



# National Accreditation Board for Testing and Calibration Laboratories

## SCOPE OF ACCREDITATION

**Laboratory Name :**

ELECTRONICS REGIONAL TEST LABORATORY (WEST), GOVERNMENT OF INDIA, MINISTRY OF ELECTRONICS & INFORMATION TECHNOLOGY, STQC DIRECTORATE, PLOT NO. F-7&8, MIDC AREA, ANDHERI(EAST), MUMBAI, MAHARASHTRA, INDIA

**Accreditation Standard**

ISO/IEC 17025:2017

**Certificate Number**

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29/01/2020 to 01/01/2021\*

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\*The validity is extended for one year up to 01.01.2022

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Permanent Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (10 Hz to 1kHz)	Direct/Ref DMM Fluke 8508A/MTS Wavetek 4950/HP 3458/Std R Tinsley 5685/3111/1682/165 9	10 A to 100 A	0.043 % to 0.05 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (10 Hz to 1kHz)	Direct/Ref DMM Fluke 8508A/MTS Wavetek 4950/HP 3458/Std R Tinsley 5685/3111/1682/165 9	10 uA to 100 mA	0.01 % to 0.023 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (10 Hz to 1kHz)	Direct/Ref DMM Fluke 8508/MTS Wavetek 4950/HP 3458A/Std.R Tinsley 5685/31114/1682/16 59	100 mA to 10 A	0.01 % to 0.043 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (1kHz to 5kHz)	Direct/Ref DMM Fluke 8508A/MTS Wavetek 4950/HP 3458/Std R Tinsley 5685/3111/1682/165 9	10 uA to 100 uA	0.2 % to 0.05 %



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5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (1kHz to 5kHz)	Direct/Ref DMM Fluke 8508A/MTS Wavetek 4950/HP 3458/Std R Tinsley 5685/3111/1682/165 9	100 mA to 20 A	0.03 % to 0.09 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (1kHz to 5kHz)	Direct/Ref DMM Fluke 8508A/MTS Wavetek 4950/HP 3458/Std R Tinsley 5685/3111/1682/165 9	100 uA to 100 mA	0.05 % to 0.03 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current (50/60Hz)	Using CT & std .R tinsley 5576/660/DMM 1281	1 A to 3200 A	0.2 % to 0.2 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage 50Hz	Direct/HV divider Process 100E/DMM Agilent US 1253 B	1 kV to 35 kV	0.1 % to 0.5 %



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9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage 50Hz	Direct/HV divider Process 100E/DMM Agilent US 1253 B	35 kV to 50 kV	0.5 % to 1 %
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Resistance @ 1kHz	AC/DC Std.Resistors Tinsley 3111/1682/5576/568 5 seris/Ref DMM 8508A/MTS 4950/LCR Bridge/Wavetek 4808/HP 3458/Precision component analyser waynkerr 6430/video bridge ESI 2160/Direct/Comparison	1 mohm to 100 mohm	0.02 % to 0.01 %





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11	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Resistance @ 1kHz	AC/DC Std.Resistors Tinsley 3111/1682/5576/568 5 seris/Ref DMM 8508A/MTS 4950/LCR Bridge/Wavetek 4808/HP 3458/Precision component analyser waynkerr 6430/video bridge ESI 2160/Direct/Comparison	1 ohm to 10 kohm	0.004 % to 0.004 %
12	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Resistance @ 1kHz	AC/DC Std.Resistors Tinsley 3111/1682/5576/568 5 seris/Ref DMM 8508A/MTS 4950/LCR Bridge/Wavetek 4808/HP 3458/Precision component analyser waynkerr 6430/video bridge ESI 2160/Direct/Comparison	100 mohm to 1 ohm	0.01 % to 0.004 %



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13	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 Hz to 10 kHz	DMM fluke 8508 A/MTS Wavetek 4950/	1 mV to 100 mV	0.2 % to 0.015 %
14	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 Hz to 10 kHz	Comparison	10 V to 1000 V	0.004 % to 0.013 %
15	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 Hz to 10 kHz	HP 3458 A	100 mV to 10 V	0.015 % to 0.004 %
16	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 kHz to 30 kHz	DMM fluke 8508/MTS wavetel 4950/	1 mV to 100 mV	0.24 % to 0.009 %



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17	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 kHz to 30 kHz	Comparison	10 V to 1000 V	0.005 % to 0.013 %
18	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 10 kHz to 30 kHz	HP 3458A	100 mV to 10 V	0.009 % to 0.005 %
19	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 100 kHz to 1MHz	DMM fluke 8508A/MTS Wavetek 4950/HP 3458A/Comparison	1 mV to 10 V	1.4 % to 0.21 %
20	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage 30 kHz to 100 kHz	DMM Fluke 8508/MTS Wavetek 4950	1 mV to 100 mV	0.3 % to 0.009 %





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21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage 30 kHz to 100 kHz	Comparison	10 V to 200 V	0.005 % to 0.09 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage 30 kHz to 100 kHz	HP 3458A	100 mV to 10 V	0.009 % to 0.005 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 100 Hz	4 terminal Capacitor GR 1417/MFC Wavetek 4808/MTS Wavetek 4950/Direct/Comparison	10 mF to 100 mF	0.05 % to 0.05 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 100 Hz	4 terminal Capacitor GR 1417/MFC Wavetek 4808/MTS Wavetek 4950/Direct/Comparison	10 mF to 1000 mF	0.05 % to 0.05 %



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25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1kHz	Capacitance measuring assembly GR 1620A/Std. Capacitors GR 1404/Std Capacitors GR 1409/IET	1 pF to 10 pF	0.02 % to 0.005 %
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1kHz	4 terminal Capacitor GR 1417/MFC Wavetek 4808/MTS Wavetek 4950/Direct/Comparison	1 uF to 10 mF	0.011 % to 0.05 %
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1kHz	Capacitance measuring assembly GR 1620A/Std. Capacitors GR 1404/Std Capacitors GR 1409/IET	10 pF to 1000 pF	0.005 % to 0.005 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1kHz	Capacitance measuring assembly GR 1620A/Std. Capacitors GR 1404/Std Capacitors GR 1409/IET	1000 pF to 1 uF	0.005 % to 0.011 %





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29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	CT Phase Angle	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	0 min to 360 min @ 50 Hz	3 min to 3 min
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	CT Ratio	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	1 A to 3200 A/ 1A or 5 A @50 Hz	0.2 % to 0.2 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inducyance @ 1kHz	Video Bridge ESI 2160/Component Analyser waynkerr 6430 B/Std Inductos GR 1482 series/Direct/Compa rison	100 uH to 100 H	0.02 % to 0.055 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Phase Angle (V-V/V-l)	Rotek 8100 source with MSB 100 /Direct/Comparison	+180 to -180 deg (20V to 600 V) 10 mA to 100 A 40 Hz to 70 Hz	0.007 deg to 0.013 deg



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33	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power Factor (Lead/Lag)	Rotek 8100 source with MSB 100 /Direct/Comparison	0.05 PF to 1 PF (20 V to 600 V), 10 mA to 100 A 40 Hz to 70 Hz	0.006 deg to 0.007 deg
34	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy 1 Phase	Rotek 8100 source with MSB 100	20V to 600V/ 10mA to 100 A/40 Hz to 70 Hz/Power Factor 0.1 to UPF	0.2 % to 0.02 %
35	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy 3Phase	Rotek 8100 source with MSB 100	20V to 600 V/ 10 mA to 100 A/ 40 Hz to 70 Hz/Power Factor 0.1 to 1 UPF	0.2 % to 0.032 %
36	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	PT Phase Angle	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	0 min to 360 min @ 50 Hz	3min



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37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	PT Phase Angle	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	0 min to 360 min @ 50 Hz	3 min to - -
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	PT Ratio	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	220V/110 V 63.5 V to 33kV/110 V, 63.5 @ 50 Hz	0.2%
39	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	PT Ratio	CT -PT Test Bench Amber IXR-2000 & Std. PT / Direct/ Comparison	220V/110 V 63.5 V to 33kV/110 V, 63.5 @ 50 Hz	0.2 % to - -





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40	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 10Hz to 1kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	10 A to 100 A	0.032 % to 0.1 %
41	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 10Hz to 1kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	10 uA to 100 mA	0.018 % to 0.018 %



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42	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 10Hz to 1kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	100 mA to 10 A	0.018 % to 0.032 %
43	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz to 5kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	10 uA to 100 uA	0.2 % to 0.05 %



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44	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz to 5kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	100 mA to 20 A	0.03 % to 0.09 %
45	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz to 5kHz	DIRECT/MFC WAVETEK4808/FLUKE/FLUKE5720A/TRAN COND AMPL. BALLANTINE 1620A/FLUKE5220A/FLUKE8508/WAVETE K4950/STD. R TINSLEY 5685/HP3548/STD R TINSLEY 5685/FLUKE5220/5520/STD R TINSLEY 3111	100 uA to 100 mA	0.05 % to 0.03 %





