

**Laboratory** Yadav Measurements Private Limited, Plot No. 373-375, RIICO  
Bhamashah Industrial Area, Kaladwas, Udaipur, Rajasthan

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** TC-6594 (in lieu of T-0347 & T-2698)

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**Validity** 14.10.2017 to 13.10.2019

**Last Amended on** 19.11.2018

Sl.	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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**ELECTRICAL TESTING**

I.	ELECTRICAL INDICATING & RECORDING INSTRUMENTS		
1.	Electrical and Electronic (Static) Energy meters & Tariff and Load Control Equipment & Electrical / Electronic Equipments	Impulse Voltage	CBIP-304 (Cl. 5.4.6.2) CBIP-325 (Cl. 5.4.6.2) IS 13779 (Cl. 12.7.6.2) IS 14697(Cl. 12.7.6.2) IS 15884(Cl. 5.4.6.2) IEC 62052-11(Cl. 7.3.2) IEC 62053-21 IEC 62053-22 IEC 62053-23 IEC 62053-24 IEC62055-31(Cl. 7.7) IEC 62052-21(Cl. 7.3.2.2) IEC 62054-21(Cl. 7.3) AS 62052.11(Cl. 7.3.2) AS 62053.21 AS 62053.22 AS 62053.23 AS 62052.21 (Cl. 7.3.2.2) AS 62054.21(Cl. 7.3) AS 1284.5 (Cl. 5.4.6.2) AS 1284.9 (Cl. 5.4.6.2) EN50470-1(Cl. 7.3.3) EN50470-3 IS16444 Part 1(Cl. 6.10.6) IS16444 Part 2 (Cl. 6.10.6) NMI M6 (Cl. A3.3) NMI M6-1(Cl. A2.19) BS EN 61036(Cl. 5.4.6.2) BS EN 62052-11(Cl. 7.3.2) BS EN 62053-21

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			BS EN 62053-22 BS EN 62053-23	
		AC Voltage	CBIP 304 (Cl. 5.4.6.3) CBIP 325 Cl. 5.4.6.3) IS 13779 (Cl. 12.7.6.3) IS 14697(Cl. 12.7.6.3) IS 15884(Cl. 5.4.6.3) IEC 62052-11 (Cl. 7.3.3) IEC 62053-21(Cl. 7.4) IEC 62053-22 (Cl. 7.4) IEC 62053-23 (Cl. 7.4) IEC 62053-24 (Cl. 7.5) IEC62055-31(Cl. 7.7) IEC 62052-21 (Cl. 7.3.2.3) IEC 62054-21(Cl. 7.3) AS 62052.11 (Cl. 7.3.3) AS 62053.21 (Cl. 7.4) AS 62053.22 (Cl. 7.4) AS 62053.23 (Cl. 7.4) AS 62052.21 (Cl. 7.3.2.3) AS 62054.21(Cl. 7.3) EN50470-1(Cl.7.3.4) EN50470-3(Cl.7.2) IS16444 Part 1 (Cl. 6.10.6) IS16444 Part 2 (Cl. 6.10.6) NMI M6 Cl. A3.4) NMI M6-1(Cl. 2.20) AS 1284.5 (Cl. 5.4.6.2) AS 1284.9 (Cl. 5.4.6.3) BS EN 61036 (Cl. 5.4.6.3) BS EN 62052-11 (Cl. 7.3.3) BS EN 62053-21 (Cl. 7.4) BS EN 62053-22 (Cl. 7.4)	Up to 10 kV

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		Insulation resistance	BS EN 62053-23 (Cl. 7.4) CBIP-304 (Cl. 5.4.6.4) CBIP-325 (Cl. 5.4.6.4) IS 13779 (Cl. 12.7.6.4) IS 14697(Cl. 12.7.6.4) IS 15884(Cl. 5.4.6.4) IS16444 Part 1(Cl. 6.10.6) IS16444 Part 2 (Cl. 6.10.6)	Up to 100 MΩ 500 V <sub>dc</sub>
		General and Constructional Requirements  - Flammability and Marking of Meters	CBIP-304 (Cl. 4.2) CBIP-325 (Cl. 4.2) IS 13779 (Cl. 6) IS 14697(Cl. 6) IS 15884 (Cl. 4.2) IEC 62052-11 (Cl. 5) IEC 62053-21 IEC 62053-22 IEC 62053-23 IEC 62053-24 IEC62055-31(Cl. 5) IEC 62052-21(Cl. 5) IEC 62054-21(Cl. 5) AS 62052.11 (Cl. 5) AS 62053.21 AS 62053.22 AS 62053.23 AS 62052.21(Cl. 5) AS 62054.21(Cl. 5) AS 1284.5 (Cl. 4.2) AS 1284.9(Cl. 4.2) EN50470-1(Cl. 5) EN50470-3 IS16444 Part 1(Cl. 6.2) IS16444 Part 2 (Cl. 6.2) NMI M6 (Cl. 11) NMI M6-1(Cl. 8)	Qualitative

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			BS EN 61036(CI. 4.2) BS EN 62052-11(CI. 5) BS EN 62053-21 BS EN 62053-22 BS EN 62053-23	
		Limits of Errors	CBIP-304 (Cl. 5.6.8) CBIP-325 (Cl. 5.6.8) IS 13779 (Cl. 11.1) IS 14697)(Cl. 11.1) IS 15884(CI. 4.6.1) IEC 62052-11 IEC 62053-21(CI. 8.1) IEC 62053-22 (Cl. 8.1) IEC 62053-23 (Cl. 8.1) IEC 62053-24 (Cl. 8.2) IEC62055-31(CI. 8) AS 62052.11 AS 62053.21 (Cl. 8.1) AS 62053.22 (Cl. 8.1) AS 62053.23 (Cl. 8.1) AS 1284.5 (Cl. 5.6) AS 1284.9 (Cl. 4.6.1) EN50470-1 EN50470-3(CI. 8.7.2) IS16444 Part 1 (Cl. 6.12) IS16444:2017 Part 2 (Cl. 6.12) NMI M6 (Cl. 4) NMI M6-1(CI. 4) BS EN 61036 (Cl. 4.6.1) BS EN 62052-11 BS EN 62053-21(CI. 8.1) BS EN 62053-22 (Cl. 8.1) BS EN 62053-23 (Cl. 8.1)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz  P.F: +1 to -1

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		Interpretation of Test Results and Adjustments	CBIP-304 (Cl. 5.6.7) CBIP-325 (Cl. 5.6.7) IS 13779 (Cl. 12.16) IS 14697(Cl. 12.15) IS 15884 (Cl. 5.6.6) IEC 62052-11 IEC 62053-21 (Cl. 8.6) IEC 62053-22 (Cl. 8.6) IEC 62053-23 (Cl. 8.6) IEC 62053-24 (Cl. 8.7) IEC62055-31(Cl. 8) AS 62052.11 AS 62053.21 (Cl. 8.6) AS 62053.22 (Cl. 8.6) AS 62053.23 (Cl. 8.6) AS 1284.5 (Cl. 5.6.7) AS 1284.9 EN50470-1 EN50470-3(Cl. 8.7.3) IS16444 Part 1(Cl. 6.12) IS16444 Part 2(Cl. 6.12) BS EN 61036 (Cl. 5.6.7) BS EN 62052-11 BS EN 62053-21(Cl. 8.6) BS EN 62053-22(Cl. 8.6) BS EN 62053-23 (Cl. 8.6)	Qualitative
		Meter Constant	CBIP-304 (Cl. 5.6.6) CBIP-325 (Cl. 5.6.6) IS 13779 (Cl. 12.15, 11.6) IS 14697(Cl. 12.14, 11.6) IS 15884 (Cl. 5.6.5) IEC 62052-11 IEC 62053-21(Cl. 8.4) IEC 62053-22 (Cl. 8.4) IEC 62053-23 (Cl. 8.4)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1

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			IEC 62053-24 (Cl. 8.5) IEC62055-31(Cl. 8) AS 62052.11 AS 62053.21 (Cl. 8.4) AS 62053.22 (Cl. 8.4) AS 62053.23 (Cl. 8.4) AS 1284.5 (Cl. 5.6.6) AS 1284.9 (Cl. 4.6.5) EN50470-1 EN50470-3(Cl. 8.7.10) IS16444 Part 1(Cl. 6.12) IS16444 Part 2(Cl. 6.12) NMI M6 (Cl. 5.9) NMI M6-1(Cl. 4.6) BS EN 61036 BS EN 62052-11 BS EN 62053-21(Cl. 8.4) BS EN 62053-22(Cl. 8.4) BS EN 62053-23 (Cl. 8.4)	
		Starting Conditions	CBIP-304 (Cl. 5.6.5) CBIP-325 (Cl. 5.6.5) IS 13779 (Cl. 12.14) IS 14697 (Cl. 12.13) IS 15884(Cl. 5.6.4) IEC 62052-11 IEC 62053-21 (Cl. 8.3) IEC 62053-22 (Cl. 8.3) IEC 62053-23 (Cl. 8.3) IEC 62053-24 (Cl. 8.4) IEC62055-31(Cl. 8) AS 62052.11 AS 62053.21 (Cl. 8.3) AS 62053.22 (Cl. 8.3) AS 62053.23 (Cl. 8.3) AS 1284.5 (Cl. 5.6.5)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1

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			AS 1284.9 (Cl. 4.6.4.3) EN50470-1 EN50470-3(Cl. 8.7.9.4) IS16444 Part 1(Cl. 6.12) IS16444 Part 2(Cl. 6.12) NMI M6 (Cl. 5.5) NMI M6-1(Cl. 5.7) BS EN 61036(Cl. 5.6.5) BS EN 62052-11 BS EN 62053-21(Cl. 8.3) BS EN 62053-22(Cl. 8.3) BS EN 62053-23 (Cl. 8.3)	
		No load Condition	CBIP-304 (Cl. 5.6.4) CBIP-325 (Cl. 5.6.4) IS 13779 (Cl. 12.13) IS 14697 (Cl. 12.12) IS 15884 (Cl. 5.6.3) IEC 62052-11 IEC 62053-21(Cl. 8.3) IEC 62053-22 (Cl. 8.3) IEC 62053-23 (Cl. 8.3) IEC 62053-24 (Cl. 8.4) IEC62055-31(Cl. 8) AS 62052.11 AS 62053.21 (Cl. 8.3) AS 62053.22 (Cl. 8.3) AS 62053.23 (Cl. 8.3) AS 1284.5 (Cl. 5.6.4) AS 1284.9 (Cl. 4.6.4.2) EN50470-1 EN50470-3(Cl. 8.7.9.3) IS16444 Part 1(Cl. 6.12) IS16444 Part 2(Cl. 6.12) NMI M6 (Cl. 5.7) NMI M6-1( Cl. 5.7)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1





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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		magnetic induction of external origin:0.2T DC -Abnormal ac magnetic induction of external origin (2800AT= 10mT) -Abnormal ac magnetic induction of external origin (25000AT= 200mT)  -Stray ac magnetic induction of external origin 400AT  -Continuous DC abnormal magnetic induction of external origin DC:-0.27T  -Continuous DC stray magnetic induction of external origin 67mT  -AC abnormal magnetic induction of external origin 10mT, 2800AT  -AC Stray magnetic induction of external origin 140AT, 0.5mT	BS EN 62053-22(CI. 8.2) EN 62053-23 (CI. 8.2)	0.2T DC magnetic field  0.2T AC magnetic field  0.5mT AC magnetic field  0.27T DC magnetic field  67mT DC magnetic field  10mT AC magnetic field  0.5mT AC magnetic field
		Repeatability of errors	CBIP-304 (CI. 5.6.9) CBIP-325 (CI. 5.6.9) IS 13779 (CI. 12.17) IS 14697(CI. 12.16) IS 15884(CI. 5.6.7) EN50470-1	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1

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			EN50470-3 (Cl. 8.2) IS16444 Part 1(Cl. 6.12) IS16444 Part 2 (Cl. 6.12)	
		Heat Deflection	CBIP-304 Cl. 4.2.2.3 CBIP-325 Cl. 4.2.2.3 IS 13779 Cl. 6.4 IS 14697Cl. 6.4 IS 15884 Cl. 4.2.4 IEC 62052-11 Cl. 5.4 IEC 62053-21 Cl. 5 IEC 62053-22Cl. 5 IEC 62053-23 Cl. 5 IEC 62053-24Cl. 5 IEC62055-31Cl. 5.5 IEC 62052-21Cl. 5.4 IEC 62054-21Cl. 5 AS 62052.11 Cl. 5.4 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21Cl. 5.4 AS 62054.21Cl. 5 EN50470-1Cl. 5.4 EN50470-3Cl. 5 IS16444 Part 1(Cl. 6.2.1) IS16444 Part 2(Cl. 6.2.1) BS EN 61036 Cl. 4.2.4 BS EN 62052-11Cl. 5.4 BS EN 62053-21Cl. 5 BS EN 62053-22Cl. 5 BS EN 62053-23Cl. 5	0 °C to 350 °C Displacement: 0.2mm to 10mm
		Start Up of energy meters	CBIP-304 (Cl. 4.6.9.1) CBIP-325 (Cl. 4.6.6.1) IS 13779 (Cl.11.4.1) IS 14697 (Cl.11.4.1)	40 V to 320 V Start Time:-Minimum 3 s

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			IS 15884 (Cl.4.6.4.1) IEC 62052-11 IEC 62053-21 (Cl. 8.3.1) IEC 62053-22(Cl. 8.3.1) IEC 62053-23 (Cl. 8.3.1) IEC 62053-24 (Cl. 8.4.2) IEC62055-31(Cl. 8) AS 62052.11 AS 62053.21(Cl. 8.3.1) AS 62053.22 (Cl. 8.3.1) AS 62053.23 (Cl. 8.3.1) AS 1284.5 (Cl. 5.6) AS 1284.9(Cl. 4.6.4.1) EN50470-1 EN50470-3(Cl. 8.7.9.2) IS16444Part 1(Cl. 6.12) IS16444Part 2 (Cl. 6.12) NMI M6 (Cl. 5.6) NMI M6-1(Cl. 5.7.2) BS EN 61036 (Cl.4.6.4.1) BS EN 62052-11 BS EN 62053-21(Cl. 8.3.1) BS EN 62053-22(Cl. 8.3.1) BS EN 62053-23 (Cl. 8.3.1)	
		Ambient Temperature Influence	CBIP-304 (Cl. 5.6.3) CBIP-325 (Cl. 5.6.3) IS 13779 (Cl. 12.12) IS 14697(Cl. 12.11) IS 15884 (Cl. 4.6.3) IEC 62052-11 IEC 62053-21(Cl. 8.2) IEC 62053-22 (Cl. 8.2) IEC 62053-23 (Cl. 8.2) IEC 62053-24 (Cl. 8.3) IEC62055-31(Cl. 8)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1 Temp -40°C to 70°C

