



National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : CENTRAL POWER RESEARCH INSTITUTE, GOVINDPURA, BHOPAL, MADHYA PRADESH, GOVINDPURA, BHOPAL, MADHYA PRADESH, INDIA

Accreditation Standard ISO/IEC 17025:2017

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Validity 17/12/2022 to 16/12/2024 **Last Amended on** 05/02/2023

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 @ 50 Hz	Using 3-phase Comparator by Direct Method	10 mA to 120 A	0.04% to 0.02%
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz to 1kHz	Using 8½ DMM by Direct Method	100 mA to 1 A	0.06% to 0.12%
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50Hz to 1kHz	Using 8½ DMM by Direct Method	100 µA to 100 mA	0.098% to 0.06%
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Power Active/Reactive (LAG/LEAD) @ 50 Hz 50 to 480V , 10mA to 120A , 0.01 PF to UPF	Using 3-phase Comparator by Direct Method	5 mW to 57.6 kW	0.1% to 0.05%



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5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Power Energy Active/Reactive 63.5V to 320 V, 10 mA to 120 A, 0.25 PF to UPF 50Hz	Using 3-phase Comparator by Direct Method	158.75 mW to 38.4 kW	0.041% to 0.015%
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Resistance @ 50 Hz	Using 8½ DMM, 6½ DMM by V/I Method	50 mohm to 13 kohm	1%
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50Hz to 10kHz	Using 8½ DMM by Direct Method	10 mV to 100 mV	0.056% to 0.025%
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50Hz to 10kHz	Using 8½ DMM by Direct Method	100 mV to 1000 V	0.026% to 0.018%
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @1 kHz	Using 6½ DMM by Direct Method	1 nF to 90 µF	2.27% to 4.54%



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10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Voltage @ 50 Hz	Using Standard Voltage Transformer and DMM by Direct Method	1 kV to 40 kV	2%
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power Factor	Using 3-phase Comparator by Direct Method	0.25 PF to 1 PF (lead/lag)	0.005%
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage and Current Harmonics @ 240V,5A	Using 3-phase Comparator by Comparison Method	2nd order to 21st order	0.64%
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz	Using Multi Product Calibrator with current Coil by Direct Method	20 A to 1000 A	0.43% to 1.1%
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz to 1kHz	Using Multi Product Calibrator by Direct Method	3 A to 20 A	0.15% to 0.33%



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15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz to 1kHz	Using Multi Product Calibrator by Direct Method	30 μ A to 300 mA	0.57 % to 0.07 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50Hz to 1kHz	Using Multi Product Calibrator by Direct Method	300 mA to 3 A	0.07% to 0.15%
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 50 Hz to 1kHz	Using Multi Product Calibrator by Direct Method	3 V to 1000 V	0.025% to 0.036%
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 50 Hz to 1kHz	Using Multi Product Calibrator by Direct Method	30 mV to 3 V	0.05% to 0.025%
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 50Hz to 1kHz	Using Multi Product Calibrator by Direct Method	1 mV to 30 mV	1.66% to 0.08%
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @1kHz to 10kHz	Using Multi Product Calibrator by Direct Method	30 mV to 200 V	0.048% to 0.2%



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21	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @1kHz	Using Multi Product Calibrator by Direct Method	1 nF to 10 nF	1.7 % to 0.46 %
22	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @1kHz	Using Multi Product Calibrator by Direct Method	10 nF to 100 µF	0.46 % to 0.64 %
23	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Ratio	Using Standard Voltage transformer by Direct Method	45.45 to 363.63	0.04%
24	ELECTRO-TECHNICAL- Alternating Current (< 1 GHz) (Source)	Voltage Ratio	Using TTR Standard by Direct Method	1 to 1000	0.1%
25	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 6½ DMM by Direct Method	1 A to 10 A	0.026% to 0.18%
26	ELECTRO-TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 8½ DMM by Direct Method	10 µA to 100 mA	0.23% to 0.013%



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27	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 8½ DMM by Direct Method	100 mA to 1 A	0.23% to 0.026%
28	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 8½ DMM by Direct Method	1 mV to 10 V	0.27% to 0.001%
29	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 8½ DMM by Direct Method	10 V to 1000 V	0.0011% to 0.0014%
30	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Low Resistance (2 Wire)	Using Multi Product Calibrator, 8½ DMM by Comparison Method	1 mohm to 10 Ohm	0.18%
31	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8½ DMM by Direct Method	1 Mohm to 100 Mohm	0.03% to 0.05%
32	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8½ DMM by Direct Method	10 ohm to 100 kohm	0.004% to 0.002%



