

Laboratory	Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	22.04.2014
Certificate Number	T-2936	Valid Until	21.04.2016
Last Amended on	29.06.2015	Page	1 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. SWITCHGEAR & PROTECTIVE EQUIPMENT				
1.	Miniature Circuit Breaker (MCB) (5 A to 100A)	Time Current Characteristics at 1.13 times of rated current	IS/IEC : 60898 (Pt -I) : 2002	5 A to 113 A 1s to 7200 s
		Time Current Characteristics at 1.45 times of rated current	IS/IEC : 60898(Pt-I) – 2002	5 A to 145 A 1s to 7200 s
		Overcurrent Current characteristics at 2.55 times rated Current	IS/IEC : 60898(Pt-I) – 2002	5 A to 255 A 1s to 120 s
		Temperature-rise test at rated current	IS/IEC : 60898(Pt-I) – 2002	15°C to 150 °C 5A to 100 A
		Measurement of Watt loss	IS/IEC : 60898(Pt-I) – 2002	0.1 Watt to 20 Watt
2.	Moulded Case Circuit Breaker (MCCB) (100A to 630A)	Temperature-rise test at rated current	IS/IEC : 60947(Pt-I& Pt-II)-2004	15°C to 200 °C 100 A to 630 A
		Inverse time delay overcurrent operation at 1.05 times of rated current	IS/IEC : 60947(Pt-I& P-II) – 2004	100 A to 700 A 1s to 7200 s
		Inverse time delay overcurrent operation at 1.30 times of rated current	IS/IEC : 60947(Pt-I& Pt-II) – 2004	100 A to 900 A 1 s to 7200 s

Laboratory	Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	22.04.2014
Certificate Number	T-2936	Valid Until	21.04.2016
Last Amended on	29.06.2015	Page	2 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	LOW VOLTAGE FUSES (63 A to 315A)	Temperature-rise test at rated current	IS:13703-1993	15°C to 150 °C 63 A to 315 A)
		Watt Loss	IS : 13703 – 1993	1Watt to 63Watts
		Non fusing test	IS : 13703 – 1993	63 A to 400 A 1s to 10800 s
		Fusing test	IS : 13703 - 1993	63 A to 600A 1s to 10800 s
II. TRANSFORMERS & REACTORS				
1.	Power Transformer (3 Phase 11kV/415V, 100 kVA to 1600 kVA)	Winding Resistance	IS : 2026:2011	0.3 mΩ to 1.5 Ω
		No Load Loss	IS : 2026:2011	200 Watts to 2500 Watts
		Full Load Loss at 75 °C	IS : 2026:2011	1000 Watts to 8000 Watts
		% Impedance at 75 °C	IS : 2026:2011	3% to 10%.
III. TRANSMISSION LINE EQUIPMENT & ACCESSORIES				
1.	Current Transformer (20/5 to 2000/5 A)	High Voltage Test	IS : 2705 – 1992 (Part 1 to 4)	0.5 kV to 30 kV
		Accuracy Test	IS : 2705 – 1992 (Part 1 to 4)	Ratio Error– 0.1 % to 5 % 0.2A to 2400 A
				Phase Error- 0.5 min to 120min 0.2Amp to 2400 Amp
		Knee point Test	IS : 2705 – 1992 (Part 1 to 4)	30 V to 200 V 10mA to 1 A

Laboratory	Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	22.04.2014
Certificate Number	T-2936	Valid Until	21.04.2016
Last Amended on	29.06.2015	Page	3 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Current Transformer (20/5 to 2000/5 A)	Verification of Terminal Marking and Polarity	IS : 2705 – 1992 (Part 1 to 4)	Qualitative
2.	Potential Transformer (Up to 14kV)	High Voltage Test	IS : 3156 – 1992 (Part 1 to 4)	0.5 kV to 30 kV
		Accuracy Test	IS : 3156 – 1992 (Part 1 to 4)	Ratio Error- 0.1 % to 5 % 10kV to 20kV Phase Error-5 min to 120min 10kV to 20kV
		Verification of Terminal Marking and Polarity	IS : 3156 – 1992 (Part 1 to 4)	Qualitative
IV.	CABLES & WIRES			
1.	Stranded Aluminium / Copper conductor, HRPVC Armoured & Unarmoured cable for working voltages upto & including 1.1 kV	Conductor Resistance test	IS : 1554 (Pt-1) – 1988 IS : 694 - 1990	0.5 mΩ to 200 Ω
		Armour Resistance test	IS : 1554 (Pt-1) – 1988	0.5 mΩ to 200 Ω
		Thickness of insulation	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	0.1 mm to 20 mm
		Thickness of outer sheath	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	0.1 mm to 20 mm
		Thickness of inner sheath	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	0.1 mm to 20 mm
		Tensile strength of Insulation	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	50 N to 1000 N 1 N/mm ² to 40 N/mm ²