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			AS 62052.11 AS 62053.21 (Cl. 8.2) AS 62053.22 (Cl. 8.2) AS 62053.23 (Cl. 8.2) AS 1284.5 (Cl. 5.6.3) AS 1284.9(Cl. 4.6.3) EN50470-1 EN50470-3(Cl. 8.7.5) IS16444 Part 1(Cl. 6.12) IS16444 Part 2(Cl. 6.12) NMI M6 (Cl. 5.3) NMI M6-1 (Cl. 5.3) BS EN 61036 (Cl. 5.6.3) BS EN 62052-11 BS EN 62053-21(Cl. 8.2) BS EN 62053-22(Cl. 8.2) BS EN 62053-23 (Cl. 8.2)	
		Power Consumption  Power Loss	CBIP-304 (Cl. 5.4.1) CBIP-325 (Cl. 5.4.1) IS 13779 (Cl. 12.7.1) IS 14697 (Cl. 12.7.1) IS 15884(Cl. 5.4.1) IEC 62052-11 IEC 62053-21(Cl. 7.1) IEC 62053-22 (Cl. 7.1) IEC 62053-23 (Cl. 7.1) IEC 62053-24 (Cl. 7.2) IEC62055-31(Cl. 7.3) IEC 62052-21(Cl. 7.1.3) IEC 62054-21 (Cl. 7.1.3) IEC 62053-61 AS 62052.11 AS 62053.21 (Cl. 7.1) AS 62053.22 (Cl. 7.1) AS 62053.23 (Cl. 7.1)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1

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			AS 62052.21 (Cl. 7.1.3) AS 62054.21 (Cl. 7.1.3) AS 1284.5 (Cl. 5.4.1) AS 1284.9 (Cl. 4.4.1) EN50470-1 EN50470-3(Cl. 7.1) IS16444 Part 1(Cl. 6.10.1) IS16444 Part 2(Cl. 6.10.1) BS EN 61036 (Cl. 5.4.1) BS EN 62052-11 BS EN 62053-21(Cl. 7.1) BS EN 62053-22 (Cl. 7.1) BS EN 62053-23 (Cl. 7.1)	
		Effect of Voltage Dips and Short Interruptions	CBIP-88 (Cl. 5.4.2) CBIP-304 (Cl. 5.4.2) CBIP-325 (Cl. 5.4.2) IS 13779 (Cl. 12.7.2) IS 14697(Cl. 12.7.2) IS 15884(Cl. 4.4.2 & 5.4.2) IEC 62052-11(Cl. 7.1.2) IEC 62053-21 IEC 62053-22 IEC 62053-23 IEC 62053-24 IEC62055-31(Cl. 7.2.2) IEC 62052-21 (Cl. 7.1.4, 7.6.8) IEC 62054-21 (Cl. 7.1.4, 7.6.8) AS 62052.11 (Cl. 7.1.2) AS 62053.21 AS 62053.22 AS 62053.23 AS 62052.21(Cl. 7.1.4, 7.6.8) AS 62054.21(Cl. 7.1.4, 7.6.8)	40 V to 320 V  for dips and short interruptions for 60 s 50 ms 1 s

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			AS 1284.5 (Cl. 5.4.2) AS 1284.9 (Cl. 4.4.2) EN50470-1(Cl. 7.4.4) EN50470-3 IS16444 Part 1(Cl. 6.10.2) IS16444 Part 2(Cl. 6.10.2) NMI M6 (Cl. A.3.1) NMI M6-1 BS EN 61036 (Cl. 5.4.2) BS EN 62052-11(Cl. 7.1.2) BS EN 62053-21 BS EN 62053-22 BS EN 62053-23	
		Influence of Short Time Over Current	CBIP-304 (Cl. 5.4.3) CBIP-325 (Cl. 5.4.3) IS 13779 (Cl.12.7.3) IS 14697(Cl. 12.7.3) IS 15884(Cl. 5.4.3) IEC 62052-11 IEC 62053-21 (Cl. 7.2) IEC 62053-22 (Cl. 7.2) IEC 62053-23 (Cl. 7.2) IEC 62053-24 (Cl. 7.3) IEC62055-31(Cl. 7.4) IEC 62052-21(Cl. 7.4.4) IEC 62054-21 AS 62052.11 AS 62053.21 (Cl. 7.2) AS 62053.22 (Cl. 7.2) AS 62053.23 (Cl. 7.2) AS 62052.21(Cl. 7.4.4) AS 62054.21 AS 1284.5 (Cl. 5.4.3) AS 1284.9(Cl. 4.4.3) EN50470-1	STOC:- Up to 8000A rms from 1 to 50 cycles (1sec) Up to 15kA peak for half cycle (10msec)

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			EN50470-3(CI. 8.6, 8.7.8) IS16444 Part 1(CI. 6.10.3) IS16444 Part 2(CI. 6.10.3) NMI M6 (CI. A3.2) NMI M6-1(CI. 2.14) BS EN 61036 (CI. 5.4.3) BS EN 62052-11 BS EN 62053-21(CI. 7.2) BS EN 62053-22(CI. 7.2) BS EN 62053-23 (CI. 7.2)	
		Influence of Self Heating	CBIP-304 (CI. 5.4.4) CBIP-325 (CI. 5.4.4) IS 13779 (CI.12.7.4) IS 14697(CI. 12.7.4) IS 15884(CI. 5.4.4) IEC 62052-11 IEC 62053-21 (CI. 7.3) IEC 62053-22 (CI. 7.3) IEC 62053-23 (CI. 7.3) IEC 62053-24(CI. 7.4) IEC62055-31(CI. 7.6) AS 62052.11 AS 62053.21 (CI. 7.3) AS 62053.22 (CI. 7.3) AS 62053.23 (CI. 7.3) AS 1284.5 (CI. 5.4.4) AS 1284.9(CI. 4.4.4) EN50470-1 EN50470-3(CI. 8.7.7.5) IS16444 Part 1(CI. 6.10.4) IS16444 Part 2(CI. 6.10.4) BS EN 61036 (CI. 5.4.4) BS EN 62052-11 BS EN 62053-21(CI. 7.3) BS EN 62053-22(CI. 7.3)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1

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		Influence of Heating	BS EN 62053-23 (Cl. 7.3) CBIP-304 (Cl. 5.4.5) CBIP-325 (Cl. 5.4.5) IS 13779 (Cl. 12.7.5) IS 14697(Cl. 12.7.5) IS 15884(Cl. 5.4.5) IEC 62052-11(Cl. 7.2) IEC 62053-21 IEC 62053-22 IEC 62053-23 IEC 62053-24 IEC62055-31(Cl. 7.5) IEC 62052-21(Cl. 7.2) IEC 62054-21(Cl. 7.2) AS 62052.11 (Cl. 7.2) AS 62053.21 AS 62053.22 AS 62053.23 AS 62052.21(Cl. 7.2) AS 62054.21(Cl. 7.2) EN50470-1(Cl. 7.2) EN50470-3 IS16444 Part 1(Cl. 6.10.5) IS16444 Part 2(Cl. 6.10.5) AS 1284.5 (Cl. 5.4.5) AS 1284.9(Cl. 4.4.5) BS EN 61036 (Cl. 5.4.5) BS EN 62052-11(Cl. 7.2) BS EN 62053-21 BS EN 62053-22 BS EN 62053-23	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1 20 °C to 70 °C
		Immunity to Earth Fault Abnormal voltage condition	CBIP-304 (Cl. 4.4.7) CBIP-325 (Cl. 4.4.7) IS 13779 (Cl. 12.8) IS 14697(Cl. 12.17)	40 V to 320 V 1 mA to 120 A 45 Hz to 65 Hz P.F: +1 to -1



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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 15884 (Cl. 4.4.2.6) IEC 62052-11(Cl. 7.4) IEC 62053-21 IEC 62053-22 IEC 62053-23 IEC 62053-24 IEC62055-31(Cl. 7.2.3) AS 62052.11 (Cl. 7.4) AS 62053.21 AS 62053.22 AS 62053.23 AS 1284.5 (Cl. 5.4.7) EN50470-1 EN50470-3(Cl. 8.7.7.6) IS16444 Part 1(Cl. 6.10.7) IS16444 Part 2(Cl. 6.10.7) BS EN 61036 (Cl. 4.4.7) BS EN 62052-11(Cl. 7.4) BS EN 62053-21 BS EN 62053-22 BS EN 62053-23	
		Dry Heat	CBIP-304 Cl. 5.3.1 CBIP-325 Cl. 5.3.1 IS 13779 Cl. 12.6.1 IS 14697 Cl. 12.6.1 IS 15884Cl. 5.3.1 IEC 62052-11Cl. 6.3.1 IEC 62053-21 Cl. 6 IEC 62053-22 Cl. 6 IEC 62053-23 Cl. 6 IEC 62053-24Cl. 6 IEC62055-31Cl. 6.1 IEC 62052-21 Cl. 6.3.1 IEC 62054-21Cl. 6	0 °C to 80 °C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			AS 62052.11 Cl. 6.3.1 AS 62053.21 Cl. 6 AS 62053.22 Cl. 6 AS 62053.23 Cl. 6 AS 62052.21 Cl. 6.3.1 AS 62054.21 Cl. 6. AS 1284.5 Cl. 5.3.1 AS 1284.9 Cl. 5.3.1 EN50470-1 Cl. 6.3.2 EN50470-3 IS16444 Part 1(Cl. 6.9) IS16444: Part 2(Cl. 6.9) NMI M6 Cl. A2.1 NMI M6-1 Cl. A2.1 BS EN 61036 Cl. 5.3.1 BS EN 62052-11 Cl. 6.3.1 BS EN 62053-21 Cl. 6 BS EN 62053-22 Cl. 6 BS EN 62053-23 Cl. 6 IS 9000 (Part3 / Sec 3) IEC 60068-2-2 (Non-Dissipating system) IS 9000 (Part III / Sec 1&3)	
		Cold Test	CBIP-304 Cl. 5.3.2 CBIP-325 Cl. 5.3.2 IS 13779 Cl. 12.6.2 IS 14697 Cl. 12.6.2 IS 15884 Cl. 5.3.2 IEC 62052-11 Cl. 6.3.2 IEC 62053-21 Cl. 6 IEC 62053-22 Cl. 6 IEC 62053-23 Cl. 6 IEC 62053-24 Cl. 6 IEC62055-31 Cl. 6.1	(-) 40 °C to 0 °C

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			IEC 62052-21Cl. 6.3.2 IEC 62054-21Cl. 6 AS 62052.11 Cl. 6.3.2 AS 62053.21 Cl. 6 AS 62053.22 Cl. 6 AS 62053.23 Cl. 6 AS 62052.21Cl. 6.3.2 AS 62054.21Cl. 6. AS 1284.5 Cl. 5.3.2 AS 1284.9Cl. 5.3.2 EN50470-1Cl. 6.3.3 EN50470-3 IS16444 Part 1(Cl. 6.9) IS16444 Part 2(Cl. 6.9) NMI M6 Cl. A2.2 NMI M6-1Cl. A2.2 BS EN 61036Cl. 5.3.2 BS EN 62052-11 Cl. 6.3.2 BS EN 62053-21 Cl. 6 BS EN 62053-22 Cl. 6 BS EN 62053-23 Cl. 6 IS 9000 (Part2 / Sec 1-4) IEC 60068-2-1(Non-Dissipating System) IS 9000 (Part II / Sec 1 to 4) (Non- Dissipating System)	
		Damp Heat Cyclic	CBIP-304 Cl. 5.3.3 CBIP-325 Cl. 5.3.3 IS 13779 Cl. 12.6.3 IS 14697 Cl. 12.6.3 IS 15884 Cl. 5.3.3 IEC 62052-11 Cl. 6.3.3 IEC 62053-21 Cl. 6 IEC 62053-22 Cl. 6 IEC 62053-23 Cl. 6	20 °C to 70 °C 50 % to 98 % RH

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			IEC 62053-24 Cl. 6 IEC62055-31Cl. 6.1 IEC 62052-21Cl. 6.3.3 IEC 62054-21Cl. 6 AS 62052.11 Cl. 6.3.3 AS 62053.21 Cl. 6 AS 62053.22 Cl. 6 AS 62053.23 Cl. 6 AS 62052.21 Cl. 6.3.3 AS 62054.21 Cl. 6 AS 1284.5 Cl. 5.3.3 AS 1284.9 Cl. 5.3.3 EN50470-1Cl. 6.3.4 EN50470-3 IS16444 Part 1(Cl. 6.9) IS16444 Part 2(Cl. 6.9) NMI M6 Cl. A2.3 NMI M6-1Cl. A2.4 BS EN 61036Cl. 5.3.3 BS EN 62052-11Cl. 6.3.3 BS EN 62053-21 Cl. 6 BS EN 62053-22 Cl. 6 BS EN 62053-23 Cl. 6 IS 9000 (Part 5 / Sec 1 to 2) IEC 60068-2-30 IS 9000 (Part V / Sec 1&2)	
2.	<b>Electrical and Electronic (Static) Energy meters &amp; Tariff and Load Control Equipment &amp; Electrical / Electronic Equipments</b>	Vibration - Sine	CBIP-304 Cl. 5.2.3 CBIP-325 Cl. 5.2.3 IS 13779 Cl. 12.3.2 IS 14697 Cl. 12.3.2 IS 15884Cl. 5.2.3 IEC 62052-11 Cl. 5.2.2.3 IEC 62053-21 Cl. 5 IEC 62053-22 Cl. 5 IEC 62053-23 Cl. 5	30 % to 98 % RH Sweep frequency: 5 Hz to 3.5 kHz Displacement: 20mm p-p Capacity 400 kgf

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	Digital Measuring instruments for measurement and control , Electrical measuring transducers		IEC 62053-24Cl. 5 IEC 62055-31 Cl. 5.3 IEC 62052-21Cl. 5.2.2.3 IEC 62054-21Cl. 5 AS 62052.11 Cl. 5.2.2.3 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21 Cl. 5.2.2.3 AS 62054.21 Cl. 5 AS 1284.5 Cl. 5.2.3 AS 1284.9 Cl. 5.2.3 EN50470-1Cl. 5.2.2.3 EN50470-3Cl. 5 IS16444 Part 1(Cl. 6.5) IS16444: Part 2(Cl. 6.5) NMI M6 Cl. A.3.9 NMI M6-1Cl. A.2.7 BS EN 61036Cl. 5.2.3 BS EN 62052-11Cl. 5.2.2.3 BS EN 62053-21 Cl. 5 BS EN 62053-22 Cl. 5 BS EN 62053-23 Cl. 5 IS 9000-Part 8 IEC 60068-2-6 IS 13875 Part(1,3) Cl. 4.9.2 IEC 60688 ed.3 Cl. 6.22 EN 60688 ed.3 Cl. 6.22	
		Shock	CBIP-304 Cl. 5.2.2 CBIP-325 Cl. 5.2.2 IS 13779 Cl. 12.3.1 IS 14697 Cl. 12.3.1 IS 15884 Cl. 5.2.2 IEC 62052-11Cl. 5.2.2.2	Peak acceleration :Up to 500 m/s <sup>2</sup> 18 ms 11 ms

