

Laboratory **CQAL Laboratories, JC Nagar Post Office, Bangalore, Karnataka**

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

Certificate Number **TC-5261** (Reprinted on 17.03.2017 in lieu of **Page 1 of 7**
T-2280 & T-3097)

Validity **16.11.2016 to 15.11.2018** Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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ELECTRICAL TESTING

I.	CELLS AND BATTERIES			
1.	Primary Battery 1.5 V Metal Clad Dry Battery (R6 – No. 1, R14 – No. 3, R 20 – No. 6)	Dimension (Length and Diameter)	JSS 6135-01:2013 (Revision No. 2) Clause No. 16.2	0.01 mm to 150 mm
		Weight	JSS 6135-01:2013 (Revision No. 2) Clause No. 16.3	25 g to 3000 g
		3. Open Circuit Voltage	JSS 6135-01:2013 (Revision No. 2) Clause No. 16.5	0.0001 V _{DC} to 500 V _{DC}
2.	Secondary Battery Ni-Cd Portable Sealed Cylindrical Alkaline 12 V, 4 AH	Dimension	JSS 6140-03:2013 (Revision No. 4) Clause No. 9.10.1, Supplement No. 12, Clause No. 3.6	0.01 mm to 300 mm
		Weight	JSS 6140-03:2013 (Revision No. 4) Clause No. 9.10.4, Supplement No. 12 Clause No. 3.7	25 g to 3000 g
		Capacity Test at Room Temperature	JSS 6140-03: 2013 (Revision No. 4) Clause No. 9.10.5.1 Supplement No. 12 (Clause No 4.1)	0.05 A to 5 A
II.	CABLES AND WIRES			
1.	Power Cable (Elastomer)	Dimensions	IS 9968 (Part 1): 2010 IS 10810: 1984 (RA 2016)	0.5 mm to 2.5 mm
		Conductor Resistance	IS 10810 (Part 5): 1984 (RA 2016)	1 mΩ to 2000 mΩ
		Insulation Resistance	IS 10810 (Part 43): 1984 (RA 2016)	1 MΩ to 1 TΩ

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		High Voltage	IS 10810 (Part 45): 1984 (RA 2016)	1 kVrms to 15 kVrms
		Tensile Strength Elongation at break	IS 10810 (Part 7): 1984 (RA 2016)	5 N/mm ² to 15N/mm ² 250 % to 800 %
2.	Power Cable (PVC)	Dimensions	IS 694:2010, IS 10810:1984 (RA 2016)IS 5831: 1984 (RA 2016)	0.5 mm to 4.5 mm
		Conductor Resistance	IS 10810 (Part 5): 1984 (RA 2016)	1 mΩ to 2000 mΩ
		Insulation Resistance	IS 10810 (Part 43): 1984 (RA 2016)	1 MΩ to 1TΩ
		High Voltage	IS 10810 (Part 45): 1984 (RA 2016)	1 KVrms to 6 KVrms
		Tensile Strength Elongation at break	IS 10810 (Part 7): 1984 (RA 2016)	5 N/mm ² to 15 N/mm ² 150 % to 800 %
		Heat Shock	IS 10810 (Part 14): 1984 (RA 2016)	150 °C ± 2 °C
		Shrinkage	IS 10810 (Part 12): 1984 (RA 2016)	Upto 200 mm
		Cold Bend	IS 10810 (Part 20): 1984 (RA 2016)	(-)15 °C ± 2 °C

