National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

ELECTRONICS REGIONAL TEST LABORATORY (EAST)

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

BLOCK: DN,SECTOR-V, SALT LAKE CITY, KOLKATA, WEST BENGAL, INDIA

in the field of

CALIBRATION

Certificate Number: CC-2008

Issue Date: 21/01/2022 **Valid Until:** 20/01/2024

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)

Name of Legal Entity : ELECTRONICS REGIONAL TEST LABORATORY (EAST)

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

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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)(±)
Permanent Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 10 Hz – 1 kHz	Using DMM, REFERENCE MULTIMETER (8.5 Digit), AC MEASUREMET STANDARD ,THREE PHASE COMPARATOR by Direct/Comparison Method	10 µA to 1 A	0.05% to 0.016%
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 10 Hz – 5 kHz	Using DMM, REFERENCE MULTIMETER (8.5 Digit), AC MEASUREMET STANDARD, THREE PHASE COMPARATOR by Direct/Comparison Method	1 A to 20 A	0.016 % to 0.035 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 50 Hz	Using Three phase comparator by Direct Method	0.01 A to 120 A	0.013%

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4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Energy 1Ph & 3Ph (50Hz) (active and reactive) , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method:	60 V to 240 V, 10 mA to 120 A, UPF to 0.5 (lead and Lag)	0.012 % to 0.023 %
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage at 50 Hz	Using DMM & HV Probe By Direct/ Comparison Method	>1 kV to 28 kV	6%
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Power 1Ph & 3Ph (50Hz) (active and reactive) 60 V to 240V, 10 mA to 120A , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method:	0.03W to 86.4kW \(0.03VAR to 86.4kVAR)	0.012% to 0.023%
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Resistance at 1kHz	Using RLC DIGIBRIDGE, Standard AC/DC resistance By Direct/ Comparison Method	1 ohm to 100 kohm	0.3 to 0.1%

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8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10 Hz –40 Hz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER AC MEASUREMET STANDARD by Direct/ Comparison Method:	1 mV to 1000 V	0.5% to 0.025%
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 100kHz-1MHz	Using Multifunction Calibrator & IVD ,AC MEASUREMET STANDARD ,THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 1 V	1.34% to 0.1%
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10kHz-100kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARD By Direct/ Comparison Method:	1 mV to 1 V	0.43 % to 0.014 %

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11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10kHz-100kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit) THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARDBy Direct/ Comparison Method:	1 V to 100 V	0.014% to 0.016%
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 40Hz – 10kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARD By Direct/ Comparison Method:	1 mV to 1000 V	0.5% to 0.012 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance at 1 kHz	Using Capacitance Measuring Assembly REFERENCE STD CAPACITOR, RLC DIGIBRIDGE Direct/Comparison	1 pF to 1.0 mF	0.04 % to 1.2 %

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14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance at 1 kHz	Using Capacitance Measuring Assembly Reference STD CAPACITOR ,RLC DIGIBRIDGE Direct/Comparison method	1.0 mF to 10 mF	1.2 % to 0.3 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Frequency AC Voltage 100MHz -1 GHz	Using RF MILLIVOLTMETER by Direct/Comparison Method	10 mV to 7 V	3.5%
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Frequency AC Voltage 1 MHz -100 MHz	Using RF MILLIVOLTMETER by Direct/Comparison Method	10 mV to 10 V	3.3%
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance at 1 kHz	Using RLC DIGIBRIDGE Reference STD Capacitor by Direct/Comparison Method	100 µH to 10 H	0.2 % to 0.06 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power Factor/Phase Angle 50Hz At 240V ,5A	Using Three Phase Comparator by Direct/comparison Method	+/- 0.1 - 1.0 (lag & lead) to 0°to 180° (Lead & Lag)	0.01 %

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19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current 10 Hz - 5 KHz	Using Multifunction Calibrator ,REFERENCE MULTIMETER (8.5 Digit), AC measurement standard & Shunt by Direct/ Comparison Method	10 µA to 1A	0.08 % to 0.05 %
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current 10 Hz - 5 KHz	Using Multifunction CALIBRATOR , REFERENCE MULTIMETER (8.5 Digit), AC measurement standard & Shunt by Direct/ Comparison Method	1A to 20 A	0.05 % to 0.035 %
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current At 50Hz	Using Three phase comparator by Direct Method	10 mA to 100 A	0.013%
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current by using current coil At 50 Hz	Using Multifunction Calibrator and Current Coil by Direct Method	20 A to 1000 A	0.55 %

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23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Energy 1Ph & 3Ph (50Hz) (active and reactive) , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method	60 V to 240 V, 10 mA to 120A, UPF to 0.5 (lead & lag) to	0.012 % to 0.023 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Power 1Ph & 3Ph (50Hz) (active and reactive) , 60 V to 240V ,10 mA to 120A , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method	(0.03W to 86.4kW) \ (0.03VAR to 86.4kVAR)	0.012% to 0.023%
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Resistance at 1 kHz	Using AC/DC RES.STD,LCR Digibridge by Direct / Comparison Method	1 ohm, 10 ohm , 100 ohm,1 kohm, 10 kohm	0.007%
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10 Hz – 45 Hz	Using Multifunction Calibrator & IVD, AC MEASUREMET STANDARD , THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	1 mV to 1000 V	0.7% to 0.025%