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			IEC 62053-21Cl. 5 IEC 62053-22Cl. 5 IEC 62053-23 Cl. 5 IEC 62053-24Cl. 5 IEC62055-31Cl. 5.3 IEC 62052-21Cl. 5.2.2.2 IEC 62054-21Cl. 5 AS 62052.11Cl. 5.2.2.2 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21 Cl. 5.2.2.2 AS 62054.21 Cl. 5 AS 1284.5 Cl. 5.2.2 AS 1284.9 Cl. 5.2.2 EN50470-1Cl. 5.2.2.2 EN50470-3 Cl. 5 IS16444 Part 1(Cl. 6.5) IS16444 Part 2(Cl. 6.5) NMI M6 Cl. A3.8 NMI M6-1 Cl. A2.8 BS EN 61036 Cl. 5.2.2 BS EN 62052-11Cl. 5.2.2.2 BS EN 62053-21 Cl. 5 BS EN 62053-22 Cl. 5 BS EN 62053-23 Cl. 5 IEC 60068-2-27 IS 9000 (Part 7 / Sec 1 to 5) EN 60068-2-27 IS 9000 (Sec I / Part 7) IS 13875 Part(1,3) Cl. 4.9.1 IEC 60068-2-6 IEC 60688 Cl. 6.23 IEC 60688 ed.3 Cl. 6.22 EN 60688 ed.3 Cl.6.22	

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	Electrical and Electronic (Static) Energy meters & Tariff and Load Control Equipment & Electrical / Electronic Equipments	Spring / Impact Hammer	CBIP-304 Cl. 5.2.1 CBIP-325 Cl. 5.2.1 IS 13779 Cl. 12.3.3 IS 14697 Cl. 12.3.3 IS 15884 Cl. 5.2.1 IEC 62052-11 Cl. 5.2.2.1 IEC 62053-21 Cl. 5 IEC 62053-22 Cl. 5 IEC 62053-23 Cl. 5 IEC 62053-24 Cl. 5 IEC 62055-31 Cl. 5.3 IEC 62052-21 Cl. 5.2.2.1 IEC 62054-21 Cl. 5 AS 62052.11 Cl. 5.2.2.1 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21 Cl. 5.2.2.1 AS 62054.21 Cl. 5 AS 1284.5 Cl. 5.2.1 AS 1284.9 Cl. 5.2.1 EN50470-1 Cl. 5.2.2.1 EN50470-3 Cl. 5 IS16444 Part 1(Cl. 6.5) IS16444 Part 2(Cl. 6.5) BS EN 61036 Cl. 5.2.1 BS EN 62052-11 Cl. 5.2.2.1 BS EN 62053-21 Cl. 5 BS EN 62053-22 Cl. 5 BS EN 62053-23 Cl. 5 AS 1284.5 Cl. 5.2.1 AS 1284.9 Cl. 5.2.1 IEC 60068-2-75 IEC 817 EN 60068-2-75	0.20 Nm 0.22 Nm 0.35 Nm 0.50 Nm 0.70 Nm 1.00 Nm

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Protection against dust and water	CBIP-304 Cl. 5.2.5 CBIP-325 Cl. 5.2.5 IS 13779 Cl. 12.5 IS 14697 Cl. 12.5 IS 15884 Cl. 5.2.5 IEC 62052-11 Cl. 5.9 IEC 62053-21 Cl. 5 IEC 62053-22 Cl. 5 IEC 62053-23 Cl. 5 IEC 62053-24 Cl. 5 IEC62055-31Cl. 5.10 IEC 62052-21Cl. 5.9 IEC 62054-21Cl. 5 AS 62052.11 Cl. 5.9 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21Cl. 5.9 AS 62054.21Cl. 5 AS 1284.9 Cl. 5.2.5 EN50470-1 Cl. 5.9 EN50470-3 Cl. 5 IS16444 Part 1(Cl. 6.5) IS16444 Part 2(Cl. 6.5) NMI M6 Cl. A.2.6 NMI M6-1 Cl. A2.6 BS EN 61036 Cl. 5.2.5 BS EN 62052-11Cl. 5.9 BS EN 62053-21 Cl. 5 BS EN 62053-22 Cl. 5 BS EN 62053-23 Cl. 5 IEC 60529 IS 12063 EN 60529	IP 51 to 54 For Dust(Sieve)  For water 0 to 6 mm/min
		Resistance to heat and	CBIP 304 Cl. 5.2.4	25 °C to 1000 °C

Sreeram Pinnamaraju  
Convenor

Alok Jain  
Program Manager



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		fire	CBIP 325 Cl. 5.2.4 IS 13779 Cl. 12.4 IS 14697 Cl. 12.4 IS 15884 Cl. 5.2.4 IEC 62052-11 Cl. 5.8 IEC 62053-21 Cl. 5 IEC 62053-22 Cl. 5 IEC 62053-23 Cl. 5 IEC 62053-24 Cl. 5 IEC62055-31Cl. 5.9 IEC 62052-21Cl. 5.8 IEC 62054-21Cl. 5 AS 62052.11 Cl. 5.8 AS 62053.21 Cl. 5 AS 62053.22 Cl. 5 AS 62053.23 Cl. 5 AS 62052.21 Cl. 5.8 AS 62054.21 Cl. 5 AS 1284.5 Cl. 5.2.4 AS 1284.9 Cl. 5.2.4 EN50470-1 Cl. 5.8 EN50470-3 Cl. 5 IS16444 Part 1(Cl. 6.4) IS16444 Part 2(Cl. 6.4) BS EN 61036 Cl. 5.2.4 BS EN 62052-11 Cl. 5.8 BS EN 62053-21Cl. 5 BS EN 62053-22 Cl. 5 BS EN 62053-23 Cl. 5 IEC 60695-2-10 IEC 60695-2-11 IS 11000 Part 1&II EN 60695-2-11	
4.	Electrical and	Electrical Fast Transient	CBIP-304 (Cl. 5.5.3)	0.5 kV to 7.0 kV

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	Electronic (Static) Energy meters & Tariff and Load Control Equipment & Electrical / Electronic Equipments, Equipment for house hold	Burst	CBIP-325 (Cl. 5.5.3) IS 13779 Cl. 12.9.4 IS 14697 Cl. 12.8.4 IS 15884 Cl. 5.5.4 IEC 62052-11Cl. 7.5.4 IEC 62053-21 Cl.8.2 IEC 62053-22 Cl.8.2 IEC 62053-23 Cl.8.2 IEC 62053-24Cl.8.3 IEC 62055-31 Cl. 7.8.4 IEC 62052-21Cl. 7.6.5 IEC 62054-21Cl. 7.6.5 AS 62052.11 Cl. 7.5.4 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.6.5 AS 62054.21 Cl. 7.6.5 AS 1284.5 Cl. 5.5.4 AS 1284.9 Cl. 5.5.4 EN50470-1 Cl. 7.4.7 EN50470-3 Cl. 8.7.7.14 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) IS15884(Cl.5.5.4) NMI M6 Cl. A.3.5 NMI M6-1Cl. A.2.15 BS EN 61036 Cl. 5.5.4 BS EN 62052-11Cl. 7.5.4 BS EN 62053-21Cl. 8.2 BS EN 62053-22 Cl. 8.2 BS EN 62053-23 Cl. 8.2 IEC 61000-4-4 IEC61326 – 1 Cl.6.2 Table-1, Table-2, Table-3	5 ns 50 ns

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			EN61326 – 1 Cl.6.2 Table-1, Table-2, Table-3 IEC 61000-4-4 IEC61000-6-1 Cl.8 Table-2 Table-3, Table-4 IEC61000-6-2 Cl.8 Table-2 Table-3, Table-4 IEC61326-1 Cl.6.2 Table-1, Table-2, Table-3 CISPR24 Cl. 4.2.2 BS EN 55024 Cl. 4.2.2 IEC 61000-4-4 EN 61000-4-4 EN 61000-6-1 EN 61000-6-2 Cl.8 Table-2, Table-3, Table-4 CISPR 14-2 EN55014-2 IS14700(part4/Sec4) EN 60730-1 Cl. ZD.6 EN 60730-2-7 Cl. 26	
		Immunity to Electrostatic Discharges	CBIP-304 Cl. 5.5.2 CBIP-325 Cl. 5.5.2 IS 13779 Cl. 12.9.2 IS 14697 Cl. 12.8.2 IS 15884 Cl. 5.5.2 IEC 62052-11 Cl. 7.5.2 IEC 62053-21 Cl. 8.2 IEC 62053-22 Cl.8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24 Cl. 8.3 IEC62055-31Cl. 7.8.2 IEC 62052-21 Cl. 7.6.3 IEC 62054-21 Cl. 7.6.3	0.2 kV to 15 kV Contact: 8 kV Air :15 kV

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			AS 62052.11 Cl. 7.5.2 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.6.3 AS 62054.21 Cl. 7.6.3 AS 1284.5 Cl. 5.5.2 AS 1284.9 Cl. 5.5.2 EN50470-1 Cl. 7.4.5 EN50470-3 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) NMI M6 Cl. A.3.6 NMI M6-1 Cl. A.2.11 BS EN 61036 (Cl. 5.5.2) BS EN 62052-11 Cl. 7.5.2 BS EN 62053-21 Cl. 8.2 BS EN 62053-22 Cl. 8.2 BS EN 62053-23 Cl. 8.2 IEC61326 – 1 Cl.6.2 Table-1, Table-2, Table-3 EN61326 – 1 Cl.6.2 Table-1, Table-2, Table-3 IEC 61000-4-2 IEC61000-6-1 Cl.8 Table-1 IEC61000-6-2 Cl.8 Table-1 IEC61000-4-2 CISPR24 Cl.4.2.1 BS EN 55024 Cl.4.2.1 EN 61000-6-1 EN 61000-6-2 Cl.8 Table-1 CISPR 14-2 EN55014-2	

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			EN 61000-4-2 IS14700(part4/Sec2) EN 60730-1 Cl. ZD.7.2 EN 60730-2-7 Cl.26	
		Surge Immunity - Power ports  - Telecom port	CBIP-304 Cl. 5.5.7 IS 15884 Cl. 5.5.6 IEC 62052-11 Cl. 7.5.6 IEC 62053-21 Cl. 8.2 IEC 62053-22 Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24 Cl. 8.3 IEC62055-31 Cl. 7.8.6 IEC 62052-21 Cl. 7.6.7 IEC 62054-21 Cl. 7.6.7 AS 62052.11 Cl. 7.5.6 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.6.7 AS 62054.21 Cl. 7.6.7 EN50470-1 Cl. 7.4.9 EN50470-3 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) BS EN 62052-11 Cl. 7.5.6 BS EN 62053 21 Cl. 8.2 BS EN 62053-22 Cl. 8.2 BS EN 62053-23 Cl. 8.2 IEC 61000-4-5 IEC61000-6-1 Cl.8Table-3, Table-4 IEC61000-6-2 Cl.8Table-3, Table-4 IEC61326-1 Cl.6.2 Table-1, Table-	Power ports 0.5 kV to 15 kV 1.2 μs to 50 μs 8 μs to 20 μs  Telecom port 0.5kV to 6kV 10 μs to 700 μs 5 μs to 320 μs

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			2, Table-3 EN61326 – 1 Cl.6.2 Table-1, Table-2, Table-3 CISPR24 Cl.4.2.5 BS EN 55024 Cl.4.2.5 IEC 61000-4-5 EN 61000-6-1 CISPR 14-2 EN55014-2 EN 61000-4-5 EN 60730-1 Cl.ZD.5 EN 60730-2-7 Cl.26	
5.	<b>Electrical and Electronic (Static) Energy meters &amp; Tariff and Load Control Equipment &amp; Electrical / Electronic Equipments Electrical Measuring transducers</b>  <b>Equipment for household</b>	Immunity to Conducted Disturbances, Induced by Radio Frequency Fields  - as per CDN/ISN method  - Power/ Telecom Ports	CBIP-304 Cl. 5.5.5 IEC 62052-11Cl. 7.5.5 IEC 62053-21 Cl. 8.2 IEC 62053-22Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24Cl. 8.3 IEC62055-31Cl. 7.8.5 IEC 62052-21Cl. 7.6.6 IEC 62054-21Cl. 7.6.6 AS 62052.11 Cl. 7.5.5 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.6.6 AS 62054.21 Cl. 7.6.6 EN50470-1Cl. 7.4.8 EN50470-3Cl. 8.7.7.15 NMI M6-1Cl. A.2.10 BS EN 62052-11 Cl. 7.5.5 BS EN 62053-21Cl. 8.2 BS EN 62053-22Cl. 8.2 BS EN 62053-23 Cl. 8.2	150 kHz to 80 MHz 1 V to 10 V 8 nos. of Telecom line (CAT5) 150 kHz to 80 MHz

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC 61000-4-6 CISPR24 Cl. 4.2.2.3 BS EN 55024 Cl. 4.2.2.3 IEC 61000-4-6 IEC61000-6-1 Cl.8 Table-2, Table-3, Table-4 IEC61000-6-2 Cl.8 Table-2, Table-3, Table-4 IEC61326-1 Cl.6.2 Table-1, Table-2, Table-3 EN61326 -1 Cl.6.2 Table-1, Table-2, Table-3 NMI M6 -1 Cl.A.2.10 EN 61000-6-1 CISPR 14-2 EN55014-2 IEC 61000-4-6 EN 61000-4-6 EN 60730-1 Cl.ZD.7.1 EN 60730-2-7 Cl.26 IS 12784 (Part 1)	
	<b>Electrical and Electronic (Static) Energy meters &amp; Tariff and Load Control Equipment &amp; Electrical / Electronic Equipments, Equipment for</b>	Immunity to Electromagnetic HF Field using GTEM Cell	IS 13779 Cl. 12.9.3 IS 14697 Cl. 12.8.3 IS 15884 Cl. 5.5.3 IEC 62052-11Cl. 7.5.3 IEC 62053-21 Cl. 8.2 IEC 62053-22 Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24Cl. 8.3 IEC62055-31Cl. 7.8.3 IEC 62052-21Cl. 7.6.4	27 MHz to 3 GHz Field strength :- Up to 30 V/m EUT Size: 33cm x 33cm x 33cm

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	household		IEC 62054-21Cl. 7.6.4 EN50470-1Cl. 7.4.6 EN50470-3Cl. 8.7.7.12 IS 16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) IEC 61000-4-3 IEC 62052-21Cl. 7.6.4 IEC 62055-31Cl. 7.8.3 IEC61000-6-1 Cl.8 Table-1 IEC61000-6-2 Cl.8 Table-1 IEC61326-1 Cl.6.2 Table-1, Table-2, Table-3 BS EN 55024 Cl. 4.2.3.2 IS14700(part4/Sec3) EN 60730-1 Cl.ZD.7 EN 60730-2-7 Cl.26	
		Immunity to Electromagnetic HF Field using Anechoic Chamber	CBIP-304 Cl. 5.5.4 CBIP-325 Cl. 5.5.4 IS 13779 Cl. 12.9.3 IS 14697 Cl. 12.8.3 IS 15884Cl. 5.5.3 IEC 62052-11Cl. 7.5.3 IEC 62053-21 Cl. 8.2 IEC 62053-22Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24Cl. 8.3 IEC 62055-31Cl. 7.8.3 IEC 62052-21Cl. 7.6.4 IEC 62054-21Cl. 7.6.4 AS 62052.11 Cl. 7.5.3 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.6.4	80 MHz to 6 GHz 1 V/m, 3 V/m, 10 V/m 30 V/m Max EUT size: 1.5m x 1.5m



