National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name :	CEEPCALIBRATION AND TESTING LLP, 638, GIDC MAKARPURA, VADODARA, GUJARAT, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
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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)	1Phase 2Wire, 3Phase 4 Wire AC Active Power/Mean Power @ 45 Hz to 62.5 Hz (40 V to 320 V , 0.001 A to 120 A, 0.25 (lead & lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mW to 115.2 kW	0.14 % to 0.039 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	1Phase 2Wire, 3Phase 4Wire AC Active Power /Mean Power @ 50 Hz (30 V to 480 V, 0.01 A to 100 A, 0.25 to 0.01 (lead & lag))	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	3 mW to 36 kW	1.15 % to 0.047 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	1Phase 2Wire,3Phase 4Wire AC Active Power/Mean Power @ 50 Hz (30 V to 480 V , 0.01 A to 100 A, 0.25 (lead & lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	75 mW to 144 kW	0.047 % to 0.012 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	10 µA to 100 mA	0.82 % to 0.16 %

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5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	100 mA to 3 A	0.16 % to 0.33 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	3 A to 10 A	0.33 % to 0.61 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator & Resistance Box by Comparison Method	10 µA to 100 mA	0.83 % to 0.17 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	100 mA to 3 A	0.17 % to 0.33 %
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	3 A to 10 A	0.33 % to 0.62 %

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10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @45 Hz - 65 Hz	Using Three Phase Reference Standard by Direct Method and Using Three Phase Reference Standard with Three Phase Power Calibrator by Comparison Method	1 mA to 120 A	0.078 % to 0.017 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator & Potential Transformer by Comparison Method	560 V to 750 V	0.17 % to 0.13 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	1 mV to 1 V	2.49 % to 0.10 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	1 V to 375 V	0.10 % to 0.16 %

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14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	375 V to 750 V	0.16 % to 0.12 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Signal Generator by Comparison Method	1 mV to 1 V	2.51 % to 0.10 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	1 V to 375 V	0.10 % to 0.16 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	375 V to 560 V	0.16 % to 0.17 %

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18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @45 Hz - 65 Hz	Using Three Phase Reference Standard by Direct Method and Using Three Phase Reference Standard with Three Phase Power Calibrator & Potential Transformer by Comparison Method	30 V to 625 V	0.017 % to 0.040 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Active Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V, 0.001 A to 120 A, 0.25 (Lag/ Lead) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mWh to 115.2 kWh	0.14 % to 0.039 %
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Active Energy (1Phase 2Wire, 3Phase 4Wire) (47.5 Hz to 62.5 Hz, 30 V to 480 V, 0.01 A to 100 A, 0.25 (Lag/ Lead) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	75 mWh to 144 kWh	0.047 % to 0.012 %

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21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	40 mVAh to 115.2 kVAh	0.039 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	40 mVA to 115.2 kVA	0.039 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Harmonics ,Total Harmonic Distortion (0.05 A to 24 A) @ 50 Hz	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	2nd order to 40th order	0.35 % to 0.66 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Harmonics, Total Harmonic Distortion in Voltage (10 V to 240V) @ 50 Hz	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	2nd order to 40th order	0.59 %

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25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Phase Angle (30 V to 480 V, 0.04 A to 100 A , 45 Hz to 62.5 Hz)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	(-)180 ° to 180 °	0.012 °
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A - 100 A)	Using Three Phase Reference Standard by Direct Method with Three Phase Power Calibrator by Comparison Method	0.01 Lag to 0.01 Lead	0.0002 PF to 0.0007 PF
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A, 0.25 (Lead/ Lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mVARh to 115.2 kVARh	0.14 % to 0.039 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Reactive Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A, 0.25 (Lead/ Lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mVAR to 115.2 kVAR	0.14 % to 0.039 %

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29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 45 Hz - 65 Hz	Using Three Phase Power Calibrator by Direct Method	1 mA to 120 A	0.098 % to 0.031 %
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 45 Hz - 65 Hz	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	1 mA to 120 A	0.13 % to 0.061 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz	Using Three Phase Power Calibrator with Current coil by Direct Method	120 A to 1000 A	0.58 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz - 65 Hz	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	30 V to 456 V	0.060 % to 0.070 %
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz - 65 Hz	Using Three Phase Power Calibrator by Direct Method	30 V to 560 V	0.029 % to 0.046 %
34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 50 Hz	Using Three Phase Power Calibrator with Potential Transformer by Direct Method	560 V to 1300 V	0.068 % to 0.072 %

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35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Energy (1 Phase 2 Wire, 3 Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A, 0.25 (Lag/Lead) to UPF)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	100 mWh to 108 kWh	0.27 % to 0.070 %
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Energy (1Phase 2Wire, 3Phase 3Wire, 3Phase 4Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A, 0.25 (Lag/Lead) to UPF)	Using Three Phase Power Calibrator by Direct Method	100 mWh to 108 kWh	0.17 % to 0.045 %
37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25Lag to UPF to 0.25Lead)	Using Three Phase Power Calibrator by Direct Method	100 mW to 108 kW	0.17 % to 0.045 %
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25Lag to UPF to 0.25Lead)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	100 mW to 108 kW	0.27 % to 0.070 %

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39	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A)	Using Three Phase Power Calibrator by Direct Method	400 mVAh to 108 kVAh	0.045 %
40	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	400 mVAh to 108 kVAh	0.070 %
41	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A)	Using Three Phase Power Calibrator by Direct Method	400 mVA to 108 kVA	0.045 %
42	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	400 mVA to 108 kVA	0.070 %
43	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Harmonics , Total Harmonics Distortion in Current (1 A to 10 A) @ 50 Hz	Using Three Phase Power Calibrator by Direct Method	2nd order to 40th order	0.83 %

