

Laboratory GE T&D India Limited, Laboratory, Plot No. 46, SIPCOT Industrial Complex, Zuzuwadi Village, Hosur, Tamil Nadu

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6923

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Validity 20.02.2018 to 19.02.2020

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.	TRANSMISSION LINE EQUIPMENT AND ACCESSORIES			
1.	Current Transformers Upto 765 kV	Verification of Terminal marking Polarity	IS 2705 (Part 1): 1992 (RA 2017)	Qualitative
		Power Frequency voltage withstand	IS 2705 (Part 4): 1992 (RA 2007)	5 kV to 1000 kV 1.5 kV to 5 kV
		Inter-turn overvoltage	IEC 61869-1 (2012)	1 kVp to 10 kVp
		Winding Resistance	IEC 61869-2 (2012)	0.5 Ω to 2000 Ω
		Knee point voltage and current		1 kV to 6.6 kV 1 A to 10 A
		Composite Error (Secondary method)		1 kV to 6.6 kV 1 A to 10 A
		Instrument Security Factor (Secondary method)		300 V and 10 A 25 V and 1 A
		Accuracy (Ratio & Phase angle measurement, TRE)		Upto 200 % Upto 100 VA
		Partial discharge		Upto 50 pC
		Capacitance		25 pF to 110 μF
		Tan delta		0.5× 10 ⁻³ to 5× 10 ⁻³
		Temperature rise		20 °C to 100 °C Up to 4800 A
		Corona inception & Extinction (Dry) Visual Corona	IS 2071 (2016)	40 kV to 650 kV
		Thermal stability	AS 1675 (1986)	Up to 4800 A 20 °C to 100 °C 5 kV to 1000 kV
	Lightning Impulse	IEC 60060-1 (2010) IEC 61869-1 (2012)	300 kVp to 2700 kVp	

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		Lightning Impulse Chopping	IEC 61869-2 (2012)	300 kVp to 2400 kVp
		Switching Impulse		500 kVp to 1500 kVp
2.	Capacitive Voltage Transformers & Coupling Capacitors Up to 765 kV	Capacitance	IEC 60358 (2005)	10 pF to 110 μF
Tan Delta		IEC 60044-5 (2004)	0.5x 1	
Verification of Terminal markings & polarity.		IEC 61869-5 (2011)	Qualitative	
Power Frequency voltage withstand (Dry)			5 kV to 1000 kV 1.5 kV to 5 kV	
Accuracy (Ratio & Phase angle)			RE Up to ± 6 % PE Up to ± 130' Burden 1.25VA to 584VA 0.8 lag	
Partial discharge			Upto 50pC	
Corona inception & Extinction test (Dry)			40 kV to 550 kV	
Visual Corona				
Ferro resonance			5 kV to 220 kV	
Transient Response			2 kV to 17 kV	
Stray Capacitance & Stray conductance			Up to 1000 pF Up to 400 μs	
High Frequency capacitance & series Resistance			Upto 1.1 μF 100 Ω	
Short circuit withstand capability			2 kV to 220 kV	
Temperature rise			20 °C to 100 °C	
Temperature co-efficient		(-) 5 °C to 100 °C 25 pF to 110μF		
Induced Over voltage		2 kV to 140 kV		
Tightness of the liquid-filled capacitor voltage divider		IEC 60044-5(2004)	0.5 kg/cm ² to 2 kg/cm ²	

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		Lightning Impulse test	IEC 60060-1 2010	300 kVp to 2700 kVp
		Chopping Impulse test	IEC 60044-1 2003	300 kVp to 2400 kVp
		Switching Impulse test	IEC 61869-1 2012 IEC 61869-2 2012	500 kVp to 1500 kVp
3.	Line Traps Up to 765 kV	Blocking resistance & Blocking Impedance	IEC 60353 (2002)	10 Ω to 2000 Ω
		Tapping loss and Tapping loss based on resistance		0.5 dB to 3 dB
		Power frequency voltage on Tuning device		2 kV to 21 kV
		Rated Inductance of the main coil		0.1 mH to 2 mH
		Power frequency Inductance of the main coil		0.1 mH to 2 mH
		Temperature rise		Up to 3200 A Up to 150 °C
		Winding resistance		2 mΩ to 15 mΩ
		Corona inception & Extinction test (Dry) Visual Corona	IS 2071 (2016)	40 kV to 650 kV
		Lightning Impulse	IEC 60060-1 IEC 60353 (2002)	20 kVp to 150 kVp
4.	Bushings Up to 420 kV	Capacitance Tan Delta	IS 2099: 1992 (RA 2008) IEC 60137 (2008)	10 pF to 110μF 0.5× 10 ⁻³ to 5× 10 ⁻³ at 630 kV
		Power Frequency voltage withstand		2 kV to 1000 kV
		Partial discharge		Up to 50pC
		Temperature rise		20 °C to 150 °C
		Thermal stability		1 A to 10 A 50 A to 3160 A

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				25 pF to 110 pF 10 °C to 150 °C 0.5× 10 ⁻³ to 5× 10 ⁻³
		Tightness		0.5 kg/cm ² to 2 kg/cm ²
		Lightning impulse	IEC 60060-1 IEC 60137(2008)	300 kVp to 2700 kVp
		Switching impulse	IEC 60060-1 IEC 60137(2008)	500 kVp to 1500 kVp
		Chopping Impulse	IEC 60060-1 IEC 60137(2008)	300 kVp to 2400 kVp
II.	ELECTRICAL MATERIALS – LIQUID DIELECTRIC MATERIALS			
1.	Insulating Oils	Electric Strength (Break Down Voltage)	IEC 60156: 1995 IS 6792 (1992)	Up to 100 kV
		Specific Resistance	IS 6103 (1971)	10 ⁶ to 10 ¹⁶ Ω
		Dielectric dissipation factor (Tan δ at 90/100°C)	IS 6262 (1971)	0.0001 to 0.1
		Inter facial Tension at 27 °C	IS 6104 (1971)	0.01 N/m to 0.18 N/m
		Water Content	IS 13567 (1992)	2 mg/l to 100 mg/l 2 ppm to 100 ppm
		Dissolved Gas Analysis Carbon Dioxide (CO ₂) Carbon Monoxide (CO) Acetylene(C ₂ H ₂) Ethylene (C ₂ H ₄) Ethane (C ₂ H ₆) Methane (CH ₄) Hydrogen (H ₂)	IEC 60599:1999 IEC 60567:2011	1 ml/l to 2500 ml/l 1 ppm to 2500 ppm
		Particle Count	ISO 11171:2016	1 micron to 100 microns