

Laboratory	Electrical Research and Development Association, ERDA Road, Makarpura Industrial Esate, Makarpura, Vadodara, Gujarat		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electronics Testing	Issue Date	31.03.2015
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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AT LABORATORY

I. EMI TEST FACILITY

1.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Electrical Fast Transient Burst Immunity Test.	IS 13779: 1999 Amd. 4 June 2006 upto & including IEC 61000-4-4: 2012 IS 14697: 1999 Amd. 3 OCT 2004 upto & including, IS 14700 (Part 4/Sec IV): 2008, CBIP-304: 2008 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IS 14614: 1998 IEC 60255-22-4: 2008 BSEN 610081: 2012 + Amd. 1 IEC 61543: 1995 + Amd. 1 & 2 2005 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. 1 IEC 60204-1: 2009+ Amd. 1 IEC 61000-6-2: 2005, IEC 61850-3: 2013, BSEN 61000-4-1: 1995	250 V to 4.4 kV ± 10 % in both polarities Rise time: 5 ns Pulse Width: 50 ns Pulse Repeating Frequency: 2.5 kHz, 5 kHz & 100 kHz
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	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment		IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012 IEC 60601-1-2: 2014 BSEN 61009-1: 2012 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 BSEN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3:2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 BSEN 50121-4: 2006 IS 15884: 2010 OIML TC12: 2012 NMI M 6.1: 2012 CISPR 24: 2010 IEEE C37.90.1: 2002 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	250 V to 4.4 kV ± 10 % in both polarities Rise time: 5 ns Pulse Width: 50 ns Pulse Repeating Frequency: 2.5 kHz, 5 kHz & 100 kHz

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2.	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment	Radio Interference / Disturbance Measurement	IS 13779:1999 Amd. 4 June 2006 upto & including IS 6873 (Part 2): 1999 + Amd. 1 & 2 IS 6873 (Part 5): 1999 + Amd. 1 & 2 CISPR 15 : 2013 IS 15111-2: 2002 Amd. 8 upto & including CBIP-304: 2008 IS16102 (Part 2): 2012 + Amd. 1 & 2 CISPR11: 2010 IS16103 (Part 2): 2012 + Amd. 1 IEC 60687: 1999 CISPR 14-1: 2011 CISPR 14-2: 2008 IS 10052 (Part 1): 1999 BSEN 55011: 2009 + A1: 2010 BSEN 55015: 2013 BSEN 55032: 2012 EN 55022: 2006 + A1: 2007 CISPR 22: 2008 IS 14697: 1999 Amd. 3 OCT.2004 upto & including IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IS 14614: 1998 IEC 61543: 1995 + Amd. 1 & 2 - 2005 IEC 60255-25: 2000	Frequency range: 9 kHz to 30 MHz 30 MHz to 300 MHz Maximum rated output current: 100 A continuous 30 MHz to 1000 MHz

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	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment		IEC 60947-2: 2013 + Amd. 1 & 2 EN 50081-2: 1994 IEC 60439-1: 2004 + Amd. IEC 60204-1: 2009 + Amd. 1 IEC 61850-3:2013 CBIP-TR-111: 1997 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012 EN 61000-6-4: 2011 + Amd. 1 IEC 60601-1-2 :2014 EN 61009-1: 2013 + Amd. 1 & 2 IEC 61000-6-4: 2011 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-3: 2011 + Amd. 1 IEC 60034-1: 2010 CISPR 16-1-4: 2012 CISPR 16-1-1: 2014 BSEN 60034-1: 2010 IEC 60255-26: 2013 IEC 61812-1: 2011 BSEN 55022: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61000-6-3: 2011 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 IS 15884: 2010	Frequency range: 9 kHz to 30 MHz 30 MHz to 300 MHz Maximum rated output current: 100 A continuous 30 MHz to 1000 MHz

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3.	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment	Electrostatic Discharge Immunity Test.	IS 13779: 1999 Amd. 4 June 2006 upto & including IEC 61000-4-2: 2008 IS 14697: 1999 Amd. 3 OCT 2004 upto & including CBIP-304: 2008 IEC 62052-11: 2003, IEC 62053-21: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003, IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IS 14614: 1998 IEC 60255-22-2: 2008 BSEN 61008-1: 2012 + Amd. 1 IEC 61543: 1995 + Amd. 1 & 2 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. IEC 60204-1: 2009 + Amd. 1 IEC 61000-6-2: 2005 CBIP-TR-111-1997, BSEN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012 IEC 60601-1-2: 2014 BSEN 61009-1: 2012+ Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013	0.2 kV to 30 kV in both polarities.

