{rel}}=0.3\%$		
		Signal output frequency		$100\text{Hz}\sim 50\text{kHz}$	$U_{\text{rel}}=0.02\%$		
		Ringing frequency		$10\text{Hz}\sim 100\text{Hz}$	$U_{\text{rel}}=0.02\%$		
		Input resistance		$600\ \Omega$	$U_{\text{rel}}=0.3\%$		
		AC resistance		$100\ \Omega\sim 2\text{k}\ \Omega$ ($200\text{Hz}\sim 4\text{kHz}$)	$U_{\text{rel}}=0.2\%$		
140	*Arbitrary Waveform Generator	Frequency	C. S. for Arbitrary Wave Generator JJF 1152	$1\text{mHz}\sim 1\text{GHz}$	$U_{\text{rel}}=3\times 10^{-6}$		
		Sampling rate		$1\text{Sample/s}\sim 10\text{GSample/s}$	$U=3\times 10^{-6}$		
		Rise Time/Fall Time		$1\text{ns}\sim 1\text{s}$	$U=50\text{ps}$		
		Duty ratio		$5\%\sim 95\%$	$U_{\text{rel}}=0.2\%$		
		Amplitude		$\pm(1\text{mV}\sim 20\text{V})(\text{DC}\sim 1\text{GHz})$	$U_{\text{rel}}=0.5\%$		



No. CNAS L0954

第 143 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Amplitude modulation		5%~99%(5kHz~1GHz)	$U_{\text{rel}}=1.5\%$		
		Frequency deviation		(1~400)kHz(5kHz~1GHz)	$U_{\text{rel}}=1.5\%$		
		Phase modulation		0° ~360° (5kHz~1GHz)	$U_{\text{rel}}=2.0\%$		
		Sine wave distortion		0.1%~10%(20Hz~100kHz)	$U_{\text{rel}}=16\%$		
		Harmonic distortion		(-70~-20)dBc	$U=0.5\text{dB}$		
		Dc offset Voltage		(-20~20)V	$U_{\text{rel}}=0.1\%$		
		Phase		0° ~360°	$U=0.05^\circ$		
		Resistance		45 Ω ~1M Ω	$U_{\text{rel}}=1.5\%$		
141	Pulse Limiter	Insertion loss	C. S. for Pulse Limiter JJF(Liao) 301	0dB~50dB(9kHz~30MHz)	$U=0.4\text{dB}$		
		VSWR		1~1.4(9kHz~30MHz)	$U=0.03$		
142	*Near-Zone Electric-field Measuring Instruments	Electric field	V.R. of Near-Zone Electric-field Measuring Instruments JJG 561	10V/m~150V/m (100kHz~200MHz)	$U_{\text{rel}}=1.0\text{dB}$		
143	*Field Transmitting Antenna	VSWR	C. S. for Field Transmitting Antenna VSWR JJF(Liao) 430	1~3.5 (1MHz~18GHz)	$U=0.05$		
144	*Holiday Detector by Pulse Voltage	Pulse Voltage	C. S. for Holiday Detector by Pulse Voltage JJF(Liao) 282	1 kV ~ 30 kV	$U_{\text{rel}}=1.6\%$		
		Short-term stability		1kV~30kV (1min)	$U=2.1\%$		
		Discharge distance		> 10mm	$U=2\text{mm}$		

No. CNAS L0954

第 144 页 共 177 页



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

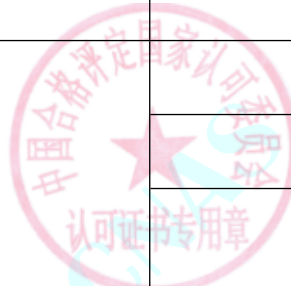
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Insulation resistance		$> 100\text{M}\Omega$	$U=2\text{M}\Omega$		
		Dielectric strength		$> 1.5\text{kV}$	$U_{\text{rel}}=5\%$		
145	Calibrator of AC Charging Piles for Electric Vehicles	Energy	V.R. of Calibrator of AC Charging Piles for Electric Vehicles JJG 1193	30V~380V, 5mA~0.1A (Phase: $0^\circ \sim 360^\circ$, Frequency: 45Hz~65Hz)	$U_{\text{rel}}=0.024\%$		
				30V~380V, 0.1A~100A (Phase: $0^\circ \sim 60^\circ$, Frequency: 45Hz~65Hz)	$U_{\text{rel}}=0.012\%$		
		time		1s~86400s	$U=0.1\text{s}$		
146	Residual Current Operated Protective Device Operated Characteristic Tester	break time of RCD	C. S. for Residual Current Operated Protective Device Operated Characteristic Tester JJF 1283	20ms	$U_{\text{rel}}=1.5\%$		
				50ms	$U_{\text{rel}}=0.6\%$		
				(100~5000)ms	$U_{\text{rel}}=0.3\%$		
		residual current		(5~1500)mA	$U_{\text{rel}}=1.3\%$		
147	Off-board Charging for Electric Vehicles	Energy	V.R. of Off-board Charging for Electric Vehicles JJG 1192	200V~1000V; 1A~500A	$U_{\text{rel}}=0.012\%$		
		time		1s~86400s	$U=0.1\text{s}$		
148	*Eddy Current Conductivity Meter	Conductivity	C. S. for Eddy Current Conductivity Meters JJF 1692	(1~100)%IACS	$U=(0.05\sim 0.5)\% \text{IACS}$		
149	RF and Microwave Power Meters	Reference Source Power	C.S.for RF and Microwave Power Meters JJF1885	1mW (50MHz)	$U_{\text{rel}}=1.1\%$		



No. CNAS L0954

第 145 页 共 177 页

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

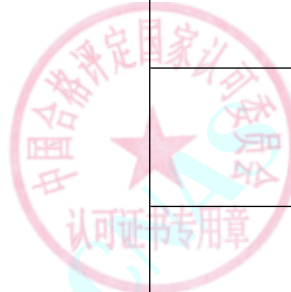
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Calibration Factor	ilac-MRA CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	0.5~2 (1 μ W~10mW,10MHz~8GHz)	U _{rel} =1.4%		
				0.5~2 (1 μ W~10mW,8GHz~18GHz)	U _{rel} =2.1%		
				0.5~2 (1 μ W~10mW,18GHz~26.5GHz)	U _{rel} =3.4%		
				0.5~2 (1 μ W~10mW,26.5GHz~40GHz)	U _{rel} =5.6%		
		Linearity		-20dBm~10dBm (50MHz~1GHz)	U=0.09 dB		
				VSWR	1~3 (10MHz~4GHz)		U=0.02
		1~3 (4GHz~22GHz)			U=0.03		
		1~3 (22GHz~40GHz)			U=0.04		
150	*Magnetic Yoke Detectors	Electric current	Calibration Specification for Magnetic Yoke Detectors JJF1458	(0.1~20)A	U=0.3A		
		Force		(1~300)N	U=8N		
151	RF and Microwave Power Sensors	Calibration Factor	C.S.for RF and Microwave Power Sensors JJF1887	0.5~2 (1 μ W~10mW,10MHz~8GHz)	U _{rel} =1.4%		
				0.5~2 (1 μ W~10mW,8GHz~18GHz)	U _{rel} =2.1%		
				0.5~2 (1 μ W~10mW,18GHz~26.5GHz)	U _{rel} =3.4%		



No. CNAS L0954

第 146 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				0.5~2 (1 μ W~10mW,26.5GHz~40GHz)	<i>U</i> _{rel} =5.6%		
		ReflectionCoefficient		0~0.5 (10MHz~4GHz)	<i>U</i> =0.009		
				0~0.5 (4GHz~22GHz)	<i>U</i> =0.010		
				0~0.5 (22GHz~40GHz)	<i>U</i> =0.015		
VI Time&Frequency							
1	*Crystal Oscillator inside the Electrical Measuring Instrument	Frequency	C. S. for Crystal Oscillator inside the Electrical Measuring Instrument JJF 1984	1s Frequency Stability:1MHz、5MHz、10MHz、100MHz	<i>U</i> _{rel} =1.5×10 ⁻¹¹ ~8×10 ⁻¹²		
				Relative frequency deviation:1MHz、5MHz、10MHz、100MHz	<i>U</i> _{rel} =3×10 ⁻¹⁰		
				Daily aging rate:1MHz、5MHz、10MHz、100MHz	<i>U</i> _{rel} =8×10 ⁻¹²		
				frequency reproducibility:1MHz、5MHz、10MHz、100MHz	<i>U</i> _{rel} =3×10 ⁻¹⁰		
				开机特性:1MHz、5MHz、10MHz、100MHz	<i>U</i> _{rel} =3×10 ⁻¹⁰		