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27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10 kHz – 50 kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 1 V	0.2% to 0.014%
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10kHz-50kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method::	1 V to 100 V	0.014% to 0.02%
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 45Hz – 10kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	1 mV to 100 V	0.4 % to 0.008 %

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30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 45Hz – 10kHz	Using Multifunction Calibrator & IVD, AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	100 V to 1000 V	0.008% to 0.02%
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 50kHz -1MHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 100 mV	0.05 % to 1.2 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 50kHz -1MHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method::	100 mV to 10 V	0.25 % to 0.12 %
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using REFERENCE STD CAPACITOR, RLC digibridge By Direct Method	1.0 mF, 10 mF	0.05% to 0.38 %

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34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using STD “Capacitor”, REFERENCE STD CAPACITOR,RLC Digibridge By Direct / Comparison Method	10 pF to 1000pF	0.003% to 0.015%
35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using REFERENCE STD CAPACITOR, RLC Digibridge By Direct Method	1000 pF to 1 mF	0.015% to 0.05 %
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	High Frequency AC Voltage 1 MHz -1 GHz	Using Multifunction Calibrator, RF Voltmeter with Insertion Unit, Signal Generator & RF Amplifier.,1000MHz, RF Attenuator by Direct / Comparison Method	10 mV to 7 V	3.5 %
37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance 1 kHz	Using Reference STD INDUCTOR , RLC DIGIBRIDGE by Direct / Comparison Method	100 µH to 100 mH	0.1% to 0.03%
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance 1 kHz	Using Reference STD INDUCTOR , RLC DIGIBRIDGE by Direct / Comparison Method	100 mH to 10H	0.03% to 0.09%

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39	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Direct/Comparison Method:	10 µA to 1 mA	0.006 % to 0.002 %
40	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Comparison,V/R Method:	20 A to 850 A	0.005 % to 0.05 %
41	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current :	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Direct/Comparison Method:	1 mA to 20 A	0.002 % to 0.005 %

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42	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage :	Using HV probe and and Digital Multimeter by Direct/Comparison method	>1 kV to 40 kV	2.5 %
43	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Using DMM, REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by V/I, Direct /Comparison ,Method:	0.0001 ohm to 0.001 ohm	0.03 % to 0.004 %
44	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by Direct/Comparison , V/I Method:	0.001 ohm to 1 Mohm	0.004 % to 0.001 %
45	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard High Resistance Meter by Direct/Comparison Method:	1 Mohm to 20 Gohm	0.001 % to 0.20 %

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46	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by Direct/Comparison Method:	20 Gohm to 1 Tohm	0.2% to 2.5 %
47	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method	1 mV to 10 V	0.014 % to 0.0004 %
48	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method:	10 µV to 1 mV	2 % to 0.014 %

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49	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage :	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method:	10 V to 1000 V	0.0004% to 0.0005 %
50	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR, STD"RESISTANCE", DMM- REFERENCE MULTIMETER (8.5 Digit) STD Shunt, By Direct/ Comparison Method	1 A to 20 A	0.005 % to 0.009 %
51	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR, STD"RESISTANCE", REFERENCE MULTIMETER STD Shunt, By Direct/ V/R Method	10 µA to 1 A	0.01 % to 0.005 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR along with current coil By Direct Method	20 A to 1000 A	0.53%

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53	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR along with Transconductance Amplifier, STD Resistance, Reference Multimeter, SYSTEM DC POWER SUPPLY, STD Shunt, By Direct/V/R Method	20 A to 850 A	0.009 % to 0.06 %
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance” By Direct Method	0.0001 ohm to 100 kohm	0.04 % to 0.001 %
55	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance” By Direct Method	10 Mohm to 1 Tohm	0.003 % to 2 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance”, By Direct Method	100 kohm to 10 Mohm	0.001 % to 0.003 %

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57	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using MULTIFUNCTION CALIBRATOR, DMM-REFERENCE MULTIMETER (8.5 Digit), DC Voltage Ref STD NULL DETECT, KELVIN VERLEY DIVIDER By Direct / Comparison Method	10 µV to 10 V	2 % to 0.0003 %
58	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using MULTIFUNCTION CALIBRATOR, DMM-REFERENCE MULTIMETER (8.5 Digit), DC Voltage Ref STD NULL DETECTOR, KELVIN VERLEY DIVIDER By Direct / Comparison Method	10 V to 1000 V	0.0003 % to 0.0004 %
59	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation 50MHz–1GHz	Using RF Level Meter, RF MILLIVOLTMETER by Direct/Comparison Method	1 dB to 10 dB	0.15dB