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46	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Current,50/60Hz	Direct for clamp type meter,using X10 & X50 turn coil with MFC Fluke 5520A/Wavetek 9100	20 A to 1000 A	0.3 % to 0.3 %
47	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC HIGH VOLTAGE 50Hz	DIRECT/HV SOURCE/STD. PT-33kV/DMM FLUKE 87III	1 kV to 35 kV	0.2 % to 0.2 %
48	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Resistance @ 1kHz	Direct,Std.Resistor Tinsley, 5576/660/1682/3111 /5685 series,(Discrete values)	1 mohm to 1 mohm	0.017 % to 0.017 %
49	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Resistance @ 1kHz	Direct,Std.Resistor Tinsley, 5576/660/1682/3111 /5685 series,(Discrete values).e 1ohm,10ohm,100ohm,1kohm,10kohm)	1 ohm to 10 kohm	0.0008 % to 0.003 %



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50	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Resistance @ 1kHz	Direct, Std.Resistor Tinsley, 5576/660/1682/3111 /5685 series, (Discrete values) i.e 1ohm, 10ohm, 100ohm, 1kohm, 10kohm)	1 ohm to 10 kohm	0.008 % to 0.003 %
51	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Resistance @ 1kHz	Direct, Std.Resistor Tinsley, 5576/660/1682/3111 /5685 series, (Discrete values)	10 mohm to 100 mohm	0.008 % to 0.012 %
52	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 100kHz to 1MHz	MFC WAVETEK 4808/FLUKE 5720A/MTS WAVETEK4950 AND DIRECT/COMPARISON	1 mV to 10 V	1.3 % to 0.21 %
53	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10Hz to 10 kHz	MFC WAVETEK 4808/FLUKE 5720A/MTS WAVETEK 4950 AND DIRECT/COMPRISON	1 mV to 100 mV	0.29 % to 0.015 %



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54	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10Hz to 10kHz	MFC WAVETEK 4808/FLUKE5720A/MTS WAVETEK 4950 AND DIRECT/COMPRISON	10 V to 1000 V	0.004 % to 0.009 %
55	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10Hz to 10kHz	MFC WAVETEL4808/FLIKE 5720A/MTS WAVETEK4950 AND DIRECT/COMPARISON	100 mV to 10 V	0.015 % to 0.004 %
56	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz to 30kHz	MFC WAVETEK 4808/FLUKE5720A/MTS WAVETEK4950 AND DIRECT/COPMRISON	1 mV to 100 mV	0.24 % to 0.009 %
57	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz to 30kHz	MFC WAVETEK4808/FLUK E5720A/MTS WAVETEK 4950 DIRECT/COMPARISON	10 V to 1000 V	0.005 % to 0.013 %
58	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz to 30kHz	MFC WAVETEK 4808/FLUKE5720A/MTS WAVETEK4950 AND DIRECT/COMPRISON	100 mV to 10 V	0.009 % to 0.005 %





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59	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30kHz to 100kHz	MFC WAVETEK4808/FLUK E5720A/MTS WAVETEK 4950	1 mV to 100 mV	0.3 % to 0.01 %
60	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30kHz to 100kHz	MFC WAVETEK 4808/FLUKE 5720A/MTS WAVETEK 4950 AND DIRECT/COMPARISON	10 V to 200 V	0.0083 % to 0.009 %
61	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30kHz to 100kHz	MFC WAVETEK 4808/FLUKE 5720A/MTS WAVETEK 4950 AND DIRECT/COMPARISON	10 V to 200 V	0.0083 % to 0.09 %
62	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30kHz to 100kHz	MFC WAVETEK 4808/FLUKE 5720A/MTS WAVETEK 4950 AND DIRECT/COMPRISON	100 mV to 10 V	0.01 % to 0.0083 %
63	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 100 Hz	4 terminal Capacitance std. GR 1417	10 mF to 1000 mF	0.13 % to 0.13 %



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64	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Direct/std Capacitors GR 1404/	1 pF to 1 pF	0.042 % to 0.042 %
65	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	4 Terminal Capacitor GR 1417	1 uF to 10 mF	0.011 % to 0.1 %
66	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Std.Capacitors GR 1409/(Discrete Values)	10 pF to 1000 pF	0.002 % to 0.001 %
67	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Std.Capacitors IET/HAC	1000 pF to 1 uF	0.001 % to 0.011 %
68	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1kHz	Std.Inductors GR 1482 series/ Direct	100 uH to 10 H	0.02 % to 0.052 %



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69	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Phase Angle (V-V/V-l)	Rotek 8100 Power Energy Calibration Calibrator	+180 to -180 deg (20V to 600V/10mA to 100A 40-70 Hz)	0.017 deg to 0.017 deg
70	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Power Factor(Lead/Lag)	Rotek 8100 Power Energy Calibration Calibrator	0.1 PF to 1 PF 20V to 600V/10mA to 100A /40Hz - 70 Hz	0.013 deg to 0.013 deg
71	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Power Factor(Lead/Lag)	Rotek 8100 Power Energy Calibration Calibrator	0.1 PF to 1 PF 20V to 600V/10mA to 100A 40Hz - 70 Hz	0.013 deg to 0.013 deg
72	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Power/Energy 1 Phase	Rotek 8100 Power Energy Calibration Calibrator	20V to 600V/ 10mA to 100A /40 Hz to 70 Hz / PF 0.1 to 1 Lead/Lag	0.2 % to 0.021 %
73	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Power/Energy 3 Phase	Rotek 8100 Power Energy Calibration Calibrator	20V to 300 V/ 10mA to 20 A /40Hz to 70Hz / Power Factor 0.1 to 1 Lead/Lag	0.2 % to 0.027 %





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74	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source, Measure)	Power/Energy 1 Phase	Rotek 8100 Power Energy Calibration Calibrator	20V to 600V/ 10mA to 100A /40 Hz to 70 Hz / PF 0.1 to 1 Lead/Lag	0.2 % to 0.021 %
75	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	1 A to 20 A	0.002 % to 0.006 %
76	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	1 nA to 100 uA	0.0034 % to 0.002 %



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77	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	100 A to 500 A	0.01 % to 0.02 %
78	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	100 mA to 1 A	0.001 % to 0.002 %
79	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	100 pA to 1 nA	0.05 % to 0.0034 %



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80	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	100 uA to 100 mA	0.002 % to 0.001 %
81	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	V/R Method/ Std R,L& N 4030 series/5685 series,Fluke Dmm 8508/HP 3458/AC/DC Std R Tinsley 3111/660/5576	20 A to 100 A	0.006 % to 0.01 %
82	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Direct/HV divider Fluke 80 E/DMM Fulke 87III	1 kV to 10 kV	0.016 % to 0.2 %
83	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Direct/HV divider Process Instrument100/DMM Agilent US 1253B	10 kV to 50 kV	0.2 % to 0.5 %





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84	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Guidline 6622A DCC Bridge/Std R tinsley 5685 series/1659/1682/3111/660/5576	0.1 mohm to 100 mohm	0.001 % to 0.001 %
85	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	MFC 4808/5520/Null detector	1 Gohm to 1 Tohm	0.001 % to 0.05 %
86	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	DMM 8508A/keithley high R meter/	1 Mohm to 1 Gohm	0.0003 % to 0.001 %
87	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Std.L& N 4030 series/	1 ohm to 1 Mohm	0.0003 % to 0.0003 %
88	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Divider/Null	100 mohm to 1 ohm	0.001 % to 0.0003 %



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89	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Direct/Null method/Nanovoltmeter Agilent 34420A/MTS 4950/Ref DMM Fluke 8508A	1 mV to 100 mV	0.007 % to 0.0005 %
90	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Direct/Null method/Nanovoltmeter Agilent 34420A/MTS 4950	10 uV to 1 mV	0.015 % to 0.007 %
91	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Ref Divider Fluke 752/DC Ref Std.Fluke 7000/Null detector ESI	100 mV to 1000 V	0.0005 % to 0.0003 %



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92	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 100A to 500A	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	100 A to 500 A	0.01 % to 0.04 %
93	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 100pA to 1nA	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	100 pA to 1 nA	0.05 % to 0.0045 %





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94	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 100uA to 1A	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	100 uA to 1 A	0.002 % to 0.002 %
95	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 1A to 20A	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	1 A to 20 A	0.002 % to 0.006 %



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96	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 1nA to 100uA	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	1 nA to 100 uA	0.0045 % to 0.002 %
97	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 20A to 1000A	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	20 A to 1000 A	0.3 % to 0.3 %



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98	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current 20A to 100A	V/R method/ MFC Wavetek 4808/ Fluke 5720A/ Transconductance Ampl.Ballantine 1620A/ Fluke 5220A / Std. R L&N 4030 / Direct/ Ref. DMM 8508A/DMM1281/HP 3458 / Direct / Std. R Tinsley3111/1682 / MFC WAVETEK 9100/ FLUKE 5520A /CURRENT COIL / DIRECT	20 A to 100 A	0.006 % to 0.01 %
99	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC High Voltage 10kV to 50kV	HV Source with HV Divider Fluke 80E&PI-HV-100 with Agilent & Fluke DMM / Direct	10 kV to 50 kV	0.22 % to 0.5 %
100	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC High Voltage 1kV to 10kV	HV Source with HV Divider Fluke 80E&PI-HV-100 with Agilent & Fluke DMM / Direct	1 kV to 10 kV	0.01 % to 0.22 %





