

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 041
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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 **02-05-2026**.

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

08-06-2023

Date

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Director General



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Testing Laboratory.

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

Permanent laboratory premises

Materials/ Products tested	Testing field	Types of test/ Properties measured	Reference to standardized method / Internal method reference (Latest Editions)
Electric Cables (Cont....)	Electrical & Mechanical Properties	Electrical Resistance of conductors	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 BS EN 60228:2005 DDS-8:2007 DDS-82:2007 P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS 6346 :1997
		Voltage test on cores	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992+ A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 DDS-82:2007 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997
		Voltage test on completed cable	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 DDS-82:2007 P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997

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Electric Cables (Cont.....)	Electrical & Mechanical Properties	Long term resistance to DC	BS6004 :2012 +A1 :2020
		Insulation Resistance Test	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 DDS-82:2007 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997
		Resistivity of extruded semi conducting screen applied over conductor and insulation	IEC 60502-2:2014 P-29:2010
		Checking of compliance with constructional provisions	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007; DDS-82:2007 P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997
		Measurement of Insulation Thickness	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-201:2012 /AMD1:2017 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007; DDS-82:2007 P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997
Measurement of Sheath Thickness	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-202:2012/AMDI:2017 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007; DDS-82:2007; P-29:2010 BS6004 :2012 +A1 :2020 ; BS6346:1997		

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Electric Cables (Cont....)	Electrical & Mechanical Properties	Measurement of separation sheath/ bedding thickness	IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 P-29:2010 BS6346:1997
		Measurement of overall diameter	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-203:2012 DDS-8:2007 P-29:2010, KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 & BS6346:1997
		Thickness of extruded inner covering	IEC 60502-1:2021 IEC 60502-2:2014 BS6346:1997
		Diameter of armoured wires and tapes	IEC 60502-1:2021 IEC 60502-2:2014 BS6346:1997 DDS-8:2007 and P-29:2010
		Ovality	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 BS6004 :2012 +A1 :2020
		Tensile strength and %age elongation of insulation before and after ageing	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-501 :2012 IEC 60811-401 :2012 DDS-8:2007; DDS-82:2007; P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020;BS6346:1997
		Tensile strength and %age elongation of Sheath before and after ageing	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-501 :2012 IEC 60811-401:2012 DDS-8:2007; DDS-82:200; P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997

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Electric Cables (Cont....)	Electrical & Mechanical Properties	Loss of mass test on insulation and Sheath	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-409:2012 DDS-8:2007 DDS-82:2007 and P-29:2010 BS6004 :2012 +A1 :2020 BS6346:1997
		Pressure test at high temperature on Insulation and Sheath	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-508:2012 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 DDS-82:2007 P-29:2010 BS6004 :2012 +A1 :2020 BS6346:1997
		Cold Bend test of insulation and Sheath at low temperature	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-504:2012 DDS-8:2007 and DDS-82:2007 BS6004 :2012 +A1 :2020 BS6346:1997
		Cold Elongation test of insulation and Sheath at low temperature	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-505:2012 IEC 60502-1:2021 IEC 60502-2:2014 DDS-8:2007 DDS-82:2007 P-29:2010 BS6004 :2012 +A1 :2020 BS6346:1997
		Impact test of PVC insulation and Sheath at low Temperature	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-506:2012 and P-29:2010 BS6004 :2012 +A1 :2020 BS6346:1997

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Electric Cables (Cont...)	Electrical & Mechanical Properties	Test for resistance of PVC Insulation and Sheath to Cracking (Heat Shock Test)	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-509:2012 DDS-8:2007 DDS-82:2007 and P-29:2010 BS6004 :2012 +A1 :2020 BS6346:1997
		Flexing test of completed cable	IEC 60227-1: 2007 IEC 60227-2:1997 + A1:2003 IEC 60227-5:2011 BS6004 :2012 +A1 :2020
		Test of flame retardance of completed cable	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60502-1:2021 IEC 60502-2:2014 IEC 60332-1-1:2004/AMD1:2015 IEC 60332-1-2:2004/AMD1:2015 BS6004 :2012 +A1 :2020 BS6346:1997
		Water absorption test	IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-402:2012 DDS-8:2007; DDS-82:2007 P-29:2010 KE-Spec:253,341,81B,45B,67B&S307 BS6004 :2012 +A1 :2020 BS6346:1997
		Colour fastness test for insulation & sheath	DDS-8:2007
		Hot Set Test for cross linked materials	IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-507:2012 DDS-82:2007 P-29:2010 KE-Spec:253,341&S307 BS6004 :2012 +A1 :2020 BS6346:1997
		Shrinkage test for insulation and sheath	IEC 60502-1:2021 IEC 60502-2:2014 IEC 60811-502:2012 IEC 60811-503:2012 DDS-82:2007 P-29:2010 KE-Spec:253,341&S307 BS6004 :2012 +A1 :2020 BS6346:1997

