

<b>Laboratory</b>	<b>Transformer Testing Laboratory, Voltamp Transformers Ltd. , Maneja, Post.- Makarpura, Vadodara, Gujarat</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Electrical Testing</b>	<b>Issue Date</b>	<b>09.03.2014</b>
<b>Certificate Number</b>	<b>T-2179</b>	<b>Valid Until</b>	<b>08.03.2016</b>
<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>1 of 3</b>

<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
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#### **I. INDUCTORS & TRANSFORMERS**

<b>1.</b>	<b>Power And Distribution Transformers (All Transformers upto 160 MVA,220 kV class)</b>	Measurement of insulation Resistance and polarization Index	IS 2026-2011 (part 1 Clause 10.1.3 i ) and CBIP manual IEC 60076 (part(1) Clause 10.1.3.i)	IR values from 10 kΩ to 5 TΩ
		Measurement of Voltage Ratio	IS 2026-2011(Part 1) Clause 10.3 IEC 60076 (Part 1) Clause 10.3	Ratio 2 to 300
		Measurement of Winding Resistance	IS 2026-2011(Part 1) Clause 10.2 IEC 60076 (Part 1) Clause 10.2	Resistance 100μΩ up to 1kΩ
		Check of polarity & voltage vector relationship	IS 2026-2011(Part 1) Clause 10.3 IEC 60076 (Part 1) Clause 10.3	Qualitative
		Measurement of No Load Loss & current	IS 2026-2011(Part 1) Clause 10.5 IEC 60076 (Part 1) Clause 10.5	Up to 200kW 3 ph and 1 ph
		Measurement of Load Loss And Impedance voltage	IS 2026-2011(Part 1) Clause 10.4 IEC 60076 (Part 1) Clause 10.4	Up to 1000 kW 3 ph and 1 ph; Vz 1% to 50%
		Separate Source voltage withstand Test	IS 2026-2009(Part 3) Clause 11.0 IEC 60076 (Part 3) Clause 11.0	1 kV to 300 kV
		Induced Over Voltage Withstand Test	IS 2026-2009(Part 3) Clause 12.0 IEC 60076 (Part 3) Clause 12.0	1 kV to 460 kV
	Test on OLTC assembled on transformer	IS 2026-2011(Part 1) Clause 10.8 IEC 60076 (Part 1) Clause 10.8	Operation test on OLTC assembled on transformer and pf test on the Aux circuit	

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	<b>Power And Distribution Transformers (All Transformers upto 160 MVA,220 kV class)</b>	Temperature Rise Tests	IS 2026-2010(Part 2) Cl 5.0, IEC 60076 (Part2) Clause5.0	Temperature rise <75°C
		Measurement of Zero Sequence Impedance of three phase Transformers	IS 2026-2011 (Part 1) Clause 10.7 IEC 60076 (Part 1) Clause 10.7	1% to 100%
		Measurement of Acoustic Noise Level	IS 2026-2009 (Part 1) Clause 10 IEC 60076 (Part 10)	Up to 100 dB
		Measurement of Power taken by fans and oil pump motors.	IS 2026-2011(Part 1) Clause 10.1.3(h) IEC 60076 (Part 1) Clause 10.1.3(h)	Up to 100 kW
		Measurement of Dissipation factor (Tan Delta) & Capacitance	IS2026-2011(Part 1) Clause 10.1.3(b) IEC 60076 (Part 1) Clause 10.1.3(b)	Cap =115 pF to 8354 pF Tan δ= 0.000880 to 0.050
		Partial Discharge Tests	IS 2026-2009 (Part 3) Clause 12 IEC 60076 (Part 3) Clause 12.0	PD >2 pC
		Harmonics of the no load current	IS 2026-2011 (Part 1) Clause 10.6 IEC 60076 (Part 3) Clause 10.6	On all 3 phases, up to 50 <sup>th</sup> harmonic
		SFRA	CBIP Publication 317:2013 Section BB Clause 3.22	Qualitative
		Magnetic Balance Test & Magnetizing current Measurement at low voltage	CBIP Manual-2006 Section -J Clause 7.3 & 7.6	Up to 415 V, 15 A