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101	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power	Direct / MFC Fluke	100 mV to 1000 V/100 mA to 20 A	0.07 % to 0.07 %
102	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 0.1mOhms to 100mOhms	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	0.1 mOhms to 100 mOhms	0.001 % to 0.001 %
103	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 100 mOhms to 1 Ohm	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	100 mOhms to 1 Ohm	0.001 % to 0.0002 %



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104	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 100 mOhms to 1 Ohm	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	100 mOhms to 1 Ohm	0.0002 % to 0.001 %
105	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 10GOhms to 1TOhms	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	10 GOhms to 1 TOhms	0.0085 % to 0.2 %



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106	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 1MOhms to 10GOhms	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	1 MOhms to 10 GOhms	0.0005 % to 0.0085 %
107	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance 10hm to 1MOhms	Std R tinsley 6602/5576/3111/168 2/Direct/Std. R L&N 4030/Tinsley 5685/ Std. R IETSRL-10M/100M, Fluke 8508A - 7000k/ Std. R Box Tinsley 4720 (direct Values in step of 10))	1 ohm to 1 MOhms	0.0002 % to 0.0005 %





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108	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 100mV to 1000V	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	100 mV to 1000 V	0.0003 % to 0.0005 %
109	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 100mV to 1000V	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	100 mV to 1000 V	0.0005 % to 0.0003 %
110	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 10uV to 1mV	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	10 uV to 1 mV	0.005 % to 0.002 %



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111	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 1mV to 100mV	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	1 mV to 100 mV	0.0005 % to 0.002 %
112	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 1mV to 100mV	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	1 mV to 100 mV	0.002 % to 0.0005 %
113	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage 1V,10V	DC Ref. STD. Fluke 7000/ MFC Fluke 5720A/Wavetek4808 Ref. div. Fluke 752/ Ref. Divider ESI SR1010 / Null Detector ESI / Direct/Null Method	1 V, to 10 V	0.0002 %, to 0.0001 %,
114	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Amplitude(vertical Deflection factor)	Direct/ MFC Fluke 5520A/Wavetek 9100/R&S Sig.Generator SMT 06	1mV to 130 V (1Mohm)/ 1mV to 6.5V (50 ohm)	1.04 % to 0.1 %



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115	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Amplitude(vertical Deflection factor)	Direct/ MFC Fluke 5520A/Wavetek 9100/R&S Sig.Generator SMT 06	1mV to 130 V (1Mohm)/ 1mV to 6.6V (50 ohm)	1.04 % to 0.1 %
116	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Bandwidth	Direct/ MFC Fluke 5520A/Wavetek 9100/R&S Sig.Generator SMT 06	DC to 3 GHz	2 % to 5 %
117	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Time Base	Direct/ MFC Fluke 5520A/Wavetek 9100/R&S Sig.Generator SMT 06	2ns to 20 ms/20ms to 5 s	0.00025 % to 0.0025 %
118	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Level/Power ( 3 GHz to 18 GHz)	RF power meter Gigatronics 8541 /direct	-50 dBm to 13 dBm	0.24 dB to 0.24 dB
119	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Level/Power (100kHz to 3 GHz)	RF Level Meter URV -35 direct	-50 dBm to 13 dBm	0.23 dB to 0.23 dB





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120	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Level/Power 10kHz to 3GHz	Synthesized signal generators R&S SMT06/Gigatronics 9000s Direct with RF Level Meter URV -35,RF Power Meter Gigatronics 8541 & Power sensors	-50 dBm to 13 dBm	0.16 dB to 0.25 dB
121	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Level/Power 3GHz to 18 GHz	Synthesized signal generators R&S SMT06/Gigatronics 9000s Direct with RF Level Meter URV -35,RF Power Meter Gigatronics 8541 & Power sensors	-50 dBm to 13 dBm	0.25 dB to 0.25 dB
122	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Digital temperature indicator of Chambers, Freezers, Baths	PRT, Thermocouple, Dry block, Baths, DTI	250 deg.C to 600 deg.C	-0.1 deg.C to 0.1 deg.C
123	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Digital temperature indicator of Chambers, Freezers, Baths	PRT, Thermocouple, Dry block, Bath, DTI	-80 deg.C to 250 deg.C	-0.05 deg.C to 0.05 deg.C



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124	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Melting point of Gallium)	Gallium cell (Mini),SPRT, AC Thermometry bridge & Furnace	29.7646 deg.C to 29.7646 deg.C	-5 m deg.C to 5 m deg.C
125	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Boiling point of Liquid Nitrogen)	Comparator bath,SPRT & AC Thermometry bridge	-196 deg.C to -196 deg.C	-7.04 m deg.C to 7.04 m deg.C
126	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Melting point of Aluminium)	Aluminium cell (Mini), SPRT, AC Thermometry bridge & Furnace	660.323 deg.C to 660.323 deg.C	-9.78 m deg.C to 9.78 m deg.C
127	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Melting point of Tin)	Tin cell(Mini),SPRT, AC Thermometry bridge & Furnace	231.928 deg.C to 231.928 deg.C	-5.5 m deg.C to 5.5 m deg.C
128	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Melting point of Zinc)	Zinc cell (Mini), SPRT, AC Thermometry bridge & Furnace	419.527 deg.C to 419.527 deg.C	-6.32 m deg.C to 6.32 m deg.C



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129	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Triple point of Mercury)	Mercury cell (Mini), SPRT, AC Thermometry bridge & Furnace	-38.8344 deg.C to -38.8344 deg.C	-5.90 m deg.C to 5.90 m deg.C
130	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Fixed point calibration (Triple point of water)	Fixed point cell(Mini), SPRT, AC Thermometry bridge & Furnace	0.01 deg.C to 0.01 deg.C	-5.82 mdeg.C to 5.82 mdeg.C
131	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Liquid in Glass Thermometer	Oil bath,Cold bath (Methanol),PRT & DTI	-80 deg.C to 250 deg.C	-0.14 deg.C to 0.14 deg.C
132	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RH & Temperature Indicator with Inbuilt or External sensors, Thermohygrometer	RH & Temperature Indicator with sensor, Chamber	20 % RH to 95 % RH	-1 % RH to 1 % RH
133	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RH & Temperature Indicator with Inbuilt or External sensors, Thermohygrometer	RH & Temperature Indicator with sensor, Chamber	25 deg.C to 25 deg.C	-0.2 deg.C to 0.2 deg.C





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134	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RH & Temperature Indicator with Inbuilt or External sensors, Thermohygrometer	RH & Temperature Indicator with sensor, Chamber	40 deg.C to 40 deg.C	-0.2 deg.C to 0.2 deg.C
135	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RH & Temperature Indicator with Inbuilt or External sensors, Thermohygrometer	RH & Temperature Indicator with sensor, Chamber	55 deg.C to 55 deg.C	-0.2 deg.C to 0.2 deg.C
136	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt 385, 100 ohm	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 650 deg C	0.01deg C
137	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt 385, 100 ohm	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 650 deg C	0.01 deg C to 0.01 deg C
138	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt 385, 1000 ohm	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 650 deg C	0.01deg C



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139	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt 385, 1000 ohm	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 650 deg C	0.01 deg C to 0.01 deg C
140	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD with or without indicator, Data logger, Scanner	Oil bath, Cold bath (Methanol), Dry block, PRT, DTI	250 deg.C to 600 deg.C	-0.16 deg.C to 0.16 deg.C
141	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD with or without indicator, Data logger, Scanner	Oil bath, Cold bath (Methanol) Dry block, PRT, DTI	-80 deg.C to 250 deg.C	-0.07 deg.C to 0.07 deg.C
142	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - B	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	0 deg C to 1800 deg C	0.076deg C
143	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - B	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	0 deg C to 1800 deg C	0.076 deg C to 0.076 deg C



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144	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - C	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	0 deg C to 2320 deg C	0.25deg C
145	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - C	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	0 deg C to 2320 deg C	0.25 deg C to 0.25 deg C
146	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - E	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1000 deg C	0.055deg C
147	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - E	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1000 deg C	0.055 deg C to 0.055 deg C
148	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - J	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-210 deg C to 1200 deg C	0.086deg C





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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
149	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - J	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-210 deg C to 1200 deg C	0.086 deg C to 0.086 deg C
150	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - K	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1372 deg C	0.094deg C
151	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - K	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1372 deg C	0.094 deg C to 0.094 deg C
152	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - L	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 900 deg C	0.04deg C
153	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - L	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 900 deg C	0.04 deg C to 0.04 deg C



