

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 1 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| 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. | ENVIRONMENTAL TEST FACILITY | | | |
| 1. | Environmental Testing for IT, Electronic & Electrical items | Cold Test | IS 9000 (Part 2 Section 1 to 4) IEC 60068-2-1 QM333 Test No. 1 | Qualitative Ambient to (-)40 °C Upto 9999 hrs Chamber size: 60cm(L) X 40cm(W) X 45cm(D) |
| | | Dry Heat Test | IS 9000 (Part 3 Section 1 to 5) IEC 60068-2-2 QM333 Test No. 2 | Qualitative Ambient to 200 °C Upto 9999 hrs Chamber size: 60cm(L) X 40cm(W) X 45cm(D) |
| | | Damp heat test and Damp heat cyclic | IS 9000 (Part 4) IEC 60068-2-78 IS 9000 (Part 5 Section 1 & 2), IEC 68-2-30 QM 333 Test No. 3 & 5 | Ambient to 55 °C 10 % RH to 98 % RH Chamber size: 60cm(L) X 50cm(W) X 50cm(D) |
| | | Vibration (sinusoidal) | IS 9000 (Part 8) IEC 60068-2-6 QM 333 Test No. 6 | Frequency 5 Hz to 5000 Hz Displacement Amplitude : Upto 15 mm Acceleration : upto 20g |
| | | Dust Test | IS 9000 (Part 12) QM 333 Test No. 15 | Qualitative (Chamber Size: 90cm(L) X 90cm(W) X 75cm(D) |

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Program Manager

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

Certificate Number **TC-5508** **Page 2 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| 2. | Degree of Protection Provided by Enclosures - IP Code Lamp, Luminaires & Accessories, Domestic Electrical Appliances, IT and AV Product | Verification of Marking | IS/IEC 60529 (Clause 10) | Qualitative |
| | | Degrees of Protection (IP) | | |
| | | First Characteristic Numeral 0 | IS/IEC 60529 (Table 5 & 7) | Qualitative (Non-protected) |
| | | First Characteristic Numeral 1 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | First Characteristic Numeral 2 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | First Characteristic Numeral 3 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | First Characteristic Numeral 4 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | First Characteristic Numeral 5 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | First Characteristic Numeral 6 | IS/IEC 60529 (Table 5 & 7) | Qualitative |
| | | Second characteristic Numeral 0 | IS/IEC 60529 (Table 8) | Qualitative |
| | | Second characteristic Numeral 1 | IS/IEC 60529 (Table 8) | Qualitative ($1^{+0.5}_0$ mm / min) |
| | | Second characteristic Numeral 2 | IS/IEC 60529 (Table 8) | Qualitative ($3^{+0.5}_0$ mm / min) |
| | | Second characteristic Numeral 3 | IS/IEC 60529 (Table 8) | Qualitative (0.07 l/min $\pm 5\%$, Spray $\pm 60^\circ$ from Vertical) |
| | | Second characteristic Numeral 4 | IS/IEC 60529 (Table 8) | Qualitative (0.07 l/min $\pm 5\%$, Spray $\pm 180^\circ$ from Vertical) |
| | | Second characteristic Numeral 5 (For Enclosure of Category II only) | IS/IEC 60529 (Table 8) | Qualitative (12.5 l/min) |

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

Certificate Number **TC-5508** **Page 3 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | Second characteristic Numeral 6 (For Enclosure of Category II only) | IS/IEC 60529 (Table 8) | Qualitative (100 l/min) |
| | | Second characteristic Numeral 7 | IS/IEC 60529 (Table 8) | Qualitative |
| | | Second characteristic Numeral 8 | IS/IEC 60529 (Table 8) | Qualitative |
| 3. | Enclosures for Electrical Equipment Against External Mechanical Impacts - IK code | IK 01 to IK07 | IEC 62262 | Qualitative (Upto 3 J) |
| II. | WIRING ACCESSORIES | | | |
| 1. | Switches for Domestic and Similar Purposes | Rating | Cl. 6 of IS: 3854:1997 | Qualitative |
| | | Classification | Cl. 7 of IS: 3854:1997 | Qualitative |
| | | Marking and visual Inspection | Cl. 8 of IS: 3854:1997 | Up to 16A/250V |
| | | Protection against Electric Shock | Cl. 10 of IS:3854:1997 | Up to 100 V |
| | | Provision for Earthing | Cl. 11 of IS:3854:1997 | 0 to 20 V, 0 to 30 Amps |
| | | Terminal and screws | Cl. 12 of IS:3854:1997 | Up to 150mm |
| | | Insulation resistance Test | Cl. 16 of IS:3854:1997 | Up to 500 V DC 2- ∞(mega ohm) |
| | | Electric Strength test | Cl. 16 of IS:3854:1997 | Qualitative Up to 3 KV |
| | | Resistance to ageing & moisture | Cl. 15 of IS:3854:1997 | Qualitative |

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

Certificate Number **TC-5508** **Page 4 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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|-----|---|--|---|--|
| | | Temperature rise | Cl. 17 of IS:3854:1997 | Up to 400°C |
| | | Making and breaking capacity | Cl. 18 of IS:3854:1997 | Qualitative |
| | | Normal operation | Cl. 19 of IS:3854:1997 | Qualitative |
| | | Resistance to Heat | Cl. 21 of IS:3854:1997 | 0-10mm |
| | | Ball pressure test | Cl. 20.1 of IS:3854:1997 | Up to 250°C |
| | | Creepage distance and clearance | Cl. 22 of IS:3854:1997 | Up to 150 mm |
| | | Resistance to rusting | Cl. 25 of IS:3854:1997 | Qualitative |
| | | Resistance to tracking | Cl. 23 of IS:3854:1997 | Up to 200 Volt |
| | | Mechanical Strength Test | Cl. 20 of IS:3854:1997 | Qualitative |
| 2. | Plug and socket outlet of rated voltage up to and including 250 V and rated current up to and including 16 A | Classification | Cl.7.1 & 7.3 of IS:1293-2005 | Up to 16A/250V |
| | | Marking | Cl.8.1 to 8.8 of IS:1293-2005 | Up to 16A/250V |
| | | Dimension | Cl.9.0 IS:1293-2005 | 0-300mm,0-25mm |
| | | Protection against electric shock | Cl.10.1 to 10.7 of IS:1293-2005 | Up to 100V |
| | | Provision for Earthing | Cl.11.1 to 11.5 of IS:1293-2005 | 0 to 20 V, 0 to 30 Amps |
| | | Terminals | Cl.12.1 to 12.3.12 Table 3 to 12 of IS:1293-2005 | Up to 150mm up to 80N |
| | | construction requirements of Fixed socket outlet | Cl.13.1 to 13.23 Table 11 to 14 of IS:1293-2005 | Visual |
| | | construction of plug and portable socket outlets | Cl.14.1 to 14.25 of IS:1293-2005 | Qualitative |
| | | Interlocked socket-outlet | Cl.15 IS:1293-2005 | Qualitative |
| | | Resistance to ageing | Cl.16.1 of IS:1293-2005 | Up to 250 °C/0.1°C Upto 95 % |
| | | Resistance to Harmful Ingress of Water | Cl.16.2 of IS:1293-2005 | Qualitative |

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

Certificate Number **TC-5508** **Page 5 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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|-----|----------------------------|--|---|--|
| | | Resistance to Humidity | Cl.16.3 of IS:1293-2005 | Upto 95%RH Upto 100°C |
| | | Insulation Resistance | Cl.17.1 to 17.3 of IS:1293-2005 | Upto 10GΩ 500VDC |
| | | Electric Strength | Cl.17 to 17.3 of IS:1293-2005 | Upto 5kV |
| | | Operation of Earthing contact | Cl.18 of IS:1293-2005 | 0 to 100 °C |
| | | Temperature rise test | Cl.19.1 & Table 15 of IS:1293-2005 | Upto 100°C |
| | | Normal operation | Cl.21.1 of IS:1293-2005 | Qualitative Pf up to 0.9 Upto50 Amp/Up to 500V |
| | | Force Necessary withdraw the plug | Cl.22 & 22.1 Table 16 of IS:1293-2005 | Up to 600N |
| | | Flexible cables and their connection | Cl.23.1 to 23.3 Table 17 to 20 of IS:1293-2005 | Upto 60N |
| | | Mechanical strength | Cl.24.1 to 24.13 Table 21 & 22 of IS:1293-2005 | Upto 300mm |
| | | Resistance to Heat Ball Pressure Test | Cl.25.1 & Cl.25.2 of IS:1293-2005 | 0 to 250°C,20N,0-300mm |
| | | Compression Test | Cl.25.4 of IS:1293-2005 | Qualitative |
| | | Screw current carrying parts and connection | Cl.26.1 to 26.6 of IS:1293-2005 | 1Nm to 6Nm 20cNm to 120cNm |
| | | Creep age distance, clearance and distance | Cl.27.1 to 27.3 & Table 23 of IS:1293-2005 | Upto 150mm |
| | | Resistance to insulating Material to abnormal heat Resistance to Abnormal heat and fire | Cl.28. 1.1 & Cl.28.1.2 of IS 1293 :2005 | Qualitative |
| | | Resistance to rusting | Cl.29 of IS:1293-2005 | Qualitative |

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

Certificate Number **TC-5508** **Page 6 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | Additional Test on pins provided with insulating sleeves. Impact Test at low temperature | Cl.30.3 of IS 1293: 2005 | Qualitative |
| III. | CABLES & ACCESSORIES | | | |
| 1. | PVC Insulated Cable up to 1100 V | Wrapping Test for Aluminum Conductor | IS: 694:2010 IS: 8130-1984 IS: 10810 (Part -3)-1984 IEC 60227-2007 | Qualitative |
| | | Thickness of Insulation & Sheath | IS: 694:2010 IS: 10810 (Part -6)-1984 IEC 60227-2007 | 0 to 150 mm |
| | | Loss of mass test of Insulation & Sheath | IS: 694:2010 IS: 5831-1984 IS: 10810 (Part -10)-1984 IEC 60227-2007 | Amb. to 200°C to 10 mg/cm ² |
| | | Ageing in air oven of Insulation & Sheath | IS: 694:2010 IS: 5831-1984 IS: 10810 (Part -11)-1984 IEC 60227-2007 | Amb. to 200°C TS Variation up to ±40% Elong variation up to ±40% |
| | | Shrinkage test of Insulation & Sheath | IS: 694:2010 IS: 5831-1984 IS: 10810 (Part -12)-1984 IEC 60227-2007 | Amb. to 200°C 0 to 10% |
| | | Heat shock test of Insulation & Sheath | IS 694:2010 IS 5831-1984 IS: 10810(Part -14)-1984 IEC 60227-2007 | Amb. to 200°C |

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

Certificate Number **TC-5508** **Page 7 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | Hot deformation test of Insulation & Sheath | IS: 694:2010 IS: 5831-1984 IS:10810(Part -15)-1984 IEC 60227-2007 | Amb. to 200°C 0 to 960 g, 0 to 100% |
| | | Insulation resistance constant | IS: 694:2010 IS: 5831-1984 IS: 10810 (Part -43)-1984 IEC 60227-2007 | 0 to 10 ⁵ MOhmkm |
| | | Volume Resistivity | IS: 694-1990 IS: 10810(Part -43)-1984 IEC 60227-2007 | Upto 10 ¹⁷ Ohm-cm |
| | | High Voltage test | IS: 694:2010 IS: 10810 (Part -45)-1984 IEC 60227-2007 | Upto 15 kV |
| | | AC High Voltage test (Water immersion) | IS: 694:2010 IS:10810 (Part -45)-1984 IEC 60227-2007 | Upto 5 kV |
| | | DC High Voltage test (Water immersion) | IS: 694:2010 IS: 10810 (Part -45)-1984 IEC 60227-2007 | Upto 5 kVA |
| | | Flammability test | IS: 694:2010 IS: 10810 (Part -53)-1984 IEC 60227-2007 | Upto 300 mm dia |
| | | Cold Bend test (Upto 12.5 mm dia) | IS: 694:2010 IS:10810 (Part -20)-1984 IEC 60227-2007 | Qualitative |
| | | Cold Impact test (Above to 12.5 mm dia) | IS: 694:2010 IS: 10810 (Part -21)-1984 IEC 60227-2007 | Qualitative |
| | | Additional ageing tests | IS: 694:2010 Clause 6.6 | Qualitative |

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

Certificate Number **TC-5508** **Page 8 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | Conductor Resistance | IS: 694:2010 IS: 8130-1984 IS: 10810 (Part -5)-1984 IEC 60228-2004 | 0.2 µOhms to 11 Ohm |
| | | Annealing tests for Copper Conductor | IS: 694-1990 IS: 8130-1984 IS: 10810 (Part -1)-1984 IEC 60228-2004 | 0 to 10 kN 0 to 40% |
| | | Breaking Load for Aluminium Conductor | IS: 694:2010 IS: 8130-1984 IS: 10810 (Part -2)-1984 IEC 60228-2004 | 0 to 10 kN |
| | | Tensile strength & Elongation at break of insulation & sheath | IS: 694:2010 IS: 5831-1984 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Copper Purity | IS: 191:2007 | 0-100 % |
| | | Thermal stability | IS: 694:2010 IS: 10810 (Part -60)-1984 | 60 min to 150 min |
| 2. | PVC Insulated Heavy Duty Cables Upto 1100 V | Thermal stability | IS: 1554(P-1)-1988 IS: 10810 (Part -60)-1984 | 60 min to 150 min |
| | | Wrapping Test for Aluminium Conductor | IS: 1554(P-1)-1988 IS: 8130-1984 IS: 10810 (Part -3)-1984 IEC 60227-2007 | Qualitative |
| | | Thickness of Insulation & Sheath | IS: 1554(P-1)-1988 IS: 10810 (Part -6)-1984 | 0 to 150 mm |
| | | Breaking Load Aluminium Conductor | IS: 1554(P-1)-1988 IS: 8130-1984 IS: 10810 (Part -2)-1984 IEC 60228 | 0 to 10 kN |

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Location 1: 487/25, Peeragarhi, New Delhi
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Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-5508** **Page 9 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | Tensile strength & Elongation at break of insulation & sheath | IS: 1554(P-1)-1988 IS: 5831-1984 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Wrapping Test for Aluminium Conductor | IS 1554(P-1)-1988 IS 8130: 1984/ IS: 10810 (Part -3)-1984 | Qualitative |
| | | Loss of mass test of Insulation and Sheath | IS: 1554(P-1)-1988 IS: 5831-1984 IS: 10810 (Part -10)-1984 | Amb. To 200°C 0 to 10 mg/cm ² |
| | | Ageing in air oven of Insulation & Sheath | IS: 1554(P-1)-1988 IS: 5831-1984 IS: 10810 (Part -11)-1984 | Amb. to 200°C TS Variation Upto ±40% Elong variation Upto ±40% |
| | | Shrinkage test of Insulation & Sheath | IS: 1554(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -12)-1984 | Amb. to 200°C 0 to 10% |
| | | Heat shock test of Insulation and Sheath | IS: 1554(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -14)-1984 | Amb. to 200°C |
| | | Hot deformation test of Insulation and Sheath | IS: 1554(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -15)-1984 | Amb. to 200°C 0 to 960 g, 0 to 100% |
| | | Volume Resistivity | IS: 1554(Part -1)-1988 IS: 10810 (Part -43)-1984 | Upto 10 ¹⁷ Ohm-cm |
| | | Insulation resistance constant | IS: 1554(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -43)-1984 | 0 to 10 ⁵ MOhmkm |
| | | High Voltage test | IS: 1554(Part -1)-1988 IS: 10810 (Part -45)-1984 | Upto 15 kV |
| | | AC High Voltage test (Water immersion) | IS: 1554(Part -1)-1988 IS: 10810 (Part -45)-1984 | Upto 5 kV |

