

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi
Accreditation Standard ISO/IEC 17025: 2005
Certificate Number TC-5837 (in lieu of T-3494) **Page 1 of 12**
Validity 21.07.2017 to 20.07.2019 **Last Amended on** 18.08.2017

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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ELECTRONICS TESTING

I.	INFORMATION TECHNOLOGY EQUIPMENT			
1.	Information Technology Equipment (Mobile Phones, Power Adaptors, Laptop/Notebook/ Tablet, Scanners, Cash register, Point of Sale Terminals, Smart Card Readers, Mail Processing Machines/Postage Machines/Franking machines, Passport Reader, Power banks for use in portable applications, Set Up Box, Automated Data Processing machines, Wireless Keyboards, Telephone Answering Machines, CCTV Cameras/CCTV Recorders, USB	Input Current	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 1.6.2)	1.5 V to 300 V ac/dc 0.5 mA to 20 A ac/dc
		Verifications of Marking and Instructions	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 1.7 to 1.7.14)	Qualitative
		Protection From Electric Shock and Energy hazards	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.1)	Qualitative
		Protection against Hazardous moving parts	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.4)	Qualitative
		Thermal Requirement	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.5.1 to 4.5.5)	Ambient to 200°C
		Humidity Conditioning	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.9.2)	93 % to 95 % RH 20°C to 40°C
		Abnormal operating and Fault Conditions	IS 13252 (Part 1) + A1: +A2 IEC60950+A1:+A2 (Cl. 5.3)	20 °C to 400 °C
		Limited Power Source	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.5)	1 W to 300 W 0.1 s to 1 hour
		Steady Force	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.2.2 to 4.2.4)	1 N to 250 N
		Stress relief test	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.2.7)	25°C to 150°C Dimension of Oven: W:1040 mm H: 1200 mm, D: 600 mm

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 2 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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	Driven Barcode Readers, Barcode Scanner, IRIS Scanners, Optical Finger Print Scanners, Smart Machines	Impact & Drop Test	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.2.5 & 4.2.6)	Upto 1000 mm
		Batteries	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.3.8)	Upto 30 V Upto 6A
		SELV circuits	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.2)	0.2 V to 1000 VAC/DC 0.001 A to 10 A AC/DC
		Limited Current Circuits	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.4)	0.001 A to 10A AC/DC
		Provision for Earthing and bonding	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.6)	Upto 12 V 1 A to 40 A
		Over-Current And Earth Fault Protection In Primary Circuits	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.7)	Qualitative
		Safety Interlocks	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.8)	Qualitative
		Electrical insulation Electric strength test with preconditioning	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.9)	20°C to 40°C 90 % to 95% RH, 0.2 kV to 5 kV
		Clearances, Creepage Distances And Distances Through Insulation Clearances Creepage	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 2.10)	0.01 mm to 150 mm
		Wiring Connection And Supply General	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 3.1)	Qualitative
		Connections To Mains Supply Except	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 3.2)	0.01 kVac/dc to 5 kVac/dc 0.01 to 200 mm Upto 400 °C, Upto 100 N

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 3 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Wiring Terminals For External Conductors	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 3.3)	Upto 400 °C 0.001 mm to 200 mm
		Disconnections From The Mains Supply	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 3.4)	Qualitative
		Interconnection of Equipment	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 3.5)	Qualitative
		Physical Requirements Stability	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.1)	Inclination : 1° - 20°, 360° Rotation Dead Weights : upto 800N
		Opening In Enclosure	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.6)	(-)40 °C to 100 °C 0.01 mm to 200 mm
		Resistance To Fire	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 4.7.3)	450 °C to 960°C Upto 999 s
		Touch current and protective conductor current	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 5.1)	1µA to 25 mA
		Volatge Surge Test	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 7.4.2)	1 kV to 10 kV
		(1.2/50us) Impulse Test	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Clause 1.5.7.2; 2.10.3.9)	1 kV to 8 kv Rise Time: 1.2µs Half peak time: 50µs
		(10/700us) Impulse Test	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Cl.1.5.7.3, 6.2.2.1 2.10.3.9)	1 kV 6 kV Rise Time: 10us Half peak time: 100us
		Requirement for the mounting means of rack-mounted equipment	IS 13252 (Part 1) + A1: +A2 IEC 60950+ A1: +A2 (Annex DD)	250 N to 530 N

