Laboratory	**Alcalab Private Limited, 3rd Floor, Ashiana Trade Centre, Adityapur, Jamshedpur, Jharkhand**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Certificate Number	**CC-2171**	**Page**	**1 of 19**
Validity	**24.09.2017 to 23.09.2019**	**Last Amended on**	**06.12.2017**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	ELECTRO- TECHNICAL CALIBRATION			
I.	**SOURCE**			
1.	DC Voltage#	1 mV to 100 mV 100 mV to 100 V 100 V to 1000 V	0.85% to 0.008% 0.008% 0.008%	Using Calibrator 5502A By Direct Method
2.	DC Current #	100 µA to 100 mA 100 mA to 2 A 2 A to 20 A	0.41% to 0.075% 0.075% to 0.05% 0.05% to 0.08%	Using Calibrator 5502A With DMM 8508A By Direct Method
3.	DC High Current#	20 A to 1000 A	0.7%	Using Calibrator 5502A + 50 Turn Coil By Direct Method
4.	Resistance#	1 Ω to 10 Ω 10 Ω to 10 kΩ 10 kΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 10 GΩ	0.08% to 0.06% 0.06% 0.06% 0.06% 0.06% to 6.3%	Using Calibrator 5502A & Decade Megohm Boxes (Model-8400) By Direct Method
5.	Low Resistance#	10 mΩ to 1 Ω	0.35% to 0.08%	Using Resistance Box By Direct Method
6.	High Resistance# (For Insulation Tester)	0.5 MΩ to 10 GΩ (50 V to 5000 V)	2.5% to 6.3%	Using Decade Megohm Boxes (Model-8400 & 8400 HV) By Direct Method
7.	Resistance# (for Earth Tester)	0.2 Ω to 200 Ω	2.1% to 0.35%	Using Decade Resistance Box By Direct Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
8.	AC Voltage#	**50 Hz to 10 kHz** 1mV to 100 mV 100 mV to 100 V 100 V to 1000 V	 2.42% to 0.15% 0.15% 0.15% to 0.11%	Using Calibrator 5502A With DMM 8508A By Direct Method
9.	AC Current#	**50 Hz to 1 kHz** 100 µA to 100 mA 100 mA to 2 A 2 A to 20 A	 0.35% to 0.1% 0.1% to 0.08% 0.08% to 0.1%	Using Calibrator 5502A By Direct Method
10.	AC High Current#	**50 Hz** 20 A to 1000 A	 0.8%	Using Calibrator 5502A + 50 Turn Coil With By Direct Method
11.	Power / Energy# (1Φ & 3Φ)	**50 Hz** 110 V to 250 V 1 A to 5 A 0.5 P.F. to 1.00 P.F.	 0.85% to 0.24%	Using Energy Meter With Calibrator By Comparison Method
12.	Capacitance#	**1 kHz** 50 nF to 1000 µF	 1.5%	Using Calibrator 5502A By Direct Method
13.	Frequency#	10 Hz to 200 MHz	0.05% to 0.03%	Using Calibrator 5502A By Direct Method
14.	Inductance#	**1 kHz** 10 µH to 1000 mH	 3.5% to 4.8%	Using Decade Inductance Box (Model-Zsdib) By Direct Method
15.	Power Factor#	**45 Hz to 55 Hz** ± 0.5 UPF	 0.3%	Using Energy Meter With Calibrator By Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
16.	Temperature Simulation #			
	RTD Type	(-) 200^{0}C to 800^{0}C	0.06^{0}C to 0.35^{0}C	Using Calibrator 5502A + ITS 90 (mV & Ω method) by Direct Method (For calibration of Indicator / controller / recorder)
	Thermocouples			
	J Type	0^{0}C to 1200^{0}C	0.32^{0}C	
	K Type	(-) 200^{0}C to 1350^{0}C	0.32^{0}C	
	R Type	0^{0}C to 1600^{0}C	0.83^{0}C	
