

Laboratory

International Centre for Automotive Technology, Plot No. 26, Sec-3,  
HSIDC, IMT Manesar, Gurugram, Haryana

Location 1: Plot No. 26, Sec-3, HSIDC, IMT Manesar, Gurgaon, Haryana  
Location 2: Plot No. 01, Sec M-11, IMT Manesar, Gurgaon, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5360

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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
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**ELECTRICAL TESTING**

LOCATION 1				
I.	<b>DOMESTIC ELECTRICAL APPLIANCES</b>			
1.	<b>Frost Free Refrigerator</b>	Testing the Air Tightness of door or lid seal (s)	IS 15750 (Amd-1) Cl no:8	Qualitative
		Testing the opening force of door(s) or lid(s)	IS 15750 (Amd-1) Cl no:9	Qualitative
		Testing the durability of hinges and handles of door(s) and lid(s)	IS 15750 (Amd-1) Cl No. 10	Qualitative
		Testing the mechanical strength of shelves and similar components	IS 15750 (Amd-1) Cl No. 11	Qualitative
		Storage temperatures testing	IS 15750 (Amd-1) Cl No. 12	Qualitative
		Water Vapour condensation test	IS 15750 (Amd-1) Cl No. 13	Qualitative
		Energy Consumption test	IS 15750 (Amd-1) Cl No. 14	Upto 3 kWh/24Hrs
		Temperature Rise Test	IS 15750 (Amd-1) Cl No. 15	(-)20 °C to 140 °C
		Pull Down Test	IS 15750 (Amd-1) Cl No. 16	2 Hrs to 6 hrs
		Ice-making Test	IS 15750 (Amd-1) Cl. No. No. 17	Qualitative
		High voltage test	IS 15750 (Amd-1) Cl. No. No. 19	Qualitative (0.1 to 3kV AC)

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Convenor

Alok Jain  
Program Manager

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		Determination of Volume	IS 15750 (Amd-1) Cl. No. No. 6.2.1 & 6.2.2	50 L to 800 L
		Insulation resistance	IS 15750 (Amd-1) Cl. No. No. 20	100 Ω to 10 GΩ 250 V, 500 V & 1000V
2.	<b>Direct Cool Refrigerator</b>	Door Seal Test	IS 1476 (Part 1) (Amd-3) Cl no:14.1	Qualitative
		Mechanical strength of shelf and similar components	IS 1476 (Part 1) (Amd-3) Cl No:14.2	Qualitative
		Door and fittings tests	IS 1476 (Part 1) (Amd-3) Cl no:14.3	Qualitative
		No-load adjustment test	IS 1476 (Part 1) (Amd-3) Cl No. 14.4	Qualitative
		No-load performance test	IS 1476 (Part 1) (Amd-3) Cl No. 14.5	1 Hrs to 4 hrs
		Ice-making test	IS 1476 (Part 1) (Amd-3) Cl No. 14.6	Qualitative
		Thermal insulation test	IS 1476 (Part 1) (Amd-3) Cl No. 14.7	Qualitative
		High voltage test	IS 1476 (Part 1) (Amd-3) Cl No. 14.8	Qualitative 0.1 to 3kV AC
		Rated energy consumption test	IS 1476 (Part 1) (Amd-3) Cl.no. : 14.9	0.1 kWh to 2.5 kWh/24 hrs
		Thermostat test	IS 1476 (Part 1) (Amd-3) Cl.no. : 15.1	Qualitative
		Determination of volume	IS 1476 (Part 1) (Amd-3) Cl. No. No. 8.2.1 & 8.2.2	50 L to 800 L
		Insulation Resistance Test	IS 1476 (Part 1) (Amd-3) Cl. No. No. 15.2	Upto 1000 V, 0 to 10 A
3.	<b>Stationary Storage Type</b>	Standing Loss	IS 2082 (Part 1) (Amd-5) Cl. No. No: 16	0.792 kWh/24 hr to 2.970 kWh/24 hr

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	Electric Water Heater (Electric Geyser)	Rated Capacity	IS 2082(Part 1) (Amd-5) Cl. No. No: 15	5 L to 200 L
4.	3-phase Squirrel Cage Induction Motor	High Voltage Test	IS/IEC 60034-1 Amd 2015, Cl. No. No: 9.2	500V AC- 1500 V AC (Qualitative)
		Insulation Resistance Test	IS 7816	100 ohm to 10 G ohm @ 250V, 500V & 1000V
		Dimensions Test	IS 1231	0.1 mm to 600 mm
		Resistance measurement of stator windings test	IS/IEC 60034-1 Cl. No. No. 8.6 IS 15999 Part-2, Cl. No. 5.7	0.01 $\Omega$ to 50 $\Omega$
		No load Test at rated voltage	IS/IEC 60034-1 Cl. No. No.: 9.1 IS 15999 Part-2/sec-1	0.1 to 10A Up to 420V
		Reduced voltage running up test at no load	IS 15999 Part-2/sec-1	0.1V to 420V (Qualitative)
		Locked rotor readings at suitable reduced voltage (V, I, T, PI)	IS 15999 Part-2/sec-1 As amended up to 2017	0.01 to 3.7kW
		Full load performance test	IS 15999 Part-2/sec-1 As amended up to 2017 6.4.4.2	0.01 to 3.7kW
		Temperature Rise test	IS/IEC 60034-1 As amended up to 2015 , Cl No. 8	10°C -100 °C
	Momentary overload test	IS 15999 Part-2/sec-1 As amended up to 2017	Qualitative (0.01 to 3.7kW )	
5.	Ceiling Fan	Temperature rise test	IS 374 (Amd-6) Cl. No. No.10.4	20 °C to 150 °C
		Leakage current test	IS 374 (Amd-6) Cl. No. No.10.5	0.01mA to 500 mA

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		High voltage test	IS 374 (Amd-6) Cl. No. No.10.6	0.1kAC to 3 kV AC
		Insulation Resistance test	IS 374 (Amd-6) Cl. No. No.10.7	100 Ω to 10 Ω 250 V,500 V & 1000 V
		Starting Test	IS 374 (Amd-6) Cl. No. No.10.8	195.5V to 204V
		Fan speed and input test	IS 374 (Amd-6) Cl. No. No.10.9	Upto 1500 RPM
		Earthing connections test	IS 374 (Amd-6) Cl. No. No.10.10	Qualitative (0.1 V to 12 V AC Upto 25 A)
		Protection against electric shock	IS 374 (Amd-6) Cl. No. No.10.11	Qualitative
		Moisture Resistance test	IS 374 (Amd-6) Cl. No. No.10.12	Upto 95% R.H
		Mechanical strength test	IS 374 (Amd-6) Cl. No. No.10.13	0.5 joule Impact energy
		Suspension system test	IS 374 (Amd-6) Cl. No. No.10.14	0.1 to 100 kN
		Creepage distance and clearances test	IS 374 (Amd-6) Cl. No. No.10.15	0.5 mm to 100 mm
		Mechanical endurance Test for regulator	IS 374 (Amd-6) Cl. No. No.10.16	Qualitative
6.	Washing Machine	Finish	IS 14155 (Amd-4), Cl No. 18	Qualitative
		Protection Against Electric Shock	IS 302-2-7 IS 302-1 (Amd-4) Cl. No. No:8	Qualitative
		Input power and current	IS 302-2-7 IS 302-1 (Amd-4) Cl. No. No:10	50 to 500 W 0.5 - 5 A

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		Leakage current at operating temperature	IS 302-2-7 IS 302-1 (Amd-4) Cl no:13	Upto 3.5 mA
		Moisture Resistance Test	IS 302-2-7/IS 302-1 (Amd-4) Cl. No. no. 15	IPX1 –IPX7
		Leakage current & Electric Strength	IS 302-2-7 IS 302-1 (Amd-4) Cl no:16	0-3.5 mA 0-6000 V AC
		Construction	IS 302-2-7 IS 302-1 (Amd-4) Cl no:22	Qualitative
		Provision for Earthing	IS 302-2-7 IS 302-1 (Amd-4) Cl no:27	10 mΩ to 2000 mΩ
7.	Color TV	Power Consumption In Standby mode	IEC 62301 Ed 2.0 Cl. No. no. 5	0.1 W to 300 W
		Power Consumption in ON mode	IEC 62087 Cl. No. no. 11	0.1 W to 300 W
8.	Computers	Power Consumption In Standby mode	IEC 62301 Ed.2.0 Cl. No. No. 5	0.1 W to 300 W
		Power Consumption in ON mode	IEC 62301Ed 2.0 Cl. No. No: 5	0.1 W to 300 W
		Power Consumption in OFF mode	IEC 62301Ed 2.0 Cl. No. No: 5	0.1 W to 300 W
9.	Television	Luminance Requirements	BEE schedule 11	0.001 cd/m <sup>2s</sup> to 199900 cd/m <sup>2s</sup>
ii.	<b>LAMPS AND LUMINIARES</b>			
1.	Self Ballasted LED Lamps for General Lighting Services	Marking	IS16102 Part-1 Amd Mar 2015 – Cl. No. No. 5.0	Qualitative
		Cap Interchangeability	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 6.1	B22, E14, E27

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		Bending Moment, Axial Pull and Mass	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 6.2	Upto 10 N-m
		Protection against electric shock	IS16102 Part-1 Amd 2015 – Cl. No. No. 7.0	30 V to 60 V
		Insulation Resistance	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 8.1	0.01 MΩ to 10 GΩ 50V-1000 V
		Electric Strength	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 8.2	1-10 kV
		Mechanical Strength (Torsion Test)	IS16102 Part-1 as amended upto Mar 2015 – Cl No. 9	Upto 10 N-m
		Cap Temperature Rise	IS16102 Part-1Amd 2015– Cl No. 10.0	Upto 600°C
		Resistance To Heat (Ball Pressure Test)	IS16102 Part-1 Amd 2015 Cl. No. No. 11.0	25°C to 180°C 0.01 mm to 10 mm, 20 N
		Resistance To Flame And Ignition (Glow Wire Test)	IS16102 Part-1 Amd 2015 Cl. No. No. 12.0	Upto 1200°C
		Fault Conditions	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 13.0	0.01V to 300V 50/60Hz / 0.1V
		Creepage Distances and Clearances	IS16102 Part-1 as amended upto Mar 2015 – Cl. No. No. 14.0	0.01 mm to 300 mm
2.	Fixed luminaires (Sec1), Recessed luminaires, (Sec 2)	Marking	IS 10322 (Part 1) (Cl. No. 3.4) IEC 60598-1 Ed 7.0 (Cl. No. 3.4)	Qualitative
		Construction	IS 10322 (Part 1) Cl. No. 4 IEC 60598- 1 Ed 7.0 (Cl.	1 N to 300N

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	luminaires for road and street lighting, (Sec 3) Portable general-purpose luminaires, (Sec 4) Floodlights, (Sec 5) Hand lamps (Sec 6)		No. 4) (Sub clause: 4.1 to 4.26	0.3Nm to 6Nm, 0.2 mm to 300mm, 0.2J, 0.35J, 0.5J, 0.7J, 1J , 2J, 5J, 10J, 20J 25°C to 180°C 5.0VAC to 600VAC 5.0 VDC to 60VDC 0.01AAC to 20AAC 0.01ADC to 20ADC
		External and Internal wiring	IS 10322 (Part 1): 2014 (Cl. No. 5) IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 5.1, 5.2 & 5.3)	0.2 mm to 300mm 1N to 300N 5.0VAC to 600VAC 5.0 VDC to 60VDC 0.01AAC to 20AAC 0.01ADC to 20ADC
		Provision for Earthing	IS 10322 (Part 1): 2014 (Cl. No. 7) IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 7) (Sub Clause:7.1, 7.2)	3AAC to 40 AAC 0.01 VAC to 600VAC 1.0 mΩ to 500 mΩ
		Protection against electric shock (access to live parts)	IS 10322 (Part 1): 2014, Cl. No. 8 IEC 60598-1 : 2008, Ed 7.0 Cl. No. 8.1, 8.2	0.2mm to 300mm, 1N to 300N Test Probe- B Test Probe- 18 & 19
		Resistance to dust, solid objects and moisture	IS 10322 (Part 1): 2014, Cl. No. 8m IEC 60598-1 : 2008, Ed 7.0 Cl. No. 9.1, 9.2,9.3	0.2mm to 300mm 1 sec to 999 sec 1 to 9000 counts -95.03 kPa to 100 kPa 0 to 0.994 MPa 1 min to 59 min
		Insulation resistance tests	IS 10322 (Part 1),Cl. No. 10.2.1/IEC 60598-1:2008, Ed 7.0Cl. No. 10.2.1	2MΩ to 20.5GΩ 500 VDC to 5000VDC

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		Electric strength test	IS 10322 (Part 1): 2014, Cl.10.2.2 IEC 60598-1 : 2008, Ed 7.0 Cl. No. 10.2.2	0.5 kVAC to 5 kVAC
		Leakage current	IS 10322 (Part 1): 2014 Cl. No. 10.3 IEC 60598-1 : 2008, Ed 7.0 Cl. No. 10.3	500µA to 25.0 mA
		Creepage distances and clearances	IS 10322 (Part 1): 2014 (Cl.11) IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 11),(Sub Clause:11.1, 11.2)	0.2mm to 300mm
		Endurance	IS 10322 (Part 1): 2014 (Cl. No. 12.3)IEC 60598-1 : 2008, Ed 7.0(Cl. No. 12.3)	25°C to 65°C 5.0VAC to 600VAC 5.0 VDC to 60VDC 0.01AAC to 20AAC 0.01ADC to 20ADC
		Thermal tests (Normal operation)	IS 10322 (Part 1) (Cl. No. 12.4) IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 12.4)	25°C to 450°C 5.0VAC to 600VAC 5.0 VDC to 60VDC 0.01AAC to 20AAC 0.01ADC to 20ADC
		Resistance to heat	IS 10322 (Part 1): 2014 (Cl. No. 13.2) IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 13.2)	25°C to 180°C 0.2mm to 300mm 20N
		Resistance to flame and ignition	IS 10322 (Part 1): 2014 , Cl. No. 13.3, IEC 60598-1 : 2008, Ed 7.0 (Cl.13.3)	Needle Flame : 10 sec – 120 sec 100°C -700°C 45°
				Glow Wire : 1AAC – 200AAC 10Sec – 59Sec 30°C - 1000°C

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		Resistance to tracking	IS 10322 (Part 1): 2014 (Cl. No. 13.4), IEC 60598-1:2008, Ed 7.0 (Cl. No. 13.4)	100VAC to 600VAC, 0.2AAC to 1AAC, 1N, 30sec
		Screw terminals	IS 10322 (Part 1): 2014 (Cl.14), IEC 60598-1 : 2008, Ed 7.0 (Cl. No. 14) (Sub Clause:14.1, 14.2, 14.3 & 14.4)	0.2mm to 300mm 10N to 300N 1 sec. to 15 min
		Screwless terminals	IS 10322 (Part 1): 2014 (Cl. No. 15) IEC 60598-1 : 2008, Ed 7.0 (Cl.15.1to 15.9)	5.0VAC to 600VAC 5.0 VDC to 60VDC 0.01AAC to 20AAC 0.01ADC to 20ADC 0.2 mm to 300mm, 25°C. to 180°C, 0.01N to 300N 1 sec. to 15 min
		Static Load Test (Wind Force Test)	IS 10322 (Part 5/sec 3): 2012 (Cl. No. 7.3.1)IEC 60598-2-3 : 2011, Ed 3.1,Cl. No. 3.6.3.1	Qualitative
		Glass Cover Shattering	IS 10322 (Part 5/sec 3): 2012(Cl. No. 7.5) IEC 60598-2-3 : 2011, Ed 3.1 (Cl. No. 3.6.5)	Qualitative
		Impact	IS 10322 (Part 5/sec 3) : 2012 (Cl. No. 7.8) IEC 60598-2-3 : 2011, Ed. 3.1 (Cl. No. 3.6.5.2/ 3.6.8)	Impact Energy: 0.2J, 0.35J, 0.5J, 0.7J, 1J , 2J, 5J, 10J, 20J
		Overturning	IS 10322 (Part 5/sec 4) :1987+A1:1995 (Cl. No.	0.2 mm to 300mm 6°