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ELECTRONICS TESTING

I.	ENVIRONMENTAL TEST FACILITY			
1.	Electronic and Electrical Equipment & Component	High Temperature	JSS 55555: 2012 (Rev. 03)(Test No. 17)	Qualitative Ambient to 300 °C 1 m x 1 m x 1 m
		Temperature (Dry Heat)	JSS 50101: 1996 (Rev. 01)(Test No. 22)	Qualitative
		Dry Heat	IS 9000 (Part 3): 1977 (RA 2010)	Qualitative
		Low Temperature	JSS 55555:2012 (Rev-03)(Test No. 20)	Qualitative Ambient to (-)70 °C 0.75 m x 0.8 m x 0.9 m
		Temperature (Cold)	JSS 50101: 1996 (Rev. 01)(Test No. 21)	Qualitative
		Cold Test	IS 9000 (Part 2): 1977 (RA 2010)	Qualitative
		Damp Heat	JSS 55555:2012 (Rev. 03) (Test No. 10)	Qualitative 25 °C to 65 °C @95 %Rh 1 m x 1 m x 1.5 m
		Steady State Damp Heat	JSS 50101: 1996 (Rev. 01) (Test No.07)IS 9000 (Part 4): 2008	Qualitative
		Cyclic Damp Heat	JSS 50101: 1996 (Rev. 01) (Test No. 05)	Qualitative 25 °C to 65 °C @95 %Rh
		Damp Heat(Moisture Resistance)	JSS 50101: 1996 (Rev. 01)(Test No. 06)	25 °C to 65 °C @95 %Rh(-) 10 °C
		Cyclic Test (Composite Temperature / Humidity)	IS 9000 (Part 6): 1978 (RA 2010)	Qualitative
		Solar Radiation	JSS 55555: 2012 (Rev. 03)(Test No. 25)	Qualitative 30 °C to 55 °C
		Radiation	IS 9000 (Part 17): 1985 (RA 2010)	1200 W/m ²

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		Dust	JSS 55555: 2012 (Rev. 03)(Test No. 14) IS 9000 (Part 12): 1981 (RA 2010)	Qualitative 40 °C ± 3 °C50 % Rh Max.
		Altitude	JSS 55555: 2012 (Rev. 03)(Test No. 3)	Qualitative Ambient to (–) 40 °C Upto 15240 m
		Combined Cold / Low Air Pressure	IS 9000 (Part 31): 1985 (RA 2010)	1013 mbar to 115 mbar 101.3 kPa to 11.5 kPa
		Altitude-Low Air Pressure	JSS 50101: 1996 (Rev. 01)(Test No.2)	Qualitative 0 to 760 mmHg 101 kPa to 0 kPa
		Low Air Pressure	IS 9000 (Part 13): 1981 (RA 2010)	
		Driving Rain	JSS 55555: 2012 (Rev. 03)(Test No.12) IS 9000 (Part 16): 1983 (RA 2010)	Qualitative 0 to 10 kg/cm ² (98.06 kPa to 980.6 kPa)
		Rapid temperature cycling (Thermal Shock)	JSS 55555:2012 (Rev-03)(Test No.22)	Qualitative (–) 65 °C to 200 °C
		Temperature Cycling	JSS 50101: 1996 (Rev. 01)(Test No-20)	Qualitative
		Change of Temperature	IS 9000 (Part 14): 1988 (RA 2015)	Qualitative
		Corrosion (Salt / Salt Fog)	JSS 55555: 2012 (Rev. 03) (Test No.9)	Qualitative 35 °C @ 95 %Rh
		Corrosive Atmosphere(Salt Mist)	JSS 50101: 1996 (Rev. 01)(Test No-4) IS 9000 (Part 11):1983 (RA 2010)	Qualitative
		Mould Growth Test	JSS 55555: 2000 (Rev. 02)(Test No. 21)	Qualitative 29 °C ± 1 °C90 %Rh Min.
		Mould Growth	JSS 50101: 1996 (Rev. 01)(Test No.14) IS 9000 (Part 10): 1979 (RA 2010)	Qualitative

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		Contamination test	JSS 55555: 2012 (Rev. 03) (Test No. 06)	Qualitative 50 °C
		Tropical Exposure	JSS 55555: 2012 (Rev. 03)(Test No. 27)	Qualitative 20 °C to 35 °C @ 95%Rh
		Desert Storage	JSS 6135-01: 2013 (Rev. 02)	Qualitative Ambient to 50 °C
		Jungle Storage	JSS 6135-01: 2013 (Rev. 02)	Qualitative 27 °C to 35 °C @ 95%Rh
		Vibration	JSS 55555: 2012 (Rev. 03)(Test No. 28) JSS 50101: 1996 (Rev. 01) (Test No. 23) IS 9000 (Part 8): 1981 (RA 2010) IS 13568: 1992 (Clause 7.11.2)	Qualitative 5 Hz to 2000 Hz 51 mm (p-p) 9.81 m/s ² to 600 m/s ²
			JSS 55555: 2012 (Rev. 03)(Test No. 28)	Qualitative 20 Hz to 2000 Hz Upto 20 (m/s ²) ² /Hz
			JSS 50101: 1996 (Rev. 01) (Test No. 24)	
			IS 14257: 1995 (RA 2011)(Clause 9.3.8.1.1)	Qualitative 16Hz, 5 mm (peak to peak)
		Bump	JSS 55555: 2012 (Rev. 03)(Test No. 05)	Qualitative 0.5 ms to 10 ms 100 to 2000 m/s ² 250 kg
			JSS 50101: 1996 (Rev. 01)(Test No.11)	
			IS 9000 (Part 7): 2006	
		Shock	JSS 55555: 2012 (Rev. 03)(Test No. 24)	Qualitative 0.5 ms to 18 ms 100 m/s ² to 17000 m/s ²
			JSS 50101: 1996 (Rev. 01)(Test No. 12)	
			IS 9000 (Part 7/ Sec. 1): 2006	

