

Laboratory	ABB Small Power Transformers Testing Laboratory, ABB India Ltd., Maneja Works, Maneja, Vadodara, Gujarat		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	10.01.2015
Certificate Number	T-1872	Valid Until	09.01.2017
Last Amended on	-	Page	1 of 3

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 Transformers Upto 125 MVA 220 kV Class 1400 kVp Impulse Voltage	Voltage Ratio Test	IS 2026 (Part 1) Cl. 16.3 : 2001 IEC 60076 (Part 1) Cl. 11.3 : 2011	0.8 to 2021
		Winding Resistance Test	IS 2026 (Part 1) Cl. 16.2 : 2001 IEC 60076 (Part 1) Cl. 11.2 : 2011	100 $\mu\Omega$ to 10 k Ω
		Vector Group Test	IS 2026 (Part 1) Cl. 116.3 : 2001 IEC 60076 (Part 1) Cl. 11.3 : 2011	Qualitative (All Vector Groups)
		Insulation Resistance Test	IS 2026 (Part 1) Cl. 16.6 : 2001 IEC 60076 (Part 1) Cl. 11.1.2.2 (b) : 2011	0 to 3 T Ω
		Capacitance and Tan Delta Test on Windings	IS 2026 (Part 1) Cl. 16.6 : 2001 IEC 60076 (Part 1) Cl. 11.1.2.2 (a) : 2011	Cap: 0.1 pF to 1.1 μ F Tan Delta: 0 to 2 %
		Capacitance and Tan Delta Test on Bushings	IS 2099 : 2003 IEC 60137 : 2008	10 PF To 1.11 μ F
		Separate Source AC High Voltage Withstand Test (Dielectric Test)	IS 2026 (Part 3) Clause 10 : 2009 IEC 60076 (Part 3) Cl. 11 : 2009	Upto 500 kV

Laboratory	ABB Small Power Transformers Testing Laboratory, ABB India Ltd., Maneja Works, Maneja, Vadodara, Gujarat		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	10.01.2015
Certificate Number	T-1872	Valid Until	09.01.2017
Last Amended on	-	Page	2 of 3

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Power Transformers Upto 125 MVA 220 kV Class 1400 kVp Impulse Voltage	Induced Over Voltage Withstand Test	IS 2026 (Part 3) Cl. 11 : 2001 IEC 60076 (Part 3) Cl. 12 : 2001	Upto 460 kV
		No Load Loss and Excitation Current	IS 2026 (Part 1) Cl. 16.5 : 2001 IEC 60076 (Part 1) Cl. 11.5 & 11.1.2.2 (e) : 2011	Upto 200 kW
		Measurement of Load Loss Short Circuit Impedance	IS 2026 (Part 1) Cl. 16.4 : 2001 IEC 60076 (Part 1) Cl. 11.4 : 2011	Upto 800 kW
		Measurement of Zero Sequence Impedance	IS 2026 (Part 1) Cl. 16.10 : 2001 IEC 60076 (Part 1) Cl. 11.1.4 (f): 2011	Upto 25 %
		Temperature Rise Test	IS 2026 (Part 2) IEC 60076 (Part 2) : 2011	Test Voltage Upto 75 kV & 1000 kW losses Upto 140 °C
		Lightning/Chopped/ Switching Impulse Test	IS 2026 (Part 3) Cl. 12 & 13 : 2001 IEC 60076 (Part 3) Cl. 13 : 2011	Upto 1400 kVp
		Measurement of No Load Current Harmonics	IS 2026 (Part 1) Cl. 16.13 : 2001 IEC 60076 (Part 1) Cl. 11.6 : 2001	Test Voltage up to 75 kV, Harmonics upto 99 orders of No load current
		Measurement of Acoustic Noise Level	IS 2026 (Part 1) Cl. 16.12 : 2001 IEC 60076 -10 : 2001	Upto 100 dB