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44	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Harmonics ,Total Harmonics Distortion in Voltage (100 V to 480 V) @ 50 Hz	Using Three Phase Power Calibrator by Direct Method	2nd order to 40th order	0.65 %
45	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A - 100 A)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	0.01 PF to UPF (Lag/Lead)	0.0019 PF to 0.0021 PF
46	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A-100 A)	Using Three Phase Power Calibrator by Direct Method	0.01 Lag to 0.01 Lead	0.0019 PF to 0.0021 PF
47	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	100 mVARh to 108 kVARh	0.27 % to 0.070 %
48	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V,0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Power Calibrator by Direct Method	100 mVARh to 108 kVARh	0.17 % to 0.045 %

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49	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	100 mVAR to 108 kVAR	0.27 % to 0.070 %
50	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Power (1Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to120 A,0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Power Calibrator by Direct Method	100 mVAR to 108 kVAR	0.17 % to 0.045 %
51	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Capacitance	Using 6½ Digital Multimeter by Direct Method	1 nF to 100 µF	1.68 % to 0.66 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Capacitance	Using 6½ Digital Multimeter with Capacitance Box by Substitution Method	1 nF to 100 µF	1.70 % to 0.66 %

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53	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	10 µA to 100 mA	0.14 % to 0.035 %
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	10 µA to 100 mA	0.14 % to 0.035 %
55	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	100 mA to 3 A	0.035 % to 0.085 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	100 mA to 3 A	0.035 % to 0.085 %
57	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	3 A to 10 A	0.085 % to 0.35 %
58	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	3 A to 10 A	0.085 % to 0.35 %

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59	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC Voltage source by Comparison Method	1 mV to 100 mV	0.42 % to 0.0083 %
60	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	1 mV to 100 mV	1.7 % to 0.009% %
61	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	10 V to 1000 V	0.0045 % to 0.0069 %
62	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC Voltage source by Comparison Method	10 V to 1000 V	0.0047 % to 0.0076 %
63	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC voltage source by Comparison Method	100 mV to 10 V	0.0083 % to 0.0043 %
64	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	100 mV to 10 V	0.0083 % to 0.0045 %

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65	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	0.01 ohm to 1 ohm	0.092 % to 0.036 %
66	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Comparison Method	0.01 ohm to 1 ohm	0.92 % to 0.036 %
67	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	1 Mohm to 10 Mohm	0.016 % to 0.054 %
68	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	1 Mohm to 10 Mohm	0.016 % to 0.054 %
69	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	1 ohm to 1 Mohm	0.036 % to 0.016 %
70	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	1 ohm to 1 Mohm	0.036 % to 0.016 %

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71	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	10 Mohm to 100 Mohm	0.054 % to 0.293 %
72	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	10 Mohm to 100 Mohm	0.054 % to 0.293 %
73	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Target – Attenuator Cable Chain :DC Resistance	Using Digital multimeter by direct method	1 ohm to 2.1 ohm	0.036 %
74	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using DC Current Source with current coil by direct Method	10 A to 1000 A	0.5 % to 0.55 %
75	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Measure)	PD Calibrator/ Pulse Generator	Using Digital Oscilloscope with Standard Resistance by Direct Method as per IS/IEC 60270	1 pC to 10000 pC	2.4 % to 3.3 %

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76	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	PD Detector (scale factor k)	Using Pulse Generator, Digital Oscilloscope with Resistance Box by Comparison Method as per IS/IEC 60270	0.5 Ratio to 2 Ratio	3.3 %
77	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	PD Detector Bandwidth	Using Function Generator by Direct Method as per IS/IEC 60270	1 kHz to 30 MHz	7.1 %
78	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Pd Detector pulse resolution time Tr	Using Pulse Generator, by Direct Method as per IS/IEC 60270	0.1 µs to 100 µs	3 %
79	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	2M Triple large loop antenna system (LAS) Antenna Factor	Using Signal Generator, Power sensor, Vector Network Analyzer with Spectrum/ Selective Volt meter as per CISPR 16-1-4 :2019+AMD1:2020 by Direct Method	34 dB(ohm) to 100 dB(ohm)	0.45 dB to 1 dB

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80	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Amplitude Modulation carrier frequency @ 9 kHz to 14.99 GHz, Modulation frequency 1 kHz to 50 kHz	Using Vector Network Analyzer with Spectrum by direct method	10 % to 95 %	2.5 % to 4.2 %
81	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Amplitude Modulation Carrier Frequency @ 9 kHz to 3.2 GHz, Modulation frequency 1 kHz to 50 kHz	Using Oscilloscope by direct method	10 % to 95 %	3.3 %
82	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System Short circuit (Current Amplitude)	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.112 kA to +/-11 kA	3.10 %
83	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-CDN Output, Short circuit current	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-37.5 A to +/-11000 A	3.10 %
84	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Amplitude	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.225 kV to +/-20.0 kV	3.10 % to 4 %

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85	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Front Time	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.84 µs to 1.56 µs	7.8 %
86	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Pulse Duration	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	40 µs to 60 µs	3.1 %
87	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit current front time @ CDN Output	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.91 µs to 10.4 µs	3.48 %
88	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit Fronttime	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	6.4 µs to 9.6 µs	3.12 %
89	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit pulse duration	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	16 µs to 24 µs	3.41 %

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90	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open Circuit Voltage @ CDN Output	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.225 kV to +/-20 kV	3.10 %
91	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage front time @CDN Output	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.84 µs to 10.4 µs	3.10 %
92	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Pulse Duration @ CDN Output	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	5 µs to 325 µs	3.10 %
93	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit current Pulse Duration @ CDN Output	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	9.10 µs to 325 µs	1 % to 3.10 %
94	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Telecom/CDN Short circuit Front time	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	2.52 µs to 6 µs	3.48 %