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Location 1: 487/25, Peeragarhi, New Delhi
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Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-5508** **Page 10 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

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| | | DC High Voltage test (Water immersion) | IS: 1554(Part -1)-1988 IS: 10810 (Part -45)-1984 | Upto 5 kVA |
| | | Flammability test | IS: 1554(Part -1)-1988 IS: 10810 (Part -53)-1984 | Upto 300 mm dia |
| | | Cold Bend test (Upto 12.5 mm dia) | IS: 1554(Part -1)-1988 IS: 10810 (Part -20)-1984 | Qualitative |
| | | Cold Impact test (Above to 12.5 mm dia) | IS: 1554(Part -1)-1988 IS: 10810 (Part -21)-1984 | Qualitative |
| | | Conductor Resistance | IS: 1554(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -5)-1984 | 0.2 µOhms to 11 Ohm |
| | | Annealing tests for Copper Conductor | IS: 1554(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -1)-1984 IEC 60228 | 0 to 10 kN 0 to 40% |
| | | | | |
| 3. | Test for Armouring Wires and Strips | Dimension for armouring material | IS: 3975-1999 IS: 10810 (Part -36)-1984 | 0 to 25 mm |
| | | Tensile strength & Elongation at break | IS: 3975-1999 IS: 10810 (Part -37)-1984 | 200 N/mm ² to 600 N/mm ² 4% to 20% |
| | | Torsion test on Galvanized steel wire for armouring | IS: 3975-1999 IS: 10810 (Part -38)-1984 | 0 to 200 count |
| | | Winding test on Galvanized steel strips for armouring | IS: 3975-1999 IS: 10810 (Part -39)-1984 | Qualitative |
| | | Resistivity & Conductance test of Armour (Wires/strips) | IS: 1554(Part -1)-1988 IS: 3975-1999 IS: 10810 (Part -42)-1984 | 0 to 19.99 k ohm |
| | | Mass of Zinc Coating | IS: 1554(Part -1)-1988 IS: 3975-1999 IS: 10810 (Part -41)-1984 | 0 - 600 gm/m ² |
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Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-5508** **Page 11 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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| 4. | XLPE Insulated PVC Sheathed Cables Upto 1100 V | Thermal stability | IS: 7098(Part -1)-1988 IS: 10810 (Part -60)-1984 | 60 min to 150 min |
| | | Wrapping Test for Aluminium Conductor | IS: 7098(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -3)-1984 | Qualitative |
| | | Thickness of Insulation & Sheath | IS: 7098(Part -1)-1988 IS: 10810 (Part -6)-1984 | 0 to 150 mm |
| | | Tensile strength for Aluminium Conductor | IS: 7098(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -2)-1984 | 0 to 10 kN |
| | | Tensile strength & Elongation at break of insulation & sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Hot set test XLPE Insulation only | IS: 7098(Part -1)-1988 IS: 10810 (Part -30)-1984 | 0 to 25% 20 to 150% |
| | | Wrapping Test for Aluminium Conductor | IS: 7098(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -3)-1984 | Qualitative |
| | | Loss of mass test of Sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -10)-1984 | Amb. to 200°C 0 to 10 mg/cm ² |
| | | Ageing in air oven of Insulation & Sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -11)-1984 | Amb. to 200°C TS Variation upto 40% Elong variation upto ±40% |
| | | Shrinkage test of Insulation & Sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -12)-1984 | Amb. to 200°C 0 to 10% |
| | | Heat shock test of Sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -14)-1984 | Amb. to 200°C |

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

Certificate Number **TC-5508** **Page 12 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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| | | Water absorption (gravimetric) | IS: 7098(Part -1)-1988 IS: 10810 (Part -33)-1984 | 0 to 4mg/cm ² |
| | | Hot deformation test of Sheath | IS: 7098(Part -1)-1988 IS: 5831-1984 IS: 10810 (Part -15)-1984 | Amb. to 200°C 0 to 960 g, 0 to 100% |
| | | Volume Resistivity | IS: 7098(Part -1)-1988 IS: 10810 (Part -43)-1984 | Upto 10 ¹⁷ Ohm –cm |
| | | High Voltage test | IS: 7098(Part -1)-1988 IS: 10810 (Part -45)-1984 | Upto 15 kV |
| | | Flammability test of Insulation & Sheath | IS: 7098(Part -1)-1988 IS: 10810 (Part -53)-1984 | Upto 300 mm Dia |
| | | Cold Bend test (Upto 12.5 mm dia) | IS: 7098(Part -1)-1988 IS: 10810 (Part -20)-1984 | Qualitative |
| | | Cold Impact test (Above to 12.5 mm dia) | IS: 7098(Part -1)-1988 IS: 10810 (Part -21)-1984 | Qualitative |
| | | Conductor Resistance | IS: 7098(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -5)-1984 | 0.2 µOhms to 11 Ohm |
| | | Annealing tests for Copper Conductor | IS: 7098(Part -1)-1988 IS: 8130-1984 IS: 10810 (Part -1)-1984 | 0 to 10 kN 0 to 40% |
| 5. | XLPE Insulated AB Cables Upto 1100 V | Wrapping Test for Aluminium Conductor | IS: 14255-1988 IS: 8130-1984 IS: 10810 (Part -3)-1984, IEC 60227-2007 | Qualitative |
| | | Thickness of Insulation | IS: 14255-1988 IS: 10810 (Part -6)-1984 | 0 to 150 mm |
| | | Tensile strength for Aluminium Conductor | IS: 14255-1988 IS: 8130-1984 IS: 10810 (Part -2)-1984 IEC 60228 | 0 to 10 kN |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 13 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | Tensile strength & Elongation at break of insulation | IS: 14255-1988 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Hot set test XLPE Insulation | IS: 14255-1988 IS: 10810 (Part -30)-1984 | 0 to 25% 20% to 150% |
| | | Ageing in air oven of Insulation | IS: 14255-1988 IS: 10810 (Part -11)-1984 | Amb. to 200°C TS Variation upto 40% Elong variation upto ±40% |
| | | Shrinkage test of Insulation | IS: 14255-1988 IS: 10810 (Part -12)-1984 | Amb. to 200°C 0 to 10% |
| | | Water absorption (gravimetric) | IS: 14255-1988 IS: 10810 (Part -33)-1984 | 0 to 4 mg/cm ² |
| | | Volume Resistivity | IS: 14255-1988 IS: 10810 (Part -43)-1984 | Upto 10 ¹⁷ Ohm –cm |
| | | High Voltage test | IS: 14255-1988 IS: 10810 (Part -45)-1984 | Upto 15 kV |
| | | Conductor Resistance | IS: 14255-1988 IS: 8130-1984 IS: 10810 (Part -5)-1984 | 0.2 µOhms to 11 Ohm |
| 6. | PVC Conduit | Checking of Dimensions | Cl.7 of IS:9537(Part-3)-1983 | 20 mm to 100 mm |
| | | Bending Test | Cl.9.2 of IS: 9537(P-3)-1983 | Qualitative |
| | | Compression Test | Cl.9.3 of IS: 9537(P-3)-1983 | Qualitative |
| | | Impact Test | Cl.9.4 of IS: 9537(P-3)-1983 | Qualitative |
| | | Collapse Test | Cl.9.5 of IS: 9537(P-3)-1983 | Qualitative |
| | | Resistance to Heat Test | Cl.10 of IS: 9537(P-3)-1983 | 2 mm to 10 mm |
| | | Resistance to burning | Cl.11 of IS: 9537(P-3)-1983 | 0 to 60 sec |
| | | Electrical characteristics | Cl.12 of IS: 9537(P-3)-1983 | 0 to 10 ⁶ MΩ 0 to 5 kv |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 14 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|---|---|--|
| 7. | FRLSH Fire retardant Low Smoke, Zero Halogen test | Oxygen Index test | IS: 694-2010 IS: 1554(Part -1)-1988 IS: 7098(Part -1)-1988 IS: 10810 (Part -58)-1984 | 10% to 40% |
| | | Temperature Index | IS: 694-2010 IS: 1554(Part -1)-1988 IS: 7098(Part -1)-1988 IS: 10810 (Part -64)-1984 | 200 °C to 500°C |
| | | Flame Retardance test on Single Cable | IS: 1554(Part -1)-1988 IS: 7098(Part -1)-1988 IS: 10810 (Part -61)-1984 | 0 to 500 mm |
| | | Halogen Acid Gas Evolution | IS: 694-2010 IS: 1554(Part -1)-1988 | 10 % to 30% |
| | | Smoke Density | IS: 694-2010 IS 13360(Part -3/Sec-9) | 0 to 100% |
| 8. | Elastomer Insulated Cable and Elastomeric Sheathed Cable Upto 1100 V | Ageing in Air Bomb | IS: 9968(Part -1)-1988 IS: 10810 (Part -56)-1984 | 20% to 50% |
| | | Oil Resistance | IS: 9968(Part -1)-1988 IS: 10810 (Part -31/Part -7)-1984 | 10% to 50% |
| | | Water absorption (Electrical) | IS: 9968(Part -1)-1988 IS:10810(Part - 28)-1984 | % Increase in Capacitance 1 – 14 days – 25% 7 – 14 days – 8% |
| | | Thickness of Insulation & Sheath | IS: 9968 (Part -1) 1988 IS: 10810 (Part -6)-1984 | 0 to 150 mm |
| | | Tensile strength & Elongation at break of insulation & sheath | IS: 9968 (Part -1) 1988 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Hot set test | IS: 9968 (Part -1) 1988 IS: 10810 (Part -30)-1984 | 0 to 25% 20 % to 150% |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 15 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|--|---|--|
| | | Ageing in air oven of Insulation & Sheath | IS: 9968 (Part -1) 1988 IS: 10810 (Part -11)-1984 | Amb. to 200°C TS Variation upto $\pm 40\%$ Elong variation upto $\pm 40\%$ |
| 9. | Aluminium Conductor and Over Head Purpose Aluminium Strand Conductor, Galvanized Steel Reinforced Aluminium Alloy Strand Conductor | Dimension of messenger wire | IS: 398 (Part -1 ,2 & 4) | 0 to 300 mm |
| | | Breaking Load | IS: 398 (Part -1 ,2 & 4) | 0 to 2.5 kN |
| 10. | Welding Cable | Ageing in Air Bomb | IS: 9857-1990 IS: 10810 (Part -56)-1984 | 20% to 50% |
| | | Thickness of Insulation | IS: 9857-1990 IS: 10810 (Part -6)-1984 | 0 to 150 mm |
| | | Tensile strength & Elongation at break of insulation | IS: 9857-1990 IS: 5831-1984 IS: 10810 (Part -7)-1984 | 0 to 500 N |
| | | Hot set test | IS: 9857-1990 IS: 10810 (Part -30)-1984 | 0 to 25% 20% to 150% |
| | | Ageing in air oven of Insulation | IS: 9857-1990 IS: 5831-1984 IS: 10810 (Part -11)-1984 | Amb. to 200°C TS Variation upto $\pm 40\%$ Elong variation upto $\pm 40\%$ |
| | | High Voltage test | IS: 9857-1990 IS: 10810 (Part -45)-1984 | Upto 15 kV |
| | | Flammability test | IS: 9857-1990 IS: 10810 (Part -53)-1984 | Upto 300 mm dia |
| | | Conductor Resistance | IS: 9857-1990 IS: 8130-1984 IS: 10810 (Part -5)-1984 | 0.2 μ Ohms to 11 Ohm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 16 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|--|--|--|---|
| | | Annealing tests for Copper Conductor | IS: 9857-1990 IS: 8130-1984 IS: 10810 (Part -1)-1984 IEC 60228 | 0 to 10 kN 0 to 40% |
| IV. | DOMESTIC ELECTRICAL APPLIANCES | | | |
| 1. | Power Adapter Power supply for Household Appliances | Marking and Instructions | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 07 | Qualitative |
| | | Protection Against Access to Live Parts | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 08 | Qualitative (30 V to 75 V (AC)) |
| | | Power Input And Current | IS: 302-1: 2008 (Clause 10) Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016 | Upto 300V Upto 25A 1 W to 12.50 kW |
| | | Heating | IS: 302-1: 2008 Amd. 3: 2014 (Clause 11) IEC 60335-1 (Edition 5.2): 2016 | 1 °C to 400 °C |
| | | Leakage Current And Electric Strength At Operating Temperature | IS: 302-1: 2008 Amd. 3: 2014 (Clause 13) IEC 60335-1 (Edition 5.2): 2016 | 0.4µA to 3.5 mA Voltage : 0.01 kV to 5 kVAC |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 17 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|--|--|
| | | Transient Over Voltages | IS: 302-1: 2008 Amd. 3: 2014 (Clause 14) IEC 60335-1 (Edition 5.2): 2016 | Qualitative (0.1 kV to 15 kV) |
| | | Moisture Resistance | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 15 | Qualitative (Upto 50°C 10% RH to 98% RH) |
| | | Leakage Current And Electric Strength | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 16 | Leakage Current 0.4µA to 3.5 mA Voltage : 0.01 kV to 5 kVAC |
| | | Overload Protection Of Transformers And Associated Circuits | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 17 | (-)40 °C to 200 °C |
| | | Endurance | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 18 | 0.001 mV to 300 V 0.001 mA to 20 A |
| | | Abnormal Operation | IS: 302-1: 2008 Amd. 3: 2014 | (-)40 °C to 200 °C |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 18 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| 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 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 19 | |
| | | Stability And Mechanical Hazards | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause: 20 | Stability apparatus (Angle) 0° to 15° |
| | | Mechanical Strength | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 21 | Qualitative (2 N to 250 N) |
| | | Construction | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 22 | IP 1 x to 6 x Scale:0.001mm to150mm IP x1 to IPx8 Scale: 1 mm to 300 mm Time: 0.01 s to 9959 h 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm Upto 100 mA 0.01 s to 99 s Angle: 0 ° to 90 ° Upto 150 mm 0.001 mV to 600 V |
| | | Internal Wiring | IS: 302-1: 2008 Amd. 3: 2014, | Qualitative (Flexing apparatus: |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 19 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| 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 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 23 | Angle: 0° to 90°) |
| | | Supply Connections And External Flexible Cord | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 25 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm 30 N to 100 N |
| | | Terminals For External Conductors | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 26 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Provision For Earthing | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 27 | Upto to 500 mΩ |
| | | Screws And Connections | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 28 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Clearances, Creepage Distances And Solid Insulation | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): | 0.1 mm to 300 mm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 20 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|--|--|---|
| | | | 2016, EN 60335-1: 2014 Clause. 29 | |
| | | Resistance To Heat And Fire | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 30 | Upto 150 mm (-)70 °C to 180 °C 550 °C to 960 °C |
| | | Resistance To Rusting | IS: 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 31 | Qualitative |
| 2. | Electrical Appliances Microwave Oven | General Condition for the Tests | (Cl. 5) of IS:302-2-25, 2014 | Qualitative |
| | | Classification | (Cl.6) of IS:302-2-25, 2014 | Qualitative |
| | | Marking & Instructions | (Cl.7) of IS:302-2-25, 2014 | Qualitative |
| | | Protection against access to live parts | (Cl.8) of IS:302-2-25, 2014 | Standard test finger Upto 99.9V |
| | | Power Input And Current | (Cl.10) of IS:302-2-25, 2014 | Upto 5000 watt Upto 600V Upto 25Amp |
| | | Heating | (Cl.11) of IS:302-2-25, 2014 | Upto 400°C 20mΩ-2kΩ |
| | | Leakage current and electric strength at operating temperature | (Cl.13) of IS:302-2-25, 2014 | Upto 5KV Upto 250mA Upto 20mA Upto 999μA |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 21 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|---|
| | | Transient over voltages | (Cl.14) of IS:302-2-25, 2014 | Qualitative (1.2/50micro second Impulse Upto 10kV) |
| | | Moisture Resistance | (Cl.15) of IS:302-2-25, 2014 | Amb-98%RH Amb-50°C |
| | | Leakage current and electric strength | (Cl.16) of IS:302-2-25, 2014 | Upto 5KV Upto 250mA 0-20mA 0-999µA |
| | | Overload Protection Of Transformers And Associated Circuits | (Cl.17) of IS:302-2-25, 2014 | (-)40 °C to 200 °C |
| | | Endurance | (Cl.18) of IS:302-2-25, 2014 | Upto 200000 cycles |
| | | Abnormal Operation | (Cl.19) of IS:302-2-25,2014 Except EMI/EMC (Cl.19.11.4.2) | Upto 200 °C |
| | | Stability And Mechanical Hazards | (Cl.20) of IS:302-2-25, 2014 | Stability apparatus (Angle) 0° to 15° |
| | | Mechanical Strength | (Cl.21) of IS:302-2-25, 2014 | Spring hammer (0.5joule) Upto 300N |
| | | Construction | (Cl.22) of IS:302-2-25, 2014 | Upto 300 Upto 60min Upto 99.9 W/M2 |
| | | Internal Wiring | (Cl.23) of IS:302-2-25, 2014 | Upto 25mm Upto 150mm Upto 5KV Upto 100mA |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 22 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----------|-------------------------------------|---|---|--|
| | | Supply Connections And External Flexible Cord | (Cl.25) of IS:302-2-25, 2014 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm 30 N to 100 N |
| | | Terminals For External Conductors | (Cl.26) of IS:302-2-25, 2014 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Provision For Earthing | (Cl.27) of IS:302-2-25, 2014 | Upto 99.9V Upto 30A |
| | | Screws And Connections | (Cl.28) of IS:302-2-25, 2014 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Clearances, creepage distances and solid insulation | (Cl.29) of IS:302-2-25, 2014 | Upto 25 mm Upto 150 mm |
| | | Resistance To Heat and Fire | (Cl.30) of IS:302-2-25, 2014 | Upto 400°C Upto 1000°C Upto 600V Upto 30A |
| | | Resistance to rusting | (Cl.31) of IS:302-2-25, 2014 | Qualitative |
| | | Radiation , Toxicity and similar hazards | (Cl.32) of IS:302-2-25, 2014 | Qualitative |
| 3. | Electrical Appliances Clocks | General conditions for the tests | (Cl.5) of IS:302-2-26 | Qualitative |
| | | Classification | (Cl.6) of IS:302-2-26:2014 | Qualitative |
| | | Marking and instruction | (Cl.7) of IS:302-2-26:2014 | Qualitative |
| | | Protection against access to live parts | (Cl.8) of IS:302-2-26:2014 | Standard test finger Upto 99.9V |
| | | Power Input And Current | (Cl.10) of IS:302-2-26, 2014 | Upto 5000 watt Upto 600V Upto 25Amp |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 23 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|--|--|
| | | Heating | (Cl.11) of IS:302-2-26, 2014 | Upto 400°C 20mΩ-2kΩ |
| | | Leakage current and electric strength at operating temperature | (Cl.13) of IS:302-2-26, 2014 | Upto 5KV Upto 250mA Upto 20mA Upto 999μA |
| | | Transient over voltages | (Cl.14) of IS:302-2-26, 2014 | Qualitative (1.2/50micro second Impulse Upto 10kV) |
| | | Moisture Resistance | (Cl.15) of IS:302-2-26, 2014 | Amb-98%RH Amb-50°C |
| | | Leakage current and electric strength | (Cl.16) of IS:302-2-26, 2014 | Upto 5KV Upto 250mA Upto 20mA Upto 999μA |
| | | Overload Protection Of Transformers And Associated Circuits | (Cl.17) of IS:302-2-26, 2014 | (-)40 °C to 200 °C |
| | | Abnormal Operation | (Cl.19) of IS:302-2-26, 2014 Except EMI/EMC (Cl.19.11.4.2) | Upto 200 °C |
| | | Stability And Mechanical Hazards | (Cl.20) of IS:302-2-26, 2014 | Stability apparatus (Angle) 0° to 15° |
| | | Mechanical Strength | (Cl.21) of IS:302-2-26, 2014 | Spring hammer (0.5joule) |
| | | Construction | (Cl.22) of IS:302-2-26, 2014 | Upto 300N Upto 60min |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 24 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|-----------------------------|---|--|--|
| | | Internal Wiring | (Cl.23) of IS:302-2-26, 2014 | Upto 25mm Upto 150mm Upto 5KV Upto 100mA |
| | | Supply Connections And External Flexible Cord | (Cl.25) of IS:302-2-26, 2014 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm 30 N to 100 N |
| | | Terminals For External Conductors | (Cl.26) of IS:302-2-26, 2014 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Provision For Earthing | (Cl.27) of IS:302-2-26, 2014 | Upto 99.9V Upto 30A |
| | | Screws and Connections | (Cl.28) of IS:302-2-26, 2014 | Upto 25mm, Upto 150mm 20-120cNm/ 10cNm |
| | | Clearances, Creepage Distances and solid insulation | (Cl.29) of IS:302-2-26, 2014 | Upto 25mm Upto 150mm 0 to1 mm |
| | | Resistance To Heat and Fire | (Cl.30) of IS:302-2-26, 2014 | Upto 400°C 20 N Upto 1000°C Upto 600V Upto 30A |
| | | Resistance to rusting | (Cl.31) of IS:302-2-26,2014 | Qualitative |
| | | Radiation , Toxicity and similar hazards | (Cl.32) of IS:302-2-26,2014 | Qualitative |
| 4. | Electric Iron Steam Iron | Marking / Marking & Instructions | Cl. 7 of IS:302-1: 2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 | Visual Examination |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 25 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|---|---|---|
| | Electric Immersion Water Heater | | IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | |
| | Electric Radiator Room Heaters | Protection against electric shock / Protection against access to live parts | Cl. 8 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Standard test finger 0-75V |
| | Stationary Storage Type Electric Water Heater | | | |
| | Mineral Filled Sheathed Heating Elements | | | |
| | Electric Instantaneous Water Heater | Input and current / Power Input and current | Cl. 10 of IS:302-1:2008 +A4:2014, 302-2-3:2007 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0 to 6000 W. 0 to 30 A. 0 to 250 V. |
| | Domestic Electric Food Mixers | | | |
| | | Temperature rise / Heating | Cl. 11 of IS: 302-1:2008+A4:2014, 302-2-3:2007 IS:302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0- 400°C |