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 4 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Household and home/office document/media shredder	IS 13252 (Part 1) +A1: +A2/ IEC 60950+ A1: +A2 (Annex EE)	Qualitative
2.	Audio Video Electronics Apparatus (Electronic Musical System with input power 200 W and above, Power Adaptors, Electronics Games, Plasma/LCD/LED Televisions, Amplifiers with input power, Optical Disc Player with Built in amplifiers of input power)	Input Power	IEC/EN 60065 IS 616 (Clause. 4.2)	Upto 600V AC/DC Upto 20A AC/DC
		Durability & Marking	IEC/EN 60065 IS 616 (Clause. 5.0)	Qualitative
		Heating Under Normal Operating Conditions	IEC/EN 60065 IS 616 (Clause. 7.1)	Upto 200°C
		External Forces windows & covers	IEC/EN 60065 IS 616 (Clause. 8.13, 8.14 & 8.15)	Upto 250 N
		Determination of Hazardous live parts	IEC/EN 60065 IS 616 (Clause. 9.1.1.1)	1µA to 25 mA DC voltage- up to 1000V AC Voltage- up to 750V
		Protection against Electric Shock- Accessibility	IEC/EN 60065 IS 616 (Clause 9.1.1.2, 9.2)	Qualitative
		Protection against Electric Shock- Opening in enclosure	IEC/EN 60065 IS 616 (Clause 9.1.3)	Qualitative
		Protection against Electric Shock- Terminals	IEC/EN 60065 IS 616 (Clause 9.1.4, 9.1.5)	Qualitative
		Withdrawal of mains plug	IEC/EN 60065 IS 616 (Clause 9.1.6)	Upto 300 V AC/DC
		Resistance to external forces	IEC/EN 60065 IS 616 (Clause 9.1.7)	1 N to 250 N
		Humidity Conditioning	IEC/EN 60065 IS 616 (Clause. 10.2)	93-95% RH 20°C - 40 °C Dimension of humidity Chamber (Interior): W: 640 mm H: 670 mm, D: 597mm

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 5 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Insulation resistance	IEC/EN 60065 IS 616 (Clause. 10.3 & 8.8)	Upto 10kV 0.2 kV to 5kV AC/DC Upto 200mA AC/DC Upto 200MΩ
		Fault Conditions (Heating)	IEC/EN 60065 IS 616 (Clause. 11.2)	Ambient - 400°C DC upto 30V AC upto 300V DC upto 20A AC upto 20A
		Vibration	IEC/EN 60065 IS 616 (Clause 12.1.2)	5 Hz -to 4000 Hz Upto 25.4 mm
		Impact	IEC/EN 60065 IS 616 (Clause 12.1.3)	Qualitative
		Drop	IEC/EN 60065 IS 616 (Clause 12.1.4)	Qualitative
		Stress Relief	IEC/EN 60065 IS 616 (Clause 12.1.5)	20°C - 300°C
		Clearances, Creepage Distances and Distances Through Insulation	IEC/EN 60065 IS 616 (Clause. 13.3 & 13.4)	0.01mm to 200 mm
		Provision for Protective earthing	IEC/EN 60065 IS 616 (Clause. 15.2)	Upto 12V 15 A to 60 A Upto 200mΩ Upto 999 s
		Terminals	IEC/EN 60065 IS 616 (Clause. 15.3.2)	Upto 25 mm 0.01N to 196 N Upto 200 mm 2 Nm to 10 Nm 40 N to 70 N
		Electrical Connections and Mechanical Fixings	IEC/EN 60065 IS 616 (Cl. 17.1, 17.2, 17.3)	Upto 10 Nm
		Stability and Mechanical Hazards	IEC/EN 60065 IS 616 (Clause. 19.1)	Inclination : 1° - 20°,