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95	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN (Telecom). Open circuit Voltage Pulse Duration	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	560 µs to 840 µs	1.10 %
96	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Open circuit Voltage Front Time	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	7 µs to 13 µs	2.28 %
97	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Short circuit Current Amplitude	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-11.25 A to +/-220 A	3.10 %
98	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Short circuit pulse duration	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	256 µs to 384 µs	1.0 %
99	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test-Phase Shifting	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0 ° to 360 °	1.0 ° to 0.5 °

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100	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Current Front Time, Impulse magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	6.4 µs to 11.2 µs	2.02 %
101	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Current Amplitude)	Using Oscilloscope and Current probe as per IEC 61000-4-18:2019	1.25 A to 20 A	7.1 %
102	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Oscillation Frequency)	Using Digital Oscilloscope with HV differential probe as per IEC 61000-4-18:2019	100 kHz to 1 MHz	2.5 %
103	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Repetition rate,)	Using Digital Oscilloscope, Voltage differential probe as per IEC 61000-4-18:2019	2 ms to 50 ms	3.0 %
104	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Rise Time)	Using Digital Oscilloscope, Voltage differential probe as per IEC 61000-4-18:2019	75 ns to 1 s	3.5 %
105	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Voltage Amplitude).	Using Digital Oscilloscope and Voltage differential probe as per IEC 61000-4-18:2019	0.25 kV to 2.5 kV	5 %

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106	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk2 to Pk1 less than equal to 1.1 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 1.1 V/V(Ratio)	4.42 %
107	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk3 to Pk2 less than equal to 0.8 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 0.8 V/V(Ratio)	4.42 %
108	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk4 to Pk3 less than equal to 0.8 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 0.8 V/V(Ratio)	4.42 %
109	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System - Generator/CDN/Capacitive coupling clamp Pulse amplitude	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	+/-113 V to +/-5.714 kV	3.29 %

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110	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Burst Duration	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	0.06 ms to 900 ms	1 %
111	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Burst Period	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	5 ms to 360 ms	1 %
112	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System-Generator/CDN/Capacitive coupling clamp Pulse Rise Time	Using Oscilloscope & Dividers (50 OHM & 1000 OHM) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	3.5 ns to 7 ns	3.93 %
113	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System-Generator/CDN/Capacitive coupling clamp: Pulse Width	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	30 ns to 150 ns	2.44 %

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114	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Repetition Frequency	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	0.08 kHz to 1200 kHz	1.0 %
115	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Air Discharge ±2 kV to ±30 kV Generator DC output voltage	Using Digital multimeter with Divider as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±1.9 kV to ±31.5 kV	2.53 %
116	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV Current 30 ns to 800 ns	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±0.15 A to ±78 A	3.79 %

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117	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV Rise time	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	0.6 ns to 1 ns	8.21 %
118	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV First Peak Current	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±6.375 A to ±129.375 A	3.78 %
119	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impedance (Artificial Mains Network, Impedance Stabilization Network(ISN), EM CLAMP, Coupling & Decoupling-CDN, coupling/decoupling network for emission measurement(CDNE) @ 9 kHz - 1000 MHz)	Using Vector Network Analyzer as per CISPR 16-1-2: Ed. 2.0 2017-11, MIL-STD-461G: 2017-07, IEC 61000-4-6, ANSI C63.5, CISPR 32 by direct method	1 ohm to 300 ohm	10.1 % to 5 %

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120	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impulse magnetic Field Generator with Standard Coil (Duration)	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	16 µs to 28 µs	1 %
121	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impulse magnetic Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m (Peak Current)	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	±99.9 A to ±1667 A	2.38 %
122	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Insertion loss/RF Attenuation/Isolation /VDF. (Transient Limiter, Attenuator, LISN, CDN, CDNE, BCI, DC, AMN, ISN, EM Clamp, ESD Target, Adopter, Cable @9 kHz - 15 GHz)	Using Vector Network Analyzer with Spectrum by Direct Method	0.1 dB to 90 dB	0.25 dB to 0.55 dB
123	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Insertion loss/RF Attenuation/Isolation /VDF. (Transient Limiter, Attenuator, LISN, CDN, CDNE, BCI, DC, AMN, ISN, EM Clamp, ESD Target, Adopter, LCL, HV Divider, Cable @9 kHz - 6 GHz)	Using Power Sensor and Signal Generator by Direct Method	0.1 dB to 75 dB	0.25 dB to 0.35 dB

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124	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Magnetic field strength. Power Frequency Magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Digital Multimeter with Current Clamp and Current Transformer as per IEC 61000-4-8 Ed 2.0 2009:09 by direct method	1 A/m to 1600 A/m	1.9 %
125	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Monopole/ ROD Antenna @9 kHz - 60 MHz	Using Signal Generator, Power sensor, Vector Network Analyzer as per MIL-461G by Direct Method	-70 dB to +15 dB	0.35 dB to 1 dB
126	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Output Voltage (NO Load) , Voltage Dips & Interruption Generator	Using Oscilloscope with HV Differential probe/HV probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	0 % to 100 %	2.60 %

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127	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Phase Angle (Artificial Mains Network, Impedance Stabilization Network(ISN), EM CLAMP, Coupling & Decoupling-CDN, coupling/decoupling network for emission measurement(CDNE):@ 9 kHz-1000 MHz)	Using Vector Network Analyzer as per CISPR 16-1-2, Ed 2.0 2017:11, MIL-STD-461G: 2017-07, IEC 61000-4-6, ANSI C63.5, CISPR 32 by Direct Method	(-)90 ° to +90 °	3.1
128	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Phase Shifting, Impulse magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	0 ° to 360 °	1.0 ° to 0.5 °
129	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Power Measurement. @ 9 kHz - 6 GHz	Using Power Sensor by Direct Method	(-)60 dBm to 15 dBm	0.25 dB to 0.35 dB
130	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Return Loss / VSWR (Attenuator, Antenna, Transient Limiter, BCI, Amplifier, Termination, RF Load, Directional Coupler, adapter line, Cable @ 9 kHz - 8.6 GHz)	Using Signal Generator , Power sensor/Spectrum & Directional Coupler by direct method	1 dB to 46 dB	0.2 dB to 0.35 dB

