सत्यमेव जयते

दूरसंचार उपकरणों की सुरक्षा आवश्यकताएँ

SAFETY REQUIREMENTS OF TELECOMMUNICATION EQUIPMENT

दस्तावेज़ सं. : TEC10009:2024

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ISO 9001:2015

दूरसंचार अभियांत्रिकी केंद्र

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FOREWORD

Telecommunication Engineering Centre (TEC) is the technical arm of Department of Telecommunications (DOT), Government of India. Its activities include:

- Framing of TEC Standards for Generic Requirements for a Product/Equipment, Standards for Interface Requirements for a Product/Equipment, Standards for Service Requirements & Standard document of TEC for Telecom Products and Services
- Formulation of Essential Requirements (ERs) under Mandatory Testing and Certification of Telecom Equipment (MTCTE)
- Field evaluation of Telecom Products and Systems
- Designation of Conformity Assessment Bodies (CABs)/Testing facilities
- Testing & Certification of Telecom products
- Adoption of Standards
- Support to DoT on technical/technology issues

For the purpose of testing, four Regional Telecom Engineering Centers (RTECs) have been established which are located at New Delhi, Bangalore, Mumbai, and Kolkata.

ABSTRACT

This document pertains to Safety Requirements for various telecom equipment and ancillary equipment in general, including radio-communication equipment.

CONTENTS

HISTORY SHEET

Sl.No.	Standard / document No.	Title	Remarks
1	TEC/R/Safety/2015	Template for Safety Requirements for telecom equipment	Part of General Requirement for Transmission Equipment issued
2.	TEC10009:2024	Safety Requirements Of Telecom Equipment	Release 1: April, 2024

REFERENCES

S.No.	*Document No.*	*Title/Document Name*
1.	IS/IEC 62368-1:2023	Audio/video, information and communication technology equipment - Part 1: Safety requirements
2.	IEC 60215 : 2016/ IS 10437 : 2019	Safety requirements for radio transmitting equipment - General requirements and terminology (Second Revision)
3.	IEC 60825:2014	Safety of laser products - Part 1: Equipment classification and requirements
4.	IS 16444	A.C. Static direct connected WATTHOUR Smart Meter - Class 1 and Class 2
5.	IS 16242 (Part 1) : 2014/ IEC 62040-1 : 2008	Uninterruptible power systems (UPS) - Part 1: General and safety requirements for UPS
6.	IS 17724 (Part 1) : 2023/ IEC 61010-1: 2010 + AMD1:2016 + COR1:2019)	Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1 General requirements
7.	IS 16046 (Part 2) : 2018 IEC 62133-2 : 2017	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
8.	IS 16894 (Part 4) : 2018 IEC 62485-4 : 2015	Safety Requirements for Secondary Batteries and Battery Installations Part 4 Valve - Regulated Lead - Acid Batteries for use in Portable Appliances
9.	IS/IEC 61204 : Part 7 : 2016	Low-voltage switch mode power supplies - Part 7: Safety requirements

10.	IEC 62619	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Safety Requirements of Telecommunication Equipment

1.0 Scope

1.1 This document specifies safety requirements and covers the assessment of all type of telecom equipment and ancillary equipment in general, including radio-communication equipment, in respect of safety.

1.2 This document also covers safety requirements for other equipment to be used in telecommunication premises i.e. uninterruptible power systems, Low-Voltage switch mode power supplies, Secondary Batteries and Battery Installations etc.

1.3 The safety requirements covered in this document, consider safety of Users (or operators) and Service persons.

USER is the term applied to all persons other than Service Persons. Requirements for protection should assume that USERS are not trained to identify hazards, but will not intentionally create a hazardous situation. Consequently, the requirements will provide protection for persons who may have access to the equipment or who may be in the vicinity of the equipment as well as the assigned users.

Service persons are expected to use their training and skill to avoid possible injury to themselves and others due to obvious hazards that exist in service access areas of the equipment or on equipment located in restricted access locations.

