Laboratory	**Ahmedabad Textile Industry's Research Association (ATIRA), Dr. Vikram Sarabhai Road, Ahmedabad, Gujarat**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Certificate Number	**CC-2824**		**Page**	**1 of 8**
Validity	**30.08.2018 to 29.08.2020**		**Last Amended on**	**-**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	ELECTRO TECHNICAL CALIBRATION			
I.	**MEASURE**			
1.	DC Voltage#	1 mV to 100 mV 100 mV to 100 V 100 V to 1000 V	0.81 % to 0.01 % 0.01 % to 0.008 % 0.008 % to 0.01 %	Using Fluke 6½ DMM 8846A By Direct/ Comparison Method
2.	DC Current#	100 µA to 100 mA 100 mA to 10 A	0.1 % to 0.22 % 0.22 %	Using Fluke 6½ DMM 8846A By Direct/ Comparison Method
3.	Resistance# (4 wires & 2 wires)	1 Ω to 100 kΩ 100 kΩ to 10 MΩ 10 MΩ to 100 MΩ	0.8 % to 0.016 % 0.016 % to 0.082 % 0.082 % to 1.0 %	Using Fluke 6½ DMM 8846A By Direct Method
4.	AC Voltage#	**50 Hz** 100 mV to 1000 V	0.122 % to 0.13 %	Using Fluke 6½ DMM 8846A By Direct/ Comparison Method
5.	AC Current#	**50 Hz** 100 µA to 1 A 1 A to 10 A	0.5 % to 0.2 % 0.2 % to 0.26 %	Using Fluke 6½ DMM 8846A By Direct/ Comparison Method
6.	Frequency#	45 Hz to 100 kHz	0.018 % to 0.058%	Using Fluke 6½ DMM 8846A By Direct/ Comparison Method
7.	Capacitance#	10 nF to 1 mF	6.0 % to 3.0 %	Using Fluke 6½ DMM 8846A By Direct Method

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Convenor

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Program Manager

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8.	Temperature Simulation[#] RTD Type	(-) 200°C to 600°C	0.67°C	Using Fluke 6 ½ DMM 8846A, By Direct Method
9.	Stop Watch[#]	40 sec to 24 hrs	0.57s to 5.845s	Using Digital Stop Watch by Comparison Method

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	MECHANICAL CALIBRATION			
I.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Vernier Caliper [$] L.C.: 0.01 mm	0 to 300 mm	19.0 µm	Using Slip Gauge Set & Accessories
2.	External Micrometer [$] L. C. 0.001 mm	0 to 25 mm 25 mm to 50 mm	1.8 µm 1.8 µm	Using Slip Gauge Set & Accessories
3.	Dial/Wobble Gauge[$] (Analog/Dial/Digital) LC: 0.001 mm	0 to 25 mm	3.0 µm	Using Slip Gauge Set & Comparator with Stand
4.	Thickness Gauge [$] (Dial/Digital) LC: 0.001 mm	0 to 25 mm	2.7 µm	Using Slip Gauge Set & Accessories
5.	Depth Gauge [$] (Dial/Digital) LC : 0.1 mm	0 to 30 mm	58 µm	Using Slip Gauge Set & Accessories
6.	Plug Gauge [$]	0 to 50 mm	1.9 µm	Using Slip Gauge Set & Comparator with Stand
7.	Mandrel [$] (Diameter only)	0 to 50 mm	2.0 µm	Using Slip Gauge Set & Comparator with Stand

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II.	**ACOUSTICS**			
1.	Sound Level Meter#	**1 kHz** 94 dB & 114 dB	0.60 dB	Using Sound Calibrator
III.	**ACCELERATION AND SPEED**			
1.	Tachometer/ Stroboscope/ RPM Indicator of Centrifuge#	50rpm to 20000 rpm	0.14 %	Using Precision Digital Tachometer By Comparison Method
IV.	**WEIGHING SCALE AND BALANCE**			
1.	Weighing Balance of Class-I and coarser # d=0.001 mg d=0.01 mg and coarser Weighing Balance of Class-I and coarser # d=1 mg and coarser d=10 mg and coarser d=1 g and coarser	 1 mg to 32 g > 32 g to 200 g > 205 g to 3200 g > 3.2 kg to 10 kg > 10 kg to 50 kg	 0.03 mg 0.06 mg 11.9 mg 30.0 mg 2.5 g	Using Standard weights of E1 Class As per OIML R-76-1 Using Standard Weights of F1 Class As per OIML R-76-1