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131	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Return Loss/VSWR (Attenuator, Antenna, Transient Limiter, BCI, Amplifier, Termination, RF Load, Directional Coupler, adapter line, Cable @ 9 kHz - 15 GHz)	Using Vector Network Analyzer By Direct Method	1 dB to 46 dB	0.35 dB to 0.4 dB
132	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifier :Gain @ 9kHz - 15 GHz	Using Vector Network Analyzer With Spectrum / Power Sensor, Signal Generator and Attenuator by Direct Method	5 dB to 65 dB	0.4 dB to 0.56 dB
133	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Ampli?er, Generator Harmonics Level, Fundamental Frequency from @9 kHz - 7.5 GHz (3rd Harmonics level up to 15 GHz)	Using Vector Network Analyzer With Spectrum, Signal Generator, and Attenuator by Direct Method	5 dBc to 80 dBc	0.52 dB to 0.7 dB
134	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifier, Generator :Power Measurement @ 9 kHz - 15 GHz	Using Network Analyzer With Spectrum /Power Sensor and Attenuator by Direct Method	(-)60 dBm to 70 dBm	0.56 dB

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135	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator -Phase Shifting	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0 ° to 360 °	1.0 ° to 0.5 °
136	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Repetition rate	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.1 min to 1 min	2.0 %
137	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System -Open Circuit Voltage	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-225 Volts to +/-6600 Volts	3.05 %
138	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Current Rise Time (Short Circuit)	Using Oscilloscope and Current clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.2 µs to 1 µs	1.0 %
139	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Frequency	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	90 kHz to 110 kHz	2.11 %

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140	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Voltage Rise Time (Open Circuit)	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.35 µs to 0.65 µs	1.0 %
141	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System-Short Circuit Current :12 OHM	Using Oscilloscope and Current Probe clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-15.6 A to +/-550 A	2.58 %
142	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System-Short Circuit Current :30 OHM	Using Oscilloscope and Current Probe clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-6.225 A to +/-220 A	2.58 %
143	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Target – Attenuator Cable Chain :Low Frequency Transfer Impedance	Using DC Power supply with Digital Multimeter as per IEC 61000-4-2 Ed 2.0 2008-12 by V/ I method	±0.0198 ohm to ±0.202 ohm	0.5 % to 0.2 %
144	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Transfer Impedance, 20Hz - 14.99GHz	Using Vector Network Analyzer, Generator with Oscilloscope/AC Multimeter, Selective Voltmeter by Direct Method	39 dBohm to -75 dBohm	0.4 dB to 1 dB

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145	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & interruption Voltage Rise/Fall Time	Using Oscilloscope with HV probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	1 µs to 50 µs	2.4 % to 2.4 %
146	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption Generator (Phase Angle).	Using Oscilloscope with HV Differential probe as per IEC 61000-4-11 Ed. 3.0 2020-01 by direct method	0 ° to 360 °	1 ° to 1.5 °
147	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption Generator (Time),	Using Oscilloscope with HV Differential probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	1 ms to 10 s	3.0 %
148	ELECTRO-TECHNICAL-EMI/ EMC (Source)	ATTENUATION, (20Hz - 14.99GHz)	Using Attenuators, 0 to 10dB in 1dB step, 10,20,30,50, by Direct method	0 dB to 100 dB	0.15 dB to 1.6 dB
149	ELECTRO-TECHNICAL-EMI/ EMC (Source)	Power Measurement @ 9 kHz - 6 GHz	Using Power Sensor with Signal Generator by Comparison method	(-)60 dBm to 15 dBm	0.25 dB to 0.35 dB

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150	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Vector Network Analyzer with Spectrum by Direct Method	0.009 MHz to 15000 MHz	0.00012 %
151	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digital Multimeter by Direct Method	10 Hz to 300 kHz	0.15 % to 0.61 %
152	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digital Multimeter with Function Generator by Comparison Method	10 Hz to 300 kHz	0.15 % to 0.61 %
153	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Three Phase Reference Standard with Three Phase Power Calibrator by Comparison Method and by Direct Method	45 Hz to 65 Hz	0.017 %
154	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	2.00E-05 MHz to 3200 MHz	0.00012 % to 0.00031 %

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155	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Three Phase Power Calibrator by Direct Method	45 Hz to 60 Hz	0.029 %
156	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	45 Hz to 60 Hz	0.060 %

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Site Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	1Phase 2Wire, 3Phase 4 Wire AC Active Power/Mean Power @ 45 Hz to 62.5 Hz (40 V to 320 V , 0.001 A to 120 A, 0.25 (lead & lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mW to 115.2 kW	0.14 % to 0.039 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	1Phase 2Wire, 3Phase 4Wire AC Active Power /Mean Power @ 50 Hz (30 V to 480 V, 0.01 A to 100 A, 0.25 to 0.01 (lead & lag))	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	3 mW to 36 kW	1.15 % to 0.047 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	1Phase 2Wire,3Phase 4Wire AC Active Power/Mean Power @ 50 Hz (30 V to 480 V , 0.01 A to 100 A, 0.25 (lead & lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	75 mW to 144 kW	0.047 % to 0.012 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	10 µA to 100 mA	0.82 % to 0.16 %

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5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	100 mA to 3 A	0.16 % to 0.33 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	3 A to 10 A	0.33 % to 0.61 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator & Resistance Box by Comparison Method	10 µA to 100 mA	0.83 % to 0.17 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	100 mA to 3 A	0.17 % to 0.33 %
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	3 A to 10 A	0.33 % to 0.62 %