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 6 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Vertical Force stability	IEC/EN 60065 IS 616 (Clause.19.2)	1 N to 250 N
		Horizontal Force stability	IEC/EN 60065 IS 616 (Clause.19.3)	1 N to 250 N
		Wall Or Ceiling Or Equipment Rack Mounting Test	IEC/EN 60065 IS 616 (Clause.19.6)	Upto 800 N
		Resistance to Fire (Glow Wire)	IEC/EN 60065 IS 616 (Clause. 20)	Upto 960°C
		(1.2/50us) Impulse Test	IEC/EN 60065 IS 616 (Clause. 13.3.4), Annex K	1 kV to 8kv Rise Time: 1.2us Half peak time: 50 µs
		(10/700us) Impulse Tester	IEC/EN 60065 IS 616 (Clause. 13.3.4), Annex K	1 kV to 6 kV Rise Time: 10us Half peak time: 100 µs
3.	“Sealed Secondary Cells / Batteries Containing Alkaline or Other Non-Acid Electrolytes for Use in Portable Applications	Insulation and wiring	IS 16046 (Clause 5.2)	0.01 MΩ to 500MΩ at 1000 Vdc
		Terminals contact	IS 16046 (Clause 5.5)	Qualitative
		Charging procedure for test purposes	IS 16046 (Clause 7.1 & 8.1)	Qualitative
		Continuous low-rate charging	IS 16046 (Clause 7.2.1)	20V 10 A 8 ch 1~8CH Voltage : 4,8,12,16,20 Vdc 1~8CH Current : 1,2,4,6,8,10 A
		Vibration	IS 16046 (Clause 7.2.2)	5Hz to 4000Hz Upto 25.4 mm
		Moulded case stress at high ambient temperature	IS 16046 (Clause 7.2.3 & 8.2.2)	Upto 7 hour Amb. To 300°C Dimension of oven (Interior):W: 1040 mm, H: 1200mm, D:600mm

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494) **Page 7 of 12**

Validity 21.07.2017 to 20.07.2019 **Last Amended on** 18.08.2017

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		Temperature cycling	IS 16046 (Clause 7.2.4)	(-30°C to 190°C
		Reasonable foreseeable misuse	IS 16046 (Clause 7.3)	Qualitative
		Incorrect installation of cell	IS 16046 (Clause 7.3.1)	Amb to 400°C
		External short circuit	IS 16046 (Clause 7.3.2 & 8.3.2)	Upto 80 mΩ 10°C to 80 °C
		Free fall	IS 16046 (Clause 7.3.3 & 8.3.3)	Qualitative
		Mechanical shock(Crush Hazard)	IS 16046 (Clause 7.3.4)	Upto 1.5 m 15 to 200 gn
		Thermal shock	IS 16046 (Clause 7.3.5 & 8.3.4)	Amb. to 200°C 1 °C/min to 5 °C/min
		Crushing of cells	IS 16046 (Clause 7.3.6 & 8.3.5)	1 kN to 20 kN
		Low pressure	IS 16046 (Clause 7.3.7)	Upto 100 kPa
		Overcharge for nickel systems	IS 16046 (Clause 7.3.8)	Upto 24 V Upto 6 A 8 CH
		Forced discharge	IS 16046 (Clause 7.3.9 & 8.3.7)	Upto 30 V Upto 20 A
		External short circuit (cell)	IS 16046 (Clause 8.3.1)	Upto 30 V Upto 20 A Upto 80mΩ 10°C to 80 °C
		Overcharging of battery	IS 16046 (Clause 8.3.6)	20v 10 A 8 ch 1~8CH Voltage : 4,8,12,16,20 Vdc 1~8CH, Current : 1,2,4 A
		Forced discharge	IS 16046 IEC 62133 (Clause 7.3.9 & 8.3.7)	30 V 20 A Amb to 400 °C
		Cell Marking	IS 16046 (Clause 10.1)	Qualitative
		Battery marking	IS 16046 (Clause 10.2)	Qualitative

