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|  | <b>ACCREDITATION<br/>DOCUMENT</b> | <b>F-06/02<br/>Issue Date: 10/08/15<br/>Rev. No: 09<br/>LAB 041</b> |
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**Accreditation No: LAB 041**

**Awarded to**

**Electrical Measurement & Test Laboratory (EMTL), PCSIR Labs.  
Complex, Lahore – Pakistan.**

The scope of accreditation is in accordance with the standard specifications outlined in the following page(s) of this document. The accredited scope shall be visible and legible in areas such as customer service, sample-receiving section etc and shall not mislead its users.

The accreditation was first time granted on **06-09-2010** by Pakistan National Accreditation Council.

The laboratory complies with the requirements of **ISO/IEC 17025:2017**.

The accreditation requires regular surveillance, and is valid until **02-05-2023**.

The decision of accreditation made by Pakistan National Accreditation Council implies that the organization has been found to fulfill the requirements for accreditation within the scope.

The organization however, itself is responsible for the results of performed measurements/tests.

**PAKISTAN NATIONAL ACCREDITATION COUNCIL**

14-12-2020  
Date

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Director General



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**Testing Laboratory**

**Accreditation Scope of Electrical Measurement & Test Lab. at PCSIR Laboratories  
Complex, Ferozepur Road, Lahore-Pakistan.**

**Permanent Laboratory Premises**

| <b>Materials/<br/>Products tested</b> | <b>Testing field</b>                                  | <b>Types of test/<br/>Properties measured</b> | <b>Reference to standardized<br/>method / Internal method<br/>reference (Latest Editions)</b>  |
|---------------------------------------|---|---|--|
| <b>Electric Cables<br/>(Cont....)</b> | <b>Electrical &amp;<br/>Mechanical<br/>Properties</b> | Electrical Resistance of conductors           | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>BS EN 60228:2005<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS6004 :2012<br>BS 6346 :1997 |
|                                       |   | Voltage test on cores                         | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992+ A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997                                     |
|                                       |   | Voltage test on completed cable               | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997                       |
|                                       |   | Long term resistance to DC                    | BS 6004:2012   |

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| <b>Electric Cables<br/>(Cont....)</b> | <b>Electrical &amp;<br/>Mechanical<br/>Properties</b> | Insulation Resistance Test   | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997                                    |
|                                       |   | Resistivity of extruded semi<br>conducting screen applied over<br>conductor and insulation | IEC 60502:2020<br>P-29:2010  |
|                                       |   | Checking of compliance with<br>constructional provisions                                   | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253, 341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997                      |
|                                       |   | Measurement of Insulation Thickness  | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60811-201:2012<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997 |
|                                       |   | Measurement of Sheath Thickness  | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60811-202, :2012<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>BS 6004:2012<br>BS6346:1997   |

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| <b>Electric Cables</b><br><i>(Cont....)</i> | <b>Electrical &amp;<br/>Mechanical<br/>Properties</b> | Measurement of separation sheath/<br>bedding thickness                        | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>P-29:2010<br>BS6346:1997   |
|   |   | Measurement of overall diameter   | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-203:2012<br>DDS-8:2007<br>P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012 & BS6346:1997                                       |
|   |   | Thickness of extruded inner covering  | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>BS6346:1997  |
|   |   | Diameter of armoured wires and<br>tapes                                       | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>BS6346:1997<br>DDS-8:2007 and P-29:2010  |
|   |   | Ovality   | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>BS6004:12   |
|   |   | Tensile strength and %age elongation<br>of insulation before and after ageing | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-501 :2012<br>IEC 60811-401 :2012<br>DDS-8:2007<br>DDS-82:2007; P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997 |

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| <p><b>Electric Cables</b><br/>(Cont....)</p> | <p><b>Electrical &amp;<br/>Mechanical<br/>Properties</b></p> | <p>Tensile strength and %age elongation of Sheath before and after ageing</p> | <p>IEC 60227-1: 2007<br/>IEC 60227-2:1997 + A1:2003<br/>IEC 60227-3:1993 + A1:1997<br/>IEC 60227-4:1992 + A1:1997<br/>IEC 60227-5:2011<br/>IEC 60502-1:2004 + A1:2009<br/>IEC 60502-2:2014<br/>IEC 60811-501 :2012<br/>IEC 60811-401:2012<br/>DDS-8:2007<br/>DDS-82:200; P-29:2010<br/>KE-Spec:253,341,81B,45B,67B&amp;S307<br/>BS 6004:2012<br/>BS6346:1997</p> |
|  |  | <p>Loss of mass test on insulation and Sheath</p>                             | <p>IEC 60227-1: 2007<br/>IEC 60227-2:1997 + A1:2003<br/>IEC 60227-3:1993 + A1:1997<br/>IEC 60227-4:1992 + A1:1997<br/>IEC 60227-5:2011<br/>IEC 60502-1:2004 + A1:2009<br/>IEC 60502-2:2014<br/>IEC 60811-409:2012<br/>DDS-8:2007<br/>DDS-82:2007 and P-29:2010<br/>BS 6004:2012<br/>BS6346:1997</p>  |
|  |  | <p>Pressure test at high temperature on Insulation and Sheath</p>             | <p>IEC 60227-1: 2007<br/>IEC 60227-3:1993 + A1:1997<br/>IEC 60227-4:1992 + A1:1997<br/>IEC 60227-5:2011<br/>IEC 60811-508:2012<br/>IEC 60502-1:2004 + A1:2009<br/>IEC 60502-2:2014<br/>DDS-8:2007<br/>DDS-82:2007<br/>P-29:2010<br/>BS 6004:2012<br/>BS6346:1997</p>   |
|  |  | <p>Cold Bend test of insulation and Sheath at low temperature</p>             | <p>IEC 60227-1: 2007<br/>IEC 60227-3:1993 + A1:1997<br/>IEC 60227-4:1992 + A1:1997<br/>IEC 60227-5:2011<br/>IEC 60811-504:2012<br/>DDS-8:2007 and DDS-82:2007<br/>BS 6004:2012<br/>BS6346:1997</p>   |