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10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @45 Hz - 65 Hz	Using Three Phase Reference Standard by Direct Method and Using Three Phase Reference Standard with Three Phase Power Calibrator by Comparison Method	1 mA to 120 A	0.078 % to 0.017 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator & Potential Transformer by Comparison Method	560 V to 750 V	0.17 % to 0.13 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	1 mV to 1 V	2.49 % to 0.10 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	1 V to 375 V	0.10 % to 0.16 %

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14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 1 kHz	Using 6½ Digital Multimeter by Direct Method	375 V to 750 V	0.16 % to 0.12 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Signal Generator by Comparison Method	1 mV to 1 V	2.51 % to 0.10 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	1 V to 375 V	0.10 % to 0.16 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz - 500 Hz	Using 6½ Digital Multimeter with Three Phase Power Calibrator by Comparison Method	375 V to 560 V	0.16 % to 0.17 %

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18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @45 Hz - 65 Hz	Using Three Phase Reference Standard by Direct Method and Using Three Phase Reference Standard with Three Phase Power Calibrator & Potential Transformer by Comparison Method	30 V to 625 V	0.017 % to 0.040 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Active Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V, 0.001 A to 120 A, 0.25 (Lag/ Lead) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mWh to 115.2 kWh	0.14 % to 0.039 %
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Active Energy (1Phase 2Wire, 3Phase 4Wire) (47.5 Hz to 62.5 Hz, 30 V to 480 V, 0.01 A to 100 A, 0.25 (Lag/ Lead) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	75 mWh to 144 kWh	0.047 % to 0.012 %

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21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	40 mVAh to 115.2 kVAh	0.039 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	40 mVA to 115.2 kVA	0.039 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Harmonics ,Total Harmonic Distortion (0.05 A to 24 A) @ 50 Hz	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	2nd order to 40th order	0.35 % to 0.66 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Harmonics, Total Harmonic Distortion in Voltage (10 V to 240V) @ 50 Hz	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	2nd order to 40th order	0.59 %

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25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Phase Angle (30 V to 480 V, 0.04 A to 100 A , 45 Hz to 62.5 Hz)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	(-)180 ° to 180 °	0.012 °
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A - 100 A)	Using Three Phase Reference Standard by Direct Method with Three Phase Power Calibrator by Comparison Method	0.01 Lag to 0.01 Lead	0.0002 PF to 0.0007 PF
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A, 0.25 (Lead/ Lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mVARh to 115.2 kVARh	0.14 % to 0.039 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Reactive Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 62.5 Hz, 40 V to 320 V , 0.001 A to 120 A, 0.25 (Lead/ Lag) to UPF)	Using Three Phase Reference Standard by Direct Method and with Three Phase Power Calibrator by Comparison Method	10 mVAR to 115.2 kVAR	0.14 % to 0.039 %

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29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 45 Hz - 65 Hz	Using Three Phase Power Calibrator by Direct Method	1 mA to 120 A	0.098 % to 0.031 %
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 45 Hz - 65 Hz	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	1 mA to 120 A	0.13 % to 0.061 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz	Using Three Phase Power Calibrator with Current coil by Direct Method	120 A to 1000 A	0.58 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz - 65 Hz	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	30 V to 456 V	0.060 % to 0.070 %
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz - 65 Hz	Using Three Phase Power Calibrator by Direct Method	30 V to 560 V	0.029 % to 0.046 %
34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @ 50 Hz	Using Three Phase Power Calibrator with Potential Transformer by Direct Method	560 V to 1300 V	0.068 % to 0.072 %

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35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Energy (1 Phase 2 Wire, 3 Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A, 0.25 (Lag/Lead) to UPF)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	100 mWh to 108 kWh	0.27 % to 0.070 %
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Energy (1Phase 2Wire, 3Phase 3Wire, 3Phase 4Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A, 0.25 (Lag/Lead) to UPF)	Using Three Phase Power Calibrator by Direct Method	100 mWh to 108 kWh	0.17 % to 0.045 %
37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25Lag to UPF to 0.25Lead)	Using Three Phase Power Calibrator by Direct Method	100 mW to 108 kW	0.17 % to 0.045 %
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Active Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25Lag to UPF to 0.25Lead)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	100 mW to 108 kW	0.27 % to 0.070 %

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39	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A)	Using Three Phase Power Calibrator by Direct Method	400 mVAh to 108 kVAh	0.045 %
40	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V , 0.01 A to 120 A)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	400 mVAh to 108 kVAh	0.070 %
41	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A)	Using Three Phase Power Calibrator by Direct Method	400 mVA to 108 kVA	0.045 %
42	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Apparent Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	400 mVA to 108 kVA	0.070 %
43	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Harmonics , Total Harmonics Distortion in Current (1 A to 10 A) @ 50 Hz	Using Three Phase Power Calibrator by Direct Method	2nd order to 40th order	0.83 %

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44	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Harmonics ,Total Harmonics Distortion in Voltage (100 V to 480 V) @ 50 Hz	Using Three Phase Power Calibrator by Direct Method	2nd order to 40th order	0.65 %
45	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A - 100 A)	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	0.01 PF to UPF (Lag/Lead)	0.0019 PF to 0.0021 PF
46	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor (47.5 Hz - 62.5 Hz, 30 V - 480 V, 0.04 A-100 A)	Using Three Phase Power Calibrator by Direct Method	0.01 Lag to 0.01 Lead	0.0019 PF to 0.0021 PF
47	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	100 mVARh to 108 kVARh	0.27 % to 0.070 %
48	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Energy (1 Phase 2Wire, 3Phase 3 Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V,0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Power Calibrator by Direct Method	100 mVARh to 108 kVARh	0.17 % to 0.045 %

