Laboratory	**Transformer Testing Laboratory-TBI, Schneider Electric Infrastructure Limited, Milestone 87, Baroda-Halol Highway, Kotambi Village, PO Jarod, Vadodara, Gujarat**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Electrical Testing**	**Issue Date**	**22.11.2016**
Certificate Number	**T-1833**	**Valid Until**	**21.11.2018**
Last Amended on	**-**	**Page**	**1 of 5**

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.	**Oil Filled Power & Distribution Transformers Upto 100 MVA, 170 kV** **Dry Type Transformers Upto 2 MVA, 33 kV**	Winding Resistance	IS 2026 (Part 1): 2011, Rev. 2 IS 11171: 1985 Clause. 10.2 IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.2 IEC 60076-11: (2004-05) Clause. 15 IEEE Std C.57.12.90: 2010 Clause. 5	50 μΩ to 500 Ω
		Voltage Ratio And Check Of Voltage Vector Relationship	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.3 IS 11171: 1985 IEC 60076-11: (2004-05) Clause. 16 IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.3 IEEE Std C.57.12.90: 2010 Clause. 6 & 7	1.0 to 2000
		Short Circuit Impedance & Load Loss	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.4, IS 11171: 1985 IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.4 IEC 60076-11: (2004-05) Clause. 17 IEEE Std C.57.12.90: 2010 Clause. 9	Impedance: 1.0 % to 25 % Load Loss: 100 W to 400 kW

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Oil Filled Power & Distribution Transformers Upto 100 MVA, 170 kV **Dry Type Transformers Upto 2 MVA, 33 kV**	No Load Loss And Current	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.5, IS 11171: 1985 IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.5 IEC 60076-11: (2004-05) Clause. 18 IEEE Std C.57.12.90: 2010 Clause. 8	No Load Loss: 10 W to 50 W No Load Current: 10 mA to 150 A
		Insulation Resistance And Polarization Index	IS 2026 (Part 1): 2011, Rev. 2, Clause. 10.1.3(j) and CBIP manual Pub. No.295 / 2006 IEC 60076 -1 (Edition 3.0): (2011-04) Clause.11.1.4(h) IEEE Std C.57.12.90: 2010 Clause. 10.11	10 kΩ to 1 TΩ
		Check Of Insulation Of Auxiliary Wiring	IS 2026 (Part 3): 2009 Rev. 3 Clause. 10.0 IEC 60076 -3 (Edition 3.0): (2013-07), Clause. 9.0	Qualitative (Marshaling box, RTCC & control circuitry of all ratings of transformers)
		Separate Source AC Withstand Voltage Test (Applied Voltage -AV)	IS 2026 (Part 3): 2009 Rev. 3 Clause. 11.0 IS 11171: 1985, Clause. 14.0 IEC 60076 -3 (Edition 3.0): (2013-07), Clause. 10.0 IEC 60076-11: (2004-05) Clause. 19 IEEE Std C.57.12.90: 2010 Clause. 10.6	1 kV to 300 kV

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Discipline	**Electrical Testing**	**Issue Date**	**22.11.2016**
Certificate Number	**T-1833**	**Valid Until**	**21.11.2018**
Last Amended on	**-**	**Page**	**3 of 5**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Oil Filled Power & Distribution Transformers Upto 100 MVA, 170 kV **Dry Type Transformers Upto 2 MVA, 33 kV**	Induced AC Over Voltage Withstand (Induced Voltage And Line Terminal AC Withstand)	IS 2026 (Part 3): 2009 Rev. 3 Clause. 12.0 IS 11171: 1985, Clause. 15 IEC 60076 -3 (Edition 2.0): (2013-07) Clause. 11& 12 IEC 60076 -11 (Edition 2.0): (2004-05) Clause. 20 IEEE Std C.57.12.90: 2010 Clause. 10.7 & 10.8	1 kV to 300 kV
		Magnetic Balance	CBIP manual Pub. No.295 / 2006, Section J, Clause. 7.3 and as per industry accepted practice	25 V to 450 V
		Lightning Impulse	IS 2026 (Part 3): 2009 Rev. 3 Clause. 13 &14 IS 11171: 1985, Clause. 16 IEC 60076 -3 (Edition 2.0): (20013-07) Clause. 13 IEC 60076-11: (2004-05) Clause. 21 IEEE Std C.57.12.90: 2010 Clause. 10.3	20 kVp to 950 kVp

Laboratory	**Transformer Testing Laboratory-TBI, Schneider Electric Infrastructure Limited, Milestone 87, Baroda-Halol Highway, Kotambi Village, PO Jarod, Vadodara, Gujarat**		
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Discipline	**Electrical Testing**	**Issue Date**	**22.11.2016**
Certificate Number	**T-1833**	**Valid Until**	**21.11.2018**
Last Amended on	**-**	**Page**	**4 of 5**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Oil Filled Power & Distribution Transformers Upto 100 MVA, 170 kV **Dry Type Transformers Upto 2 MVA, 33 kV**	Temperature Rise	IS 2026 (Part 2): 2010 Rev. 1 Clause. 5 IS 11171: 1985, Clause. 17 IEC 60076 -2 (Edition 3.0): (2011-02) Clause. 6 IEC 60076-11: (2004-05) Clause. 23 IEEE Std C.57.12.90: 2010 Clause. 11	10 °C to 200 °C
		OLTC	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.8 IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.7	All OLTCs with continuous rated current Upto 1.6 kA and step voltage Upto 4.5 kV
		Zero Sequence Impedance Of Three Phase Transformers Star Windings	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.7 IS 11171: 1985, IEC 60076 -1 (Edition 3.0): (2011-04) Clause. 11.6 IEC 60076-11 (2004-05) IEEE Std C.57.12.90: 2010 Clause. 9.5	1.0 % to 25 %
		Sound Levels	IS 2026 (Part 10): 2009 IS 11171: 1985, IEC 60076 -10 (Edition 1.0): (2001-05) IEC 60076-11 Clause. 24 IEEE Std C.57.12.90: 2010 Clause. 13	45 dB to 130 dB

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Discipline	**Electrical Testing**	**Issue Date**	**22.11.2016**
Certificate Number	**T-1833**	**Valid Until**	**21.11.2018**
Last Amended on	**-**	**Page**	**5 of 5**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Oil Filled Power & Distribution Transformers Upto 100 MVA, 170 kV **Dry Type Transformers Upto 2 MVA, 33 kV**	Harmonics Of No Load Current	IS 2026 (Part 1): 2011, Rev. 2, Clause. 10.6 IS 11171: 1985	From 1st Harmonics to 25th harmonics.
		Power Taken By The Fan and Oil Pump Motors.(Measurement Of Power Taken By The Fan And Liquid Pump Motors)	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.1.3 (h) IEC 60076 -1 (Edition 3.0): (2011-04) Clause.11.1.3 (d)	Upto 3500 W
		Capacitance, Windings To Earth, And Between Windings	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.1.3 (b) IS 11171: 1985, IEC 60076-1 (Edition 3.0) (2011-04) Clause.11.1.4(c) IEC 60076-11	100 pF to 20 nF
		Dissipation Factor(Tan Delta)	IS 2026 (Part 1): 2011, Rev. 2 Clause. 10.1.3 (j) IEC 60076 -1 (Edition 3.0): (2011-04) Clause.11.1.4 (d)	0.1 % to 10 %
		Insulation Power Factor	IEEE Std C.57.12.90: 2010 Clause. 10.10	0.1 % to 10 %
		Electrical Strength	IS 335: 1993 (RA 2005) IS 1866:2000	1 kV to 100 kV

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