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 8 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Transport Tests	IS 16046 IEC 62133 Clause. 8.3.8	Upto 100 kPa Amb. to 200 °C
4.	Lithium Metal and Lithium ion Batteries	Altitude simulation	UN 38.3 Clause. 38.3.4.1	Upto 100 kPa
		Thermal test	UN 38.3 Clause. 38.3.4.2	Amb. to 200 °C
		Vibration test	UN 38.3 Clause. 38.3.4.3	5 Hz to 4000 Hz Upto 25.4 mm
		Shock test	UN 38.3 Clause. 38.3.4.4	Qualitative (Upto 1.5 m 15 g to 200 g)
		External short circuit test	UN 38.3 Clause. 38.3.4.5	10°C to 80°C
		Impact/crush test	UN 38.3 Clause. 38.3.4.6	1 kN to 20 kN
		Overcharge test	UN 38.3 Clause. 38.3.4.7	Upto 30 V dc Upto 20 A dc
		Force discharge	UN 38.3 Clause. 38.3.4.8	1V to 60 V dc 1 A to 20 A dc
5.	Electrical Equipment for Measurement, Control, and Laboratory Use	Mains Supply	IEC 61010-1 (Clause:5.1.3)	Upto 600V AC/DC Upto 20A AC/DC
		Single fault test	IEC 61010-1 (Clause: 4.4.4)	Ambient to 400°C
		Equipment temperature limits and resistance to heat	IEC 61010-1 (Clause: 10.1 to Clause. 10.4)	Ambient to 400°C
		Durability of markings	IEC 61010-1 (Clause: 5.3)	Qualitative
		Determination of Accessible parts	IEC 61010-1 (Clause: 6.2)	Qualitative
		Touch Current	IEC 61010-1 (Clause: 6.1.1) (Clause: 6.3)	Upto 300 V AC/DC
		Protective Bonding	IEC 61010-1 (Clause: 6.5.2)	Upto 12V, 15 - 60A Upto 200 mΩ Upto 999Sec

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 9 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Plugs & Connectors (Capacitor discharge test)	IEC 61010-1 (Clause:6.10.3)	Upto 300 V AC/DC
		Clearance & Creepage distance	IEC 61010-1 (Clause: 6.7.2.1 & 6.7.2.3, 6.7.3.3)	0.01mm to 200 mm
		Humidity conditioning	IEC 61010-1 (Clause: 6.8.2)	93-95% RH 20°C - 40 °C Dimension of humidity Chamber (Interior): W: 640mm, H: 670mm, D: 597mm
		Cord entry	IEC 61010-1 (Clause: 6.10.2.1)	Qualitative
		Cord anchorage	IEC 61010-1 (Clause: 6.10.2.2)	Upto 100N
		Stability	IEC 61010-1 (Clause: 7.4)	Inclination : 1° - 20°, Force: 1 N - 250N Dead Weights : upto 800N
		Drop	IEC 61010-1 (Clause: 8.3)	50mm Thick Hardwood Board, Upto 60°
		Limited Energy Circuit measurements	IEC 61010-1 (Clause: 9.4)	Upto 300 W Upto 100 s
		Impact	IEC 61010-1 (Clause: 8.2.2)	Qualitative
		Stress Relief	IEC 61010-1 (Clause: 10.5.2)	Dimension of Oven: 20°C - 300°C W:1040 mm H: 1200 mm D: 600 mm
		Ball Pressure	IEC 61010-1 (Clause: 10.5.3)	Qualitative
6.	Medical Electrical Equipment	Power Input	IS 13450 (Part 1) IEC-60601-1 Clause 4.11	Upto 600V AC/DC Upto 20A AC/DC