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			6.4)IEC 60598-2-4 : 2011, Ed. 3.1 (Cl. No. 4.6.3)	
		Wind Speed	IS 10322 (Part 5/sec 5):2013 (Cl. No. 7.5) IEC 60598-2-5: 2011, Ed. 3.1 (Cl. 4.6.8)	Qualitative
		Flat Glass Cover Shattering (Fragmentation Test)	IS 10322 (Part 5/sec 5):2013 (Cl. No. 7.8) IEC 60598-2-5: 2011, Ed. 3.1 (Cl. 4.6.8)	Qualitative
		Impact Test for hand Lamp	IS 10322 (Part 5/sec 6): 2013 (Cl. No. 7.6.2) IEC 60598-2-8 : 2013, Ed 3.1 (Cl. No. 8.7.6.2)	Qualitative
		Flexing	IS 10322 (Part 5/sec 6):2013(Cl. No. 11.4.1) IEC 60598-2-8 : 2013, Ed 3.1 (Cl.8.11.4.1)	2MΩ to 20.5GΩ 500 VDC to 5000VDC 0.5 kVAC to 5 kVAC
		Compression for hand lamp	IS 10322 (Part 5/sec 6):2013 (Cl. No. 16.1) , IEC 60598-2-8 : 2013, Ed 3.1 (Cl. No. 8.16.1)	10N to 100N 100°C
III.	<b>POWER STABILISERS AND UPS</b>			
1.	<b>Uninterruptible Power Systems</b>	Power Interface	IS 16242-1 IEC 60950-1 2005+AMD1:2009+AMD2:2013, Cl. No. No. 4.6/Cl. No. No. 1.6.2RD	5 mA to 50 A 10 W to 5 kW 10 V to 300 V
		Limited Power Sources	IS 16242-1 IEC 60950-1:	0.1 V to 60 V DC 30 mA to 90 mA

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			2005+AMD1:2009+AMD2:2013 Cl. No. No. 5.2.5, 2.5/RD	
		Provisions for Earthing and Bonding	IS 16242-1 IEC 60950-1:2005+AMD1:2009+AMD2:2013 Cl. No. No. 5.3, 2.6/RD	0.001 $\Omega$ to 0.4 $\Omega$ 3 A to 45 A
		Abnormal operating & fault condition	IS 16242-1 IEC 60950-1: 2005+AMD1:2009+AMD2:2013 Cl. No. No. 8.3, 5.3/RD	Upto 400°C 5 mA to 20 A 0.1 W to 10 kW
		Disconnection from the mains Supply	IS 16242-1 IEC 60950-1: 2005+AMD1:2009+AMD2:2013 Cl. No. No. 3.4	Qualitative
		Stability	IEC 60950-1 amd 2 Cl. No. No. 4.1	5° to 30°
		Mechanical Strength	IS 16242-1 IEC 60950-1: 2005+AMD1:2009+AMD2:2013 Cl. No. No. 7.3, 4.2	0.1 N to 500N 0.001m to 3m Upto 180 °C
		Thermal requirements	IS 16242-1: 2014 (RD): IEC 60950-1: 2005+AMD1:2009+AMD2:2013 Cl. No. No. 7.7, 4.5/RD	Upto 400°C Upto 1000 VAC /DC 5 mA to 20 A 0.1 W to 10 kW Upto 2k $\Omega$
		Openings in enclosures	IS 16242-1 IEC 60950-1: 2005+AMD1:2009+AMD2:2013 Cl. No. No. 4.6	Up to 70 mm

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		General Provision for Earth leakage Test	IS 16242-1 IEC 60950-1: 2005+ AMD1: 2009+AMD2:2013 Cl. No. No. 8.1	30µA to 9.9mA
		Electric Strength Test	IS 16242-1 IEC 60950-1: 2005+AMD1:2009+AMD2:2 013 Cl. No. No. 8.2, 5.2	50 V to 5 kVAC 50 Hz to 60 Hz
		Cable and interconnection check	IEC 62040-3 Cl. No. No. 6.2.2.2	1 N to 100 N
		Light Load and functional Test	IEC 62040-3 Cl. No. No. 6.2.2.3	100 VA to 10000 VA 10 V to 300 V 0.1A to 50 A
		No load	IEC 62040-3 Cl. No. No. 6.2.2.4	100 VA to 10000 VA 10 V to 300 V 0.1 A to 50 A
		Full load	IEC 62040-3 Cl. No. No. 6.2.2.5	100VA to 10000VA 10V to 300V 0.1A to 50A
		Synchronization	IEC 62040-3 Cl. No. No. 6.2.2.6	100VA to 10000VA 10V to 300V 0.1A to 50A
		AC input failure	IEC 62040-3 Cl. No. No. 6.2.2.7	100VA to 10000VA 10V to 300V 0.1A to 50A
		AC input return	IEC 62040-3 Cl. No. No. 6.2.2.8	100VA to 10000VA 10V to 300V 0.1A to 50A
		Transfer to bypass	IEC 62040-3 Cl. No. No. 6.2.2.9	100VA to 10000VA 10V to 300V 0.1A to 50A

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		Specific applications Annex H "Degree of Protection against foreign objects indicated by the first characteristic Numeral"	Cl. 1.2 of IS 16242 (Part 1) IEC 62040-1	IP 1X to 6X IP X1 to X8
		Components	Cl. 4.5 of IS 16242-1 IEC 62040-1 Cl. 1.5 of IEC 60950-1:2005+AMD1:2009+AMD2	Qualitative
		Marking and instruction	Cl. 4.7 of IS 16242-1 IEC 62040-1 Cl. 1.7 of IEC 60950-1:2005+AMD1:2009+AMD2	Qualitative
		Protection for UPS intended to be used in operator access areas	Cl. 5.1.1 of IS 16242-1 IEC 62040-1 RD 2.1.1 of IEC 60950-1:2005+AMD1:2009+AMD2	Qualitative (Jointed test probe Test Probe 13 Test Probe as per Figure 2C 0 to 300N 0-34Kg, LC: 0.1gm
		Protection for UPS intended to be used in service access areas	Cl. 5.1.2 of IS 16242-1 IEC 62040-1 RD 2.1.1.5 of IEC 60950-1:2005+AMD1:2009+AMD2	Qualitative (Bandwidth: 1 GHz Channels: 4 Max. Sample Rate: 20 GSa/s 1mV/Div to 5V/ Div for all channels Time: 0.01s to 24h)
		Protection for UPS intended to be used in	Cl. 5.1.3 of IS 16242-1 IEC 62040-1	Upto 600 V AC/DC Upto 50 A

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		restricted access area	RD 2.1.1.1 & 2.1.1.5 of IEC 60950-1: 2005+AMD1:2009+AMD2	50/60Hz 12 kVA 1 N to 300 N
		Back feed protection	Cl. 5.1.4 of IS 16242-1:2014/IEC 62040-1:2008 RD 2.10.3.3 of IEC 60950-1: 2005+AMD1:2009+AMD2	0 -60V 0-1000ms
		Emergency switching (Disconnect) Device	Cl. 5.1.5 of IS 16242-1 IEC 62040-1	Qualitative
		Safety Extra Low Voltage-SELV	Cl. 5.2.1 of IS 16242-1 IEC 62040-1 RD 2.2 of IEC 60950-1: 2005+AMD1:2009+AMD2	CRO: Bandwidth: 1 GHz Channels: 4 Max. Sample Rate: 20 GSa/s 1 mV/Div to 5V/ Div for all channels 0.01 s to 24 hr 4½ Digit (DMM)
		Telephone network voltage circuits	Cl. 5.2.2 of IS 16242-1:2014/IEC 62040-1 / RD 2.3 of IEC 60950-1: 2005+AMD1:2009+AMD2	CRO: Bandwidth: 1 GHz Channels: 4 Max. Sample Rate: 20 GSa/s 1 mV/Div to 5V/ Div for all channels 0.01 s to 24 hr 4½ Digit (DMM)
		Limited current circuits	Cl. 5.2.3 of IS 16242-1:2014/IEC 62040-1:2008 / RD 2.4 of IEC 60950-1: 2005+AMD1:2009+AMD2	4½ Digit (DMM) 10µA to 90mA 2000Ω

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		External signaling circuits	Cl. 5.2.4 of IS 16242-1 IEC 62040-1/ RD 3.5 of IEC 60950-1: 2005+ AMD1: 2009+AMD2	Qualitative
		AC and D.C. Power Isolation	Cl. 5.4 of IS 16242-1 IEC 62040-1/ RD 3.4 of IEC 60950-1: 2005+AMD1: 2009+AMD2	Qualitative
		Over current and earth fault Protection	Cl. 5.5 of IS 16242-1 IEC 62040-1 / RD 2.7.3, 2.7.4, 2.7.5, 2.7.6 of IEC 60950-1: 2005+AMD1:2009+AMD2	Qualitative
		Protection of personnel - Safety Interlocks	Cl. 5.6 of IS 16242-1 IEC 62040-1/ RD 2.8 of IEC 60950-1: 2005+AMD1: 2009+AMD2	CRO: 1. Bandwidth: 1 GHz 2. Channels: 4 3. Max. Sample Rate: 20 GSa/s 4. 1mV/Div to 5V/ Div for all channels Force: 1N to 300N 4½ Digit (DMM)
		Clearances, Creepage distances and distances through insulation	Cl. 5.7 of IS 16242-1 IEC 62040-1 / RD 2.10 of IEC 60950-1: 2005+AMD1:2009+AMD2	1 N to 300 N 0.01 to 150 mm 100 to 600V Upto 1A 1N 30 s
		Wiring, connections and supply	Cl. 6 of IS 16242-1 IEC 62040-1/RD 3.1 of IEC 60950 1:2005 +AMD1:2009 +AMD2	Qualitative

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		Enclosure	Cl. 7.1 of IS 16242-1:2014/IEC 62040-1:2008/ 2.1/RD, 1.7.2/RD & 6.2.1/RD, 1.7.7 of IEC 60950 1:2005+AMD1:2009+AMD2 :2013	Qualitative
		Constructional details	Cl. 7.4 of IS 16242-1 IEC 62040-1 RD 4.3.1 to 4.3.5/ 4.3.7/ 4.3.11/ 4.4/ 4.5 of IEC 60950 - 1:2005+AMD1:2009+AMD2	Qualitative
		Resistance to fire	Cl. 7.5 of of IS 16242-1 IEC 62040-1 RD 4.7 of IEC 60950 1:2005+AMD1:2009+AMD2	Burner Dia:9.5 mm Needle Dia:0.5 mm Time:1mSec.-99.99 Minute Glow wire temp: 550oC to 960oC Scale: 0 mm to 150 mm
		Battery location	Cl. 7.6 of IS 16242-1 IEC 62040-1:2008/ RD 5.2 of IEC 60950 1:2005+AMD1:2009+AMD2	Qualitative (0.5kV to 5kV (AC)/ 50/60Hz 0.5kV to 6kV (DC) Current: 100 mA 50/60Hz 0.1mm to 150 mm 4½ Digit (DMM))
		Connection to telecommunication networks	Cl. 9 of IS 16242-1 IEC 62040-1 RD 6/ 3.5/ 2.1.3/ 2.3.1 to 2.3.5/ 2.6.5.8/ 2.10.3.3/ 2.10.3.4/ 2.10.4 and annex	Qualitative (Test probe \fig. 2C Impulse generator: 10/700 µs Insulation resistance: 0 to

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			M of IEC 60950 1:2005+AMD1:2009+AMD2	10 GΩ @ 500V DC)
IV.	<b>BATTERIES</b>			
1.	<b>Stationary Valve Regulated Lead Acid Batteries</b>	Checking of Dimension	IS 15549 Cl. No. No. 10.1.1.b	0.01 mm to 600 mm
		Test For C <sub>10</sub> Capacity and Voltage During Discharge	IS 15549 Cl. No. No. 12.1	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 5 Ah to 400 Ah
		Test on vent seal operation	IS 15549 Cl. No. No. 12.8	Qualitative
		Test For C <sub>1</sub> Capacity and voltage during discharge	IS 15549 Cl. No. No. 12.2	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 5 Ah to 400 Ah
		Ampere-Hour and Watt-Hour Efficiency Test	IS 15549 Cl. No. No. 12.4 & 12.5	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Test for Retention of Charge	IS 15549 Cl. No. No. 12.6	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Acid Retention Capability Test on Separators	IS 15549 Cl. No. No. 12.7	1 mg to 200 g
		Wicking Test on Separators	IS 15549 Cl. No. No. 12.7	Qualitative
	Test for Oxygen Recombination	IS 15549 Cl. No. No. 12.9	0.1 ml to 50 ml	
2.	<b>Stationary Cells And Batteries, Lead-Acid Type (With Tubular Positive Plates)- Specification</b>	Verification of Marking	IS 1651 Cl. No. No. 12.3	Qualitative
		Verification of Dimensions	IS 1651 Cl. No. No. 12.4	0.01mm to 600 mm
		Test for Capacity and Test for Voltage During	IS 1651 Cl. No. No. 12.5 Cl. No. No. 12.10	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC

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		Discharge		5 Ah to 400 Ah
		Ampere-Hour and Watt-Hour Efficiency Tests	IS 1651 Cl. No. No. 12.9	0.01 V DC to 60 V DC 0.020 A DC to 400 A DC
		Test for Loss of Capacity on Storage	IS 1651 Cl. No. No. 12.7	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Endurance Test	IS 1651 Cl. No. No. 12.8	Qualitative
3.	<b>Stationary Cells and Batteries, Lead-Acid Type (With Tubular Positive Plates) in Monoblock Container</b>	Verification of Constructional Requirements	IS 13369 Cl. No. No. 11.2	Qualitative
		Verification of Marking	IS 13369/Cl. No. No. 11.3	Qualitative
		Verification of Dimensions	IS 13369/Cl. No. No. 11.4	0.01 mm to 600 mm
		Test of Capacity	IS 13369 Cl. No. No. 11.5	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 5 Ah to 400 Ah
		Ampere-Hour and Watt-Hour Efficiency Tests	IS 13369 Cl. No. No. 11.8	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Test for Loss of Capacity on Storage	IS 13369 Cl. No. No. 11.6	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Endurance Test	IS 13369 Cl. No. No. 11.7	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
4.	<b>Lead-Acid Storage Batteries for Motor Vehicles With Light Weight and High Cranking Performance</b>	Physical Examination	IS 14257 Cl. No. No. 9.3.1	Qualitative
		Dimension and Layout	IS 14257 Cl. No. No. 9.3.2	0.01 mm to 600 mm
		Marking	IS 14257 Cl. No. No. 9.3.3	Qualitative
		Charge Acceptance	IS 14257 Cl. No. No. 9.3.6	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		5 Hr Capacity	IS 14257 Cl. No. No. 9.3.4	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC

