

Laboratory	IMP Powers Ltd., Survey No. 263/3/2/2, Sayli Village, Umarkuin Road, Silvassa, Dadra & Nagar Haveli		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	28.05.2015
Certificate Number	T-2486	Valid Until	27.05.2017
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S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. TRANSFORMERS AND REACTORS				
1.	Power Transformer upto 315 MVA, 400 kV	Measurement of Winding Resistance	IS 2026 (Part 1): 2011 Clause 10.2 IEC 60076 (Part 1): 2011 Clause.11.2	< 25 mA to 50 A, 100 $\mu\Omega$ to 100 Ω
		Measurement of voltage ratio & check vector group	IS 2026 (Part 1): 2011 Clause 10.3 IEC 60076 (Part 1): 2011 Clause.11.3	Test Voltage: 1 V rms,10 V rms, 40 V rms, 100 V rms Nominal: 50 Hz to 60 Hz Ratio: 0.8 to 2000 Excitation current: 0 to 1 A Phase Angle: (\pm) 90°
		Measurement of No Load Loss & Current	IS 2026 (Part 1): 2011 Clause 10.5 IEC 60076 (Part 1): 2011 Clause.11.5	CT: 5-10-15-50/5A, PT: 22 kV to 33 kV/110 V Max Operating Voltage: 48 kVrms Wattmeter: Frequency: 40 Hz to 999 Hz Voltage Input: 110 V AC rms Current Input: 0 to 5 A AC rms
		Measurement of Load Loss & % Impedance	IS 2026 (Part 1): 2011 Clause 10.4 IEC 60076 (Part 1): 2011 Clause 11.4	CT: 300-600-1200/5A, PT: 6.6-13.2-2233kV/ 110V Max Operating Voltage: 48 kVrms Wattmeter: Frequency: 40 Hz to 999 Hz Voltage Input: 110 V AC rms Current Input: 0 to 5 A AC rms. Temp:-Upto 250 °C

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	Power Transformer upto 315 MVA, 400 kV	Measurement of Insulation Resistance & Polarization Index	IS 2026 (Part 1): 2011 Clause 10.1.3 IEC 60076 (Part 1): 2011 Clause.11.1.2 CBIP Manual Pub.No.295/2006	Voltage Range: 250 V to 5 kV Insulation Range: 5 MΩ to 10 TΩ @ 5 kV
		Separate Source voltage withstand test	IS 2026 (Part 3): 2009 Clause 11.0 IEC 60076 (Part 3): 2013 Clause.10.0	0 to 350 kV, Frequency @ 50 Hz
		Induced Over Voltage Withstand Test (ACLD) with Partial Discharge measurement.	IS 2026 (Part 3): 2009 Clause 12.2/12.3 IEC 60076 (Part 3): 2013 Clause.11.0	CT: 5-10-15-50/5A , PT: 22-33kV/110V Max Operating Voltage: 48kVrms Wattmeter : Frequency: 40 Hz to 999 Hz Voltage Input: 110 V AC rms Current Input: 0 to 5 A AC rms. 100 Hz & 200 Hz
		Temperature Rise Test, Measurement of load loss & Impedance voltage test	IS 2026 (Part 2): 2010 Clause 5.0 IEC 60076 (Part 2): 2011 Clause 7.0	CT: 300-600-1200/5A , PT: 6.6-13.2-22-33kV/110V Max Operating Voltage: 48kVrms Wattmeter: Frequency: 40Hz to 999 Hz Voltage Input: 110 V AC rms Current Input: 0 to 5 A AC rms. Temp:-200 °C to 850 °C
		Measurement of Zero Sequence Impedance	IS 2026 (Part 1): 2011 Clause 10.7 IEC 60076 (Part 1): 2011 Clause.11.6	CT: 300-600-1200/5A PT: 6.6-13.2-22-33kV/110V Max operating voltage: 48 kVrms @ 50 Hz or 60 Hz