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Electric Cables	Electrical & Mechanical Properties	Bending test of completed cable	IEC 60502-1:2021 IEC 60502-2:2014 KE-Spec:253,341 &S307
		Measurement of the thickness & resistivity of semi conducting screens over insulation and conductor	IEC 60502-2:2014 P-29:2010
		Thermal stability test for PVC insulation and sheath	IEC 60227-1: 2007 IEC 60227-3:1993 + A1:1997 IEC 60227-4:1992 + A1:1997 IEC 60227-5:2011 IEC 60811-405:2012
		Additional ageing test on pieces of completed cables /compatibility test	IEC 60502-1:2021 IEC 60502-2:2014 P-29:2010, BS6004 :2012 +A1 :2020 ,BS6346:1997
		Electrical Resistivity/ Conductivity Test	ASTM B193 P-44:96
Electrical/Medical Appliances	Safety Testing	Classification	IEC 60335-1: 2020/ISH1:2021 IEC 60335-2-80: 2015 IEC 60335-2-24: 2020/COR1:2021 IEC 60335-2-89: 2019/COR2:2021 IEC 60335-2-88: 2002 IEC 60335-2-7: 2019 IEC 60335-2-5: 2012/AMD/COR 1:2018 IEC 60335-2-98: 2002AMD 2:2008 Excluding Clause: 19.11.4 IEC 60601-1: 2023 IEC60601-2-2: 2017/AMD1:2023 Excluding Clause: 201.8.8.103, 201.10.201.17& 202
		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	
		Abnormal operation	
		Stability and mechanical hazards	
		Mechanical strength	
		Construction	
		Internal wiring	
		Components	
		Supply connection and external flexible cords	
		Terminals for external conductor	
		Provision of earthing	
		Screws and connections	
Clearances, creepage distance and solid insulation			
Resistance to heat and fire			
Resistance to rusting			
Radiation, toxicity and similar hazards			

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Electric Fans	Performance Testing	Noise & Electronic Interface	IEC 60879: 2019 PS-1:2021
		Speed Regulator	
		Remote Control Unit	
		Marking	
		Insulation Test	
		Test of Air Performance (Air Delivery Test)	
		Temp. Rise Test	
		Starting Test	
		Fan Speed and Input Test	
		Test of Remote Control Operation	
		Service Value	
Self Ballasted Fluorescent Lamps	Safety Testing	Marking	IEC 60968:2015
		Interchangeability, mass bending moment	
		Protection against Electric Shock	
		Insulation Resistance and Electric Strength	
		Mechanical Strength	
		Cap Temperature Rise	
		Resistance to Heat	
		Resistance to Flame and Ignition	
		Creepage distances and clearance	
		Photo-biological safety	
Self-Ballasted Compact Fluorescent Lamps	Performance Testing	Marking	IEC 60969 :2016
		Initial power	
		Initial luminous flux	
		Chromaticity coordinates	
		Colour rendering index (CRI)	
		Starting time	
		Low temperature and low supply voltage starting	
		run-up time	
		Lumen Maintenance	
		Premature lamp failure rate	
		Life time	
		Switching withstand	
Dimensions			

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Double Capped Fluorescent Lamps	Performance Testing	Caps	IEC 60081 :1997 /AMD 6:2017
		Dimensions	
		Starting Characteristics	
		Electrical & Cathode Characteristics	
		Photometric Characteristics	
		Lumen Maintenance	
		Marking	
Ballasts for Tubular Fluorescent Lamps	Performance Testing	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	
Self-Ballasted LED-Lights	Performance Testing	Marking	IEC 62612:2018 IEC 62722-1:2022 IEC 62722-2-1:2023
		Dimensions	
		Lamp input	
		Light output	
		Colour nomenclature, variation and rendering	
Household Refrigerator Appliances	Performance Testing	Storage Test	IEC 62552-1 : 2015/ AMD 1:2020 IEC 62552-2 : 2015/ AMD 1:2020 IEC 62552-3 : 2015/ AMD 1:2020
		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	
Current Transformer (LT, HT)	Performance Testing	Accuracy Limit Factor/ Instrument Security Factor	IEC 61869-2:2012/ISH1:2022
		Composite Error	

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Electric Motor	Performance Testing	Winding resistance	IEC 60034-1: 2022 IEC60034-30-1:2014 IEC 60034-2-1:2014 IEC60034-5: 2020 IEC 60529:2020
		No Load test	
		Full load test	
		Efficiency	
		Speed	
		IP test	
Mechanical/ Material Testing	--	Colour stability test	SASO-ISO 22991:2019

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