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60	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation 50MHz–1GHz	Using RF Level Meter, RF Millivoltmeter by Direct/Comparison Method	10 dB to 60 dB	0.17dB
61	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz – 2GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	1 mW to 40 mW	4%
62	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz – 2GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	1 nW to 1 mW	6%
63	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz to 1GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	40 mW to 30 W	4%

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64	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz–1GHz	Using RF MILLIVOLTMETER RF Attenuator, Amplifier Research RF Amplifier & Signal Gen by Direct / Comparison Method	40 mW to 30 W	4%
65	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	VSWR : 50MHz-2GHz	Using SWR BRIDGE WITH OPEN, SHORT & COAXIAL MISMATCH RF MILLIVOLTMETER, By Return Loss Method	1.05 to 3	0.15 to 0.3 in VSWR
66	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Attenuation 50MHz - 1GHz	Using RF MILLIVOLTMETER ,Level Meter with Sensor, Power Meter, RF Step Attenuator, RSP By Power Ratio Method	1 dB to 10 dB	0.2 dB
67	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Attenuation 50MHz - 1GHz	Using RF Millivoltmeter ,Level Meter with Sensor, Power Meter, RF Step Attenuator by Power Ratio Method	10 dB to 60 dB	0.2dB

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68	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power 30MHz-2GHz	Using RF MILLIVOLTMETER, RF Attenuator, Amplifier Research RF Amplifier & Signal Gen by Direct / Comparison Method	1 mW to 40 mW	4%
69	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power 30MHz-2GHz	Using RF MILLIVOLTMETER RF Attenuator, RF Amplifier & Signal Gen by Direct / Comparison Method	1 nW to 1 mW	6%
70	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	VSWR 50MHz–1GHz	Using SWR BRIDGE WITH OPEN, SHORT & COAXIAL MISMATCH RF MILLIVOLTMETER, By Return Loss Method	1.05 to 3	0.15 to 0.3 in VSWR
71	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using frequency Counter GPS Controlled Rubidium Frequency standard Timer/ Counter/ Analyzer,GPS Controlled frequency Standard by Direct / Comparison Method	10 Hz to 20 GHz	5X10-6 to 6x10-10

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72	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval / Time Period	Using Freq. Counter by Direct/Comparison Method	20 nsec to 2000 sec	0.0002%
73	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using HIGH STABILITY FEQUENCY COUNTER , GPS controlled Frequency Standard, FUNCTION WAVEFORM GENERATOR, Signal Generator by Direct / Comparison Method	10 Hz to 20 GHz	5X10-6 to 6x10-10
74	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Time Interval/Time Period	Using Func. Gen. Freq. Counter by Direct Method	20 nsec to 2000 sec	0.0002%
75	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bevel Protractor L.C.: 5 min	Using Angle Gauge Set By comparison method	0 to 360 °	1 Min of Arc

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76	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Gauge L.C.: 0.01 mm	Using Dial Calibration Tester By Comparison Method	0 to 2 mm	6.3µm
77	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Micrometer L.C.: 0.01 mm	Using Gauge Block Set/ Surface Plate By Comparison Method	0 to 300 mm	10µm
78	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Thickness Gauge L.C.: 0.01 mm	Using Gauge Block Set By comparison method	0 to 10 mm	6.0µm
79	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	0 to 25 mm	1.8µm
80	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	100 mm to 150 mm	3.0µm

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81	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	150 mm to 300 mm	5.0µm
82	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	25 mm to 50 mm	2.0µm
83	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	300 mm to 400 mm	6.0µm
84	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	50 mm to 75 mm	2.5µm
85	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer LC 0.001 mm	Using Slip Gauge Block Set/Long Gauge Block Set By Comparison Method	75 mm to 100 mm	2.8µm

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86	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Feeler Gauge	Using Electronic comparator with stand By comparison method	0.01 mm to 1 mm	2.8µm
87	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge : Dial / Digital / Analog LC 0.01 mm	Using Gauge block, Long Gauge Block Set/Surface Plate By comparison method	0 mm to 1000 mm	15µm
88	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Internal Micrometer LC 0.001 mm	Using Gauge Block Set/ Gauge Block Accessories, Long Gauge Block Set By Comparison Method	50 mm to 500 mm	6.1µm
89	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Lever Dial LC 0.01 mm	Using Dial Calibration Tester By comparison method	0 to 2 mm	3µm
90	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Scale LC 1 mm	Using Scale & Tape Calibrator By comparison method	0 to 2000 mm	220 sqrt of (L) µm, where L in m

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91	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Tape LC 1 mm	Using Scale & Tape Calibrator By comparison method	0 to 10 m	220 sqrt of (L) µm, where L in m
92	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Setting Standard / Length Bar	Using Long Gauge Block Set/Electronic Probe with DRO By Comparison Method	25 mm to 600 mm	8.0µm
93	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Pie Tape	Using Scale & Tape Calibrator By comparison method	0 to 1200 mm	220 sqrt of (L) µm, where L in m
94	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain Plug Gauge	Using Gauge Block Set/ Electronic Comparator By comparison method	10 mm to 100 mm	3.0µm
95	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plunger Dial LC 0.01 mm	Using Dial Calibration Tester By Comparison method	0 to 25 mm	8.3µm

