

**Laboratory** National High Power Test Laboratory Pvt. Ltd., POWERGRID  
Complex, 765/400kV S/S, Khimlasa Road, Bina, Distt.-Sagar, Madhya Pradesh

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

**Certificate Number** TC-6407

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**Validity** 12.10.2017 to 11.10.2019

Last Amended on 12.02.2019

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.	<b>TRANSFORMERS &amp; REACTORS</b>			
1.	<b>Power Transformers, Auto Transformers (ICT), Generator Transformers, Converter Transformers for Industrial Applications &amp; HVDC Applications, Traction Transformers and Series Reactors</b>  <b>(50 MVA, 132kV Class to 520 MVA, 765kV Class)</b>  <b>(1 Phase &amp; 3 Phase Transformers)</b>	Ability to withstand dynamic effects of Short circuit	IEC 60076-1: 2011 Cl. 11.1.4 IEC 60076-5: 2006 Cl. 4.2 IS 2026 (Part 1): 2011 Cl. 10.1.3 IS 2026 (Part 5): 2011 Cl. 4.2	50 MVA to 520 MVA 132 kV to 765 kV 1 $\phi$ & 3 $\phi$ Transformers
		Voltage ratio Voltage Vector relationship.	IEC 60076-1: 2011 Cl. 11.1.2 (Annex D) IS 2026 (Part 1): 2011 Cl. 10.1.1	Ratio up to 1000 All Vector Groups
		Short circuit Inductance	IEC 60076-1: 2011 Cl. 11.1.2 IS 2026 (Part 1): 2011 Cl. 10.1	100 $\mu$ H to 10 H
		Insulation Resistance	IEC 60076-1: 2011 Cl. 11.1.2 IS 2026 (Part 1): 2011 Cl. 10.1.3	1 M $\Omega$ to 100 G $\Omega$
		Winding Resistance	IEC 60076-1: 2011 Cl. 11.1.2 IS 2026 (Part 1): 2011 Cl. 10.1.1	100 $\mu$ $\Omega$ to 1000 $\Omega$
		Break Down Voltage of Transformer Oil	IEC 60296: 2012 IEC 60422: 2013 Cl. 5.3 IEC 60156 IS 335: 2010 IS 1866: 2000 Cl. 7.2	10 kV to 100 kV

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 6792	
		Moisture content of Transformer Oil - Coulometric Karl Fischer Titration method	IEC 60296: 2012 IEC 60422: 2013 Cl. 5.4 IEC 60814 IS 335: 2015 IS 1866: 2000 Cl. 7.3 IS 13567	1 µg/kg to 10 mg/kg 1 % to 100 %
		Frequency Response Analysis (FRA)	IEC 60076-1: 2011 Cl. 11.1.4	20 Hz to 2 MHz
		Capacitance Dissipation factor (tanδ)	IEC 60076-1: 2011 Cl. 11.1.2 IS 2026 (Part 1): 2011 Cl. 10.1.3	1 pF to 100 µF 0.00001(Abs) to 0.05 (Abs)