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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			AS 62054.21 Cl. 7.6.4 AS 1284.5 Cl. 5.5.3 AS 1284.9 Cl. 5.5.3 EN50470-1Cl. 7.4.6 EN50470-3Cl. 8.7.7.12 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) NMI M6 Cl. A.3.7 NMI M6-1Cl. A.2.9 BS EN 61036Cl. 5.5.3 BS EN 62052-11 Cl. 7.5.3 BS EN 62053-21 Cl. 8.2 BS EN 62053-22 Cl. 8.2 BS EN 62053-23 Cl. 8.2 IEC 61000-4-3 AS 62054.21 Cl. 7.6.4 IEC62052-11Cl. 7.5.3 CISPR24 Cl.4.2.3.2 EN 61000-4-3 IEC61326 -1 Cl.6.2 Table-1, Table-2, Table-3 EN 61326 -1 Cl.6.2 Table-1, Table-2, Table-3 BS EN 55024 Cl. 4.2.3.2 IEC 61000-4-3 IEC61000-6-1 Cl.8 Table-1 IEC61000-6-2 Cl.8 Table-1 IEC61326-1Cl.6.2 Table-1, Table-2, Table-3 BS EN 55024 Cl. 4.2.3.2 EN 61000-6-1 EN 61000-6-2 Cl.8 Table-1	

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			CISPR 14-2 EN55014-2 IS14700(part4/Sec3) EN 60730-1 Cl.ZD.7 EN 60730-2-7 Cl.26 OIML – R46 (Clause no.-6.3.15.1 & clause no.- 6.4.6)	
	<b>Electrical and Electronic (Static) Energy meters &amp; Tariff and Load Control Equipment &amp; Electrical / Electronic Equipments</b>	Radio interference Measurement (CE)	CBIP-304 Cl. 5.5.8 CBIP-325 Cl. 5.5.5 IS 13779 Cl. 12.9.5 IS 14697 Cl. 12.8.5 IS 15884 Cl. 5.5.5 IEC 62052-11 Cl. 7.5.8 IEC 62053-21 Cl. 8.2 IEC 62053-22 Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24 Cl. 8.3 IEC62055-31 Cl. 7.8.8 IEC 62052-21 Cl. 7.7 IEC 62054-21 Cl. 7.7 AS 62052.11 Cl. 7.5.8 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21 Cl. 7.7 AS 62054.21 Cl. 7.7 AS 1284.5 Cl. 5.5.5 AS 1284.9 Cl. 5.5.5 EN50470-1 Cl. 7.4.13 EN50470-3 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) BS EN 61036 Cl.5.5.5 BS EN 62052-11 Cl. 7.5.8	0.15 MHz to 30 MHz. For power line. 8 nos. of Telecom line (CAT5) 150 kHz to 30 MHz

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			BS EN 62053-21 Cl. 8.2 BS EN 62053-22Cl. 8.2 BS EN 62053-23 Cl. 8.2	
		Radio interference Measurements (RE)	CBIP-304 Cl. 5.5.8 CBIP-325 Cl. 5.5.5 IS 13779 Cl. 12.9.5 IS14697 Cl. 12.8.5 IS 15884 Cl. 5.5.5 IEC 62052-11Cl. 7.5.8 IEC 62053-21 Cl. 8.2 IEC 62053-22Cl. 8.2 IEC 62053-23 Cl. 8.2 IEC 62053-24Cl. 8.3 IEC62055-31Cl. 7.8.8 IEC 62052-21Cl. 7.7 IEC 62054-21Cl. 7.7 AS 62052.11 Cl. 7.5.8 AS 62053.21 Cl. 8.2 AS 62053.22 Cl. 8.2 AS 62053.23 Cl. 8.2 AS 62052.21Cl. 7.7 AS 62054.21Cl. 7.7 AS 1284.5 Cl. 5.5.5 AS 1284.9Cl. 5.5.5 EN50470-1Cl. 7.4.13 EN50470-3 IS16444 Part 1(Cl. 6.11) IS16444 Part 2(Cl. 6.11) BS EN 61036 Cl. 5.5.5 BS EN 62052-11 Cl. 7.5.8 BS EN 62053-21Cl. 8.2 BS EN 62053-22Cl. 8.2 BS EN 62053-23 Cl. 8.2 AS 1284.9 Cl.5.5.5 CISPR 14	30 MHz to 6 GHz

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			CISPR 14-1 CBR-325 Cl. 5.5.5	
	Electrical and Electronic (Static) Energy meters & Tariff and Load Control Equipment & Electrical / Electronic Equipments	Impulse Voltage	IEC 61000-4-5 IEC 60060-1 SPM1618 IEC60051-1 IEC51-2 IEC51-3 IEC51-4 IEC51-5 IEC51-8 IEC51-9	Up to 12 kV  1.2 ms 50 ms
		AC Voltage	IEC 60060-1 IS 2071 (Part-1)	Up to 10 kV
		Heat Deflection	ISO 75-1& 2 ASTM D648-07 ASTM 1585	0 °C to 350 °C Displacement: 0.2 mm to 10 mm
	Electrical and Electronic (Static) Energy meters - Smart Meter	Limits of Errors	IS 15707 Cl. 12.3.1	Single Phase: (0.12 W to 38.4 kW) Three Phase: (0.36 W to 115.2 kW)
		Interpretation of Test Results and Adjustments	AS 1284.5 (Cl. 5.6.7) AS 1284.9	Single Phase: (0.12 W to 38.4 kW) Three Phase: (0.36 W to 115.2 kW)
		Short Time Over Voltage Test	AS 1284.5 (Cl. 4.4.2.3)	1.732 times Vn for 1 minute
		Tamper and Fraud Monitoring	CBIP-88 (Cl. 6.7) CBIP-304 (Cl. 6.7) CBIP-325 (Cl. 6.7) Central Electricity Authority :-Installation and	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1

Sreeram Pinnamaraju  
Convenor

Alok Jain  
Program Manager

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			Operation of Meters Regulations	
		Keypad interface	IS 15884 Cl. 4.2.12.3 IEC62055-31 Cl. 5.14.3 IS16444	20,000 operations
		Functional Performance -General	IS 15884(Cl. 6.1 & Annexure A) IEC62055-31(Cl. Annexure A)	Qualitative
		Prepayment mode Core functionalities	IS 15884(Cl. 6.1 & Annexure A.1.2) IEC62055-31(Cl. Annexure A.1.2)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1
		Core functional test within voltage and temperature range limits	IS 15884(Cl. 6.1 & Annexure A.1.3) IEC62055-31(Cl. Annexure A.1.3)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1 (-) 40 °C to 150 °C
		Functional tests within the limit range of the operation with voltage	IS 15884(Cl. 6.1 & Annexure A.1.4) IEC62055-31(Cl. Annexure A.1.4)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1
		Functional tests within the limit range of the operation with temperature	IS 15884(Cl. 6.1 & Annexure A.1.5) IEC62055-31(Cl. Annexure A.1.5)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF: +1 to -1 (-) 40 °C to 150 °C

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		Prepayment mode- Token handling and data integrity requirements	IS 15884 (Cl. 6.1 & Annexure A.1.6) IEC62055-31(Cl. Annexure A1.6)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1
		Additional -Functionalities	IS 15884(Cl. 6.1 & Annexure A.2) IEC62055-31(Annexure A.2)	Up to 320 V Up to 120 A 45 Hz to 65 Hz PF +1 to -1 (-) 40 °C to 150 °C
		System Compliance requirements	IS 15884(Cl. 6.1 & Annexure A.3) IEC62055-31 (Annexure A.3)	Qualitative
		Requirements of Time-Keeping requirements	IS 15884(Cl. 4.3.1, 4.3.2(a) and (b), 4.4 and 5.1.7 Annexure D) IEC62055-31 (Cl. Annexure D)	Up to ± 6000sec
		Performance Requirements for Payment meters with Load switching Utilization categories UC1, UC2 & UC3	IS 15884(Cl. 3.12.6, 4.6.6.2.2, 5.1.7 and Annexure G) IEC62055-31 (Annexure C & Cl. 4.9.3) IS16444:2015 Part 1 (amendment 1:2017) (clause No. 7)	Up to 8000 A <sub>rms</sub> from 1 to 50 cycles (1sec) Up to 15kA peak for half cycle (10msec) Up to UPF
		Communication Requirements	IS16444:2015 Part 1 (amendment 1:2017) (clause No.9)& IS16444:2017 Part 2 (clause No.8)	Qualitative

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		Test and Test Conditions	IS16444:2015 Part 1 (amendment 1:2017) (clause No.10.3,10.4,10.5,10.6) IS16444:2017 Part 2 (clause No.9.3,9.4,9.5)	Qualitative
		Smart Meter Functional Requirements	IS16444:2015 Part 1 (amendment 1:2017) (clause No.11) IS16444:2017 Part 2 (clause No.10)	Qualitative Over current range: Up to 130A
	<b>Electrical Equipments &amp; Electrical / Electronic Equipments for house hold</b>	Power Frequency Magnetic Field	IEC 61000-6-1 Cl.8 Table-1 IEC 61000-6-2 Cl.8 Table-1 EN 61000-6-1 EN 61000-6-2 Cl.8 Table-1 IEC 61000-4-8 EN 61000-4-8 IEC 61326-1 Cl.6.2 Table-1, Table-2 EN 61326-1 Cl.6.2 Table-1, Table-2 CISPR 24 Cl. 4.2.4 EN 55024 Cl. 4.2.4 EN 60730-1 Cl.ZD.9 EN 60730-2-7 Cl. 26	Up to 400 AT / 0.5 mT
	<b>Electricity metering equipment</b>	Durability	EN62059-32-1 IEC62059-32-1 Ed.1 OIML: R 46-1/-2 Cl. 6.4.17	(-) 40 °C to 100 °C
	<b>Electrical and Electronic (Static) Energy meters</b>	Higher order harmonic	OIML: R 46-1/-2 (Cl. 6.3.17)	40 V to 320 V Up to 120 A 50 Hz to 65 Hz PF +1 to -1
	<b>Electrical and Electronic (Static)</b>	Immunity to Conducted Disturbances	CLC/TR/50579	2 kHz to 150 kHz

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	Energy meters, Tariff and load control equipment & Electrical / Electronic / Equipments			
	Electrical and Electronic (Static) Energy meters, Tariff and load control equipment & Electrical / Electronic / Equipments Electrical Measuring Transducers Automatic electrical control for Household and similar use	Conducted emission (on Telecom port)	CISPR22, Cl.5 EN 55022 IEC61000-6-3 Table-1 EN 61000-6-4 Table-1 EN61000-6-3 Table-1 IEC61000-6-4 Table-1 IEC 61326-1 Cl.7 EN 61326-1 Cl.7 CISPR 32 EN 55032 IEC 60688 ed.3 Cl. 6.22 EN 60688 ed.3 Cl. 6.22 EN 60730-1 Cl.H.23.1.2 EN 60730-2-7 Cl.23	8 nos. of Telecom line (CAT5) Frequency range: 150kHz to 30MHz
	Electromagnetic interference (EMI) / Electromagnetic Compatibility (EMC) test facility.  Electrical and Electronic (Static) Energy meters Electrical Equipments Tariff and load control equipment	Radio interference Measurements (CE / RE)	CISPR 22 IS 6842 IS 6873 (part2) IEC 61326-1 Cl.7 IEC 61000-6-3 Table-1 IEC 61000-6-4 Table-1 EN61326 – 1 Cl.7 CISPR 11 CISPR 14 CISPR 14-1 IEC 61268 CISPR 16-2-3 EN 55011 EN 55022	Frequency Range:- 0.15 MHz to 30 MHz. For power line. For Singe Phase and Three phase  Frequency Range:- 30 MHz to 6 GHz



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	& Electrical /electronic equipments for Household		CISPR 22 EN 55022 CISPR 14-1 EN61000-6-3 EN61000-6-4Table-1 EN 60730-1 Cl.23 EN 60730-2-7 Cl.23 IS6873(Part7)	
	<b>Electrical and Electronic (Static) Energy meters, Tariff and load control equipment &amp; Electrical / Electronic / Equipments Electrical Measuring Transducers</b>  <b>Automatic electrical control for Household and similar use.</b>	Voltage Dips & Interruptions	IEC 61000-4-11 IEC 60601-1-2 Ed3.0 IEC 61000-6-1 Cl.8 Table-4 IEC 61000-6-2 Cl.8 Table-4 IEC 61326-1 Cl.6.2 Table-1, Table-2,Table-3 CISPR 14-2 Ed1.2, Cl. 5.7 EN 61000-4-11 EN 55014 -2 Cl. 5.7 EN 60601-1-2 Table-202 EN 61000-6-1 Cl.8 Table-4 EN 61000-6-2 Cl.8 Table-4 EN 61326-1:Cl.6.2 Table-1, Table-2,Table-3 NMI M6 Cl.A.3.1 NMI M6-1 Cl.A.2.14 CISPR24 Cl.4.2.6 BS EN 55024 Cl.4.2.6 CISPR 14-2 EN55014-2 IEC 60688 Cl. 6.23 IS 12784 (Part 1) Cl.8.6 IEC 60688 ed.3 Cl.6.22 Table-1, Table-2,Table-3 IEC 61326-1 EN 60688 ed.3 Cl. 6.22 EN 60730-1 Cl. ZD.10	Single phase: 2A per phase Three phase: 2A per phase Frequency 50Hz Programmable from 0% to 100% of supply voltage

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	<b>Electrical and Electronic (Static) Energy Meter/Smart Meter</b>	Conformance to protocol implementation as per DLMS/COSEM base standards; IEC 62056	EN 60730-2-7 Cl.26 IS 15959 Part 1 Annexure K-1 (a) Category A, B, C, C1 ,C2 and C3 IEC 62056 IS16444 Part 1(Cl. 8) IS16444 Part 2 (Cl. 8) IS 15959 Part 2 Cl.23,24 category D1,D2 IS 15959(part 3) Cl.27,28 Category D3,D4	Qualitative
		Conformance to protocol Implementation of specific requirements related to: -All mandatory parameters -All data types -All application associations with specified services -Association objects with access rights and OBIS codes -Events related to DLMS objects with event identifiers	IS 15959 : part 3 Annexure K-1 (b) and K-2Category A, B, C, C1 ,C2 and C3 IS 15959 Part 2 IS 16444 (Cl. 8) Part 1, Part 2, Part 3	Qualitative
	<b>Electrical and Electronic (Static) Energy Meter</b>	-Test of Mechanical and electrical characteristics -Optical characteristics	IS 15884Cl. 4.2.10.8, 4.2.10.9 IEC 62055-31 Cl. 5.12 & IEC62052-11 Cl. 5.11.1, 5.11.2	10 nanoseconds to 500 micro seconds Up to 5000 micro W/cm <sup>2</sup>
	<b>Electrical Measuring</b>	Environmental Condition	IEC 60688 IS 12784 (part 1)	Environment chamber (-) 40 °C to +85 °C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Transducers</b>		IEC 60068-2-3 IEC 60688 ed.3 EN 60688 ed.3	50 % to 98 % RH Three Phase: source (320 V,24A, 0 to 360°)
		Tests: -Variation due to Auxiliary Supply Voltage	IEC 60688 (Cl. 6.2) IS 12784 (part 1) (Cl. 6.1 ) IEC 60688 ed.3 (Cl. 6.2) EN 60688 ed.3 (Cl. 6.2)	Three Phase source Up to 320 V
		Variation due to Auxiliary Supply Frequency	IEC 60688 (Cl. 6.3) IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.3) EN 60688 ed.3 (Cl. 6.3)	Three Phase source Up to 320 V 45 Hz to 65 Hz
		-Variation due to Ambient Temperature	IEC 60688 (Cl. 6.4) IS 12784 (part 1) (Cl. 8.5) IEC 60688 ed.3 (Cl. 6.4) EN 60688 ed.3 (Cl. 6.4)	Up to 80 °C
		-Variation due to the frequency of the input quantity	IEC 60688 (Cl. 6.5) IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.5) EN 60688 ed.3 (Cl. 6.5)	Three Phase source Up to 320 V 45 Hz to 65 Hz
		- Variation due to the input Voltage	IEC 60688 (Cl. 6.6) IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.6) EN 60688 ed.3 (Cl. 6.6)	Three Phase source Up to 320 V
		-Variation due to the input Current	IEC 60688 (Cl. 6.7) IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.7) EN 60688 ed.3 (Cl. 6.7)	Three Phase source Up to 24 A
		-Variation due to the power factor	IEC 60688 (Cl. 6.8) IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.8) EN 60688 ed.3 (Cl. 6.8)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Variation due to the	IEC 60688 (Cl. 6.9)	Three Phase source Up