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				5 Ah to 400 Ah
		High Rate at -15 °C	IS 14257 Cl. No. No. 9.3.5	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 1 s to 5000 s
		Life Cycle Test	IS 14257 Cl. No. No. 9.3.7	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Overcharge Endurance	IS 14257 Cl. No. No. 9.3.9	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Strength of Terminal	IS 14257 Cl. No. No. 9.3.10	2.5 Nm to 490 Nm
		Robustness to fastening	IS 14257 Cl. No. No. 9.3.11	0 N to 2000 N
5.	Lead-Acid Starter Batteries	Effective reserve Capacity (Cr , e)	JIS D 5301 Cl. No. No. 9.5.2a	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 1 s to 5000 s
		5h Rate Capacity (C5 , n)	JIS D 5301 Cl. No. No. 9.5.2b	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 5 Ah to 400 Ah
		Dimensions	JIS D 5301 Cl. No. No. 9.5.1	0.01 mm to 600 mm
		High Rate discharge	JIS D 5301 Cl. No. No. 9.5.3 b	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 1 s to 5000 s
		Cold Cranking Ampere (CCA) Test	JIS D 5301 Cl. No. No. 9.5.3 a	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 1 s to 5000 s
		Charge Acceptance Test-1	JIS D 5301 Cl. No. No. 9.5.4 a	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC (-) 40 °C to 150 °C
		Charge Acceptance Test-2	JIS D 5301 Cl. No. No. 9.5.4 b	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC (-)40 °C to 150 °C

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		Heavy load Endurance Test	JIS D 5301 Cl. No. No. 9.5.5 b	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Light Load endurance Test	JIS D 5301 Cl. No. No. 9.5.5 a	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
		Terminal strength Test	JIS D 5301 Cl. No. No. 9.5.7	2.5Nm to 490Nm
		Fastening Robustness	JIS D 5301 Cl. No. No. 9.8	0 N to 2000 N
6.	<b>Battery Operated Vehicles</b>	Short Circuit Test (Cell Level or Battery Module or Battery Pack)	AIS 048 Cl. No. No. 2.1.1	Qualitative
		Overcharge Test	AIS 048 Cl. No. No. 2.1.2	Qualitative
		Discharge after Vibration Test	AIS 048 Cl. No. No. 2.2.1.2	0.01 V DC to 60 V DC 0.1 A DC to 400 A 5 Ah to 400 Ah
		Discharge after Shock Test	AIS 048 Cl. No. No. 2.2.2.2	0.01 V DC to 60 V DC 0.1 A DC to 400 A 5 Ah to 400 Ah
		Roll-Over Test	AIS 048 Cl. No. No. 2.2.3	Qualitative
		Penetration Test	AIS 048 Cl. No. No. 2.2.4	Qualitative
7.	<b>Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes</b>	<b>Nickel System</b>		
		Continuous low rate Charging (cells) Test	AIS 048 IEC 62133 Cl. No. No. 7.2.1	Qualitative
		Vibration test	IS 16046 IEC 62133 Cl. No. No. 7.2.2	10 Hz to 55 Hz 0.76mm to 1.52mm
		Moulded case stress at High Ambient Temperature (batteries) Test	IS 16046 IEC 62133 Cl. No. No. 7.2.3	68 °C to 72 °C

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		Temperature Cycling Test	IS 16046 IEC 62133 Cl. No. No. 7.2.4	(-)20 °C to 75 °C
		Incorrect Installation (cells) Test	IS 16046 IEC 62133 Cl. No. No. 7.3.1	Qualitative
		External Short Circuit	IS 16046 IEC 62133 Cl. No. No. 7.3.2	60mΩ to 100mΩ (-)20 °C to 75 °C
		Free Fall Test	IS 16046 IEC 62133, Cl. No. No. 7.3.3	1 m
		Thermal Abuse (cells) Test	IS 16046 IEC 62133 Cl. No. No. 7.3.5	3 °C/min to 7 °C/min 20 °C to 132 °C
		Crushing of Cells Test	IS 16046 IEC 62133 Cl. No. No. 7.3.6	12 kN to 14 kN
		Low Pressure (cells) Test	IS 16046 IEC 62133 Cl. No. No. 7.3.7	15 °C to 25 °C
		Overcharge Test	IS 16046 IEC 62133 Cl. No. No. 7.3.8	0A to 40A
		Force Discharge (cells) Test	IS 16046 IEC 62133 Cl. No. No. 7.3.9	Upto 10A
		<b>Lithium System :</b>		
		Continuous charging at Constant Voltage (cells)	IS 16046 IEC 62133 Cl. No. No. 8.2.1	Qualitative

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		Moulded case stress at High Ambient Temperature (battery) Test	IS 16046 IEC 62133 Cl. No. No. 8.2.2	68 °C to 72 °C
		External Short Circuit (cell) Test	IS 16046 IEC 62133 Cl. No. No. 8.3.1	60mΩ to 100mΩ
		External Short Circuit (Battery) Test	IS 16046 IEC 62133 Cl. No. No. 8.3.2	60mΩ to 100mΩ
		Free Fall Test	IS 16046 /IEC 62133, Cl. No. No. 8.3.3	60mΩ to 100mΩ 50 °C to 60 °C
		Thermal Abuse (cells) Test	IS 16046 IEC 62133, Cl. No. No. 8.3.4	15 °C to 25 °C
		Crush (cells) Test	IS 16046 IEC 62133, Cl. No. No. 8.3.5	3 °C/min to 7 °C/min +20 °C to +132 °C
		Overcharging of Battery Test	IS 16046 IEC 62133, Cl. No. No. 8.3.6	12kN to 14kN
		Forced Discharge (cells) Test	IS 16046 IEC 62133 Cl. No. No. 8.3.7	Upto 10A
		Transport Tests	IS 16046 IEC 62133 Cl. No. No. 8.3.8	Qualitative
8.	<b>Lead Acid Starter for Motorcycle Battery</b>	Dimensions	JIS D 5302 Cl. No. No. 7.3.1	0.01 mm to 600 mm
		Capacity 10 Hr	JIS D 5302 Cl. No. No. 7.3.2	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 5 Ah to 400 Ah

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		High Rate Discharge Characteristics	JIS D 5302 Cl. No. No. 7.3.3	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC 1 s to 5000 s
		Life Test	JIS D 5302 Informative ref. under 7.3.4	0.01 V DC to 60 V DC 0.1 A DC to 400 A DC
9.	<b>Motor Vehicle Electronic and Electrical System/Sub System Operating on Vehicle Battery Supply</b>	Test(s) at Constant Temperature	ISO 16750-4	-60 to 200°C
		Temperature Step Test(s)	ISO 16750-4	-60 to 200°C, 10% to 98% RH
		Temperature Cycling Test(s)	ISO 16750-4	(-)60 °C to 200 °C 10% R.H to 98% R.H.
		Humid Heat Cyclic Test(s)	ISO 16750-4	(-)60 °C to 200 °C 10% R.H to 98% R.H.
		Damp Heat Steady State Test(s)	ISO 16750-4	(-)60 °C to 200 °C 10% R.H to 98% R.H.
		IPXX Testing	IEC 60529	IPX1 to IPX9 IP1X to IP6X
		Impact Testing	JIS D 5500: 1995	265 N to 314 N
		Over Voltage	ISO 16750-2	Upto 80V
		DC Supply Voltage	ISO 16750-2	Upto 80V
		Reversed Voltage	ISO 16750-2	(-)80V
	Insulation Resistance	ISO 16750-2	Upto 2GΩ 250 V, 500 V & 1000 V	
	Ground Reference and Supply Offset	ISO 16750-2	Upto 80V	
	Open Circuit	ISO 16750-2	Upto 80V	
	Short Circuit	ISO 16750-2	Upto 80V	

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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
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**ELECTRICAL TESTING**

LOCATION 2				
I.	<b>EMC/EMI TEST FACILITY</b>			
1.	<b>EMI /EMC Testing for Electrical/ Electronic Automotive Components</b>	Off – Board Radiated Emissions (RE)	AIS 004 (Part 3): 2009+Amd. 1 ECE R10-05 CISPR 25 (Ed. 3.0): 2008+Corr. 1	9 kHz to 8 GHz 10 dBuV/m to 86 dBuV/m
		Conducted RF Emissions (CE) by voltage (LISN) method	CISPR 25 (Ed. 4.0) CISPR 16-2-1 (Ed. 3.0): 2014+Amd.:2017 CSV, ECE R10-05	100kHz – 150MHz Limits:10-86 dBuV/m
		Conducted RF Emissions (CE) by current probe method	CISPR 25 (Ed. 4.0):2016, CISPR 16-2-1 (Ed. 3.0): 2014 +Amd./ECE R10-05	20Hz – 500MHz Limits: (-16 to 90) dBuV/m
		Off – Board Radiated Immunity (RI), ALSE Method	ISO 11452-2 (Ed. 2) AIS 004 (Part 3): 2009+Amd. 1: April 2015, ECE R10-05: 2014	25 V/m – 200 V/m: 20 MHz – 18 GHz Using Horn antenna (AR LB-1025-NF antenna) 600 V/m (radar pulses): 1.2 – 1.4 GHz, 2.7 – 3.2 GHz Limits: Performance verification
		Radiated Immunity (R1), TEM method	ISO 11452-3 (Ed. 3): 2016, AIS 004 (Part 3): 2009+Amd. 1: April 2015, ECE R10-05: 2014	10 kHz – 400 MHz Limits: Performance verification



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		Bulk Current Injection (BCI)	ISO 11452-4 (Ed. 4): 2011, SAE J1113-4 AIS 004 (Part 3): 2009+Amd. 1: April 2015, ECE R10-05: 2014	10 kHz – 1.3 GHz Limits: Performance verification
		Radiated Immunity (RI), Stripline Method	ISO 11452-5 (Ed. 2): 2002, AIS 004 (Part 3): 2009+Amd. 1: April 2015, ECE R10-05: 2014	10 kHz – 400 MHz Limits: Performance verification
		Radiated Immunity (RI), Direct RF Method	ISO 11452-7 (Ed. 2): 2003, +Amd. 1: 2013,	250 kHz – 400 MHz Limits: Performance verification
		Radiated Immunity (RI), Triplate Method	SAE J1113-25: 2005,	100 kHz – 1 GHz Limits: Performance verification
		Immunity to Magnetic Fields	ISO 11452-8 (Ed. 2): 2015, IEC 61000-4-8:2009	DC – 150 KHz Limits: Performance verification
		Electrostatic Discharge (ESD) test	ISO 11452-8(Ed. 2):2008+Corr. 1:2010+Amd. 1:2014, IEC 61000-4-2(Ed. 2):2008, SAE J1113-13: 2015,	±2kV to 30kV contact and air discharge Limits: Performance verification
		Conducted Transient Emissions on Power Leads	ISO 7637-2 (Ed. 3):2011	24V DC Limits: -600V to +200V
		Immunity to Conducted Transient Disturbances	AIS 004 (Part 3): 2009+Amd. 1: April 2015, ECE R10-05: 2014, ISO 7637-2:2011, ISO 7637-3:2016, SAE J1113-11:2012,	-600 to 600V DC Limits: Performance verification

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			SAE J1113-12:2012, SAE J1455:2017, JASO D001-94, Def Standard 61-5(part 6,2009-2) DIN 72300-2 (2000-07) ECER10 prEN 50498 (2008-03) ETS 300 329 (1994-11) ETS 300 340 (1994-06) ETS 300 342 (1994-06) ETSI EN 301 489-1(2002-04), GOST 28751-90 (1990) ISO 14982 (1998-05) ISO/CD 21848.4 (2005-04) JASO D902-95 (1995) SAE J2139 (2014) SAE J2628 (2013)	
		Environmental conditions and testing for electrical and electronic equipment	ISO 16750-2:2012	Max supply voltage : 32V DC Limits: Performance verification
2.	<b>EMI /EMC testing for 2/3/4 wheeler Passenger Vehicles, Commercial and Agricultural Vehicles</b>	Off – Board Radiated Emissions (RE)	AIS 004 (Part 3): 2009+Amd. 1: 2015, ECE R10-05: 2014, CISPR 12 (Ed. 6.1): 2009 SAE J551-5 (E-field radiated emissions)	9 kHz – 8 GHz Limits:32-83 dBuV/m
		On – Board Radiated Emissions	CISPR 25 (Ed. 4): 2016	0.15 MHz – 2.5 GHz Limits:10-86 dBuV/m
		Off – Board Radiated Immunity (RI), ALSE Method	ISO 11451-2 (Ed. 4): 2015, AIS 004 (Part 3): 2009+Amd. 1: 2015,	25 V/m – 200 V/m: 100 kHz – 18 GHz 600 V/m (radar pulses):

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			ECE R10-05: 2014	1.2 – 1.4 GHz, 2.7 – 3.2 GHz Limits: Performance verification
		Onboard Transmitter Simulation Electromagnetic Immunity	ISO 11451-3 (Ed. 3):2015	1.8 MHz – 54 MHz 60 – 90 MHz 120 – 132 MHz 136 –186 MHz 220 – 225 MHz 404 – 470 MHz 800 MHz – 2 GHz Limits: Performance verification
		Bulk Current Injection (BCI)	ISO 11451-4 (Ed. 3):2013	10 kHz – 1.3 GHz Limits: Performance verification
		Electrostatic Discharge (ESD) Test	ISO 10605 (Ed. 2):2008, SAE J551-15:2015	±2kV to 30kV contact and air discharge Limits: Performance verification
3.	EMI /EMC testing for Electrical/ Electronic non - Automotive Components	Radiated Emissions (RE)	CISPR 11:2015+AMD1:2016 CSV CISPR 14-1:2016 CISPR 22:2008 CISPR 32:2015	9 kHz – 8 GHz Limits: 46-100 dBuV/m
		Conducted Emissions (CE) on Power Lines	CISPR 11:2015+AMD1:2016 CSV CISPR 14-1:2016 CISPR 22:2008 CISPR 32:2015	9 kHz – 8 GHz Limits: 46-152 dBuV/m
4.	Electrical/ Electronic	Off – Board Radiated Emissions (RE)	ISO 13766-1/ISO 13766-2 EN 13309	9 kHz – 8 GHz / Limits:10-100 dBuV/m

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	<b>Automotive Components</b>	Off – Board Radiated Immunity (RI), ALSE Method	ISO 13766-1 ISO 13766-2 EN 13309	20 MHz – 80 MHz: 30 V/m 80 MHz – 18 GHz: 200 V/m Limits: Performance verification
		Bulk Current Injection (BCI)	ISO 13766-1 ISO 13766-2 EN 13309 ISO 11452-4 (Ed. 4)	10 kHz – 1 MHz: 100 mA 1 MHz – 80 MHz: 200 mA 80 MHz – 1 GHz: 400 mA 1 GHz – 2 GHz: 300 mA Limits: Performance verification
		Radiated Immunity (RI), TEM Method	ISO 13766-1 ISO 13766-2 EN 13309	10 kHz – 400 MHz/ Limits: Performance verification
		Radiated Immunity (RI), Stripline Method	ISO 13766-1 ISO 13766-2 EN 13309	10 kHz – 400 MHz/ Limits: Performance verification
		Electrostatic Discharge (ESD) test	ISO 13766-1 ISO 13766-2 EN 13309	± 2 kV to 30 kV contact and air discharge / Limits: Performance verification
<b>5.</b>	<b>Construction Equipment Vehicles</b>	Conducted Transient Emissions on Power Leads	ISO 13766-1 ISO 13766-2 EN 13309	Upto 24V DC Limits: -450V to +150V
		Immunity to Conducted Transient Disturbances	ISO 13766-1 ISO 13766-2 EN 13309	0 to 60 V DC @ 100A / Limits: Performance verification
		Off – Board Radiated Emissions (RE)	ISO 13766-1 ISO 13766-2 EN 13309	30 MHz – 8 GHz / Limits:10-100 dBuV/m