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33	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8½ DMM by Direct Method	100 kohm to 1 Mohm	0.002% to 0.003%
34	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8½ DMM and 6½ DMM for 1 Gohm by Direct Method	100 Mohm to 1 Gohm	0.05% to 2.4 %
35	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multiproduct Calibrator & Turn Coil by Direct Method	20 A to 1000 A	0.5% to 0.95%
36	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	3 A to 20 A	0.08% to 0.5%
37	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	30 µA to 300 mA	0.95% to 0.04%
38	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	300 mA to 3 A	0.04% to 0.08%



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39	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using Multi Product Calibrator by Direct Method	1 Mohm to 100 Mohm	0.06% to 0.6%
40	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using Multi Product Calibrator by Direct Method	1 Ohm to 1 Mohm	0.15 % to 0.006 %
41	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Resistance	Using Multi Product Calibrator by Direct Method	100 Mohm to 1 Gohm	0.6% to 1.72%
42	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	1 mV to 300 mV	0.0085% to 0.003%
43	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	300 mV to 1000 V	0.003% to 0.0025%
44	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	High Resistance	Using Discrete Resistors by Direct Method	10 Gohm	0.74%



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45	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	High Resistance	Using Discrete Resistors by Direct Method	10 Mohm, 100 Mohm, 1 Gohm	0.50%
46	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Low Resistance (4 Wire)	Using Discrete Resistors by Direct Method	1 mohm, 10 mohm, 100 mohm	0.12%
47	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Low Resistance (4 Wire)	Using Discrete Resistors by Direct Method	1 Ohm, 10 Ohm, 100 Ohm	0.04%
48	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Bandwidth)	Using Multi Product Calibrator by Direct Method	Up to 500 MHz	6.53%
49	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Time)	Using Multi Product Calibrator by Direct Method	1 ns to 50 ms	0.008% to 0.036%
50	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Voltage)	Using Multi Product Calibrator by Direct Method	25 mV to 80 mV	0.35%



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51	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ DMM by Direct Method	50 Hz to 1 MHz	0.015%
52	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Time Interval Meter by Direct Method	10s ' to 1 hr	0.12 s to 0.63 s
53	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Multi Product Calibrator by Direct Method	50 Hz to 1 MHz	0.008%
54	THERMAL-TEMPERATURE	Digital Temp. Indicator with Sensors (RTD/ Thermocouple)	Using PRT sensor along with Metrology well dry bath by Comparison Method	150 °C to 650 °C	2.0°C
55	THERMAL-TEMPERATURE	Digital Temp. Indicator with Sensors (RTD/ Thermocouple)	Using PRT along with Oil Bath by comparison method	-25 °C to 150 °C	0.1°C
56	THERMAL-TEMPERATURE	Digital Temp. Indicator with Sensors (RTD/ Thermocouple)	Using S-type Thermocouples along Furnace by comparison method	650 °C to 1000 °C	2.6°C
57	THERMAL-TEMPERATURE	Liquid-in-Glass Thermometer	Using PRT Sensor and Oil Bath by comparison method	0 °C to 150 °C	0.6°C



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Site Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Voltage @ 50 Hz	Using Standard Voltage Transformer and DMM by Direct Method	1 kV to 40 kV	2%
2	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Low Resistance (2 Wire)	Using Multi Product Calibrator, 8½ DMM by Comparison Method	1 mohm to 10 Ohm	0.18%
3	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Bandwidth)	Using Multi Product Calibrator by Direct Method	Up to 500 MHz	6.53%
4	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Time)	Using Multi Product Calibrator by Direct Method	1 ns to 50 ms	0.008% to 0.036%
5	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope (Voltage)	Using Multi Product Calibrator by Direct Method	25 mV to 80 mV	0.35%



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6	THERMAL-SPECIFIC HEAT & HUMIDITY	Indicator with sensor of RH Chamber/Environmental chambers (Single Position)	Using Digital Hygrometer with sensor by Comparison Method	40 %rh to 95 %rh (25 °C to 55 °C)	1.5%rh
7	THERMAL-TEMPERATURE	Freezer, Oven, Chambers (Multi Position Calibration)	Using RTDs(Minimum 9 sensor) with Digital Thermometer by Multiposition method	-25 °C to 150 °C	1.55°C

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