



National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name :

SOCIETY FOR APPLIED MICROWAVE ELECTRONICS ENGINEERING AND RESEARCH (SAMEER)-EMC DIVISION, SECTOR 7, RAIN TREE MARG CBD BELAPUR, NAVI MUMBAI, MUMBAI, MAHARASHTRA, INDIA

Accreditation Standard

ISO/IEC 17025:2017

Certificate Number

CC-3728

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Validity

11/10/2025 to 10/10/2029

Last Amended on

09/01/2026

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-EMI/ EMC (Measure)	Combination Wave Surge Test System : Current Amplitude (CDN Output)	Using Digital storage oscilloscope and current transformer by direct method as per ISO/IEC 61000-4-5	(±) 41 A to (±) 3 kA	2.98 %
2	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System Current Front Time (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	6.4 µs to 9.6 µs	4.07 %
3	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test System Current Pulse Width (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	16 µs to 24 µs	3.28 %
4	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave surge test system: Voltage Amplitude (Generator Output)	Using Digital Storage oscilloscope & Common Mode probe by direct method as per ISO/IEC 61000-4-5, 600950-1, 60065	(±) 0.5 kV to (±) 12 kV	3.8 %
5	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Current Amplitude (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	(±) 0.25 kA to (±) 3 kA	3.03 %

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6	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Current Front Time (CDN Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct Method as per ISO/IEC 61000-4-5	1.75 μ s to 9.6 μ s	4.66 %
7	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Current Pulse Width (CDN Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-5	16 μ s to 32.5 μ s	4.40 %
8	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Amplitude (CDN Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5	(±) 0.5 kV to (±) 6 kV	3.78 %
9	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Amplitude (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	(±) 0.5 kV to (±) 6 kV	2.86 %
10	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Front Time (CDN Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5	0.84 μ s to 1.56 μ s	5.79 %



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11	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Front Time (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	0.84 μ s to 1.56 μ s	6.22 %
12	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Pulse Width (CDN Output)	Using Digital Storage Oscilloscope & HV Differential Probe By Direct method as per ISO/IEC 61000-4-5	5 μ s to 60 μ s	2.62 %
13	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Combination Wave Surge Test Systems: Voltage Pulse Width (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5, 60950-1, 60065	40 μ s to 60 μ s	2.52 %
14	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): AM Depth (10 Hz to 13.6 GHz)	Using Spectrum Analyzer by direct method as per ISO/IEC 61000-4-6	5 % to 95 %	3.61 %
15	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): Error of Monitoring Input (9 kHz to 400 MHz)	Using Signal Generator and Power Meter by direct method as per ISO/IEC 61000-4-6	(-) 40 dBm to 13 dBm	0.4 dB to 0.6 dB
16	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): Frequency Accuracy	Using Frequency Counter by direct method as per ISO/IEC 61000-4-6	9 kHz to 400 MHz	0.000046 %



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17	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): Gain (10 Hz to 400 MHz)	Using Spectrum Analyzer & Power meter by Direct method as per ISO/IEC 61000-4-6	1 dB to 70 dB	0.43 dB to 0.45 dB
18	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): Harmonics Level (up to Third Harmonics) (10 Hz to 400 MHz)	Using Spectrum Analyzer by Direct method as per ISO/IEC 61000-4-6	(-) 90 dBc to 0	0.45 dB
19	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Conducted RF Test System(RFCS): Level Accuracy (9 kHz to 400 MHz)	Using Spectrum Analyzer & Power Meter by Direct method as per ISO/IEC 61000-4-6	(-) 30 dBm to 20 dBm	0.52 dB
20	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Coupling Factor/Coupling Loss (9 kHz to 8.5 GHz) Directional Coupler - EM Clamp.	Using Vector Network Analyser by Direct Method as per ISO/IEC 61000-4-6	1 dB to 70 dB	0.5 dB to 0.7 dB
21	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator Current Amplitude	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-18	(±) 1 A to (±) 15 A	2.93 %
22	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator: Oscillation Frequency	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-18	90 kHz to 110 kHz	0.3 %



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23	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator: Voltage Amplitude	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-18	(±) 0.25 kV to (±) 4 kV	3.82 %
24	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator: Voltage Decay (Ratio of Pk10 to Pk1)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-18	0 to 0.5	4.07 %
25	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator: Voltage Decay (Ratio of Pk5 to Pk1)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-18	0 to 0.5	4.06 %
26	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Damped Oscillatory Wave Generator: Voltage Rise Time	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-18	60 ns to 90 ns	2.54 %
27	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Decoupling of Common Mode Disturbance (9 kHz to 230 MHz) Coupling Decoupling Network, Impedance Stabilization Network and EM clamp	Using Vector Network Analyzer by Direct method as per ISO/IEC 61000-4-6	1 dB to 70 dB	0.5 dB
28	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Directivity (9 kHz to 8.5 GHz) Dual Directional Coupler	Using Vector Network Analyzer by direct method	1 dB to 90 dB	0.5 dB