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96	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine Bar	Using Gauge Block Set/Angle Gauge, Dial Gauge By Comparison Method	300 mm to 500 mm	3.0 arc Sec
97	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Spirit Level Sensitivity 0.01 mm/m	Using Sine Bar & Gauge Block Set With Spirit level calibration Jig By comparison method	0 ± 0.100 mm / m	5.0 µm/m
98	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Vernier Caliper : Dial/Digital/Analog L.C.: 0.01 mm	Using Gauge Block Set/Accessory Set By Comparison Method	0 to 300 mm	13.5µm
99	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Vernier Caliper :Dial/Digital/Analog L.C.: 0.01 mm	Using Gauge Block Set/Accessory Set By Comparison Method	300 mm to 1000 mm	25.0µm
100	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Gauge Block : Grade 0, I & II	Using Gauge Block Calibration Tester & Gauge Block Set K Grade By comparison Method	10 mm to 25 mm	0.30µm

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101	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Gauge Block : Grade 0, I & II	Using Gauge Block Calibration Tester & Gauge Block Set K Grade By comparison Method	25 mm to 50 mm	0.45µm
102	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Gauge Block : Grade 0, I & II	Using Gauge Block Calibration Tester & Gauge Block Set K Grade By comparison Method	0.5 mm to 10 mm	0.25µm
103	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Gauge Block : Grade 0,I & II	Using Gauge Block Calibration Tester & Gauge Block Set K Grade By comparison Method	50 mm to 100 mm	0.60µm
104	MECHANICAL-PRESSURE INDICATING DEVICES	(Hydraulic Medium) Pressure Gauges, Pressure Transmitters	Using Digital Pressure Calibrator and and 6.5 digit multimeter as per DKD R-6-1	0 to 700 bar	0.23bar
105	MECHANICAL-PRESSURE INDICATING DEVICES	Precision Gauges, Precision Transmitter (Pneumatic)	Using Digital Pressure Indicator ,Digital Pressure Calibrator and 6.5 digit multimeter as per DKD R-6-1	0 to 40 bar	0.021bar

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106	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum Gauges, Vacuum Transmitter	Using Digital Pressure Indicator & Digital Pressure Calibrator, 6.5 digit multimeter as per DKD R-6-1	0 to (-) 0.9 bar (g)	0.0042 bar
107	MECHANICAL-VOLUME	Measuring Cylinder & Flask	Using Standard Weights of Class E2, Precision Balance (d= 0.01 mg) & Distilled water of known density as per ISO 4787	0.1 ml to 25 ml	0.01 ml
108	MECHANICAL-VOLUME	Measuring Cylinder & Flask	Using Standard Weights of Class E2, Precision Balance (d=1.0 mg) & Distilled water of known density as per ISO 4787	100 ml to 1000 ml	0.03 ml
109	MECHANICAL-VOLUME	Measuring Cylinder & Flask	Using Standard Weights of Class E2, Balance (d=0.01 mg) & Distilled water of known density as per ISO 4787	25 ml to 100 ml	0.03ml

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110	MECHANICAL-VOLUME	Micro-pipette	Using Standard Weights of Class E2, Precision Balance (d= 0.01 mg) & Distilled water of known density as per ISO 8655-6	10 µl to 1000 µl	1.66 µl
111	MECHANICAL-VOLUME	Pipette / Burette	Using Standard Weights of Class E2, Precision Balance (d= 0.01 mg) & Distilled water of known density as per ISO 4787	1 ml to 50 ml	10.0 µl
112	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	1 g	0.03 mg
113	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=1 mg As per OIML R-111-1	1 kg	1.0 mg

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114	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	10 g	0.05 mg
115	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	100 g	0.06 mg
116	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	100 mg	0.01 mg
117	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	2 g	0.04 mg

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118	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	20 mg	0.01 mg
119	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	20 g	0.06 mg
120	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	200 g	0.12 mg
121	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	200 mg	0.01 mg

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122	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	5 g	0.04 mg
123	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	50 g	0.06mg
124	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	50 mg	0.01 mg
125	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=1 mg As per OIML R-111-1	500 g	1.0 mg

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126	MECHANICAL-WEIGHTS	Calibration of Weights of Class F1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	500 mg	0.01 mg
127	MECHANICAL-WEIGHTS	Calibration of Weights of Class F2 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	1 mg	0.01 mg
128	MECHANICAL-WEIGHTS	Calibration of Weights of Class F2 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	10 mg	0.01 mg
129	MECHANICAL-WEIGHTS	Calibration of Weights of Class F2 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=10 mg As per OIML R-111-1	2 kg	10mg