Upasna Jain
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Venugopal C
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 26 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|--|--|
| | | Operation under over load conditions of appliances with heating element | Cl. 12 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0- 400°C |
| | | Electrical Insulation and Leakage current at operating temp. / Leakage current and electric strength at operating temp. | Cl.13. of IS: 302-1:2008 A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0-3.5mA Upto 5kV |
| | | Transient over voltage test | Cl. 14 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0-6kV 1.2/50µs |
| | | Moisture resistance | Cl. 15 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 | 20-99%RH |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 27 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | | IS: 302-2-35:1993 IS: 4250:1980 | |
| | | Insulation resistance and electric strength (After humidity treatment)/ Leakage current and electric strength | Cl. 16 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0- 1000 MΩ Upto 5 kV 0-750μA |
| | | Overload protection of Transformers and associated circuits/Overload protection | Cl. 17 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Qualitative |
| | | Endurance | Cl. 18 of IS:302-1:2008 +A4:2014, | Qualitative |
| | | Abnormal operation | Cl. 19 of IS:302-1:2008 +A4:2014, | 0 to 400°C |
| | | Stability and mechanical hazards | Cl. 20 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0 to 10°, 0 to 15° Standard Test finger |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 28 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

“In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020”

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
| | | Mechanical strength | Cl. 21 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Qualitative |
| | | Construction | Cl. 22 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Visual Examination |
| | | Internal wiring | Cl.23 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Visual Examination |
| | | Components | Cl. 24 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 | Visual Examination |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 29 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | | IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | |
| | | Supply connection & external flexible cables & cords / Supply connection & external flexible cords | Cl.25 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Pull 30 N to 100 N, Torque 0.1 Nm to 10 Nm |
| | | Terminals for external conductors | Cl.26 of IS: 302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Qualitative |
| | | Provision for Earthing | Cl.27 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0 to 20 V, 0 to 50 Amps |
| | | Screws and connections | Cl.28 of IS:302-1:2008 +A4:2014, 302-2-3:2007 | 0.1 Nm to 10 Nm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 30 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | | IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | |
| | | Creepage distance & clearances / Clearances, Creepage distances and solid insulations | Cl.29 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 0-300mm |
| | | Resistance to heat, fire and tracking / Resistance to heat and fire | Cl.30 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | Qualitative |
| | | Resistance to rusting | Cl.31 of IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 4159:2002 IS: 302-2-35:1993 IS: 4250:1980 | 20% to 99 % RH |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 31 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----------|----------------------------|--|--|--|
| | | Finish | Cl.33 IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 302-2-35:1993 | Qualitative |
| | | Radiation, Toxicity and Similar Hazards | Cl.32 IS:302-1:2008 +A4:2014, 302-2-3:2007 IS: 302-2-201 :2008 IS: 302-2-30 : 2007 IS: 302-2-21-1992 IS: 302-2-35:1993 | Qualitative |
| 5. | Electric Iron | Measurement of Heating up time | Cl.10 of IS:366-1991 | Upto 24 hr Upto 600°C |
| | | Measurement of Sole plate temperature | Cl.11 of IS:366-1991 | Upto 600°C |
| | | Measurement of Temp. Distribution | Cl. 12 of IS:366-1991 | Upto 600°C |
| | | Measurement of Initial Over swing Temp and Heating up excess temperature | Cl. 13 of IS:366-1991 | Upto 600°C |
| | | Measurement of Cyclic Fluctuation of Temperature | Cl. 14 of IS:366-1991 | Upto 600°C Upto 300 Volt |
| | | Measurement of Temp. Drop under load | Cl. 15 of IS:366-1991 | Upto 600°C |
| | | Measurement of Thermostatic Stability | Cl. 16 of IS:366-1991 | Upto 600°C Upto 5000 W |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 32 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|--|---|---|
| 6. | Electric Immersion Water Heater | Finish | Cl. 17 of IS:366-1991 | Qualitative |
| | | Operation under overload condition of appliance with Heating Element | Cl.12 of IS:368:2014 | Qualitative |
| 7. | Electric Radiator | Endurance | Cl. 18 of IS:368:2014 | Qualitative |
| | | Dimensions | Cl. 10 of IS:369:1992 | 0 to 500 mm |
| | | Temp. rise of surface on which the appliance is placed or supported | Cl. 11 of IS:369:1992 | Upto 600°C |
| | | Endurance | Cl. 12 of IS:369:1992 | Qualitative |
| 8. | Domestic Electric Food Mixers | Finish | Cl. 13 of IS:369:1992 | Qualitative |
| | | Rating | Cl. 5.1, 5.2 & 5.3 of IS: 4250:1981 | 0 to 600V/0 to 1000W/ Jar capacity- 0-1.5Ltrs |
| | | Marking | Cl. 7.4 of IS:4250:1981 | Qualitative |
| | | Operational Tests | Cl. 34 of IS:4250:1981 | Qualitative |
| | | Temperature Withstand test for bowl | Cl. 35 of IS:4250:1981 | 0 to 110°C |
| | | Test for Controls | Cl. 36 of IS:4250:1981 | Qualitative |
| | | Strength of Assembly | Cl. 37 of IS:4250:1981 | 0 to 500 N |
| 9. | Stationary Storage Type Electric Water Heater | Verification of Rated Capacity | Cl. 14 of IS:2082:2018 | Qualitative |
| | | Standing Loss per 24 Hrs. | Cl. 15 of IS:2082:2018 | 0-9999 hrs 0 to 600 ±0.1°C |
| | | Hot Water Output | Cl. 16 of IS:2082:2018 | 0 to 600°C 0 to 15 litre/min. |
| | | Reheating Time | Cl. 17 of IS:2082:2018 | 0 to 24 hrs 0 to 600°C |
| | | Mixing Factor | Cl. 18 of IS:2082:2018 | 0 to 600°C |
| | | Deviation from Dial Calibration | Cl. 19 of IS:2082:2018 | Qualitative |
| | | | | |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 33 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|-------------------------------------|---|---|---|
| | | Cyclic Temperature Variation | Cl. 20 of IS:2082:2018 | Qualitative |
| | | Finish | Cl. 21 of IS:2082:2018 | Qualitative |
| 10. | Electric Instantaneous Water Heater | Finish | Cl. 10 of IS:8978:1992 | Qualitative |
| | | Endurance | Cl.12 of IS:8978:1992 | Qualitative |
| V. | TOYS AND SIMILAR PRODUCTS | | | |
| 1. | Toys and Similar Products | Verification of Marking and instructions | IS 15644:2006 IEC 62115:2003 Cl.7 | Qualitative |
| | | Heating and abnormal operation | IS 15644:2006 IEC 62115:2003 Cl.9 | Upto 400°C 10µA - 20 mA |
| | | Electric strength at operating temperature | IS 15644:2006 IEC 62115:2003 Cl.10 | Qualitative (0.01-5kV AC/DC) |
| | | Moisture resistance | IS 15644:2006 IEC 62115:2003 Cl.11 | Visual Inspection Ambient to 50°C, Upto 96% R.H. |
| | | Electric strength at room temperature | IS 15644:2006 IEC 62115:2003 Cl.12 | Qualitative (0.01-5kV AC/DC) |
| | | Mechanical strength | IS 15644:2006 IEC 62115:2003 Cl.13 | Qualitative (Impact energy 0.7 J) |
| | | Construction (Testing condition 0.1 to 300V, to 10A, Force: 0.1 to100N) | IS 15644:2006 IEC 62115:2003 Cl.14 | 1 W to 5 kW Qualitative |
| | | Protection of cords and wires | IS 15644:2006 IEC 62115:2003 Cl.15 | 0.05 mm to 200 mm Qualitative |
| | | Components | IS 15644:2006 IEC 62115:2003 Cl.16 | Qualitative |
| | | Screws and connection (Testing Condition : 0-6Nm, upto 1000mm) | IS 15644:2006 IEC 62115:2003 Cl.17 | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 34 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|---|---|---|--|
| | | Clearances and creepage distances | IS 15644:2006 IEC 62115:2003 Cl.18 | 0.05 mm -200mm |
| | | Resistance to heat and fire (Glow wire upto 1000°C) | IS 15644:2006 IEC 62115:2003 Cl.19 | 0.05mm to 10mm Qualitative |
| VI. | LAMPS, LUMINARIES AND ACCESSORIES | | | |
| 1. | Fixed General Purpose Luminaires Recessed Luminaires Luminaires For Road And Street Lighting Portable General Purpose Luminaires Flood-Lights Luminaires Hand lamps Lighting Chains Emergency Lighting | Marking | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 6) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 6) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 6) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (CI 6) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(CI 6) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 5) | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 35 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|---|
| | | | IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.6) | |
| | | | IS: 10322 (Part 5/Sec 8): 2013 (Clause 6) | |
| | | Construction | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 7) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 7) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 7) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (Cl 7) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(Cl 7) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 6) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.7) | 10 Hz to 150 Hz to 10 Hz Upto 70 mm 0.1 km/h to 160km/h |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 36 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|---|--|
| | | Creepage Distances And Clearances | <p>IS: 10322 (Part 5/Sec 8): 2013 (Clause 7)</p> <p>IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 8) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979</p> <p>IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 8) IEC 60598-2-2: 2011</p> <p>IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 8) IEC 60598-2-3: 2002+AMD1:2011</p> <p>IS: 10322 (Part 5/Sec 4): 1987 (Cl 8) RA 2015 IEC 60598-2-4: 2017</p> <p>IS: 10322 (Part 5/Sec 5):2013(Cl 8) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 7)</p> <p>IS 10322 (Part 5/Sec 7): 2017 (Clause 20.8)</p> | 0.01 mm to 200 mm |

