

Laboratory **Transformer Testing Laboratory, Tesla Transformers Limited,
Plot No. 23 A, Sector-B, Industrial Area, Govindpura, Bhopal,
Madhya Pradesh**

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

Certificate Number **TC-7633 (in lieu of T-3101)**

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Validity **10.09.2018 to 09.09.2020**

Last Amended on --

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.	TRANSFORMERS & REACTORS			
1.	Transformer Upto 50 MVA, 132 kV, 50 Hz, 3 Phase, Dry Type Transformer Upto 2.5 MVA, 33 kV, 50 Hz, 3 Phase	Insulation Resistance	IS 2026, (Part 1):2011 CL.10.1.3.j IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL. 11.1.4 IS 11171-1985	Upto 1000 GΩ 500 V to 5000 V DC
		Voltage Ratio & Check Of Phase Displacement	IS 2026, (Part 1):201, Cl.10.3 IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL. 11.3 IS 11171-1985	4 to 300
		Vector Group Test	IS 2026, (Part 1):2011 CL10.3 IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL 11.3, IS 11171-1985	All Vector Groups (Qualitative)
		Winding Resistance	IS 2026, (Part 1):2011 CL10.2 IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL 11.2 IS 11171-1985	10 μΩ to 500 Ω
		No Load Loss & Current	IS 2026, (Part 1):2011 CL10.5 IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL 11.5 IS 11171-1985	40 W to 40 kW 100 mA to 40 A

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		Short Circuit Impedance And Load Loss	IS 2026, (Part 1):2011 CL10.4 IS 1180 (Part 1):2014 IEC 60076 (Part 1):2011 CL 11.4 IS 11171-1985	300 W to 200 kW Z up to 20%
		Induced AC Voltage Test	IS 2026, (Part 3): 2009 CL12 IS 1180 (Part 1):2014 IEC 60076 (Part 3):2013 CL 11 IS 11171-1985	400 V to 275 kV
		Separate Source AC Withstand Voltage Test	IS 2026, (Part 3):2009 CL11 IS 1180 (Part 1):2014 IEC 60076 (Part 3):2013 CL 10 IS 11171-1985	2 kV to 300 kV rms AC
		Magnetic Balance Test	CBIP PUB. NO. 317 APRIL 2013	50 V to 500 V
		Determination of capacitance between windings to earth, and between windings & Measurement of dissipation factor (tan delta) of the insulation system capacitance	IS 2026, (Part 1):2011 CL10.1.3.a & j IEC 60076 (Part 1):2011 CL 11.1.4 IS 11171-1985	Tan Delta 0.00001 to 0.01 Capacitance 500 to 50000 pF
		Harmonics Of No Load Current	IS 2026, (Part 1):2011 CL10.6 IEC 60076 (Part 1): 2011 IS 11171-1985	Upto 27 th Order
		Determination Of Sound Level	IS 2026 (Part 1)0 2009 NEMA TR1 2013 IEC 60076 (Part 1)0 2001	30 dB to 100 dB

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		Zero Sequence Impedance(S) On Three Phase Transformer	IS 2026, (Part 1):2011 CL10.7 IEC 60076 (Part 1):2011 IS 11171-1985	Upto 20 %
		Over Excitation Test	CBIP PUB. NO. 317 April 2013 IEC 60076 (Part 1) 201 Cl. No. 11.1.3	1 kV to 38 kV 0.01 A to 50 A
		Lightning Impulse Voltage Withstand Test	IS 2026, (Part 3): 2009 CL13 & 14 IS 1180 (Part 1):2014 IEC 60076 (Part 3): 2013 CL 13.2 & 13.3 IS 11171-1985	Full Wave: 40 kVp to 700 kVp Chopped Wave: 40 kVp to 750kVp Energy: 160 KJ
		Temperature Rise Test	IS 2026, (Part 2) 2010 IS 1180: (Part 1) 2014 IEC 60076- (Part 2) 2011 IS 11171-1985	Loss: 100 W to 500 kW Temperature: Upto 100°C
		Power Taken By The Fan And Oil Pump Motors	IS 2026, (Part 1):2011 CL10.1.3h IEC 60076 (Part 1):2011 Cl 11.1.3 IS 11171-1985	100 W to 10 kW
		Test On On-Load Tap Changer	IS 2026, (Part 1) 2011 Cl. 10.8 IEC 60076 (Part 1)-2011 Cl 11.7	Manual Operation (Qualitative)
		Pressure Test	IS 180 (Part 1) 2014 Cl 21.5.2	Upto 1 Kg/cm ²
		Vacuum Test	CBIP MANUAL NO. 317 April 213	(-) 760 mmHg to (-) 730 mmHg

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2.	Transformer up to 2.5 MVA, 33 kV, 50 Hz, 3 phase	Permissible Flux Density	IS 180, (Part 1): 2014, Cl 6.9.1, 7.9.1, 8.9.1	Upto 1.9 Tesla
II.	LIQUID DIELECTRIC MATERIALS			
1.	Transformer Insulating Oil	Break Down Voltage Test On Insulating Oil	IS 335, 1983 IS 1866, 2017 IS 6792:1992 IEC 60156:1995	1 kV to 100 kV AC