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	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment		IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012+ Amd. 1 IEC 60947-4-1: 2012+ Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 IS 15884: 2010 OIML TC12: 2012 NMI M 6.1: 2012 CISPR 24: 2010 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	0.2 kV to 30 kV in both polarities
4.	Electrical / Electronic (Static Energy Meter) And Tariff and Load Control Equipment	Radiated, Radio Frequency, Electromagnetic Field Immunity Test	IS 13779: 1999 Amd. 4 June 2006 upto & including IEC 61000-4-3: 2000 IEC 61000-4-3: 2010 + Amd. 1 IS 14697: 1999 Amd. 3 Oct. 2004 upto & including CBIP-304: 2008 IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IS 14614: 1998 IEC 60255-22-3: 2007 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 61543: 1995 + Amd. 1 & 2 IEC 60947-2:2013 + Amd. 1 & 2	80 MHz to 6000 MHz Field Strength: 3V/m to 30V/m

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	Electrical / Electronic (Static Energy Meter) And Tariff and Load Control Equipment		IEC 60439-1: 2004 + Amd. IEC 60204-1: 2009 + Amd. 1 IEC 61000-6-2 : 2005 IEC 61850-3: 2013 CBIP-TR-111: 1997 BSEN 61000-4-1: 1995 IEC 61000-4-1:2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014 BS EN 61009-1: 2012 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 61812-1: 2011 BSEN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 BS EN 50121-4: 2006 IS 15884: 2010 OIML TC12: 2012 NMI M 6.1 : 2012 CISPR 24: 2010 IEC 60335-1: 2013 IEC 61800-3: 2012	80 MHz to 6000 MHz Field Strength: 3V/m to 30V/m

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5.	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment	Immunity To Conducted Disturbances, Induced By Radio-Frequency Fields	IEC 61000-4-6: 2013 IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IS 14614: 1998 CBIP-304: 2008 IEC 60255-22-6: 2001 EN 61008-1: 2013 + Amd. 1 & 2 IEC 61543: 1995 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. IEC 60204-1: 2009 + Amd. 1 IEC 61000-6-2: 2005 IEC 61850-3: 2013 BSEN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014 IEC 60947-1: 2014+ Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 BS EN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012	Output Level: 1 V to 10 V Frequency Band: 9 kHz to 250 MHz Modulation: 80 % Modulation freq.: 1 kHz

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	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment		EN 50121-4: 2006 IS 15884: 2010 OIML TC12: 2012 NMI M 6.1: 2012 CISPR 24: 2010 IEC 60335-1: 2013 IEC 61800-3: 2012	Output Level: 1 V to 10 V Frequency Band: 9 kHz to 250 MHz Modulation: 80 % Modulation freq.: 1 kHz
6.	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment	Surge Immunity Test	IEC 61000-4-5: 2014 IEC 60601-1-2: 2014 IS 13779: 1999 Amd. 4 June 2006 upto & including IS 14697: 1999 Amd. 3 Oct. 2004 upto & including ITU K.20, ITU K.41/K.44. IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IEC 60255-22-5: 2008, IEC 61000-4-1: 2006 IEC 61547: 2009 EN 61008-1: 2013 + Amd. 1 & 2 IEC 61543: 1995 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. 1, IEC 60204-1: 2009+ Amd. 1, IEC 61000-6-2:2005, IEC 61850-3: 2013, BS EN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014	Open Circuit Voltage: 400 V to 12.5 kV Waveforms : 1.2/50µs, 8/20 µs 10/700µs Polarity : positive & negative Open Circuit 1.2/50µs Short Circuit 8/20 µs Open Circuit 10/700µs Short Circuit 5/320µs