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V.	**WEIGHTS**			
1.	Calibration of F1 class weights and coarser [$]	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.006 mg 0.006 mg 0.006 mg 0.006 mg 0.014 mg 0.014 mg 0.024 mg 0.024 mg 0.100 mg	Using E1 Class Standard Weights and Digital Weighing Balance Up to 32 g of d=0.001 mg and Up to 200 g and d=0.01 mg By ABBA method as per OIML R-111
	Calibration of M1 class weights and coarser[$]	500 g 1 kg 2 kg 5 kg 10 kg 20 kg 50 kg	1.7 mg 1.9 mg 10.7 mg 0.82 g 0.84 g 0.88 g 1.0 g	Using F1 Class weights and Digital weighing balance Up to 3200 g with d=1 mg, Up to 65 kg with d=1 g by ABBA method as per OIML R-111

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VI.	**VOLUME**			
1.	Calibration of Piston Pipette[$]	10 µl to 100 µl 100 µl to 1000 µl	0.08 µl	Using Digital Precision Balance Resolution: 0.01 mg (Up to 100 µl) and Resolution: 0.1 mg (> 100 µl to 1000 µl) and distilled water of known density as per IS : 8655-6
2.	Glass Pipette[$] Burette[$] Volumetric Flask/ Measuring Cylinder/ Beaker[$]	> 1 ml to 25 ml > 1 ml to 50 ml > 1 ml to 100 ml > 100 ml to 1000 ml	6.4 µl 6.4 µl 20.0 µl 110.0 µl	Using Digital Precision Balance Resolution: 0.1 mg (Up to 10 µml) and Resolution: 1 mg (> 10 ml to 1000 ml) and distilled water of known density as per ISO : 4787

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		THERMAL CALIBRATION		
I.	**TEMPERATURE**			
1.	Liquid in Glass Thermometer, Temperature Gauge & RTD/ Thermocouple with or without indicator $	(-)80°C to 50°C 50°C to 300°C 300°C to 600°C	1.1°C 1.0 °C 2.2 °C	Using SSPRT/RTD Indicator with Temperature Indicator & 6.5 DMM/ Beamex & Liquid & Dry Bath Circulators By Comparison Method
		600°C to 1200°C	3.5 °C	Using R Type Thermocouple with Indicator & 6.5 DMM and Dry-Block Calibrator by Comparison Method
2.	Internal Temperature Sensor with Indicator, Thermohygrometer $	15°C to 50°C	0.80°C	Using Temperature Sensor with Indicator & Cole Parmar Incubator by Comparison Method
3.	Humidity Indicator with Sensor, Thermohygrometer$	22% RH to 95% RH @ 25°C	2.7 %RH	Using Fixed RH Salt Solution with Digital Temp/RH Indicator with sensor By Comparison Method

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4.	RTD/Thermocouple with or without Indicator, Temperature Indicator with sensor of Oven, Muffle Furnace, Water Bath, Incubator (Non-Medical Applications, Deep Freezer, COD, BOD, Refrigerator ♣	(-)80°C to 50°C 50°C to 300°C 300°C to 600°C	1.1 °C 1.0 °C 2.2 °C	Using SSPRT/RTD Indicator with Temperature Indicator & 6.5 DMM/ Beamex & Liquid Bath Circulars By Comparison Method
		600°C to 1200°C	2.8 °C	Using R Type Thermocouple with Indicator & 6.5 DMM and Dry Block Calibrator By Comparison Method
5.	Humidity Chamber ♣	22% RH to 95% RH @ 25°C	2.7%	Using Digital Temp/RH Indicator with sensor By Comparison 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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Convenor

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Program Manager