	S Type	0^{0}C to 1600^{0}C	0.83^{0}C	
II.	**MEASURE**			
1.	DC Voltage$	1 mV to 100 mV 100 mV to 1 V 1 V to 1000 V	0.13% to 0.005% 0.005% to 0.002% 0.002%	Using 8½ DMM 8508A by Direct / Comparison Method
2.	DC Current$	100 µA to 1 mA 1 mA to 100 mA 100 mA to 1 A 1 A to 20 A	0.008% 0.008% to 0.01% 0.01% to 0.025% 0.025% to 0.05%	Using 8½ DMM 8508A by Direct / Comparison Method
3.	Frequency$	10 Hz to 1 MHz	0.15% to 0.06%	Using 8½ DMM 8508A By Direct / Comparison Method
4.	Resistance$	1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 100 MΩ 100 MΩ to 1 GΩ 1 GΩ to 10 GΩ	0.01% to 0.005% 0.005% 0.005% to 0.05% 0.05% to 2.0% 2.0% to 2.5%	Using 8½ DMM 8508A By Direct / Comparison Method
5.	Low Resistance$	10 mΩ to 1 Ω	0.35% to 0.08%	Using 8½ DMM 8508A & Calibrator 5502A By VIR Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
6.	AC Voltage[$]	**50 Hz to 10 kHz** 1 mV to 10 mV 10 mV to 10 V 10 V to 100 V 100 V to 1000 V	 1.0% to 0.1% 0.1% to 0.015% 0.015% 0.015% to 0.02%	Using 8½ DMM 8508A By Direct / Comparison Method
7.	AC Current[$]	**50 Hz to 5 kHz** 100 µA to 100 mA 100 mA to 10 A	 0.15% to 0.07% 0.07% to 0.14%	Using 8½ DMM 8508A By Direct / Comparison Method
8.	DC High Voltage[$]	1 kV to 2.5 kV 2.5 kV to 10 kV	5.1% 5.1% to 2.6%	Using High Voltage Probe (Model - 80K-40) with DMM By Direct / Comparison Method
9.	AC High Voltage[$]	**50 Hz** 1 kV to 20 kV	6.5%	Using High Voltage Probe (Model - 80K-40) with DMM by Direct / Comparison Method
10.	Temperature Simulation[$] RTD Type Thermocouples J Type K Type R Type S Type	 (-) 200^{0}C to 800^{0}C 0^{0}C to 1200^{0}C (-) 200^{0}C to 1350^{0}C 0^{0}C to 1600^{0}C 0^{0}C to 1600^{0}C	 0.06^{0}C to 0.35^{0}C 0.32^{0}C 0.32^{0}C 0.83^{0}C 0.83^{0}C	Using Calibrator 5502A + ITS 90 (mV & Ω method) by direct method (For Process Calibrator)
11.	Stop Watch / Timer[#]	1 sec. to 10 sec. 10 sec. to 9000 sec.	1.2% to 0.025% 0.025% to 0.01%	Using Programmable Timer by Direct / Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	MECHANICAL CALIBRATION			
I.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Vernier Caliper$ L.C.0.01 mm	0 to 600 mm 0 to 1000 mm	20.0 µm 25.0 µm	Using Slip Gauge & Length Bar
2.	Vernier Tooth Caliper$ L.C. 0.02 mm	0 to 60 mm	20.0 µm	Using Slip Gauge
3.	Vernier Depth Gauge$ L.C. 0.01 mm	0 to 600 mm	20.0 µm	Using Slip Gauge & Length Bar
4.	External Micrometer$ L.C. 0.001 mm	0 to 50 mm > 50 mm to 100 mm > 100 mm to 500 mm	2.20 µm 2.30 µm 8.00 µm	Using Slip Gauge & Length Bars
5.	External Micrometer$ L.C. 0.01 mm	0 to 300 mm > 300 mm to 1000 mm	6.0 µm 20.0 µm	Using Slip Gauge & Length Bars
6.	Flange Micrometer$ L.C: 0.001 mm	0 to 50 mm > 50 mm to 300 mm	3.00 µm 5.10 µm	Using Slip Gauge & Length Bars
7.	Screw Thread Micrometer$ (for Metric Thread) L.C. 0.01 mm	0 to 200 mm	6.0 µm	Using Slip Gauge & Length Bar