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29	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Burst Duration(at 5kHz)	Using Digital Storage Oscilloscope & 50/1000 Ohm load by Direct method as per ISO/IEC 61000-4-4	12 ms to 18 ms	0.35 %
30	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Burst Period	Using Digital Storage Oscilloscope & 50 ohm /1000 ohm load by Direct method as per ISO/IEC 61000- 4-4	240 ms to 360 ms	0.35 %
31	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Pluse Amplitude (CDN Output)	Using Digital Storage Oscilloscope & 50/1000 Ohm load by Direct method as per ISO/IEC 61000-4-4	(±) 0.25 kV to (±) 6 kV	5.05 %
32	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Pulse Amplitude (Generator Output)	Using Digital Storage Oscilloscope & 50/1000 ohm load by Direct method as per ISO/IEC 61000-4-4	(±) 0.25 kV to (±) 6 kV	5.08 % to 5.10 %
33	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Pulse Rise Time (CDN Output)	Using Digital Storage Oscilloscope & 50 ohm /1000 ohm load by Direct Method as per ISO/IEC 61000- 4-4	3.5 ns to 6.5 ns	2.6 %
34	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System Pulse Rise Time (Generator Output)	Using Digital Storage Oscilloscope & 50 ohm/1000 ohm load by Direct method as per ISO/IEC 61000- 4-4	3.5 ns to 6.5 ns	2.6 %



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35	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System Pulse Width (CDN Output)	Using Digital Storage Oscilloscope & 50/1000 ohm load by Direct method as per ISO/IEC 61000- 4-4	35 ns to 150 ns	2.43 %
36	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System Pulse Width (Generator Output)	Using Digital Storage Oscilloscope & 50/1000 Ohm load by Direct method as per ISO/IEC 61000- 4-4	35 ns to 150 ns	0.31 %
37	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System Repetition Frequency (Generator Output)	Using Digital Storage Oscilloscope & 50/1000 Ohm load by Direct method as per ISO/IEC 61000- 4-4	5 kHz to 100 kHz	0.36 % to 0.32 %
38	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System: Burst Duration (100 kHz)	Using Digital Storage Oscilloscope & 50/1000 Ohm load by direct method as per ISO/IEC 61000-4-6	0.6 ms to 0.9 ms	2.97 %
39	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System: Capacitive Coupling Clamp: Pulse Amplitude	Using DSO with 50 Ohm Load as per ISO/IEC 61000-4-4	(-) 2 kV to 2 kV	5 %
40	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Electrical Fast Transient Test System: Capacitive Coupling Clamp: Pulse Rise Time	Using DSO with 50 Ohm load as per ISO/IEC 61000-4-4	3.5 ns to 6.5 ns	0.48 %



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41	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrical Fast Transient Test System: Capacitive Coupling Clamp: Pulse Width	Using DSO with 50 Ohm load as per ISO/IEC 61000-4-4	35 ns to 65 ns	0.98 %
42	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Current at 180 ns (Contact Discharge Mode) [RC Module: 150 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 0.55 A to (±) 5.55 A	8.3 % to 11.4 %
43	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Current at 360 ns (Contact Discharge Mode) [RC Module: 150 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 0.3 A to (±) 3 A	8.3 % to 11.4 %
44	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Current at 360 ns (Contact Discharge Mode) [RC Module: 330 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 0.3 A to (±) 3 A	8.3 % to 11.4 %
45	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Current at 65 ns (Contact Discharge Mode) [RC Module: 330 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 4 A to (±) 40 A	8.3 % to 11.4 %
46	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : DC Voltage (Air Discharge Mode)	Using HV Volt Meter by Direct method as per ISO/IEC 61000-4-2 (2025)	(±) 2 kV to (±) 30 kV	2.9 %