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154	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - N	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1300 deg C	0.076deg C
155	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - N	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 1300 deg C	0.076 deg C to 0.076 deg C
156	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - R	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-50 deg C to 1768 deg C	0.12deg C
157	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - R	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-50 deg C to 1768 deg C	0.12 deg C to 0.12 deg C
158	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - S	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-50 deg C to 1768 deg C	0.12deg C



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159	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - S	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-50 deg C to 1768 deg C	0.12 deg C to 0.12 deg C
160	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - T	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 400 deg C	0.038deg C
161	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - T	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-270 deg C to 400 deg C	0.038 deg C to 0.038 deg C
162	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - U	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 600 deg C	0.03deg C
163	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple type - U	Using DMM Datron 1281/Nonovoltmeter Agilent 34420A/ Direct	-200 deg C to 600 deg C	0.03 deg C to 0.03 deg C





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164	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouples with or without indicator, Data logger, Scanner	PRT, S type Thermocouple, Dry block furnace, DTI	300 deg.C to 1100 deg.C	-1.36 deg.C to 1.36 deg.C
165	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouples with or without indicator, Data logger, Scanner	PRT, Thermocouple, Dry block furnace, DTI	50 deg.C to 600 deg.C	-0.16 deg.C to 0.16 deg.C
166	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,100 ohm	MFC Fluke 5720A/ Wavetek 4808/Direct	-199 deg C to 650 deg C	0.042deg C
167	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,100 ohm	MFC Fluke 5720A/ Wavetek 4808/Direct	-199 deg C to 650 deg C	0.042 deg C to 0.042 deg C
168	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,1000 ohm	MFC Fluke 5720A/ Wavetek 4808/Direct	-199 deg C to 650 deg C	0.042deg C



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169	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,1000 ohm	MFC Fluke 5720A/ Wavetek 4808/Direct	-199 deg C to 650 deg C	0.042 deg C to 0.042 deg C
170	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - E	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1000 deg.C	0.11deg.C
171	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - E	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1000 deg.C	0.11 deg.C to 0.11 deg.C
172	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - J	MFC Fluke 5720A/ Wavetek 4808/Direct	-210 deg.C to 1200 deg.C	0.08deg.C
173	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - J	MFC Fluke 5720A/ Wavetek 4808/Direct	-210 deg.C to 1200 deg.C	0.08 deg.C to 0.08 deg.C



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174	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - K	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1372 deg.C	0.11deg.C
175	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - K	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1372 deg.C	0.11 deg.C to 0.11 deg.C
176	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - N	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1300 deg.C	0.06deg.C
177	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - N	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 1300 deg.C	0.06 deg.C to 0.06 deg.C
178	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - R	MFC Fluke 5720A/ Wavetek 4808/Direct	-50 deg.C to 1768 deg.C	0.2deg.C





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179	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - R	MFC Fluke 5720A/ Wavetek 4808/Direct	-50 deg.C to 1768 deg.C	0.2 deg.C to 0.2 deg.C
180	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - S	MFC Fluke 5720A/ Wavetek 4808/Direct	-50 deg.C to 1768 deg.C	0.2deg.C
181	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - S	MFC Fluke 5720A/ Wavetek 4808/Direct	-50 deg.C to 1768 deg.C	0.2 deg.C to 0.2 deg.C
182	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - T	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 400 deg.C	0.09deg.C
183	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple type - T	MFC Fluke 5720A/ Wavetek 4808/Direct	-270 deg.C to 400 deg.C	0.09 deg.C to 0.09 deg.C



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184	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-B	MFC Fluke 5720A/ Wavetek 4808/Direct	0 deg. C to 1820 deg. C	0.07deg. C
185	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-B	MFC Fluke 5720A/ Wavetek 4808/Direct	0 deg. C to 1820 deg. C	0.07 deg. C to 0.07 deg. C
186	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-C	MFC Fluke 5720A/ Wavetek 4808/Direct	0 deg.C to 2320 deg.C	0.09deg.C
187	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-C	MFC Fluke 5720A/ Wavetek 4808/Direct	0 deg.C to 2320 deg.C	0.09 deg.C to 0.09 deg.C
188	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-L	MFC Fluke 5720A/ Wavetek 4808/Direct	-200 deg.C to 900 deg.C	0.02deg.C



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189	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-L	MFC Fluke 5720A/ Wavetek 4808/Direct	-200 deg.C to 900 deg.C	0.02 deg.C to 0.02 deg.C
190	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-U	MFC Fluke 5720A/ Wavetek 4808/Direct	-200 deg.C to 600 deg.C	0.02deg.C
191	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple Type-U	MFC Fluke 5720A/ Wavetek 4808/Direct	-200 deg.C to 600 deg.C	0.02 deg.C to 0.02 deg.C
192	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Rubidium Frequency counter CNT 85R/Frequency counter HP/Aplab1148/Anrist su MF 1602/Direct	1 mHz to 18 GHz	2.1 E-10 to 7 E-11
193	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time (Interval)	Rubidium Frequency counter CNT 85R/Frequency counter HP/Aplab1148/Anrist su MF 1602/Direct Comparison Fre.counter PM 6672	100 ms to 1000 s	2 E-3 to 2.4 E-7





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194	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time (Period)	Rubidium Frequency counter CNT 85R/Frequency counter HP/Aplab1148/Anrist su MF 1602/Direct Comparison	3.3 ns to 1000 s	3.2 E-10 to 7.8 E-11
195	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Direct/CNT 85R Rubidium clock/Frequency counter with R&S SMT 06/ gigatronics 9000s Synthesized signal generators	1 mHz to 18 GHz	4E-10 to 7E-11
196	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Time-- Period	Direct/CNT 85R Rubidium clock/Frequency counter with R&S SMT 06/ gigatronics 9000s Synthesized signal generators	3.3 ns to 1000 s	1.3E-10 to 4.5E-10
197	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter)(Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	50rpm to 10000rpm	0.28% to 0.18%



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198	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter)(Non Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	30rpm to 100000rpm	0.05% to 0.5%
199	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter)(Non Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	30rpm to 100000rpm	0.5% to 0.05%
200	MECHANICAL-VOLUME	Glassware Pipette, Burette, Measuring cylinder, Volumetric flask	Using weighing balance with resolution : 0.01 mg/0.02mg/0.05 mg, distilled water & standard weights. Calibration of glassware based on Gravimetric method as per ISO 8655	1 ml to 200 ml	60 micro litre to 60 micro litre



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201	MECHANICAL-VOLUME	Glassware Pipette, Burette, Measuring cylinder, Volumetric flask	Using weighing balance with resolution 0.01 mg, distilled water & standard weights. Calibration of micro pipettes based on Gravimetric method as per ISO 8655	1 ml to 5 ml	50 micro litre to 50 micro litre
202	MECHANICAL-VOLUME	Glassware Pipette, Burette, Measuring cylinder, Volumetric flask	Using weighing balance with resolution 0.01 mg, distilled water & standard weights. Calibration of micropipettes based on Gravimetric method as per ISO 8655	10 micro litre to 50 micro litre	0.5 micro litre to 0.5 micro litre
203	MECHANICAL-VOLUME	Glassware Pipette, Burette, Measuring cylinder, Volumetric flask	Using weighing balance with resolution 0.01 mg, distilled water & standard weights. Calibration of micropipettes based on Gravimetric method as per ISO 8655	50 micro litre to 1 ml	10 micro litre to 10 micro litre





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204	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance $d \geq 0.002\text{mg}$	Class 1 weighing balances and coarser as per OIML R 76-1 E1 class standard weights 1mg - 200g	1mg to 20g	0.03mg to 0.03mg
205	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance $d \geq 0.01\text{mg}$	Class 1 weighing balances and coarser as per OIML R 76-1 E1 class standard weights 1mg - 200g	1mg to 200g	0.14mg to 0.14mg
206	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance $d \geq 0.1\text{g}$	Class 2 weighing balances and coarser as per OIML R 76-1 E1 class standard weights 1mg - 200g & E2 class standard weights 500g -10kg	50g to 12kg	61mg to 61mg
207	MECHANICAL-WEIGHTS	Weights 100 mg to 200mg of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	100mg to 200mg	0.006mg to 0.007mg



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208	MECHANICAL-WEIGHTS	Weights 100g to 200g of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	100g to 200g	0.06mg to 0.12mg
209	MECHANICAL-WEIGHTS	Weights 10g to 20g of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	10g to 20g	0.025mg to 0.03mg
210	MECHANICAL-WEIGHTS	Weights 1mg -2mg of F1 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	1mg to 2mg	0.004mg to



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211	MECHANICAL-WEIGHTS	Weights 1mg -2mg of F1 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	1mg to 2mg	0.004mg to -
212	MECHANICAL-WEIGHTS	Weights 20mg -50mg of F1 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	20mg to 50mg	0.004mg to 0.005mg
213	MECHANICAL-WEIGHTS	Weights 2g to 5g of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	2g to 5g	0.014mg to 0.02mg