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	Electrical / Electronic (Static Energy Meter) And Tariff And Load Control Equipment		IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 60255-26: 2013 IEC 61812-1: 2011 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 BS EN 55024: 2010 IEC 60947 -2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 OIML TC12: 2012 CISPR 24: 2010 IEC 60065: 2005 IS 616: 2010 IEC 60060-1: 2010 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	Open Circuit Voltage: 400 V to 12.5 kV Waveforms : 1.2/50 μ s, 8/20 μ s 10/700 μ s Polarity : positive & negative Open Circuit 1.2/50 μ s Short Circuit 8/20 μ s Open Circuit 10/700 μ s Short Circuit 5/320 μ s

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
7.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Damped Oscillatory & Ring Wave Immunity Test.	IEC 61000-4-12: 2006 IEC 61000-4-18: 2011 IEC 60255-26: 2013 IS 12640 (Part 1): 2008 IS 12640 (Part 1): 2008 IEC 870-2-1: 1995 IEC 61008-1: 2012 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 62052-11: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003, IEEE C37.90.1: 2002	250 V to 6000 V ± 10 % Rise time first peak T1: 0.5 ± 20 % 75ns ± 20 % (Open circuit), <1µs (short circuit) Repeating rate: max.1 Hz (1S to 999S) Repeating rate: At least 40S for 100 kHz and At least 400/s for 1 MHz
8.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	A.C Voltage Dips & Interruption Test	IEC 60255-26: 2013 IEC 61000-4-11: 2004 IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 61000-6-2: 2005 IEC 61326-1: 2012 OIML TC12, CISPR 24: 2010 IEC 60335-1: 2013 IEC 61800-3: 2012	0 V to 260 V Amplitude of interruption: Continuously selectable 0 % to 100 % Interruption time: 50 µs to 30 s
9.	Electrical & Electronic Products for Defense / Military Applications	CE 101 Conducted Emission, Power Leads	MIL – STD-461F: 2007 MIL – STD-461E: 1999	30 Hz to 10 kHz Maximum rated output current: 50 A

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10.	Electrical & Electronic Products for Defense / Military Applications	CE102 Conducted Emission, Power Leads:	MIL – STD-461F: 2007 MIL – STD-461E: 1999	10 kHz to 10 MHz Maximum rated output current: 50 A
11.	Electrical & Electronic Products for Defense / Military Applications	RE102 Radiated Emission	MIL – STD-461F: 2007 MIL – STD-461E: 1999	Electric Fields: 10 kHz to 18 GHz
12.	Electrical & Electronic Products for Defense / Military Applications	CS101 Conducted Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	power leads: 30 Hz to 150 kHz
13.	Electrical & Electronic Products for Defense / Military Applications	CS114 Conducted Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	bulk cable injection : 10 kHz to 200 MHz
14.	Electrical & Electronic Products for Defense / Military Applications	CS115 Conducted Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	bulk cable injection impulse excitation Rise time: $\leq 2\text{nS}$ Fall time: $\leq 2\text{nS}$ Pulse width: $\geq 30\text{nS}$
15.	Electrical & Electronic Products for Defense / Military Applications	CS 116 Conducted Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	Damped Sinusoid transients, cable & power leads (10 kHz to 100 MHz)

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16.	Electrical & Electronic Products for Defense / Military Applications	RS 103 Radiated Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	Electric field- 10 kHz to 18 GHz 10 V/m to 50 V/m
17.	Electrical & Electronic Products for Defense / Military Applications	RS 101 Radiated Susceptibility	MIL – STD-461F: 2007 MIL – STD-461E: 1999	Magnetic field- 30 Hz to 100 kHz
18.	Electrical & Electronic Products for Defense / Military Applications	RE101 Radiated Emission-	MIL – STD-461F: 2007 MIL – STD-461E: 1999	Magnetic Field- 30 Hz to 100 kHz
19.	Electrical / Electronic, Tariff and Load Control Equipment	Power Frequency Immunity Test	IEC 60255-26: 2013	Test voltage differential mode: 150 V & 100 V, Common mode: 300 V Coupling resistor: 100 Ω, 220 Ω Coupling capacitor: 0.1μF, 0.47μF
20.	Electrical / Electronic, Tariff and Load Control Equipment	D.C Short Interruption Test	IEC 61000-4-29: 2000	0 V to 260 V Amplitude of interruption: Continuously selectable 0 % to 100 % Interruption time: 50 μs to 30 s