Upasna Jain
Convener

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Program Manager

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 37 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|---|
| | | Provision For Earthing | IS 10322 (Part 5/Sec 8): 2013 (Clause 8) IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 9) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 9) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 9) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (Cl 9) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(Cl 9) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 8) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.9) IS: 10322 (Part 5/Sec 8): 2013 (Clause 9) | 0.01 V to 19.99 V, 0.1 A to 50 A (0.001Ω to 5Ω) |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 38 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
| | | Terminals | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 10) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 10) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 10) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (Cl 10) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(Cl 10) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 9) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.10) IS: 10322 (Part 5/Sec 8): 2013 (Clause 10) | Qualitative Test (0.1 Nm to 6 Nm) |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 39 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

“In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020”

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|----------------------------|--|--|
| | | External & Internal Wiring | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 11) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 11) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 11) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (Cl 11) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(Cl 11) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 10) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.11) IS: 10322 (Part 5/Sec 8): 2013 (Clause 11) | Qualitative |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 40 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

“In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020”

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|---|--|
| | | Protection Against Electric Shock | <p>IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 12) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979</p> <p>IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 12) IEC 60598-2-2: 2011</p> <p>IS: 10322 (Part 5/Sec 3): 2012 RA 2017(Cl 12) IEC 60598-2-3: 2002+AMD1:2011</p> <p>IS: 10322 (Part 5/Sec4): 1987 (Cl 12) RA 2015 IEC 60598-2-4: 2017</p> <p>IS: 10322 (Part 5/Sec 5): 2013(Cl 12) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 11)</p> <p>IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.12)</p> <p>IS: 10322 (Part 5/Sec 8): 2013 (Clause 12)</p> | Qualitative Test (30 V to 75 V (AC) 1 N to 75 N) |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 41 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|---|--|
| | | Endurance Tests And Thermal Tests | IS: 10322 (Part 5/Sec 1): 2012 (Clause 13) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012 (Clause 13) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Clause 13) IEC 60598-2-3: 2002 IS: 10322 (Part 5/Sec 4): 1987 (Clause 13.4)RA 2005 IEC 60598-2-4: 1997 IS: 10322 (Part 5/Sec 5): 1987, (Clause 13.4) RA 2005 IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 13) IS: 10322 (Part 5/Sec 7): 2013, (Clause 13) IS: 10322 (Part 5/Sec 8): 2013 (Clause 13) | 1 °C to 200 °C, 1 V to 300 V, Upto 999 Hrs |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 42 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | Resistance To Dust & Moisture | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 14) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS: 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 14) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 14) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 | Qualitative Test IP1X/2X/3X/4X/5X/6X IPX1/X2/X3/X4/X5/X6/X7/X8, 30% Rh to 99 % Rh, Up to 60 °C |
| | | | (Cl. 14) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(Cl 14) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 14) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.14) IS: 10322 (Part 5/Sec 8): 2013 (Clause 14) | |
| | | Insulation Resistance & Electric Strength | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 15) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | Qualitative (1 MΩ to 2000 MΩ, 0.1 kV to 5 kV) |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 43 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | | IS: 10322 (Part 5/Sec 2): 2012+RA 2017(CI. 15) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017 (CI 15) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (CI 15) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(CI 15) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 16) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.18) IS: 10322 (Part 5/Sec 8): 2013 (Clause 18) | |
| | | Resistance To Heat , Fire And Tracking | IS: 10322 (Part 5/Sec 1): 2012+RA 2017 (CI. 16) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | 1 °C to 300 °C, 0.1 h to 10000 h, 0.1 mm to 200 mm, 1°C to 650 °C, 0.1 V to 270 V, 0.001 A to 1.999 A Upto 10mm |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 44 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|-------------------------|--|--|
| | | | IS: 10322 (Part 5/Sec 2): 2012+RA 2017(CI. 16) IEC 60598-2-2: 2011 IS: 10322 (Part 5/Sec 3): 2012 RA 2017(CI 16) IEC 60598-2-3: 2002+AMD1:2011 IS: 10322 (Part 5/Sec 4): 1987 (CI 16) RA 2015 IEC 60598-2-4: 2017 IS: 10322 (Part 5/Sec 5): 2013(CI 16) IEC 60598-2-5: 2015 IS: 10322 (Part 5/Sec 6): 2013 (Clause 16) IS: 10322 (Part 5/Sec 7): 2017 (Clause 20.16) IS: 10322 (Part 5/Sec 8): 2013 (Clause 16) | |
| 2. | Luminaires – Luminaires for road and street lighting | Static Load Test | IS: 10322 (Part 5/sec 3): 2012 RA 2017 (Cl. 7.3.1) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative |
| | | Glass Cover Shattering | IS: 10322 (Part 5/sec 3): 2012 RA 2017 (Cl. 7.5) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 45 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|---------------------------------|---|---|
| | | Impact Test | IS: 10322 (Part 5/sec 3) : 2012 (Cl. 7.8) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative (Impact: 0.2J, 0.35J, 0.5J, 0.7J) |
| 3. | Luminaires – Portable general purpose Luminaires | Construction (Overturning Test) | IS: 10322 (Part 5/sec 4): 1987+RA 2015 (Cl. 6.4) IEC 60598-2-4 : 2011, Ed. 3.1 (Cl. 4.6.3) | Angle: Upto 20° |
| 4. | Luminaires Floodlights | Wind Speed Test | IS: 10322 (Part 5/Sec V): 2013(Cl 7.5) IEC 60598-2-5: 2015 | Qualitative |
| | | Flat Glass Cover Shattering | IS: 10322 (Part 5/Sec V): 2013(Cl 7.8) IEC 60598-2-5: 2015 | Qualitative |
| 5. | Luminaires Hand lamps | Impact Test | IS: 10322 (Part 5/sec 6): 2013 (Cl. 7.6.2) IEC 60598-2-8 : 2013, Ed 3.1 (Cl. 8.7.6.2) | Qualitative |
| | | Flexing Test | IS 10322 (Part 5/sec 6): 2013 (Cl. 11.4.1) IEC 60598-2-8 : 2013, Ed 3.1 (Cl.8.11.4.1) | Insulation Resistance : 0.01 MΩ to 10GΩ Voltage: 100 V to 1000 VDC Voltage: 0.01 kV to 5 kVAC Trip Current: 0.1 mA to 100 mA |
| | | Compression Test | IS: 10322 (Part 5/sec 6): 2013 (Cl. 16.1) , IEC 60598-2-8 : 2013, Ed 3.1 (Cl. 8.16.1) | Amb. to 250°C |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 46 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|---|---|--|
| 6. | Luminares Emergency Lighting | Functional Safety | IS: 10322 (Part 5/sec 8): 2013(Cl.17) IEC 60598-2-22 : 2008, Ed. 3.2 (Cl. 22.16) | Voltage DC : 0.001 V to 300V Voltage AC : 0.06 V to 300V Power: 1.000W to 6.000 kW |
| | | Changeover Operation | IS: 10322 (Part 5/sec 8): 2013 (Cl.18) IEC 60598-2-22 : 2008, Ed. 3.2 (Cl. 22.17) | Voltage DC : 0.001 V to 600V Voltage AC : 0.06 V to 600V Current DC: 0.001A to10A Current AC : 0.1A to10A |
| | | High Temperature Operation | IS: 10322 (Part 5/sec 8): 2013 (Cl. 19) IEC 60598-2-22 : 2008, Ed. 3.2 (Cl. 22.18) | Ambient to 250°C Voltage: 20.0 V to 300.0 V Current: 5.00mA to 30A |
| | | Battery Chargers for Self Contained Emergency Luminares | IS: 10322 (Part 5/sec 8): 2013(Cl.20) IEC 60598-2-22 : 2008 Ed. 3.2 (Cl. 22.19) | Voltage:1V to 30.0 V Curent:5.00mA to 20A |
| 7. | DC or AC Supplied Electronic Control gear for LED Modules | Marking | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No.7 | Qualitative test |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 47 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|--|--|
| | | Protection against accidental contact with live parts | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 8 | Qualitative test |
| | | Terminals | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+ A1: 2017, Clause No: 9 | 0.1mm to 300mm Upto 6Nm Force: 1N to 500N |
| | | Provision for Protective Earthing | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1: 2017, Clause No: 10 | Current: 1A to 40A Resistance: 0-0.12Ω 0-0.6Ω |
| | | Moisture Resistance and insulation | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 11 | 20 % to 100 % RH Upto 2000 MΩ |
| | | Electric Strength | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: | Hi Voltage: 0.01kV AC to 10kV AC 0.1kV AC to 6kV AC Time: 0s to 99s |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 48 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
| | | | 2014+A1:2017, Clause No: 12 | |
| | | Fault conditions | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 14 | Voltage AC: 0.1V to 600V Current AC: 0.01 to 20 Wattage: 0.01kW to 6kW Temperature: 25°C to 200°C Resistance: 0.002Ω to 0.5Ω High voltage: 0.1kV AC to 5kV AC & 0.01kV AC to 6kV AC Time: 1s to 99s Resistance: 1kΩ to 2000MΩ |
| | | Transformer Heating | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 15 | Up to 400 °C Upto 9999.99Hr |
| | | Construction | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, | Qualitative Test Voltage AC: 0.1V to 600V Current AC: 0.01 to 20 |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 49 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | | Clause No: 16 | Wattage: 0.00001kW to 6kW Temperature: 25 °C to 200 °C |
| | | Creepage Distance and clearance | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 17 | 0.01mm to 300mm |
| | | Screws, current- carrying parts and connections | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 18 | 0.01mm to 300mm 0.2Nm to 6Nm 1N to 500N |
| | | Resistance to heat, fire and tracking | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 19 | Force: 20N Length : 0.01mm to 300mm 40°C to 180°C RH: 10% to 97% Glow Wire Temperature: 550°C to 960°C Comparative Tracking index: 175V to 600V, 50Hz Needle Flame: 100°C to 700°C |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 50 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

“In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020”

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|---|---|--|
| | | Resistance to corrosion | IS: 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+ A1: 2017, Clause No: 20 | Qualitative |
| 8. | Self-Ballasted LED Lamps For general purpose Lighting Services | Marking | Cl. 5 of IS:16102 (Part 1):2012+A1& A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Interchangeability | Cl. 6 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Protection Against accidental Contact With Live Parts | Cl. 7 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Insulation Resistance and Electric Strength Test After Humidity | Cl. 8 of IS:16102 (Part 1):2012+A1& A2:2015 IEC 62560:2011+AMD1:: 2015 | 1MΩ to 100MΩ/1MΩ at 500V DC |
| | | Mechanical Strength | Cl. 9 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Cap Temperature Rise Test | Cl. 10 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | 0-199.9 °C |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 51 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| 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 | Cl. 11 of IS:16102 (Part 1):2012+A1& A2:2015 IEC 62560:2011+AMD1:: 2015 | 0-400°C 0-4 mm |
| | | Resistance to Flame and Ignition | Cl. 12 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Fault Conditions | Cl. 13 of IS:16102 (Part 1): 2012+A1 & A2:2015 IEC 62560:2011+ AMD1:: 2015 | Qualitative test |
| | | Creepage Distance And Clearances | Cl. 14 of IS:16102 (Part 1):2012+A1& A2:2015 IEC 62560:2011+AMD1:: 2015 | 0-300mm |
| | | | | |
| 9. | LED Modules for General Lighting Self - Ballasted LED Lamps for General Lighting Services | Protection against Accidental contact with live parts | IS: 16103 – 1 :2012 (RA 2017) (Clause 10) | Qualitative |
| | | Moisture Resistance & Insulation | IS: 16103 – 1 :2012 (RA 2017) (Clause 11) | 20 % to 100 % RH Upto 2000 MΩ |
| | | Electric Strength | IS: 16103 – 1 :2012 (RA 2017) (Clause 12) | Qualitative (Upto 5 kV) |
| | | Resistance to Heat, Fire and Tracking | IS: 16103 – 1 :2012 (RA 2017) (Clause 18) | 0 °C to 300°C Upto 99 s Upto 100 A 0 °C to 1000 °C Upto 10 mm |
| | | Fault Conditions | IS: 16103 – 1 :2012 (RA 2017) (Clause 13) | Upto 600 V Upto 19.99 A Upto 2000 W |

Upasna Jain
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Venugopal C
Program Manager