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	Power Transformer upto 315 MVA, 400 kV	Lightning Impulse Test	IS 2026 (Part 3): 2009 Clause 13.0 IEC 60076 (Part 3): 2013 Clause 13.0	30 kVp to 1600 kVp, 160 kJ
		Switching Impulse Test	IS 2026 (Part3): 2009 Clause 15.0 IEC 60076 (Part 3): 2013 Clause 14	30 kVp to 1200 kVp, 160 kJ
		Measurement of Acoustic Noise Level	IS 2026 (Part 1): 2010 Clause 10.1.3 IEC 60076 (Part 10): 2001 NEEMA TR-1	0 to 130 dB
		Measurement of Harmonics of No Load	IS 2026 (Part 1): 2011 Clause 10.1.3 IEC 60076 (Part 1): 2011 Clause 10.6	Current Input: 0 to 5 A Odd Harmonics: 1st, 3rd, 5th ... 25th
		Measurement of capacitance & tan-delta	IS 2026 (Part 1): 2011 Clause 10.1.3 IEC 60076 (Part 1): 2011 Clause 11.1.4; CBIP cl.3.3 (i)	Tan-δ: 0 to 100 (0 to 10000 %) Power factor (cosØ): 0 to 1 (0 to 100 %) Capacitance@50Hz: 100 pF to 56 nF @ 10 kV
		Measurement of Power Taken By the Fans & Oil Pumps.	IS 2026 (Part 1): 2011 Clause 10.1.3 IEC 60076 (Part 1): 2011 Clause.11.1.3	Voltage Input: 0 to 600 V Current Input : 0 to 20 I
		Testing on on-laod tap changer	IS 2026 (Part 1): 2011 Clause 10.1.1 IEC 60076 (Part 1): 2011 Clause.11.1.2	Qualitative

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	Power Transformer upto 315 MVA, 400 kV	Bushing CT Test	IS 2705 – IV IEC 60044 - I	Knee point Voltage: 1.5 kV
		SFRA Test	DOBLE Manual (Mfgr) CBIP Pub-295 cl.3.4.e.	Double Frequency: 10 Hz to 20 MHz Input Impedance: 0.01 to 10 0.01 Ω to 10 MΩ
		Measurement of Excitation Current at 415 V three phase	Low voltage measurement of current for site reference. CBIP Pub-295 cl.3.4.f.	RISHABH AC (V): 3V to 1000 V AC (A): 3 mA, 300 mA & 10 A
		Magnetic Balance at 230 V single Phase	Established method by transformer manufactures for over years CBIP Pub-295 cl.3.5.f.	RISHABH AC (V): 3V to 1000 V AC (A): 3 mA, 300 mA & 10 A
		Oil BDV Test	IS 6792: 1992	Oil BDV Tester: 0 to 100 kV
		RSO (Transfer of surge)	IS 2026 (Part 1): 2009 Clause 10.1.3 IS 2026 (Part 3): 2009 IEC 60076 (Part 3): 2013 Clause 13.3.3	0 to 50 kVp, 160 kJ Y bandwidth CH1:25 MHz CH 2:25 MHz X bandwidth 25 MHz
		Oil leakage test	CBIP Manual Pub.No.295/ 317/2006 clause.17.3.2(b) CBIP Manual Pub.No.295/317/ 2006 Clause.17.3.1(b) IEC 60076 (Part 1): 2011 Clause 11.8	0 to 15 PSI LC-0.2 PSI
		Vacuum test Tank Stage	CBIP Manual Pub. No.295/317/ 2006 clause.17.3.2(a) IEC 60076 (Part 1): 2011 Clause 11.9	0 to 760 mm Hg, LC-10 mm Hg Steel Scale: 0 to 600 mm, LC- 0.50000 mm

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	Power Transformer upto 315 MVA, 400 kV	Pressure test Tank Stage	CBIP Manual Pub.No.295/317/2006 clause.17.3.1(a1) IEC 60076 (Part 1): 2011 Clause 11.10	0 to 15 PSI, LC-0.2 PSI Steel Scale: 0 to 600 mm LC- 0.50000 mm

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