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		output load	IS 12784 (part 1) (Cl. 6.1) IEC 60688 ed.3 (Cl. 6.9) EN 60688 ed.3 (Cl. 6.9)	to 320 V 24 A 0° to 360°
		-Variation due to the distortion of the input quantity	IEC 60688 (Cl. 6.10) IS 12784 (part 1) (Cl. 6.5) IEC 60688 ed.3 (Cl. 6.10) EN 60688 ed.3 (Cl. 6.10)	Three Phase source Up to 320 V 24 A 0° to 360° Up to 20% in voltage and current
		- Variation due to the magnetic field of external origin	IEC 60688 (Cl. 6.11) IS 12784 (part 1) (Cl. 6.7) IEC 60688 ed.3 (Cl. 6.11) EN 60688 ed.3 (Cl. 6.11)	400 AT magnet
		- Variation due to the unbalanced currents	IEC 60688 (Cl. 6.12) IS 12784 (part 1) (Cl. 6.4) IEC 60688 ed.3 (Cl. 6.12) EN 60688 ed.3 (Cl. 6.12)	Three Phase source Up to 24 Amp
		-Variation due to the interaction between measuring elements	IEC 60688 (Cl. 6.13) IS 12784 (part 1) (Cl. 6.6) IEC 60688 ed.3 (Cl. 6.13) EN 60688 ed.3 (Cl. 6.13)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Variation due to the self heating	IEC 60688 (Cl. 6.14) IS 12784 (part 1) (Cl. 6.3.2) IEC 60688 ed.3 (Cl. 6.14) EN 60688 ed.3 (Cl. 6.14)	Three Phase source Up to 320 V 24 A 0° to 360°
		- Variation due to the continuous operation	IEC 60688 (Cl. 6.15) IS 12784 (part 1) (Cl. 6.3) IEC 60688 ed.3 (Cl. 6.15) EN 60688 ed.3 (Cl. 6.15)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Permissible excessive inputs	IEC 60688 (Cl. 6.18) IS 12784 (part 1) (Cl. 8.3) IEC 60688 ed.3 (Cl. 6.17.5)	Three Phase source Up to 320 V 24 A

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			EN 60688 ed.3 (Cl. 6.17.5)	0° to 360°
		-Continuous excessive inputs	IEC 60688 (Cl. 6.18.1) IS 12784 (part 1) (Cl. 8.3.1) IEC 60688 ed.3 (Cl. 6.17.6) EN 60688 ed.3 (Cl. 6.17.6)	Three Phase source Up to 560V, 300 Amp, (0 to 360°)
		-Excessive inputs of short duration	IEC 60688 (Cl. 6.18.2) IS 12784 (part 1) (Cl. 8.3.2) IEC 60688 ed.3 (Cl. 6.17.7) EN 60688 ed.3 (Cl. 6.17.7)	Three Phase source Up to 560V, 300 Amp, (0 to 360°)
		-Impulse voltage	IEC 60688 (Cl. 6.20) IS 12784 (part 1) (Cl. 8.7) IEC 60688 ed.3 (Cl. 6.19) EN 60688 ed.3 (Cl. 6.19)	0.5 kV to 8 kV 1.2 ms/50 ms
		temperature rise	IEC 60688 (Cl. 6.22) IEC 60688 ed.3 (Cl. 6.21) EN 60688 ed.3 (Cl. 6.21) IEC 60688 (Cl. 6.21)	25 °C to 100 °C
		High frequency disturbance	IS 12784 (part 1) (Cl. 8.6) IEC 60688 ed.3 (Cl. 6.20) EN 60688 ed.3 (Cl. 6.20)	HF test 0.5 kV to 2.5 kV 75 ns
		Voltage Test , Insulation Test and other safety requirements	IEC 60688 (Cl. 6.19) IS 12784 (part 1) (Cl. 8.6) IEC 60688 ed.3 (Cl. 6.18) EN 60688 ed.3 (Cl. 6.18)	Up to 10 kV
		-Variation due to common mode interference	IEC 60688 (Cl. 6.16) IEC 60688 ed.3 (Cl. 6.16) EN 60688 ed.3 (Cl. 6.16)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Variation due to series mode interference	IEC 60688 (Cl. 6.17) IEC 60688 ed.3 (Cl. 6.17) EN 60688 ed.3 (Cl. 6.17)	Three Phase source Up to 320 V 24 A

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				0° to 360°
		-Over range of Measurand	IEC 60688 (Cl. 5.6) IS 12784 (part 1) (Cl. 6.8) IEC 60688 ed.3 (Cl. 5.7) EN 60688 ed.3 (Cl. 5.7)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Drop and Topple	IEC 60688 (Cl.6.23 )	Up to 1 m
		- Limits of Intrinsic Error	IEC 60688 (Cl. 4.2 ) IS 12784 (part 1) (Cl. 4) IEC 60688 ed.3 (Cl. 4.4 ) EN 60688 ed.3 (Cl. 4.4)	Three Phase source Up to 320 V 24 A 0° to 360°
		-Marking	IEC 60688 (Cl. 7.1 to 7.4 ) IS 12784 (part 1) (Cl. 10) IEC 60688 ed.3 (Cl. 7.1 to 7.4 ) EN 60688 ed.3 (Cl. 7.1 to 7.4)	Qualitative
		-Limiting conditions for storage and transport	IEC 60688 (Cl. 5.10 ) IS 12784 (part 1) (Cl. 9.2) IEC 60688 ed.3 (Cl. 5.11 ) EN 60688 ed.3 (Cl. 5.11)	(-) 40 °C to 150 °C
		-Response time	IEC 60688 (Cl. 5.5 ) IS 12784 (part 1) (Cl. 8.2) IEC 60688 ed.3 (Cl. 5.6 ) EN 60688 ed.3 (Cl. 5.6)	2 ns to 4 s
		-Limiting value of output	IEC 60688 (Cl. 5.7 ) IS 12784 (part 1) (Cl. 8.4) IEC 60688 ed.3 (Cl. 5.8) EN 60688 ed.3 (Cl. 5.8)	Three Phase source Up to 320 V 24 A 0° to 360°
		- Sealing verification	IEC 60688 (Cl. 5.11 )	Qualitative

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			IS 12784 (part 1) (Cl. 9.3) IEC 60688 ed.3 (Cl. 5.12 ) EN 60688 ed.3 (Cl. 5.12)	
		- Ripple content of output	IEC 60688 (Cl. 5.4 ) IS 12784 (part 1) (Cl. 8) IEC 60688 ed.3 (Cl. 5.5 ) EN 60688 ed.3 (Cl. 5.5)	2 mV to 40 V
		Electromagnetic compatibility	IEC 60688 Cl. 6.23 IEC 60688 ed.3 Cl. 6.22 EN 60688 ed.3 Cl. 6.22 IEC61326 –1Cl.6.2 Table-1, Table-2,Table -3 EN61326 – 1Cl.6.2 Table-1, Table-2,Table-3 IEC 61000-4-2 IEC 61000-4-4 IEC 61000-4-3 IEC 61000-4-8 IEC 61000-4-6 IEC 61000-4-5	
		Immunity to electrostatic discharge		Contact:8 kV Air :15 kV
		Fast Transient Burst		0.5 kV to 7.0 kV 5 ns / 50 ns
		Immunity to Electromagnetic RF Fields		Frequency range: 27 MHz to 2.7 GHz Field strength: Up to 40 V/m
		Power frequency magnetic field		Up to 400 A/m

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		immunity to conducted disturbances induced by radio frequency fields		150 kHz to 80 MHz 1 V to 10 V
		surge immunity		1.2/50 ms (0.2 kV to 15 kV)
		Conducted emission		Frequency range: 150 kHz to 30 MHz Up to 137 dB $\mu$ V
		Radiated emission		Frequency Range:- 30 MHz to 6 GHz
		Drop and Topple	IS 9000 (Part VII/Section 3) IS 9000 (Part VII/Section 1-5 ) EN 60068-2-31	Up to 1 m
	<b>Enclosures for household accessories</b>	Markings	IS 14772	Qualitative
		Resistance to humid conditions	IS 14772 (Cl. 12.2)	Temperature 10°C to 50 °C at 95% RH
		Resistance against ingress of solid objects	IS 14772 IS 12063	IP 5X
		Resistance to Harmful Ingress of Water	IS 14772 IS 12063	IP X1 to X4
		Resistance of Insulating Material to Abnormal Heat and Fire	IS 14772 IS 11000 (Part 2/ Sec.1)	Up to 960 °C
	<b>Digital Measuring instruments for measurement and</b>	-Intrinsic Error	IS 13875 Part(1) (Cl. 4.2) IS 13875 Part(2,3)(Cl. 3.2)	40 V to 320 V 1mA to 120 A 0° to 360°



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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>control</b>	-Influence error resulting from change in Ambient Temperature	IS 13875 Part(1) (Cl. 4.4) IS 13875 Part(2,3)(Cl. 3.4)	40 Hz to 70 Hz  20°C to 70°C 30 % to 98 % RH
		-Influence error resulting from change in Relative Air Humidity	IS 13875 Part(1) (Cl. 4.5) IS 13875 Part(2,3) (Cl. 3.5)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		-Influence error resulting from a change in Position	IS 13875 Part(1) (Cl. 4.6) IS 13875 Part(2,3) (Cl. 3.6)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		-Influence error resulting from Supply Voltage	IS 13875 Part(1,2,3)(Cl. 4.8) IS 13875 Part(2,3) (Cl. 3.8)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		-Frequency Influence error in the case of ac voltage measurement	IS 13875 Part(1) (Cl. 4.2.2) IS 13875 Part(2) (Cl. 3.13)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		-Overload	IS 13875 Part(2) (Cl. 3.15) IS 13875 Part (3)(Cl. 3.10)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		Self Heating Due to Measured Quantity	IS 13875 Part (2) (Cl. 3.16) IS 13875 Part(3) (Cl. 3.11)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
		-Step response time	IS 13875 Part (2)(Cl. 3.14)	40 V to 320 V 1 mA to 120 A 0 ° to 360 ° 40 Hz to 70 Hz
<b>II.</b>	<b>WIRING ACCESSORIES</b>			

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
1.	<b>Time Switches (Synchronous &amp; Crystal Controlled)</b>	Variation of the Supply Frequency  Immunity to DC Magnetic Fields  Immunity to AC Magnetic Fields (0.5mT)  Voltage Dips and Short Interruptions	AS 62054.21 (Cl. 7.1.2) AS 62052.21 (Cl. 7.1.2) IEC 62054-21(Cl. 7.1.2) IEC 62052-21(Cl. 7.1.2)  AS 62054.21 (Cl. 7.6.9) AS 62052.21 (Cl. 7.6.9) IEC 62054-21(Cl. 7.6.9) IEC 62052-21(Cl. 7.6.9)  AS 62054.21(Cl. 7.6.10) AS 62052.21 (Cl. 7.6.10) IEC 62054-21(Cl. 7.6.10) IEC 62052-21(Cl. 7.6.10)	Up to 320 V 45 Hz to 65 Hz  DC:1000 AT  AC: 0.5mT  Time:

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		-Test of the effects of short supply interruptions on synchronous time switches (Except 20ms & 50ms)	AS 62054.21(CI. 7.1.4 & 7.6.8) AS 62052.21 (CI. 7.6.8) IEC 62054-21 (CI. 7.1.4 & 7.6.8) IEC 62052-21 (CI. 7.6.8)	(100ms,200ms, 500ms, 1s,2s)
		-Long Interruptions of Supply Voltage	AS 62054.21(CI. 7.6.8.2 &7.6.8.3) AS 62052.21 (CI. 7.1.4 & 7.6.8) IEC 62054-21 (CI. 7.6.8.2 &7.6.8.3) IEC 62052-21 (CI. 7.1.4 & 7.6.8)	Time: 6 switching per min. Voltage: : Up to 320V p-n
		-Operation Reserves	AS 62054.21(CI. 7.1.5) AS 62052.21 (CI. 7.1.5) IEC 62054-21 (CI. 7.1.5) IEC 62052-21 (CI. 7.1.5)	Time: 6 switching per min. Voltage: : Up to 320Vp-n
		-Backup Power Supply Replacement	AS 62054.21(CI. 7.1.6) AS 62052.21 (CI. 7.1.6) IEC 62054-21 (CI. 7.1.6) IEC 62052-21 (CI. 7.1.6)	Time: up to 36 hr. ACV: Up to 320V
			AS 62054.21(CI. 7.1.7, 7.1.8) AS 62052.21 (CI. 7.1.7, 7.1.8) IEC 62054-21 (CI. 7.1.7, 7.1.8) IEC 62052-21 (CI. 7.1.7, 7.1.8)	Qualitative
				Up to 320Vp-n
		<b>Sreeram Pinnamaraju</b> Convenor	<b>Alok Jain</b> Program Manager	

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		Functional Requirements and Tests-Accuracy -Time setting and Programming	AS 62054.21(CI. 7.5.1) AS 62052.21 IEC 62054-21 (Cl. 7.5.1) IEC 62052-21	Time: Up to 30 days Voltage: Up to 320Vp-n
		-Time switches with Mechanical analogue Dials.	AS 62054.21(CI. 7.5.1.1) AS 62052.21 IEC 62054-21(CI. 7.5.1.1) IEC 62052-21	Qualitative
		-Time switches with digital displays.	AS 62054.21(CI. 7.5.1.2) AS 62052.21 IEC 62054-21(CI. 7.5.1.2) IEC 62052-21	Qualitative
		Time keeping accuracy. Requirement for Synchronous Time and Crystal Switches	AS 62054.21(CI. 7.5.2) AS 62052.21 IEC 62054-21 (Cl. 7.5.2) IEC 62052-21	Time: Up to 30 days Voltage: Up to 320Vp-n
		Test of time keeping accuracy -Test of synchronous & crystal controlled time switches	AS 62054.21(CI. 7.5.2.3) AS 62052.21 IEC 62054-21 (Cl. 7.5.2.3) IEC 62052-21	Time: Up to 30 days Voltage: Up to 320Vp-n
		-Test of synchronous & crystal controlled time switches supplied by mains	AS 62054.21(CI. 7.5.2.3.2.1 & 7.5.2.3.3.1) AS 62052.21 IEC 62054-21 (Cl. 7.5.2.3.2.1 & 7.5.2.3.3.1) IEC 62052-21	Time: Up to 30 days Voltage: Up to 320Vp-n
		-Test of synchronous &	AS 62054.21(CI. 7.5.2.3.2.2)	Time: Up to 30 days