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47	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : First Peak Current (Contact Discharge Mode) (RC Module: 150 pF/330 ohm)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 61000-4-2(2008) & ISO/ IEC 61000-4-2(2025)	(±) 7.5 A to (±) 75 A	8.3 % to 11.4 %
48	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : First Peak Current (Contact Discharge Mode) [RC Module: 150 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 7.5 A to (±) 75 A	8.3 % to 11.4 %
49	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : First Peak Current (Contact Discharge Mode) [RC Module: 330 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 7.5 A to (±) 75 A	8.3 % to 11.4 %
50	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Rise Time (Contact Discharge Mode) [RC Module: 330 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	0.6 ns to 1 ns	11.4 % to 13.8 %
51	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator : Rise Time (Contact Discharge Mode) [RC Module: 330 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	0.6 ns to 1 ns	11.4 % to 13.8 %
52	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator :Current at 180 ns (Contact Discharge Mode) [RC Module: 330 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 0.55 A to (±) 5.55 A	8.3 % to 11.4 %

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53	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator current at 30 ns (Air discharge waveform)	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2 Ed:3 (2025)	2.8 A to 39 A	8.3 % to 11.4 %
54	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator current at 60 ns (Air Discharge Waveform)	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2 Ed.2(2025)	1.4 A to 19.5 A	8.3 % to 11.4 %
55	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator Second peak current (Air Discharge Waveform) 150pf/330 ohm	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2 Ed.3(2025)	3.6 A to 40.56 A	8.3 % to 11.4 %
56	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator Second peak current (contact Discharge) RC module: 150pF/330 ohm	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2(2025)	3.6 A to 25.2 A	8.3 % to 11.4 %
57	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Current at 130 ns (Contact Discharge Mode) [RC Module: 330 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 2 A to (±) 20 A	8.3 % to 11.4 %



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58	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Current at 30 ns (Contact Discharge Mode)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 61000-4-2	(±) 4 A to (±) 30 A	8.3 % to 11.4 %
59	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Current at 30 ns (Contact Discharge Mode) (RC Module: 150 pF/330 ohm)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 4 A to (±) 40 A	8.3 % to 11.4 %
60	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Current at 60 ns (Contact Discharge Mode)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 61000-4-2(2008) & ISO/ IEC 61000-4-2(2025)	(±) 2 A to (±) 15 A	8.3 % to 11.4 %
61	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Current at 60 ns (Contact Discharge Mode) [RC Module: 150 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 2 A to (±) 20 A	8.3 % to 11.4 %
62	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: DC Voltage (Air Discharge Mode)	Using HV Voltmeter by Direct method as per ISO/IEC 61000-4-2, ISO/IEC 10605	(±) 2 kV to (±) 30 kV	2.9 %



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63	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic discharge Generator: First Peak current (Air Discharge Waveform)	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2 Ed:3(2025)	6.375 A to 64.74 A	8.3 % to 11.4 %
64	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: First Peak Current (Contact Discharge Mode)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 7.5 A to (±) 56.25 A	8.3 % to 11.4 %
65	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: First Peak Current (Contact Discharge Mode) [RC Module: 330 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	(±) 7.5 A to (±) 75 A	8.3 % to 11.4 %
66	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic discharge Generator: Rise Time (Air Discharge waveform)	Using Target Attenuator cable chain & Digital Storage Oscilloscope by direct method as per ISO/IEC 61000-4-2 Ed:3(2025)	0.6 ns to 1 ns	11.4 % to 13.8 %
67	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Rise Time (Contact Discharge Mode)	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 61000-4-2	0.6 ns to 1 ns	11.4 % to 13.8 %



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68	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Rise Time (Contact Discharge Mode) [RC Module: 150 pF/2000 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	0.6 ns to 1 ns	11.4 % to 13.8 %
69	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Electrostatic Discharge Generator: Rise Time (Contact Discharge Mode) [RC Module: 150 pF/330 ohm]	Using Target-Attenuator-Cable Chain & Digital Storage Oscilloscope by Direct method as per ISO/IEC 10605	0.6 ns to 1 ns	11.4 % to 13.8 %
70	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Receiver Display Error of Quasi peak detector using Sinusoidal signal	Using Signal Generator by direct method As per CISPR 16-1-1	9 kHz to 18 GHz	0.7 dB
71	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Amplitude Relationship (Quasi Peak/ Average)	Using Calibration Pulse Generator by Direct method as per CISPR 16-1-1	9 kHz to 1 GHz	0.7 dB
72	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Amplitude Relationship (Peak/quasi Peak)	Using Calibration Pulse Generator by Direct method as per CISPR 16-1-1	9 kHz to 1 GHz	0.7 dB
73	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Display Error of Average Detector with Sinusoidal Signal	Using Signal Generator by Direct method as per CISPR 16-1-1	9 kHz to 18 GHz	0.7 dB
74	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Display Error of Peak Detector With Sinusoidal Signal	Using Signal Generator by Direct method as per CISPR 16-1-1	9 kHz to 18 GHz	0.7 dB