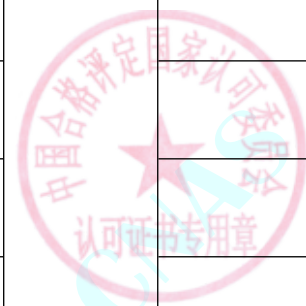
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No. CNAS L0954

第 147 页 共 177 页

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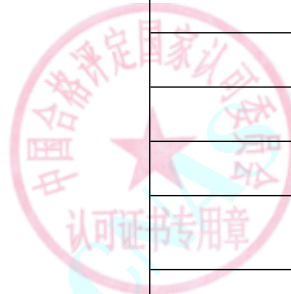
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
2	Time Interval Generator	Frequency	V.R. of Time Interval Generator JJG 601	5MHz,10MHz	$U_{rel}=2 \times 10^{-10}$		
		time interval		100 μ s~86400s	$U=1 \mu s$		
3	*Online Timer	Time	C. S. for Online Timer JJF(Liao) 492	1s~18000s	$U=0.58s$		
4	Rubidium Atomic Frequency Standard	Amplitude	C. S. for Rubidium Atomic Frequency Standards JJF 1957	0.5V~5V	$U_{rel}=2.4\%$		
		Non-harmonic		1MHz,5MHz,10MHz	$U=2dB$		
		harmonic		1MHz,5MHz,10MHz	$U=2dB$		
		phase noise		1MHz,5MHz,10MHz	$U=3dB$		
		Pulse Width		400ns~200ms	$U_{rel}=0.024\%$		
		Rise Time		1ns~10ns	$U=0.4ns$		
		time interval		20ns~500ns	$U=8ns$		
		frequency		Frequency Stability: 1MHz,5MHz,10 MHz	$U_{rel}=1.3 \times 10^{-13}$		
			Relative frequency deviation: 1MHz,5MHz,10 MHz	$U_{rel}=1 \times 10^{-11}$			
			Daily Frequency Drift Rate: 1MHz,5MHz,10MHz	$U_{rel}=1 \times 10^{-13}$			
			frequency reproducibility: 1MHz,5MHz,10MHz	$U_{rel}=1.2 \times 10^{-12}$			
				Frequency adjustment: 1MHz,5MHz,10MHz	$U_{rel}=1 \times 10^{-11}$		



No. CNAS L0954

第 148 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
5	Quartz Crystal Frequency Standards	Frequency stability	V.R. of Quartz Crystal Frequency Standards JJG 181	1 MHz, 5 MHz, 10 MHz	<i>U</i> _{rel} =5.0×10 ⁻¹²		
		Daily Aging rate		1 MHz, 5 MHz, 10 MHz	<i>U</i> _{rel} =5.0×10 ⁻¹³		
		Frequency accuracy		1 MHz, 5 MHz, 10 MHz	<i>U</i> _{rel} =2.6×10 ⁻¹¹		
		Phase noise		1MHz,5MHz,10MHz	<i>U</i> =3dB		
6	Stopwatch	Time	V.R. of Stopwatches JJG 237	Mechanical Stopwatch: 1s~1800s	<i>U</i> =0.1 s		
				Electronic stopwatch: 1s~3600s	<i>U</i> =0.01 s		
				Electric Stopwatch: 1s~ 60s	<i>U</i> =0.001 s		
				Electric Stopwatch: 60s~600s	<i>U</i> =0.002 s		
		Day difference		-99.99s~99.99s	<i>U</i> =0.05s		
7	*Universal Counter	Warm up	V.R. of the Universal Counters JJG 349	1 MHz, 5 MHz, 10 MHz	<i>U</i> _{rel} =2.0×10 ⁻⁹		
		Frequency accuracy		1 MHz, 5 MHz, 10 MHz	<i>U</i> _{rel} =2.0×10 ⁻⁹		
		Frequency		10 Hz~18 GHz	<i>U</i> _{rel} =2.0×10 ⁻⁹		
		Time interval		50ns~10000s	<i>U</i> =15ns		
		Period		1ns~100s	<i>U</i> _{rel} =2.0×10 ⁻⁹		
		Input sensitivity		-33dBm~-15dBm (>1GHz~18GHz)	<i>U</i> _{rel} =2dB		
				20 mV~300mV (10Hz~1GHz)	<i>U</i> =5mV		



No. CNAS L0954

第 149 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				20 mV~300mV (10ns~100s)	$U=5\text{mV}$		
				-33dBm~-15dBm (1ns~10ns)	$U_{\text{rel}}=2\text{dB}$		
8	Frequency Comparator	Comparison uncertainty	V.R. of Frequency Comparators JJG 545	5MHz、 10MHz,(Sampling time 1ms)	$U_{\text{rel}}=2.2 \times 10^{-12}$		
				5MHz、 10MHz,(Sampling time 10ms)	$U_{\text{rel}}=4.0 \times 10^{-13}$		
				5MHz、 10MHz,(Sampling time 100ms)	$U_{\text{rel}}=3.0 \times 10^{-13}$		
				5MHz、 10MHz,(Sampling time 1s)	$U_{\text{rel}}=2.4 \times 10^{-14}$		
				5MHz、 10MHz,(Sampling time 10s)	$U_{\text{rel}}=2.2 \times 10^{-14}$		
				5MHz、 10MHz,(Sampling time 100s)	$U_{\text{rel}}=6.0 \times 10^{-15}$		
				-10dBm~20dBm	$U_{\text{rel}}=3\text{dB}$		
		Input sensitivity					
9	Vibrating wire frequency readout	frequency	Calibration Specification for Vibrating wire frequency readouts JJF 1401	300Hz~6kHz	$U=0.005\text{Hz}$		
10	*Pulse counter	Count value	Calibration Specification for Pulse Counters JJF1686	1~1000000	$U=1$		



No. CNAS L0954

第 150 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
11	Frequency Meters	Frequency	Verification Regulation of Frequency Meters JJG 603	10Hz~10kHz	$U_{\text{rel}}=5 \times 10^{-5}$		
12	Microwave Frequency Counters	frequency	V.R. of Microwave Frequency Counters JJG 841	5MHz,10MHz	$U_{\text{rel}}=2 \times 10^{-10}$		
				100kHz~40GHz	$U_{\text{rel}}=1 \times 10^{-9}$		
		Input sensitivity		-33dBm~-15dBm (>1GHz~40GHz)	$U_{\text{rel}}=1\text{dB}$		
				(20~300) mV (100kHz~1GHz)	$U=5\text{mV}$		
13	Instantaneous Daily Clock Time Difference Testers	frequency	V.R. of Instantaneous Daily Clock Time Difference Testers JJG 488	Built-in quartz oscillator frequency deviation: 5MHz,10MHz	$U_{\text{rel}}=1 \times 10^{-9}$		
		Daily Clock Time Difference		-99.99 s~99.99 s	$U=0.01\text{s}$		
		Daily Clock Time Difference		-9.999 s~9.999 s	$U=0.001\text{s}$		
14	Calibration Specification for Electronic time relay	time interval	C. S. for Electronic time relay JJF 1282	0.09s~7200s	$U=0.004\text{s}$		
15	Time Interval Meters	time interval	V.R. of Time Interval Meters JJG 238	50ns~10000s	$U=15\text{ns}$		
		Frequency		5MHz,10MHz	$U_{\text{rel}}=1 \times 10^{-9}$		
VII Optics							
1	Cold Filter Plugging Point Meter	transmittance	V.R. of Reference Filter for Calibration Spectrophotometer JJG 1034	(0.1~100)%	$U=0.4\%$		
		wavelength		(200~900)nm	$U=0.3\text{nm}$		
2	Abbe Refractometer	Refractive index	V.R. of Abbe Refractometer JJG 625	1.47076~1.67292	$U=6 \times 10^{-5}$		



