

Laboratory **ABB R & D Laboratory, ABB India Limited, Maneja Works, Vadodara, Gujarat**

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

Certificate Number **TC-7222** Page 2 of 10

Validity **26.04.2018 to 25.04.2020** 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
2.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI:0.1,Upto:100VA	Wet Power frequency voltage withstand on primary terminal (# Application for product up to 220 kV class).	IS 16227 (Part-2) :2016. EC 60060-1 (2010-09) IEC 61869-1-cl.no.7.3.1	10 kV to 700 kV
	Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 18200pf		IS 16227 (Part-5):2016 IEC 61869-5 (2011-07) IS 16227 (Part-5):2016	
	Circuit Breaker (66 kV to 400 kV) Upto 4000 A, 63 kA		IS 13118:1991 (RA 2002) IEC 62271-100 (2017), CI.No.6.2.11,	
	Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 18200pf		IS 16227 (Part-5):2016 IEC 61869-5 (2011-07)	
	Circuit Breaker (66 kV to 400 kV) upto 4000 A, 63 kA		IS 13118:1991 (RA 2002) IEC 62271-100 (2017), CI.No.6.2.11	
	Disconnector 66 kV to 400 kV, 800 A to 4000 A		IS 9921:1985 (RA 2002) IEC 62271-102 (2013-02), CI.No.6.102, 6.4, IEC 62771-1 (2017) CI no. 6.2 IEC 62271-200 (2003-11)	
	Voltage Grading Capacitor (500 to 2600 pF)		IS 11530:1985 (RA 2006) IEC 62146-1 (2013)	
	Coupling Capacitors (66 kV to 400 kV) (4400 to 13200pF)		IEC 60358 (1990-05)	
	Bushings 11 kV to 220 kV, 800 A to 1600A		IS 12676:1989 IEC 60137 (2003-08), (RA 2006)	

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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
3.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI: 0.1, Upto:100VA	Lightning Impulse voltage withstand on primary terminal.	IS 16227 (Part-2):2016. IEC 60060-1 (2010-09) IEC 61869-1-cl.no.7.3.1	50 kVp to 1700 kVp, 66 kJ 0.8 uS to 10 uS (Rise) 40 uS to 100 uS (Fall)
	Capacitor Voltage transformer (66 kV to 400 kV) 4400 pf to 10000pf		IS 16227 (Part-5):2016 IEC 61869-5 (2011-07)	
	Circuit Breaker (66 kV to 400 kV) upto 4000 Amp, 63 kA		IS 13118:1991 (RA 2002) IEC 62271-100 (2017), CI.No.6.2.11	
	Disconnecter 66 kV to 400 kV, 800 A to 4000 A		IS 9921:1985 (RA 2002) IEC 62271-102 (2013-02), CI.No.6.102, 6.4, IEC 62771-1 (2017) CI no. 6.2 IS 3427:1997 (RA 2002) IEC 62271-200 (2003-11)	
	Voltage Grading Capacitor (500 to 2600 pf)		IS 11530:1985 (RA 2006) IEC62146-1 (2013)	
	Coupling Capacitors (66 kV to 400 kV) (4400 pf to 13200 pf)		IEC 60358 (1990-05)	
	Bushings 11 kV to 220 kV, 800 A to 1600 A		IS 12676:1989 (RA 2006) IEC 60137 (2003-08)	

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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
4.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI:0.1,Upto:100VA	Chopped impulse voltage withstand test on primary terminals	IS 16227 (Part-2) :2016. IEC 61869-1-cl.no.7.4.1	50 kVp to 1700 kVp, 66 kJ 0.8 uS to 10 uS (Rise) 1 uS to 6 uS (Discharge)
	Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 10000Pf		IS 16227 (Part-5):2016. IEC 61869-5 (2011-07)	
5.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI:0.1,Upto:100VA	Switching impulse voltage withstand	IS 16227 (Part-2) :2016 IEC 60060-1 (2010-09) IEC 61869-1 (2007-10),	50 kVp to 1500 kVp, 66 kJ 200 uS to 300 uS (Rise) 1000 uS to 4000 uS (Fall)
	Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 10000pf		IS 16227 (Part-5) :2016. IEC 61869-5 (2011-07)	
	Circuit Breaker (66 kV to 400 kV) Up to 4000A, 63 kA		IS 13118:1991 (RA 2002) IEC 62271-100 (2011) CI no. 6.2 IS 13118:1991 (RA 2002)	
	Disconnecter 66 kV to 400 kV, 800 A to 4000 A		IS 9921:1985 (RA 2002) IEC 62271-102 (2001-02), IEC 62771-1(2011) CI no. 6.2	
	Bushings (11 kV to 220 kV) 800 A to 1600 A		IS 12676:1989 (RA 2006) IEC 60137 (2003-08)	
	Voltage Grading Capacitor (500 pf to 2600 pf)		IS 11530:1985 (RA 2006) & IEC62146-1	