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21.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Power Frequency Magnetic Field Immunity Test,	IEC 61000-4-8: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-1: 2014 + Amd. 1 IEC 60947-2: 2013 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 CISPR 24: 2010	0.8 upto 5A/m; 5 upto 40A/m; 40 upto 160A/m. 0.5 upto 3.5A/m; 3.5 upto 28A/m; 28 upto 110A/m; Max. 500A/m.
22.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Pulse Magnetic Field Immunity Test	IEC 61000-4-9: 2001	Upto 100 A/m
23.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Damp Magnetic Field Immunity Test.	IEC 61000-4-10: 2000	10 kHz & 1MHz Upto 100A/m

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24.	Electrical / Electronic, Tariff and Load Control Equipment	Harmonics Measurements & Flicker Measurements	IEC 61000-3-2: 2014 IEC 61000-3-3: 2013 IEEE 519: 2005 CBIP 251 IEC 61000-4-15: 2010	Bandwidth : 10MHz (DC-0.05Hz to 10MHz) Harmonics & Inter harmonics upto 50KHz /1.5MHz Voltage : 3V to 1000V AC 3Phase, 50Hz Current : 20mA to 32A, 50Hz (Direct) 1A to 2000A (through Clamp on CT) Harmonic order DC to 99 order
25.	Electrical / Electronic, Tariff and Load Control Equipment	Touch Current Measurement	IEC 60990: 1999 IEC 60950: 2013	Voltage : 1V to 440V AC 3Phase, 50 Hz Touch/leakage current : upto 2 mA

AT SITE

II. EMI TEST FACILITY

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	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment		IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IS 14614: 1998 IEC 60255-22-4: 2008 BSEN 61008-1: 2012 + Amd. 1 IEC 61543: 1995 + Amd. 1 & 2 2005 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. 1 IEC 60204-1: 2009 + Amd. 1 IEC 61000-6-2: 2005, IEC 61850-3: 2013, BS EN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012 IEC 60601-1-2: 2014 BSEN 61009-1: 2012 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 BSEN 50121-4: 2006 IS 15884: 2010 OIML TC12	250 V to 4.4 kV ± 10 % in both polarities Rise time: 5 ns Pulse Width: 50 ns Pulse Repeating Frequency: 2.5 kHz, 5 kHz & 100 kHz

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment		NMI M 6.1 CISPR 24: 2010 IEEE C37.90.1: 2002 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	250 V to 4.4 kV ± 10 % in both polarities Rise time: 5 ns Pulse Width: 50 ns Pulse Repeating Frequency: 2.5 kHz, 5 kHz & 100 kHz
2.	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment	Radio Interference / Disturbance Measurement	IS 13779: 1999 Amd. 4 June 2006 upto & including IS 6873 (Part 2): 1999 + Amd.1 & 2 IS 6873 (Part 5): 1999 + Amd.1 & 2, CISPR 15: 2013 IS 15111-2: 2002 Amd. 8 upto & including CBIP-304: 2008 IS16102 (Part 2): 2012 + Amd. 1 & 2 CISPR11: 2010 IS16103 (Part 2): 2012 + Amd. 1 IEC 60687: 1999 CISPR 14 –1: 2011, CISPR 14 –2: 2008 IS 10052 (Part 1): 1999, BS EN 55011: 2009 + Amd. 1 2010, BS EN 55015: 2013 BS EN 55032: 2012	Frequency range: 9 kHz to 30 MHz & 30 MHz to 300 MHz Maximum rated output current: 100A continuous 30 MHz to 1000 MHz