No. CNAS L0954

第 151 页 共 177 页

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

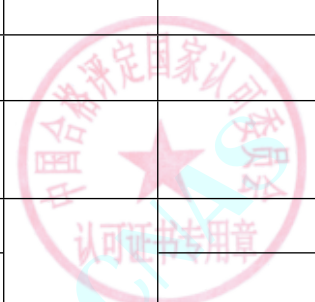
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		dispersion		0.007~0.020	$U=6 \times 10^{-5}$		
3	Luminance Meter	luminance	V.R.of Luminance Meter JJG 211	(10~1000) cd/m ²	$U_{rel}=2.4\%$		
		Chromaticity coordinates		x,y: (0~1)	$U=0.01$		
4	Illuminance Meter	Illuminance	V.R.of Illuminance Meter JJG 245	(20~5000)lx	$U_{rel}=1.2\%$		
5	Interference Filter	transmittance	V.R.of Interference Filter JJG 812	(0.1~100)%	$U=0.4\%$		
		wavelength		(200~900)nm	$U=0.3nm$		
6	Colorimeters and Colour Difference Meters	Chroma	V.R.of Colorimeters and Colour Difference Meters JJG 595	Y: (1~100)	$U=1.8$		
				x,y: (0~1)	$U=0.0048$		
7	Whiteness Meter	Chroma	V.R.of Whiteness Meter JJG 512	Y: (1~100)	$U=2.1$		
8	Colour Plates	Chroma	V.R.of Colour Standard Plates JJG 453	Y: (0.1~100)	$U=2.0$		
				x,y: (0~1)	$U=0.0048$		
9	Specular Gloss Meter and Gloss Plates	Glossiness	V.R.of Specular Gloss Meters and Gloss Plates JJG 696	Specular Gloss Meter: 85°, 60°, 20° (0~120)	$U=1.0GU$ (scale division 0.1GU); 1.6GU (scale division 1GU)		
				Gloss Plates: 85°, 60°, 20° (0~120)GU	$U=1.2GU$		
10	Focimeters	Focal power	V.R.of Focimeters JJG 580	(-25m ⁻¹ ~+25m ⁻¹)	$U=0.03m^{-1}$		
11	Trial Case Lenses	Focal power	V.R.of Trial Case Lenses JJG 579	(-20m ⁻¹ ~+20m ⁻¹)	$U=0.03m^{-1}$		
12	Petroleum Colorimeter	Chroma	C.S. for Petroleum Products Colorimeters & Filters JJF 1526	x,y: (0~1)	$U=0.008$ Automatic instrument		



No. CNAS L0954

第 152 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		transmittance		(1~100)%	U=2.1% Automatic instrument		
13	Diffuse Transmission Visual Densitometer	Photographic Density	V.R. of Diffuse Transmission Visual Densitometer JJG 920	D:(>0~2)	U=0.02		
				D:(>2~4)	U=0.03		
14	Optical step tablet	Photographic Density	V.R. of Black and White Step Tablet JJG 452	D:(>0~2)	U=0.02		
				D:(>2~4)	U=0.03		
15	Luminous Spectral Power	Wavelength	Calibration Method of Luminous Spectral Power Distribution JFZ (JLBZ-O-02)07	(200~900)nm	U=0.3nm		
16	Reflectometers	reflectivity	Calibration Specification for Reflectometers JJF1232	70~100	U=2.2		
17	Ultraviolet Radiometers	Ultraviolet irradiance	Ultraviolet Radiometers JJG879	UV-A ₁ : (10~2000) μ W/cm ²	U _{rel} =14%		
				UV-B: (10~1000) μ W/cm ²	U _{rel} =14%		
				UV-UV-C: (10~1000) μ W/cm ²	U _{rel} =14%		
18	*Lasers for Medicine	Optical power	V.R. of Lasers for Medicine JJG 581	(20~200)W	U _{rel} =3%		
19	*Medical imaging diagnosis display systems	Luminance	Calibration Specification of Medical Imaging Diagnosis Display Systems JJF 1746	(50~1000)cd/m ²	U _{rel} =2.2%		
20	*Hazemeters	Haze	C.S. for Calibration Specification for Hazemeter JJF 1303	0~30	U=0.52		
		Transmittance		0.70~1.00	U=0.011		
21	*Clarity test	Illuminance	Calibration Specification for	(100~3000) lx	U _{rel} =10%		

No. CNAS L0954

第 153 页 共 177 页



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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	equipments	Time	Clarity Test Equipment JJF 1287	(10~1800) s	U=0.4s		
22	*Standard light sources color boxes	Illuminance	Calibration Specification for Standard Light Sources Color Boxes JJF(Liao) 245	(30~3000) lx	U _{rel} =5%		
		CCT		(2300~3000) K	U=32K		
				(>3000~5500) K	U=56K		
				(>5500~7000) K	U=1.1×10 ² K		
23	Industrial film viewer	Luminance	C. S.for Industrial Film Viewer JJF(Liao)244	(50~3×10 ⁵)cd/m ²	U _{rel} =3.2%		
24	Standard Neutral Filters for Automobile Test Equipmen	Transmittance	C. S. of Standard Neutral Filters for Automobile Test Equipmen JJF2046	0.1~1	U=0.006		
VIII Chemical							
1	*Alarmer Detector of Combustible Gases	Concentration	V. R. of Alarmer Detector of Combustible Gases JJG 693	(0.1~100)%LEL	U _{rel} =1.1%	Accredited only for isobutane, methane, hydrogen, propane	
2	*Atomic Absorption Spectrophotometer	Limit of Detection	V. R. of Atomic Absorption Spectrophotometers JJG 694	Cu: ≤0.02μg/ml	U=0.004μg/ml		
				Cd: ≤4 pg	U=0.03 pg		
3	*Gas Chromatograph	Sensibility	V. R. of Gas Chromatographs JJG 700	TCD: ≥800 mV • mL/mg (benzene、methane)	U _{rel} =3.3%		
		Limit of Detection		FID:≤0.5 ng/s(N-hexadecane、methane)	U _{rel} =3.3%		

No. CNAS L0954

第 154 页 共 177 页



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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				ECD: ≤ 5 pg/mL	$U_{\text{rel}}=3.3\%$		
				FPD(S): ≤ 0.5 ng/s(Parathion methyl)	$U_{\text{rel}}=3.3\%$		
				FPD(P): ≤ 0.1 ng/s(Parathion methyl)	$U_{\text{rel}}=3.3\%$		
				NPD(N): ≤ 5 pg/s(azobenzene)	$U_{\text{rel}}=5.1\%$		
				NPD(P): ≤ 10 pg/s(malathion)	$U_{\text{rel}}=5.1\%$		
4	*Liquid chromatographs	Minimum Detectable Concentration	V. R. of Liquid Chromatographs JJG 705	Ultraviolet Visible spectrum detector/diode array detector: $\leq 5.0 \times 10^{-8}$ g/mL (naphthalene)	$U_{\text{rel}}=4.2\%$		
				Fluorescence detector: $\leq 5.0 \times 10^{-9}$ g/mL (naphthalene)	$U_{\text{rel}}=4.2\%$		
				Differential refraction detector: $\leq 5.0 \times 10^{-6}$ g/mL (cholesterol)	$U_{\text{rel}}=5.2\%$		
				evaporative light-scattering detector: $\leq 5.0 \times 10^{-6}$ g/mL (cholesterol)	$U_{\text{rel}}=5.2\%$		
5	Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer	Concentration	V. R. of Carbon Monoxide and Carbon Dioxide Infrared Gas Analyzer JJG 635	CO: (0.1~5000) μ mol/mol	$U_{\text{rel}}=1.1\%$		
		Concentration		CO ₂ : (0.1~5)%	$U_{\text{rel}}=1.1\%$		



No. CNAS L0954

第 155 页 共 177 页

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

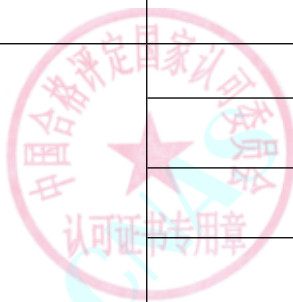
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
6	*Electrochemical Oxygen meter	Concentration	V. R. of Electrochemical Oxygen meter JJG 365	(0.1~100)%	$U_{rel}=1.1\%$		
7	*Carbon-Sulfur Analyzer	Concentration	V. R. of Carbon-Sulfur Analyzer JJG 395	Infrared carbon sulfur analyzer:C: 0.0079%~0.010%	$U=0.0007\%$		
				Infrared carbon sulfur analyzer:C: 0.010%~0.100%	$U=0.004\%$		
				Infrared carbon sulfur analyzer:C: 0.100%~1.00%	$U=0.007\%$		
				Infrared carbon sulfur analyzer:C: 1.00%~4.00%	$U=0.04\%$		
				Infrared carbon sulfur analyzer:S: 0.006%~0.010%	$U=0.0004\%$		
				Infrared carbon sulfur analyzer:S: 0.010%~0.100%	$U=0.003\%$		
				Infrared carbon sulfur analyzer:S: 0.100%~0.107%	$U=0.004\%$		
				Automatic carbon and sulfur analyzer: C: 0.042%~0.100%	$U=0.004\%$		
				Automatic carbon and sulfur analyzer: C: 0.100%~0.500%	$U=0.007\%$		