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 52 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|--|--|--|
| | | Creepage Distances and Clearances | IS: 16103 – 1 :2012 (RA 2017) (Clause 16) | 0 °C to 199.9 °C Upto 300 mm |
| | | Terminals | IS: 16103 – 1 :2012 (RA 2017) (Clause 18) | Upto 300 mm Upto 10 nm |
| | | Provisions for protective Earthing | IS: 16103 – 1 :2012 (RA 2017) (Clause 9) | Current: 1 A to 40 A Resistance: Upto 0.12 Ω Upto 0.6 Ω |
| | | Construction | IS: 16103 – 1 :2012 (RA 2017) (Clause 15) | Qualitative |
| | | Screws, Current-carrying parts and connections | IS: 16103 – 1 :2012 (RA 2017) (Clause 17) | 0.01 mm to 300 mm 0.2 Nm to 6 Nm 1 N to 500 N |
| | | Resistance to Corrosion | IS: 16103 – 1 :2012 (RA 2017) (Clause 19) | 20 % to 100 % RH 0 °C to 200 °C |
| 10. | D.C. or A.C. Supplied Electronic Control Gear for LED Modules | Circuit Power Factor | IS: 16104:2012 (RA 2017) (Clause 9) | Upto 1 |
| | | Abnormal Conditions Operational | IS: 16104:2012 (RA 2017) (Clause 12) | Upto 500 V Upto 24 hrs |
| | | Starting and connecting requirements | IS: 16104:2012 (RA 2017) (Clause 7.1) | Upto 500 V Upto 25 A Upto 1000 W |
| | | Voltage and current during operation | IS: 16104:2012 (RA 2017) (Clause 7.2) | Upto 500 V Upto 25 A |
| | | Supply Current | IS: 16104:2012 (RA 2017) (Clause 10) | Upto 25 A |
| 11. | LED Modules for General Lighting (Performance Requirements) | Verification of Marking | IS: 16103 (Part 2):2012 (RA 2017) (Clause 4) IEC 62717:2015 | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 53 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|--|---|---|
| | | Dimension | IS: 16103 (Part 2):2012 (RA 2017) (Clause 5) IEC 62717:2015 | 0.1 mm to 200 mm |
| | | Module Power | IS 16103 (Part 2):2012 (RA 2017) (Clause 7) IEC 62717:2015 | 0.1 W to 400 W |
| 12. | LED Luminaries | Verification of Marking | IS 16107 (Part 2/ Section I): 2012(Claude 4) IEC 62722-2-1:2014 | Qualitative |
| | | Total Input Power | IS 16107 (Part 2/ Section I): 2012(Claude 7) IEC 62722-2-1:2014 | 0.1 W to 400 W |
| 13. | Self-Ballasted LED Lamps for General Lighting Services | Verification of Marking | IS 16102 (Part 2) : 2017 (Clause 5) IEC 62612:2015 | Qualitative |
| | | Dimension | IS 16102 (Part 2): 2017 (Clause 6) IEC 62612:2015 | 0.1 mm to 200 mm |
| | | Lamp input | IS 16102 (Part 2) :2017 (Clause 8.1, 8.2, 8.3) IEC 62612:2015 | 0.1 W to 400 W 1 st order to 50 th order Upto 1 |
| | | Insulation Resistance & Electric Strength after Humidity Treatment | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 9) IEC 60968:2015 (Clause 8) | 1 MΩ to 2000 MΩ, 0.1 kV to 5 kV |
| | | Torsion /Torsion Resistance | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 10) IEC 60968 :2015 (Clause 9.2) | 0.01 Nm to10 Nm |
| | | Cap Temperature Rise | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 11) IEC 60968:2015 | 0.1 °C to 400 °C |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 54 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|----------------------------------|--|---|
| | | | (Clause 10) | |
| | | Resistance To Heat | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 12) IEC 60968:2015 Clause 11 | 1 °C to 150 °C |
| | | Resistance To Flame And Ignition | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 13) IEC 60968:2015 (Clause12) | 1 °C to 1350 °C |
| | | Fault Condition | IS 15111 (Part 1) : 2002 (RA 2017) (Clause 14) IEC 60968:2015 Clause 13 | Qualitative (1 V to 700 V) |
| | | Dimensions | IS 15111 (Part 2) : 2002 (RA 2017) (Clause 6) IEC 60969:2016 (Clause 6.2 Table 3) | 0.1 mm to 200 mm, 0.01 mm to 25 mm |
| | | Starting And Run-Up Test | IS 15111 (Part 2) : 2002 (RA 2017) (Clause 8) IEC 60969 :2016 (Annexure B) | 0.01 s to 200 s |
| | | Lamp Wattage | IS 15111 (Part 2) : 2002 (RA 2017) (Clause 9) IEC 60969:2016 (Annexure A) | 0.1 W to 2000 W |
| | | Harmonics | IS 15111 (Part 2) : 2002 (RA 2017) Clause 14) | 1 st Order to 50 th Order |
| | | Power Factor | IS 15111 (Part 2) : 2002 (RA 2017) Clause 16) | 0.5 lag to 0.5 lead |
| | | Verification of Marking | IS 15111 (Part 2) : 2002 (RA 2017) (Clause 18) IEC 60969 :2016 (Clause 4) | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 55 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-------------|---|---------------------------------|---|--|
| VII. | BATTERIES | | | |
| 1. | Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes — Safety Requirements for Portable Sealed Secondary Cells and for Batteries Made from Them for Use in Portable Applications (Part 1: Nickel System) | General Safety Considerations | Cl. 5.0 of IS 16046-1:2018/ IEC 62133-1:2017 | Insulation Resistance : 0.01MΩ-2GΩ |
| | | Type test and Sample Size | Cl. 6.0 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |
| | | Continuous low-rate charging | Cl. 7.2.1 of IS 16046-1:2018/ IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Vibration | Cl. 7.2.2 of IS 16046-1:2018/ IEC 62133-1:2017 | 10Hz to 3000Hz 0.2mm to 5mm |
| | | Case Stress | Cl. 7.2.3 of IS 16046-1:2018/ IEC 62133-1:2017 | 0 to 125°C/0.1°C |
| | | Temperature cycling | Cl. 7.2.4 of IS 16046-1:2018/ IEC 62133-1:2017 | -40°C to 100°C/0.1°C |
| | | Incorrect installation | Cl. 7.3.1 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |
| | | External short circuit | Cl. 7.3.2 of IS 16046-1:2018/ IEC 62133-1:2017 | 15°C to 70°C 0.1 to 300°C |
| | | Free Fall | Cl. 7.3.3 of IS 16046-1:2018/IEC 62133-1:2017 | Qualitative |
| | | Mechanical shock (Crash hazard) | Cl. 7.3.4 of IS 16046-1:2018/IEC 62133-1:2017 | 1gn to 175gn |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 56 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|-------------------------------|---|---|
| | | Thermal abuse | Cl. 7.3.5 of IS 16046-1:2018/IEC 62133-1:2017 | 0.1 to 150°C |
| | | Crushing of Cells | Cl. 7.3.6 of IS 16046-1:2018/IEC 62133-1:2017 | Upto 15kN |
| | | Low pressure | Cl. 7.3.7 of IS 16046-1:2018/IEC 62133-1:2017 | Upto 15kPa |
| | | Overcharge | Cl. 7.3.8 of IS 16046-1:2018/IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Force discharge | Cl. 7.3.9 of IS 16046-1:2018/IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Information for safety | Cl. 8.0 of IS 16046-1:2018/IEC 62133-1:2017 | Qualitative |
| | | Marking | Cl. 9.0 of IS 16046-1:2018/IEC 62133-1:2017 | Qualitative |
| | | Packaging | Cl. 10.0 of IS 16046-1:2018/IEC 62133-1:2017 | Qualitative |
| 2. | Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes — Safety Requirements for | General Safety Considerations | Cl. 5.0 of IS 16046-2:2018/IEC 62133-2:2017 | Insulation Resistance : 0.01MΩ-2GΩ Internal Resistance: 0.001Ω -3Ω |
| | | Type test and Sample Size | Cl. 6.0, Annex D of IS 16046-2:2018 /IEC 62133-2:2017 | 3mΩ to 3000mΩ Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 57 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|------------------------------|---|--|
| | Portable Sealed Secondary Cells and for Batteries Made from Them for Use in Portable Applications Part 2: Lithium Systems | Continuous low-rate charging | Cl. 7.2.1 of IS 16046-2:2018 / IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | Case Stress | Cl. 7.2.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 0 to 125°C/0.1°C |
| | | External short circuit | Cl. 7.3.1, 7.3.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 15°C to 70°C 0.1 to 300°C |
| | | Free Fall | Cl. 7.3.3 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Thermal abuse | Cl. 7.3.4 of IS 16046-2:2018/ IEC 62133-2:2017 | 0.1 to 150°C |
| | | Crush (cells) | Cl. 7.3.5 of IS 16046-2:2018/ IEC 62133-2:2017 | Upto 15kN |
| | | Overcharge | Cl. 7.3.6 of IS 16046-2:2018/ IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | Force discharge | Cl. 7.3.7 of IS 16046-2:2018/ IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | Vibration | Cl. 7.3.8.1 of IS 16046-1:2018/ IEC 62133-1:2017 | 10Hz to 3000Hz 0.2mm to 5mm |
| | | Mechanical Shock | Cl. 7.3.8.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 1gn to 175gn |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 58 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
| | | Information for safety | Cl. 8.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Marking | Cl. 9.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Packaging and Transport | Cl. 10.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 59 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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

ELECTRICAL TESTING

| LOCATION 2 | | | | |
|------------|---|---------|---|-------------|
| I. | LAMPS, LUMINARIES AND ACCESSORIES | | | |
| 1. | Fixed General Purpose Luminaires Recessed Luminaires Luminaires For Road And Street Lighting Portable General Purpose Luminaires Flood-Lights Luminaires Hand lamps Lighting Chains Emergency Lighting | Marking | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 6) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 6) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 6) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec 4): 1987 (CI 6) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(CI 6) IEC 60598-2-5: 2015 | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 60 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 5) IS 10322 (Part 5/Sec 7): 2017 (Clause 20.6) IS 10322 (Part 5/Sec 8): 2013 (Clause 6) | |
| | | Construction | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 7) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 7) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 7) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec 4): 1987 (Cl 7) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(Cl 7) IEC 60598-2-5: 2015 | 10 Hz to 150 Hz to 10 Hz Upto 70 mm 0.1 km/h to 160km/h |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 61 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|---|--|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 6) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.7) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 7) | |
| | | Creepage Distances And Clearances | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 8) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 8) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 8) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec 4): 1987 (Cl 8) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(Cl 8) IEC 60598-2-5: 2015 | 0.01 mm to 200 mm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 62 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 7) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.8) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 8) | |
| | | Provision For Earthing | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 9) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | 0.01 V to 19.99 V, 0.1 A to 50 A (0.001Ω to 5Ω) |
| | | | IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 9) IEC 60598-2-2: 2011 | |
| | | | IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 9) IEC 60598-2-3: 2002+AMD1:2011 | |
| | | | IS 10322 (Part 5/Sec 4): 1987 (Cl 9) RA 2015 IEC 60598-2-4: 2017 | |
| | | | IS 10322 (Part 5/Sec 5): 2013(Cl 9) IEC 60598-2-5: 2015 | |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 63 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

“In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020”

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|--|--|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 8) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.9) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 9) | |
| | | Terminals | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 10) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | Qualitative Test (0.1 Nm to 6 Nm) |
| | | | IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 10) IEC 60598-2-2: 2011 | |
| | | | IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 10) IEC 60598-2-3: 2002+AMD1:2011 | |
| | | | IS 10322 (Part 5/Sec 4): 1987 (Cl 10) RA 2015 IEC 60598-2-4: 2017 | |
| | | | IS 10322 (Part 5/Sec 5): 2013(Cl 10) IEC 60598-2-5: 2015 | |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 64 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|----------------------------|--|--|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 9) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.10) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 10) | |
| | | External & Internal Wiring | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 11) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | Qualitative |
| | | | IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 11) IEC 60598-2-2: 2011 | |
| | | | IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 11) IEC 60598-2-3: 2002+AMD1:2011 | |
| | | | IS 10322 (Part 5/Sec 4): 1987 (Cl 11) RA 2015 IEC 60598-2-4: 2017 | |
| | | | IS 10322 (Part 5/Sec 5): 2013(Cl 11) IEC 60598-2-5: 2015 | |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 65 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|--|--|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 10) IS 10322 (Part 5/Sec 7): 2017 (Clause 20.11) IS 10322 (Part 5/Sec 8): 2013 (Clause 11) | |
| | | Protection Against Electric Shock | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 12) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 12) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017(Cl 12) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec4): 1987 (Cl 12) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(Cl 12) IEC 60598-2-5: 2015 | Qualitative Test (30 V to 75 V (AC) 1 N to 75 N) |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 66 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-----------------------------------|--|--|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 11) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.12) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 12) | |
| | | Endurance Tests And Thermal Tests | IS 10322 (Part 5/Sec 1): 2012 (Clause 13) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012 (Clause 13) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Clause 13) IEC 60598-2-3: 2002 IS 10322 (Part 5/Sec 4): 1987 (Clause 13.4) RA 2005 IEC 60598-2-4: 1997 IS 10322 (Part 5/Sec 5): 1987, (Clause 13.4) RA 2005 IEC 60598-2-5: 2015 | 1 °C to 200 °C, 1 V to 300 V, Upto 999 Hrs |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 67 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------------|--|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 13) | |
| | | | IS 10322 (Part 5/Sec 7): 2013, (Clause 13) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 13) | |
| | | Resistance To Dust & Moisture | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 14) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 14) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 14) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec 4): 1987 (Cl 14) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(Cl 14) IEC 60598-2-5: 2015 | Qualitative Test IP1X/2X/3X/4X/5X/6X IPX1/X2/X3/X4/X5/X6/X7/X8, 30% Rh to 99 % Rh, 1°C to 60 °C |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 68 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---|--|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 14) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.14) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 14) | |
| | | Insulation Resistance & Electric Strength | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 15) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 | Qualitative (1 MΩ to 2000 MΩ, 0.1 kV to 5 kV) |
| | | | IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 15) IEC 60598-2-2: 2011 | |
| | | | IS 10322 (Part 5/Sec 3): 2012 RA 2017 (Cl 15) IEC 60598-2-3: 2002+AMD1:2011 | |
| | | | IS 10322 (Part 5/Sec 4): 1987 (Cl 15) RA 2015 IEC 60598-2-4: 2017 | |
| | | | IS 10322 (Part 5/Sec 5): 2013(Cl 15) IEC 60598-2-5: 2015 | |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 69 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 16) | |
| | | | IS 10322 (Part 5/Sec 7): 2017 (Clause 20.18) | |
| | | | IS 10322 (Part 5/Sec 8): 2013 (Clause 18) | |
| | | Resistance To Heat , Fire And Tracking | IS 10322 (Part 5/Sec 1): 2012+RA 2017 (Cl. 16) IEC 60598-1: 2014+AMD 1:2017, IEC 60598-2-1: 1979 IS 10322 (Part 5/Sec 2): 2012+RA 2017(Cl. 16) IEC 60598-2-2: 2011 IS 10322 (Part 5/Sec 3): 2012 RA 2017(Cl 16) IEC 60598-2-3: 2002+AMD1:2011 IS 10322 (Part 5/Sec 4): 1987 (Cl 16) RA 2015 IEC 60598-2-4: 2017 IS 10322 (Part 5/Sec 5): 2013(Cl 16) IEC 60598-2-5: 2015 | 1 °C to 300 °C, 0.1 h to 10000 h, 0.1 mm to 200 mm, 1°C to 650 °C, 0.1 V to 270 V, 0.001 A to 1.999 A Upto 10mm |