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	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment		EN 55022: 2006 + Amd. 1: 2007 CISPR 22: 2008 IS 14697: 1999 Amd. 3 October 2004, upto & including IEC 62052-11: 2003, IEC 62053-21: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003. IS 14614: 1998, IEC 61543: 1995 + Amd. 1 & 2: 2005 IEC 60255-25: 2000 IEC 60947-2: 2013 + Amd. 1 & 2 EN 50081-2: 1994 IEC 60439-1: 2004 + Amd. 1 IEC 60204-1: 2009 + Amd. 1 IEC 61850-3: 2013, CBIP-TR-111: 1997 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, EN 61000 – 6-4: 2011 + Amd. 1 IEC 60601-1-2: 2014 EN 61009-1: 2013 + Amd. 1 & 2, IEC 61000-6-4: 2011 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2, IEC 60947-5-1: 2009 + Amd. 1, IEC 61000-6-3: 2011 + Amd. 1 IEC 60034 - 1: 2010 CISPR 16-1-4: 2012 CISPR 16-1-1: 2014 BSEN 60034 – 1: 2010 IEC 60255-26: 2013 IEC 61812-1: 2011 BS EN 55022: 2010	Frequency range: 9 kHz to 30 MHz & 30 MHz to 300 MHz Maximum rated output current: 100A continuous 30 MHz to 1000 MHz

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	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment		IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61000-6-3: 2011 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 IS 15884: 2010	Frequency range: 9 kHz to 30 MHz & 30 MHz to 300 MHz Maximum rated output current: 100A continuous 30 MHz to 1000 MHz
3.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Electrostatic Discharge Immunity Test.	IS 13779: 1999 Amd. 4 June 2006 upto & including IEC 61000-4-2: 2008 IS 14697: 1999 Amd. 3 October 2004, upto & including CBIP-304: 2008 IEC 62052-11: 2003, IEC 62053-21: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003, IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IS 14614: 1998, IEC 60255-22-2: 2008 BSEN 61008-1: 2012 + Amd. 1 IEC 61543: 1995 + Amd. 1 & 2 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. 1 IEC 60204-1: 2009 + Amd. 1 IEC 61000-6-2: 2005	0.2 kV to 30 kV in both polarities.

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	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment		CBIP-TR-111: 1997, BS EN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014 BSEN 61009-1: 2012 + Amd. 1 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 IS 15884: 2010 OIML TC12 NMI M 6.1 CISPR 24: 2010 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	0.2 kV to 30 kV in both polarities.
4.	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment Electrical /	Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields	IEC 61000-4-6: 2013 IEC 62052-11: 2003, IEC 62053-21: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003, IS 14614: 1998, CBIP-304: 2008 IEC 60255-22-6: 2001	Output Level: 1-10V Frequency Band: 9 kHz to 250 MHz Modulation: 80 % Modulation freq.: 1 kHz Output Level: 1-10V

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	Electronic (Static Energy meter) and Tariff and Load Control Equipment		EN 61008-1: 2013 + Amd. 1 & 2 IEC 61543: 1995 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 +Amd. 1, IEC 60204-1: 2009+ Amd. 1, IEC 61000-6-2: 2005, IEC 61850-3: 2013, BS EN 61000-4-1: 1995 IEC 61000-4-1: 2006 IEC 60947-5-2: 2012 + Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005 IEC 61547: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 BS EN 55024: 2010 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 IS 15884: 2010 OIML TC12 NMI M 6.1 CISPR 24: 2010 IEC 60335-1: 2013 IEC 61800-3: 2012	Frequency Band: 9 kHz to 250 MHz Modulation: 80 % Modulation freq.: 1 kHz