No. CNAS L0954

第 156 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Automatic carbon and sulfur analyzer: C: 0.500%~1.000%	$U=0.007\%$		
				Automatic carbon and sulfur analyzer: C: 1.00%~2.40%	$U=0.04\%$		
				Automatic carbon and sulfur analyzer: S: 0.004%~0.010%	$U=0.0004\%$		
				Automatic carbon and sulfur analyzer: S: 0.010%~0.050%	$U=0.003\%$		
				Automatic carbon and sulfur analyzer: S: 0.050%~0.100%	$U=0.003\%$		
				Automatic carbon and sulfur analyzer: S: 0.100%~0.107%	$U=0.004\%$		
8	*Carbon Monoxide Detector	Concentration	V. R. of Carbon Monoxide Detectors JJG 915	(0.1~2000) μ mol/mol	$U_{rel}=1.1\%$		
9	Flue Gas Analyzers	Concentration	V. R. of Flue Gas Analyzers JJG 968	O ₂ : (4~20)%	$U_{rel}=1.6\%$		
				CO: (100~1600) μ mol/mol	$U_{rel}=1.3\%$		
				SO ₂ : (80~500) μ mol/mol	$U_{rel}=2.2\%$		
				NO: (100~500) μ mol/mol	$U_{rel}=2.2\%$		



No. CNAS L0954

第 157 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
10	*Catalysis Combustion Type Methane Measuring Device	Concentration	V. R. of Catalysis Combustion Type Methane Measuring Device JJG 678	(0.5~3)%	$U_{rel}=1.1\%$		
11	*Quadrupole Inductively Coupled Plasma Mass Spectrometers	Limit of Detection	C. S. for Quadrupole Inductively Coupled Plasma Mass Spectrometers JJF 1159	Be: ≤ 30 ng/L In: ≤ 10 ng/L Bi: ≤ 10 ng/L	$U=0.91$ ng/L $U=0.09$ ng/L $U=0.07$ ng/L		
12	*Ultraviolet, Visible Spectrophotometers	Transmittance	V. R. of Ultraviolet, Visible, Near-Infrared Spectrophotometers JJG 178	(0~100)%	$U=0.3\%$	Accredited except for grade I Spectrophotometer	
		Wavelength		(190~360)nm (360~900)nm	$U=0.3$ nm $U=0.5$ nm		
13	Working Capillary Viscometer	Viscosity	V. R. of Working Capillary Viscometer JJG 155	(1~3)mm ² /s (3~15)mm ² /s (15~80)mm ² /s (80~500)mm ² /s (500~1500)mm ² /s (1500~5500)mm ² /s (5500~25000)mm ² /s (25000~125000)mm ² /s	$U_{rel}=0.36\%$ $U_{rel}=0.38\%$ $U_{rel}=0.40\%$ $U_{rel}=0.44\%$ $U_{rel}=0.48\%$ $U_{rel}=0.52\%$ $U_{rel}=0.56\%$ $U_{rel}=0.62\%$		
14	Rotational Viscometers	Viscosity	V. R. of Rotational Viscometers JJG 1002	(1~125000)mPa·s	$U_{rel}=2.2\%$		
15	Kinematic Viscosity Tester	Viscosity	C. S. for Kinematic Viscosity Tester JJF 1274	(1~9) mm ² /s	$U_{rel}=1.1\%$		



No. CNAS L0954

第 158 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(9~100)mm ² /s	$U_{rel}=0.78\%$		
				(100~1000) mm ² /s	$U_{rel}=0.88\%$		
				(1000~9000) mm ² /s	$U_{rel}=1.0\%$		
				(9000~30000) mm ² /s	$U_{rel}=1.1\%$		
16	*Electrolytic Conductivity Meter	Conductivity	V. R. of Electrolytic Conductivity Meters JJG 376	Instrument: (147~1410) μ S/cm (25°C)	$U_{rel}=0.3\%$		
				Electronic Unit: (0.05~10 ⁵) μ S/cm	$U_{rel}=0.2\%$		
17	Dust Samplers	flow	V. R. of Dust Samplers JJG 520	(1~30)L/min	$U_{rel}=1.5\%$		
18	*Extrusion Plastometer	Rate of fusant flow	V. R. of Extrusion Plastometer JJG 878	1.6 g/10min ~4.1 g/10min	$U= (0.16\sim0.39) \text{ g/10min}$		
19	*Open /Closed Cup Flash Point Tester	losed flash point	C. S. for Open /Closed Cup Flash Point Testers JJF 1384	(70~178)°C	$U=5.8^{\circ}\text{C}$		
		Open flash point		(119~230)°C	$U=9.0^{\circ}\text{C}$		
20	*Distillation	Temperature	Calibration method of Petrification type instrument JFZ(JZDA-C-A1)-01	Distillation(203~329)°C	$U=3.1^{\circ}\text{C}$		
				Cold Filter Plugging Point Meter:-36°C~0.2°C	$U=2.8^{\circ}\text{C}$		
				Freezing Point Meter:-54°C	$U=2.0^{\circ}\text{C}$		
21	Airborne Particle Counter	partical diameter	C.S. for Airborne Paticle Counter JJF 1190	0.5 μ m particle size: (1~3×10 ⁵) pcs/28.3L	$U_{rel}=14\%$		
22	Air Samplers	flow	V.R. of Air Samplers JJG956	(100~1000) mL/min	$U_{rel}=1.1\%$		
				(1000~6000) mL/min	$U_{rel}=0.6\%$		



No. CNAS L0954

第 159 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
23	Samplers for Stack Dust	flow	V.R. of Samplers for Stack Dust JJG680	(6~100)L/min	$U_{rel}=0.7\%$		
24	Total Suspended Particulates Samplers	flow	V. R. of Total Suspended Particulates Sampler JJG 943	(100~1200) L/min	$U_{rel}=0.4\%$		
25	*Capillary Electrophoresis Instrument	Detection Limit	V. R. of Capillary Electrophoresis Instruments JJG 964	(0~1×10 ⁻⁶ g/mL)	$U=1.9\times 10^{-8}$ g/mL		
26	*Flame Photometer	Detection Limit	V. R. of Flame Photometer JJG 630	K: ≤0.004mmol/L	$U=0.001$ mmol/L		
				Na: ≤0.008mmol/L	$U=0.002$ mmol/L		
27	*Disintegration Analyzers	Disintegration time	C. S. for Disintegration Analyzers JJF 1449	(1~500)s	$U_{rel}=13\%$		
28	*Mercury Analyzers	Detection Limit	V. R. of Mercury Analyzers JJG 548	Absorption: ≤1.0ng	$U=0.03$ ng		
				Fluorescence: ≤0.1ng	$U=0.02$ ng		
29	*Chemical Oxygen Demand(COD)Meters	Concentration	V. R. of Chemical Oxygen Demand(COD)Meters JJG 975	(0.1~1000)mg/L	$U_{rel}=0.3\%\sim 0.9\%$		
30	*Instrument for KF Coulometry Titration	water content	V. R. Instrument for KF Coulometry Titration JJG 1044	(10~5000) μg	$U_{rel}=2\%$		
31	*Determinators for Total Sulfur in Coal	Concentration	V. R. Determinators for Total Sulfur in Coal JJG 1006	(0.3~1.00) %	$U=0.04\%$		
				(1.00~4.00) %	$U=0.03\%$		
				(4.00~6.00) %	$U=0.07\%$		
32	*Thermogravimetric Moisture Meters	water content	V. R. Thermogravimetric Moisture Meters JJG 658	95%	$U=0.08\%$		
		mass		(0.001~500)g	$U=0.5$ mg		



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No. CNAS L0954

第 160 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
33	*Sulfur Hydrogen Gas Detectors	Concentration	V. R. of Sulfur Hydrogen Gas Detectors JJG 695	(1~1000) μ mol/mol	$U_{rel}=1.6\%$		
34	Wood Moisture Content Measuring Meters	Moisture Content	V. R. Wood Moisture Content Measuring Meters JJG 986	6%~28%	$U_{rel}=1.7\%$		
35	*Sulfur Dioxide Gas Detectors	Concentration	V.R. Sulfur Dioxide Gas Detectors JJG551	$(0.01\sim 500)\times 10^{-6}$	$U_{rel}=2.0\%$		
36	*Paramagnetic Oxygen Analyzers	Concentration	V. R. Paramagnetic Oxygen Analyzer JJG 662	(0.1~100) %	$U_{rel}=1.2\%$		
37	*Micro Oxygen Analyzers	Concentration	V. R. Micro Oxygen Analyzers JJG 945	(0.1~10) μ mol/mol	$U_{rel}=1.4\%$		
				(10~100) μ mol/mol	$U_{rel}=1.6\%$		
				(100~1000) μ mol/mol	$U_{rel}=1.6\%$		
38	*Zirconia Oxygen Analyzers	Concentration	V. R. Zirconia Oxygen Analyzers JJG 535	(0.1~100) %	$U_{rel}=1.2\%$		
39	*Turbidimeters	Turbidity	V. R. of Turbidimeters JJG 880	(1~400) NTU	$U_{rel}=3.1\%$		
40	*The Alarmer of Ammonia Gas	Concentration	V. R. of Ammonia Gas Detectors JJG 1105	(10~50) μ mol/mol	$U_{rel}=2.0\%$		
				(50~1000) μ mol/mol	$U_{rel}=1.8\%$		
41	Dissolved Oxygen Meters	Concentration	V. R. of Dissolved Oxygen Meters JJG 291	(5~12) mg/L	$U=0.05$ mg/L		
42	*Total Organic Carbon Analyzer	Concentration	V. R. of Total Organic Carbon Analyzer JJG 821	TOC: (1~1000) mg/L	$U_{rel}=2.1\%$		
				IC: (1~1000) mg/L	$U_{rel}=2.1\%$		
43	*Analyzers for Oil Content in Water	Concentration	V. R. of Analyzers for Oil Content in Water JJG 950	(1~1000) mg/L	$U_{rel}=3.1\%$		
44	*Fluorescence Spectrophotometer	Detection Limit	V. R. of Fluorescence Spectrophotometer JJG 537	A classification: $<5\times 10^{-10}$ g/mL	$U=1.0\times 10^{-10}$ g/mL		