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Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 70 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|---|---------------------------------|--|---|
| | | | IS 10322 (Part 5/Sec 6): 2013 (Clause 16) IS 10322 (Part 5/Sec 7): 2017 (Clause 20.16) IS 10322 (Part 5/Sec 8): 2013 (Clause 16) | |
| 2. | Luminaires for Road and Street Lighting | Static Load Test | IS 10322 (Part 5/sec 3): 2012 RA 2017 (Cl. 7.3.1) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative |
| | | Glass Cover Shattering | IS 10322 (Part 5/sec 3): 2012 RA 2017 (Cl. 7.5) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative |
| | | Impact Test | IS 10322 (Part 5/sec 3) : 2012 (Cl. 7.8) IEC 60598-2-3: 2002+AMD1:2011 | Qualitative (Impact: 0.2J, 0.35J, 0.5J, 0.7J) |
| 3. | Luminaires Portable general purpose Luminaires | Construction (Overturning Test) | IS 10322 (Part 5/sec 4): 1987+RA 2015 (Cl. 6.4) IEC 60598-2-4 : 2011, Ed. 3.1 (Cl. 4.6.3) | Angle: Upto 20° |
| 4. | Luminaires Floodlights | Wind Speed Test | IS 10322 (Part 5/Sec V): 2013 (Cl 7.5) IEC 60598-2-5: 2015 | Qualitative |
| | | Flat Glass Cover Shattering | IS 10322 (Part 5/Sec V): 2013(Cl 7.8) IEC 60598-2-5: 2015 | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 71 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|---|---|---|
| 5. | Luminares Hand lamps | Impact Test | IS 10322 (Part 5/sec 6): 2013 (Cl. 7.6.2) IEC 60598-2-8 : 2013, Ed 3.1 (Cl. 8.7.6.2) | Qualitative |
| | | Flexing Test | IS 10322 (Part 5/sec 6):2013(Cl. 11.4.1) IEC 60598-2-8 : 2013, Ed 3.1 (Cl.8.11.4.1) | Insulation Resistance : 0.01MΩ to 10GΩ Voltage : 100 V to 1000 VDC Voltage:0.01kV to 5 kVAC Trip Current: 0.1 mA to 100 mA |
| | | Compression Test | IS 10322 (Part 5/sec 6): 2013 (Cl. 16.1) , IEC 60598-2-8 : 2013, Ed 3.1 (Cl. 8.16.1) | Amb. to 250°C |
| 6. | DC or AC Supplied Electronic Control gear for LED Modules | Marking | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 7 | Qualitative test |
| | | Protection against accidental contact with live parts | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 8 | Qualitative test |
| | | Terminals | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 | 0.1mm to 300mm Upto 6Nm |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 72 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|------------------------------------|--|---|
| | | | IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 9 | Force: 1N to 500N |
| | | Provision for Protective Earthing | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 10 | Current: 1A to 40A Resistance: 0-0.12Ω 0-0.6Ω |
| | | Moisture Resistance and insulation | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 11 | Hi Voltage: 0.01kV AC to 5kV AC 0.01kV AC to 6kV DC Time: 0s to 99s |
| | | Electric Strength | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 12 | Hi Voltage: 0.01kV AC to 10kV AC 0.1kV AC to 6kV AC Time: 0s to 99s |
| | | Fault conditions | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: | Voltage AC: 0.1 V to 600V Current AC: 0.01 to 20 Wattage: |

Upasna Jain
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 73 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---------------------------------|--|--|
| | | | 2014+A1:2017, Clause No: 14 | 0.01kW to 6kW Temperature: 25°C to 200°C Resistance: 0.002Ω to 0.5Ω High voltage: 0.1kV AC to 5kV AC & 0.01kV AC to 6kV AC Time: 1s to 99s Resistance: 1kΩ to 2000MΩ |
| | | Transformer Heating | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 15 | Up to 400 °C Upto 9999.99Hr |
| | | Construction | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 16 | Qualitative Test Voltage AC: 0.1V to 600V Current AC: 0.01 to 20 Wattage: 0.00001kW to 6kW Temperature: 25°C to 200°C |
| | | Creepage Distance and clearance | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, | 0.01mm to 300mm |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 74 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---|--|--|
| | | | Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 17 | |
| | | Screws, current- carrying parts and connections | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 18 | 0.01mm to 300mm 0.2Nm to 6Nm 1N to 500N |
| | | Resistance to heat, fire and tracking | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 19 | Force: 20N Length : 0.01mm to 300mm 40°C to 180°C RH: 10% to 97% Glow Wire Temperature: 550°C to 960°C Comparative Tracking index: 175V to 600V, 50Hz Needle Flame: 100°C to 700°C |
| | | Resistance to corrosion | IS 15885 (Part 2/ Sec 13): 2012+A1 :2015 IEC 61347-2-13, Ed2:2014+A1:2016 EN 61347-2-13: 2014+A1:2017, Clause No: 20 | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 75 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|---|--|--|
| 7. | Self-Ballasted LED Lamps For general purpose Lighting Services | Marking | Cl. 5 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Interchangeability | Cl. 6 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Protection Against accidental Contact With Live Parts | Cl. 7 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Insulation Resistance and Electric Strength Test After Humidity | Cl. 8 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | 1MΩ to 100MΩ/1MΩ at 500V DC |
| | | Mechanical Strength | Cl. 9 of IS:16102 (Part 1): 2012+A1 & A2:2015/ IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Cap Temperature Rise Test | Cl. 10 of IS:16102 (Part 1):2012+A1& A2:2015 IEC 62560:2011+AMD1:: 2015 | 0-199.9 °C |
| | | Resistance To Heat | Cl. 11 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | 0-400°C 0-4 mm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 76 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|--|---|--|--|
| | | Resistance to Flame and Ignition | Cl. 12 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1: 2015 | Qualitative test |
| | | Fault Conditions | Cl. 13 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1:: 2015 | Qualitative test |
| | | Creepage Distance And Clearances | Cl. 14 of IS:16102 (Part 1):2012+A1 & A2:2015 IEC 62560:2011+AMD1: 2015 | 0-300mm |
| II. | DOMESTIC ELECTRICAL APPLIANCES | | | |
| 1. | Power Adapter Power supply for Household Appliances | Marking and Instructions | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 07 | Qualitative |
| | | Protection Against Access to Live Parts | IS 302-1: 2008 Amd. 3:2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 08 | Qualitative (30 V to 75 V (AC)) |
| | | Power Input And Current | IS 302-1: 2008 (Clause 10) Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016 | Upto 300V Upto 25A 1 W to 12.50 kW |
| | | Heating | IS 302-1: 2008 Amd. 3: 2014 (Clause 11) IEC 60335-1 (Edition 5.2): 2016 | 1 °C to 400 °C |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 77 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|--|---|--|
| | | Leakage Current And Electric Strength At Operating Temperature | IS 302-1: 2008 Amd. 3: 2014 (Clause 13) IEC 60335-1 (Edition 5.2): 2016 | 0.4µA to 3.5 mA Voltage : 0.01 kV to 5 kVAC |
| | | Transient Over Voltages | IS 302-1: 2008 Amd. 3: 2014 (Clause 14) IEC 60335-1 (Edition 5.2): 2016 | Qualitative (0.1 kV to 15 kV) |
| | | Moisture Resistance | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 15 | Qualitative (Upto 50°C 10% RH to 98% RH) |
| | | Leakage Current And Electric Strength | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 16 | Leakage Current 0.4µA to 3.5 mA Voltage : 0.01 kV to 5 kVAC |
| | | Overload Protection Of Transformers And Associated Circuits | IS 302-1: 2008 Amd.3:2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 17 | (-)40 °C to 200 °C |
| | | Endurance | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 18 | 0.001 mV to 300 V 0.001 mA to 20 A |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 78 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|----------------------------------|--|---|
| | | Abnormal Operation | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 19 | (-)40 °C to 200 °C |
| | | Stability And Mechanical Hazards | IS 302-1: 2008 Amd.3:2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause: 20 | Stability apparatus (Angle) 0° to 15° |
| | | Mechanical Strength | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 21 | Qualitative (2 N to 250 N) |
| | | Construction | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 22 | IP 1 x to 6 x Scale: 0.001 mm to 150 mm IP x1 to IPx8 Scale: 1 mm to 300 mm Time: 0.01 s to 9959 h 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm Upto 100 mA 0.01 s to 99 s Angle: 0 ° to 90 ° Upto 150 mm 0.01 mV to 600 V |
| | | Internal Wiring | IS 302-1: 2008 Amd. 3:2014 IEC 60335-1 (Edition 5.2): 2016,,EN 60335-1: 2014 Clause. 23 | Qualitative (Flexing apparatus: Angle:0° to 90°) |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 79 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---|--|--|
| | | Supply Connections And External Flexible Cord | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 25 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm 30 N to 100 N |
| | | Terminals For External Conductors | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 26 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Provision For Earthing | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 27 | Upto 500 mΩ |
| | | Screws And Connections | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 28 | Visual Inspection 0.1 Nm to 1.2 Nm & 1 Nm to 6 Nm |
| | | Clearances, Creepage Distances And Solid Insulation | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 29 | 0.1 mm to 300 mm |
| | | Resistance To Heat And Fire | IS 302-1: 2008 Amd. 3: 2014 | Upto 150 mm (-)70 °C to 180 °C |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 80 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| 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 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 30 | 550 °C to 960 °C |
| | | Resistance To Rusting | IS 302-1: 2008 Amd. 3: 2014 IEC 60335-1 (Edition 5.2): 2016, EN 60335-1: 2014 Clause. 31 | Qualitative |
| III. | BATTERIES | | | |
| 1. | Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes — Safety Requirements for Portable Sealed Secondary Cells and for Batteries Made from Them for Use in Portable Applications Part 1: Nickel System | General Safety Considerations | Cl. 5.0 of IS 16046-1:2018/IEC 62133-1:2017 | Insulation Resistance : 0.01MΩ-2GΩ |
| | | Type test and Sample Size | Cl. 6.0 of IS 16046-1:2018/IEC 62133-1:2017 | Qualitative |
| | | Continuous low-rate charging | Cl. 7.2.1 of IS 16046-1:2018/ IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Vibration | Cl. 7.2.2 of IS 16046-1:2018/ IEC 62133-1:2017 | 10Hz to 3000Hz 0.2mm to 5mm |
| | | Case Stress | Cl. 7.2.3 of IS 16046-1:2018/ IEC 62133-1:2017 | 0 to 125°C/0.1°C |
| | | Temperature cycling | Cl. 7.2.4 of IS 16046-1:2018/ IEC 62133-1:2017 | -40°C to 100°C/0.1°C |
| | | Incorrect installation | Cl. 7.3.1 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 81 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---------------------------------|---|--|
| | | External short circuit | Cl. 7.3.2 of IS 16046-1:2018/ IEC 62133-1:2017 | 15°C to 70°C 0.1 to 300°C |
| | | Free Fall | Cl. 7.3.3 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |
| | | Mechanical shock (Crash hazard) | Cl. 7.3.4 of IS 16046-1:2018/ IEC 62133-1:2017 | 1gn to 175gn |
| | | Thermal abuse | Cl. 7.3.5 of IS 16046-1:2018/ IEC 62133-1:2017 | 0.1 to 150°C |
| | | Crushing of Cells | Cl. 7.3.6 of IS 16046-1:2018/ IEC 62133-1:2017 | Upto 15kN |
| | | Low pressure | Cl. 7.3.7 of IS 16046-1:2018/ IEC 62133-1:2017 | Upto 15kPa |
| | | Overcharge | Cl. 7.3.8 of IS 16046-1:2018/ IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Force discharge | Cl. 7.3.9 of IS 16046-1:2018/ IEC 62133-1:2017 | 10mV to 20V 12mA to 10A |
| | | Information for safety | Cl. 8.0 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |
| | | Marking | Cl. 9.0 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 82 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|-------------------------------|---|---|
| | | Packaging | Cl. 10.0 of IS 16046-1:2018/ IEC 62133-1:2017 | Qualitative |
| | Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes — Safety Requirements for Portable Sealed Secondary Cells and for Batteries Made from Them for Use in Portable Applications (Part 2: Lithium Systems) | General Safety Considerations | Cl. 5.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Insulation Resistance : 0.01MΩ-2GΩ Internal Resistance: 0.001Ω -3Ω |
| | | Type test and Sample Size | Cl. 6.0, Annex D of IS 16046-2:2018/ IEC 62133-2:2017 | 3mΩ to 3000mΩ Qualitative |
| | | Continuous low-rate charging | Cl. 7.2.1 of IS 16046-2:2018/ IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | Case Stress | Cl. 7.2.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 0 to 125°C/0.1°C |
| | | External short circuit | Cl. 7.3.1, 7.3.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 15°C to 70°C 0.1 to 300°C |
| | | Free Fall | Cl. 7.3.3 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Thermal abuse | Cl. 7.3.4 of IS 16046-2:2018/ IEC 62133-2:2017 | 0.1 to 150°C |
| | | Crush (cells) | Cl. 7.3.5 of IS 16046-2:2018/ IEC 62133-2:2017 | Upto 15kN |
| | | Overcharge | Cl. 7.3.6 of IS 16046-2:2018/ IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | | | |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 83 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|----------------------------------|--|---|--|
| | | Force discharge | Cl. 7.3.7 of IS 16046-2:2018/ IEC 62133-2:2017 | 10mV to 20V 12mA to 10A |
| | | Vibration | Cl. 7.3.8.1 of IS 16046-1:2018/ IEC 62133-1:2017 | 10Hz to 3000Hz 0.2mm to 5mm |
| | | Mechanical Shock | Cl. 7.3.8.2 of IS 16046-2:2018/ IEC 62133-2:2017 | 1gn to 175gn |
| | | Information for safety | Cl. 8.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Marking | Cl. 9.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| | | Packaging and Transport | Cl. 10.0 of IS 16046-2:2018/ IEC 62133-2:2017 | Qualitative |
| IV. | TOYS AND SIMILAR PRODUCTS | | | |
| 1. | Toys and Similar Products | Verification of Marking and instructions | IS 15644:2006 IEC 62115:2003 Cl.7 | Qualitative |
| | | Heating and abnormal operation | IS 15644:2006 IEC 62115:2003 Cl.9 | Upto 400°C 10µA - 20 mA |
| | | Electric strength at operating temperature | IS 15644:2006 IEC 62115:2003 Cl.10 | Qualitative (0.01-5kV AC/DC) |
| | | Moisture resistance | IS 15644:2006 IEC 62115:2003 Cl.11 | Visual Inspection Ambient to 50°C, Upto 96% R.H. |
| | | Electric strength at room temperature | IS 15644:2006 IEC 62115:2003 Cl.12 | Qualitative (0.01-5kV AC/DC) |