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| <b>Electric Cables</b><br>(Cont....) | <b>Electrical &amp;<br/>Mechanical<br/>Properties</b> | Cold Elongation test of insulation and Sheath at low temperature               | IEC 60227-1: 2007<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60811-505:2012<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>BS 6004:2012<br>BS6346:1997  |
|                                      |   | Impact test of PVC insulation and Sheath at low Temperature                    | IEC 60227-1: 2007<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60811-506:2012 <u>and</u> P-29:2010<br>BS 6004:2012<br>BS6346:1997   |
|                                      |   | Test for resistance of PVC Insulation and Sheath to Cracking (Heat Shock Test) | IEC 60227-1: 2007<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-509:2012<br>DDS-8:2007<br>DDS-82:2007 and P-29:2010<br>BS 6004:2012<br>BS6346:1997 |
|                                      |   | Flexing test of completed cable  | IEC 60227-1: 2007<br>IEC 60227-2:1997 + A1:2003<br>IEC 60227-5:2011<br>BS 6004:2012   |
|                                      |   | Test of flame retardance of completed cable                                    | IEC 60227-1: 2007<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60332-1-1:2004<br>IEC 60332-1-2:2004<br>BS 6004:2012<br>BS6346:1997                      |
|                                      |   | Water absorption test  | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-402:2012<br>DDS-8:2007<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341,81B,45B,67B&S307<br>BS 6004:2012<br>BS6346:1997   |
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| <b>Electric Cables<br/>(Cont....)</b>                          | <b>Electrical &amp;<br/>Mechanical<br/>Properties</b> | Colour fastness test for insulation & sheath  | DDS-8:2007  |
|  |   | Hot Set Test for cross linked materials   | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-507:2012<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341&S307<br>BS 6004:2012<br>BS6346:1997                       |
|  |   | Shrinkage test for insulation and sheath  | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>IEC 60811-502:2012<br>IEC 60811-503:2012<br>DDS-82:2007<br>P-29:2010<br>KE-Spec:253,341&S307<br>BS 6004:2012<br>BS6346:1997 |
|  |   | Bending test of completed cable   | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>KE-Spec:253,341 &S307   |
|  |   | Measurement of the thickness & resistivity of semi conducting screens over insulation and conductor | IEC 60502-2:2014<br>P-29:2010   |
|  |   | Thermal stability test for PVC insulation and sheath  | IEC 60227-1: 2007<br>IEC 60227-3:1993 + A1:1997<br>IEC 60227-4:1992 + A1:1997<br>IEC 60227-5:2011<br>IEC 60811-405:2012   |
|  |   | Additional ageing test on pieces of completed cables /compatibility test                            | IEC 60502-1:2004 + A1:2009<br>IEC 60502-2:2014<br>P-29:2010,BS6004:2012,BS6346:97   |
|  |   | Electrical Resistivity/ Conductivity Test   | ASTM B193<br>P-44-96  |
|  |   | <b>Electric Fans</b>  | <b>Safety<br/>Testing</b>   |
| Marking and instructions                                       |   |   |   |
| Protection against access to live parts                        |   |   |   |
| Power input and current  |   |   |   |
| Heating  |   |   |   |
| Leakage current and electric strength at operating temperature |   |   |   |
| Transient over voltages  |   |   |   |
| Moisture resistance  |   |   |   |
| Leakage current and electric strength                          |   |   |   |