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49	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Power (1 Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to 120 A, 0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Portable Meter Test System(Calibrator) by Direct Method	100 mVAR to 108 kVAR	0.27 % to 0.070 %
50	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Reactive Power (1Phase 2Wire, 3Phase 4 Wire) (45 Hz to 60 Hz, 40 V to 300 V, 0.01 A to120 A,0.25 Lag to UPF to 0.25 Lead)	Using Three Phase Power Calibrator by Direct Method	100 mVAR to 108 kVAR	0.17 % to 0.045 %
51	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Capacitance	Using 6½ Digital Multimeter by Direct Method	1 nF to 100 µF	1.68 % to 0.66 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Capacitance	Using 6½ Digital Multimeter with Capacitance Box by Substitution Method	1 nF to 100 µF	1.70 % to 0.66 %

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53	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	10 µA to 100 mA	0.14 % to 0.035 %
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	10 µA to 100 mA	0.14 % to 0.035 %
55	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	100 mA to 3 A	0.035 % to 0.085 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	100 mA to 3 A	0.035 % to 0.085 %
57	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter by Direct Method	3 A to 10 A	0.085 % to 0.35 %
58	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digital Multimeter with DC Current Source by Comparison Method	3 A to 10 A	0.085 % to 0.35 %

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59	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC Voltage source by Comparison Method	1 mV to 100 mV	0.42 % to 0.0083 %
60	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	1 mV to 100 mV	1.7 % to 0.009% %
61	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	10 V to 1000 V	0.0045 % to 0.0069 %
62	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC Voltage source by Comparison Method	10 V to 1000 V	0.0047 % to 0.0076 %
63	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter with DC voltage source by Comparison Method	100 mV to 10 V	0.0083 % to 0.0043 %
64	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digital Multimeter by Direct Method	100 mV to 10 V	0.0083 % to 0.0045 %

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65	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	0.01 ohm to 1 ohm	0.092 % to 0.036 %
66	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Comparison Method	0.01 ohm to 1 ohm	0.92 % to 0.036 %
67	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	1 Mohm to 10 Mohm	0.016 % to 0.054 %
68	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	1 Mohm to 10 Mohm	0.016 % to 0.054 %
69	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	1 ohm to 1 Mohm	0.036 % to 0.016 %
70	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	1 ohm to 1 Mohm	0.036 % to 0.016 %

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71	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter by Direct Method	10 Mohm to 100 Mohm	0.054 % to 0.293 %
72	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance (4-Wire)	Using 6½ Digital Multimeter with Resistance Box by Substitute Method	10 Mohm to 100 Mohm	0.054 % to 0.293 %
73	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Target – Attenuator Cable Chain :DC Resistance	Using Digital multimeter by direct method	1 ohm to 2.1 ohm	0.036 %
74	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using DC Current Source with current coil by direct Method	10 A to 1000 A	0.5 % to 0.55 %
75	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Measure)	PD Calibrator/ Pulse Generator	Using Digital Oscilloscope with Standard Resistance by Direct Method as per IS/IEC 60270	1 pC to 10000 pC	2.4 % to 3.3 %

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76	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	PD Detector (scale factor k)	Using Pulse Generator, Digital Oscilloscope with Resistance Box by Comparison Method as per IS/IEC 60270	0.5 Ratio to 2 Ratio	3.3 %
77	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	PD Detector Bandwidth	Using Function Generator by Direct Method as per IS/IEC 60270	1 kHz to 30 MHz	7.1 %
78	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Pd Detector pulse resolution time Tr	Using Pulse Generator, by Direct Method as per IS/IEC 60270	0.1 µs to 100 µs	3 %
79	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	2M Triple large loop antenna system (LAS) Antenna Factor	Using Signal Generator, Power sensor, Vector Network Analyzer with Spectrum/ Selective Volt meter as per CISPR 16-1-4 :2019+AMD1:2020 by Direct Method	34 dB(ohm) to 100 dB(ohm)	0.45 dB to 1 dB

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80	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Amplitude Modulation carrier frequency @ 9 kHz to 14.99 GHz, Modulation frequency 1 kHz to 50 kHz	Using Vector Network Analyzer with Spectrum by direct method	10 % to 95 %	2.5 % to 4.2 %
81	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Amplitude Modulation Carrier Frequency @ 9 kHz to 3.2 GHz, Modulation frequency 1 kHz to 50 kHz	Using Oscilloscope by direct method	10 % to 95 %	3.3 %
82	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System Short circuit (Current Amplitude)	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.112 kA to +/-11 kA	3.10 %
83	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-CDN Output, Short circuit current	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-37.5 A to +/-11000 A	3.10 %
84	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Amplitude	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.225 kV to +/-20.0 kV	3.10 % to 4 %

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85	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Front Time	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.84 µs to 1.56 µs	7.8 %
86	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Pulse Duration	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	40 µs to 60 µs	3.1 %
87	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit current front time @ CDN Output	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.91 µs to 10.4 µs	3.48 %
88	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit Fronttime	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	6.4 µs to 9.6 µs	3.12 %
89	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit pulse duration	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	16 µs to 24 µs	3.41 %

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90	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open Circuit Voltage @ CDN Output	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-0.225 kV to +/-20 kV	3.10 %
91	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage front time @CDN Output	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0.84 µs to 10.4 µs	3.10 %
92	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Open circuit Voltage Pulse Duration @ CDN Output	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	5 µs to 325 µs	3.10 %
93	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Short circuit current Pulse Duration @ CDN Output	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	9.10 µs to 325 µs	1 % to 3.10 %
94	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System-Telecom/CDN Short circuit Front time	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	2.52 µs to 6 µs	3.48 %