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Program Manager

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 84 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|--|
| | | Mechanical strength | IS 15644:2006 IEC 62115:2003 Cl.13 | Qualitative (Impact energy 0.7 J) |
| | | Construction (Testing condition 0.1 to 300V, to 10A, Force: 0.1 to100N) | IS 15644:2006 IEC 62115:2003 Cl.14 | 1 W to 5 kW Qualitative |
| | | Protection of cords and wires | IS 15644:2006 IEC 62115:2003 Cl.15 | 0.05 mm to 200 mm Qualitative |
| | | Components | IS 15644:2006 IEC 62115:2003 Cl.16 | Qualitative |
| | | Screws and connection (Testing Condition : 0-6Nm, upto 1000mm) | IS 15644:2006 IEC 62115:2003 Cl.17 | Qualitative |
| | | Clearances and creepage distances | IS 15644:2006 IEC 62115:2003 Cl.18 | 0.05 mm-200mm |
| | | Resistance to heat and fire (Glow wire upto 1000°C) | IS 15644:2006 IEC 62115:2003 Cl.19 | 0.05 mm to 10mm Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 85 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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

ELECTRONICS TESTING

| LOCATION 1 | | | | |
|-------------------|---|---|---|---|
| I. | IT EQUIPMENT | | | |
| 1. | IT Equipment including Electrical Business Equipment | Safety Requirements General Requirements | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 +A2:2013, Clause No. 1.3 | -- |
| | | Verification of Components | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 +A2:2013, Clause No. 1.5 (Except Cl. 1.5.3, 1.5.6, 1.5.9.1) | Qualitative |
| | | Power Interface | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 1.6 | 1 mA to 20 A (AC & DC Current) 0.15 V to 300 V (AC & DC Voltage) 0.01 W to 3000 W 50 Hz to 60 Hz |
| | | Verification of Marking & Instruction | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2:2013 Clause No. 1.7 | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 86 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|--|--|
| | | Protection from Hazards (Electric shock & Energy hazard) | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.1 | 40 V to 75 V, 0 to 75 N 0.01 V _{AC/DC} to 5 kV _{AC/DC} 100 kΩ to 2 GΩ 0.01 mm to 200 mm |
| | | SELV Circuits | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015/ IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.2 | 0.01 V _{AC/DC} to 1000 V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | TNV Circuits | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.3 | 0.01 V _{AC/DC} 1500 V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Limited Current Circuits | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.4 | Qualitative 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Limited Power Sources | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.5 | 0.01 V _{AC/DC} to 1000 V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Provision for Earthing & Bonding | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.6 | 0 to 50 A, 1 V to 99 V |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 87 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | Over-current and earth fault protection in primary circuits | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.7 | Qualitative |
| | | Safety interlocks | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2:2013 Clause No. 2.8 (Except Clause 2.8.5, 2.8.7) | 0.01 mm to 200 mm |
| | | Electrical Insulation | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.9 | Qualitative (0-50)°C, (20-99)% R.H. (0.01 - 5)kV |
| | | Clearances, Creepage and distance through insulation | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 2.10 (Except Cl. 2.10.5.4) | 0.01 mm to 200 mm 0.01 kV _{AC/DC} to 5 kV _{AC/DC} (1 to 100)°C/(20 to 99)%Rh |
| | | Wiring Connection & Supply | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 3.1 | Qualitative |
| | | Connections to mains supply | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 | 0.01 V _{AC/DC} to 1000 V _{AC/DC} 0.001 mm to 25 mm 0.01 mm to 200 mm |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 88 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|---|
| | | | Clause No. 3.2 | 0.01 V _{AC/DC} to 5 kV _{AC/DC} 1 to 100 N |
| | | Wiring Terminal for external conductor | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 3.3 | 1 °C to 400 °C 0.001 mm to 25 mm 0.01 mm to 200 mm |
| | | Disconnection from Main Supply | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 3.4 | Qualitative |
| | | Interconnection of equipment | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 3.5 | Qualitative |
| | | Physical requirements Stability | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 4.1 | Qualitative Test (Inclination (0° to 20°), Force: (1 N to 1000 N) |
| | | Mechanical Strength | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 4.2 (Except 4.2.8) | Qualitative 1 N to 250 N 1 N to 1000 N |
| | | Verification of Design and Construction | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + | 0.01 V _{AC/DC} to 100 V _{AC/DC} 1 µA to 10 A |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 89 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---|---|---|
| | | | A1:2009 + A2 : 2013 Clause No. 4.3 (Except Cl. 4.3.13.2, 4.3.13.3, 4.3.13.4, 4.3.13.5) | |
| | | Protection against hazardous moving parts | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 4.4 | Qualitative (1 N to 100 N) |
| | | Thermal Requirements | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2:2013, Clause No. 4.5 | 0.1 °C to 199.9 °C 1 °C to 400 °C 10 mΩ to 1 mΩ |
| | | Opening in Enclosure | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 4.6 | 0.01 mm to 200 mm |
| | | Resistance to fire | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 4.7 | Qualitative Test (1 °C to 1350 °C, Mass 20 N, Ball Ø 5 mm, (0.01 V _{AC} to 500 V _{AC}), 9.5 mm, (1ms to 99.99 minute) |
| | | Electrical requirements & simulated abnormal conditions, Touch current and protective conductor current | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 5.1 | 1 µA to 20 mA |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 90 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|--|---|---|--|
| | | Electric Strength | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 5.2 | Qualitative (0.01 kV _{AC/DC} to 5 kV _{AC/DC}) |
| | | Abnormal operating & fault conditions | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 5.3 | 1 °C to 400 °C 10 mΩ to 1 mΩ 1 μA to 20 mA |
| | | Connections to telecommunication network | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 6 | Qualitative 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 10 kV 100 kΩ to 2 GΩ |
| | | Connection to Cable Distribution Systems | IS 13252 (Part 1): 2010 + A1: 2013 + A2 : 2015 IEC 60950-1: 2005 + A1:2009 + A2 : 2013 Clause No. 7 | Qualitative 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 10 kV |
| II. | AUDIO EQUIPMENT | | | |
| 1. | Audio-Video & similar Electronics Apparatus | Marking and Instructions | IS 616: 2017 IEC 60065:2014 Clause 5 | 1 mA to 20 A (AC & DC Current) 0.15 V to 600 V (AC & DC Voltage) 0.2 mW to 3000 W |
| | | Heating under normal operating conditions | IS 616: 2017 IEC 60065:2014 Clause 7 | 20 °C to 400 °C (0.001Ω to 100Ω) |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 91 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | Constructional requirements with regard to the protection against electric shock | IS 616: 2017 IEC 60065:2014 Clause 8 | 20 °C to 200 °C 20 %R.H. to 97 %R.H. (0.01 to 100) mm 10 Hz-55Hz -10Hz, 0.35 mm |
| | | Electric shock hazard under normal operating condition | IS 616: 2017 IEC 60065:2014 Clause 9 | Qualitative (40 to 75) V, (0 to 75)N (0.01 to 1000) V 1 µA to 20 mA 0 to 5 kV _{AC/DC} |
| | | Insulation requirements | IS 616: 2017 IEC 60065:2014 Clause 10 | Qualitative 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 15 kV 100 kΩ to 2GΩ 1 °C to 100 °C 20 %Rh to 97 %R.H. |
| | | Fault Conditions | IS 616: 2017 IEC 60065:2014 Clause 11 | 20°C to 400 °C 0.1 V to 300 V |
| | | Mechanical Strength | IS 616: 2017 IEC 60065:2014 Clause 12 | Qualitative (0.01 mm to 200) mm Upto 6.0 Nm 10-55Hz, 0.35mm, (0.1-199.9) °C |
| | | Clearance & Creepage Distances | IS 616: 2017 IEC 60065:2014 Clause 13 | 0.01 mm to 200 mm |
| | | Components | IS 616: 2017 IEC 60065:2014 Clause 14, | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 92 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|--|---|---|
| | | | (Except Cl. 14.2, 14.4, 14.5.1, 14.5.2, 14.5.3, 14.6, 14.7 & 14.12) | |
| | | Terminals | IS 616: 2017 IEC 60065:2014 Clause 15 | Qualitative Glow Wire Test : Upto 960°C Test Probe D Length 100mm Force : 1N |
| | | External flexible Cords | IS 616: 2017 IEC 60065:2014 Clause 16 | 0.001 mm to 25 mm 0.01 mm to 200 mm |
| | | Electrical Connection and Mechanical Fixings | IS 616: 2017 IEC 60065:2014 Clause 17 | Qualitative 0 to 6 Nm |
| | | Stability & Mechanical Hazards | IS 616: 2017 IEC 60065:2014 Clause 19 | Qualitative Inclination : 0 to 20°, Force (0 to 250) N |
| | | Resistance to fire | IS 616: 2017 IEC 60065:2014 Clause 20 | Qualitative (1 to 1350)°C, 20 N, Ball Ø5mm (0 to 500) V _{AC} , 9.5 mm (1 ms to 99.99 minute) |
| 2. | Measurement of standby power Measurement of the Power Consumption - Audio, Video and Related Equipment | Standby power mode | IEC 62301:2011 (Cl. 3.6) | 0.01V to 300V 0.001A to 10A 0.01W to 1000W |
| | | Power in Active Mode(3.8) | IEC 62301:2011 | 0.01V to 300V 0.001A to 10A 0.01W to 1000W |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 93 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-------------|---|---|---|--|
| | | Power in On Mode (Section 11) | IEC 62087,Ed3.0 | 0.01V to 300V 0.001A to 10A 0.01W to 1000W 0.1 to 1999cd/m ² |
| III. | POWER SUPPLIES AND STABILIZERS | | | |
| 1. | Uninterruptible Power Supply (UPS) | Components | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.5) | Qualitative |
| | | Power Interface | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.6) | 0.1W to 12000W 0.1A to 60A (With Linear load) |
| | | Marking & instructions | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.7) | Qualitative |
| | | Protection against shock and energy hazards | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.1) | Qualitative |
| | | Requirement for auxiliary circuits | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.2) | 0 to 300 V DC 0-500V peak |
| | | Protective Earthing and bonding | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.3) | 3A to 40A 0.001Ω to 1.2Ω 0.3s to 999s |
| | | AC and D.C power isolation | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.4) | Qualitative |
| | | Over current and earth fault condition | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.5) | 0.1A to 25A 0.01s to 9999hrs |
| | | Protection of personnel-safety interlocks | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.6) | Qualitative |
| | | Clearances, Creepage distances and distances through insulation | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.7) | 0 to 300 mm |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 94 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|---|
| | | Wiring, connections and supply - General | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.1) | DCV: 200 mV to 1000 V ACV: 200 mV to 750 V |
| | | Connection to power | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.2) | Qualitative |
| | | Wiring terminals for external power conductors | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.3) | 0.01mm to 300mm |
| | | Enclosure | IS 16242(Part1):2014 IEC 62040-1:2008(Cl. 7.1) | Qualitative test |
| | | Stability | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.2) | Tilting angle: 10° to 15° 1N to 1000N |
| | | Mechanical strength | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.3) | 0 to 1000 N |
| | | Construction details | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.4) | Qualitative |
| | | Resistance to fire | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.5) | 0-1100°C 0- 10mm |
| | | Battery Location | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.6) | Qualitative |
| | | Temperature rise | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.7) | Upto 300°C Upto 20 kΩ |
| | | General provision for earth leakage | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 8.1) | 40μA to 20 mA AC |
| | | Electrical strength | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 8.2) | Qualitative Test (0 to 10kVac) |
| | | Abnormal operating and fault conditions | IS16242(Part1):2014 IEC62040-1:2008 (Cl. 8.3) | Upto 300 °C 0 to 20mA AC |
| | | Connection to telecommunication network | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 9.0) | Qualitative (0.01-5)kV AC/DC (0.01 - 15) kV 100kΩ to 2GΩ |

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Venugopal C
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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 95 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|------------|--|---|---|---|
| IV. | MISCELLANEOUS PRODUCTS | | | |
| 1. | Instruments for Measurement and Laboratory use (Electrical control Equipment, Electrical Microscopes, Power supply, Auto transformer Electrical Laboratory equipment, Signal generators, Transducers, Transmitters) | Testing in Single Fault Condition | IEC 61010-1:2010+AMD1:2016 (Clause 4.4) | Upto 300 °C Upto 300 V Upto 1000 W |
| | | Mains Supply (Power input and current) | IEC 61010-1:2010+AMD1:2016 (Clause 5.1.3) | 1 mA to 20 A 0.15 V to 300 V 0.01 W to 1000 W 50 Hz to 60Hz |
| | | Durability of Markings | IEC 61010-1:2010+AMD1:2016 (Clause 5.3) | Qualitative |
| | | Determination of Accessible parts | IEC 61010-1:2010+AMD1:2016 (Clause 6.2) | 1 N to 250 N (Voltage : <u>Upto</u> 100 V) |
| | | Limit Values for Accessible Parts | IEC 61010-1:2010+AMD1:2016 (Clause 6.3) | 5 V _{DC} to 1000 V _{DC} 5 V _{AC} to 1000 V _{AC} |
| | | Protective Bonding | IEC 61010-1:2010+AMD1:2016 (Clause 6.5.2) | 0.1 A to 50 A (Upto 12 V maximum) |
| | | Insulation requirements | IEC 61010-1:2010+AMD1:2016 (Clause 6.7) | 5 V _{DC} to 1000 V _{DC} 5 V _{AC} to 1000 V _{AC} 0.01 mm to 300 mm |
| | | Procedure for voltage | IEC 61010-1:2010+AMD1:2016 (Clause 6.8) | Qualitative Upto 10 kV |
| | | Constructional Requirements for Protection against Electric Shock | IEC 61010-1:2010+AMD1:2016 (Clause 6.9) | Qualitative |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 96 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|--|
| | | Protection against Mechanical Hazard | IEC 61010-1:2010+AMD1:2016 (Clause 7) | Qualitative |
| | | Resistance to Mechanical Stresses | IEC 61010-1:2010+AMD1:2016 (Clause 8) | 0.01 mm to 300 mm |
| | | Drop | IEC 61010-1:2010+AMD1:2016 (Clause 8.3) | Qualitative (Height of Drop: 1 m Mass : 0.1 kg to 100 kg Tilting angle:30°) |
| | | Resistance to heat Non-metallic Enclosures Insulating material | IEC 61010-1:2010+AMD1:2016 (Clause 10.5) | 40 °C to 150 °C (Range for Impression : 0.1 mm to 10 mm) |
| | | Transient overvoltage limiting device | IEC 61010-1:2010+AMD1:2016 (Clause 14.8) | Qualitative (Rise Time: 1.2 µs Time to half value: 50 µs 100 V to 10 kV) |
| | | Specially protected equipment | IEC 61010-1:2010+AMD1:2016 (Clause 11.6) | Qualitative (Ingress of solid: IP1X to IP6X) Ingress of water: IPX1 to IP68) |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 97 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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