No. CNAS L0954

第 161 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				B 类: $<1 \times 10^{-8} \text{g/mL}$	$U=1.0 \times 10^{-8} \text{g/mL}$		
45	*Silicate Analyzers	concentration	C. S. for Silicate Analyzers JIF 1539	$(1 \sim 100) \mu \text{g/L}$	$U_{\text{rel}}=3.0\%$		
				$100 \mu \text{g/L} \sim 100 \mu \text{g/mL}$	$U_{\text{rel}}=2.6\%$		
46	*Formaldehyde Gas Analyzers	concentration	V. R. of Formaldehyde Gas Analyzers JJG 1022	$(0.1 \sim 1.5) \mu \text{mol/mol}$	$U_{\text{rel}}=3.4\%$		
47	*Ion Chromatographs	Minimum Detectable Concentration	V. R. of Ion Chromatographs JJG 823	$\text{Cl}^-: \leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=1.9\%$		
				$\text{Li}^+: \leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=2.0\%$		
				$\text{I}^+: \leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=2.0\%$		
				$\text{NO}_2^-: \leq 0.02 \mu \text{g/mL}$	$U_{\text{rel}}=2.7\%$		
48	*Volatile Organic Compounds Photo Ionization Detectors	Concentration	C. S. for Volatile Organic Compounds Photo Ionization Detectors JIF 1172	$(1 \sim 2000) \times 10^{-6}$	$U_{\text{rel}}=3\%$		
49	Ozone Gas Analyzers	Concentration	V. R. of Ozone Gas Analyzers JJG 1077	$(0.2 \sim 1) \mu \text{mol/mol}$	$U_{\text{rel}}=1.8\%$		
				$(1 \sim 400) \mu \text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
50	*Sulfur Hexafluoride	Concentration	C. S. for the Alarmer Detector of Sulfur Hexafluoride JIF 1263	$(1 \sim 1000) \mu \text{mol/mol}$	$U_{\text{rel}}=1.1\%$		
51	Mud Density Meters	Density	V. R. of Mud Density Meters JJG 1045	$(0.500 \sim 3.500) \text{g/cm}^3$	$U=0.003 \text{g/cm}^3$		
52	*Coulometer	Concentration	C. S. n for Coulometers JIF (liao) 307	S, N, Cl: $(0.2 \sim 1000) \text{mg/L}$	$U= (0.05 \sim 8) \text{mg/L}$		
53	*ICP-Optics Emission Spectrometer	Detection Limit	V. R. of Emission Spectrometer JJG 768	Zn213.856nm: $\leq 0.003 \text{mg/L}$	$U=0.00036 \text{mg/L}$		



No. CNAS L0954

第 162 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Ni231.604nm: $\leq$ 0.01mg/L	$U=0.0018\text{mg/L}$		
				Cr267.716nm: $\leq$ 0.007mg/L	$U=0.00067\text{mg/L}$		
				Mn257.610nm: $\leq$ 0.002mg/L	$U=0.00025\text{mg/L}$		
				Cu324.754nm: $\leq$ 0.007mg/L	$U=0.00063\text{mg/L}$		
				Ba455.403nm: $\leq$ 0.001mg/L	$U=0.00018\text{mg/L}$		
54	*Particulate Analyzer	Particulate Analyzer	C. S. for Particulate Analyzer JJF1290	(1000~2300) Grain/mL	$U_{\text{rel}}=12\%$		
55	*Melting-point Measurement Instruments	Melting-point	V. R. of Melting-point Measurement Instruments JJG 701	(40~300) °C	$U=(0.05\sim0.2)^\circ\text{C}$		
56	*Atomic Fluorescence Spectrophotometer	Detection Limit	V. R. of Atomic Fluorescence Spectrophotometers JJG 939	$\leq 0.4\text{ ng(As, Sb)}$	$U=0.022\text{ ng}$		
57	*Gas Chromatography-Mass Spectrometries	signal-to-noiseratio	C. S. for Gas Chromatography-Mass Spectrometries JJF1164	Octafluoronaphthalene:S/ $N\geq 10:1$	$U_{\text{rel}}=15\%$		
58	*Laboratory pH Meters	pH	V. R. of Laboratory pH Meter JJG 119	Instrument:0~14.00	$U=0.02$	Accredited except for grade 0.001pH Meters	
				Electrometer:0~14.00	$U=0.01$		
		Voltage		(-2000~2000) mV	$U=1\text{ mV}$		
59	*Bomb Calorimeter	calorific value	V. R. of the Bomb Calorimeter JJG 672	(2.64~2.65) $\times 10^4\text{ J/g}$	$U_{\text{rel}}=0.2\%$		
60	*laboratory Ionometer	pX	V. R. of Laboratory Ion Meters JJG 757	Instrument: 2~4	$U=0.02$		



No. CNAS L0954

第 163 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Electrometer: 0~14	$U=0.01$		
		Voltage		(-2000~2000) mV	$U=1$ mV		
61	*Polarimeter	Polarization	V. R. of Polarimeter and Ploarimetric Saccharimeters JJG 536	$-35^{\circ} \sim 35^{\circ}$	$U=0.003^{\circ}$		
62	*Direct Reading Emission Spectrometer	Detection Limit	V. R. of Emission Spectrometer JJG 768	C: $\leq 0.005\%$	$U=0.00038\%$		
				Si: $\leq 0.005\%$	$U=0.00045\%$		
				Mn: $\leq 0.003\%$	$U=0.0003\%$		
				Cr: $\leq 0.003\%$	$U=0.00033\%$		
				Ni: $\leq 0.005\%$	$U=0.00035\%$		
				V: $\leq 0.001\%$	$U=0.00012\%$		
				Al、As、B、Co、Cu、Mo、Nb、P、S、Sn、Ti: $\leq 0.02\%$	$U=(0.0004 \sim 0.004)\%$		
63	*Static Light Scattering Particle Size Analyzers	median diameter of weight distribution	C.S. for Static Light Scattering Particle Size Analyzers JJF 1211	(1~120) μm	$U=(0.05 \sim 3.9) \mu\text{m}$		
64	*Hand Saccharimeter (Content-meter) and Hand Refractometer	Concentration of sugar	V. R. of Hand Saccharimeter (Content-meter) and Hand Refractometer JJG 820	(0~50.3) %	$U=0.3\%$		
		Refractive index		(1.3330~1.5200)	$U=0.0005$		

