

The Standards Report

Quarter 4 | 2024

The latest industry changes and what they mean to you

IEEE 802.3 (Ethernet)

Published Amendments to IEEE 802.3™-2018 (since last report):

- **IEEE Std. 802.3df™-2024**
 - IEEE Standard for Ethernet - Media Access Control Parameters for 800 Gb/s and Physical Layers and Management Parameters for 400 Gb/s and 800 Gb/s Operation.

ACTIVE IEEE 802.3 PROJECTS:

- **IEEE P802.3da 10 Mb/s Single Pair Multidrop Segments Enhancement**
 - This project supports 10 Mb/s single pair Ethernet mixing segments (multi-drop), including optional power delivery supporting multiple powered devices.
- **IEEE P802.3dg 100 Mb/s Long-Reach Single Pair Ethernet Task Force**
 - This project is for the Physical Layer Specifications and Management Parameters for 100 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of Conductors to a distance of 500 meters.
- **IEEE P802.3dj 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet Task Force**
 - Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber physical medium dependent (PMD) sublayers based on 200 Gb/s or greater per lane signaling technologies.
- **IEEE P802.3dk Greater than 50 Gb/s Bidirectional Optical Access PHYs Task Force**
 - Define physical layer specifications and management parameters for symmetric bidirectional operation at greater than 50 Gb/s over a single strand of single mode fiber of at least 10 km.

Next Meetings:

- Plenary: March 9-14, 2025, Atlanta, GA
- Interim: January 20-24, 2025, Phoenix, AZ

IEEE 802.11 (Wireless)

Recently Published

- **IEEE P802.11be Extremely High Throughput WLAN (Wi-Fi 7)**
 - This standard supports wireless Ethernet operations in the 1 GHz, 7.25 GHz, 2.4 GHz, 5 GHz, and 6 GHz frequency bands, with a maximum throughput of 30 Mb/s.

TIA TR 42

Recently Published

- **ANSI/TIA-570-E: Residential Telecommunications Infrastructure Standard (latest revision)**
- **ANSI/TIA-942-C: Telecommunications Infrastructure Standard for Data Centers**
- **ANSI/TIA-607-E: Generic Telecommunications Bonding & Grounding (Earthing) For Customer Premises**

TR 42.1 - Generic Telecommunications Cabling and Premises Cabling

- **ANSI/TIA-758-C (Customer Owned OSP)** This Standard specifies minimum requirements for customer-owned outside plant (OSP) telecommunications facilities in a campus environment. It specifies the cabling, pathways, and spaces to support the cabling. Customer-owned OSP cabling extends between separated structures including the terminating connecting hardware at or within the structures. The OSP pathway includes the pathway through the point of entry into the building space. Customer-owned OSP pathways can include aerial, direct-buried, underground (e.g., duct), and tunnel distribution techniques.
- **ANSI/TIA-5017-A (Physical Network Security)** This document covers the security of telecom cables, pathways, spaces, & other elements of the physical infrastructure. It includes design guidelines, installation practices, administration, & management. It addresses guidelines for new construction as well as renovation of existing buildings. The document also provides installation guidelines for implementing cabling systems for premise security systems with an integrated security approach. The Standard enables the planning and installation of physical network security systems that protect critical telecommunications infrastructure elements. The document is being updated with additional clarification on the levels of security needed for the structured cabling media and spaces, as well as any critical data infrastructure (data centers, equipment rooms, etc.) with the addition of risk and threat assessment criteria and appropriate mitigation measures to incorporate.
- **TSB-6000 (Application Channel Attenuation and Supportable Distances)** This document provides tables of a comprehensive list of networking applications with the officially supported distances over the specified cabling media (copper and fiber). It is intended that this document be made available at no cost on the TIA website as a general reference resource. Approved for publishing.
- **TIA-TSB-162-B (Wireless Access Points)** A project for a -C revision has been approved and a new editor assigned. This will be the required 5-year maintenance work on the document. The committee approved a call for comments ballot that closes in January 2025.

- **TIA-568.1-F (Consolidation of 568.0, 568.1, and 862)** Committee approved a call for comments on first draft that closes in January before the next meeting.