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130	MECHANICAL-WEIGHTS	Calibration of Weights of Class F2 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	2 mg	0.01 mg
131	MECHANICAL-WEIGHTS	Calibration of Weights of Class F2 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=0.01 mg As per OIML R-111-1	5 mg	0.01 mg
132	MECHANICAL-WEIGHTS	Calibration of Weights of Class M1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=100 mg As per OIML R-111-1	10 kg	100mg
133	MECHANICAL-WEIGHTS	Calibration of Weights of Class M1 and coarser	Using Weights of Accuracy Class E2 and Electronic Balance with readability d=100 mg As per OIML R-111-1	5 kg	100mg
134	OPTICAL-OPTICAL	Colour Temperature	Using Standard Lamp by direct method	2856 K to 7000 K	72K

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135	OPTICAL-OPTICAL	Illuminance	Using Photometer by Comparison Method	100 lx to 2000 lx	2.7%
136	OPTICAL-OPTICAL	Optical Wavelength	Using Set of inductive voltage divider calibrated Spectral standard lamps ((1) He-Ne Laser , A 4302 (2) Kr, 6031 (3) Ne, 6032) and Optical Spectrum Analyzer.	400 nm to 1750 nm	1.5nm
137	OPTICAL-OPTICAL	x,y Colour coordinate	Using Standard Lamp (CFL/ TH) by Direct Method	x,y :0.001 to 1	0.049
138	THERMAL-SPECIFIC HEAT & HUMIDITY	Relative Humidity : RH Sensor, RH Indicator & Digital Hygrometer , Standard Hygrometer	Using Standard RH Meter Humidity Source (Chamber) RTD & Data Logger By Comparison Method	35 %RH to 95 %RH @25°C	2.5%RH
139	THERMAL-TEMPERATURE	Glass Thermometer	Using PRT, Liquid bath, Silicon oil bath, Black Stack by comparison method	-80 °C to 250 °C	0.08°C

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140	THERMAL-TEMPERATURE	Non -Contact Temperature : IR Thermometer, Optical Pyrometer, Radiation Thermometer	Using Black Body Radiation Source with emissivity1.0, IR Thermometer, Std. R Type Thermocouple with Meter By Comparison Method	600 °C to 1300 °C	4.6°C
141	THERMAL-TEMPERATURE	Temp. Gauge, Thermocouple & RTD with or without Indicator , Dry Well bath	Using Liquid Baths (silicon Oil Bath) , Dry Block Calibrator, SPRT, Std. PRT, Digital Indicator (Black Stack), 4 Channel Thermometer by Comparison Method	50°C to 250 °C	0.08°C
142	THERMAL-TEMPERATURE	Temp. Gauge, Thermocouple & RTD with or without Indicator of Dry Well bath	Using Liquid Baths (Liquid Bath) , Std. PRT, Digital Indicator (Black Stack), 4 Channel Thermometer by Comparison Method	-80 °C to 50 °C	0.08 °C

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143	THERMAL-TEMPERATURE	Temperature : Temp. Gauge, T/C with or without Indicator , Temp.Indicator of, Dry Well bath	Using Dry Block Calibrator, Digital Indicator (Black Stack), 4 Channel Thermometer (2 PRT, 2 T/C) Tube Furnace, Std. 'R' Type T/C by Comparison Method	550 °C to 1200 °C	2.0°C
144	THERMAL-TEMPERATURE	Temperature : Thermocouple with or without Inddicator, Indicator of Dry Well bath.	Using Digital Indicator (Black Stack),4 Channel Thermometer , Tube Furnace, Std. 'R' Type T/C by Comparison Method	1200 °C to 1300 °C	3.6°C
145	THERMAL-TEMPERATURE	Thermo Couple /RTD with or without Indicator, Dry Well Indicator & sensor	Using Dry Block Calibrator, SPRT, Digital Indicator (Black Stack), 4 Channel Thermometer by Comparison Method	250 °C to 550 °C	0.12°C

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Site Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 10 Hz – 1 kHz	Using DMM, REFERENCE MULTIMETER (8.5 Digit), AC MEASUREMET STANDARD ,THREE PHASE COMPARATOR by Direct/Comparison Method	10 µA to 1 A	0.05% to 0.016%
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 10 Hz – 5 kHz	Using DMM, REFERENCE MULTIMETER (8.5 Digit), AC MEASUREMET STANDARD, THREE PHASE COMPARATOR by Direct/Comparison Method	1 A to 20 A	0.016 % to 0.035 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current at 50 Hz	Using Three phase comparator by Direct Method	0.01 A to 120 A	0.013%

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4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage at 50 Hz	Using DMM & HV Probe By Direct/ Comparison Method	>1 kV to 28 kV	6%
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Power 1Ph & 3Ph (50Hz) (active and reactive) 60 V to 240V, 10 mA to 120A , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method:	0.03W to 86.4kW \(0.03VAR to 86.4kVAR)	0.012% to 0.023%
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Resistance at 1kHz	Using RLC DIGIBRIDGE, Standard AC/DC resistance By Direct/ Comparison Method	1 ohm to 100 kohm	0.3 to 0.1%
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10 Hz –40 Hz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER AC MEASUREMET STANDARD by Direct/ Comparison Method:	1 mV to 1000 V	0.5% to 0.025%