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		Off – Board Radiated Immunity (RI), ALSE Method	ISO 13766-1 ISO 13766-2 EN 13309	20 MHz to 18 GHz: 100 V/m Limits: Performance verification
		Electrostatic Discharge (ESD) test	ISO 13766-1 ISO 13766-2 EN 13309	± 2 kV to 30 kV contact and air discharge / Limits: Performance verification
6.	Electrical/ Electronic Non - Automotive Components	Radiated Emissions (RE)	EN 55011:2016+A1 EN 55014-1 EN 55022/EN 55032 EN 55013/A1 CISPR 15 EN 55015:2013/A1:2015 IEC 61000-6-3:2006/AMD1:2010/ISH1 EN61000-6-3:2007+A1 IEC 61000-6-4:2018 RLV EN 61000-6-4:2007+A1 IEC 60601-1-2 EN 60601-1-2 EN 50121-3-2 CISPR 13:2009/AMD1	9 kHz to 8 GHz / Limits: 46-100 dBuV/m
		Conducted Emissions (CE) on power lines	EN 55011:2016+A1 EN 55014-1 EN 55022 EN 55032 EN 55013/A1 CISPR 15 EN 55015:2013/A1 IEC 61000-6-3:2006/AMD1:2010/ISH1 EN61000-6-3:2007+A1	9kHz to 30MHz / Limits: - 50 to 137 dBuV

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			IEC 61000-6-4:2018 RLV EN 61000-6-4:2007+A1 IEC 60601-1-2 EN 60601-1-2 EN 50121-3-2 CISPR 13:2009/AMD1	
		Click test	IEC 61000-6-3:2006/AMD1:2010/ISH1 EN 61000-6-3:2007+A1 IEC 61000-6-4:2018 RLV EN 61000-6-4:2007+A1 CISPR14-1:2016/ISH2 EN 55014-1	9 kHz to 30MHz Limits: -50 -137 dBuV
		Electrostatic Discharge Immunity Test	IEC 61000-4-2:2008 IEC 61000-6-1:2016 RLV EN 61000-6-1:2007 IEC 61000-6-2:2016 RLV EN 61000-6-2:2005 CISPR 14-2:2015 RLV EN 55014-2:2015 CISPR 24:2010/ AMD1: 2015/EN 55035 IEC 60601-1-2 EN 60601-1-2 CISPR 20:2006+ AMD1: 2013 CSV EN 55020:2007/A12 EN 50121-3-2 IEC 60945:2002/COR1 EN 60945	±2 kV to ±30kV for air and contact discharge
		Radiated Immunity	IEC 61000-4-3:2006/AMD2:2010	80 MHz to 6 GHz: 30 V/m @ 3m

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			EN 61000-4-3:2006/AMD2:2010 EN 61000-6-1 :2007 IEC 61000-6-2:2016 RLV EN 61000-6-2 :2005 CISPR 14-2:2015 RLV EN 55014-2:2015 CISPR 24:2010/ AMD1:2015/EN 55035:2017/IEC 60601-1-2:2014 EN 60601-1-2:2015 EN 50121-3-2 :2016 IEC 60945:2002/ COR1:2008 EN 60945 :2002	80 MHz to 6 GHz: 33 V/m @ 1m
		Electrical Fast Transient (EFT)/Burst Immunity Test (Power Line & Signal Line)	IEC 61000-4-4:2012 RLV EN 61000-4-4:2012 EN 61000-6-1 :2007 IEC 61000-6-2:2016 RLV EN 61000-6-2 :2005 CISPR 14-2:2015 RLV EN 55014-2:2015 CISPR 24:2010/AMD1:2015 EN 55035:2017 IEC 60601-1-2:2014 EN 60601-1-2:2015 CISPR 20:2006/AMD1:2013 EN 55020:2007/A12:2016 EN 50121-3-2 :2016 IEC 60945:2002/	0.5 kV - 5.5kV

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			COR1:2008 EN 60945 :2002 ECE R10-05: 2014	
		High Energy/Telecom Surge Immunity Test	IEC 61000-4-5:2014+AMD1:2017 CSV EN 61000-4-5:2014 EN 61000-6-1 :2007 IEC 61000-6-2:2016 RLV EN 61000-6-2 :2005 CISPR 14-2:2015 RLV EN 55014-2:2015 CISPR 24:2010/ AMD1:2015 EN 55035:2017 IEC 60601-1-2:2014 EN 60601-1-2:2015 CISPR 20:2006/ AMD1:2013 EN 55020:2007/A12:2016 EN 50121-3-2 :2016 IEC 60945:2002/ COR1:2008 EN 60945:2002 ECE R10-05: 2014	0.5 kV - 5kV
		Conducted RF Immunity Test	IEC 61000-4-6:2013/ COR1:2015 EN 61000-4-6:2014/ AC:2015 EN 61000-6-1:2007 IEC 61000-6-2:2016 RLV EN 61000-6-2 :2005 CISPR 14-2:2015 RLV	0.5 - 30V (rms) 150kHz to 230MHz



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			EN 55014-2:2015 CISPR 24:2010/ AMD1:2015 EN 55035:2017 IEC 60601-1-2:2014 EN 60601-1-2:2015 EN 50121-3-2 :2016	
		Voltage dips, short interruption & voltage variations Immunity Test	IEC 61000-4-11:2004+AMD1:2017 CSV EN 61000-4-11:2004/A1:2017/IEC 61000-4-34:2005/ AMD1:2009 CSV EN 61000-4-34:2007/ AMD1:2009 EN 61000-6-1 :2007 IEC 61000-6-2:2016 RLV EN 61000-6-2 :2005 CISPR 14-2:2015 RLV EN 55014-2:2015 CISPR 24:2010/ AMD1:2015 EN 55035:2017 IEC 60601-1-2:2014 EN 60601-1-2:2015 CISPR 20:2006/ AMD1:2013 EN 55020:2007/A12:2016 IEC 60945:2002/ COR1:2008 EN 60945:2002 IEC 61000-4-29:2000	AC (single phase): Upto 400V Upto 32A  DC: Upto 200V Upto 32A

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**ELECTRONICS TESTING**

LOCATION 1				
I.	AUDIO EQUIPMENT			
1.	Amplifiers And Audio System, Electronics Musical Systems , Plasma/LCD/LED Televisions, Optical Disc Players With Built In Amplifiers, Electronic Games (Video), Electronic Musical Systems, Power Adaptors For Audio, Video & Electronic Apparatus	Marking and Instructions	Cl. No. 5 of IS 616 IEC 60065	Qualitative
		Heating under normal operating Conditions	Cl. No. 7 of IS 616 IEC 60065	Temp: -80°C to 400°C Volt. : 1mV to 600 V, Amp : 200 mA to 50 A Power : 3 W to 20 kW Freq.:0.1 Hz to 100 kHz
		Constructional requirements with regard to the protection against electric Shock	Cl. No. 8 of IS 616 IEC 60065	Qualitative
		Covering of conductive parts.	Cl. No. 8.1 & Cl. No. 8.2 of IS 616 IEC 60065	Qualitative
		Material of insulation for live Parts.	Cl. No. 8.3 of IS 616 IEC 60065	500 V to 5 kV at 50/60 Hz 1 mA to 100 mA 50/60 Hz Ambient to 80°C 25 to 95 % RH
		Class of Insulation	Cl. No. 8.5, Cl. No. 8.6 of IS 616 IEC 60065	Qualitative
		Physical characteristic and parameter of insulating material.	Cl. No. 8.8 to Cl. No. 8.10 of IS 616 IEC 60065	500 V to 5 kV ac 0.007 mm to 150 mm

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		Construction of apparatus (clearance and creepage distance)	Cl. No. 8.11 of IS 616 IEC 60065	0.007 mm to 150 mm
		Construction of apparatus (window, lenses, signal lamp cover etc)	Cl. No. 8.12 to Cl. No. 8.15 of IS 616 IEC 60065	10 N to 300 N 1 s to 24 hrs 0.007 mm to 150 mm
		Insulated winding wires of wound component	Cl. No. 8.16 to Cl. No. 8.18 of IS 616 IEC 60065	10 Hz to 55 Hz, Upto 0.35 mm Sweep rate 1 octave/min 0.007 to 150mm
		Fitting of main switch.	Cl. No. 8.19 to Cl. No. 20 of IS 616 IEC 60065	Qualitative
		Compliance of non-separable thin sheet material	Cl. No. 8.21 of IS 616 IEC 60065	10 N to 1000N Mandrel: 5kg & 10 kg HV : 500 to 5kV ac Limiting current : 1mA to 100 mA ac
		Electric shock hazard under normal operating conditions	Cl. No. 9 of IS 616 IEC 60065	Qualitative
		Determination of hazardous live parts	Cl. No. 9.1.1.2 of IS 616 IEC 60065	30 µA to 90 mA
		Determination of accessible parts	Cl. No. 9.1.1.3 of IS 616 IEC 60065	Qualitative
		Shaft of operating knobs, handles, levers and the like	Cl. No. 9.1.2 of IS 616 IEC 60065	Qualitative
		Openings in enclosure	Cl. No. 9.1.3 of IS 616 IEC 60065	Qualitative

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		Terminals	Cl. No. 9.1.4 of IS 616 IEC 60065	Qualitative
		Pre-set controls	Cl. No. 9.1.5 of IS 616 IEC 60065	Qualitative
		Withdrawal of mains plug	Cl. No. 9.1.6 of IS 616 IEC 60065	0.1 V to 500 V AC 1us to 10 s 1 GHz to 6 GHz Max. Memory Depth: 4 Mpts Max Sample rate: 20GSa/s half channel, 10 GSa/s all channel
		Resistance to external forces	Cl.9.1.7 of IS 616 IEC 60065	Push pull Probe : 10 N to 300 N Stop watch: 1s to 24 hrs Test hook
		Removal of protective covers	Cl. No. 9.2 of IS 616 IEC 60065	Qualitative
		Surge Test	Cl. No. 10.2 of IS 616 IEC 60065	Qualitative (500 V to 12 kV ac 12 pluses per minute)
		Humidity Treatment, Insulation Resistance and die electric strength	Cl. No. 10.3 & 10.4 of IS 616 IEC 60065	25% RH to 95% RH 2MΩ to 25GΩ At 500 V DC
		Fault Conditions	Cl. No. 11 of IS 616 / IEC60065:2014	1 mV to 600 V ac /dc 200 mA to 50 A ac/dc 0.1 Hz to 100 kHz Ambient . to 200°C 2 mΩ to 2 kΩ 1s to 24 hrs
		Mechanical strength	Cl. No. 12 of IS 616 IEC 60065	Qualitative

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		Bump Test	Cl. No. 12. 1.2 of IS 616 IEC 60065	Qualitative
		Vibration Test	Cl. No. 12.1.3 of IS 616 IEC 60065	10 Hz to 60 Hz Amplitude Upto 0.35mm Sweep Rate -1 Octave/min Qualitative
		Impact test	Cl. No. 12.1.4 of IS 616 IEC 60065	Qualitative (0.5 J to 3.5 J Impact hammer Steel Ball 50 mm dia /500gms)
		Drop Test	Cl. No. 12.1.5 of IS 616 IEC 60065	Qualitative (1 cm to 1.5 m)
		Stress Relief Test	Cl. No. 12.1.6 of IS 616 IEC 60065	Qualitative (Ambient to 200° C)
		Fixing of actuating elements	Cl. No. 12.2 of IS 616 IEC 60065	Qualitative (0.3 Nm to 6 Nm)
		Remote control devices hand held	Cl. No. 12.3 of IS 616 IEC 60065	Qualitative (Tumbling Barrel )
		Drawers	Cl. No. 12.4 of IS 616 IEC 60065	Qualitative (1 N to 50 N 0.1 s to 1 min)
		Antenna Coaxial sockets mounted on the apparatus	Cl. No. 12.5 of IS 616 IEC 60065	Qualitative
		Tele scoping or Rod antennas	Cl. No. 12.6 of IS 616 IEC 60065	0.3 Nm to 6 Nm 1 N to 50 N 0.1 s to 30 min
		Apparatus Containing coin /button cell batteries	Cl. No. 12.7 of IS 616 IEC 60065	Qualitative

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		Clearances and Creepage distances	Cl. No. 13 of IS 616 IEC60065:2014	0 .007 mm to 300 mm
		Terminals	Cl.15 of IS 616 IEC 60065	10 m $\Omega$ to 500 m $\Omega$ 3A A to 45 A Ambient to 200 °C 1 mm to 150 mm 10 Nm to 300 Nm
		External flexible cords	Cl. No. 16 of IS 616 IEC 60065	Qualitative (20 N to 30 N 0.1 Nm to 0.35 Nm
		Electrical connections and mechanical fixings	Cl. No. 17 of IS 616 IEC 60065	Qualitative (0.01 mm to 150 mm 0.1 Nm to 3 Nm 1 N to 300 N )
		Stability and mechanical hazards	Cl. No. 19 of IS 616 IEC 60065	Qualitative (Inclined Plane 1° to 30° (rotating through 360° 1 N to 1000 N 0.01 mm to 150 mm)
		Resistance to fire	Cl. No. 20 of IS 616 IEC 60065	Glow Wire 1250° C Ambient to 200 °C 20 N (Ball Pressure) 0.01 mm to 120 mm
II.	IT EQUIPMENT			
1.	Remote/Passive Keyless Entry (RKE/PKE), Body Control Module (BCM), Vehicle Alarm System	Components	Cl. No. 1.5 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Power Interface	Cl. No. 1.6 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative

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	(VAS), Telematics Unit/Vehicle Tracking Unit/ Automotive Tracking Device (ATD), Car Audio System, CCTV, LED Sign Board, Laptop/Notebook/ Tablet, Automatic Data Processing Machine, Printers, Plotters, Scanners, Set Top Box, Visual Display Units, Videos Monitors, Wireless Keyboards, Cash Registers, Copying Machines/Duplicators, Passport Reader, Point Of Sale Terminals, Mail Processing Machines/Postage Machines, Power Banks For Use In Portable Applications, Smart Card	Input Current	Cl. No. 1.6.2 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	1 mV to 600 V ac/dc 200 mA to 50 A ac/dc 3 W to 150 kW :0.1Hzto100 kHz
		Voltage limit of hand-held equipment	Cl. No. 1.6.3 of IS 13252 (Part 1)+A1+ A2 IEC 60950 1+ AMD 1+AMD 2	Qualitative
		Neutral conductor	Cl. No. 1.6.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Marking And instruction	Cl. No. 1.7.1 to 1.7.10 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Durability	Cl. No. 1.7.11 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (1 s to 24 hrs Petroleum Spirit Water & cloths)
		Removal Parts	Cl. No. 1.7.12 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD 1+AMD 2	Qualitative
		Replaceable batteries	Cl. No. 1.7.13 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Equipment for restricted access locations	Cl. No. 1.7.14 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Protection from hazards	Cl. No. 2.0 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative