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75	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Display Error of Quasi Peak Detector (PRF L ref) Band A	Using Calibration Pulse Generator by Direct method as per CISPR 16-1-1	100 Hz	0.7 dB
76	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Display Error of Quasi Peak Detector (PRF L ref) Band B	Using Calibration Pulse Generator by Direct method as per CISPR 16-1-1	100 Hz	0.7 dB
77	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Display Error of Quasi Peak Detector (PRF L ref) Band C/D	Using Calibration Pulse Generator by Direct method as per CISPR 16-1-1	100 Hz	0.7 dB
78	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	EMI Test Receiver Return Loss(0 dB to 70 dB)	Using Vector Network Analyzer by Direct method	9 kHz to 8.5 GHz	0.5 dB
79	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impedance (10 kHz to 100 MHz) EM Clamp	Using Vector Network Analyzer By Direct Method / Calculation Method (ABCD Transformation) as per ISO/IEC 61000-4-6	2 kohm to 100 ohm	0.49 ohm
80	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impedance (30 MHz to 230 MHz) Line Impedance Stabilization Network, Coupling & Decoupling Network and Similar Devices	Using Vector Network Analyzer by Direct method as per CISPR 16-1-2	1 ohm to 210 ohm	8.6 %



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81	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Impedance (9 kHz to 30 MHz) Line Impedance Stabilization Network, Coupling & Decoupling Network ,Termination and Similar Devices	Using Vector Network Analyzer by Direct method as per CISPR 16-1-2	1 ohm to 210 ohm	8.6 %
82	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Insertion Loss (0dB to 90 dB) Attenuator ,Pulse Limiter , Transient Limiter, Line Impedance Stabilization Network, Bulk Current Injection Probe, Directional Coupler ,RF Cables.	Using Vector Network Analyser by Direct Method	9 kHz to 8.5 GHz	0.5 dB
83	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Isolation (9kHz to 8.5 GHz) Line Impedance Stabilization Network, Dual Directional Coupler.	Using Vector Network Analyzer by Direct method	1 dB to 90 dB	0.5 dB
84	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Phase Angle (9kHz to 230 MHz) Line Impedance Stabilization Network and Similar Devices	Using Vector Network Analyzer by Direct method as per CISPR 16-1-2	(-)10° to 90°	8.50 %



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85	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Return Loss (9kHz to 8.5GHz) Antenna, Pulse Limiter , Attenuator, Amplifier , Termination/ Load, Directional Coupler ,50 ohm Conical Adapter Line, RF Cables.	Using Vector Network Analyzer by Direct method	1 dB to 70 dB	0.5 dB
86	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifier(Pre Amplifier) Return Loss of Power Input Port & Output Port (9kHz to 8.5 GHz)	Using Vector Network Analyzer by Direct method as per ISO/IEC 61000-4-3	0 dB to 90 dB	0.5 dB
87	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifiers (Power Amplifier): Gain (10 Hz to18 GHz)	Using Spectrum Analyzer & Power Meter with Signal Generator by Direct method as per ISO/IEC 61000-4-3	0 to 90 dB	0.5 dB
88	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifiers (Power Amplifier): Harmonics Distortion (10 Hz to 13.6 GHz; up to 1000 W)	Using Spectrum Analyzer & Signal Generator by Direct method as per ISO/IEC 61000-4-3	Up to (-)90 dBc	0.5 dB
89	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifiers (Pre-amplifier): Gain (10 Hz to 18 GHz)	Using Spectrum Analyzer & Power meter with Signal Generator by Direct method as per ISO/IEC 61000-4-3	0 to 90 dB	0.5 dB
90	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Amplifiers (Pre-amplifier): Harmonics Distortion (10 Hz to 13.6 GHz)	Using Spectrum Analyzer & Signal Generator by Direct method as per ISO/IEC 61000-4-3	0 to (-) 90 dBc	0.5 dB



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91	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Signal Generator: Amplitude Modulation (AM) Depth, CF: 10 Hz to 13 GHz, Mod rate: 1kHz	Using Spectrum Analyzer by Direct method	5 % to 95 %	3.9 %
92	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Signal Generator: Frequency Accuracy	Using Frequency Counter by Direct method	9 kHz to 8 GHz	0.0030 % to 0.507 %
93	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Signal Generator: Harmonic Level (up to Third Harmonic) (10 Hz to 12 GHz)	Using Spectrum Analyzer by Direct method	Up to (-) 90 dBc	0.44 dB
94	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	RF Signal Generator: Level Accuracy (9 kHz to 18 GHz)	Using Spectrum Analyzer & Power Meter by Direct method	(-) 60 dBm to 19 dBm	0.42 dB to 0.45 dB
95	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Decay in Voltage (Ratio of Pk2 to Pk1)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	0.4 to 1.1	4.47 %
96	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Decay in Voltage (Ratio of Pk3 to Pk2)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	0.4 to 0.8	4.55 %
97	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Decay in Voltage (Ratio of Pk4 to Pk3)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	0.4 to 0.8	4.81 %