1.4 Detailed safety requirements for various type of equipment, wherever applicable, are mentioned in Table-I. The safety requirements mentioned in this documents will provide safeguard to users/service persons from risk of injury or damage that may occur due to followings:

- Electric shock
- Electrically-caused fire
- Mechanical Hazards
- Thermal Hazards (Skin burn)
- Radiation Hazards
- Chemical Hazards

Table-1

S. No.	Category of Equipment	Description	Standard	Limits/Values	Applicability/ Remarks
1.	Audio / Video, Information and Communication Technology Equipment	Indoor and Outdoor use Equipment	IS/IEC 62368-1:2018 or Latest	Compliance to clauses applicable to the EUT	Applicable to all Telecommunication equipment and their ancillary equipment. For outdoor equipment, Annexure Y of IEC 62368-2018 is mandatory requirement.
2.	Radio Transmitting Equipment (Other than CPE)	Radio equipment basedRF Amplifiers	IS 10437 : 2019/ IEC 60215 : 2016	Compliance to clauses applicable to the EUT	Applicable to Radio Transmitting Equipment operating under responsibility of skilled person. Not applicable to battery powered transmitters, Class-II equipment, radio base stations and Fixed terminal stations for wireless telecommunications.
3.	Optical Communication Equipment	Optical, Electrical, or Mechanical system emitting laser radiation	IEC 60825-1:2014	Compliance to clauses applicable to the EUT	Applicable for products emitting laser radiation
			IEC 60825-2:2021		Applicable for optical fibre communication systems (OFCSs)

4.	Smart Electricity Meter	Electricity Meter with communication Module	IS 16444	Compliance to clauses applicable to the EUT	If Smart Electricity Meter is to be tested along with communication module, then safety must be as per prevailing IS 16444.
5.	Uninterruptible power systems (UPS)	UPS systems	IS 16242 (Part 1) : 2014/ IEC 62040-1 : 2017+ AMD1:2021+ AMD2:2022	Compliance to clauses applicable to the EUT	Applicable for movable, stationary, fixed or built-in UPS for use in low-voltage distribution systems
6.	Electrical Equipment for Measurement, Control, and Laboratory Use	Measurement equipment like EMF measuring instrument, Spectrum Analyzer	IS 17724 (Part 1) : 2023/ IEC 61010-1: 2010 + AMD1:2016 + COR1:2019)	Compliance to clauses applicable to the EUT	Applicable for all type of Equipment for Measurement, Control, and Laboratory Use
7.	Secondary cells and batteries containing alkaline or other non-acid electrolytes	Portable Sealed Secondary Cells and for Batteries Made from Them for	IS 16046 (Part 2) : 2018 IEC 62133-2 : 2017	Compliance to clauses applicable to the EUT	Applicable only if it is portable equipment and uses secondary cells and batteries containing alkaline or non-acid electrolyte.

		Use in Portable Applications (Lithium Systems)			
		secondary lithium cells and batteries, for use in industrial applications	IEC 62619	Compliance to clauses applicable to the EUT	Applicable for secondary lithium cells and batteries in stationary equipment i.e. telecom, uninterruptible power supplies (UPS), electrical energy storage system, utility switching, emergency power, and similar applications
8.	Secondary Batteries and Battery Installations	Valve - Regulated Lead - Acid Batteries for use in Portable Appliances	IS 16894 (Part 4) : 2018 IEC 62485-4 : 2015	Compliance to clauses applicable to the EUT	Applicable for Valve - Regulated Lead - Acid Batteries for use in Portable Appliances
9.	Low-Voltage switch mode power supplies	Stand-alone and component SMPS	IS/IEC 61204 : Part 7 : 2016	Compliance to clauses applicable to the EUT	Applicable for Switch Mode Power Supply (SMPS) units supplied by source voltages up to 1 000 V AC or 1 500 V DC providing AC and/or DC output(s), except inverter output(s) establishing AC mains.

Application Note

The safety requirements standards mentioned in this document, consider all type of telecom equipment including switching, transmission, power, Radio base stations, fixed radio links equipment, short-range devices, mobile broadband access devices, wireless LAN, digital subscriber line (xDSL) etc. along with their ancillary equipment and can be used for suitable incorporation, wherever applicable, in the relevant TEC GR/ER document of the equipment/category of equipment.

A sample template for safety requirements which may be included in the TEC GR/ER document of a particular equipment/equipment category is mentioned as:

> "The equipment shall conform to relevant safety requirements as per (specify the standard name as per Table no. 1) as prescribed under Table no. 1 of the TEC document 'SAFETY REQUIREMENTS OF TELECOMMUNICATION EQUIPMENT*":* TEC10009: 2024."

ABBREVIATIONS

For the purpose of this document, the following abbreviations apply:

CPE	Customer Premises Equipment
EMF	Electromagnetic Field
EUT	Equipment Under Test
IEC	International Electrotechnical Commision
IS	Indian Standard
RF	Radio Frequency
SMPS	Switch Mode Power Supply

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