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8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 100kHz-1MHz	Using Multifunction Calibrator & IVD ,AC MEASUREMET STANDARD ,THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 1 V	1.34% to 0.1%
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10kHz-100kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARD By Direct/ Comparison Method:	1 mV to 1 V	0.43 % to 0.014 %
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 10kHz-100kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit) THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARDBy Direct/ Comparison Method:	1 V to 100 V	0.014% to 0.016%

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11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage at 40Hz – 10kHz	Using IVD, REFERENCE MULTIMETER (8.5 Digit), THERMAL VOLTAGE CONVERTER, AC MEASUREMET STANDARD By Direct/ Comparison Method:	1 mV to 1000 V	0.5% to 0.012 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance at 1 kHz	Using Capacitance Measuring Assembly REFERENCE STD CAPACITOR, RLC DIGIBRIDGE Direct/Comparison	1 pF to 1.0 mF	0.04 % to 1.2 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance at 1 kHz	Using Capacitance Measuring Assembly Reference STD CAPACITOR ,RLC DIGIBRIDGE Direct/Comparison method	1.0 mF to 10 mF	1.2 % to 0.3 %
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Frequency AC Voltage 100MHz -1 GHz	Using RF MILLIVOLTMETER by Direct/Comparison Method	10 mV to 7 V	3.5%

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15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Frequency AC Voltage 1 MHz -100 MHz	Using RF MILLIVOLTMETER by Direct/Comparison Method	10 mV to 10 V	3.3%
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance at 1 kHz	Using RLC DIGIBRIDGE Reference STD Capacitor by Direct/Comparison Method	100 µH to 10 H	0.2 % to 0.06 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power Factor/Phase Angle 50Hz At 240V ,5A	Using Three Phase Comparator by Direct/comparison Method	+/- 0.1 - 1.0 (lag & lead) to 0°to 180° (Lead & Lag)	0.01 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current 10 Hz - 5 KHz	Using Multifunction Calibrator ,REFERENCE MULTIMETER (8.5 Digit), AC measurement standard & Shunt by Direct/ Comparison Method	10 µA to 1A	0.08 % to 0.05 %

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19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current 10 Hz - 5 KHz	Using Multifunction CALIBRATOR , REFERENCE MULTIMETER (8.5 Digit), AC measurement standard & Shunt by Direct/ Comparison Method	1A to 20 A	0.05 % to 0.035 %
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current At 50Hz	Using Three phase comparator by Direct Method	10 mA to 100 A	0.013%
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current by using current coil At 50 Hz	Using Multifunction Calibrator and Current Coil by Direct Method	20 A to 1000 A	0.55 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Power 1Ph & 3Ph (50Hz) (active and reactive) , 60 V to 240V ,10 mA to 120A , UPF – 0.5 PF (lead & Lag)	Using Three Phase Comparator by Direct / Comparison Method	(0.03W to 86.4kW) \ (0.03VAR to 86.4kVAR)	0.012% to 0.023%
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Resistance at 1 kHz	Using AC/DC RES.STD,LCR Digibridge by Direct / Comparison Method	1 ohm, 10 ohm , 100 ohm,1 kohm, 10 kohm	0.007%

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24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10 Hz – 45 Hz	Using Multifunction Calibrator & IVD, AC MEASUREMET STANDARD , THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	1 mV to 1000 V	0.7% to 0.025%
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10 kHz – 50 kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 1 V	0.2% to 0.014%
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 10kHz-50kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method::	1 V to 100 V	0.014% to 0.02%

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27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 45Hz – 10kHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	1 mV to 100 V	0.4 % to 0.008 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 45Hz – 10kHz	Using Multifunction Calibrator & IVD, AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method:	100 V to 1000 V	0.008% to 0.02%
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 50kHz -1MHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method	1 mV to 100 mV	0.05 % to 1.2 %

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30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage 50kHz -1MHz	Using Multifunction Calibrator & IVD AC MEASUREMET STANDARD THERMAL VOLTAGE CONVERTER by Direct/Comparison Method::	100 mV to 10 V	0.25 % to 0.12 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using REFERENCE STD CAPACITOR, RLC digibridge By Direct Method	1.0 mF, 10 mF	0.05% to 0.38 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using STD “Capacitor”, REFERENCE STD CAPACITOR,RLC Digibridge By Direct / Comparison Method	10 pF to 1000pF	0.003% to 0.015%
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance 1 kHz	Using REFERENCE STD CAPACITOR, RLC Digibridge By Direct Method	1000 pF to 1 mF	0.015% to 0.05 %

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34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	High Frequency AC Voltage 1 MHz -1 GHz	Using Multifunction Calibrator, RF Voltmeter with Insertion Unit, Signal Generator & RF Amplifier.,1000MHz, RF Attenuator by Direct / Comparison Method	10 mV to 7 V	3.5 %
35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance 1 kHz	Using Reference STD INDUCTOR , RLC DIGIBRIDGE by Direct / Comparison Method	100 µH to 100 mH	0.1% to 0.03%
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance 1 kHz	Using Reference STD INDUCTOR , RLC DIGIBRIDGE by Direct / Comparison Method	100 mH to 10H	0.03% to 0.09%
37	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Direct/Comparison Method:	10 µA to 1 mA	0.006 % to 0.002 %

