Laboratory	**Electrical Testing Laboratory, S1 Division, CG Power and Industrial Solutions Limited, A-3, MIDC, Ambad, Nashik, Maharashtra**
Accreditation Standard	**ISO/IEC 17025: 2005**
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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

ELECTRICAL TESTING

I.	**TRANSMISSION LINE EQUIPMENT AND ACCESSORIES**			
1.	**Capacitor Voltage Transformer Upto 420 kV**	Tightness of liquid- filled capacitor voltage divider	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.7.501	Qualitative
		Power-frequency withstand test and measurement of capacitance, tan δ and partial discharge	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.1, 7.2.501,7.3.2	15 kV to 700 kV Capacitance: 50 pF to 25000 pF Tan delta: 0.0005 to 0.014 2 pC to 500 pC
		Verification of markings	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.6	Qualitative
		Power-frequency withstand tests on the electromagnetic unit	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.1.504	10 kV to 100 kV
		Power frequency - withstand test on low-voltage terminal of the capacitor voltage divider	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.1.503	1 kV to 10 kV

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		Power-frequency voltage withstand tests on secondary terminals	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.4	1 kV to 10 kV
		Ferro-resonance tests	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause:7.3.501	1 kV to 400 kV
		Test for accuracy	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.3.5	Accuracy class of 0.2, 0.5, 1.0, 3P, 6P
		Temperature-rise test	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.2.2	5°C to 80°C
		Chopped impulse voltage withstand test on primary terminals	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1 & IEC 61869-5 Clause: 7.4.1	100 kVp to 1725 kVp
		Lightning impulse voltage test on primary terminals	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.2.3	100 kVp to 1550 kVp

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		Wet Power frequency HV test	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.2.4	(Um<300kV) 15kV to 700kV
		Wet Switching Impulse test		(Um>300kV) 100 kVp to 1550 kVp
		Transient response test	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.2.504	0.1 V to 1000 V
		Short-circuit withstand capability test	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 IEC 61869-5:2011 & IEC 61869-3:2011 Clause: 7.2.502	1 kV to 400 kV
		Tightness test of a liquid-filled electromagnetic unit	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.2.8.501	Qualitative
		Mechanical test	IS 16227-5:2015, IS 9348:1998, IEC 60358:2012 IEC 61869-1:2007 & IEC 61869-5:2011 Clause: 7.4.5	1 kg to 1000 kg
2.	**Inductive Voltage Transformer Upto 420 kV**	Power Frequency Voltage withstand test on primary terminals	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause:7.3.1	15 kV to 700 kV

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		Partial discharge measurement	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.3.2	2 pC to 500 pC
		Power frequency voltage withstand test between sections	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.3.3	1kV to 10 kV
		Power Frequency Voltage withstand test on secondary terminals	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.3.4	1kV to 10 kV
		Tests for accuracy	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.3.5	Accuracy class of 0.2, 0.5, 1.0, 3P, 6P
		Verification of markings	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.3.6	Qualitative
		Enclosure tightness test at ambient temperature	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause 7.3.7	Qualitative
		Temperature-rise test	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.2.2	5°C to 80°C
		Lightning impulse voltage withstand test on primary terminals	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.2.3	100 kVp to 1550 kVp
		Wet Power frequency HV test	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011	(Um<300kV) 15kV to 700kV

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			Clause: 7.2.4	
		Wet Switching Impulse test		(Um>300kV) 100 kVp to 1550 kVp
		Short-circuit withstand capability test	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.2.301	1 kV to 400 kV
		Chopped impulse voltage withstand test on primary terminals	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.4.1	100 kVp to 1725 kVp
		Measurement of capacitance and dielectric dissipation factor	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.4.3	Capacitance: 50 pF to 25000 pF Tan delta: 0.0005 to 0.014
		Mechanical tests	IS 16227-3:2015, IEC 61869-1:2007, IEC 61869-3:2011 Clause: 7.4.5	1 kg to 1000 kg
3.	**Current Transformer Upto 420 kV**	Power Frequency Voltage withstand test on primary terminals	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.1	15 kV to 700 kV
		Partial discharge measurement	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.2	2 pC to 500 pC
		Power frequency voltage withstand test between sections	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.3	1kV to 10 kV
		Power Frequency Voltage withstand test on secondary terminals	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.4	1kV to 10 kV