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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
	Bushings (11 kV to 220 kV) 400 A to 800A			
8.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI: 0.1, Upto:100VA Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 10000pf Voltage Grading Capacitor (500 pf to 2600 pf) Coupling Capacitors (66 kV 400 kV) 4400 pf to 13200 pf Bushings (11 kV to 220 kV) 400 A to 800A	Partial Discharge	IS 16227 (Part-2) :2016. IEC 60270(2000-12) IEC 61869-1-cl.no.7.3.2, IEC 61869-5, IS 16227 (Part-2) :2016 IEC 60358 (1990-05) IS 11530:1985 (RA 2006) & IEC62146-1 IEC 60137 (2003-08), IS 12676:1989 (RA 2006)	1 pC to 1000 pC (10 kV to 420 kV)
9.	Current Transformer (66 kV to 400 kV) 50A to 4000A CI: 0.1, Upto:100VA Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 10000pf Circuit Breaker (66 kV to 400 kV)	Radio interference voltage	IS 16227 (Part-2) :2016. CISPR 16-1, IEC 62271-1 (2007-10) IEC 61869-1-cl.no.7.2.5.1, IEC 61869-5, IS 16227 (Part-5) :2016. IEC 62271-100 (2006-10), IS 13118:1991 (Reaffirmed 2002) IEC 62271-102 (2001-02) , IEC 62771-1, Cl no. 6.3 (2011) & IS 9921:1985	2.5 uV to 5000 uV (10 kV to 365 kV)

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	upto 4000 Amp, 63 kA Disconnecter 66 kV to 550 kV,800 Amp to 4000 Amp Bushings (11 kV to 220 kV) 400 A to 800A		(RA 2002) IEC 60137 (2003-08), IS 12676:1989 (RA 2006)	
10.	Current Transformer (66 kV to 400 kV) 50A to 4000A Cl:0.1,Upto:100VA Capacitor Voltage transformer (66 kV to 400 kV) 4400pf to 10000pf Circuit Breaker (66 kV to 400 kV) upto 4000 A, 63 kA Disconnecter 66 kV to 550 kV,800 Amp to 4000 Amp Coupling Capacitors (66 kV to 400 kV) 4400 pf to 13200 pf Bushings (11 kV to 220 kV) 400 A to 800A	Visible corona	Lab SOP no. RTP001-4 issue no. dated [based on POWERGRID specification (GTR-Rev. No. 13)]	10 kV to 420 kV
11.	Current Transformer (66 kV to 400 kV) 50A to 4000A	Temperature rise	IS 13118:1991 (RA 2002) IEC 62271-1 (2007-10) IEC 61869-1, cl.no. 7.2.2, IS 16227 (Part-2) :2016.	50 A to 5000 A 10°C to 150 °C

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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
	CI: 0.1,Upto:100VA Circuit Breaker (66 kV to 400 kV) upto 4000 A, 63A Disconnecter 66 kV to 800 kV, 800 A to 4000 A Bushings (11 kV to 220 kV) 400 A to 800A		IEC 62271-102 (2013-02), cl.no. 4.4 , IEC 62271-1 Cl no. 6.2 (2017) IS 9921:1985 (RA 2002) IEC 60137 (2003-08), IS 12676:1989 (RA 2006)	
12.	Current Transformer (66 kV to 765 kV) 50A to 4000A CI:0.1, Upto:100VA	Accuracy	IS 16227 (Part-2) :2016. IEC 61869-1-cl 7.3.5 (2012)	765 kV, Upto 5000A Upto 0.02S class
		Power frequency Voltage withstand test on secondary winding	IS 16227 (Part-2) :2016 IEC 61869-2 (2012) cl.no.7.3.4,.	1 kV to 10 kV
		Winding resistance	IS 16227 (Part-2) :2016. IEC 61869-2 (2012) cl.no.7.3.201,	Upto 20 Ω
		Rated knee point e.m.f. and exciting current at rated knee point e.m.f.	IEC 61869-2 (2012) cl.no.7.3.203, IS 16227 (Part-2) :2016.	Upto 1 A, Upto 6 kV
		Inter-turn over voltage	IS 16227 (Part-2) :2016. IEC 61869-2 (2012) cl.no.7.3.204,	Rated secondary current 1 A, 5A for metering core, 4.5 kVpeak & 10 kVpeak for protection class core
		Instrument security factor (FS) of measuring current transformer	IS 16227 (Part-2) :2016. IEC 61869-2 (2012) cl.no.7.5.2, ,	Upto10 A
13	Capacitor Voltage transformer (66 kV to 765 kV)	Accuracy	IS 16227 (Part-5) :2016. IEC 61869-5 (2011),	66 kV to 765 kV Upto 0.2 class