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		crystal controlled time switches on operation reserve	&7.5.2.3.3.2) AS 62052.21 IEC 62054-21 (Cl. 7.5.2.3.2.2 &7.5.2.3.3.2) IEC 62052-21	Voltage: Up to 320Vp-n
		Test of time keeping accuracy of crystal-controlled time switches with temperature	AS 62054.21(Cl.7.5.2.3.3.3) AS 62052.21 IEC 62054-21 (Cl.7.5.2.3.3.3) IEC 62052-21	45 Hz to 65 Hz Active :- (0.12W to 115.2 kW) Temp: -10°C to 40°C
		Switching Accuracy -Test on time switches with dials  -Test on time switches with digital displays.  - Test of Influence of Harmonics  -Synchronization  -Test of Influence of Harmonics	AS 62054.21(Cl. 7.5.3.1) AS 62052.21 IEC 62054-21 (Cl. 7.5.3.1) IEC 62052-21  AS 62054.21(Cl. 7.5.3.2) AS 62052.21 IEC 62054-21 (Cl. 7.5.3.2) IEC 62052-21  AS 62054.21(Cl. 7.6.10) AS 62052.21 (Cl. 7.6.11) IEC 62054-21 (Cl. 7.6.10) IEC 62052-21 (Cl. 7.6.11)  AS 62054.21(Cl. 7.5.4) AS 62052.21 IEC 62054-21 (Cl. 7.5.4) IEC 62052-21  AS 62054.21(Cl. 7.6.11) AS 62052.21 (Cl. 7.6.11) IEC 62054-21 (Cl. 7.6.11) IEC 62052-21 (Cl. 7.6.11)	Time: up to 168 h Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar  Time: up to 168 h Active / Reactive:- 0.12W to 115.2 kW 0.12 Var to 115.2 kVar 10% of 320 V P-N Time: Up to 30 days  Time: 0 to ± 6000sec  10% of 320 V P-N Time: Up to 30 days
		Conducted emission (on Telecom port)	AS 62054.21,Cl. 7.7 AS 62052.21,Cl. 7.7	8 nos. of Telecom line (CAT5)

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			IEC 62054-21, Cl. 7.7 IEC 62052-21, Cl. 7.7	Frequency range: 150kHz to 30MHz
		Immunity to conducted disturbances induced by Radio frequency fields (on Telecom port)	AS 62054.21, Cl. 7.6.6 AS 62052.21, Cl. 7.6.6 IEC 62054-21, Cl. 7.6.6 IEC 62052-21, Cl. 7.6.6	Frequency range: 150 kHz to 80 MHz Level: Up to 10Vrms
<b>III.</b>	<b>INDUCTORS &amp; TRANSFORMERS</b>			
1.	<b>Current Transformers- Metering &amp; Protection (LT, 0.66kV HSV) (class :0.2s to 1) (5P,10P,15P)</b>	Terminal Marking and Polarity  Composite Error  Error According to the Requirement of Appropriate Accuracy	IS 2705- Part 1 (Cl. 9.2) IS 2705- Part 2 (Cl. 6) IS 2705- Part 3 (Cl. 6) IS 2705- Part 4 (Cl. 5) IS/IEC: 60044-1 (Cl. 8.1) IEC61869-1 (Cl. 7.3.6) IEC61869-2(Cl.6.13.201 ) IEC61869-4 (Cl.6.13) IS 16227-Part 1 (Cl. 7.3.6) IS16227-Part 2 (Cl.6.13.201 ) IS16227-Part4 (Cl.6.13 )  IS 2705- Part 1 IS 2705-Part 2(Cl. 7.1.2) IS 2705- Part 3(Cl. 2.2, 7.1.2,7.2.2) IS/IEC: 60044-1(Cl. 12.5, 12.6) IEC61869-1 IEC61869-2 (Cl. 7.2.6.203, 7.3.5.203 ) IS 16227-Part 1 IS 16227-Part2, (Cl. 7.2.6.203, 7.3.5.203 )	Qualitative             Up to 15%

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Class	IS 2705 (part2):(Cl. 7.1.1, 7.2.1 ) IS 2705 (part3) (Cl. 7.1.1 ) IS/IEC: 60044-1-(Cl. 11.4,12.5,14.3) IEC61869-1(Cl. 7.2.6) IEC61869-2(Cl. 7.2.6& 7.3.5 ) IEC61869-4(Cl. 7.3.5 ) IS 16227-Part 1(Cl. 7.2.6 ) IS 16227-Part2(Cl. 7.2.6, & 7.3.5 ) IS 16227-Part4 (Cl. 7.3.5 )	5A to 2000 A
		Winding Resistance	IS 2705- part 2(Cl. 7.1.2) IS 2705- part 3(Cl. 7.1.2) IS 2705- part 4(Cl. 6.2) IS/IEC: 60044-1,(Cl. 11.6) IEC61869-1 IEC61869-2,(Cl. 7.3.201) IEC61869-4,(Cl. 7.3.201) IS 16227-Part 1 IS 16227:part 2,(Cl.7.3.201) IS 16227-Part4(Cl.7.3.201)	1 mΩ to 20 k Ω
		Temperature Rise	IS 2705( part 1) (Cl. 9.7) IS/IEC: 60044-1 (Cl. 7.2) IEC61869-1,(Cl. 7.2.2) IEC61869-2, (Cl. 7.2.2) IEC61869-4, (Cl. 7.2.2) IS 16227-Part1,(Cl. 7.2.2) IS 16227-Part 2,(Cl. 7.2.2) IS 16227-Part 4, (Cl. 7.2.2)	Current 2400 A Ambient to 200°C Temp.

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		High Voltage Power Frequency	IS 2705-part 1 (Cl. 9.3 & 9.4) IS/IEC: 60044-1,(Cl. 8.3) IEC61869-1,(Cl. 7.3.1, 7.3.3,7.3.4) IEC61869-2, (Cl. 7.3.1) IEC61869-4,(Cl. 7.3.1, 7.3.3, 7.3.4) IS 16227-Part1,(Cl. 7.3.1, 7.3.3,7.3.4) IS 16227-Part 2,(Cl. 7.3.1) IS 16227-Part 4,(Cl. 7.3.1, 7.3.3, 7.3.4)	3 kV
		Over – Voltage Inter-Turn	IS 2705 (part1),(Cl. 9.5) IS/IEC: 60044-1,(Cl. 8.4) IEC61869-1 IEC61869-2,(Cl. 7.3.204, 5.3.201) IEC61869-4,(Cl. 7.3.204) IS 16227-Part 1 IS 16227-Part2,(Cl. 7.3.204, 5.3.201) IS 16227-Part4, (Cl. 7.3.204)	2400A
		Short time current	IS 2705 (part1),(Cl. 9.6) IS/IEC: 60044-1,(Cl. 7.1) IEC61869-1 IEC61869-2,(Cl. 7.2.201) IEC61869-4,(Cl. 7.2.201) IS 16227-Part 1 IS 16227-Part2,(Cl.	Up to 5kA rms from 1-50 cycle (1sec)  Up to12.5kA peak



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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		-Instrument Security Factor	7.2.201) IS 16227-Part4,(Cl. 7.2.201)  IS 2705- Part 2 (Cl. 7.1.2) IS/IEC: 60044-1,(Cl. 11.6) IEC61869-1 IEC61869-2,(Cl. 7.5.2) IEC61869-4,(Cl. 7.5.2) IS 16227-Part 1 IS 16227-Part2,(Cl. 7.5.2) IS 16227-Part4,(Cl. 7.5.2)	Up to 10
2.	<b>Current Transformers (Protection ) (5P,10P,15P)</b>	Accuracy limit factor	IS 2705Part 3(Cl. 7.1.2 & 7.2.2 IS/IEC: 60044-1(Cl. 13.1) IEC61869-1 IEC61869-2(Cl. 3.4.208 ) IS 16227-Part 1 IS 16227-Part2(Cl. 3.4.208)	Up to 30 15%
		Composite Error	IS 2705Part 3(Cl. 2.2, 7.1.2,7.2.2) IS/IEC: 60044-1(Cl. 12.5, 12.6) IEC61869-1 IEC61869-2(Cl. 7.2.6.203, 7.3.5.203 ) IS 16227-Part 1 IS 16227-Part 2(Cl. 7.2.6.203, 7.3.5.203 )	Up to 15%
		knee voltage	IS 2705Part 4(Cl. 6.1) IS/IEC: 60044-1(Cl. 14.4.1) IEC61869-1	230V

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC61869-2(Cl. 7.3.203) IEC61869-4(Cl. 7.3.203) IS 16227-Part 1 IS 16227-Part2(Cl. 7.3.203) IS 16227-Part4: (Cl. 7.3.203)	
3.	<b>Voltage transformer - Metering</b>  <b>6.6kV to 132kV Class :0.2 to 1</b>	Error According to the requirement of appropriate accuracy class  terminal marking and polarity	IS 3156 (Part-I) Cl. 9.1.1(e), 9.1.2(e) IS 3156 (Part-II) Cl. 8.1.1 & 8.1.2 IS 3156 (Part-IV) Cl. 9.3.2& 9.2.5 IEC: 60044-2Cl. 12.2 IS 16227-1Cl. 7.2.6 IS 16227-3: Cl. 7.2.6 & 7.3.5 IS 16227-4 Cl. 7.2.6 & 7.3.5 IS 16227-5 Cl. 7.2.6 & 7.3.5 IEC 61869-1Cl. 7.2.6 IEC 61869-3 Cl.7.2.6, 7.3.5 IEC61869-4 Cl. 7.2.6, 7.3.5 IEC61869-5 Cl. 7.2.6, 7.3.5  IS 3156 (Part-I) Cl. 8, 9.1.2(a),9.2 IS 3156 (Part-II) Cl. 7 IS 3156 (Part-IV) Cl. 8 IEC: 60044-2Cl. 9.1 IS 16227-1Cl. 7.3.6 IS 16227-3 Cl. 6.13.301 IS 16227-4Cl. 6.13.401 IS 16227-5 Cl. 6.13.501 IEC 61869-1Cl. 7.3.6	6.6 kV to 132 kV  Qualitative

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC 61869-3, Cl. 6.13.301 IEC61869-4Cl.6.13.401 IEC61869-5Cl. 6.13.501	
<b>IV.</b>	<b>DOMESTIC ELECTRICAL APPLIANCES</b>			
<b>1.</b>	<b>Automatic electrical controls for household and similar use</b>	Rating Guidance on the use of electronics disconnection Classification Normal operation	EN 60730-1(Cl. 5,6,25,28) EN 60730-2-7 (Cl. 5, 6,25, 28)	Qualitative
		Information	EN 60730-1(Cl. 7) EN 60730-2-7 (Cl. 7)	Qualitative
		Protection against electric shock  Components	EN 60730-1(Cl. 8) EN 60730-2-7  EN 60730-1(Cl. 24) EN 60730-2-7	Qualitative  Up to 240V Up to 196 N Fingers :80 mm, Pin: 15mm DCV-up to 1000V ACV-up to 750V DCI-up to 20A ACI- up to 20A up to 20MΩ up to 200 kHz 0-1000sec.
		Provision for protective earthing	EN 60730-1(Cl. 9) EN 60730-2-7	Up to 200 mm Up to 240V Up to 100A
		Terminals and terminations	EN 60730-1(Cl.10) EN 60730-2-7	0.0-196N Up to 200 mm Torque:2CNm – 10Nm Stop watch 0-1000sec.

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Constructional requirements	EN 60730-1(Cl.11) EN 60730-2-7	Force:0.0-196N Up to 240V A.C. Voltage Up to 10 kV 0-500VDC/2000 MΩ 1000VDC/2000MΩ Fingers :80 mm, 15mm up to 100kg Stop watch 0-1000sec.
		Electric strength and insulation resistance	EN 60730-1(Cl. 13) EN 60730-2-7	Up to 240V ACV Up to: 10kV 0-500VDC/2000 MΩ 1000VDC/2000MΩ Stop watch:0-1000sec.
		Heating	EN 60730-1 (Cl. 14) EN 60730-2-7	Temp:-40 to 150 °C Up to 240V
		Manufacturing deviation and drift	EN 60730-1(Cl.15) EN 60730-2-7	Up to 240V
		-Endurance -Abnormal operation	EN 60730-1(Cl.17, 27) EN 60730-2-7	Up to 240V ACV Up to: 10kV Temp:-40 to 150 °C
		Mechanical strength	EN 60730-1(Cl. 18) EN 60730-2-7	0.22Nm-1Nm Up to 200 mm Force:0.0-196N Stop watch:0-1000sec.
		Threaded parts and connections Contacts gaps	EN 60730-1(Cl. 19) EN 60730-2-7	Torque:2CNm – 10Nm
		Creepage distances, clearances and distances through solid insulation	EN 60730-1(Cl. 20) EN 60730-2-7	Up to 200 mm Up to 196 N Fingers :80 mm, Pin: 15mm

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Resistance to heat, fire and tracking Resistance to corrosion -Environmental stress Moisture and dust resistance	EN 60730-1 (Cl.21,22,16,12) EN 60730-2-7	%RH:20 to 95% 40°C to +150°C 20N Up to 1000 °C Pin 1mm