ELECTRONICS TESTING

| LOCATION 2 | | | | |
|-------------------|---|---|---|--|
| I. | IT EQUIPMENT | | | |
| 1. | Information Technology Equipment | Power Interface | Clause No. 1.6 (IS 13252 (Part 1): 2010 + A1 + A2) | 1 mA to 20 A (AC & DC Current) 0.15 V to 300 V (AC & DC Voltage) 0.01 W to 3000 W 50 Hz to 60 Hz |
| | | Verification of Marking & Instruction | Clause No. 1.7 | Qualitative |
| | | Protection from Hazards (Electric shock & Energy hazard) | Clause No. 2.1 | 40 V to 75 V, 0 to 75 N 0.01 V _{AC/DC} to 5 kV _{AC/DC} 100 kΩ to 2 GΩ 0.01 mm to 200 mm |
| | | SELV Circuits | Clause No. 2.2 | 0.01 V _{AC/DC} to 1000 V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | TNV Circuits | Clause No. 2.3 | 0.01 V _{AC/DC} 1500 V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Limited Current Circuits | Clause No. 2.4 | Qualitative 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Limited Power Sources | Clause No. 2.5 | 0.01 V _{AC/DC} to 1000V _{AC/DC} 0.001 A _{AC/DC} to 10 A _{AC/DC} |
| | | Provision for Earthing & Bonding | Clause No. 2.6 | 0 to 50 A, 1 V to 99 V |
| | | Over-current and earth fault protection in primary circuits | Clause No. 2.7 | Qualitative |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 98 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|--|
| | | Safety interlocks | Clause No. 2.8 (Except Clause 2.8.5, 2.8.7) | 0.01 mm to 200 mm |
| | | Electrical Insulation | Clause No. 2.9 | Qualitative (0 to 50)°C, (20-99)% R.H. (0.01 to 5)kV |
| | | Clearances, Creepage and distance through insulation | Clause No. 2.10 | 0.01 mm to 200 mm 0.01 kV _{AC/DC} to 5 kV _{AC/DC} (1 to 100)°C/ (20 to 99)%Rh |
| | | Wiring Connection & Supply | Clause No. 3.1 | Qualitative |
| | | Connections to mains supply | Clause No. 3.2 | 0.01 V _{AC/DC} to 1000 V _{AC/DC} 0.001 mm to 25 mm 0.01 mm to 200 mm 0.01 V _{AC/DC} to 5 kV _{AC/DC} 1 to 100 N |
| | | Wiring Terminal for external conductor | Clause No. 3.3 | 1 °C to 400 °C 0.001 mm to 25 mm 0.01 mm to 200 mm |
| | | Disconnection from Main Supply | Clause No. 3.4 | Qualitative |
| | | Interconnection of equipment | Clause No. 3.5 | Qualitative |
| | | Physical requirements Stability | Clause No. 4.1 | Qualitative Test (Inclination (0° to 20°), Force: (1 N to 1000 N) |
| | | Mechanical Strength | Clause No. 4.2 (Except 4.2.8) | 1 N to 250 N 1 N to 1000 N |
| | | Verification of Design and Construction | Clause No. 4.3 (Except Cl. 4.3.13.2, 4.3.13.3, 4.3.13.4, 4.3.13.5) | 0.01 V _{AC/DC} to 100 V _{AC/DC} 1 µA to 10 A |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 99 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|--|
| | | Protection against hazardous moving parts | Clause No. 4.4 | Qualitative (1 N to 100 N) |
| | | Thermal Requirements | Clause No. 4.5 | 0.1 °C to 199.9 °C 1 °C to 400 °C 10 mΩ to 1 mΩ |
| | | Opening in Enclosure | Clause No. 4.6 | 0.01 mm to 200 mm |
| | | Resistance to fire | Clause No. 4.7 | Qualitative Test (1 °C to 1350 °C, Mass 20 N, Ball Ø 5 mm, (0.01 V _{AC} to 500 V _{AC}), 9.5 mm, (1ms to 99.99 minute) |
| | | Electrical requirements & simulated abnormal conditions, Touch current and protective conductor current | Clause No. 5.1 | 1 µA to 20 mA |
| | | Electric Strength | Clause No. 5.2 | Qualitative (0.01 kV _{AC/DC} to 5 kV _{AC/DC}) |
| | | Abnormal operating & fault conditions | Clause No. 5.3 | 1 °C to 400 °C 10 mΩ to 1 MΩ 1 µA to 20 mA |
| | | Connections to telecommunication network | Clause No. 6 | Qualitative 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 15 kV 100 kΩ to 2 GΩ |
| | | Connection to Cable Distribution Systems | Clause No. 7 | Qualitative 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 15 kV |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 100 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|--|--|---|--|
| II. | AUDIO EQUIPMENT | | | |
| 1. | Audio-Video & similar Electronics Apparatus | Marking and Instructions | IS 616: 2017 IEC 60065:2014 Clause 5 | 1 mA to 20 A (AC & DC Current) 0.15 V to 600 V (AC & DC Voltage) 0.2 mW to 3000 W |
| | | Heating under normal operating conditions | Clause 7 | 20 °C to 400 °C (0.001Ω to 100Ω) |
| | | Constructional requirements with regard to the protection against electric shock | Clause 8 | 20 °C to 200 °C 20 %R.H. to 97 %R.H. (0.01 to 100) mm 10 Hz-55Hz-10Hz,0.35 mm 1N to 150 N |
| | | Electric shock hazard under normal operating condition | Clause 9 | (40 to 75) V, (0 to 75)N (0.01 to 1000) V 1 μA to 20 mA 0 to 5 kV _{AC/DC} 1 ms-99.99 min |
| | | Insulation requirements | Clause 10 | 0.01 kV _{AC/DC} to 5 kV _{AC/DC} 0.01 kV to 15 kV 100 kΩ to 2GΩ 1 °C to 100 °C 20 %Rh to 97 %R.H. |
| | | Fault Conditions | Clause 11 | 20°C to 400 °C 0.1 V to 300 V |
| | | Mechanical Strength | Clause 12 | 1N-350 N (0.01 mm to 200) mm Upto 6.0 Nm 10-55Hz, 0.35mm, |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 101 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-------------|---|--|--|--|
| | | Clearance & Creepage Distances | Clause 13 | (0.1-199.9) °C 0.01 mm to 200 mm |
| | | Components | Clause 14, (Except Cl. 14.2, 14.4, 14.5.1, 14.5.2, 14.5.3, 14.6, 14.7 & 14.12) | Qualitative |
| | | Terminals | Clause 15 | Qualitative Glow Wire Test : Upto 960°C Test Probe D Length 100mm Force : 1N |
| | | External flexible Cords | Clause 16 | 0.001 mm to 25 mm 0.01 mm to 200 mm |
| | | Electrical Connection and Mechanical Fixings | Clause 17 | Qualitative 0 to 6 Nm |
| | | Stability & Mechanical Hazards | Clause 19 | Qualitative Inclination : 0 to 20°, Force (0 to 250) N |
| | | Resistance to fire | Clause 20 | Qualitative (1 to 1350)°C, 20 N, Ball Ø 5mm (0 to 500) V _{AC} , 9.5 mm (1 ms to 99.99 minute) |
| III. | POWER SUPPLIES AND STABILIZERS | | | |
| 1. | Uninterruptible Power Supply (UPS) | Components | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.5) | Qualitative |
| | | Power Interface | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.6) | 0.1W to 12000W 0.1A to 60A |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 102 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|---|---|---|
| | | Marking & instructions | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 4.7) | Qualitative |
| | | Protection against shock and energy hazards | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.1) | Qualitative |
| | | Requirement for auxiliary circuits | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.2) | 0 to 300 V DC 0-500V _{peak} |
| | | Protective Earthing and bonding | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.3) | 3A to 40A 0.001Ω to 1.2Ω 0.3s to 999s |
| | | AC and D.C power isolation | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.4) | Qualitative |
| | | Over current and earth fault condition | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.5) | 0.1A to 25A 0.01s to 9999hrs |
| | | Protection of personnel-safety interlocks | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.6) | Qualitative |
| | | Clearances, Creepage distances and distances through insulation | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 5.7) | 0 to 300 mm |
| | | Wiring, connections and supply - General | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.1) | DCV: 200 mV to 1000 V ACV: 200 mV to 750 V |
| | | Connection to power | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.2) | Qualitative |
| | | Wiring terminals for external power conductors | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 6.3) | 0.01mm to 300mm |
| | | Enclosure | IS 16242(Part1):2014 IEC 62040-1:2008(Cl. 7.1) | Qualitative test |
| | | Stability | IS 16242(Part1):2014 IEC 62040-1:2008(Cl. 7.2) | Tilting angle: 10° to 15° 1N to 1000N |
| | | Mechanical strength | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.3) | 0 to 1000 N |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 103 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|---|---|--|
| | | Construction details | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.4) | Qualitative |
| | | Resistance to fire | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.5) | 0-1100°C 0- 10mm |
| | | Battery Location | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.6) | Qualitative |
| | | Temperature rise | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 7.7) | Upto 300°C Upto 20 kΩ |
| | | General provision for earth leakage | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 8.1) | 40μA to 20 mA AC |
| | | Electrical strength | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 8.2) | Qualitative Test (0 to 10kVAC) |
| | | Abnormal operating and fault conditions | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 8.3) | Upto 300 °C 0 to 20mA ac |
| | | Connection to telecommunication network | IS 16242(Part1):2014 IEC 62040-1:2008 (Cl. 9.0) | (0.01-5)kVAC/DC (0.01 - 15) kV 100kΩ to 2GΩ 10/700μS/10KV |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 104 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|----------------------------|-------------------------|---|--|

PHOTOMETRY TESTING

| LOCATION 1 | | | | |
|-------------------|--|---------------------------------|--|--------------------------------------|
| I. | LIGHT SOURCES (LED LAMP) | | | |
| 1. | SSL (LED) Products | Test for Total Luminous Flux | IS 16106: 2012 Clause. 11 IES LM-79-08 Clause. 9.0 | 50 lm to 50000 lm |
| | | Luminous Intensity distribution | IS 16106: 2012 Clause. 12 IES LM-79-08 Clause. 10.0 | 1 cd to 20000 cd |
| | | Luminous Efficacy Test | IS 16106: 2012 Clause. 13 IES LM-79-08 Clause. 11.0 | 1lm/watt to 1000lm/watt |
| | | Test for product CCT | IS 16106: 2012 Clause. 14 | 2000 K to 8000 K |
| | | Color Rendering Index | IES LM-79-08 Clause. 12.0 | CRI Upto 100 |
| | | Chromaticity coordinates | | Chromaticity coordinates Upto 1 |
| 2. | Fixed General Purpose Luminaires, Recessed Luminaires, Luminaires for Road & Street Lighting, Flood Light | Photometry Test | IS 10322 (Part 5/Sec I): 2012 (RA 2017) (Clause. 17) IS 10322 (Part 5/Sec II): 2012(RA 2017) (Clause. 17) IS 10322 (Part 5/Sec III): 2012 (RA 2017) (Clause. 17) IS 10322 (Part 5/Sec V): 2017 (Clause. 17) | 1 lm to 50000 lm 1 cd to 20000 cd |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 105 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|---|--|--|--|
| 3. | LED Modules for General Lighting | Luminous Flux | IS 16103 (Part 2): 2012 (Clause 8.1) IEC 62717: 2015-09 | 50 lm to 50000 lm |
| | | Luminous Intensity Distribution | IS 16103 (Part 2): 2012 (Clause 8.2) IEC 62717: 2015-09 | 1 cd to 20000 cd |
| | | Efficacy | IS 16103 (Part 2): 2012 (Clause 8.3) IEC 62717: 2015-09 | 1 lm/watt to 1000 lm/watt |
| | | Chromaticity Coordinates | IS 16103 (Part 2): 2012 (Clause 9.1) IEC 62717: 2015-09 | Chromaticity coordinates Upto 1 |
| | | Performance Requirements Correlated Colour Temperature | IS 16103 (Part 2):2012 (Clause 9.2) IEC 62717: 2015-09 | 2000 K to 8000 K |
| | | Colour Rendering Index | IS 16103 (Part 2):2012 (Clause 9.3) IEC 62717: 2015-09 | Upto 100 |
| 4. | LED Luminaires | Luminous Flux | IS 16107 (Part 2/Sec 1): 2012/Clause. 8.1 IEC 62722-2-1: 2011 | 50 lm to 50000 lm |
| | | Luminous Intensity Distribution, Peak Intensity and Beam Angle | IS 16107 (Part 2/Sec 1): 2012/Clause. 8.2 IEC 62722-2-1: 2014 | 1 cd to 20000 cd |
| | | Luminaire Efficacy | IS 16107 (Part 2/Sec 1): 2012/Clause. 8.3 IEC 62722-2-1: 2014 | 1lm/watt to 1000lm/watt |
| | | Chromaticity Coordinates | IS 16107 (Part 2/Sec 1): 2012/Clause. 9.1 IEC 62722-2-1: 2014 | Chromaticity coordinates Upto 1 |

Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 106 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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|-----|---|---|--|--|
| | | Correlated Colour Temperature | IS 16107 (Part 2/Sec 1): 2012/Clause. 9.2 IEC 62722-2-1: 2014 | 2000 K to 8000 K |
| | | Colour Rendering Index | IS 16107 (Part 2/Sec 1): 2012/ Clause. 9.3 IEC 62722-2-1: 2014 | Upto 100 |
| 5. | Self-Ballasted LED Lamps For General Lighting Services | Luminous Flux | IS 16102 (Part 2): 2017 (Clause 9.1) IEC 62612: 2015 | 50 lm to 50000 lm |
| | | Luminous Intensity Distribution, Peak intensity, Beam Angle | IS 16102 (Part2):2017 (Cl. 9.2) IEC 62612: 2015 | 1 cd to 20000 cd |
| | | Efficacy | IS 16102 (Part2):2017 (Cl. 9.3) IEC 62612:2015 | 1lm/watt to 1000lm/watt |
| | | Color Nomenclature, Variation And Rendering | IS 16102 (Part 2): 2017 (Clause 10) IEC 62612:2015 | 2000 K to 8000 K |
| | | CRI | IS 16102 (Part2):2017 (Clause 10.2) IEC 62612: 2015 | Upto 100 |
| | | Lamp Life - Lumen Maintenance - Endurance Test | IS 16102 (Part 2): 2017 (Clause 11) IEC 62612: 2015 | 1 h to 10000 h |
| 6. | Self Ballasted Lamps For General Lighting Services | Luminous Flux | IS 15111 (Part 2):2002 +AMD 7: 2009 (Clause 10), IEC 60969: 2016-10 (Annex D) | 50 lm to 50000 lm |
| | | Colour | IS 15111 (Part 2):2002 +AMD 7: 2009 (Clause 11) IEC 60969: 2016-10 | 2000 K to 8000 K |

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Laboratory **Alpha Test House, 487/25, Peeragarhi, New Delhi**
Location 1: 487/25, Peeragarhi, New Delhi
Location 2: K-28, Udyog Nagar, Peeragarhi, New Delhi

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

Certificate Number **TC-5508** **Page 107 of 107**

Validity **08.12.2018 to 07.12.2020** **Last Amended on 03.06.2019**

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
| | | Lumen Maintenance | IS 15111 (Part 2):2002 +AMD 7: 2009 (Clause 12) IEC 60969: 2016-10 (Annex D) | 50 lm to 50000 lm |
| | | Life | IS 15111 (Part 2):2002 +AMD 7: 2009 (Clause 13) IEC 60969: 2016-10 (Annex G) | 1 hour to 9999 hour |
| | | Lamp Efficacy | IS 15111 (Part 2): 2002 +AMD 7: 2009 (Clause 15) | 1 lm/watt to 1000 lm/watt |

Upasna Jain
Convener

Venugopal C
Program Manager