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214	MECHANICAL-WEIGHTS	Weights 2kg to 5kg of M2 class and coarser as per OIML 111-1	using E2 class standard weights 500g-10kg and Weighing Balance of 12kg/0.1g by substitution Method based on ABBA cycles.	2kg to 5kg	120mg to 120mg
215	MECHANICAL-WEIGHTS	Weights 500 mg to 1g of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	500mg to 1g	0.009mg to 0.012mg
216	MECHANICAL-WEIGHTS	Weights 500g to 1kg of M2 class and coarser as per OIML 111-1	using E2 class standard weights 500g-10kg and Weighing Balance of 12kg/0.1g by substitution Method based on ABBA cycles.	500g to 1kg	120mg to 120mg



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217	MECHANICAL-WEIGHTS	Weights 50g to 100g of E2 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	50g to 100g	0.039mg to 0.06mg
218	MECHANICAL-WEIGHTS	Weights 5kg to 10kg of M2 class and coarser as per OIML 111-1	using E2 class standard weights 500g-10kg and Weighing Balance of 12kg/0.1g by substitution Method based on ABBA cycles.	5kg to 10kg	120mg to 120mg
219	MECHANICAL-WEIGHTS	Weights 5mg -10mg of F1 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	5mg to 10mg	0.004 mg



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220	MECHANICAL-WEIGHTS	Weights 5mg -10mg of F1 class and coarser as per OIML 111-1	using E1 class standard weights 1mg-200g and Balances of 22g/0.002mg & 205g/0.01mg by substitution Method based on ABBA cycles.	5mg to 10mg	0.004mg to
221	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity	Specific heat & Humidity. RH & Temperature indicator with Inbuilt or External sensor, Thermohygrometer, Comparison calibration method using RH/Temperature indicator with sensor & Chamber, Temperature range of calibration ( 25 deg C to 55 deg C)	20 % RH to 95 % RH	-1 % RH to 1 % RH





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222	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity	Specific heat & Humidity. RH & Temperature indicator with Inbuilt or External sensor, Thermohygrometer, Comparison calibration method using RH/Temperature indicator with sensor & Chamber, Temperature range of calibration ( 25 deg C & 20%RH to 95%RH, 40 deg C & 20%RH to 95%RH and 55 deg C and 20%RH to 95%RH)	20 % RH to 95 % RH	1.0% RH 0.2°C
223	THERMAL-TEMPERATURE	Temperature	Fixed point calibration method using Fixed point cell, SPRT, AC Thermometry bridge, DTI	0.01 deg C to 0.01 deg C	-4.5 mdeg C to 4.5 mDeg C



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224	THERMAL-TEMPERATURE	Temperature	Fixed point calibration method using Fixed point cell, SPRT, AC Thermometry bridge, DTI	0.01 deg C to 0.01 deg C	5.82mdeg C
225	THERMAL-TEMPERATURE	Temperature	Boiling point of liquid Nitrogen (LN2), Comparison calibration using Liquid Nitrogen apparatus, SPRT, AC Thermometry Bridge, DTI	-196 deg C	7.04mDeg C
226	THERMAL-TEMPERATURE	Temperature	Boiling point of liquid Nitrogen (LN2), Comparison calibration using Liquid Nitrogen apparatus, SPRT, AC Thermometry Bridge, DTI	-196 deg C to -196 deg C	-7.04 mDeg C to 7.04 mDeg C
227	THERMAL-TEMPERATURE	Temperature	Melting point of Tin,Fixed point calibration method using fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	231.928 deg C to 231.928 deg C	-5.5 mDeg C to 5.5 mDeg C



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228	THERMAL-TEMPERATURE	Temperature	Melting point of Tin,Fixed point calibration method using fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	231.928 deg C to 231.928 deg C	5.5mDeg C
229	THERMAL-TEMPERATURE	Temperature	Digital temperature indicator of Chamber, Freezer, Bath, Single point calibration method using PRT Dry block furnace, DTI	250 deg C to 600 deg C	-0.10 deg C to 0.10 deg C
230	THERMAL-TEMPERATURE	Temperature	RTD with or without indicator, Data logger, Scanners, Comparison method using Oil bath, Cold bath, Dry block furnace, PRT DTI	250 deg C to 600 deg C	-0.16 deg C to 0.16 deg C
231	THERMAL-TEMPERATURE	Temperature	RTD with or without indicator, Data logger, Scanners, Comparison method using Oil bath, Cold bath, Dry block furnace, PRT, DTI	250 deg C to 600 deg C	0.16deg C





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232	THERMAL-TEMPERATURE	Temperature	Fixed point calibration method using Fixed point cell (mini), SPRT, AC thermometry bridge, DTI	29.7646 deg C to 29.7646 deg C	-5.0 mdeg C to 5.0 mDeg C
233	THERMAL-TEMPERATURE	Temperature	Fixed point calibration method using Fixed point cell (mini), SPRT, AC thermometry bridge, DTI	29.7646 deg C to 29.7646 deg C	5.0mdeg C
234	THERMAL-TEMPERATURE	Temperature	Thermocouples with or without indicator, Data logger, Scanner, Comparison calibration method using PRT/ S type Thermocouple, Dry block furnace, DTI	300 deg C to 1000 deg C	-1.30 deg C to 1.30 deg C



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235	THERMAL-TEMPERATURE	Temperature	Thermocouples with or without indicator, Data logger, Scanner, Comparison calibration method using PRT/ S type Thermocouple, Dry block furnace, DTI	300 deg C to 1000 deg C	1.36deg C
236	THERMAL-TEMPERATURE	Temperature	Triple point of Mercury, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	-38.8344 deg C to -38.8344 deg C	-5.5 deg C to 5.5 deg C
237	THERMAL-TEMPERATURE	Temperature	Triple point of Mercury, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	-38.8344 deg C to -38.8344 deg C	5.9deg C



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238	THERMAL-TEMPERATURE	Temperature	Melting point of Zinc, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	419.527 deg C to 419.527 deg C	-5.5 mDeg C to 5.5 mDeg C
239	THERMAL-TEMPERATURE	Temperature	Melting point of Zinc, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	419.527 deg C to 419.527 deg C	6.32mDeg C
240	THERMAL-TEMPERATURE	Temperature	Thermocouples with or without indicator, Data loggers, Scanner, Comparison method using PRT/ S Type Thermocouple, Dry block furnace, DTI	50 deg C to 600 deg C	-0.16 deg C to 0.16 deg C





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241	THERMAL-TEMPERATURE	Temperature	Thermocouples with or without indicator, Data loggers, Scanner, Comparison method using PRT/ S Type Thermocouple, Dry block furnace, DTI	50 deg C to 600 deg C	0.16deg C
242	THERMAL-TEMPERATURE	Temperature	Melting point of Aluminium, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	660.323 deg C to 660.323 deg C	-7.5 mDeg C to 7.5 mDeg C
243	THERMAL-TEMPERATURE	Temperature	Melting point of Aluminium, Fixed point calibration method using Fixed point cell (mini), SPRT, AC Thermometry bridge, DTI	660.323 deg C to 660.323 deg C	9.78mDeg C



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244	THERMAL-TEMPERATURE	Temperature	Digital temperature indicator of Chambers, Freezers, Bath, Single point calibration method using PRT, Dry block furnace, DTI	-80 deg C to 250 deg C	-0.05 deg C to 0.05 deg C
245	THERMAL-TEMPERATURE	Temperature	RTD with or without indicator, Data logger, Scanners Comparison method using Oil bath, Cold bath, Dry block furnace, PRT, DTI	-80 deg C to 250 deg C	-0.07 deg C to 0.07 deg C
246	THERMAL-TEMPERATURE	Temperature	Liquid in glass thermometer, Comparison calibration method using Oil bath, Cold bath (Methanol), PRT, DTI	-80 deg C to 250 deg C	-0.14 deg C to 0.14 deg C
247	THERMAL-TEMPERATURE	Temperature	RTD with or without indicator, Data logger, Scanners Comparison method using Oil bath, Cold bath, Dry block furnace, PRT, DTI	-80 deg C to 250 deg C	0.07deg C



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248	THERMAL-TEMPERATURE	Temperature	Liquid in glass thermometer, Comparison calibration method using Oil bath,Cold bath (Methanol), PRT, DTI	-80 deg C to 250 deg C	0.14deg C





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Site Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC CURRENT 50Hz to 1KHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	20 A to 100 A	0.05 % to 0.05 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current 50Hz to 50kHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	100 mA to 1 A	0.04 % to 0.08 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current 50Hz to 50kHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	100 uA to 100 mA	0.04 % to 0.04 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC CURRENT 50Hz to 5KHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	1 A to 20 A	0.05 % to 0.08 %



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5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC CURRENT 50Hz to 5KHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	1 A to 20 A	0.08 % to 0.05 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current 50Hz to 5kHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	100 µA to 100 mA	0.04 % to 0.04 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current 50Hz to 5kHz	Direct/DMM Wavetek 1281/ Std. R Tinsley 3111/ V/I method	100 mA to 1 A	0.04 % to 0.08 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC HIGH VOLTAGE 50Hz	Direct/HV Probe Fluke 80k-6/40/ DMM Agilent U1235B	1 kV to 5 kV	0.70 % to 0.7 %