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5.	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment	Surge immunity test	IEC 61000-4-5: 2014 IEC 60601-1-2: 2014 IS 13779: 1999 Amd. 4 June 2006 upto & including IS 14697: 1999 Amd. 3 October 2004, upto & including ITU K.20, ITU K.41/K.44 ITU-T K44 ITU-T K 44 IEC 62052-11: 2003 IEC 62053-21: 2003 IEC 62053-22: 2003 IEC 62053-23: 2003 IEC 60255-22-5: 2008, IEC 61000-4-1: 2006 IEC 61547: 2009 IEC 60950: 2013 IEC 60950: 2013 EN 61008-1: 2013 + Amd. 1 & 2 IEC 61543: 1995 + Amd. 1 & 2 IEC 60947-2: 2013 + Amd. 1 & 2 IEC 60439-1: 2004 + Amd. 1, IEC 60204-1: 2009 + Amd. 1, IEC 61000-6-2: 2005, IEC 61850-3: 2013, BS EN 61000-4-1: 1995 IEC 61000-4-1:2006 IEC 60947-5-2: 2012+ Amd. 1 IEC 60571: 2012, IEC 60601-1-2: 2014 IEC 60947-1: 2014 + Amd. 1 & 2 IEC 60947-5-1: 2009 + Amd. 1 IEC 61000-6-1: 2005	Open Circuit Voltage: 400 V to 12.5 kV Waveforms : 1.2/50 μ s, 8/20 μ s 10/700 μ s Polarity : positive & negative Open Circuit 1.2/50 μ s Short Circuit 8/20 μ s Open Circuit 10/700 μ s Short Circuit 5/320 μ s

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	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment		IEC 60255-26: 2013 IEC 61812-1: 2011 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 61008-1: 2013 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 BS EN 55024: 2010 IEC 60947 -2: 2013 + Amd. 1 & 2 IEC 60947-3: 2012 + Amd. 1 IEC 60947-4-1: 2012 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 OIML TC12 CISPR 24: 2010 IEC 60065: 2005 IS 616: 2010 IEC 60060-1: 2010 IEC 870-2-1: 1995 IEC 60335-1: 2013 IEC 61800-3: 2012	Open Circuit Voltage: 400 V to 12.5 kV Waveforms : 1.2/50µs, 8/20 µs 10/700µs Polarity : positive & negative Open Circuit 1.2/50µs Short Circuit 8/20 µs Open Circuit 10/700µs Short Circuit 5/320µs
6.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Damped oscillatory & Ring wave immunity test.	IEC 61000-4-12: 2006 IEC 61000-4-18: 2011 IEC 60255-26: 2013 IS 12640 (Part 1): 2008 IS 12640 (Part 2): 2008 IEC 870-2-1: 1995 IEC 61008-1: 2012 + Amd. 1 & 2 IEC 61009-1: 2013 + Amd. 1 & 2 IEC 62052-11: 2003, IEC 62053-22: 2003, IEC 62053-23: 2003, IEEE C37.90.1: 2002	250 V to 6000 V ± 10 % Rise time first peak T1: 0.5 ± 20 % 75ns ± 20 % (Open circuit), <1µs (short circuit) Repeating rate: max. 1Hz (1 s to 999 s) Repeating rate: At least 40s for 100 kHz and At least 400/s for 1 MHz

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7.	Electrical / Electronic (Static Energy Meter) and Tariff and Load Control Equipment	Power Frequency Magnetic Field Immunity Test	IEC 61000-4-8: 2009 IEC 60255-26: 2013 IEC 61812-1: 2011 BS EN 55024: 2010 IEC 60947-1: 2014 + Amd. 1 IEC 60947-2: 2013 + Amd. 1 IEC 61326-1: 2012 EN 50121-4: 2006 CISPR 24: 2010	0.8 upto 5A/m; 5 upto 40A/m; 40 upto 160A/m. 0.5 upto 3.5A/m; 3.5 upto 28A/m; 28 upto 110A/m; Max. 500A/m.
8.	Electrical / Electronic (Static Energy meter) and Tariff and Load Control Equipment	Pulse Magnetic Field Immunity Test	IEC 61000-4-9: 2001	Upto 100A/m
9.	Electrical / Electronic (Static Energy meter) and Tariff and load Control Equipment	Damp Magnetic Field Immunity Test.	IEC 61000-4-10: 2000	100 kHz & 1 MHz Upto 100A/m