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	<b>Reader, Mobile Phones, Power Adaptors For IT Equipments, Visual Display Units, Video Monitors, CCTV Cameras/CCTV Recorders, USB Driven Barcode Readers, Barcode Scanners, Iris Scanners, Optical Fingerprint Scanners, Smart Watches</b>	Access to energized parts	Cl. No. 2.1.1.1 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Battery compartments	Cl. No. 2.1.1.2 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Access to ELV wiring	Cl. No. 2.1.1.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+ AMD 1+ AMD2	Qualitative (500 V to 5kV at 50/60 Hz 0.1 mA to 100 mA ac Upto 300 mm)
		Access to hazardous voltage circuit wiring	Cl. No. 2.1.1.4 of IS 13252 (Part 1) + AMD 1 + AMD2 IEC 60950-1+AMD1+AMD2	Visual inspection Qualitative
		Energy hazards	Cl. No. 2.1.1.5 of IS 13252 (Part 1)+AMD1+ AMD2 IEC 60950-1+AMD1+AMD2	Qualitative
		Manual controls	Cl. No. 2.1.1.6 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Discharge of capacitors in equipment	Cl. No. 2.1.1.7 of IS 13252 (Part 1) : 2010 +AMD1:2013+ AMD2:2015/ IEC 60950-1:2005+ AMD1:2009+AMD2:2013	Qualitative (Oscilloscope: 1 GHz to 6 GHz Test probe: 100 MΩ ± 5 MΩ in parallel with an input capacitance of 20 pF ± 5 pF)
		Energy hazards - d.c. mains supplies	Cl. No. 2.1.1.8 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	1 GHz to 6 GHz
		Audio amplifiers in information technology equipment	Cl. No. 2.1.1.9 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative

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		Protection in service access areas	Cl. No. 2.1.2 IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Protection in restricted access areas	Cl. No. 2.1.3 IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		SELV circuits test	Cl. No. 2.2 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	0.5V to 800 V Peak
		Limited current circuits	Cl. No. 2.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	30 $\mu$ A to 90 mA
		Limited power sources	Cl. No. 2.5 of IS 13252 (Part 1) : 2010 +AMD1:2013+ AMD2:2015/ IEC 60950-1:2005+ AMD1:2009+AMD2:2013	1 A to 70 A dc 1 V to 70 V dc
		Provisions for earthing and bonding	Cl. No. 2.6.1 to 2.6.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Ground Bond Tester: Upto 45 A <12V
		Overcurrent and earth fault protection in primary circuits	Cl. No. 2.7 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Safety Interlocks	Cl. No. 2.8 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (Safety Interlock Programmable instrument 1To 100000 C/s 6 to 10 Cycles min On /off - 0 to 99 sec No. of work station = 06)

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		Electrical insulation	Cl. No. 2.9 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	100 Ω to 10 GΩ @ 500 V DC
		Clearances and Creepage Distances	Cl. No. 2.10 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	0.1 mm to 300 mm
		Wiring, connections and supply	Cl. No. 3.1.1 to 3.5.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	0.1 mm to 300mm 500 V to 5 kV ac/dc 1 N to 100 N
		Stability Test	Cl. No. 4.1 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	10 to 800N 360°Rotating Inclined Plane 0° to 30° (Adjustable) Qualitative
		Mechanical Strength Impact test, Drop Test, Stress relief test	Cl. No. 4.2.2 to Cl. No. 4.2.7 of I IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (10N to 1000N (100kgf) Test finger B: length: 180 mm Steel ball Dia: 30 mm , 500gm Tape: 0 to 15 mtr Ambient to 200°C)
		Wall or Ceiling mounted equipments	Cl. No. 4.2.10 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (200 N to 1000 N 1s to 24 hrs)
		Design and construction	Cl. No. 4.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Edges and corners	Cl.4.3.1 to IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative

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		Handles and manual controls	Cl. No. 4.3.2 IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (Upto 1000 N)
		Adjustable controls	Cl. No. 4.3.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Connection by plugs and sockets	Cl. No. 4.3.5 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Securing of parts	Cl. No. 4.3.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Direct plug-in equipment	Cl. No. 4.3.6 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (0.1mm to 8 mm 0.25 Nm to 10 Nm)
		Heating elements in earthed equipment	Cl. No. 4.3.7 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Batteries	Cl. No. 4.3.8 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Oil and grease	Cl.4.3.9 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Dust, powders, liquids and gases	Cl. No. 4.3.10 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (50 V to 5 kV at 50/60Hz) Tripping Current: 100 mA 50/60Hz)
		Protection against hazardous moving parts	Cl. No. 4.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative

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		Protection in operator access areas	Cl. No. 4.4.2 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Protection in restricted access locations	Cl. No. 4.4.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Protection in service access areas	Cl. No. 4.4.4 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Thermal Requirements	Cl. No. 4.5.1 to 4.5.5 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	1 mV to 600 V ac/dc 200 mA to 50 A ac/dc 3 W to 150 kW Ambt. to 400°C 2 mΩ to 2 kΩ of ball 5mm, mass 20 N 0.01 mm to 150 mm
		Opening in enclosures	Cl. No. 4.6 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD 1+AMD 2	Wedge probe: 2 mm to 300 mm 0 to 150 mm 40 °C to 400 °C
		Resistance to fire	Cl. No. 4.7 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (Burner Dia:9.5 mm Needle Dia:0.5 mm 1ms to 99.99 Minute Glow wire 550 °C to 960 °C)
		Electrical requirements and simulated abnormal conditions	Cl. No. 5 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative
		Touch Current and protective conductor current	Cl. No. 5.1 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	30 μA to 90 mA

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		Electric Strength	Cl. No. 5.2 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (500 V to 6 kV ac/dc 0.01 mA to 100 mA ac/dc)
		Abnormal Operating and fault Condition Single fault	Cl. No. 5.3 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	AC/DC Upto 600 V AC/DC 200 mA to 50 A 3.0000 W to 20.00 kW Freq.:0.1 Hz to 100 kHz Ambient to 400 °C 2 mΩ to 2 kΩ of ball 5mm mass 20 N Dia:0.01-150mm
		Connection to telecommunication networks	Cl. No. 6 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (Test probe fig. 2C Impulse : 10/700 μs 500 to 5kV ac 500Ω to 10 GΩ @ 500V DC)
		Connection to cable distribution systems (7)	Cl. No. 7 of IS 13252 (Part 1)+AMD1+ AMD2 / IEC 60950-1+AMD1+AMD2	Qualitative (Impulse: 10/700 μs (100V to 6kV) Impulse : 1.2/50 μs (100V to 10kV))
III.	<b>DOMESTIC ELECTRONIC APPLIANCES &amp; ACCESSORIES</b>			
1.	<b>Household Adapters</b>	Marking and Instructions	Cl. No. 7 of IS 302-1+AMD1+ AMD2+AMD3+AMD4 IEC 60335-1+ AMD1+AMD2	Qualitative

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		Protection against access to live parts	Cl. No. 8 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Qualitative (1 N to 300 N Test probe 80 V to 240 V ac)
		Power Input and Current	Cl. No. 10 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1 AMD1+AMD2	1 V to 600 V ac 200 mA to 50 A ac 3 W to 20 kW 1 Hz to 100 kHz
		Heating	Cl. No. 11 of IS 302-1 AMD1+AMD2+AMD3+AMD4 IEC 60335-1 AMD1+AMD2	Ambient°C to 400°C 20% to 100% RH 10 mΩ to 100 kΩ
		Leakage Current and electric strength at operating temperature	Cl. No. 13 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Ambient to 190°C 25 to 95 % RH 500V to 5kV at 50/60Hz, 50VDC to 6kVDC Current: 100 mA 50/60Hz
		Transient over voltages	Cl. No. 14 of IS 302-1 AMD1+AMD2+AMD3+AMD4 IEC 60335-1 AMD1+AMD2	Qualitative (100 V to 12 kV 1.2/50 μs
		Moisture Resistance	Cl. No. 15 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Temp.: -40°C to 190°C Humidity: 20 to 95 % RH Voltage: 50V to 5kV at 50/60Hz, 50VDC to 6kVDC Current: 100 mA 50/60Hz Qualitative
		Leakage current and electric strength	Cl. No. 16 of IS 302-1+AMD1+AMD2+AMD3+AMD4	Voltage: 50V to 5kV at 50/60Hz, 50VDC to 6kVDC

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			IEC 60335-1+AMD1+AMD2	Current: 100 mA 50/60Hz Qualitative
		Overload protection of transformers and associated circuits	Cl. No. 17 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Volt. : AC/DC 10 V to 600 V, Amp : AC/DC 200 mA to 50 A Power : 3 W to 20 kW Freq: 0.1 Hz to 100 kHz Winding Resistance: 10mΩ to 100kΩ
		Abnormal operation	Cl. No. 19 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	10 V to 600V ac/dc 200 mA to 50 Aac 3 W to 20 1 Hz to 100 kHz Winding Resistance: 10mΩ to 100kΩ
		Stability and mechanical hazards	Cl. No. 20 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	1N to 1000N Incline Plane: 360°Rotating Angle: 0° to 30° (Adjustable) Qualitative
		Mechanical Strength	Cl. No. 21 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	0.14 J to 3.5J Steel ball: (50 ± 1)mm, approx 500g. Speed: 20mm/s force: 0 to 1000N Angle: 80° to 85° Radius: 25 Qualitative Test
		Construction	Cl. No. 22 of IS 302-1+AMD1+AMD2+AMD3+AMD4	Qualitative

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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
			IEC 60335-1+AMD1+AMD2	
		Internal Wiring	Cl. No. 23 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Volt. : AC/DC 1V to 600 V, Amp : AC 200 mA to 50 A Power : 3 W to 20 kW Freq: 0.1 Hz to 100 kHz Volt: 50V to 5kV at 50/60Hz 50VDC to 6kVDC Current: 100 mA 50/60Hz Flexing Tester Rotation angle : (30°, 45°) Qualitative Test
		Components	Cl. No. 24 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Only visual tests carried out Qualitative
		Supply connection and external flexing cords	Cl. No. 25 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	1V to 3kV,ac/dc 200 mA to 50 A ac/dc Power : 3 W to 20 kW 1 Hz to 100 kHz 5N & 10N Qualitative
		Terminals for external conductors	Cl.26 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	1mm to 300 mm 1N to 1000N
		Provision for earthing	Cl. No. 27 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	1A to 45A 0 to 12V 0.1Ω - 0.5Ω

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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
		Screws and connections	Cl.28 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Screw Driver: 1Nm to 6Nm Qualitative Test
		Clearances and Creepage Distances and solid insulation	Cl. No. 29 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	0 to 300 mm 1N to 1000N
		Resistance to heat and fire	Cl. No. 30 of IS 302-1+AMD1+AMD2+AMD3+AMD4 IEC 60335-1+AMD1+AMD2	Dia: 9.5 mm Needle Dia: 0.5 mm Time:1mSec.:99.99 Minute Glow wire temp: 550°C to 960°C Scale: 0.1mm to 150 mm Vernier Caliper : 0 to 300 mm Oven: Ambt. to 400°C Qualitative Test
4.	<b>Microwave Ovens, Including Combination Microwave Ovens</b>	Marking and Instructions	Cl. No. 7 of IS 302-2-25	Qualitative
		Protection against access to live parts	Cl. No. 8 of IS 302-2-25	Qualitative (1N to 300 N Test probe B Test Probe 18)
		Power Input and Current	Cl. No. 10 of IS 302-2-25	(1V to 600 V ac/ dc 200 mA to 50 A 3 W to 20 kW 1 Hz to 100 kHz)
		Heating	Cl. No. 11 of IS 302-2-25	Ambt. to 400°C Winding Resistance: 2 mΩ to 2 kΩ

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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
		Leakage Current and electric strength at operating temperature	Cl. No. 13 of IS 302-2-25	30 $\mu$ A to 90 mA 500 V to 5 kVac at 50/60Hz/ 500V to 6kVdc 20 °C to 30 °C 40% to 95% RH
		Transient over voltages	Cl. No. 14 of IS 302-2-25	Qualitative (100 V to 12 kV Impulse : 1.2/50 $\mu$ s)
		Moisture resistance	Cl. No. 15 of IS 302-2-25	Qualitative (20°C to 30°C 40% to 95% RH)
		Leakage Current and electric strength	Cl. No. 16 of IS 302-2-25	30 $\mu$ A to 90 mA 500 V to 5kVac at 50/60Hz/ 500 V to 6 kV dc
		Overload Protection of transformer and associated circuits	Cl. No. 17 of IS 302-2-25	Qualitative (10 V to 600 V ac/dc 200 mA to 50 A ac/dc 3 W to 20 kW 0.1 Hz to 100 kHz 10 m $\Omega$ to 100 k $\Omega$ )
		Endurance	Cl. No. 18 of IS 302-2-25	Qualitative (1 to 100000 cycles Rate of cycle : 6 to 12 cycles/Min. LEAKAGE TESTER Range: 0 9.99 mW/cm <sup>2</sup> Alarm: 5.0mW/cm <sup>2</sup> )
		Abnormal Operation	Cl. No. 19 of IS 302-2-25	10 V to 600 V 200 mA to 50 A 3 W to 20 kW

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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
				Ambt. to 400 °C 10 mΩ to 100 kΩ Leakage Tester Range: 0 9.99 mW/cm <sup>2</sup> Alarm: 5.0 mW/cm <sup>2</sup>
		Stability and mechanical hazards	Cl. No. 20 of IS 302-2-25	Qualitative (1 N to 1000 N 360° Rotating Inclined Plane, Angle: 0° to 30° (Adjustable)
		Mechanical Strength	Cl. No. 21 of IS 302-2-25	Qualitative (0.14 J to 3.5 J Steel ball (50 ±1) mm, approx 500 g Upto 1000 N Leakage Tester Range: 0 9.99 mW/cm <sup>2</sup> Alarm: 5.0mW/cm <sup>2</sup> )
		Construction	Cl. No. 22 of IS 302-2-25	Qualitative
		Internal Wiring	Cl. No. 23 of IS 302-2-25	Qualitative (1 V to 600 V AC/DC 200 mA to 50 A AC 3 W to 20 kW 0.1 Hz to 100 kHz 50 V to 5 kV at 50/60Hz 50 VDC to 6 kV DC 100 mA 50/60Hz Flexing Tester Rotation angle : (30°, 45°)
		Components	Cl. No. 24 of IS 302-2-25	Qualitative
		Supply connection and	Cl. No. 25 of IS 302-2-25	Qualitative

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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
		external flexible cords		(1 V to 600 V AC/DC 200 mA to 50 A AC/DC 3 W to 20 kW 0.1 Hz to 100 kHz Flexing Tester Rotation angle :(30°, 45°) 1 kg to 50 kg 5 N & 10 N
		Terminals for external conductors	Cl. No. 26 of IS 302-2-25	1 mm to 300 mm 1N to 1000N
		Provision for earthing	Cl. No. 27 of IS 302-2-25	0.1Ω to 0.5 Ω 6A to 45 A
		Screws and connections	Cl. No. 28 of IS 302-2-25	Qualitative (1 Nm to 6 Nm)
		Clearances and Creepage Distances and solid insulation	Cl. No. 29 of IS 302-2-25	Upto 300 mm 1 N to 1000 N
		Resistance to heat and fire	Cl. No. 30 of IS 302-2-25	Qualitative (Burner Dia:9.5 mm Needle Dia:0.5 mm Time:1mSec.-99.99 Min Glow wire temp: 550 °C to 960 °C)
		Radiation, Toxicity and similar hazards	Cl. No. 32 of IS 302-2-25	Qualitative (Upto 9.99 mW/cm <sup>2</sup> )
<b>5.</b>	<b>Clocks</b>	Marking and Instructions	Cl. No. 7 of IS 302-2-26	Qualitative
		Protection against access to live parts	Cl. No. 8 of IS 302-2-26	Qualitative (1 N to 300 N Test probe B)
		Power Input and Current	Cl. No. 10 of IS 302-2-26	Qualitative (1 V to 600 V ac/dc,