TR-42.3 – Telecommunications Administration, Pathways, Spaces, Bonding and Grounding

- **ANSI/TIA-569-F (Pathways and Spaces)** Committee approved a call for comments to be reviewed in the January meeting. Changes to this version will include:
 - Updating of references.
 - Incorporation of revised temperature and humidity requirements of ANSI/TIA-569-E-1.
 - Reversion to non-generic terminology for telecommunications spaces.
 - Addition of normative annex covering generic terminology and requirements for telecommunications spaces for use by referencing standards.
- **TIA-606 (Administration)** A contribution was made on examples of labelling methods to identify the physical location of an equipment outlet using geographical identifiers for large campus or military compound networks. The committee approved a project request and a call for comments ballot.
- **TIA-5048 (Automated Infrastructure Management)** This document was reaffirmed as is and approved to be published.

TR-42.5 – Telecommunications Infrastructure Terms and Symbols

No new definitions or acronyms were submitted for approval and addition to the dictionary at this meeting.

TR 42.7 – Telecommunications Copper Cabling Systems

The following documents were submitted to TIA for publication:

- **TIA-TSB-184-A-2 (Guidelines for Supporting Power Delivery over Balanced Single Twisted-Pair Cabling)** Addendum 2.
- **TSB-190 (Guidelines on Shared Pathways and Shared Sheaths)** Notably this document does not include the use of a 4-pair cable to support four single-pair channels. This topic will be discussed separately.
- **ANSI/TIA-568.2-E (Balanced Twisted-Pair Telecommunications Cabling and Components Standard)**
- **ANSI/TIA-568.5-1 (Balanced Single Twisted-Pair Telecommunications Cabling and Components Standard)** Addendum 1: Technical Corrections to Transmission Requirements.

TR 42.7 Active Projects:

- **ANSI/TIA-568.6 (Single Pair Multi-Drop (SPMD) Cabling and Component Specification)** Reviewed project scope and agreed to keep this project on the agenda even though there have been very few contributions on the topic. Expect to receive contributions for next meeting.
- **ANSI/TIA-568.5 (Single Balanced Twisted-Pair Cabling and Components)** Discussed creating an Amendment 2 to include SP-2 cable definition for E1 MICE environment and 100BASE-T1L (single pair cable with a reach of 500 meters). Expecting contributions on this as well as centralized cabling in relation to SPE in the January meeting.
- **ANSI/TIA-1152-A (Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling)** Discussed the need to make a decision to revise, reaffirm, or withdraw. Group to review the document to decide on how to move forward at the next meeting.
- **Consider Extended Distance of 4-pair Cabling** Reviewed contribution TR42.7-2024-10-026. The contribution presented the results of several studies on the capability of different cable types with different conductor sizes to support various Ethernet speeds and PoE power delivery at distances beyond 100 meters. Agreed to have a task group meet to develop a Whitepaper on Extended Distance (led by Bob Voss) and to develop a Scope for a TSB on extended distance.

TR-42.9 – Industrial Telecommunication Infrastructure

- **ANSI/TIA-1005-B (Telecommunications Infrastructure Standard for Industrial Premises)** Comments to the industry ballot were resolved. Deferred document resolution pending TIA-568.7 approval.
- **ANSI/TIA-568.7 (Balanced Single Twisted-Pair Communications Cabling and Components Standard for Industrial Premises)** Ballot comment resolution began, but could not all be addressed so the rest will be addressed at an interim meeting on October 31st. The committee reviewed a contribution advocating for a potential new project for 100Mbps, 500 meter Single Pair Ethernet cabling to support the IEEE project for this speed and reach.

TR-42.11 –Optical Fiber Systems

- **ANSI/TIA-568.3-E-1 (Optical Fiber Cabling and Components Standard)** Addendum 1: The second round of comments were reviewed. Most of the comments/discussion revolved around various elements of polarity – how is it called out, what does it look like in diagrams, how to incorporate VSFF terminology, etc. A 3rd “Call for Comments” will be issued to continue to get industry input.
- **ANSI/TIA-526-28 (Attenuation Measurement of MPO)** Motion passed to approve a project to ballot and revise the document.
- **ANSI/TIA-526-2-A (Power Coupled into Single-Mode Fiber Optic Cable)** Motion passed to approve a project to ballot and revise the document.

TR-42.12 –Optical Fibers and Cables

Most of the activity has been to review the documents that have been past due for action.