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
10.	Electrical / Electronic, Tariff and Load Control Equipment	Harmonics Measurements & Flicker Measurements	IEC 61000-3-2: 2014 IEC 61000-3-3: 2013 IEEE 519: 2005 CBIP 251 IEC 61000-4-15: 2010	Bandwidth : 10MHz (DC-0.05Hz to 10MHz) Harmonics & Inter harmonics upto 50KHz /1.5MHz Voltage : 3V to 1000V AC 3Phase, 50Hz Current : 20mA to 32A, 50Hz (Direct) 1A to 2000A (through Clamp on CT) Harmonic order DC to 99 order
11.	Electrical / Electronic, Tariff and Load Control Equipment	Touch Current Measurement	IEC 60990: 1999 IEC 60950: 2013	Voltage : 1V to 440V AC 3Phase, 50Hz Touch/leakage current : upto 2mA
III. LIGHTING EQUIPMENT, LED DISPLAY BOARD CONTROLLER				
1.	Luminaries	Visual Examination & Marking	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 6 MNRE specifications	Qualitative (Visual inspection)
		Resistance to Heat , Fire and Tracking.	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 16	25°C to 650°C, 0.1 hr to 10000 hr 0.1 mm to 200 mm
		Terminals, External & Internal Wiring.	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 10,11	0.1 Nm to 6 Nm

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	Luminaries	Provision for Earthing.	IS 10322 (Part 5/ Sec I, II & III) - 2012	0.1 Nm to 6 Nm
		Creepage Distances and Clearances	IS 10322 (Part 5/Sec I,II & III): 2012 Clause. 8	0.1 mm to 100 mm
		Thermal Test ---Normal Operation ---Abnormal Operation	IS 10322 (Part 5 / Sec I, II & III): 2012 Clause. 13	25°C to 200°C
		Resistance to Dust & Moisture, Ingress Protection Test Humidity Test	IS 10322 (Part 5 / Sec I, II & III): 2012 Clause. 14	IP1X/2X/3X/4X/5X/6 X, IPX1/X2/X3/X4/X5/X 6/X7/X8 20 % RH to 97 % RH, 0° C to 60° C
		Insulation Resistance & Electric Strength	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 15	0.1 MΩ to 2000 MΩ 500 V DC 0.1 kV to 5 kV
		Resistance to Tracking	IS 10322 (Part 5 / Sec I, II & III): 2012 Clause. 16	1V to 270 V
		Photometric Test	IS 10322 (Part 5 / Sec I, II & III): 2012 Clause. 17	50 lm to 80000 lm
		Endurance Test	IS 10322 (Part 5/ Sec I, II & III): 2012 Clause. 13	25 °C to 200°C 0.1 hr to 240 hr
		Mechanical Strength/ Construction	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 7	0.35 Nm, 50N Specified Tumbling Barrel (500 mm)

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	Luminaries	Protection Against Electric Shock	IS 10322 (Part 5 /Sec I, II & III): 2012 Clause. 12	30 N, Specified gauges
2.	Self Ballasted LED Lamps for General Lighting Service	Marking.	IS 16102 (Part 1): 2012 Clause. 5 IS 16102 (Part 2): 2012 Clause. 5	Qualitative (Visual)
		Interchange Ability & Dimensions.	IS 16102 (Part 1): 2012 Clause. 6 IS 16102 (Part 2): 2012 Clause. 6	0.1 mm to 620 mm & Specified Gauges
		Mechanical Strength	IS 16102 (Part 1): 2012 Clause. 9	0.1 Nm to 5 Nm, 25 °C to 250 °C 0.1 hr to 2000 hr
		Wattage & Luminous Flux,	IS 16102 (Part 2): 2012 Clause. 8, 9	0.1 W to 60 W 50 lm to 10000 lm
		Cap Temperature Rise	IS 16102 (Part 1): 2012 Clause. 10	15 °C to 200 °C
		Life Test	IS 16102 (Part 2): 2012 Clause. 13	0.1 hr to 25000 hr
		Chromaticity Coordinates, Colour Rendering Index and Correlated Colour Temperature,	IS 16102 (Part 2): 2012 Clause. 12	2000 K to 8000 K.
		Insulation Resistance and Electric Strength after Humidity Treatment	IS 16102 (Part 1): 2012 Clause. 8	0.1 MΩ to 2000 MΩ 500V DC 0.1 kV to 5 kV