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
8.	Inside Micrometer$ L.C. 0.01 mm	25 mm to 50 mm 50 mm to 600 mm	7.1 µm 10.0 µm	Using Height Master & Riser Block
9.	Inside Micrometer$ L.C. 0.01 mm	5 mm to 50 mm	5.0 µm	Using Slip Gauge Accessories Set & Slip Gauge
10.	Depth Micrometer$ L.C. 0.001 mm	0 to 300 mm	7.10 µm	Using Slip Gauge & Length Bar
11.	Dial Bore Gauge$ (for 1 mm Plunger movement)	10 mm to 250 mm	4.0 µm	Using Height Master
12.	Plunger Type Dial Gauge$ L.C. 0.001 mm L.C. 0.01 mm	0 to 1 mm >1 mm to 10 mm 0 to 25 mm 0 to 50 mm	1.0 µm 3.0 µm 3.0 µm 10.0 µm	Using Electronic Dial Calibration Tester Using Mechanical Dial Calibration Tester & Slip Gauge
13.	Lever Type Dial Gauge$ L.C. 0.001 mm L.C. 0.01 mm	0 to 0.2 mm 0 to 1.4 mm	1.6 µm 5.5 µm	Using Length Measuring Machine & Height Master

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
14.	Dial Thickness Gauge$ L.C. 0.01 mm	0 to 50 mm	10.0 µm	Using Slip Gauge Accessories Set and Slip Gauge
15.	Dial Caliper Gauge$ L.C. 0.10 mm	0 to 50 mm	85.0 µm	Using Slip Gauge
16.	Steel Scale$ L.C. 1 mm	0 to 1000 mm	300 µm	Using Scale Calibrator
17.	Steel Measuring Tape$	0 to 50 m	$405\sqrt{\frac{L}{1000}}$ µm L in mm	Using Tape Calibrator
18.	Surface Plate #	Upto 3000 mm x 3000 mm	$1\sqrt{\frac{L+W}{125}}$ µm L & W in mm	Using Electronic Level
19.	Angle Plate / Box Angle Plate$ (Squareness)	100 mm to 450 mm	11.0 µm	Using Cylindrical Square & Slip Gauge
20.	Try Square$ (Squareness)	50 mm to 450 mm	11.0 µm	Using Cylindrical Square & Slip Gauge
21.	Vee Block $ Parallelity, Squareness Angle of V-Grove	Upto 200 mm x100 mm x 100 mm V Angle 90^0	7.2 µm 5' of arc	Using Dial Gauge, Plain Cylinder & Height Master

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
22.	Vernier Height Gauge[$] L.C. 0.01 mm	0 to 600 mm 0 to 1000 mm	20.0 µm 25.0 µm	Using Slip Gauge & Length Bar
23.	2D Height Gauge[#] L.C. 0.001 mm	0 to 600 mm 0 to 1000 mm	10.0 µm 20.0 µm	Using Slip Gauge & Length Bar
24.	Slip Gauge[$]	0.5 mm to 25 mm >25 mm to 50 mm >50 mm to 75 mm >75 mm to 100 mm	0.25 µm 0.34 µm 0.46 µm 0.58 µm	Using Slip Gauge (0-Grade) & Double Probe Comparator
25.	Slip Gauge Accessories Set[$]	Flatness & Parallelism	0.40 µm	Using Slip Gauge (0-Grade), Double Probe Comparator & Optical Flat
26.	Check Master[$] (Caliper Checker, Inside Micrometer Checker & Depth Micrometer Checker)	0 to 600 mm	6.47 µm	Using Slip Gauge, Lever Type Dial Gauge & Length Bars
27.	Height Master[$] L.C. 0.001 mm	5 mm to 310 mm	4.7 µm	Using Slip Gauge, Length Bars & Lever Dial Gauge
28.	Riser Block[$]	100 mm to 300 mm	4.7 µm	Using Slip Gauge, Length Bars & Lever Dial Gauge
29.	Cylindrical Setting Standard[$]	> 1 mm to 100 mm	2.0 µm	Using Slip Gauge, Inductive Probe & Comparator Stand

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
30.	Bevel Protractors$ L.C. 5 min. of arc	0 to 180^0	3.1' of arc	Using Slip Gauge & Sine Bar
31.	Spirit Level$	0.02 mm / meter	0.01 mm / m	Using Electronic Level
32.	Sine Bar$ Angle & Parallelism of working face wrt contact face Roller Distance	100 mm to 500 mm	8.64" 9.83 µm	Using Angle Gauge & Slip Gauge
33.	Sine Centre$ (Angle & Parallelism of working face wrt contact face)	100 mm to 300 mm	7.84"	Using Angle Gauge & Slip Gauge
34.	Combination Set / Angle Protractor$ L.C. 1^0 of arc	0^0 to 90^0	35' of arc	Using Profile Projector
35.	Radius Gauge$	1 mm to 25 mm	20.0 µm	Using Profile Projector
36.	Thread pitch Gauge $ Pitch Angle	0.6 mm to 7 mm 55^0 & 60^0	5.17 µm 5' of arc	Using Profile Projector
37.	Feeler Gauge$	0.03 mm to 1 mm	3.0 µm	Using Digimatic Micrometer