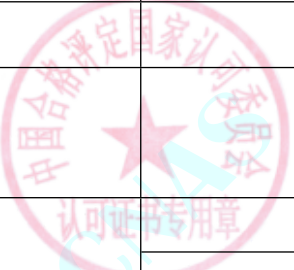


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No. CNAS L0954

第 164 页 共 177 页

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

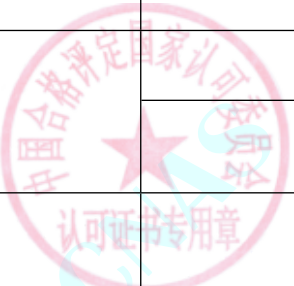
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
65	*Liquid Chromatography-Mass Spectrometers	signal-to-noiseratio	C. S. for Liquid Chromatography-Mass Spectrometers JJF 1317	$\geq 10:1$ (reserpine)	$U_{\text{rel}}=10\%$		
66	*Epoxyethane Analyzers	Concentration	C.S. of Epoxyethane Analyzers JJF (Liao) 438	$(0.1 \sim 100) \mu \text{mol/mol}$	$U_{\text{rel}}=3.4\%$		
67	*On-line pH Meters	pH	C.S. for On-line pH Meters JJF 1547	Instrument: $0 \sim 14.00$	$U=0.02$		
				Electrometer: $0 \sim 14.00$	$U=0.01$		
		Voltage		$(-2000 \sim 2000) \text{ mV}$	$U=1 \text{ mV}$		
68	*On-line Electrolytic Conductivity Meters	Electrolytic Conductivity	C.S. for On-line Electrolytic Conductivity Meters JJF(Liao) 410	Electronic unit: $(0.05 \sim 10^5) \mu \text{S/cm}$	$U=0.3\% \text{FS}$		
				Instrument: $(120 \sim 1420) \mu \text{S/cm}$	$U_{\text{rel}}=0.7\%$		
69	*Alarmer Detectors of Benzene	Concentration	C. S. for Alarmer Detectors of Benzenet JJF 1674	$(1 \sim 100) \mu \text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
70	*Chlorine Alarm Detectors	Concentration	C. S. for Chlorine Alarm Detectors JJF 1433	$(0.1 \sim 10) \mu \text{mol/mol}$	$U_{\text{rel}}=3.1\%$		
				$(>10 \sim 1000) \mu \text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
71	*EVAP tester	Pressure	C.S. for EVAP tester JJF(Liao) 451	$(0.1 \sim 10000) \text{ Pa}$	$U=0.06\% \text{FS}$		
72	*Karl Fischer Volumetric Titrators for Water Content	Water Content	V. R. of Karl Fischer Volumetric Titrators for Water Content JJG 1154	$(1 \sim 20000) \mu \text{g}$	$U_{\text{rel}}=2.0\%$		
73	*Differential Scanning Calorimeters	Temperature	V.R. of Differential Scanning Calorimeters JJG 936	In: 156.52°C	$U=0.30^\circ \text{C}$		
				Sn: 231.81°C	$U=0.13^\circ \text{C}$		



No. CNAS L0954

第 165 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		thermal value		Pb: 327.77 °C	$U=0.48^{\circ}\text{C}$		
				Zn: 420.67 °C	$U=0.62^{\circ}\text{C}$		
				KNO ₃ : 130.45°C	$U=0.46^{\circ}\text{C}$		
				SiO ₂ :574.29°C	$U=0.95^{\circ}\text{C}$		
				In: 28.53J/g	$U_{\text{rel}}=1.2\%$		
				Sn: 60.24J/g	$U_{\text{rel}}=0.4\%$		
				Pb: 23.02J/g	$U_{\text{rel}}=1.4\%$		
				Zn: 107.6J/g	$U_{\text{rel}}=1.3\%$		
74	*On-line Automatic Determinators of Chemical Oxygen Demand(COD)	Concentration	V. R. of On-line Automatic Determinators of Chemical Oxygen Demand(COD) JJG 1012	(16~1000)mg/L	$U_{\text{rel}}=2.6\%$		
75	*Ammonia-Nitrogen Automatic Analyzers	Concentration	V. R. of Ammonia-Nitrogen Automatic Analyzers JJG 631	(0.1~100)mg/L	$U_{\text{rel}}=2.3\%$		
76	*Water Quality On-line Analyzers of Total Phosphorus and Total Nitrogen	concentration	V. R. of Water Quality On-Line Analyzers of Total Phosphorus and Total Nitrogen JJG 1094	Total Phosphorus:(0.1~10)mg/L	$U_{\text{rel}}=3\%$		
				Total Nitrogen:(0.1~50)mg/L	$U_{\text{rel}}=3\%$		
77	*Fourier Transform Infrared Spectrometers	wave number	C. S. for Fourier Transform Infrared Spectrometers JJF 1391	4000cm ⁻¹ ~400cm ⁻¹	$U=0.6\text{cm}^{-1}$		
78	*Automatic Potentiometric Titrators	Voltage	V. R. of Automatic Potentiometric Titrators JJG	(-2000~+2000)mV	$U=0.24\text{mV}$		

No. CNAS L0954

第 166 页 共 177 页



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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Titrators	Capacity	814	(0.01~100)mL	$U=0.001\text{mL}$		
		Concentration		(0.09~0.11)mol/L	$U_{\text{rel}}=0.7\%$		
79	*Pour Point and Cloud Point Testers of Petroleum Products	Pour Point	C. S. for Pour Point and Cloud Point Testers of Petroleum Products JJF1869	Pour Poin:(-2.0~-30.0)°C	$U=4.6^{\circ}\text{C}$		
		Cloud Point		Cloud Point:(0.0~-22.0)°C	$U=2.2^{\circ}\text{C}$		
80	*Elemental Analyzers	content	C. S. for Elemental Analyzers JJF 1321	ONH Elemental Analyzers:O:(0.0010~0.0200)%	$U_{\text{rel}}=7\%$		
				ONH Elemental Analyzers:N:(0.0010~0.1000)%	$U_{\text{rel}}=3\%$		
				ONH Elemental Analyzers: H:(0.0010~0.0020)%。	$U_{\text{rel}}=7\%$		
				CHN Elemental Analyzers:C:(40~80)%	$U_{\text{rel}}=0.6\%$		
				CHN Elemental Analyzers:H:(1.0~5.0)%	$U_{\text{rel}}=0.8\%$		
				CHN Elemental Analyzers:N:(0.4~1.5)%	$U_{\text{rel}}=1.3\%$		
				Kjeldahl Azotometer:N:(0.1~99.8)%	$U_{\text{rel}}=1.4\%$		
81	Aerosol Photometers	Mass Concentration	C. S. for Aerosol Photometers JJF 1800	(0.01~100)mg/L	$U=(7.2 \times 10^{-2} \sim 12) \mu\text{g/L}$		



No. CNAS L0954

第 167 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
82	*Blood Viscometers	Viscosity	C. S. for Blood Viscometers JJF 1316	(1~20)mPa · s	$U_{rel}=(0.4\sim0.6)\%$		
83	*Bacterial Endotoxin Analyzers	Temperature	C. S. for Bacterial Endotoxin Analyzers JJF 1529	37℃	$U=0.4^{\circ}\text{C}$		
84	*Ultraviolet Fluorescence Sulfur Analyzers	Content	C.S. for Ultraviolet Fluorescence Sulfur Analyzers JJF 1685	(1~10)mg/L (10~100)mg/L	$U=0.12\text{mg/L}$ $U_{rel}=3.1\%$		
85	*Sulfur X-ray Fluorescence Spectrometry Analyzers	Content	C.S. for Sulfur X-ray Fluorescence Spectrometry Analyzers JJF 1952	(0.05~1.02)%	$U_{rel}=2.2\%$		
86	*Industrial Analyzers	Ash Content	V.R. of Industrial Analyzers JJG 1140	10%~40%	$U=(0.13\sim0.26)\%$		
		Volatile Matter		5%~35%	$U=(0.30\sim0.41)\%$		
		Furnace Temperature		100℃~1000℃	$U=3^{\circ}\text{C}$		
		Mass		1g	$U=0.8\text{mg}$		
87	*Verifying Meter for Chromatograph	DC Voltage	V.R. for Verifying Meter for Chromatograph JJG 937	2mV~10V	$U_{rel}=1\times 10^{-4}$		
		DC Resistance		24 Ω ~64 Ω	$U_{rel}=5\times 10^{-5}$		
		Output DC Current		100 Ω ~300 Ω	$U_{rel}=3\times 10^{-5}$		
		Output Resistance		1mA	$U=0.002\text{mA}$		
				44 Ω 、200 Ω	$U=(0.001\sim0.003)\Omega$		
88	Verifying Meter for pH Meter	Voltage	V.R. of Verifying Meter for pH Meters JJG 919	(-2000~2000)mV	$U=0.003\%\text{FS}$		



No. CNAS L0954

第 168 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		D.C.RESISTANCE		(1~3)G Ω	$U_{rel}=1\%$		
		pH		0~14	$U=0.0002$		
89	*Micro-spectrophotometers	Concentrations	C. S. for Micro-spectrophotometers JJF1836	(10~2000)ng/ μ L	$U=(1.2\sim1.9\times10^2)$ ng/ μ L		
IX Radiation							
1	*Medical Radiation Source for γ -ray Afterloading Brachytherapy	Absorbed Dose	V.R.of Medical Radiation Source for γ -ray Afterloading Brachytherapy JJG 773	10mGy~10Gy	$U_{rel}=3.6\%$		
2	*Accelerator Used in Radiotherapy	Absorbed Dose	V.R.of Medical Electron Accelerator Radiation Source JJG 589	10mGy~10Gy	$U_{rel}=3.6\%$		
3	*Medical Diagnostic X-ray Radiation Source	Kerma Rate	V.R.of Medical Diagnostic X-ray Radiation Source JJG 744	(0.1~100.0)mGy/s	$U_{rel}=5\%$		
4	*Medical Electron Accelerator Radiation Source	Absorbed Dose	V.R.of Medical Electron Accelerator Radiation Source JJG 589	10mGy~10Gy	$U_{rel}=3.6\%$		
5	*X-ray Flaw Detectors	Kerma Rate	V.R.of X-ray Flaw Detectors JJG 40	0.1mGy/min~10Gy/min	$U_{rel}=4\%$		
6	*Medical Diagnostic X-ray Radiation Source for Spiral CT	Dose Index	V. R.of Medical radiation Source for Spiral CT JJG 961	(10~200)mGy	$U_{rel}=6.4\%$		