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38	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Comparison,V/R Method:	20 A to 850 A	0.005 % to 0.05 %
39	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current :	Using Current Shunt & Standard Resistance, Current Source & DMM REFERENCE MULTIMETER (8.5 Digit) by Direct/Comparison Method:	1 mA to 20 A	0.002 % to 0.005 %
40	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage :	Using HV probe and and Digital Multimeter by Direct/Comparison method	>1 kV to 40 kV	2.5 %

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41	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance	Using DMM, REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by V/I, Direct /Comparison ,Method:	0.0001 ohm to 0.001 ohm	0.03 % to 0.004 %
42	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by Direct/Comparison , V/I Method:	0.001 ohm to 1 Mohm	0.004 % to 0.001 %
43	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard High Resistance Meter by Direct/Comparison Method:	1 Mohm to 20 Gohm	0.001 % to 0.20 %

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44	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Resistance :	Using DMM REFERENCE MULTIMETER (8.5 Digit), Standard Resistance Set, High Resistance Meter by Direct/Comparison Method:	20 Gohm to 1 Tohm	0.2% to 2.5 %
45	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method	1 mV to 10 V	0.014 % to 0.0004 %
46	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method:	10 µV to 1 mV	2 % to 0.014 %

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47	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage :	Using DC Reference Standard , Null Detector , Kelvin Verley Divider, REFERENCE MULTIMETER (8.5 Digit) by Direct/ Comparison method:	10 V to 1000 V	0.0004% to 0.0005 %
48	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR, STD"RESISTANCE", DMM- REFERENCE MULTIMETER (8.5 Digit) STD Shunt, By Direct/ Comparison Method	1 A to 20 A	0.005 % to 0.009 %
49	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR, STD"RESISTANCE", REFERENCE MULTIMETER STD Shunt, By Direct/ V/R Method	10 µA to 1 A	0.01 % to 0.005 %
50	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR along with current coil By Direct Method	20 A to 1000 A	0.53%

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51	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using CALIBRATOR along with Transconductance Amplifier, STD Resistance, Reference Multimeter, SYSTEM DC POWER SUPPLY, STD Shunt, By Direct/V/R Method	20 A to 850 A	0.009 % to 0.06 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance” By Direct Method	0.0001 ohm to 100 kohm	0.04 % to 0.001 %
53	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance” By Direct Method	10 Mohm to 1 Tohm	0.003 % to 2 %
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using STD “Resistance”, By Direct Method	100 kohm to 10 Mohm	0.001 % to 0.003 %

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55	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using MULTIFUNCTION CALIBRATOR, DMM-REFERENCE MULTIMETER (8.5 Digit), DC Voltage Ref STD NULL DETECT, KELVIN VERLEY DIVIDER By Direct / Comparison Method	10 µV to 10 V	2 % to 0.0003 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using MULTIFUNCTION CALIBRATOR, DMM-REFERENCE MULTIMETER (8.5 Digit), DC Voltage Ref STD NULL DETECTOR, KELVIN VERLEY DIVIDER By Direct / Comparison Method	10 V to 1000 V	0.0003 % to 0.0004 %
57	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation 50MHz–1GHz	Using RF Level Meter, RF MILLIVOLTMETER by Direct/Comparison Method	1 dB to 10 dB	0.15dB

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58	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation 50MHz–1GHz	Using RF Level Meter, RF Millivoltmeter by Direct/Comparison Method	10 dB to 60 dB	0.17dB
59	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz – 2GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	1 mW to 40 mW	4%
60	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz – 2GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	1 nW to 1 mW	6%
61	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz to 1GHz	Using RF MILLIVOLTMETER, RF STEP ATTENUATOR Power Sensors, RF Attenuator , RF Amplifier By Direct/ Comparison Method	40 mW to 30 W	4%

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62	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	RF Power 50MHz–1GHz	Using RF MILLIVOLTMETER RF Attenuator, Amplifier Research RF Amplifier & Signal Gen by Direct / Comparison Method	40 mW to 30 W	4%
63	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	VSWR : 50MHz-2GHz	Using SWR BRIDGE WITH OPEN, SHORT & COAXIAL MISMATCH RF MILLIVOLTMETER, By Return Loss Method	1.05 to 3	0.15 to 0.3 in VSWR
64	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Attenuation 50MHz - 1GHz	Using RF MILLIVOLTMETER ,Level Meter with Sensor, Power Meter, RF Step Attenuator, RSP By Power Ratio Method	1 dB to 10 dB	0.2 dB
65	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Attenuation 50MHz - 1GHz	Using RF Millivoltmeter ,Level Meter with Sensor, Power Meter, RF Step Attenuator by Power Ratio Method	10 dB to 60 dB	0.2dB