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
38.	Taper Gauge[$] (Width marked at different depths)	1 mm to 30 mm	15.0 µm	Using Profile Projector
39.	Adjustable Snap Gauge / Limit Snap Gauge[$]	5 mm to 100 mm > 100 mm to 300 mm	3.0 µm 5.0 µm	Using Slip Gauge & Length Bars
40.	Plain Plug Gauge[$]	3 mm to 100 mm > 100 mm to 300 mm	3.0 µm 5.4 µm	Using Slip Gauge, Comparator Stand & Plunger Dial Gauge
41.	Measuring Pins[$]	0.1 mm to 20 mm	2.0 µm	Using Slip Gauge, Inductive Probe & Comparator Stand
42.	Plain Ring Gauge[$]	5 mm to 100 mm > 100 mm to 250 mm	3.0 µm 5.0 µm	Using Length Measuring Machine
43.	Thread Plug Gauge[$] Major Dia Minor Dia Pitch Dia Half Angle Pitch Error	M3 to M100 3-48 TPI to ¼"-20 TPI UNC	 4.5 µm 4.5 µm 3.98 µm 3.5' 5.0 µm	Using Floating Carriage Dia. Measuring M/c & Profile Projector
44.	Taper Thread Plug Gauge[$] Pitch Dia	3.175 mm to 101.60 mm (1/8" to 4") (BSPT, NPT)	6.58 µm	Using Floating Carriage Dia. Measuring M/c & Profile Projector
45.	Parallel Thread Ring Gauge [$] Pitch Dia	M6 to M100 1/8"-48 TPI to ¼"-20 TPI UNC	4.5 µm	Using Length Measuring Machine

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
47.	Taper Thread Ring Gauge $ Pitch Dia	3.175 mm to 101.60 mm (1/8" to 3¾") (BSPT, NPT)	6.0 µm	Using Length Measuring Machine
48.	Test Sieve $	0.032 mm to 5.00 mm (Wiremesh) 5.00 mm to 50 mm (Wiremesh) 1 mm to 125 mm (Perforated)	6.3 µm 13.0 µm 41.0 µm	Using Profile Projector Digimatic Calipers Digimatic Calipers
49.	Comparator Stand $ (Flatness of Base)	Upto 50 mm > 50 mm to 400 mm	2.0 µm 3.0 µm	Using Plunger Dial Gauge (Millimess)
50.	Test Foils $	0 to 2000 µm	2.0 µm	Using Digimatic External Micrometer
51.	Coating Thickness Gauge $ L.C. 0.001 mm	0 to 710 µm	6.1 µm	Using Test Foil
52.	Inductive Probe $ L.C. 0.01 µm	0 to 1.00 mm	0.20 µm	Using Slip Gauge (0 Grade)
II.	**DIMENSION (PRECISION INSTRUMENTS)**			
1.	Gauge Block Comparator# L.C.: 0.01 µm (Double Probe Electronic Comparator)	0 to 100 mm	0.16 µm	Using Slip Gauge (K Grade) (As per EAL G 21)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
2.	Profile Projector # Linear Scale L.C.0.001 mm Angular Scale L.C.36 sec Magnification	 0 to 300 mm 0 to 360^0 10 X to 100 X	 5.00 µm 1.9 min 0.22%	 Using Slip Gauge, Angle Gauge & Glass Scale
3.	Dial Calibration Tester # L.C. 0.0001 mm	 0 to 25 mm	 0.40 µm	 Using Inductive Probe & Slip Gauge
4.	Length Measuring Machine $ LC: 0.1 µm	 0 to 100 mm	 1.0 µm	 Using Slip Gauge (0 grade)
5.	Steel Scale and Tape Calibrator $ L.C. 0.005 mm	 1000 mm	 20.2 µm	 Using Length Bar