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**ELECTRICAL TESTING**

AT SITE				
I.	<b>ELECTRICAL INDICATING &amp; RECORDING INSTRUMENTS</b>			
1.	<b>Electrical and Electronic (Static) Energy meters</b>	Limits of Errors (Accuracy Requirements)	IS 15707 Cl. 12.3.2	Single Phase: (0.12W to 38.4kW) Three Phase: (0.36W to 115.2 kW)
		Limits of Errors	IS:13779 (Cl. 11.1) IS 14697 (Cl. 11.1) IEC 62052-11 IEC 62053-21 (Cl. 8.1) IEC 62053-22(Cl. 8.1) IEC 62053-23 (Cl. 8.1) IEC 62053-24(Cl. 8.2) CBIP 304(Cl. 5.6.8) CBIP-325(Cl. 5.6.8) IS15884(Cl. 4.6.1) IS16444 (Cl. 6.12) CBIP-88 (Cl. 5.6.8)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar
		Meter Constant	IS:13779 (Cl. 12.15) IS 14697 (Cl. 12.14) IEC 62052-11 IEC 62053-21 (Cl. 8.4) IEC 62053-22(Cl. 8.4) IEC 62053-23 (Cl. 8.4) IEC 62053-24 (Cl. 8.5) CBIP 304 (Cl. 5.6.6) CBIP-325 (Cl. 5.6.6) IS15884 (Cl. 5.6.5)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Starting Conditions	IS16444 (Cl. 6.12) CBIP-88 (Cl. 5.6.6)  IS:13779 (Cl. 12.14) IS 14697 (Cl. 12.13) IEC 62052-11 IEC 62053-21 (Cl. 8.3) IEC 62053-22 (Cl. 8.3) IEC 62053-23 (Cl. 8.3) IEC 62053-24(Cl. 8.4) CBIP 304(Cl. 5.6.5) CBIP-325 (Cl. 5.6.5) IS15884(Cl. 5.6.4) IS16444: (Cl. 6.12)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar
		Frequency variation Voltage variation	IS:13779 (Cl. 12.11) IS 14697 (Cl. 12.10) IEC 62052-11 IEC 62053-21 (Cl. 8.2) IEC 62053-22 (Cl. 8.2) IEC 62053-23 (Cl. 8.2) IEC 62053-24(Cl. 8.3) CBIP 304 (Cl. 5.6.2) CBIP-325(Cl. 5.6.2) IS15884(Cl. 4.6.2) IS16444 (Cl. 6.12)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar
		No load Condition	IS:13779 (Cl. 12.13) IS 14697 (Cl. 12.12) IEC 62052-11 IEC 62053-21 (Cl. 8.3) IEC 62053-22(Cl. 8.3) IEC 62053-23 (Cl. 8.3) IEC 62053-24(Cl. 8.4)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Start Up Test of energy meters	CBIP 304 (Cl. 5.6.4) CBIP-325 (Cl. 5.6.4) IS15884(Cl. 5.6.3) IS16444 (Cl. 6.12)  IS:13779 (Cl. 11.4.1) IS 14697(Cl. 11.4.1) IEC 62052-11 IEC 62053-21 (Cl. 8.3.1) IEC 62053-22 (Cl. 8.3.1) IEC 62053-23 (Cl. 8.3.1) IEC 62053-24 (Cl. 8.4.2) CBIP 304: (Cl. 4.6.9.1) CBIP-325: (Cl. 4.6.6.1) IS15884 (Cl. 4.6.4.1) IS16444: (Cl. 6.12)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar
		power consumption / power loss	IS:13779 (Cl. 12.7.1) IS 14697 (Cl. 12.7.1) IEC 62052-11 IEC 62053-21 (Cl. 7.1) IEC 62053-22(Cl. 7.1) IEC 62053-23 (Cl. 7.1) IEC 62053-24(Cl. 7.2) CBIP 304: (Cl. 5.4.1) CBIP-325: (Cl. 5.4.1) IS15884(Cl. 5.4.1) IS16444: (Cl. 6.10.1)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW 0.12Var to 115.2 kVar
		Repeatability of errors	IS:13779 (Cl. 12.17) IS 14697(Cl. 12.16) CBIP 304: (Cl. 5.6.9) CBIP-325:(Cl. 5.6.9) IS15884(Cl. 5.6.7) IS16444: (Cl. 6.12)	40 V to 320 V 1 mA to 120 A Freq: 45Hz to 65 Hz P.F: +1 to -1 Active / Reactive:- 0.12W to 115.2 kW



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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		IR test	IS:13779 Cl. 12.7.6.4 IS 14697Cl. 12.7.6.4 CBIP 304 (Cl. 5.4.6.4) CBIP-325(Cl. 5.4.6.4) IS15884(Cl. 5.4.6.4) IS16444 (Cl. 6.10.6)	0.12Var to 115.2 kVar  Resistance: Up to 2000MΩ Voltage: 500VDC
		Functional requirements	CEA regulations (Part II)	Active / Reactive:- 0.12W to 115.2 kW & 0.12Var to 115.2 kVar ACV: Up to 320V ACI: Up to 120A Freq: 45 Hz to 65 Hz PF : +1 to -1
<b>II.</b>	<b>INDUCTORS &amp; TRANSFORMERS</b>			
<b>1.</b>	<b>Current Transformers-Metering (Class 0.2S to 1)</b>	Terminal Marking and Polarity  -Determination of Error According to requirement of Appropriate Accuracy Class	IS 2705 (Part-I) Cl. 9.2 IS 2705 Part 2 (Cl. 6) IS/IEC: 60044-1Cl. 8.1 IS 16227-1,Cl.7.3.6 IS 16227-2 Cl.6.13.201 IEC 61869-1 Cl. 7.3.6 IEC 61869-2 Cl.: 6.13.201  IS 2705 (part2)(Cl. 7.1.1, 7.2.1 ) IS 2705 (part3) (Cl. 7.1.1 ) IS/IEC 60044-1Cl. .11.2 IS 16227-Part 1 (Cl. 7.2.6) IS 16227-2 Cl.7.2.6 & 7.3.5 IEC 61869-1Cl. 7.2.6 IEC 61869-2	Qualitative             5 A to 2000 A

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	Voltage transformer - Metering 6.6kV to 132kV (Class :0.2 to 1)	Terminal marking and polarity  Error According to requirement of Appropriate accuracy class	Cl. 7.2.6 & 7.3.5 IS 3156 (Part-I) Cl. 8, 9.1.2(a),9.2 IS 3156(Part-II) Cl. 7 IEC: 60044-2 Cl. 9.1 IS 16227-1Cl. 7.3.6 IS 16227-3 Cl.6.13.301 IS 16227-4 Cl. 6.13.401 IS 16227-5 Cl. 6.13.501 IEC 61869-1 Cl. 7.3.6 IEC 61869-3 Cl. 6.13.301 IEC61869-4 Cl. 6.13.401 IEC61869-5 Cl. 6.13.501  IS 3156 (Part-I) Cl. 9.1.1(e),9.1.2(e) IS 3156 (Part-II) Cl. 5,6,8 IEC 60044-2 Cl. 12.2 IS 16227-3 Cl.7.2.6 & 7.3.5 IS 16227-1Cl. 7.2.6 IS 16227-4 Cl. 7.2.6 & 7.3.5 IS 16227-5 Cl.7.2.6 & 7.3.5 IEC 61869-1Cl. 7.2.6 IEC 61869-3 Cl. 7.2.6 & 7.3.5 IEC61869-4 Cl. 7.2.6, 7.3.5 IEC61869-5 Cl. 7.2.6, 7.3.5	Qualitative  6.6 kV to 132 kV

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**ELECTRONICS TESTING**

I.	<b>INFORMATION TECHNOLOGY EQUIPMENT</b>			
1.	<b>Information technology equipment</b>	Power interface	IEC 60950-1Cl. 1.6 EN 60950-1Cl. 1.6 IS 13252 (Part1) Cl. 1.6 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 240V Up to 120A Up to 38.4kW AC and Up to 1.5 kW DC
		Marking and instruction (Durability)	IEC 60950-1Cl. 1.7 EN 60950-1Cl. 1.7 IS 13252 (Part1) Cl. 1.7 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative
		Access to energized parts Access to ELV wiring Access to hazardous voltage circuit wiring Energy hazards Manual controls Discharge of capacitors in equipment	IEC 60950-1 EN 60950-1 IS 13252 (Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a> Cl. 2.1.1.1, Cl. 2.1.1.3, Cl. 2.1.1.4, Cl. 2.1.1.5, Cl. 2.1.1.6, Cl. 2.1.1.7	Qualitative
		Energy hazard	IEC60950-1Cl. 2.1.1.8 EN60950-1Cl. 2.1.1.8 IS 13252 (Part1) Cl. 2.1.1.8 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 1000 V Up to 750 V DC Current- Up to 20 A AC Current -Up to 20 A Resistance -40 MΩ

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		Protection in service access areas Protection in restricted access locations	IEC60950-1 EN60950-1 IS 13252 (Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a> Cl. 2.1.2, Cl. 2.1.3	Qualitative
		SELV circuit Voltages under normal conditions Voltages under fault conditions TNV circuit	IEC60950-1 EN60950-1 IS13252(Part 1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a> Cl. 2.2, Cl. 2.2.2 Cl. 2.2.3, Cl. 2.3.1	DC Voltage-Up to 1000 V AC Voltage- Up to 750V DC Current- Up to 20A AC Current -Up to 20A Resistance - Up to 40MΩ
		Protection by basic insulation	IEC 60950-1 Cl. 2.3.2.2 EN 60950-1 Cl. 2.3.2.2 IS 13252 (Part1) Cl. 2.3.2.2 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 10 kV
		Protection by earthing	IEC 60950-1 Cl. 2.3.2.3 EN 60950-1 Cl. 2.3.2.3 IS 13252 (Part1) Cl. 2.3.2.3 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	1.25 VA to 40 VA
		Protection by other construction	IEC 60950-1 Cl. 2.3.2.4 EN 60950-1 Cl. 2.3.2.4 IS 13252 (Part1) Cl. 2.3.2.4 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 10 kV
		Connection of TNV circuits to other circuits	IEC 60950-1 Cl. 2.3.4 EN 60950-1 Cl. 2.3.4 IS 13252 (Part 1) Cl. 2.3.4	Up to 240 V

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			<a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 10 kV
		Operating voltages generated externally	IEC 60950-1 Cl. 2.3.5 EN 60950-1 Cl. 2.3.5 IS 13252 (Part1) Cl. 2.3.5 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 240 V at 50/60 Hz
		Limit values	IEC60950-1(Annexure D) Cl. 2.4.2 EN60950-1(Annexure D) Cl. 2.4.2 IS13252(Part1) (Annexure D) Cl. 2.4.2 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 2 mA
		Connection of limited current circuits to other circuits	IEC60950-1(Annexure D) Cl. 2.4.3 EN60950-1(Annexure D) Cl. 2.4.3 IS13252(Part1) (Annexure D) Cl. 2.4.3 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 2 mA  Up to 10 kV
		Protective earthing	IEC 60950-1 Cl. 2.6.1 EN 60950-1 Cl. 2.6.1 IS 13252 (Part1) Cl. 2.6.1 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 50 V, 100 A, 0.5 Ω
		Size of protective earthing conductors	IEC 60950-1 Cl. 2.6.3.2 EN 60950-1 Cl. 2.6.3.2 IS 13252 (Part1) Cl. 2.6.3.2 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm
		Size of protective bonding conductor	IEC 60950-1 Cl. 2.6.3.3 EN 60950-1 Cl. 2.6.3.3 IS 13252 (Part1): Cl. 2.6.3.3 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm

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		Resistance of earthing conductors and their terminations	IEC 60950-1Cl. 2.6.3.4 EN 60950-1Cl. 2.6.3.4 IS 13252 (Part1) Cl. 2.6.3.4 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 50V, 100A, 0.5Ω
		Protective earthing and bonding terminals	IEC 60950-1Cl. 2.6.4.2 EN 60950-1Cl. 2.6.4.2 IS 13252 (Part1) Cl. 2.6.4.2 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm Vernier Caliper
		Short-circuit backup protection	IEC 60950-1Cl. 2.7.3 EN 60950-1Cl. 2.7.3 IS 13252 (Part1) Cl. 2.7.3 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 10 kV
		Protection requirements	IEC 60950-1Cl. 2.8.2 EN 60950-1Cl. 2.8.2 IS 13252 (Part1) Cl. 2.8.2 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative
		Inadvertent reactivation	IEC60950-1Cl. 2.8.3 EN60950-1Cl. 2.8.3 IS13252(Part1) Cl. 2.8.3 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative
		Moving parts	IEC 60950-1Cl. 2.8.5 EN 60950-1Cl. 2.8.5 IS 13252 (Part1) Cl. 2.8.5 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 100000 cycles
		Switches and relays Contacts gaps Overload	IEC60950-1 EN60950-1 IS 13252 (Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm Up to 10 kV Up to 999900 cycles,

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		Endurance	Cl. 2.8.7, Cl. 2.8.7.1 Cl. 2.8.7.2, Cl. 2.8.7.3 Cl. 2.8.7.4	flexible timer
		Electric strength		
		Properties of insulating materials	IEC60950-1 EN60950-1 IS 13252 (Part1)	20% to 95% humidity (-) 40 °C to 150 °C
		Humidity conditioning	<a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a> Cl. 2.9.1, Cl. 2.9.2	
		Reduced values for functional insulation	IEC 60950-1 Cl. 2.10.1.3 EN 60950-1 Cl. 2.10.1.3 IS 13252 (Part1) Cl. 2.10.1.3 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm  Up to 10 kV
		Insulation in circuits generating starting pulses	IEC 60950-1 Cl. 2.10.1.7 EN 60950-1 Cl. 2.10.1.7 IS 13252 (Part1) Cl. 2.10.1.7 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 200 mm  Up to 10 kV
		Determination of working voltage	IEC60950-1 EN60950-1 IS 13252 (Part1) Cl. 2.10.2	Up to 1000 V
		General	IEC60950-1 EN60950-1 IS 13252 (Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>  Cl. 2.10.3.1	Qualitative
		Clearances in primary circuits	Cl. 2.10.3.3	Up to 200 mm

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		Clearance in secondary circuits	Cl. 2.10.3.4	Up to 200 mm
		Clearances in circuits having starting pulses	Cl. 2.10.3.5	Up to 200 mm
		Transients from an a.c. mains supply	Cl. 2.10.3.6	Up to 10 kV
		Transients from a d.c. mains supply	Cl. 2.10.3.7	Up to 10 kV
		Transients from telecommunication networks and cable distribution systems	Cl. 2.10.3.8	Up to 6 kV 0.5kV- 12kV (surge) 1.2 μs 50 μs
		transient voltages	Cl. 2.10.3.9	Up to 10 kV 1.2 μs /50 μs Up to 6kV
		Creepage distances	Cl. 2.10.4.3	10 μs /700 μs Up to 200 mm
		Distances through insulation	Cl. 2.10.5.2	Up to 200 mm
		Insulating compound as solid insulation	Cl. 2.10.5.3	Up to 200 mm
		Semiconductor devices	IEC60950-1 EN60950-1 IS 13252 (Part1)	Up to 10 kV
		Cemented joints	Cl. 2.10.5.4, Cl. 2.10.5.5 Cl. 2.10.5.6, Cl. 2.10.5.7	Up to 200 mm