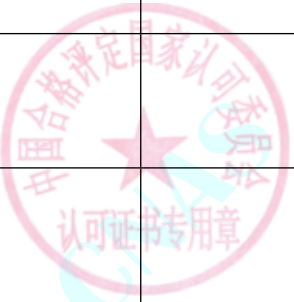


No. CNAS L0954

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第 169 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
7	*Ionization Chamber Dosimeters Used in Radiotherapy	Kerma	V.R.of Ionization Chamber Dosimeters Used in Radiotherapy JJG 912	$(1 \times 10^{-4} \sim 1) \text{ Gy}$	$U_{\text{rel}}=2.1\%$		
8	*X-ray Radiation Sources for Medical Computed Radiography System and Digital Radiography System	Air Kerma	V.R. of X-ray Radiation Sources for Medical Computed Radiography System and Digital Radiography System JJG 1078	$30 \text{ nGy} \sim 1 \text{ Gy}$	$U_{\text{rel}}=3.6\%$		
9	Radon Measuring Instruments	Volume Activity	V.R. of Radon Measuring Instruments JJG 825	$(370 \sim 1000) \text{ Bq} \cdot \text{m}^{-3}$	$U_{\text{rel}}=8\%$		
				$(>1000 \sim 3000) \text{ Bq} \cdot \text{m}^{-3}$	$U_{\text{rel}}=7.3\%$		
				$(>3000 \sim 20000) \text{ Bq} \cdot \text{m}^{-3}$	$U_{\text{rel}}=6.8\%$		
10	Portable Ambient Dose Equivalent(Rate) Meters and Monitors for X and gamma Radiations	Dose Equivalent Rate	V.R. of Portable Ambient Dose Equivalent(Rate) Meters and Monitors for X and gamma Radiations JJG 393	$(1 \sim 2000) \mu \text{ Sv/h}$	$U_{\text{rel}}=8\%$		
11	Personal Dose Equivalent Hp(10) Monitors for X and γ Radiations	personal dose equivalent	V.R. of Personal Dose Equivalent Hp(10) Monitors for X and γ Radiations JJG 1009	$(0.1 \sim 1000) \mu \text{ Sv}$	$U_{\text{rel}}=7\%$		
12	*Positron Emission Tomography / Computed tomography	Sensitivity	Calibration Specification for Positron Emission Tomography / Computed Tomography JJF(liao)364	$(3.7 \times 10^4 \sim 3.7 \times 10^{11}) \text{ Bq}$	$U_{\text{rel}}=6.4\%$		



No. CNAS L0954

第 170 页 共 177 页

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

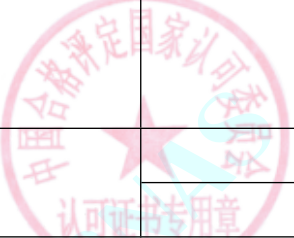
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
13	Diagnostic Dosimeters	Kerma	Calibration Specification for Diagnostic Dosimeters JJF1621	$(6 \times 10^{-5} \sim 1)$ Gy/min	$U_{\text{rel}}=2.9\%$		
X Medical Care							
1	*pulmonary function measuring instrument	Volume	C.S. for the pulmonary function measuring instrument JJF 1213	(0.1~10)L	$U_{\text{rel}}=0.62\%$		
		Flow		(2~14)L/s	$U_{\text{rel}}=2.4\%$		
2	*Hemoperfusion Equipment	Flow rate	C.S. for Hemoperfusion Equipment JJF 1633	(1~1000)mL/min	$U_{\text{rel}}=0.7\%$		
		Pressure		(-40~60)kPa	$U=0.2\text{kPa}$		
		Temperature		(25~50)°C	$U=0.2^{\circ}\text{C}$		
3	*Continuous Blood Purification Equipment	Flow rate	C.S. of Continuous Blood Purification Equipment JJF 1844	(1~1000)mL/min	$U_{\text{rel}}=0.7\%$		
		Pressure		(-70~80)kPa	$U=0.2\text{kPa}$		
		Quality		(0~6)kg	$U=0.5\text{g}$		
4	*Buoy Type Oxygen Inhalers	Pressure	V.R. of Buoy Type Oxygen Inhalers JJG 913	(0.1~25) MPa	$U_{\text{rel}}=2.0\%$		
		Flow rate		(1~10) L/min	$U_{\text{rel}}=1.9\%$		
5	*Baby Incubator	Temperature	C.S. for Baby Incubator JJF 1260	(30~40) °C	$U=0.2^{\circ}\text{C}$		
		Humidity		(30~90) %RH	$U=2\%\text{RH}$		
		Noise		(30~100) dB	$U=2.0\text{dB}$		
		Oxygen concentration		(30~40) %	$U=2\%$		
6	*Cardiopulmonary Resuscitators	Volume	C.S. of Cardiopulmonary Resuscitators JJF 1748	(200~1000) mL	$U_{\text{rel}}=5.6\%$		
		Pressing depth		(30~50)mm	$U_{\text{rel}}=1.2\%$		



No. CNAS L0954

第 171 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Frequency		(100~120) times / min	$U_{\text{rel}}=3.4\%$		
7	*Medical Suction Equipment	Pressure	C.S. for Medical Suction Equipment JJF 1810	Pressure: (-90~0) kPa	$U=1\text{kPa}$		
8	*cardiac defibrillators	Energy	C.S. for cardiac defibrillators JJF 1149	(1~360)J	$U_{\text{rel}}=5.8\%$		
9	*Plate Electrophoresis Apparatus	Voltage	C.S. for Plate Electrophoresis Apparatus JJF 1654	(0.01~1000) V	$U=1\text{V}$		
		Current		(0.01~1) A	$U=1\text{mA}$		
10	*Electrosurgical Generator	Power	C.S. For Electrosurgical Generator JJF 1217	(50~400) W	$U_{\text{rel}}=3.3\%$		
		electric current		(1~500) mA	$U_{\text{rel}}=6\%$		
11	*Electrolyte Analyzers	Concentration	V.R. of Electrolyte Analyzers JJG 1051	K^+ : (1.5~7.5) mmol/L	$U=0.22\text{mmol/L}$		
				Na^+ : (100~180) mmol/L	$U=3.8\text{mmol/L}$		
				Cl^- : (80~160) mmol/L	$U=2.7\text{mmol/L}$		
				Li^+ : (0.4~2.0) mmol/L	$U=0.02\text{mmol/L}$		
				iCa^+ : (0.5~2.5) mmol/L	$U=0.05\text{mmol/L}$		
12	Dust Concentration Measuring Instruments	Concentration	V.R. of Dust Concentration Measuring Instruments JJG 846	(1~8) mg/m^3	$U_{\text{rel}}=10\%$		
13	*ELISA analytical instruments	Absorbance	V.R. of ELISA analytical instruments JJG 861	0.2~1.6	$U=0.004$		
		wavelength		(405~630)nm	$U=1\text{nm}$		
14	*Urine Analyzers	pH	C.S. of Urine Analyzers JJF 1129	5.5 pH、6.5pH、7.6pH	$U_{\text{rel}}=4.2\%$		