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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
				200 mA to 50 A 3 W to 20 kW 0.1 Hz to 100 kHz)
		Heating	Cl. No. 11 of IS 302-2-26	Ambient to 400°C
		Leakage Current and electric strength at operating temperature	Cl. No. 13 of IS 302-2-26	30 µA to 90 mA 500 V to 5 kV ac 50 VDC to 6 kVdc
		Transient over voltages	Cl. No. 14 of IS 302-2-26	Qualitative (100 V to 12 kV Impulse Time: 1.2/50µs)
		Moisture Resistance	Cl. No. 15 of IS 302-2-26	Qualitative (Ambient to 190°C 25 to 95 % RH)
		Leakage current and electric strength	Cl. No. 16 of IS 302-2-26	Qualitative (500 V to 5 kV ac 50 VDC to 6 kVac 1mA to 100 mA 50/60Hz)
		Overload protection of transformers and associated circuits	Cl. No. 17 of IS 302-2-26	10 V to 600 V 200 mA to 50 A 3 W to 20 kW 1 Hz to 100 kHz 10 mΩ to 100 kΩ
		Abnormal operation	Cl. No. 19 of IS 302-2-26	10 V to 600 V 200 mA to 50 A 3 W to 20 kW 1 Hz to 100 kHz 10mΩ to 100kΩ
		Stability and mechanical hazards	Cl. No. 20 of IS 302-2-26	Qualitative (1 N to 1000 N Incline Plane: 360° Rotating Inclined Plane

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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
				Angle: 0° to 30° (Adjustable)
		Mechanical Strength	Cl. No. 21 of IS 302-2-26	Qualitative (0.14 J to 3.5J Steel ball (50 ± 1)mm, approx 500g. Speed: 20mm/s Upto 1000 N)
		Construction	Cl. No. 22 of IS 302-2-26	Qualitative
		Internal Wiring	Cl. No. 23 of IS 302-2-26	Qualitative (50 V to 5 kV at 50/60 Hz 500 V DC to 6 kV DC 100 mA 50/60Hz Flaxing Tester Rotation angle :(30°, 45°)
		Components (Clause 24)	Cl. No. 24 of IS 302-2-26	Qualitative
		Supply connection and external flexing cords	Cl. No. 25 of IS 302-2-26	Qualitative (Flaxing Tester Rotation angle :(30°, 45°) Weight : 5N & 10N)
		Terminals for external conductors	Cl. No. 26 of IS 302-2-26	(1 mm to 300 mm 1 N to 1000 N)
		Provision for earthing	Cl. No. 27 of IS 302-2-26	(Upto 45A Volt: <12V 0.1Ω to 0.5 Ω)
		Screws and connections	Cl. No. 28 of IS 302-2-26	Qualitative (1 Nm to 6 Nm)
		Clearances and Creepage Distances and solid insulation	Cl. No. 29 of IS 302-2-26	Upto 300 mm 1 N to 1000 N

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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
		Resistance to heat and fire	Cl.30 of IS 302-2-26	Qualitative (Burner Dia:9.5 mm Needle Dia:0.5 mm Time:1mSec.-99.99 min Glow wire temp: 550 °C to 960 °C)
IV.	<b>ENVIRONMENTAL TESTING</b>			
1.	<b>Telecom Equipment's</b>	Low Temperature Cold Cycle	Cl. No. 3.1 of QM-333	Qualitative (-15°C -20°C)
		High Temperature Dry heat Cycle	Cl. No. 3.2 of QM-333	Qualitative (30°C - 60°C)
		Tropical Exposure	Cl. No. 3.3 of QM-333	Qualitative (25°C - 40°C)
		Rapid temperature cycling	Cl. No. 3.4 of QM-333	Qualitative (-15°C to 60°C)
		Damp Heat Test	Cl. No. 3.5 of QM-333	Qualitative (35°C 95% RH)
		Vibration	Cl. No. 3.6 of QM-333	Qualitative (Load rating- 6000Kgf Frequency -5Hz to 350Hz Max displacement – 51mm(peak to peak))
		Sealing Test/ High altitude test	Cl. No. 3.7 of QM-333	Qualitative (25 kPa)
		Water Immersion Test	Cl. No. 3.8 of QM-333	Qualitative (1.5m)
		Corrosion Salt	Cl. No. 3.9 of QM-333	Qualitative
		Drop Test	Cl. No. 3.10 of QM-333	Qualitative

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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
		Topple Test	Cl. No. 3.11 of QM-333	Qualitative
		Fall test	Cl. No. 3.12 of QM-333	Qualitative
		Bump/Roadability Test	Cl. No. 3.13 of QM-333	Qualitative (1-3 bumps per second 1000±10 bumps at 40g±4g)
		Rain test	Cl. No. 3.14 of QM-333	Qualitative
		Dust Test	Cl. No. 3.15 of QM-333	Qualitative
2.	Mobile Phone Handsets Part 3 Indian Language Support for Mobile Phone Handsets – Specific Requirements	Inputting and display of all the characters in English, Hindi and at least an additional Indian official language	Cl.5 of IS 16333 (Part 3): 2017 IS 16350: 2016 + A1: 2017	Qualitative
		Marking	Cl.6 of IS 16333 (Part 3) : 2017 Cl.5.1 of IS 16333 (Part 1) : 2015	Qualitative
3.	Information Technology Equipment-Safety General Requirements	TNV Circuit	Cl.2.3 of IS 13252 (Part 1): 2010 With Amendments (A1:2013 & A2:2015)/ IEC 60950-1:2005+AMD1:2009+AMD2 :2013	Qualitative (5000Ω, 1200Ω ±2%, 2000Ω, 1 GHz to 6 GHz, 20 GSa/s half channel, 10 GSa/s all channel, Volt: 50.000 mV to 1000.0 VACDC, Current: 500μA to 10A, Resistance: 500.00 Ω to 500.0 MΩ Freq: 99.999 Hz to 999.99 kHz LC: 'VARIABLE Acc: Volt: 0.025% DC FS AC 0.4% (True-RMS)

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				Current: 0.15 % 0.7 % (true-rms), Resis: 0.05 % frequency 0.005 %, Output=120V, at 50Hz, 1200Ω)
		Flammable Liquids	Cl.4.3.12 of IS 13252 (Part 1): 2010 With Amendments (A1:2013 & A2:2015)/ IEC 60950-1:2005+AMD1:2009+AMD2 :2013	Qualitative (Hot flaming Oil Tester 50mm/500g, Range: Amb. to 1380°C LC: 0.1°C Acc: 0.1% of F.S. ± (0.05 % of reading + 2.0 °C), ± (0.05 % of reading + 1.0 °C), Range: Upto 12kV/ Upto 50A , LC: 1V, 0.01A Acc: ±2%)

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**MECHANICAL TESTING**

LOCATION 1				
I.	AUTOMOTIVE COMPONENTS			
1.	<b>Mechanical Automotive Components - Safety Glass (Laminated &amp; Toughened)</b>	Thickness Test (Laminated safety glass) (Toughened safety glass)	IS 2553 (Part 1): 1995 Amd. P1 Amd. 1,2,3 & 4 IS 2553 (Part 2): 2000 Amd. 1 & 2: 2008 Cl. No. No.5.3.1	0.01 mm to 25 mm
		Edge Matching Test (Laminated safety glass)	IS 2553 (Part 1): 1995 Amd. P1 Amd. 1,2,3 & 4 Cl. No. No. 5.3.2 IS 2553 (Part 2): 2000 Amd. 1 & 2: 2008, Cl. No. No. 5.2.2	0.01 mm to 200 mm
		Impact Resistance Test (Laminated safety glass)	IS 2553 (Part 2): 2000 Amd. 1 & 2: 2008 Cl. No. No. 5.2.3 ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008 ECE R 43: 2004, Cl. No. No. 4.3 Annexure 6	2 to 12 m (height of drop Ball Weight : 227 (±) 2 gm) At (+) 40 °C At (-) 20 °C At Room Temperature)
		Impact Resistance Test (Toughened safety glass)	IS 2553 (Part 2): 2000 Amd. 1 & 2: 2008 Cl. No. No. 5.3.2 ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008	2 to 12 m (height of drop Ball Weight : 227 (±) 2 gm) At (+) 40 °C At (-) 20 °C At Room Temperature)

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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
			ECE R 43: 2004, Cl. No. No. 4.3 Annexure 6	
		Penetration Resistance Test (Laminated safety glass)	IS 2553 (Part 2): 2000 Amd. 1 & 2: 2008 Cl. No. No. 5.2.6.1 ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008 ECE R 43: 2004 Cl. No. No.4.2 Annexure 6	2 to 12 m (height of drop Ball Weight : 2260 (±)20 gm)
		Boil Test (Laminated safety glass)	IS 2553 (Part 1): 1995 & IS 2553 (Part 2): 2000 Rev. Amd. P1 Amd. 1,2,3 & 4 Cl. No. No. 5.3.4 P2 Amd. 1 & 2: 2008 Cl. No. No. 5.2.4 ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008 ECE R 43: 2004 Cl. No. No. 5 Annexure 3	Qualitative
		Light Stability Test (With Xenon Ac Lamp Weather-O-Meter Ci4000) (Laminated safety glass)	IS 2553 (Part 1): 1995 & IS 2553 (Part 2): 2000 Rev. Amd. P1 Amd. 1,2,3 & 4 Cl. No. No. 5.3.3 P2 Amd. 1 & 2: 2008 Cl. No. No. 5.2.5 ECE R 43: 2004 Cl. No. No. 6.4, Annexure 3 ECE R 43: 2004 Cl. No. No. 5 Annexure 3	0 to 100 % (Light Transmission)

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		Head Form Test (Laminated safety glass)	IS 2553 (Part 2): 2000 Rev. Amd. P2 Amd. 1 & 2: 2008 Cl. No. No. 5.2.6.2 ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008 ECE R 43/2004 Cl. No. No. 3 Annexure 4	2 to 12 m (height of drop) Weight 10 ( $\pm$ ) 0.2 kg
		Visual Light Transmission Test (Laminated safety glass) (Toughened glass)	IS 2553 (Part 2): 2000 Rev. Amd. P2 Amd. 1 & 2: 2008 Cl. No. No. 5.1.7 Ref. IS 2553 (Part 1): 1995 Amd. P1 Amd. 1,2,3 & 4 Annex-C ECE R 43: 2004 Cl. No. No. 9.1 Annexure 3	0 to 100 % (Light Transmission)
		Secondary Image Test (Laminated safety glass)	IS 2553 (Part 2): 2000 Rev. Amd. P2 Amd. 1 & 2: 2008 Cl. No. No. 5.5.2 ECE R 43:2004 Cl. No. No. 9.3 Annexure 3	Qualitative
		Optical Distortion Test (Laminated safety glass)	IS 2553 (Part 2): 2000 Rev. Amd. P2 Amd. 1 & 2: 2008 Cl. No. No. 5.5.3	0 to 50 min of Arc
		Fragmentation Test (Toughened glass)	IS 2553 (Part 1): 1995 & IS 2553 (Part 2): 2000 Rev. Amd. P1 Amd. 1,2,3 & 4 Cl. No. No. 5.2.3 P2 Amd. 1 & 2: 2008 Cl. No. No. 5.3.3	Qualitative

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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
			ECE R 43: 2004, Rev. 2 Amd. 3 Corrigendum 1 Amd. 3: 2008 ECE R 43: 2004, Cl. No. No. 2 Annexure 4	
2.	<b>Mechanical Automotive Components- Rear View Mirrors (Class I, II, III, IV, V, VI, VII &amp; L)</b>	Dimensions of Reflecting Surface	Amd. 1 & Amd. 2: 2008 Cl. No. No. 6, AIS 001 (Part 1) Rev. 1 Amd: 2011 Cl. No. No. 6.1.2.1, AIS 001 (Part 2) Rev. 1, Amd: 2011 Cl. No. No. 7.1, ECE R46 Cl.no. 6.1.2.1, ECE R81 cl.no. 7.1	0.5 mm to 530 mm
		Radius of Curvature	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 4.6 AIS 001 (Part 1) Rev. 1 Amd: 2011 Cl. No. No. 6.1.2.2.2 AIS 001 (Part 2) Rev. 1, Amd: 2011 Cl. No. No. 6.3 ECE R46 Cl.no. 6.1.2.1, ECE R81 cl.no. 7.2	Range of ROC: 55 to ∞
		Normal Co-Efficient of Reflection Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 13.1.4 AIS 001 (Part 1) Rev. 1 Amd: 2011 Cl. No. No. 6.1.2.2.5 AIS 001 (Part 2) Rev. 1	Range of Reflectivity : 0 to 99 %

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			Amd: 2011 Cl. No. No. 7.2.4 ECE R46 Cl.no. 6.1.2.1. ECE R81 cl.no. 7.2	
		Impact Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 8.2 AIS 001 (Part 1) Rev. 1 Amd: 2011, Cl. No. No. 6.1.3.2 AIS 001 (Part 2) Rev. 1 Amd: 2011/Cl. No. No. 8.2 ECE R46 Cl.no. 6.1.3.2, ECE R81 cl.no. 8.2	Range : 0 to 60 ° (angle of impact)
		Bending Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 8.3 AIS 001 (Part 1) Rev. 1 Amd: 2011 Cl. No. No. 6.1.3.2.3 AIS 001 (Part 2) Rev. 1 Amd: 2011 Cl. No. No. 8.3 ECE R81 cl.no. 8.3	0.1 to 25 kg
		Distortion Factor Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.1	Range: 0.01 mm to 100 mm (max) (diameter of con centric Circles)
		Moisture Resistance Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.2	Range of Reflectivity : (0 to 99) % (Coefficient of Reflection test)

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		Temperature Resistance Test	AIS 001:2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.3	1 °C to 79 °C
		Vibration Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.4	Range of Reflectivity : (0 to 99) % (Coefficient of Reflection test)
		Salt Spray Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.6	Range of Reflectivity : (0 to 99) % (Coefficient of Reflection test)
		Weather Resistance Test	AIS 001: 2001 Rev. Amd. 1 & Amd. 2: 2008 Cl. No. No. 11.7	Qualitative
3.	<b>Mechanical Automotive Components (Wheel Rim Testing)</b>	Wheel Rims for Passenger Car:	IS 9436: 1980 (RA 2006) Amd.1	
		Dynamic Cornering Fatigue Test	Cl. No. No. 3.1	0 to 50 kNm
		Dynamic Radial Fatigue Test	Cl. No. No. 3.2	0.001 to 75 kN
		Wheel Rims For Trucks, Buses & Multi Purpose Passenger Vehicles	IS 9438: 1980 (RA 2000)	0 to 50 kNm Max. Load: 75 kN
		Cornering Fatigue Test	Cl. No. No. 3.1.1	0 to 50 kNm
		Dynamic Radial Fatigue Test	Cl. No. No. 3.2	0.001 to 75 kN
4.	<b>Mechanical Automotive Components - Vibration Testing</b>	Resonance Frequency Detection Test	JIS D 1601: 1995 Cl. No. No. 5.1	Load Rating : 1000 kgf Frequency Range: 5 Hz to 2500 Hz Max. Acceleration:

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				70 g (useful range) Max. Displacement: 30 mm (peak to peak)
		Vibration Function Test	JIS D 1601: 1995, Cl. No. 5.2	Qualitative (Max displacement: 30 mm peak to peak)
		Vibration Endurance Test (Discrete Mode)	JIS D 1601: 1995 Cl. No. No. 5.3	Qualitative
		Sweep Vibration Endurance Test (Sine Sweep Vibration)	JIS D 1601: 1995 Cl. No. No. 5.4	Qualitative
5.	<b>Metal &amp; Metal Products (Ferrous)</b>	Tensile Strength	IS 1608: 2005	0.001 kN to 100 kN
		Elongation	Cl. No. No. 4.1.1, 4.1.2, 4.4.2, 11	0.01 to 100 %
6.	<b>CNG Pressure Regulator</b>	Hydro-Static Strength Test	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016	Downstream : 20 bar to 1000 bar , Upstream : 1 bar to 20 bar, PRV : 7 bar to 45 bar
		Hydro-Static Strength Test	IS 15713:2006 Amd 1 dt. June 2012	Downstream : 20 bar to 1000 bar Upstream: 1 bar to 20 bar
		Leakage	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016	5 bar to 300 bar (Leakage bubble free)
		Leakage	IS 15713:2006 Amd 1 dt. June 2012	5 bar to 300 bar (Leakage bubble free)
		Excess Torque Resistance	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006 Amd 1 dt. June 2012	25 to 135 Nm 5-300 Bar(Leakage bubble free)
		Electrical Over Voltages	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006	0.01 V DC to 32 V DC