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		Thin sheet material - General	Cl. 2.10.5.8, Cl. 2.10.5.9 Cl. 2.10.5.10	Qualitative
		Separable thin sheet material		Up to 10 kV
		Non-Separable thin sheet material		Up to 10 kV
		Thin sheet material - standard test procedure		Up to 10 kV
		Thin sheet material - alternative test procedure		Up to 10 kV
		Insulation in wound components	IEC 60950-1 Cl. 2.10.5.11 EN 60950-1 Cl. 2.10.5.11 IS 13252 (Part1) Cl. 2.10.5.11 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 10 kV
		Wire in wound components	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 10 kV
		Wire with solvent-based enamel in wound components	Cl. 2.10.5.12, Cl. 2.10.5.13	
		Uncoated printed boards	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm Up to 10 kV
		Insulation between conductors on different surfaces of a printed board	Cl. 2.10.6.1, Cl. 2.10.6.4	
		Thermal conditioning	IEC60950-1 Cl. 2.10.8.2 EN60950-1 Cl. 2.10.8.2 IS13252(Part1) Cl. 2.10.8.2 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	20 to 95% humidity (-) 40 °C to 150 °C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Electric strength	IEC 60950-1 Cl. 2.10.8.3 EN 60950-1 Cl. 2.10.8.3 IS 13252 (Part1): Cl. 2.10.8.3 <a href="#">IEC 62368-1, EN 62368-1</a>	Up to 10 kV
		Thermal cycling	IEC 60950-1 Cl. 2.10.9 EN 60950-1 Cl. 2.10.9 IS 13252 (Part1): Cl. 2.10.9 <a href="#">IEC 62368-1, EN 62368-1</a>	20 % to 98 % RH (-) 40 °C to 150 °C
		Test for Pollution Degree 1 environment and for insulating compound Tests for semiconductor devices and for cemented joints Enclosed and sealed parts	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1, EN 62368-1</a> Cl. 2.10.10, Cl. 2.10.11 Cl. 2.10.12	Up to 10 kV
		Current rating and over current protection	IEC60950-1 EN60950-1 IS13252(Part1) Cl. 3.1.1, Cl. 3.1.4	(-) 40 °C to 150 °C
		Insulation of conductors	Cl. 3.1.5, Cl. 3.1.9 Cl. 3.2.2, Cl. 3.2.4 Cl. 3.2.5, Cl. 3.2.8, Cl. 3.2.9	Up to 10 kV
		Beads and ceramic insulators	Cl. 3.3.8, Cl. 3.3.2 Cl. 3.3.4, Cl. 3.3.5 Cl. 3.3.6, Cl. 3.3.8	10 N Up to 200 mm
		Termination of conductors		10 N
		Multiple supply connections		Qualitative
		Appliance inlets		Qualitative

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Power supply cords		Up to 25 mm
		Supply wiring space		Up to 200 mm
		Stranded Wire		Up to 200 mm
		Connection of non-detachable power supply cords		(-) 40 °C to 150 °C
		Conductor sizes to be connected		Up to 200 mm Up to 25 mm
		Wiring terminal sizes		Up to 200 mm
		Wiring terminal design		Up to 200 mm
		Stranded wire		Up to 200 mm
		Stability	IEC 60950-1 Cl. 4.1 EN 60950-1 Cl. 4.1 IS 13252 (Part1) Cl. 4.1 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to equipment of mass 7kg to 24 kg 10° angle Inclined plane setup
		Steady force 10 N	IEC60950-1 EN60950-1	Qualitative
		Steady force 30 N	IS13252(Part1) <a href="#">IEC 62368-1</a>	
		Steady force, 250 N	<a href="#">EN 62368-1</a> Cl. 4.2.2, Cl. 4.2.3 Cl. 4.2.4	
		Impact test	IEC 60950-1 Cl. 4.2.5 EN 60950-1 Cl. 4.2.5 IS13252 (Part1) Cl. 4.2.5 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative

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		Drop test	IEC 60950-1Cl. 4.2.6 EN 60950-1Cl. 4.2.6 IS 13252 (Part1) Cl. 4.2.6 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative Height Up to 1m
		Stress relief	IEC60950-1Cl. 4.2.7 EN60950-1Cl. 4.2.7 IS13252 (Part1) Cl. 4.2.7 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	20 to 95% humidity (-) 40 °C to 150 °C
		Wall or ceiling	IEC 60950-1Cl. 4.2.10 EN 60950-1Cl. 4.2.10 IS 13252 (Part1) Cl. 4.2.10 <a href="#">IEC 62368-1, EN 62368-1</a>	50 N ± 3 N
		Design and construction	IEC 60950-1Cl.4.3 (except Cl. 4.3.12, 4.3.13) EN 60950-1Cl.4.3 (except Cl. 4.3.12, 4.3.13) IS 13252 (Part1) Cl. 4.3 (except Cl. 4.3.12, 4.3.13) <a href="#">IEC 62368-1, EN 62368-1</a>	Qualitative
		Handles and manual controls	IEC 60950-1Cl. 4.3.2 EN 60950-1Cl. 4.3.2 IS 13252 (Part1): Cl. 4.3.2 <a href="#">IEC 62368-1, EN 62368-1</a>	Up to 5 kg
		Batteries	IEC60950-1Cl. 4.3.8 EN60950-1Cl. 4.3.8 IS13252(Part1) Cl. 4.3.8 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative
		Dust, powders, liquids and gases	IEC 60950-1Cl. 4.3.10 EN 60950-1Cl. 4.3.10 IS 13252 (Part1) Cl. 4.3.10 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Up to 200 mm

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		Protection in operator access areas	IEC60950-1Cl. 4.4.2 EN60950-1Cl. 4.4.2 IS13252(Part1) Cl. 4.4.2 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative
		Temperature tests Temperature limits for materials Touch temperature limits Resistance to abnormal heat Adhesives for constructional purposes	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a> Cl. 4.5.2, Cl. 4.5.3 Cl. 4.5.4, Cl. 4.5.5 Cl. 4.6.5	20 % to 98 % RH (-) 40 °C to 150 °C Up to 1000 °C  Qualitative
		Materials (Resistance to fire)	IEC 60950-1Cl. 4.7.3 EN 60950-1Cl. 4.7.3 IS 13252 (Part1) Cl. 4.7.3 <a href="#">IEC 62368-1, EN 62368-1</a>	Up to 960°C and Up to 700°C
		Electrical requirements and simulated abnormal conditions Touch current and protective conductor current	IEC 60950-1Cl. 5.1 EN 60950-1Cl. 5.1 IS 13252 (Part1) Cl. 5.1 <a href="#">IEC 62368-1, EN 62368-1</a>	0.25 mA to 3.5 mA 2 mA 500 mA 15 mA
		Electric strength	IEC 60950-1Cl. 5.2 EN 60950-1Cl. 5.2 IS 13252 (Part1) Cl. 5.2 <a href="#">IEC 62368-1, EN 62368-1</a>	Up to 10 kV
		Abnormal operating and fault conditions Transformers	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1</a>	Up to 240 V Up to 200 mm

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		Functional insulation  Audio amplifiers in information technology equipment During the tests After the tests	<a href="#">EN 62368-1</a> Cl. 5.3, Cl. 5.3.3 Cl. 5.3.4, Cl. 5.3.6 Cl. 5.3.9.1, Cl. 5.3.9.2	(-) 40 °C to 150 °C & ± 0.2°C  Up to 10 kV
		Separation of the telecommunication network from earth	IEC 60950-1 Cl. 6.1.2, 6.1.2.1 EN 60950-1 Cl. 6.1.2, 6.1.2.1 IS 13252 (Part1): Cl. 6.1.2, 6.1.2.1 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 10 kV  Up to 200 mm
		Separation requirements	IEC 60950-1 Cl. 6.2.1 EN 60950-1 Cl. 6.2.1 IS 13252 (Part1): Cl. 6.2.1 <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a>	Qualitative  Up to 10 kV  Up to 200 mm
		Impulse	IEC 60950-1 Cl. 6.2.2.1 EN 60950-1 Cl. 6.2.2.1 IS 13252 (Part1): Cl. 6.2.2.1 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 6kV 10 µs / 700 µs
		Steady-state	IEC 60950-1 Cl. 6.2.2.2 EN 60950-1 Cl. 6.2.2.2 IS 13252 (Part1): Cl. 6.2.2.2 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 10 kV
		Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	IEC60950-1 EN60950-1 IS13252(Part1) <a href="#">IEC 62368-1</a> <a href="#">EN 62368-1</a> Cl. 7.2, Cl. 7.3	Up to 240V  Qualitative 44.04 mm long  Up to 10 kV

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		Protection of equipment users from over voltages on the cable distribution system		Up to 200 mm
		Voltage Surge	IEC 60950-1 Cl. 7.4.2 EN 60950-1 Cl. 7.4.2 IS 13252 (Part1) Cl. 7.4.2 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 10 kV
		Impulse test	IEC 60950-1 Cl. 7.4.3 EN 60950-1 Cl. 7.4.3 IS 13252 (Part1): Cl. 7.4.3 <a href="#">IEC 62368-1</a> , <a href="#">EN 62368-1</a>	Up to 6kV 10 µs / 700 µs
<b>II.</b>	<b>SAFETY TEST FACILITY</b>			
<b>1.</b>	<b>Electrical equipment for measurement, control, and laboratory use</b>		IEC61010-1 EN 61010-1	
		Marking	Cl. 5.1	Qualitative
		Identification	Cl. 5.1.2	Qualitative
		Mains supply	Cl. 5.1.3	Qualitative
		Fuses	Cl. 5.1.4	Qualitative
		Terminals, connections and operating devices	Cl. 5.1.5	Qualitative
		Switches and circuit breakers	Cl. 5.1.6	Qualitative
	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION	5.1.7	Qualitative	

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		Field-wiring TERMINAL boxes	Cl. 5.1.8 (refer 10.3)	Qualitative
		Warning marking	IEC 61010-1 Cl. 5.2 EN 61010-1 Cl. 5.2	Up to 200 mm
		Durability of marking	IEC61010-1 Cl. 5.3 EN 61010-1 Cl. 5.3	Qualitative
		Documentation	IEC 61010-1 Cl. 5.4 EN 61010-1 Cl. 5.4	Qualitative
		Protection against electric shock	IEC61010-1 EN 61010-1	Qualitative
		General	Cl. 6, Cl. 6.1, Cl. 6.2 Cl. 6.3, Cl. 6.4	100 mm long, 4 mm diameter test pin
		Determination of ACCESSIBLE parts		0.5mA to 2mA
		Limit values for ACCESSIBLE parts		Up to 200 mm
		Primary means of protection		DC Voltage- 200mV, 2V, 20V, 200V, 1000V
				AC Voltage- (50Hz, Sine wave) 200mV, 2V, 20V, 200V, 750V
				DC Current- 20mA, 200mA, 10A
				AC Current (50Hz, Sine wave)- 20mA, 200mA, 10A
				Resistance -200Ω, 2k Ω, 20kΩ, 200 kΩ, 2MΩ, 20MΩ



Laboratory

Yadav Measurements Private Limited, Plot No. 373-375, RIICO  
Bhamashah Industrial Area, Kaladwas, Udaipur, Rajasthan

Accreditation Standard

ISO/IEC 17025: 2005

Certificate Number

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Validity

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Additional means of Protection in case of SINGLE FAULT CONDITION	IEC61010-1 Cl. 6.5 EN 61010-1 Cl. 6.5	Torque Screw Driver 2cNm-30 cNm 40cNm-300 cNm 4Nm-10Nm  DC Voltage- 200mV, 2V, 20V, 200V, 1000V  AC Voltage- (50Hz, Sine wave) 200mV, 2V, 20V, 200V, 750V  DC Current- 20mA, 200mA, 10A  AC Current (50Hz, Sine wave)- 20mA, 200mA, 10A  Resistance -200Ω, 2kΩ, 20kΩ, 200 kΩ, 2MΩ, 20MΩ
		Connections to external circuits  Insulation requirements	IEC 61010-1 EN 61010-1 (Cl. 6.6)  Cl. 6.7	Up to 10 kV  Qualitative  DC Voltage- 200mV, 2V, 20V, 200V, 1000V AC Voltage- (50Hz, Sine wave) 200mV, 2V, 20V, 200V, 750V DC Current- 20mA, 200mA, 10A AC Current (50Hz, Sine

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
				wave)- 20mA, 200mA, 10A Resistance -200Ω, 2kΩ, 20kΩ, 200 kΩ, 2MΩ, 20MΩ  Up to 200 mm
		Procedure for voltage  Constructional requirements for protection against electric shock  Connection to MAINS supply source and connections between parts of equipment Disconnection from supply source	IEC61010-1 EN 61010-1  Cl. 6.8  Cl. 6.9 Cl. 6.10 Cl. 6.11	Up to 10 kV  (-) 40 °C to 150 °C 20 % to 95 % humidity  Up to 200 mm  2cNm-30 cNm 40cNm-300 cNm 4Nm-10Nm  0.01N-196N
		Protection Against Mechanical Hazards	IEC61010-1 Cl. 7 EN 61010-1 Cl. 7	0.01N-196N  2cNm-30 cNm 40cNm-300 cNm 4Nm-10Nm  Up to 200 mm  250 N ± 10 N 10°angle Inclined plane setup
		Resistance to mechanical stresses	IEC 61010-1 Cl. 8 EN 61010-1 Cl. 8	30 N hard rod 500g±25g
		Protection against the	IEC 61010-1 Cl. 9	Up to 960 °C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		spread of fire	EN 61010-1 Cl. 9	Up to 700 °C
		Equipment Temperature Limits and Resistance to Heat	IEC 61010-1 Cl. 10 EN 61010-1 Cl. 10	38 °C to 150 °C 20 % to 98 % RH (-) 40 °C to 150 °C 20N
		PROTECTION BY INTERLOCKS	IEC 61010-1 Cl. 15 EN 61010-1 Cl. 15	setup 10000 cycles
		HAZARDS resulting from application	IEC 61010-1 Cl. 16 EN 61010-1 Cl. 16	Qualitative
		RISK assessment	IEC 61010-1: Cl. 17 EN 61010-1 Cl. 17	Qualitative
<b>III.</b>	<b>MEDICAL ELECTRICAL EQUIPMENT</b>			
<b>1.</b>	<b>Medical electrical equipment and medical electrical systems</b>	Effect of Voltage Dips and Short Interruptions	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-11 EN 61000-4-11	Single phase: 2A per phase Three phase: 2A per phase Frequency 50Hz Programmable from 0% to 100% of supply voltage Frequency 50Hz
		Power Frequency Magnetic Field	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-8 EN 61000-4-8	Up to 400 AT
		Electrical Fast Transient Burst	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-4 EN 61000-4-4	0.5 kV to 7.0 kV 5 ns 50 ns

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**Validity**                              **14.10.2017 to 13.10.2019**

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Immunity to Electrostatic Discharges	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-2, EN 61000-4-2	Contact Up to 8 kV Air Up to 30 kV
		Surge Immunity	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8), IEC 61000-4-5	0.5 kV to 12 kV Front/fall time: 1.2/50 $\mu$ s (open ckt) 8 /20 $\mu$ s (short ckt)
		Test of Immunity to Conducted Disturbances, Induced by Radio Frequency Fields	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-6, EN 61000-4-6	For Mains power 150 kHz to 80 MHz 1Vrms to 10 Vrms For telecom port 150 kHz to 80 MHz 1Vrms to 10 Vrms
		Immunity to Electromagnetic HF Field using Anechoic Chamber	IEC60601-1-2(CI.6.2) IEC60601-1-2(CI.8) EN 60601-1-2(CI.6.2) EN 60601-1-2(CI.8) IEC 61000-4-3 EN 61000-4-3	Frequency Range : 80 MHz to 3 GHz Field strength :- Up to 30V/m
		Radio Interference Measurement (CE + RE)	IEC60601-1-2(CI.6.1) IEC60601-1-2(CI.7) EN 60601-1-2(CI.6.1) EN 60601-1-2(CI.7) CISPR 11 CISPR 14-1 CISPR 22 EN 55011 EN 55022 EN55014-1	Frequency Range:- Conducted Emission For power line 0.15 MHz to 30 MHz For Telecom line 0.15 MHz to 30 MHz Radiated Emission: Frequency Range:- 30 MHz to 6GHz