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 10 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Humidity Preconditioning Treatment	IS 13450 (Part 1) IEC-60601-1 Clause 5.7	93-95% RH 20°C to 40 °C Upto 10kV Upto 200 MΩ (IR)
		Determination of applied parts and accessible parts	IS 13450 (Part 1) IEC-60601-1 Clause 5.9.2.1 & 5.9.2.2	Qualitative
		ME Equipment Identification, Marking And Documents	IS 13450 (Part 1) IEC-60601-1 Clause 7.0	Qualitative
		Accessible Parts Including Applied Parts	IS 13450 (Part 1) IEC-60601-1 Clause 8.4.2	Qualitative
		Limitations Voltage And Energy	IS 13450 (Part 1) IEC-60601-1 Clause 8.4.3 & 8.4.4	DCV: upto 1000 V ACV: upto 1000 V
		Impedance And Current- Carrying Capability	IS 13450 (Part 1) IEC-60601-1 Clause 8.6.4	Upto 12V 1 A to 60A Upto 300mΩ
		Leakage Currents And Patient Auxiliary Currents	IS 13450 (Part 1) IEC-60601-1 Clause 8.7 & IS 13450 (Part I/Sec 1) :2006 IEC 60601-1-1 Clause 19	1μA to 25 mA
		Dielectric Strength	IS 13450 (Part 1) IEC-60601-1 Clause 8.8.3 & 15.5.2	Upto 5kV AC/DC
		Ball Pressure	IS 13450 (Part 1) IEC-60601-1 Clause 8.8.4.1	20N, 5mm ball diameter 0 to 3hrs
		Creepage Distances And Air Clearances	IS 13450 (Part 1) IEC-60601-1 Clause 8.9	0.01mm to 200 mm

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 (in lieu of T-3494)

Page 11 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

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		Cord Anchorage	IS 13450 (Part 1) IEC-60601-1 Clause 8.11.3.5	Upto 100N
		Instability Hazards	IS 13450 (Part 1) IEC-60601-1, Clause 9.4	1N-250N Inclination : 1° - 20°
		Excessive Temperatures	IS 13450 (Part 1) IEC-60601-1, Clause 11.1	Ambient to 400°C
		Hazardous Situations And Fault Conditions	IS 13450 (Part 1) IEC-60601-1, Clause 13	Ambient to 400°C
		Mechanical Strength	IS 13450 (Part 1) IEC-60601-1 Cl. 15.3.2, 15.3.3 & 15.3.4	1N-250N 1000mm
		Mould stress relief test	IS 13450 (Part 1) IEC-60601-1 Clause 15.3.6	25°C to 150°C Dimension of Oven: W:1040 mm H: 1200 mm D: 600 mm
		Cord-Connected Hand-Held And Foot-Operated Control Devices	IS 13450 (Part 1) IEC-60601-1 Clause 15.4.7	Upto 800N & 30mm
		Transformers	IS 13450 (Part 1) IEC-60601-1 Clause 15.5.1.1	Upto 300V AC Upto 20A Upto 3000W Ambient to 400°C
		Leakage Currents	IS 13450 (Part 1) IEC-60601-1, Clause 16.6	1µA to 20 mA
II.	DOMESTIC ELECTRONICS APPLIANCES			
1.	Color Television	Energy efficiency test	SOP: MRL-S-007 Issue Date- 25.07.2017 IEC 62301 IEC 62087-1 IEC 62087-3	Upto 600 V AC/DC Upto 20 A AC/DC Upto 12 kW Upto 100Whr Upto 33390 cd/m ²

Laboratory AB MSAI Research Labs Pvt. Ltd., 201, IInd Floor, Aggarwal Cyber Plaza, Netaji Subhash Place, Pitampura, Delhi

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5837 *(in lieu of T-3494)*

Page 12 of 12

Validity 21.07.2017 to 20.07.2019

Last Amended on 18.08.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
III.	IT EQUIPMENTS			
1.	Laptop/ Notebook Computers	Energy efficiency test	SOP: MRL-S-008 Issue Date- 25.07.2017	Upto 600V AC/DC Upto 20A AC/DC
2.	Printers, Scanners, Copiers, Fax Machines and Multi Function Devices	Energy efficiency test	SOP: MRL-S-009 Issue Date- 25.07.2017	Upto 600V AC/DC Upto 20A AC/DC