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| <p><b>Electric Fans</b><br/>(Cont....)</p>     | <p><b>Safety Testing</b><br/>(Cont....)</p> | <p>Abnormal operation</p> <p>Stability and mechanical hazards</p> <p>Mechanical strength</p> <p>Construction</p> <p>Internal wiring</p> <p>Components</p> <p>Supply connection and external flexible cords</p> <p>Terminals for external conductor</p> <p>Provision of earthing</p> <p>Screws and connections</p> <p>Clearances, creepage distance and solid insulation</p> <p>Resistance to heat and fire</p> <p>Resistance to rusting</p> <p>Radiation, toxicity and similar hazards</p> | <p>IEC 60335-1:2016<br/>IEC 60335-2-80:2015<br/>Excluding Clause:19.11.4</p> |
|  | <p><b>Performance Testing</b></p>           | <p>Marking</p> <p>Test of Air Performance (Air Delivery Test)</p> <p>Measurement of Speed of the Fan</p> <p>Measurement of Power Factor</p> <p>Measurement of Power Input</p> <p>Service Value</p>   | <p>IEC 60879:1986<br/>PS-1:2010</p>  |
| <p><b>Self Ballasted Fluorescent Lamps</b></p> | <p><b>Safety Testing</b></p>                | <p>Marking</p> <p>Interchangeability, mass bending moment</p> <p>Protection against Electric Shock</p> <p>Insulation Resistance and Electric Strength</p> <p>Mechanical Strength</p> <p>Cap Temperature Rise</p>   | <p>IEC 60968:2015</p>  |

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| <b>Self Ballasted<br/>Fluorescent Lamps</b>             | <b>Safety<br/>Testing<br/>(Cont....)</b> | Resistance to Heat                                 | IEC 60968:2015   |
|   |  | Resistance to Flame and Ignition                   |  |
|   |  | Creepage distances and clearance                   |  |
|   |  | Photo-biological safety                            |  |
| <b>Self Ballasted<br/>Compact<br/>Fluorescent Lamps</b> | <b>Performance<br/>Testing</b>           | Marking  | IEC 60969 :2016  |
|   |  | Initial power                                      |  |
|   |  | Initial luminous flux                              |  |
|   |  | Chromaticity coordinates                           |  |
|   |  | Colour rendering index (CRI)                       |  |
|   |  | Starting time                                      |  |
|   |  | Low temperature and low supply<br>voltage starting |  |
|   |  | run-up time  |  |
|   |  | Lumen Maintenance                                  |  |
|   |  | Premature lamp failure rate                        |  |
|   |  | Life time  |  |
|   |  | Switching withstand                                |  |
| Dimensions  |  |  |  |
| <b>Double Capped<br/>Fluorescent Lamps</b>              | <b>Performance<br/>Testing</b>           | Caps   | IEC 60081 :1997 + A1:2000 +<br>A2:2003 + A3:2005 + A4:2010 +<br>A5:2013+ A6:2017 |
|   |  | Dimensions   |  |
|   |  | Starting Characteristics                           |  |
|   |  | Electrical & Cathode Characteristics               |  |
|   |  | Photometric Characteristics                        |  |
|   |  | Lumen Maintenance                                  |  |
|   |  | Marking  |  |

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| <b>Ballasts for<br/>Tubular<br/>Fluorescent Lamps</b> | <b>Performance<br/>Testing</b> | Marking   | IEC 60921:2004 + A1:2006   |
|   |                                | Voltage at Terminations of Lamp or Starter (If any) |  |
|   |                                | Pre-Heating Conditions                              |  |
|   |                                | Lamps Power and Current                             |  |
|   |                                | Circuit Power Factor                                |  |
|   |                                | Supply Current                                      |  |
|   |                                | Maximum Current in any Lead to a Cathode            |  |
|   |                                | Magnetic Screening                                  |  |
| <b>Self-Ballasted<br/>LED-Lights</b>                  | <b>Performance<br/>Testing</b> | Marking   | IEC 62612:2015+A2:2015+<br>A3:2018<br>IEC62722-1:2011<br>IEC62722-2-1:2011 |
|   |                                | Dimensions  |  |
|   |                                | Lamp input  |  |
|   |                                | Light output  |  |
|   |                                | Colour nomenclature, variation and rendering        |  |
| <b>Household<br/>Refrigerator<br/>Appliances</b>      | <b>Performance<br/>Testing</b> | Storage Test  | IEC 62252-1 : 2015<br>IEC 62252-2 : 2015<br>IEC 62252-3 : 2015             |
|   |                                | Cooling Capacity Test                               |  |
|   |                                | Freezing Capacity Test                              |  |
|   |                                | Automatic Ice Making Capacity Test                  |  |
|   |                                | Pull Down Test                                      |  |
|   |                                | Temperature Rise Test                               |  |
|   |                                | Water Vapour Condensation Test                      |  |
|   |                                | Energy Consumption Test                             |  |
|   |                                | Volume Measurement                                  |  |
| <b>Current<br/>Transformer<br/>(LT, HT)</b>           | <b>Performance<br/>Testing</b> | Accuracy Limit Factor/ Instrument Security Factor   | IEC 61869-2:2012   |
|   |                                | Composite Error                                     |  |

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