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95	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN (Telecom). Open circuit Voltage Pulse Duration	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	560 µs to 840 µs	1.10 %
96	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Open circuit Voltage Front Time	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	7 µs to 13 µs	2.28 %
97	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Short circuit Current Amplitude	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	+/-11.25 A to +/-220 A	3.10 %
98	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System/CDN-Telecom Short circuit pulse duration	Using Oscilloscope and Current Clamp as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	256 µs to 384 µs	1.0 %
99	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test-Phase Shifting	Using Oscilloscope and HV Differential Probe/HV probe as per IEC 61000-4-5 Ed 3.0 2017-08 by direct method	0 ° to 360 °	1.0 ° to 0.5 °

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100	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Current Front Time, Impulse magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	6.4 µs to 11.2 µs	2.02 %
101	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Current Amplitude)	Using Oscilloscope and Current probe as per IEC 61000-4-18:2019	1.25 A to 20 A	7.1 %
102	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Oscillation Frequency)	Using Digital Oscilloscope with HV differential probe as per IEC 61000-4-18:2019	100 kHz to 1 MHz	2.5 %
103	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Repetition rate,)	Using Digital Oscilloscope, Voltage differential probe as per IEC 61000-4-18:2019	2 ms to 50 ms	3.0 %
104	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Rise Time)	Using Digital Oscilloscope, Voltage differential probe as per IEC 61000-4-18:2019	75 ns to 1 s	3.5 %
105	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator (Voltage Amplitude).	Using Digital Oscilloscope and Voltage differential probe as per IEC 61000-4-18:2019	0.25 kV to 2.5 kV	5 %

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106	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk2 to Pk1 less than equal to 1.1 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 1.1 V/V(Ratio)	4.42 %
107	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk3 to Pk2 less than equal to 0.8 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 0.8 V/V(Ratio)	4.42 %
108	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decay in voltage 0.4 less than equal to ratio of Pk4 to Pk3 less than equal to 0.8 Ring Wave Immunity Test System	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.4 V/V(Ratio) to 0.8 V/V(Ratio)	4.42 %
109	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System - Generator/CDN/Capacitive coupling clamp Pulse amplitude	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	+/-113 V to +/-5.714 kV	3.29 %

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110	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Burst Duration	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	0.06 ms to 900 ms	1 %
111	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Burst Period	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	5 ms to 360 ms	1 %
112	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System-Generator/CDN/Capacitive coupling clamp Pulse Rise Time	Using Oscilloscope & Dividers (50 OHM & 1000 OHM) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	3.5 ns to 7 ns	3.93 %
113	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System-Generator/CDN/Capacitive coupling clamp: Pulse Width	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	30 ns to 150 ns	2.44 %

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114	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System- Generator/ CDN/Capacitive coupling clamp : Repetition Frequency	Using Oscilloscope & Dividers (50 Ohm & 1000 Ohm) as per IEC 61000-4-4 Ed 3.0 2012-04 by direct method	0.08 kHz to 1200 kHz	1.0 %
115	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Air Discharge ±2 kV to ±30 kV Generator DC output voltage	Using Digital multimeter with Divider as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±1.9 kV to ±31.5 kV	2.53 %
116	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV Current 30 ns to 800 ns	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±0.15 A to ±78 A	3.79 %

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117	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV Rise time	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	0.6 ns to 1 ns	8.21 %
118	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Contact Discharge ±2 kV to ±30 kV First Peak Current	Using Oscilloscope & ESD Target Attenuator Cable Chain as per IEC 61000-4-2 Ed 2.0 2008-12, SAE J1113-13 2015-02, ISO 10605 2008-07 by direct method	±6.375 A to ±129.375 A	3.78 %
119	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impedance (Artificial Mains Network, Impedance Stabilization Network(ISN), EM CLAMP, Coupling & Decoupling-CDN, coupling/decoupling network for emission measurement(CDNE) @ 9 kHz - 1000 MHz)	Using Vector Network Analyzer as per CISPR 16-1-2: Ed. 2.0 2017-11, MIL-STD-461G: 2017-07, IEC 61000-4-6, ANSI C63.5, CISPR 32 by direct method	1 ohm to 300 ohm	10.1 % to 5 %

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120	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impulse magnetic Field Generator with Standard Coil (Duration)	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	16 µs to 28 µs	1 %
121	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impulse magnetic Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m (Peak Current)	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	±99.9 A to ±1667 A	2.38 %
122	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Insertion loss/RF Attenuation/Isolation /VDF. (Transient Limiter, Attenuator, LISN, CDN, CDNE, BCI, DC, AMN, ISN, EM Clamp, ESD Target, Adopter, Cable @9 kHz - 15 GHz)	Using Vector Network Analyzer with Spectrum by Direct Method	0.1 dB to 90 dB	0.25 dB to 0.55 dB
123	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Insertion loss/RF Attenuation/Isolation /VDF. (Transient Limiter, Attenuator, LISN, CDN, CDNE, BCI, DC, AMN, ISN, EM Clamp, ESD Target, Adopter, LCL, HV Divider, Cable @9 kHz - 6 GHz)	Using Power Sensor and Signal Generator by Direct Method	0.1 dB to 75 dB	0.25 dB to 0.35 dB

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124	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Magnetic field strength. Power Frequency Magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Digital Multimeter with Current Clamp and Current Transformer as per IEC 61000-4-8 Ed 2.0 2009:09 by direct method	1 A/m to 1600 A/m	1.9 %
125	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Monopole/ ROD Antenna @9 kHz - 60 MHz	Using Signal Generator, Power sensor, Vector Network Analyzer as per MIL-461G by Direct Method	-70 dB to +15 dB	0.35 dB to 1 dB
126	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Output Voltage (NO Load) , Voltage Dips & Interruption Generator	Using Oscilloscope with HV Differential probe/HV probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	0 % to 100 %	2.60 %