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9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC HIGH VOLTAGE 50Hz	Direct/HV Probe Fluke 80k-6/40/ DMM Agilent U1235B	5 kV to 28 kV	0.7 % to 2 %
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Resistance 1KHz	Direct/Precision Component Analyser 6430B	1 Ohm to 5 MOhm	0.02 % to 0.1 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (10kHz to 30kHz)	Direct/DMM Wavetek 1281/DMM HP3458	10 mV to 100 mV	0.07 % to 0.034 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (10kHz to 30kHz)	Direct/DMM Wavetek 1281/DMM HP3458	100 mV to 1000 V	0.034 % to 0.022 %





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13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (30kHz to 100kHz)	Direct/DMM Wavetek 1281/DMM HP 3458	10 mV to 100 mV	0.17 % to 0.08 %
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (30kHz to 100kHz)	Direct/DMM Wavetek 1281/DMM HP3458	100 mV to 100 V	0.08 % to 0.06 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (50Hz to 10kHz)	Direct/DMM Wavetek 1281 /DMM HP 3458	10 mV to 100 mV	0.03 % to 0.012 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage (50Hz to 10kHz)	Direct/DMM Wavetek 1281/DMM HP 3458	100 mV to 1000 V	0.012 % to 0.01 %



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17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance 1kHz	Direct/Precision Component Analyser 6430B	10 pF to 1 mF	0.05 % to 0.2 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance 1kHz	Direct/Precision Component Analyser 6430B	10 uH to 100 H	0.05 % to 0.2 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Phase Angle/PF	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	-180 degree to +180 degree(V-I)	0.02deg
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Phase Angle/PF	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	-180 degree to +180 degree(V-I)	0.02 deg to - -



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21	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy 3 Phase	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	40V to 320V/ 10mA to 20A/ 40Hz to 70Hz/ PF - UPF to 0.1 PF	0.03 %/PF to 0.03 % / PF
22	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy 3 Phase	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	40V to 320V/ 10mA to 20A/ 40Hz to 70Hz/ PF - UPF to 0.1 PF	0.03 %/PF to - %/PF
23	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy Single Phase	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	40V to 320V/ 10mA to 20A/ 40Hz to 70Hz/ PF - UPF to 0.1	0.03 %/PF to 0.03 % / PF
24	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power/Energy Single Phase	Direct/Power Energy Calibrator ZERA TPZ 303/MT 3000	40V to 320V/ 10mA to 20A/ 40Hz to 70Hz/ PF - UPF to 0.1	0.03 %/PF to - -
25	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz TO 5kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	1 A to 20 A	0.7 % to 3.2 %





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26	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz TO 5kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	1 mA to 10 mA	0.22 % to 0.1 %
27	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz TO 5kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	10 mA to 100 mA	0.1 % to 0.15 %
28	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz TO 5kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	100 mA to 1000 mA	0.15 % to 0.7 %
29	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 1kHz TO 5kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	100 uA to 1 mA	0.45 % to 0.22 %
30	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz TO 1kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	1 A to 10 A	0.06 % to 0.08 %



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31	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz TO 1kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	1 mA to 10 mA	0.12 % to 0.06 %
32	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz TO 1kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	10 A to 20 A	0.08 % to 0.15 %
33	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz TO 1kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	10 mA to 1 A	0.06 % to 0.06 %
34	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz TO 1kHz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	100 uA to 1 mA	0.23 % to 0.12 %
35	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC CURRENT 50Hz/60Hz	MFC FLUKE 5520/WAVETEK 9100/DIRECT	20 A to 1000 A	0.3 % to 0.3 %



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36	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC RESISTANCE 1kHz	DIRECT/STD R TINSLEY 3111/1682/5685 SERIES	10 mOhm to 100 mOhm	0.01 % to 0.01 %
37	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC RESISTANCE 1kHz	DIRECT/STD R TINSLEY 3111/1682/5685 SERIES	10hm,100hm,1000 hm,1 kOhm to 10 kOhm	0.004 % to 0.004 %
38	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 100 kHz TO 500 kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	1 mV to 10 V	5.8 % to 0.25 %
39	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz TO 30kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	1 mV to 10 mV	0.7 % to 0.11 %
40	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz TO 30kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 mV to 100 mV	0.11 % to 0.036 %





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41	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz TO 30kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 V to 100 V	0.03 % to 0.036 %
42	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 10kHz TO 30kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	100 mV to 10 V	0.036 % to 0.030 %
43	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30 kHz TO 100 kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	1 mV to 10 mV	1.5 % to 0.5 %
44	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30 kHz TO 100kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 mV to 100 mV	0.5 % to 0.083 %
45	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30 kHz TO 100kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 V to 100 V	0.041 % to 0.25 %



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46	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30 kHz TO 100kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 V to 100 V	0.083 % to 0.041 %
47	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 30 kHz TO 100kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	100 mV to 10 V	0.083 % to 0.041 %
48	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 50 Hz TO 10kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	1 mV to 10 mV	0.62 % to 0.075 %
49	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 50 Hz TO 10kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 mV to 100 mV	0.075 % to 0.025 %
50	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 50 Hz TO 10kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	10 V to 1000 V	0.021 % to 0.031 %



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51	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC VOLTAGE 50 Hz TO 10kHz	MFC FLUKE 5520/WAVETEK 9100/DMM WAVETEK 128/HP 3458/DIRECT	100 mV to 10 V	0.025 % to 0.021 %
52	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Direct/std Capacitors IET	1 pF to 1 pF	0.04 % to 0.04 %
53	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	CAPCITANCE 100Hz	4 TERMINAL CAPACITOR GR 1417/FLUKE 5520/WAVETEK 9100	10 mF to 1000 mF	0.10 % to 0.10 %
54	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	CAPCITANCE 1kHz	4 TERMINAL CAPACITOR GR 1417/FLUKE 5520/WAVETEK 9100	1 uF to 10 mF	0.02 % to 0.1 %
55	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	CAPCITANCE 1kHz	DIRECT/STD CAPACITORS IET/STD CAPACITORS GR 1409/IET(DISCRETE VALUES)	10 pF to 1 uF	0.02 % to 0.02 %





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56	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	INDUCTANCE 1kHz	DIRECT/STD INDUCTOR GR 1482 SERIES	100 uH to 10 H	0.02 % to 0.03 %
57	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	PHASE ANGLE /P.F.	DIRECT/POWER ENERGY CALIBRATION SYSTEM/ZERA TPZ 303/ZERA Mt3000	+180 degree to -180 degree(V-I)	0.02 degree
58	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	POWER /ENERGY SINGLE PHASE ACTIVE/REACTIVE	DIRECT/POWER ENERGY CALIBRATION SYSTEM/ZERA TPZ 303/ZERA Mt3000	40V TO 320V/10mA TO 20 A 40Hz to 70Hz POWER FACTOR - 0.1 TO UPF	0.031 % to 0.31 %
59	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	POWER /ENERGY SINGLE PHASE ACTIVE/REACTIVE	DIRECT/POWER ENERGY CALIBRATION SYSTEM/ZERA TPZ 303/ZERA Mt3000	40V TO 320V/10mA TO 20 A 40Hz to 70Hz POWER FACTOR - 0.1 TO UPF	0.31 % to 0.031 %
60	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	POWER /ENERGY THREE PHASE ACTIVE/REACTIVE	POWER ENERGY CALIBRATION SYSTEM/ZERA TPZ 303/ZERA Mt3000	40V TO 320V/10mA TO 20A 40Hz to 70Hz POWER FACTOR 0.1 TO UPF	0.03 % to 0.31 %



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61	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	POWER /ENERGY THREE PHASE ACTIVE/REACTIVE	POWER ENERGY CALIBRATION SYSTEM/ZERA TPZ 303/ZERA Mt3000	40V TO 320V/10mA TO 20A 40Hz to 70Hz POWER FACTOR 0.1 TO UPF	0.31 % to 0.03 %
62	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Direct/DMM Wavetek 1281/HP 3458/Std R Tinsley 3111, V/I Method	1 A to 100 A	0.01 % to 0.01 %
63	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Direct/DMM Wavetek 1281/HP 3458/Std R Tinsley 3111	10 mA to 100 mA	0.003 % to 0.004 %
64	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Direct/DMM Wavetek 1281/HP 3458/Std R Tinsley 3111	100 mA to 1 A	0.004 % to 0.012 %
65	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Direct/DMM Wavetek 1281/HP 3458/Std R Tinsley 3111	100 uA to 10 mA	0.003 % to 0.003 %



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66	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Direct/DMM Agilent U1253/HV Probe Fluke 80k-6/40	1 kV to 5 kV	0.2 % to 0.2 %
67	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Direct/DMM Agilent U1253/HV Probe Fluke 80k-6/40	5 kV to 40 kV	0.2 % to 1 %
68	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	1 Gohm to 100 Gohm	0.012 % to 0.04 %
69	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	1 ohm to 10 ohm	0.0075 % to 0.001 %