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			Amd 1 dt. June 2012	
		Vibration Resistance	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016	10-550 Hz (resonance search) 5-300 Bar (Leakage bubble free)
			IS 15713:2006 Amd 1 dt. June 2012	17 Hz @ 2 hrs (each axis) 5-300 Bar (Leakage bubble free)
		Corrosion Resistance	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006 Amd 1 dt. June 2012	5-300 Bar (Leakage bubble free)
		Insulation Resistance	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006 Amd 1 dt. June 2012	0.01Ω to 4 GΩ at 1000 Volts DC
		Minimum Opening Voltage	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016	0.01 to 40 VDC
			IS 15713:2006 Amd 1 dt. June 2012	0.01 to 40 VDC
		Water Jacket Freezing	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006 Amd 1 dt. June 2012	5-300 Bar (Leakage bubble free)
		Oxygen Ageing	ISO 15500-9:2012(E) Amd 1 dt. 01.04.2016 IS 15713:2006 Amd 1 dt. June 2012	@20 bar and 10 to 80 deg. C for 96 hrs.
7.	<b>CNG Automatic Valve</b>	Hydro-Static Strength Test	ISO 15500-6:2012(E) Amd 1 dt. 01.04.2016	20-1000 bar
		Leakage		5-300 Bar(Leakage bubble free)

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		Excess Torque Resistance		25 to 135 Nm 5-300 Bar(Leakage bubble free)
		Electrical Over Voltages		0.01 to 40 VDC)
		Vibration Resistance		10-550 Hz (resonance search) 5-300 Bar(Leakage bubble free)
		Corrosion Resistance		5-300 Bar(Leakage bubble free)
		Insulation Resistance		0.01Ω to 4 GΩ at 1000 Volts DC
		Minimum Opening Voltage		0.01 to 40 VDC
8.	<b>CNG Gas/Air Mixer</b>	Hydro-Static Strength Test	ISO 15500- 11: 2015(E)	20-1000 bar
		Leakage		5-300 Bar(Leakage bubble free)
		Vibration Resistance		10-550 Hz (resonance search) 5-300 Bar (Leakage bubble free)
		Corrosion Resistance		5-300 Bar (Leakage bubble free)
9.	<b>LPG Pressure Regulator, LPG Solenoid Valve, Gas Air Mixer</b>	Over Pressure	ECE R-67-Rev. 4 Annexure 15	100 to 10,000 kPa
		High Temperature		100 to 10,000 kPa at 120°C
		Low Temperature		100 to 10,000 kPa at (-) 20°C

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		Corrosion resistance		@ 35°C for 144 hrs
		Creep		100 to 10,000 kPa at 120°C, For 96 Hrs.
		Temperature Cycle	ECE R-67-2008 Annexure 15	(-) 20 °C to 120 °C for 96 hrs.
10.	CNG Rigid pipe	Burst Pressure Test	AIS : 28 (Version 5) 2016 (IS 15716:2006 Amd. 2 june 2012)	1MPa to 100MPa (1000 bar)
		Salt Mist Test		@ 35 °C for 24 hrs.
11.	Mechanical Automotive Components (Test On Automotive Engines)	Power	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, IS 14599: 1999, ECE-R24, ECE-R85	0.5 kW to 800 kW
		Smoke - Free Acceleration & Full Load	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, ECE-R24	0.009 m-1 to 10 m-1
		Smoke - Engine Load Response (ELR)	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 1999/96/EC	0.009 m-1 to 10 m-1
		Fuel Consumption	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, IS14599:1999	0.1 kg/h to 150 kg/h
		CO	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.01 g/kWh to 36.22 g/kWh
		THC	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.01 g/kWh to 189.74 g/kWh

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		No <sub>x</sub>	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.02 g/kWh to 120.83 g/kWh
		CO <sub>2</sub>	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.02% to 20%
		Particulate Matter	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.00014 g/kWh to 431.28 g/kWh
		NH <sub>3</sub>	MoRTH/CMVR/TAP/ 115-116_ ISSUE-4: 2010, 88/77/EEC, 91/542/EEC, 1999/96/EC, 2005/55/EC, 2005/78/EC, 2006/51/EC	0.1 ppm to 200 ppm
12.	<b>Mechanical Automotive Components (Test On Agricultural Tractor, Construction Equipments &amp; Power Tiller Engines)</b>	Power	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, IS 14599: 1999, ECE-R24, ECE-R85	0.5 kW to 800 kW
		Smoke @80% Load	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, 77/537/EEC, 97/54/EC	0.009 m-1 to 10 m-1
		Fuel Consumption	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, IS 14599:1999	0.1 kg/h to 150 kg/h
		CO	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010,	0.01 g/kWh to 36.22 g/kWh

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			ISO 8178: 2008, 97/68/EC, 2002/88/EC, 2004/26/EC, 2010/26/EU	
		THC	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, ISO 8178: 2008, 97/68/EC, 2002/88/EC, 2004/26/EC, 2010/26/EU	0.01 g/kWh to 189.74 g/kWh
		No <sub>x</sub>	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, ISO 8178: 2008, 97/68/EC, 2002/88/EC, 2004/26/EC, 2010/26/EU	0.02 g/kWh to 120.83 g/kWh
		CO <sub>2</sub>	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, ISO 8178: 2008, 97/68/EC, 2002/88/EC, 2004/26/EC, 2010/26/EU	0.02 % to 20 %
		Particulate Matter	MoRTH/CMVR/TAP/ 115-116 ISSUE-4: 2010, ISO 8178: 2008, 97/68/EC, 2002/88/EC, 2004/26/EC, 2010/26/EU	0.00014 g/kWh to 431.28 g/kWh
13.	Mechanical Automotive Components (Test On Genset Engines Upto 800 Kw)	Power	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.5 kW to 800 kW
		Full Load Smoke	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.009 m-1 to 10 m-1
		Fuel Consumption	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.1 kg/h to 150 kg/h
		CO	CPCB : PCLS/9/2005-06 ISO 8178: 2008	CO: 0.01 g/kWh to 36.22 g/kWh

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		THC	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.01 g/kWh to 189.74 g/kWh
		No <sub>x</sub>	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.02 g/kWh to 120.83 g/kWh
		CO <sub>2</sub>	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.02 % to 20 %
		Particulate Matter	CPCB : PCLS/9/2005-06 ISO 8178: 2008	0.00014 g/kWh to 431.28 g/kWh
14.	Mechanical Automotive Components (Test on Portable Genset )	Power	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.1 kW to 19 kW
		Fuel Consumption	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.1 kg/h to 10 kg/h
		CO	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.91 g/kWh to 302.68 g/kWh
		THC	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.01 g/kWh to 94.08 g/kWh
		No <sub>x</sub>	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.02 g/kWh to 83.65 g/kWh
		CO <sub>2</sub>	CPCB : PCLS/5/2005-01 ISO 8178: 2008 SAE J 1088	0.02% to 20 %
15.	Mechanical Automotive Components (Test on IC Engines for Endurance &	Power & Rating Test	IS 10000 (Part 1 to 13): 1980 IS 11170: 1985 IS 7347: 1974	0.5 kW to 800 kW
		Fuel Consumption	IS 10000 (Part 1 to 13): 1980	0.1 kg/h to 150 kg/h

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	<b>Component Wear Assessment)</b>		IS 11170: 1985 IS 7347: 1974	
		Bore/Internal Dia	IS 10000 (Part 1 to 13): 1980, IS 11170:1985 IS 7347:1974	0.1 mm to 150mm
		External Dia	IS 10000 (Part 1 to 13): 1980, IS 11170: 1985 IS 7347: 1974	0.1 mm to 150 mm
		Height/Length	IS 10000 (Part 1 to 13): 1980, IS 11170: 1985 IS 7347: 1974	0.1 mm to 300 mm
16.	<b>Automotive Component (Emission Of Gaseous Pollutants From Petrol &amp; Engine Vehicles)</b>	Evaporative Emissions HCG/ Test	[EEC-98/69/EC-R83 (Type 4) MoSRTH/CMVR/TAP/115-116_ Issue 4 (Part 14) (4W)-G.S.R 84 (E) MoSRTH/CMVR/TAP/115-116_ Issue. 4 (Part 17) (2W)-G.S.R. 186 (E). California Evaporative Emission Standards and Test procedures for 2001 and subsequent model motor vehicles, (Part 4): for motorcycles ]	4 W (Min-Max) 0.001 g to 60.492 g/test  2 W (Min-Max) 0.001 g to 60.492 g/test
17.	<b>Mechanical Automotive Components (Emission Of Gaseous Pollutants From Petrol &amp; Diesel</b>	Idling CO, HC	[MoRTH/CMVR/TAP/115-116_ Issue. 4 (Type 2 Test) R 83: 1995 (Type 2 Test) 70/220/EEC Amended Till 2002/80/EC: 2002 (Type 2 Test)]	Co (Min-Max) 0.0001 ppm to 34600 ppm  HC (Min-Max)

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	Engine Vehicles & Crankcase Emission from Petrol Engines)	Free Acceleration		0.001 ppm to 1990 ppm	
		Smoke Test		0 to 100 % HSU	
				Idle Rpm	
				Fly up Rpm	
		Tail Pipe Emissions	[ MoRTH/CMVR/TAP/115-116_ Issue. 4: 2010 (Type 1 Test) R 83/04: 2004 (Type 1 Test) 70/220/EEC Amended Till 2002/80/EC: 2002 (Type 1 Test) ]		CO (Min-Max) 0.0001g/km to 161.97 g/km
		CO			HC (Min-Max) 0.0001g/km to 642.098 g/km
		HC			NO <sub>x</sub> (Min-Max) 0.0001g/km to 1119.65 g/km
		No <sub>x</sub>			CO <sub>2</sub> (Min-Max) 0.0001g/km to 20371.698 g/km
		CO <sub>2</sub>			PM (Min-Max) 0.01 g/km to 676.87 g/km
		Particulate			Crankcase emission 0 to 500 mm H <sub>2</sub> O
	Crankcase emission		[ MoRTH/CMVR/TAP/115-116_ Issue. 4: 2010 (Type 3 Test) R 83/04 , 2004 (Type -3 Test) 70/220/EEC Ammended Till 2002/80/EC: 2002 (Type-3 test) ]		
18.	Vibration Testing	Resonance Frequency Detection Test	JIS 1601-1995 Clause 5.1	Qualitative (BY using Electro-Dynamic Shakers	

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				(in X, Y & Z axis.) Force : 3200 kgf Frequency range : 5 Hz-3000 Hz Max. Displacement range : ±25.5 mm (g=11.228 Dis. : 0.056mm @ 100kg payload)
		Vibration Function Test	Clause 5.2	
		Vibration Endurance Test (Discrete Mode)	Clause 5.3	
		Sweep Vibration Endurance Test (Sine Sweep Vibration)	Clause 5.4	
		Vibration Endurance Test (Discrete Mode)	Clause 5.3	BY using Multi Axial Simulation Table; with 6 Degrees of Freedom.(X,Y,Z Axis and Roll, Yaw and Pitch) [only one axis at a time] Frequency range: 0.1 Hz-100 Hz Displacement range : Z axis: ±127 mm Y axis: ±165 mm X axis: ±152 mm)
		Sweep Vibration Endurance Test (Sine Sweep Vibration)	Clause 5.4	
19.	<b>Vibration Testing for Automotive vehicles (M1</b>	Bumper fitment performance by Simulation of Road	IS 15901:2010 (Annexure C: Clause No. 4.1.2)	Qualitative (By using 4- Poster : Actuator Force Rating –

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	Category)	profile (Road Load Acquired Data) along 'Z' axis.		104 kN (Front), 167 kN (Rear) Max Acceleration : 0 to 39 g Frequency Range : 0-50 Hz Max Displacement : ±125 mm)
20.	Automotive Components (Endurance Testing of Leaf Spring Assemblies)	Fatigue Test of Leaf Spring assemblies	IS 1135:1995 with Amd. 1 dt. 2004. (Clause No.16)	Maximum Load : ± 160 kN Maximum Displacement : ±125 mm
21.	Mechanical/ Electronic/ Electrical system/ Subsystem of Automotive/ Rolling Stock/Defense components.	Simulated long-life testing at increased random vibration levels	IEC 61373 clause No. 9 (Body mounted & Bogie Mounted)	5 to 3000 Hz ,upto 70g(bare armature table) [Payload upto 650 kg] & 2 to 2000 Hz ,upto 100g(bare armature table) [Payload upto 1000 kg]
		Functional random vibration test conditions	IEC 61373 clause No. 8 (Body mounted & Bogie Mounted)	
		Shock testing conditions	IEC 61373 clause No. 10 (Body mounted & Bogie Mounted)	
22.	Mechanical Automotive	Leak Tightness Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 3.1,	0-30kPa

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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
	<b>Components - Plastic Fuel Tank 2 &amp; 3 W</b>		EEC 97/24 Chapter 6 Annex-I Cl. No. No. 1.3	
		Over Turn Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 3.2, EEC 97/24 Chapter 6 Annex-I Cl. No. No. 1.3	0-200 ml/min
		Permeability Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.1, EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.1	0-20 gram/day
		Shock Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.2, EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.2	0 to -20°C ± 2°C
		Mechanical Strength Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.3, EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.3	(-53°C ± 2°C) (0.3 Kg/cm <sup>2</sup> )
		Fuel Resistance Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.4 EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.4	Difference in tensile strength max < 25%
		Fire Resistance Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.5 EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.5	0-0.64 mm/sec
		High Temperature Test	IS 14681:1999 Amd 1 2016 Cl. No. No. 4.6 EEC 97/24 Chapter 6 Annex-I Cl. No. No. 2.6	0-70°C ± 2°C
23.	<b>Mechanical Automotive</b>	Over Turn Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.1	0-150 ml/min

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	Components - Plastic Fuel Tank 4W		ECE R34: 1995 Rev 3 Part 1 Cl. No. No. 6.2	
		Impact Resistance Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.2 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 1	-60°C to +180°C
		Mechanical Strength Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.3 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 2	(-53°C ± 2°C) (0.3 Kg/cm <sup>2</sup> )
		Permeability Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.4 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 3	0-20 gram/day -20°C ± 2°C
		Resistance to Fuel Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.5 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 4	(-20°C ± 2°C) (-53°C ± 2°C) (0.3 Kg/cm <sup>2</sup> )
		Resistance to Fire Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.6 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 5	----
		High Temperature Test	IS 15547:2005 Amd 1 2017 Cl. No. No. 4.7 ECE R34: 1995 Rev 3 Annex-5 Cl. No. No. 6	95°C ± 2°C