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127	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Phase Angle (Artificial Mains Network, Impedance Stabilization Network(ISN), EM CLAMP, Coupling & Decoupling-CDN, coupling/decoupling network for emission measurement(CDNE):@ 9 kHz-1000 MHz)	Using Vector Network Analyzer as per CISPR 16-1-2, Ed 2.0 2017:11, MIL-STD-461G: 2017-07, IEC 61000-4-6, ANSI C63.5, CISPR 32 by Direct Method	(-)90 ° to +90 °	3.1
128	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Phase Shifting, Impulse magnetic Field Generator with Standard Coil:1 m x 1 m, 1 m x 2.6 m	Using Oscilloscope & Current clamp As per IEC 61000-4-9 Ed. 2.0 2016-07 by direct method	0 ° to 360 °	1.0 ° to 0.5 °
129	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Power Measurement. @ 9 kHz - 6 GHz	Using Power Sensor by Direct Method	(-)60 dBm to 15 dBm	0.25 dB to 0.35 dB
130	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Return Loss / VSWR (Attenuator, Antenna, Transient Limiter, BCI, Amplifier, Termination, RF Load, Directional Coupler, adapter line, Cable @ 9 kHz - 8.6 GHz)	Using Signal Generator , Power sensor/Spectrum & Directional Coupler by direct method	1 dB to 46 dB	0.2 dB to 0.35 dB

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131	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Return Loss/VSWR (Attenuator, Antenna, Transient Limiter, BCI, Amplifier, Termination, RF Load, Directional Coupler, adapter line, Cable @ 9 kHz - 15 GHz)	Using Vector Network Analyzer By Direct Method	1 dB to 46 dB	0.35 dB to 0.4 dB
132	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifier :Gain @ 9kHz - 15 GHz	Using Vector Network Analyzer With Spectrum / Power Sensor, Signal Generator and Attenuator by Direct Method	5 dB to 65 dB	0.4 dB to 0.56 dB
133	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Ampli?er, Generator Harmonics Level, Fundamental Frequency from @9 kHz - 7.5 GHz (3rd Harmonics level up to 15 GHz)	Using Vector Network Analyzer With Spectrum, Signal Generator, and Attenuator by Direct Method	5 dBc to 80 dBc	0.52 dB to 0.7 dB
134	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifier, Generator :Power Measurement @ 9 kHz - 15 GHz	Using Network Analyzer With Spectrum /Power Sensor and Attenuator by Direct Method	(-)60 dBm to 70 dBm	0.56 dB

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135	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator -Phase Shifting	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0 ° to 360 °	1.0 ° to 0.5 °
136	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Repetition rate	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.1 min to 1 min	2.0 %
137	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System -Open Circuit Voltage	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-225 Volts to +/-6600 Volts	3.05 %
138	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Current Rise Time (Short Circuit)	Using Oscilloscope and Current clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.2 µs to 1 µs	1.0 %
139	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Frequency	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	90 kHz to 110 kHz	2.11 %

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140	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System Voltage Rise Time (Open Circuit)	Using Oscilloscope and HV Differential Probe as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	0.35 µs to 0.65 µs	1.0 %
141	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System-Short Circuit Current :12 OHM	Using Oscilloscope and Current Probe clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-15.6 A to +/-550 A	2.58 %
142	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Immunity Test System-Short Circuit Current :30 OHM	Using Oscilloscope and Current Probe clamp as per IEC 61000-4-12 Ed 3.0 2017-07 by direct method	+/-6.225 A to +/-220 A	2.58 %
143	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Target – Attenuator Cable Chain :Low Frequency Transfer Impedance	Using DC Power supply with Digital Multimeter as per IEC 61000-4-2 Ed 2.0 2008-12 by V/ I method	±0.0198 ohm to ±0.202 ohm	0.5 % to 0.2 %
144	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Transfer Impedance, 20Hz - 14.99GHz	Using Vector Network Analyzer, Generator with Oscilloscope/AC Multimeter, Selective Voltmeter by Direct Method	39 dBohm to -75 dBohm	0.4 dB to 1 dB

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145	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & interruption Voltage Rise/Fall Time	Using Oscilloscope with HV probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	1 µs to 50 µs	2.4 % to 2.4 %
146	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption Generator (Phase Angle).	Using Oscilloscope with HV Differential probe as per IEC 61000-4-11 Ed. 3.0 2020-01 by direct method	0 ° to 360 °	1 ° to 1.5 °
147	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption Generator (Time),	Using Oscilloscope with HV Differential probe as per IEC 61000-4-11 Ed. 3.0 2020-01 and IEC 61000-4-29:2000 by direct method	1 ms to 10 s	3.0 %
148	ELECTRO-TECHNICAL-EMI/ EMC (Source)	ATTENUATION, (20Hz - 14.99GHz)	Using Attenuators, 0 to 10dB in 1dB step, 10,20,30,50, by Direct method	0 dB to 100 dB	0.15 dB to 1.6 dB
149	ELECTRO-TECHNICAL-EMI/ EMC (Source)	Power Measurement @ 9 kHz - 6 GHz	Using Power Sensor with Signal Generator by Comparison method	(-)60 dBm to 15 dBm	0.25 dB to 0.35 dB

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150	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Vector Network Analyzer with Spectrum by Direct Method	0.009 MHz to 15000 MHz	0.00012 %
151	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digital Multimeter by Direct Method	10 Hz to 300 kHz	0.15 % to 0.61 %
152	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digital Multimeter with Function Generator by Comparison Method	10 Hz to 300 kHz	0.15 % to 0.61 %
153	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Three Phase Reference Standard with Three Phase Power Calibrator by Comparison Method and by Direct Method	45 Hz to 65 Hz	0.017 %
154	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	2.00E-05 MHz to 3200 MHz	0.00012 % to 0.00031 %

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155	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Three Phase Power Calibrator by Direct Method	45 Hz to 60 Hz	0.029 %
156	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Three Phase Portable Meter Test System (Calibrator) by Direct Method	45 Hz to 60 Hz	0.060 %

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