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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
70	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	10 ohm to 100 Mohm	0.001 % to 0.002 %
71	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	100 Gohm to 1 Tohm	0.04 % to 0.25 %
72	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	100 Mohm to 1 Gohm	0.002 % to 0.012 %
73	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Direct/Micro ohm meter Agilent 34420A/DMM Wavetek 1281/HP 3458/High Resistance Meter Keithley 6617	100 mohm to 1 ohm	0.01 % to 0.0075 %



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74	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Direct/DMM Wavetek 1281/HP 3458/Nano Voltmeter Agilent 33420A	1 mV to 10 mV	0.007 % to 0.0055 %
75	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Direct/DMM Wavetek 1281/HP 3458/Nano Voltmeter Agilent 33420A	10 mV to 100 mV	0.0055 % to 0.0008 %
76	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Direct/DMM Wavetek 1281/HP 3458/Nano Voltmeter Agilent 33420A	100 mV to 1000 V	0.0008 % to 0.0012 %
77	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE 5520a/WAVETEK 9100/DIRECT WITH CURRENT COIL	1 A to 20 A	0.025 % to 0.11 %
78	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE5520/WAVETE K 9100/DIRECT WITH CURRENT COIL	1 mA to 100 mA	0.017 % to 0.013 %



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79	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE 5520/WAVETEK 9100/DIRECT WITH CURRENT COIL	100 $\mu$ A to 1000 $\mu$ A	0.04 % to 0.017 %
80	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE 5520A /WAVETEK 9100/ DIRECT WITH CURRENT COIL	100 mA to 1 A	0.013 % to 0.025 %
81	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE 5520/WAVETEK 9100/DIRECT WITH CURRENT COIL	100 $\mu$ A to 1000 $\mu$ A	0.04 % to 0.01 %
82	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC CURRENT	MFC FLUKE 5520A/WAVETEK 9100/DIRECT WITH CURRENT COIL	20 A to 1000 A	0.3 % to 0.3 %
83	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power	Direct/Using mfc Fluke 5520A	1V to 1000V 100 mA to 20 A	0.025 % to 0.07 %





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84	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC RESISTANCE	DIRECT/GUIDLINE SHUNT 9921A/STD R L&N 4030 SERIES/DECADE R BOX ESI/DECADE R BOX BIDDLE /DECADE R BOX TINSLEY	1 GOhm to 1 TOhm	0.05 % to 0.4 %
85	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC RESISTANCE	DIRECT /GUIDLINE SHUNT 9921A/STD R L & N 4030 SERIES /DECADE R BOX ESI/ DECADE R BOX BIDDLE/DECADE R BOX TINSLEY	1 mOhm to 10 k Ohm	0.001 % to 0.001 %
86	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC RESISTANCE	DIRECT/GUIDLINE SHUNT 9921A/STD R L&N 4030 SERIES/DECADE R BOX ESI/DECADE R BOX BIDDLE /DECADE R BOX TINSLEY	1 MOhm to 10 MOhm	0.001 % to 0.005 %



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87	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC RESISTANCE	DIRECT/GUILDLINE SHUNT 9921A/STD R L&N 4030 SERIES/DECADE R BOX ESI/DECADE R BOX BIDDLE /DECADE R BOX TINLSLEY	10 kOhm to 1 MOhm	0.001 % to 0.001 %
88	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC RESISTANCE	DIRECT/GUILDLINE SHUNT 9921A/STD R L&N 4030 SERIES/DECADE R BOX ESI/DECADE R BOX BIDDLE /DECADE R BOX TINLSLEY	10 MOhm to 1 GOhm	0.005 % to 0.050 %
89	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC VOLTAGE	DIRECT /MFC FLUKE 5520A/WAVETEK9100	1 mV to 100 mV	0.1 % to 0.003 %
90	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC VOLTAGE	DIRECT/MFC FLUKE 5520A/WAVETEK 9100/NANOVLTMETER AGILENT 34420A	100 mV to 1000 V	0.003 % to 0.002 %



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91	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope - Bandwidth	direct/signal generator SMT 06?aplab 1016	Up to to 3 GHz	2 % to 5 %
92	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope - Time Base	Direct/mfc fluke 5520A/Wavetek 9100	2 ns to 20 ms	0.00025 % to 0.0025 %
93	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope - Time Base	Direct/mfc fluke 5520A/Wavetek 9100	20 ms to 5 s	0.00025 % to 0.0025 %
94	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope - Amplitude(Vertical Deflection Factor)	Direct/mfc fluke 5520A/Wavetek 9100	1 mV to 130 V(1M Ohm)	0.46 % to 0.46 %
95	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope - Amplitude(Vertical Deflection Factor)	Direct/mfc fluke 5520A/Wavetek 9100	1 mV to 6.5 V(50M Ohm)	0.46 % to 0.46 %





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96	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Level/Power 100kHz to 3 GHz	Direct/RF Level Meter URV-35/ RF Power Meter Gigatronics 8541	-50 dBm to 13 dBm	0.23 dB to 0.23 dB
97	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Level/Power 10MHz to 6GHz	Direct/RF Level Meter URV-35/ RF Power Meter Gigatronics 8541	-50 dBm to 13 dBm	0.25 dBm to 0.25 dBm
98	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF LEVEL/POWER 100kHz TO 3GHz	DIRECT/SYNTHESIZED SIGNAL GENERATOR R & S SMT 06/GIGATRONICS 9000s RF LEVEL METER URV-35,RF POWER METER GIGATRONICS 8541	-50 dB to +13 dB	0.23 dB to 0.23 dB



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99	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF LEVEL/POWER 10MHz TO 6GHz	DIRECT/SYNTHESIZED SIGNAL GENERATOR R & S SMT 06/GIGATRONICS 9000s RF LEVEL METER URV-35,RF POWER METER GIGATRONICS 8541	-50 dB to +13 dB	0.25 dB to 0.25 dB
100	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RH & Temperature Indicators of Chambers	Humidity parameter is calibrated at 25 degC, 40 deg C & 55 degC with expanded uncertainty of +/- 0.3 degC, using RH & Temperature indicator with sensor	20 % RH to 95 % RH	-1.5 % RH to 1.5 % RH
101	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt385, 1000ohm	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-199 deg. C to 800 deg. C	0.04 deg. C



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102	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt385, 1000Ohm	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-199 deg. C to 800 deg. C	0.04 deg. C to 0.04 deg C
103	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt385, 1000Ohm	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-199 deg. C to 800 deg. C	0.04 deg. C





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104	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - Pt385, 1000hm	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-199 deg. C to 800 deg. C	0.04 deg. C to 0.04 deg C
105	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD, Temperature Indicator with sensor	PRT, Dry block furnace, DTI	-25 deg.C to 600 deg.C	-0.2 deg.C to 0.2 deg.C
106	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Temperature Indicator of Ovens, baths, Deep freezers, Chambers etc	PRT, Thermocouple Type `S', Dry block furnace, DTI	200 deg.C to 1100 deg.C	-1.39 deg.C to 1.39 deg.C
107	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Temperature Indicator of Ovens, baths, Deep freezers, Chambers etc	PRT, Thermocouple Type `S', Dry block furnace, DTI	-25 deg.C to 600 deg.C	-0.2 deg.C to 0.2 deg.C



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108	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Temperature Indicator with sensor of Oven,Deep freezers, & Chamber	Five, Nine, Fifteen Class `A' PT 100 sensors,PRT, DTI	-80 deg.C to 200 deg.C	-0.5 deg.C to 0.5 deg.C
109	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-B	For Calibration of Temp. Indicator/controller/indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	600 deg. C to 1800 deg. C	0.04deg. C
110	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-B	For Calibration of Temp. Indicator/controller/indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	600 deg. C to 1800 deg. C	0.04 deg. C to 0.04 deg. C



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111	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-C	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 2300 deg. C	0.9deg. C
112	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-C	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 2300 deg. C	0.9 deg. C to 0.9 deg. C





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113	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-E	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-250 deg. C to 1000 deg. C	0.012deg. C
114	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-E	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-250 deg. C to 1000 deg. C	0.012 deg. C to 0.012 deg. C



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115	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-J	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1200 deg. C	0.013deg. C
116	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-J	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1200 deg. C	0.013 deg. C to 0.013 deg. C



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117	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-K	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1350 deg. C	0.03deg. C
118	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-K	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1350 deg. C	0.03 deg. C to 0.03 deg. C





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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
119	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-L	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 900 deg. C	0.4deg. C
120	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-L	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 900 deg. C	0.4 deg. C to 0.4 deg. C



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121	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-N	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1300 deg. C	0.025deg. C
122	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-N	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 1300 deg. C	0.025 deg. C to 0.025 deg. C



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123	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-R	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 1750 deg. C	0.035deg. C
124	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-R	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 1750 deg. C	0.035 deg. C to 0.035 deg. C





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125	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-S	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 1750 deg. C	0.043deg. C
126	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-S	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	0 deg. C to 1750 deg. C	0.043 deg. C to 0.043 deg. C