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		Bounce	JSS 55555: 2012 (Rev. 03)(Test No. 4) (Procedure 1)	Qualitative 25 mm± 0.5 mm 285 rpm ± 5 rpm/250 kg
			IS 9000 (Part 7 / Sec. VI):1988 Clause No. 5.6.1.2 (RA 2015)	
		Drop Test	JSS 55555: 2012 (Rev. 03)(Test No. 13)	Qualitative Height 1000 mm
			IS 9000 (Part-7): 1979 (RA 2006)	
		Toppling Test	JSS 55555: 2012 (Rev. 03)(Test No.26)	Qualitative Angle 45° or Height 100 mm
II.	AUDIO EQUIPMENT			
1.	Ear Phone, Electrodynamic	Visual Examination	JSS 55400: 2005, JSS 55401: 2004 (Clause No. 13.1.1)	Qualitative
		Dimensions	JSS 55400: 2005, JSS 55401: 2004 (Clause No. 13.1.2)	1 mm to 1000 mm
		Weight	JSS 55400: 2005, JSS 55401: 2004 (Clause No. 13.1.4)	10 g to 1.5 kg
		Insulation Resistance	JSS 55400: 2005 (Clause 13.3)	1MΩ to 20 GΩ@ 250V _{DC}
		Voltage Proof	JSS 55400: 2005 (Clause 13.2)	500 V _{AC}
		Acoustic Quality	JSS 55400: 2005 (Clause 13.4)	300 Hz to 3400 Hz
2.	Microphone	Visual Examination	JSS 55320: 2005, JSS 55321: 2004 (Clause No. 13.1.1)	Qualitative
		Dimensions	JSS 55320: 2005, JSS 55321: 2004 (Clause No. 13.1.2)	1 mm to 1000 mm

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		Weight	JSS 55320: 2005, JSS 55321: 2004 (Clause No. 13.1.4)	10g to 1.5 kg
		Insulation Resistance	JSS 55320: 2005 (Clause 13.3)	1M Ω to 20 G Ω @ 250V _{DC}
		Voltage Proof	JSS 55320: 2005 (Clause 13.2)	500 V _{AC}
		Impedance	JSS 55320: 2005 (Clause 13.4)	30 Ω to 1K Ω
3.	Handset	Visual Examination	JSS 55420: 2004 (Clause 13.1.1)	Qualitative
		Dimensions	JSS 55420: 2004 (Clause 13.1.2)	1 mm to 300mm
		Weight	JSS 55420: 2004 (Clause 13.1.4)	10 g to 1.5 Kg
		Insulation Resistance	JSS 55420: 2004 (Clause 13.3)	1M Ω to 20 G Ω @ 250V _{DC}
		Voltage Proof	JSS 55420: 2004 (Clause 13.2)	500 V _{AC}
		Impedance of Earphone	JSS 55420: 2004 (Clause 13.4)	100 Ω to 1250 Ω
		Sensitivity of Earphone	JSS 55420: 2004–Clause 13.5 (a)	104 dB to 122 dB @1kHz
		Frequency Response of Earphone	JSS 55420: 2004 (Clause 13.5)	104 dB to 122 dB@ 300Hz to 3KHz
		Harmonic distortion of Earphone	JSS 55420: 2004 (Clause 13.6)	0-100 % @(300Hz to 3KHz)
		Acoustic Quality of Earphone	JSS 55420: 2004 (Clause 13.9)	@ 1 kHz

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