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
III.	**WEIGHTS**			
1.	Weights $ (Accuracy class F1 & coarser)	1 mg 2mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.014 mg 0.015 mg 0.015 mg 0.015 mg 0.025 mg 0.025 mg 0.25 mg 0.25 mg 0.25 mg	Using E1 Class Standard Weights and Mass Comparators (Readability 0.001 mg upto 5.1 g, 0.01 mg upto 22 g, 0.01 mg / 0.1 mg upto 80 g / 200 g) as per OIML R-111
	(Accuracy class M1 & coarser)	500 g 1 kg 2 kg 5 kg	15.0 mg 15.0 mg 15.0 mg 20.0 mg	Using F1 Class Standard Weights and Mass Comparators (Readability 1 mg upto 5 kg) as per OIML R-111
	(Accuracy class M2 & coarser)	10 kg 20 kg	1.8 g 2.0 g	Using F1 Class Standard Weights and Mass Comparators (Readability 1 g to 5 g upto 30 kg) as per OIML R-111

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
IV.	**WEIGHING SCALE AND BALANCE**			
	Electronic Weighing # Balance (Accuracy class I and coarser)			
	Readability ≥ 0.001 mg	1 mg to 5 g	0.023 mg	Using E1 Class Standard Weights as per OIML R-76
	Readability ≥ 0.01 mg	> 5 g to 20 g	0.10 mg	
	Readability ≥ 0.1 mg	> 20 g to 200 g	0.35 mg to 0.85 mg	
	(Accuracy class II and coarser)			
	Readability ≥ 1 mg	> 200 g to 5 kg	16.0 mg	Using F1 Class Standard Weights as per OIML R-76
	Readability ≥ 1 g	> 5 kg to 20 kg	1.75 g	
	(Accuracy class III and coarser)			
	Readability ≥ 2 g	> 20 kg to 30 kg	5.8 g	Using M1 Class Standard Weights as per OIML R-76
	Readability ≥ 10 g	> 30 kg to 60 kg	10.8 g	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
V.	**VOLUME**			
1.	Piston Pipette $	> 50 µl to 1000 µl	0.23 µl to 0.29 µl	Using Digital Balance upto 5 g / 20 g / 200 g readability 0.001 mg / 0.01 mg / 0.1 mg and distilled water of known density as per IS 8655-6, ISO/TR 20461
2.	Glass Wares $ Glass Pipettes (Graduated / Non Graduated) Glass Burette Measuring Cylinder / Volumetric Flask / Conical Flask / Beaker	1 ml to 25 ml 1 ml to 100 ml 2 ml to 1000 ml	0.06 ml 0.06 ml to 0.07 ml 0.07 ml to 0.1 ml	Using Precision Balance and distilled water of known density as per ISO 4787, ISO/TR 20461
VI.	**PRESSURE INDICATING DEVICES**			
1.	Hydraulic Pressure $ (Dial / Digital Pressure Gauges and Calibrators)	5 bar to 1000 bar	0.28% of read	Using Dead Weight Tester by comparison method as per DKD-R-6-1
2.	Hydraulic Pressure # (Dial / Digital Pressure Gauges and Calibrators, Pressure Transmitters, Pressure Switches)	0 to 600 bar	0.20% of read	Using Digital Pressure Gauge by comparison method as per DKD-R-6-1

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Pneumatic Pressure # (Dial / Digital Pressure Gauges and Calibrators, Pressure Transmitters, Pressure Switches)	0 to 10 bar	0.15% of read	Using Digital Pressure Gauge by comparison method as per DKD-R-6-1
4.	Vacuum # (Dial / Digital Vacuum Gauges / Indicators and Calibrators)	(-)0.85 bar to 0 bar or 650 mmHg to 0 mmHg	0.41% of read	Using Digital Vacuum Gauge by comparison method as per DKD-R-6-1
VII.	**TORQUE GENERATING DEVICES**			
1.	Torque Wrench $ (Type-I & II) Class A, B, C	20 Nm to 1000 Nm	2.07% Reading	Using Torque Wrench Calibrator As per ISO 6789
VIII.	**DENSITY AND VISCOSITY**			
1.	Hydrometer $	0.600 g/ml to 1.00 g/ml 1 g/ml to 1.84 g/ml	0.0016 g/ml 0.0112 g/ml	Using Standard Hydrometers & Liquids As per IS 3104-II
IX.	**ACOUSTICS**			
1.	Sound Level Meter / Calibrator $	Freq:1000 Hz 94 dB 114 dB	1.53 dB 1.45 dB	Using Sound Level Calibrator