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		Tests for Accuracy	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.5	Accuracy class of 0.1, 0.1S, 0.2, 0.2S, 0.5, 0.5S, 1.0, 5P, 10P, 15P, PX, PS, TPS, TPX, TPY, TPZ
		Verification of markings	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.6	Qualitative
		Secondary winding resistance (Rct)	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.201	0.05Ω to 50 Ω
		Test for rated knee point e.m.f. (Ek) and exciting current at Ek	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.203	50 V to 7000 V 0.3 mA to 1000 mA
		Inter-turn overvoltage test	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.3.204	1 kVp to 12 kVp 1mA to 6000mA
		Composite error of class P and PR protective current transformers	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.2.6.203	0.3 mA to 1000 mA
		Instrument security factor (FS) of measuring current transformers	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.5.2	0.1 V to 1000 V
		Temperature-rise test	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.2.2	1°C to 100 °C
		Lightning impulse voltage withstand test on primary	IS 16227-2:2016, IEC 61869-1:2007,	100 kVp to 1550 kVp

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		terminals Wet test for outdoor type transformers	IEC 61869-2:2012 Clause: 7.2.3	
		Wet Power frequency HV test	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.2.4	(Um<300kV) 15kV to 700kV
		Wet Switching Impulse test		(Um>300kV) 100 kVp to 1550 kVp
		Chopped impulse voltage withstand test on primary terminals	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.4.1	100 kVp to 1725 kVp
		Capacitance and dielectric dissipation factor	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.4.3	Capacitance: 50 pF to 25000 pF Tan delta: 0.0005 to 0.014
		Mechanical tests	IS 16227-2:2016, IEC 61869-1:2007, IEC 61869-2:2012 Clause: 7.4.5	1 kg to 1000 kg
		Thermal stability test	IEEMA Publication No.22:2005	10 deg. C to 80 deg. C
		Temperature coefficient test	IEEMA Publication No.22:2005	Capacitance: 50 pF to 25000 pF Tan delta: 0.0005 to 0.014
4.	**Condenser Bushing Upto 420 kV**	Dielectric dissipation factor (tanδ) and capacitance at ambient temperature	IS 2099:2003 IEC 60137:2008 Clause: 9.1	Capacitance: 50 pF to 25000 pF Tan delta: 0.0005 to 0.007
		Dry lightning impulse voltage withstand test (BIL)	IS 2099:2003 IEC 60137:2008 Clause: 8.3	100 kVp to 1725 kVp
		Dry or Wet Power frequency voltage withstood test	IS 2099:2003 IEC 60137:2008 Clause: 8.1	15 kV to 700 kV
		Partial discharge quantity	IS 2099:2003 IEC 60137:2008, Clause: 9.4	2 pC to 500 pC

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		Tests of tap insulation	IS 2099:2003 IEC 60137:2008, Clause: 9.5	1kV to 10kv rms 1 pF to 9999 pF 0.0008 to 0.5
		Tightness test on liquid filled and liquid insulated bushings	IS 2099:2003 IEC 60137:2008, Clause: 9.7	Qualitative
		Visual Inspection and dimension check	IEC 60137:2008, Clause: 9.10	Qualitative
		Long duration Power Frequency Voltage Withstand Test (ACLD)	IEC 60137:2008, Clause: 8.2	2 pC to 500 pC
		Dry - Switching Impulse Voltage Withstand test (SIL)	IS 2099:2003 IEC 60137:2008, Clause: 8.4	100 kVp to 1640 kVp
		Temperature rise	IS 2099:2003 IEC 60137:2008, Clause: 8.7	5 °C to 80 °C
		Thermal Short time current withstand	IS 2099:2003 IEC 60137:2008, Clause: 8.8	Qualitative
		Cantilever Load Withstand Test	IS 2099:2003 IEC 60137:2008, Clause: 8.9	1 kg to 1000 kg