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98	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Open Circuit Voltage	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	(±) 0.25 kV to (±) 6 kV	3.9 %
99	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Open Circuit Voltage Rise Time	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	0.35 µs to 0.65 µs	3.5 % to 3.78 %
100	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Generator: Voltage Oscillation Frequency	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-12	90 kHz to 110 kHz	0.35 %
101	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Short Circuit Current	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-12	(±) 166 A to (±) 499 A	3.08 %
102	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Ring Wave Short Circuit Current Rise Time	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000-4-12	1 µs	3.44 %
103	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Target Attenuator Cable Chain Insertion Loss Variation 100 kHz to 1 GHz	Using Vector Network Analyzer by Direct method as per ISO/IEC 61000-4-2	± 0.5 dB	0.5 dB to 0.7 dB



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104	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Target Attenuator Cable Chain Insertion Loss Variation 1GHZ to 4 GHz	Using Vector Network Analyzer by Direct method as per ISO/IEC 61000- 4-2	(-)-1.2 dB to 1.2 dB	0.5 dB to 0.7 dB
105	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Target-Attenuator- Cable Chain: DC Resistance	Using Digital Multimeter by Direct method as per ISO/IEC 61000-4-2	2.1 ohm	0.76 %
106	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Target-Attenuator- Cable Chain: Low Frequency Transfer Impedance	Using Digital Multimeter by Direct method as per ISO/IEC 61000-4-2	0.060 ohm to 0.20 ohm	0.73 %
107	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Current Amplitude (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000- 4-5	(±) 12.5 A to (±) 150 A	3.26 %
108	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Current Duration (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000- 4-5	256 µs to 384 µs	2.6 %
109	ELECTRO- TECHNICAL- EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Current Front Time (Generator Output)	Using Digital Storage Oscilloscope & Current Transformer by Direct method as per ISO/IEC 61000- 4-5	4 µs to 6 µs	3.38 %



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110	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Voltage Amplitude (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5	(±) 0.5 kV to (±) 6 kV	3.7 %
111	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Voltage Duration (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5	560 µs to 840 µs	2.45 %
112	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Telecommunication Surge Test Systems: Voltage Front Time (Generator Output)	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-5	7 µs to 13 µs	5.7 %
113	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Transfer Impedance Current Probe	Using Vector Network Analyzer By Direct Method	10 kHz to 230 MHz	0.5 dBohm to 0.7 dBohm
114	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption : Fall Time & Rise Time: at :90° and 270° (0% to 100 %, 100 % to 0 %, 100 % to 80 %, 100 % to 70 % and 100 % to 40 %)	Using Digital storage Oscilloscope & HV Differential Probe as per ISO/IEC 61000-4-11	1 µs to 5 µs	3 %
115	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption : Phase Angle Accuracy	Using Digital Storage Oscilloscope & HV Differential Probe as per ISO/IEC 61000-4-11	1° to 360°	0.025° to 9.11°



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116	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption : Undershoot Voltage and Overshoot Voltage at 90° and 270° (0% to 100 % , 100% to 0%, 100% to 80%, 100% to 70% and 100% to 40%)	Using Digital Storage Oscilloscope & HV Differential Probe as per ISO/IEC 61000-4-11	(-)50 V to +50 V	3.3 %
117	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption: Dips/Interruption Time	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-11, ISO/IEC 61000-4-29	10 ms to 5 s	4 %
118	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Dips & Interruption: Output Voltage (RMS) at No Load (Nominal Line Voltage):100%,80%,70%,40%	Using Digital Storage Oscilloscope & HV Differential Probe by Direct method as per ISO/IEC 61000-4-11, ISO/IEC 61000-4-29	0 to 100 %	2.5 % to 2.6 %
119	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Voltage Division Factor (150 kHz to 230 MHz) Coupling Decoupling Network (CDN), Impedance Stabilization Network	Using Vector Network Analyzer by Direct method as per CISPR 16-1-2	1 dB to 70 dB	0.5 dB to 0.7 dB

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