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127	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-T	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-250 deg. C to 400 deg. C	0.038deg. C
128	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-T	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-250 deg. C to 400 deg. C	0.038 deg. C to 0.038 deg. C



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129	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-U	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 600 deg. C	0.6deg. C
130	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	Thermocouple TYPE-U	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/ Using DMM Datron 1281/Nonovoltmeter /MicroOhm Meter Agilent 34420A/ Direct	-200 deg. C to 600 deg. C	0.6 deg. C to 0.6 deg. C
131	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,100 ohm,1000 Ohm	direct/using MFC Datron 9100/fluke 5520A/Aoip Process calibrator	-199 deg.C to 800 deg.C	0.03deg.C





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132	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD-Pt 385,100 ohm,1000 Ohm	direct/using MFC Datron 9100/fluke 5520A/Aoip Process calibrator	-199 deg.C to 800 deg.C	0.03 deg.C to 0.03 deg.C
133	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-C	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/using mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 2300 deg.C	0.9deg.C
134	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-C	For Calibration of Temp. Indicator/controller/Indicator/Process Calibrator/direct/using mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 2300 deg.C	0.9 deg.C to 0.9 deg.C



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135	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-E	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-250 deg.C to 1000 deg.C	0.11deg.C
136	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-E	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-250 deg.C to 1000 deg.C	0.11 deg.C to 0.11 deg.C
137	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-J	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1200 deg.C	0.08deg.C



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138	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-J	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1200 deg.C	0.08 deg.C to 0.08 deg.C
139	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-K	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1350 deg.C	0.11deg. C
140	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-K	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1350 deg.C	0.11 deg. C to 0.11 deg. C





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141	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-L	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 900 deg.C	0.4deg.C
142	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-L	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 900 deg.C	0.4 deg.C to 0.4 deg.C
143	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-N	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1300 deg.C	0.1deg.C



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144	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-N	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 1300 deg.C	0.1 deg.C to 0.1 deg.C
145	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-R	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 1750 deg.C	0.15deg.C
146	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-R	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 1750 deg.C	0.15 deg.C to 0.15 deg.C



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147	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-S	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 1750 deg.C	0.15deg.C
148	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-S	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	0 deg.C to 1750 deg.C	0.15 deg.C to 0.15 deg.C
149	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-U	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 600 deg.C	0.6deg.C





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150	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-U	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-200 deg.C to 600 deg.C	0.6 deg.C to 0.6 deg.C
151	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-B	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	600 deg.C to 1800 deg.C	0.15deg.C
152	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-B	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	600 deg.C to 1800 deg.C	0.15 deg.C to 0.15 deg.C



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153	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-T	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-250 deg.C to 400 deg.C	0.13deg.C
154	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	Thermocouple TYPE-T	For Calibration of Temp. Indicator/controller/ Indicator/Process Calibrator/direct/usin g mfc datron 9100/fluke 5520A/Aoip process calibrator	-250 deg.C to 400 deg.C	0.13 deg.C to 0.13 deg.C
155	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency 1Hz to 18 GHz	Direc/ Freq. Counter Anritsu MF 1602/ Aplab	1 Hz to 18 GHz	1.3 E-7 to 9.3 E -8
156	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency 1Hz to 18 GHz	Direc/ Freq. Counter Anritsu MF 1602/ Aplab	1 Hz to 18 GHz	9.3E-8 to 1.3E- 8



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157	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time -- Interval	Direc/ Freq. Counter Anritsu PM 6672	1 s to 10000 s	0.007 % to 0.007 %
158	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time -- Period	Direc/ Freq. Counter Anritsu PM 6672	1 us to 1000 s	1E- 8 to - 8
159	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time -- Period	Direc/ Freq. Counter Anritsu PM 6672	1 us to 1000 s	1E- 8 to 1E- 8
160	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	FREQUENCY	DIRECT/SIG. GEN R&S SMT-06	1 Hz to 6 GHz	1.2E-6 . to 1.2E-6 .
161	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	TIME -PERIOD	DIRECT/COMPARISON/FREQ COUNTER PM6672+FUNCTION GEN/TIMER	1 uS to 1000 uS	3E-8 . to 3E-8 .





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**Validity**

29/01/2020 to 01/01/2021\*

**Last Amended on**

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\*The validity is extended for one year up to 01.01.2022

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
162	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter) (Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	50 rpm to 10000 rpm	0.18% to 0.28%
163	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter) (Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	50 rpm to 10000 rpm	0.28% to 0.18%
164	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter) (Non Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	30 rpm to 100000 rpm	0.05% to 0.5%
165	MECHANICAL-ACCELERATION AND SPEED	Tachometer (RPM Meter) (Non Contact)	Using Digital Tachometer Monarch & RPM generator(AC/DC Motor) by Direct/Comparison Method	30 rpm to 100000 rpm	0.5% to 0.05%



# National Accreditation Board for Testing and Calibration Laboratories

## SCOPE OF ACCREDITATION

**Laboratory Name :**

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166	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.002$ mg	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g	1 mg to 20g	0.03 mg
167	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.002$ mg	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g	1 mg to 20g	0.03 mg to - -
168	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.01$ mg	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g	1 mg to 200 mg	0.14 mg
169	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.01$ mg	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g	1 mg to 200 mg	0.14 mg to - -



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170	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.1$ g	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g & E2 class standard weights 500g to 10kg	50 g to 12 kg	61 mg
171	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronics Weighing Balance $d \geq 0.1$ g	Calibration of Class 1 Weighing balances and coarser as per OIML R-76-I / E1 Class Standard Weights 1mg - 200g & E2 class standard weights 500g to 10kg	50 g to 12 kg	61 mg to - -
172	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity	RH & Temperature indicator of Chamber, Single position comparison calibration using RH/Temperature indicator with sensor & Chamber, Calibration range 25 deg C to 55 deg C	20 % RH to 95 % RH	-1.5 % RH to 1.5 % RH





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173	THERMAL-SPECIFIC HEAT & HUMIDITY	RH & Temperature Indicators of Chambers	RH & Temperature indicator of Chamber, Single position comparison calibration	20 % RH to 95 % RH @ 25°C,40°C & 55°C	0.3°C 1.5% RH
174	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer, Chamber, Single position calibration using RTD/PRT, DTI	200 deg C to 1000 deg C	-1.39 deg C to 1.39 deg C
175	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer, Chamber, Single position calibration using RTD/PRT, DTI	200 deg C to 1000 deg C	1.39deg C
176	THERMAL-TEMPERATURE	Temperature	RTD, Temperature indicator with sensor, Comparison calibration method using PRT, Dry block calibrator, DTI	-25 deg C to 600 deg C	-0.2 deg C to 0.2 deg C



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177	THERMAL-TEMPERATURE	Temperature	RTD, Temperature indicator with sensor, Comparison calibration method using PRT, Dry block calibrator, DTI	-25 deg C to 600 deg C	0.2deg C
178	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer & chamber, Single position calibration using RTD/PRT, DTI	-25 deg C to 600 deg C	-0.2 deg C to 0.2 deg C
179	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer & chamber, Single position calibration using RTD/PRT, DTI	-25 deg C to 600 deg C	0.2deg C
180	THERMAL-TEMPERATURE	Temperature	Digital temperature indicator of Chamber, Freezer, Bath, Single point calibration method using PRT Dry block furnace, DTI	250 deg C to 600 deg C	0.1deg C



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181	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer, Chamber, Multi position calibration using RTD, DTI	80 deg C to 200 deg C	-0.5 deg C to 0.5 deg C
182	THERMAL-TEMPERATURE	Temperature	Temperature indicator with sensor of Oven, Deep freezer, Chamber, Multi position calibration using RTD, DTI	80 deg C to 200 deg C	0.5deg C
183	THERMAL-TEMPERATURE	Temperature	Digital temperature indicator of Chambers, Freezers, Bath, Single point calibration method using PRT, Dry block furnace, DTI	-80 deg C to 250 deg C	0.05deg C

\* CMCs represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k = 2.





National Accreditation Board for  
Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**ELECTRONICS REGIONAL TEST LABORATORY (WEST)**

has been assessed and accredited in accordance with the standard

**ISO/IEC 17025:2017**

**"General Requirements for the Competence of Testing &  
Calibration Laboratories"**

for its facilities at

GOVERNMENT OF INDIA, MINISTRY OF ELECTRONICS & INFORMATION TECHNOLOGY, STQC  
DIRECTORATE, PLOT NO. F-7&8, MIDC AREA, ANDHERI(EAST), MUMBAI, MAHARASHTRA, INDIA

in the field of

**CALIBRATION**

Certificate Number: CC-2031

Issue Date: 29/01/2020

Valid Until: 01/01/2021\*

\*The validity is extended for one year up to 01.01.2022

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.  
(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

Name of Legal Identity : ELECTRONICS REGIONAL TEST LABORATORY (WEST)

Signed for and on behalf of NABL



N. Venkateswaran  
Chief Executive Officer