Laboratory	Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	22.04.2014
Certificate Number	T-2936	Valid Until	21.04.2016
Last Amended on	29.06.2015	Page	4 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Tensile strength of outer sheath	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	50 N to 1000 N 1 N/mm ² to 40 N/mm ²
		Elongation at break of Insulation	IS : 1554 (Pt-1) – 1988 IS : 694 – 1990	1 mm to 200 mm
		Elongation at break of outer sheath	IS : 1554 (P1) – 1988 IS : 694 - 1990	1 mm to 200 mm
		High Voltage Test at Room Temperature	IS : 1554 (P1) – 1988 IS : 694 - 1990	0.5 to 10 kV
2.	Stranded aluminium conductor, pvc sheathed, xlpe armoured cable for working voltages upto & including 1.1 kV	Conductor Resistance test	IS : 7098 (P1) - 1988	0.5 mΩ to 200 Ω
		Armour Resistance test	IS : 7098 (P1) - 1988	0.5 mΩ to 200 Ω
		Thickness of insulation	IS : 7098 (P1) - 1988	0.1 mm to 20 mm
		Thickness of outer sheath	IS : 7098 (P1) - 1988	0.1 mm to 20 mm
		Thickness of inner sheath	IS : 7098 (P1) - 1988	0.1 mm to 20 mm
		Tensile strength of outer sheath	IS : 7098 (P1) - 1988	50 N to 1000 N (1 N/mm ² to 40 N/mm ²)
		Elongation at break of outer sheath	IS : 7098 (P1) - 1988	1 mm to 200 mm
		High Voltage Test At Room Temperature	IS : 7098 (P1) - 1988	0.5 to 10 kV

Laboratory	Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	22.04.2014
Certificate Number	T-2936	Valid Until	21.04.2016
Last Amended on	29.06.2015	Page	5 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
V. CAPACITORS				
1.	L. T. Capacitor	Measurement of Capacitance & kVAR output	IS : 13585 –2012 (Part 1)	0.1 μ F to 1100 μ F 1kVAR to 125 kVAR
		Measurement of the Tangent of Loss angle (Tan δ) of the capacitor	IS : 13585 –2012 (Part 1)	0.001% to 0.2%
		Voltage Test between terminals & container	IS : 13585 –2012 (Part 1)	0.5 kV to 10 kV
		Test of the internal discharge device	IS : 13585 –2012 (Part 1)	1 s to 120 s
VI. LAMPS, LUMINAIRES & ACCESSORIES				
1.	HPSV Lamps (Up to 400Watts)	Lamp Starting test & Lamp Electrical Characteristics	IS : 9974:1981 (Part 1 & 2)	40V to 250 V 0.1A to 5 A 5W to 500W 100 Lux to 3000 Lux
2.	HPSV Ballast (Up to 400Watts)	Test for Power and Current output	IS : 6616 :1992	40V to 300 V 0.1A to 6 A 5W to 500W 100 Lux to 3000 Lux

Laboratory Material Testing and Standards Department, Best Undertaking, 1st Floor, Bijlee Bhavan, Kussara Bunder Road, Mazgaon, Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Electrical Testing **Issue Date** 22.04.2014

Certificate Number T-2936 **Valid Until** 21.04.2016

Last Amended on 29.06.2015 **Page** 6 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
VII. INSULATING MATERIALS & INSULATORS				
1.	New Insulating Oil	Water Content	IS : 335 - 1993	0.001mg to 10mg (in 5 ml sample)
		Electric Strength	IS : 335 - 1993	15kV to 100 kV
		Dielectric Dissipation Factor	IS : 335 - 1993	0.00001 to 0.004

~~-X-X-X-X-X-X-X-X-X-X-X-X-~~