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
X.	**ACCELERATION & SPEED**			
1.	Speed (RPM) # Non Contact	100 rpm to 40000 rpm	1.51 % rdg	Using Digital Tachometer as per SANAS TR-45:2008
XI.	**UTM, TENSION CREEP AND TORSION TESTING MACHINE**			
1.	Uniaxial Testing Machine♣ (Compression only) (accuracy class-II and coarser)	20 kN to 200 kN 100 kN to 1000 kN	1.27% 1.48%	Using Proving Ring, Class-1 & Load Cell, Class-0.5 as per IS 1828
XII.	**HARDNESS TESTING MACHINES**			
1.	Rockwell Hardness Testing Machine ♣	HRA HRB HRC HR 15N HR 30N HR 45N	1.15 HRA 1.08 HRB 0.49 HRC 0.61 N 0.80 N 0.88 N	Using Standard Test Block as per ISO-6508-2
2.	Brinell Hardness Testing Machine ♣	HBW 2.5/187.5 HBW 5/750 HBW 10/3000	1.53% 1.65% 1.53%	Using Standard Test Block as per ISO-6506-2
3.	Vickers Hardness Testing Machine ♣	HV 30	1.35%	Using Standard Test Block as per 6507-2

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		THERMAL CALIBRATION		
I.	**TEMPERATURE**			
1.	RTD, Thermocouple with or without Temperature Indicator / Recorder / Data Logger / Digital Thermometer $	(-)20^{0}C to 20^{0}C 20^{0}C to 250^{0}C 250^{0}C to 1000^{0}C	0.29^{0}C 0.39^{0}C 2.34^{0}C	Using RTD, R-Type T/C with Temperature Calibrator & Liquid / Dry Well Bath by Comparison Method
2.	Temperature Indicator with sensor of Incubators / Liquid Bath / Dry Block / Autoclave / Cold & Hot Chamber / Muffle & Tube Furnace $	(-)20^{0}C to 20^{0}C 20^{0}C to 250^{0}C 250^{0}C to 1000^{0}C	0.26^{0}C 0.53^{0}C 2.3^{0}C	Using RTD, R-Type T/C with Temperature Calibrator by Single position method
3.	Glass / Dial Thermometer $	(-)20^{0}C to 250^{0}C	0.80^{0}C	Using RTD with Temperature Calibrator & Liquid Bath by Comparison Method
4.	Pyrometer / Infrared Thermometer $	50^{0}C to 400^{0}C 500^{0}C to 1500^{0}C	2.1^{0}C 4.5^{0}C	Using RTD with Temperature Calibrator & Black Body Source by Comparison Method Using Non-Contact Pyrometer & Black Body Source by Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
5.	RTD, Thermocouple with or without Temperature Indicator / Recorder / Data Logger / Digital Thermometer♣	50^0C to 250^0C 250^0C to 1000^0C	0.39^0C 2.34^0C	Using RTD, R-Type T/C with Temperature Calibrator & Liquid / Dry Well Bath by Comparison Method
6.	Temperature Indicator with sensor of Incubators / Liquid Bath/ Dry Block / Autoclave / Cold & Hot Chamber / Muffle & Tube Furnace ♣	(-)20^0C to 250^0C 250^0C to 1000^0C	0.53^0C 2.3^0C	Using RTD (PT-100), R-Type T/C with Temperature Calibrator by Single Position Method
II	**SPECIFIC HEAT & HUMIDITY**			
1.	Temperature / Humidity Meter with inbuilt or external Sensor, Thermo Hygrometer $	40% RH to 90% RH @ ≈ 25^0C	2.00% RH	Using Temperature / Humidity Meter & Humidity Chamber by Comparison Method
2.	Humidity / Temperature Indicator with sensor of Humidity / Environment Chamber ♣	10^0C to 50^0C @ ≈ 50% RH 20% RH to 90% RH @ ≈ 25^0C	0.27^0C 2.00% RH	Using Standard Temperature & Humidity Meter by Single Position Method

*** Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95%**
$Only in Permanent Laboratory
♣Only for Site Calibration
 # The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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