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66	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power 30MHz-2GHz	Using RF MILLIVOLTMETER, RF Attenuator, Amplifier Research RF Amplifier & Signal Gen by Direct / Comparison Method	1 mW to 40 mW	4%
67	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power 30MHz-2GHz	Using RF MILLIVOLTMETER RF Attenuator, RF Amplifier & Signal Gen by Direct / Comparison Method	1 nW to 1 mW	6%
68	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using frequency Counter GPS Controlled Rubidium Frequency standard Timer/ Counter/ Analyzer,GPS Controlled frequency Standard by Direct / Comparison Method	10 Hz to 20 GHz	5X10-6 to 6x10-10
69	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval / Time Period	Using Freq. Counter by Direct/Comparison Method	20 nsec to 2000 sec	0.0002%

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70	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using HIGH STABILITY FEQUENCY COUNTER , GPS controlled Frequency Standard, FUNCTION WAVEFORM GENERATOR, Signal Generator by Direct / Comparison Method	10 Hz to 20 GHz	5X10-6 to 6x10-10
71	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Time Interval/Time Period	Using Func. Gen. Freq. Counter by Direct Method	20 nsec to 2000 sec	0.0002%
72	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Plate 1000 mm X 1000 mm	Using Electronic Level By comparison method	300 X 300 mm to 1000 X 1000 mm	1.0 xsqrt of (L+W)/ 150mm, where L & W in mm
73	MECHANICAL-PRESSURE INDICATING DEVICES	(Hydraulic Medium) Pressure Gauges, Pressure Transmitters	Using Digital Pressure Calibrator and and 6.5 digit multimeter as per DKD R-6-1	0 to 700 bar	0.23bar

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74	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum Gauges, Vacuum Transmitter	Using Digital Pressure Indicator & Digital Pressure Calibrator, 6.5 digit multimeter as per DKD R-6-1	0 to (-) 0.9 bar (g)	0.0042 bar
75	MECHANICAL-WEIGHING SCALE AND BALANCE	Calibration of Balances: Class II and Coarser Readability: 100 mg	Using Standards Weights of Class E2 as per OIML R -76-1	0 to 12 kg	66.52 mg
76	MECHANICAL-WEIGHING SCALE AND BALANCE	Calibration of Balances: Class I and Coarser Readability: 0.1 mg	Using Standards Weights of Class E2 as per OIML R -76-1	0 to 210 g	0.1 mg
77	MECHANICAL-WEIGHING SCALE AND BALANCE	Calibration of Balances: Class II and Coarser Readability:10 mg	Using Standards Weights of Class E2 as per OIML R -76-1	0 to 3.2 kg	7.0 mg
78	MECHANICAL-WEIGHING SCALE AND BALANCE	Calibration of Balances:Class II and Coarser Readability: 1 mg	Using Standards Weights of Class E2 as per OIML R -76-1	0 to 1000 g	1.5 mg
79	OPTICAL-OPTICAL	x,y Colour coordinate	Using Standard Lamp (CFL/ TH) by Direct Method	x,y :0.001 to 1	0.049
80	THERMAL-SPECIFIC HEAT & HUMIDITY	Relative Humidity :Environmental & Humidity Chambers @25°C	Using Data Loggers (minimum nine location)By spatial mapping Method	35 %RH to 95 %RH	2.5%RH

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81	THERMAL-TEMPERATURE	Bath, Oven, Chamber, Incubator (for Non-Medical Application) & Autoclave (up to 121°C)(for Non-Medical Application)	Using RTDs & Data Loggers by single and multi-point (minimum 9) Method	-50 °C to 300 °C	1.0 °C
82	THERMAL-TEMPERATURE	Dry Well Calibrator, Furnace, Hot Chamber	Using ‘R’ Type T/C & Four Channel Thermometer (single position) by Direct Method	300 °C to 1300 °C	3.0 °C
83	THERMAL-TEMPERATURE	Refrigerator & Cold Chamber	Using RTD & Data Logger with Minimum 9 Sensors by Direct Method	- 80 °C to 50 °C	1.0 °C
84	THERMAL-TEMPERATURE	RTD/PRT /Thermocouple with or without Indicator, Temp. Gauge, Indicator with sensor of temp. Calibrator	Using SPRT, Dry Block Calibrator Liquid Baths Four Channel Thermometer By Comparison Method	50 °C to 300 °C	2°C
85	THERMAL-TEMPERATURE	RTD/PRT/Thermpcouple with or without Indicator, Temp. Gauge, Indicator with sensor of temp. Calibrator	Using R Type Thermocouple, ,Dry block Calibrator, Four Channel Thermometer By Comparison Method	300°C to 1200°C	2°C

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86	THERMAL-TEMPERATURE	Thermo Couple /RTD with or without Indicator, Dry Well Indicator & sensor	Using Dry Block Calibrator, SPRT, Digital Indicator (Black Stack), 4 Channel Thermometer by Comparison Method	250 °C to 550 °C	0.12°C

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