No. CNAS L0954

第 172 页 共 177 页

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

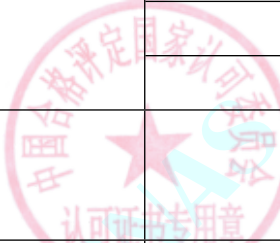
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		PRO Concentration		(0.1~2.0) g/L	$U_{rel}=4.2\%$		
		GLU Concentration		(0.1~50)mmol/L	$U_{rel}=2.4\%$		
		SG		0.995~1.030	$U=0.004$		
15	*Semiautomatic Clinical Chemistry Analyzers	Absorbance	V.R. of Semiautomatic Clinical Chemistry Analyzers JJG 464	A: (0.1~ 1)	$U=0.003$		
		Wavelength		(340~700)nm	$U=1.0\text{nm}$		
16	*Portable Blood Glucose Meters	Concentration	C.S. for Portable Blood Glucose Meters JJF 1383	(5.5~14) mmol/L	$U_{rel}=4\%$		
17	*Hemodialysis Equipment	Conductivity	C.S. for Hemodialysis Equipment JJF 1353	(12.5~15.5) mS/cm	$U_{rel}=1.7\%$		
		Acidity		pH: (1~14)	$U=0.04$		
		Temperature		(25~40) °C	$U=0.1\text{°C}$		
		Flow rate		(400~800) mL/min	$U_{rel}=4.5\%$		
18	*Medical magnetic resonance imaging system	Length	V.R.ofMedical magnetic resonance imaging system JJG(Liao) 53	(2~15)mm	$U_{rel}=3.4\%$		
19	*Multiparameter Physiological Simulators	Voltage	Calibration Specification for Multiparameter Physiological Simulators JJF 1470	(0.5~2) mV	$U_{rel}=0.5\%$		
				Amplitude ofReferenceWaves: (0.5~2) mV	$U_{rel}=0.5\%$		
				Bloodpressureanalog signal: (0.05~200) mV	$U_{rel}=0.4\%$		
		ECG rate		(30~300) BPM	$U_{rel}=0.2\%$		



No. CNAS L0954

第 173 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
		Respirationba sicimpedance		(500～2000) Ω	<i>U</i> _{rel} =0.2%			
		Resistance		Temperatureanalog signal: (1～100) k Ω	<i>U</i> _{rel} =0.2%			
				Cardiacoutput analogsignal: (10～ 20) k Ω	<i>U</i> _{rel} =0.2%			
				Frequency	(1～100) Hz			
20	*Ventilators	Volume	V.R.of Calibration Specification for Ventilators JJF1234	Tidal Volume: (400～ 800) mL	<i>U</i> _{rel} =3.2%			
21	*Syringe Pumps and Infusion Pumps	Flow	Calibration Specification for Syringe Pumps and Infusion Pumps JJF 1259	(5～20) mL/h	<i>U</i> _{rel} =2.6%			
				(>20～200) mL/h	<i>U</i> _{rel} =1.5%			
				(>200～1000) mL/h	<i>U</i> _{rel} =2.5%			
22	*Blood Cell Analyzers	Concentration	V.R.of Blood Cell Analyzers JJG 714	WBC:(6.50～7.00)× 10 ⁹ L ⁻¹	<i>U</i> _{rel} =2.6%			
				RBC:(3.90～4.20)×10 ¹² ↑/L ⁻¹	<i>U</i> _{rel} =2.2%			
				PLT:(240～260)×10 ⁹ L ⁻¹	<i>U</i> _{rel} =3.2%			
				HGB:(90～120)g/L	<i>U</i> _{rel} =2.2%			
23	*Automatic Closed Luminescence Immunoassay	Concentration	Calibration Specification for Automatic Closed Luminescence Immunoassay Analyzers JJF 1752	Regular insulin:(9～12) μ IU/mL	<i>U</i> =1.3 μ IU/mL			
24	* (Automation) Nucleic Acid Extractors	Temperature	C. S. for (Automation) Nucleic Acid Extractors	(50～95)℃	<i>U</i> =0.76℃			
		Frequency	JJF1874	(2～50)Hz	<i>U</i> =0.12Hz			



No. CNAS L0954

第 174 页 共 177 页

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

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Volume		(50~200) μL	$U=1.2 \mu L$		
		rate of recovery		50%~100%	$U=1.9\%$		
XI Vehicle							
1	*Diesel Vehicle Nitrogen Oxides(NOx) Measuring Instruments	concentration	C.S. for Diesel Vehicle Nitrogen Oxides (NOx) Measuring Instruments JJF 1873	NO: (1~4000) × 10 ⁻⁶ mol/mol NO ₂ : (1~1000) × 10 ⁻⁶ mol/mol CO ₂ : (0.1~18.0) × 10 ⁻² mol/mol	$U_{rel}=1.1\%$ $U_{rel}=2.1\%$ $U_{rel}=1.1\%$		
2	*Vehicle Contour Dimensions Testers	length	C.S. for Vehicle Contour Dimensions Testers JJF 1749	(1~40)m	$U_{rel}=0.1\%$		
3	*Roller Opposite Force Type Brake Testers	Force	V.R. of Roller Opposite Force Type Brake Testers JJG 906	(1~5000)daN	$U_{rel}=0.8\%$		
4	Motor Vehicle Testers for Steering Force and Steering Angle	Force Angle	C.S. for Motor Vehicle Testers for Steering Force and Steering Angle JJF 1196	(1~1000)N (10~50)°	$U_{rel}=0.6\%$ $U=0.3^\circ$		
5	*Automobile Side Slip Tester	side slip distance	V.R. of Automobile Side Slip Tester JJG 908	(-15~15)mm	$U=0.07m/km$		
6	*Vehicle Exhaust Emissions Measuring Instruments	Concentration	V.R. of Vehicle Exhaust Emissions Measuring Instruments JJG 688	C ₃ H ₈ : (180~3300) × 10 ⁻⁶ mol/mol CO: (0.48%~5.0%)mol/mol CO ₂ : (3.2%~13%) mol/mol	$U_{rel}=1.1\%$ $U_{rel}=1.3\%$ $U_{rel}=1.7\%$		

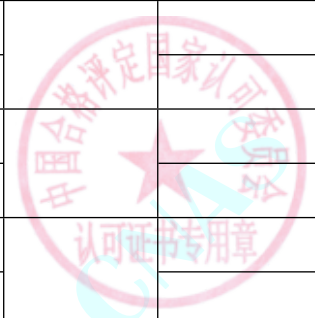


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No. CNAS L0954

第 175 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				O ₂ : (0.4%~23%)mol/mol	$U_{\text{rel}}=1.2\%$		
				NO: (280~3200)×10 ⁻⁶ mol/mol	$U_{\text{rel}}=1.4\%$		
7	*Filter-Type Smokemeters	Smoke	V.R. of Filter-Type Smokemeters JJG 847	(3.4~7.0)BSU	$U=0.26\text{BSU}$		
8	*Chassis Dynamometers for Automobile Emissions Testing	velocity	C.S. of Chassis Dynamometers for Automobile Emissions Testing JJF 1221	(0.1~100) km/h	$U_{\text{rel}}=0.1\%$		
		force		(1~4000) N	$U_{\text{rel}}=0.5\%$		
9	*Manipulating Force Tester for Automotive Brake	force	C.S. for Manipulating Force Tester for Automotive Brake JJF1169	(0.1~1000) N	$U_{\text{rel}}=0.1\%$		
10	*Transmittance meter	Transmittance	C. S. for Transmittance Meter of Automobile JJF1225	0~100%	$U=0.62\%$		
11	*Motor Vehicle Engine Speed Measuring Instruments	Rotational Speed	C. S. for Motor Vehicle Engine Speed Measuring Instruments JJF1375	(500~6000)r/min	$U_{\text{rel}}=0.2\%$		
XII Meteorology and Ocean							
1	Fanning Mill Anemometers	wind speed	C.S. for Fanning Mill Anemometers JJF1971	(0.2~5.0) m/s	$U=0.13\text{m/s}$		
				(5.0~30) m/s	$U=0.24\text{m/s}$		
2	the Thermo-anemoscope	wind velocity	C.S. for the Thermo-anemoscope JJF1939	(0.15~5.0)m/s	$U=0.13\text{ m/s}$		
				(5.0~30)m/s	$U=0.24\text{ m/s}$		
3	Mine Anemometer	wind velocity	V.R. of Wind speed sensor for mine JJG (Coal) 01	(0.2~5.0)m/s	$U=0.13\text{ m/s}$		
				(5.0~50)m/s	$U=0.22\text{ m/s}$		



No. CNAS L0954

第 176 页 共 177 页

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

№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
4	Contact Anemometer	wind velocity	V.R. of Contact Anemometer JJG613	(2.0~5.0)m/s	<i>U</i> =0.13 m/s		
				(5.0~40)m/s	<i>U</i> =0.20m/s		
5	Pitot Tubes	Pitot tubes coefficient	V.R. of Pitot Tubes JJG518	(0.81~1.01)	<i>U</i> =0.004		
6	Portable 3-Cup Anemometers	wind velocity	V.R. of Portable 3-Cup Anemometers JJG431	(0.4~5.0)m/s	<i>U</i> =0.13 m/s		
				(5~30)m/s	<i>U</i> =0.19 m/s		
XIII Construction and Transportation							
1	Needle and Flake Gages	Length	C.S. for Needle and Flake Gages JJF 1593	Needle Gauge:(4.74~82.8)mm	<i>U</i> =0.04mm		
				Flake Gauge:(2.8~82.8)mm	<i>U</i> =5 μ m		



No. CNAS L0954

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第 177 页 共 177 页

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