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	Self Ballasted LED Lamps for General Lighting Service	Resistance to Heat, Resistance to Flame and Ignition	IS 16102 (Part 1): 2012 Clause. 11, 12	Qualitative (Visual)
		Creepage Distances and Clearances	IS 16102 (Part 1): 2012 Clause. 14	Qualitative (Visual)
		Harmonics	IS 16102 (Part 2): 2012 Clause. 15	2 nd to 50 th harmonic 1 mA to 500 mA
		Protection Against Accidental Contact with Live Parts	IS 16102 (Part 1): 2012 Clause. 7	Qualitative (Visual)
3.	LED Modules for General Lighting	Marking	IS 16103 (Part 1): 2012 Clause. 7 IS 16103 (Part 2): 2012 Clause. 4	Qualitative (Visual)
		Dimensions	IS 16103 (Part 2): 2012 Clause. 5	Qualitative (Visual)
		Module Power, Luminous Flux & Module Efficiency	IS 16103 (Part 2): 2012 Clause. 7, 8.1, 8.3	0.1 W to 200 W 150 lm to 25000 lm
		Lumen Maintenance	IS 16103 (Part 2): 2012 Clause. 10.2	Qualitative (Visual)
		Chromaticity Coordinates, Correlated Colour Temperature, and Colour Rendering Index	IS 16103 (Part 2): 2012 Clause. 9	Qualitative (Visual)

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	LED Modules for General Lighting	Resistance to Heat, Fire and Tracking.	IS 16103 (Part 1): 2012 Clause. 18	Qualitative (Visual)
		Terminals	IS 16103 (Part 1): 2012 Clause. 8	Qualitative (Visual)
		Screws, Current Carrying Parts and Connection	IS 16103 (Part 1): 2012 Clause. 17	0.1 Nm to 6 Nm
		Provision for Protective Earthing	IS 16103 (Part 1): 2012 Clause. 9	Qualitative (Visual)
		Luminous Intensity	IS 16103 (Part 2): 2012 Clause. 8.2	Qualitative (Visual)
		Resistance to Corrosion	IS 16103 (Part 1): 2012 Clause. 19	25 °C to 200 °C
		Endurance Test	IS 16103 (Part 2): 2012 Clause. 10.3	Qualitative (Visual)
		Creepage Distances and Clearances	IS 16103 (Part 1): 2012 Clause. 16	Qualitative (Visual)
		Protection Against Accidental Contact With Live Parts	IS 16103 (Part 1): 2012 Clause. 10	Qualitative (Visual)
		Moisture Resistance & Insulation., Electric Strength.	IS 16103 (Part 1): 2012 Clause. 11	20 % RH to 97 % RH 20 °C to 60 °C 0.1 M Ω to 2000 M Ω 0.1 kV to 5 kV
4.	LED Luminaries	Marking.	IS 16107 (Part 2 /Sec I): 2012 Clause. 4	

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	LED Luminaries	Total Input Power, Luminous Flux & Luminaire Efficacy	IS 16107 (Part 2 / Sec I): 2012 Clause. 7, 8.1, 8.3	0.1 W to 200 W 150 lm to 25000 lm
		Life & Lumen Maintenance	IS 16107 (Part 2 / Sec 1): 2012 Clause. 10	Qualitative (Visual)
		Chromaticity Coordinates, Correlated Colour Temperature, and Colour Rendering Index	IS 16107 (Part 2/ Sec I): 2012 Clause. 9	Qualitative (Visual)
		Endurance Test	IS 16107 (Part 2/Sec I): 2012 Clause. 10.3	Qualitative (Visual)
		Luminous Intensity Distribution	IS 16107 (Part 2 / Sec I): 2012 Clause. 8.2	Qualitative (Visual)
5.	Solid State Lighting (LED) Products	Total Luminous Flux Measurement, Luminous efficacy	IS 16106: 2012 Clause. 11, 13 IES LM 79: 08 Clause. 9, 11 MNRE specifications	0.1 W to 200 W 150 lm to 25000 lm
	Solid State Lighting (LED) Products	Colour Characteristics :	IS 16106: 2012 Clause. 14 IES LM 79: 08 Clause. 12 MNRE specifications	Qualitative (Visual)
6.	Solid State Light (LED) Sources	Lumen Maintenance	IS 16105: 2012 Clause. 7	Qualitative (Visual)

-X-X-X-X-X-X-X-X-X-X-X-X-X-