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**MECHANICAL TESTING**

LOCATION 2				
I.	<b>AUTOMOTIVE COMPONENTS</b>			
1.	<b>Tyre Testing</b>			
a.	<b>Pneumatic Tyres for 2w/3w</b>	Tyre Dimensions Test Section Width of Tyre	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.1, Cl. No. No. 4.1.1.1/ECE R75 Rev. 1 18 March 1997 Cl. No. No. 6.1, Cl. No. No. 6.1.1.	0.01 mm to 450 mm
		Tyre Outer Diameter	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.1.1.2 ECE R75 Rev. 1 18 March 1997 Cl. No. No. 6.1.2.	1.2 mm to 900 mm
		Load Speed Performance Test	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.2 ECE R75 Rev. 1 18 March 1997 Cl. No. No. 6.2	1.2 mm to 900 mm

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		Dynamic Growth of Tyre Test	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.3 ECE R75 Rev. 1 18 March 1997 Cl. No. No. 6.3	Qualitative
		Tyre Strength Test (Plunger Test)	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.4	Plunger Energy = 0 to 271J
		Endurance Test	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.5	Qualitative
		Tread Wear Indicator Test	IS: 15627-2005. Amend. 1, May 2011, Amend. 2 April 2016 Cl. No. No. 4.6	0.01 mm to 2.2 mm
<b>b.</b>	<b>Pneumatic Tyres For Passenger Car</b>	<b>Tyre Dimensions Test</b>		
		Section Width of Tyre	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.1 Cl. No. No. 4.1.1.1, ECE R30 Rev. 3 29 March, 2007 Cl. No. No. 6.1, Cl. No. No. 6.1.1	0.01 mm to 450 mm
		Tyre Outer Diameter	IS 15633: 2005 Amd. 1: August 2009.	1.2 mm to 900 mm

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			Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.1.1.2, ECE R30 Rev. 3 29 March, 2007 Cl. No. No. 6.1.2	
		Load Speed Performance Test	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.2, ECE R30 Rev. 3 29 March, 2007, Cl. No. 6.2	1.2 mm to 900 mm
		Endurance Test	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.3	Qualitative
		Tread Wear Indicator Test	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.4 ECE R30 Rev. 3 29 March, 2007 Cl. No. No. 6.3	0.01 mm to 2.2 mm
		Tyre Strength Test (Plunger Test)	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd 3: July 2014 Cl. No. No. 4.6	Plunger Energy = 0 to 5996 kgf-cm

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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
		Bead Unseating Resistance Test	IS 15633: 2005 Amd. 1: August 2009. Amd. 2: April 2011 Amd. 3: July 2014 Cl. No. No. 4.5	Bead Unseating Resistance = 0 to 50000 N
c.	Pneumatic Tyres For Commercial Vehicles	<b>Tyre Dimensions Test</b> Section Width of Tyre	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014. Cl. No. No. 4.1, Cl. No. No. 4.1.1.1 ECE R 54 Rev. 3-26 March 2013 Cl. No. No. 6.1, Cl. No. No. 6.1.1.,	0.01 mm to 450 mm
		Tyre Outer Diameter	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014.Cl. No. No. 4.1.1.2 ECE R 54 Rev. 3-26 March 2013 Cl. No. No. 6.1.2	1.2 mm to 1500 mm
		Endurance Test	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014.Cl. No. No. 4.2 ECE R 54 Rev. 3-26 March 2013 Cl. No. No. 2.2.2 of Annexure 7	1.2 mm to 1500 mm
		Load Speed Performance Test	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014.	Qualitative

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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
			Cl. No. No. 4.3 ECE R 54 Rev. 3-26 March 2013, Cl. No. No. 6.2	
		Tread Wear Indicator Test	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014, Cl. No. No. 4.4 ECE R 54 Rev. 3-26 March 2013 Cl. No. No. 6.3	0.01 mm to 2.2 mm
		Tyre Strength Test (Plunger Test)	IS 15636: 2005 (1 <sup>st</sup> Revision): 2012 Amd. 1 July 2014 Cl. No. No. 4.5	Plunger Energy = 0 to 34560 kgf-cm
<b>2.</b>	<b>Pedestrian Testing</b>			
<b>a.</b>	<b>Frontal Structure of Vehicle such as Bumper, Bonnet, Windshield</b>	Lower Legform Test to Bumper (Lower legform weight = 13.4±0.2 kg , Test speed = 11.1±0.2m/s)  Dynamic knee bending angle Dynamic knee shear displacement Acceleration at the upper end of tibia)	AIS: 100-2010 & Amd 1, 2015  Regulation (EC) 78/2009, Regulation (EC) 631/2009, Commission Regulation (EU) 459/2011; 12 May 2011 GTR-9, Amendment No. 1, 22 Feb, 2011	0.001° - 22°
		Upper Legform Test to Bumper (Legform weight = 9.5±0.1 kg Test Speed= 11.1±0.2m/s)		1N - 20kN

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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
		Sum of the impact forces Bending Moment at the impactor		
		Child & Adult Headform Test (Child Headform weight = 3.5±0.07 kg) (Adult Headform weight = 4.5±0.1 kg) Test Speed= 9.7±0.2m/s HIC ( Head Injury Criteria)		HIC 0.01 to 2000 (Unitless)
b.	<b>Steering Control</b>	Bodyblock Test (Body Block weight = 34 to 36 kg) (Test speed = 24.1+1.2 km/h) Force on body block Headform Test (Head form weight = 6.8 kg) (Test speed = 24.1+1.2 km/h) (Performed with linear guided impactor & Head form impactor ) Maximum deceleration on Impactor	IS 11939: 1996, Amd1, Jan, 2016 AIS 96-2008, Amd 4, 2017 ECE R12, Rev.4 Amd3, July, 2016	1N- 20 kN  0.001g- 200 g
c.	<b>Interior Fitting (Instrument</b>	Testing of Energy Dissipating Materials	IS 15223: 2002,	0.001g- 200 g

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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
	<b>Panels)</b>	Test Speed= 24.1 km/h Mass of the pendulum = 6.8 kg (as per annexure 4 of ECE R21) Maximum deceleration on Impactor	ECE R21 1993 & Amd-2, 2003	
<b>d.</b>	<b>Automotive Seats</b>	Energy Dissipation Test Test Speed= 24.1 km/h Mass of the pendulum = 6.8 kg Maximum deceleration on Impactor	IS 15546: 2005, Amd 1 Dec-2013 , ECE R17 Rev.5 2014 &Amd. 1, 2016	0.001g-200g
<b>3.</b>	<b>Crash &amp; SLED Testing</b>			
<b>a.</b>	<b>M1 Category Vehicles, N1 Category Vehicles (GVW≤1500kg)</b>	Full Frontal Crash Test (Test Speed = 48.3-53.1km/h) Speed range = 0 to 80 km/h Movement of Steering Control	IS: 11939-1996(Reaffirmed 2017), &Amd1, Jan, 2016 (Cl. No. No. 4.7) AIS:96-2008, Amd 4, Apr-2017 (Cl. No. No. 5.1) ECE R12, Rev.4 Oct-2012 Amd3, July, 2016 (Cl. No. No. 5.1)	0.001mm - 500 mm
<b>b.</b>	<b>M1 Category Vehicles with GVW ≤2500kg</b>	<b>40% Offset Frontal Impact Test</b> (Test Speed= 56-0/+1km/h) Speed range = 0 to 80 km/h	AIS:098-2008 &Amd. 2-Sep-2016,  ECE R94 Rev3-Sep-2017	
		Head Performance Criterion (HPC)		0.01 - 2000 (Unitless)
		Resultant Head		0.01 g - 2000 g

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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
		Acceleration for more than 3ms		
		Neck Tension Criteria		1N - 13.34 Kn
		Neck Shear Criteria		1N - 8.9kN
		Neck Bending Moment about Y-axis in tension		0.01Nm - 282.5 Nm
		Thorax Compression Criteria (ThCC)		0.01mm- 68 mm
		Viscous Criterion for thorax (V*C)		0.001m/s- 68m/s
		Femur Force Criterion (FFC)		1N - 13.34 Kn
		Tibia Compression Force Criterion (TCFC)		1N - 11.12 Kn
		Tibia Index (TI) at the upper & lower end of tibia		0.001 – 3(Unitless)
		Movement of Sliding Knee Joint		0.001mm-36 mm
		Residual Steering Displacement		0.001mm-500 mm
		Seat Belt Buckle Opening Force		0.1N-500N
		Fuel Leakage Rate		1g/min-5000g/min
<b>c.</b>	<b>M1 &amp; N1 Category Vehicles</b>	Side Impact Test (Test Speed = 50±1 km/h) Speed range = 0 to 80 km/h	AIS:099-2008 &Amd 2-Sep-2016, ECE R95 Rev2- Feb 2014 & Amd 3 July 2016	
		Head Performance Criterion (HPC)		0.01-2000

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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
		Rib Deflection Criterion (RDC)		0.01mm-72 mm
		Soft Tissue Criterion (VC)		0.01m/s-72 m/s
		Pubic Symphysis Peak Force (PSPF)		1N-20 Kn
		Abdominal Peak Force (APF)		1N to 5Kn
		Fuel Leakage Rate		1 gm/min to 5000 g/min
d.	<b>M1 Category Vehicles (Passenger Cars)</b>	Rear Impact Test (Test Speed = 35-38 km/h) Speed range = 0 to 80 km/h	AIS:101-Sep-12, Amd1,2017 ECE R32 Rev1-Oct, 1993 & Amd1- Aug 2007 Rev1, Corrigendum2 March 14	1 gm/min to 5000 g/min
e.	<b>Seat Belts of Automotive Vehicles of M &amp; N category</b>	Dynamic Test on Sled Speed range = 0 to 80 km/h Peak deceleration = 90g	IS:15140-2003 (Reaffirmed 2009) &Amd2-May 2017 (Cl. No. No. 5.5.2) ECE R16 Rev8-June 2014 & Amd 1- July, 2017 (Cl. No. No. 6.4.1) AIS:005-2000 Amd 1- May 2012 (Cl. No. No. 4.4.2)	
		Displacement of Dummy at Pelvic and Torso Levels.		1 mm to 1000 mm
		g levels		0.01g to 90g
f.	<b>Seat Anchorage of M1 category vehicles</b>	Seat Anchorage Strength Tests on Sled Speed range = 0 to 80 km/h	IS:15546-2005(Reaffirmed 2014) & Amd1-Dec-2013 (Cl. No. No. 4.3), ECE R17 Rev5-June 2014	0.01g to 90g

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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
		Peak deceleration = 90g g levels	& Amd1-Feb 2016 (Cl. No. No. 5.2), AIS:016-2000, AIS:023-2005 & Amd4-Aug-2017 (Cl. No. No. 4.3)	
g.	<b>Side Doors of M1 Category Vehicles</b>	Side Door Intrusion Test Load range = 0 to 150 kN Load range = 0 to 750 mm	IS:12009-1995 (Reaffirmed 2015) Amd 1- June 2017	1N- 150kN 1mm- 750 mm
4.	<b>Vehicle Evaluation Testing</b>			
a.	<b>Automotive Vehicle Testing 2w, 3w, 4w &amp; their Derivatives</b>	Brakes and Braking System		
		4 Wheelers and their derivatives	IS 11852: 2001	0 to 150 km/h (Speed limit on N-CAT test track is 150 km/h)
		2 & 3 Wheelers and their derivatives	IS 14664: 1999	0 to 60 km/h
		Brake for Agricultural Tractors	IS 12061: 1999	0 to 50 km/h
		Gradeability Evaluation	AIS 003: 1999	7°, 10.2° & 15°
		Speedometer Calibration		
		4 Wheelers and their derivatives	IS 11827: 2008	0 to 120 km/h
		2 & 3 Wheelers and their derivatives	IS 11827: 2008	0 to 120 km/h
		Max. Speed Test		
		4 Wheelers and their derivatives	IS 11877: 1986	0 to 150 km/h (Speed limit on N-CAT test track is 150 km/h)

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		2 Wheelers and their derivatives	IS 10278: 2002	0 to 150 km/h (Speed limit on N-CAT test track is 150 km/h)
		3 Wheelers and their derivatives	IS 10278: 2002	0 to 150 km/h (Speed limit on N-CAT test track is 150 km/h)
		Noise Emitted By Moving vehicle Test		
		Wheelers and their Derivatives	IS 3028: 1998	30 dB(A) to 130 dB(A)
		Wheelers and their derivatives	IS 3028: 1998	30 dB(A) to 130 dB(A)
		Wheelers and their derivatives	IS 3028: 1998	30 dB(A) to 130 dB(A)
		Bystander Noise for Agricultural Tractors	AIS 115: 2009	30 dB(A) to 130 dB(A)
<b>b.</b>	<b>Automotive Vehicle Testing for 4W</b>	Steering Effort Evaluation for 4 Wheeler	IS 11948: 1999	Torque : 0 to 250 Nm Angle : 0° to 1250°
		Steering Equipment for Agricultural tractors	AIS 042: 2004	Upto 250 Nm 0° to 2500°
		Turning Circle Diameter Evaluation for 4 Wheeler	IS 12222: 1987	Upto 70 m
		Coast Down Test for 4 wheeler	IS 14785: 2000	0 to 150 km/h (Speed limit on N-CAT test track is 150 km/h)
<b>c.</b>	<b>Automotive Vehicles Testing For 4w &amp; Their Derivatives</b>	Interior Sound Level Test for 4 Wheelers and their derivatives	IS 12832: 2010	30 dB(A) to 130 dB(A) MU =0.03dB(A) @ 71.66 dB(A)

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Location 2: Plot No. 01, Sec M-11, IMT Manesar, Gurgaon, Haryana

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

**Certificate Number** TC-5360

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Last Amended on 03.06.2019

SI.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Hood Latch Tests – Method of Test for 4 Wheelers and their derivatives	IS 14226: 1995	0 to 120 km/h



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**PHOTOMETRY TESTING**

LOCATION 1				
<b>I.</b>	<b>LUMINARIES</b>			
<b>1.</b>	<b>Lighting &amp; Light Signaling Luminaries / Fixtures (Head Lamp / Front Fog Lamp/ Warning Lamp / Stop Lamp, Position Lamp)</b>	Illuminance Measurement	AIS (010, 012, 062, 127) ECER (5, 6, 7, 19, 23, 31, 38, 50, 65, 77, 87, 91, 98, 112, 113, 119, 123)	0.001 Lux to 8 * 10 <sup>4</sup> Lux
		Luminance Intensity Measurement		
		Color Measurement (x,y co-ordinates)		0 to 1 co-ordinates for x & y
<b>2.</b>	<b>Light Sources (Incandescent, High Intensity Discharge, Halogen, LEDs)</b>	Luminous Flux Measurement	ECER (37, 99, 128) AIS 034, 130	1-4000 Lumen
		Color Measurement (x,y co-ordinates)	Clause 6 as per IS 16105:2012 (RA 2017),	0 to 1 co-ordinates for x & y
		Dimension Measurement	Clause 11, 12, 13 & 14 IS 16106:2012 (RA 2017)	X=0-250mm, Y=0-100mm 0-360 deg
<b>3.</b>	<b>Retro Reflection Devices</b>	Photometric Measurement	AIS (22, 57, 88, 89, 90) ECER (03, 27, 69, 70, 104)	0.1 ~ 199900 Mcd/lx
		Color Measurement (x,y co-ordinates)		0 to 1 co-ordinates for x & y
<b>4.</b>	<b>Rear Registration Plate Lamps, LED Display</b>	Luminance Measurement	AIS (010, 012, 062) ECER 04	0.0001 to 1999 000 cd/m <sup>2</sup>
		Color Measurement (x,y co-ordinates)		0 to 1 co-ordinates for x & y

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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
5.	Glossary Surfaces	Gloss Measurement	ASTM D2457 08E1, ASTM E 430-11, ASTM D523-08, NIST Pub. SP 250-70: 2006 ISO 2813	At 20 °, 45 °, 60 °