The following documents have been published in 2024:

- **ANSI/TIA-455-3-C FOTP-3** Procedure to Measure Temperature Cycling Effects on Optical Fiber Units, Optical Cable, and Other Passive Fiber Components
- **ANSI/TIA-455-37-B FOTP-37** Low or High Temperature Bend Test for Fiber Optic Cable
- **ANSI/TIA-455-81-C FOTP-81** Compound Flow (Drip) Test for Filled Fiber Optic Cable
- **ANSI/TIA-455-203-B FOTP-203** Light Source Encircled Flux Measurement
- **ANSI/TIA-455-204-B FOTP 204** Bandwidth Measurement

The following documents were reaffirmed during 2024:

- **ANSI/TIA-455-C** General requirements for standard test procedures for optical fibers, cables, transducers, sensors, connecting and terminating devices, and other fiber optic components
- **ANSI/TIA-455-16-A FOTP-16 Salt Spray (Corrosion)** Test for Fiber Optic Components
- **ANSI/TIA-455-25-D FOTP-25** Impact Testing of Optical Fiber Cables
- **ANSI/TIA-455-56-C FOTP-56** Test Method For Evaluating Fungus Resistance of Optical Fiber and Cable
- **ANSI/TIA 455-62-C FOTP-62** Optical Fibres — Macrobending Loss
- **ANSI/TIA 455-67-B FOTP-67** Optical Fibres — Dry Heat
- **ANSI/TIA 455-74-FOTP-74** Optical Fibres — Water Immersion
- **ANSI/TIA 455-78-C FOTP-78** Optical Fibres — Attenuation
- **ANSI/TIA 455-80-D FOTP-80** Measurement Methods and Test Procedures- Cut-off Wavelength
- **ANSI/TIA 455-82-C FOTP-82** Fluid Penetration Test for Fluid-Blocked Fiber Optic Cable
- **ANSI/TIA-455-86-A FOTP-86** Optical Fiber Cable Jacket Shrinkage
- **ANSI/TIA 455-95-B FOTP-95** Absolute Optical Power Test for Optical Fibers and Cables
- **ANSI/TIA-455-104-B FOTP-104** Fiber Optic Cable Cyclic Flexing Test

- **ANSI/TIA 455-122-C FOTP-122** Measurement Methods and Test Procedures-Polarization Mode Dispersion
- **ANSI/TIA 455-175-C FOTP-175** Measurement Methods and Test Procedures — Chromatic Dispersion
- **ANSI/TIA 455-176-B FOTP-176** Measurement Methods and Test Procedures — Fibre Geometry
- **ANSI/TIA 455-177-C FOTP-177** Measurement Methods and Test Procedures — Numerical Aperture
- **ANSI/TIA 455-178-C-2021 FOTP-178 IEC 60793-1-32** Optical Fibres — Part1-32: Measurement Methods and Test Procedures — Coating Strippability
- **ANSI/TIA 455-191-C FOTP-191** Measurement Methods and Test Procedures — Mode Field Diameter
- **ANSI/TIA-455-203-B FOTP-203** Light Source Encircled Flux Measurement Method
- **ANSI/TIA-455-204-B FOTP 204** Measurement methods and test procedures – Bandwidth
- **ANSI/TIA 455-244-A FOTP-244** Methods for Measuring the Change in Transmittance of Optical Fibers in Expressed Buffer Tubes When Subjected to Temperature Cycling Revision

The following documents are open for review:

- **TIA-455-33-B FOTP-33** Optical Fiber Cable Tensile Loading and Bending Test
- **TIA-455-41-A FOTP-41** Compressive Loading Resistance of Optical Fiber Cables
- **TIA-455-71 FOTP-71** Procedure to Measure Temperature- Shock Effects on Fiber Optic Components
- **TIA-455-85 FOTP-85** Fiber Optic Cable Twist Test
- **TIA-455-87-B FOTP-87** Fiber Optic Cable Knot Test
- **TIA-455-88 FOTP-88** Fiber Optic Cable Bend Test
- **TIA-455-89-B FOTP-89** Optical Fiber Cable Jacket Elongation and Tensile Strength
- **TIA-455-91 FOTP-91** Fiber Optic Cable Twist-Bend Test
- **TIA-455-98 FOTP-98** Fiber Optic Cable External Freezing Test
- **TIA-455-162-A FOTP-162** Optical Fiber Cable Temperature Humidity

TR 42.13 – Passive Optical Devices and Fiber Optic Metrology

Most of the activity has been to review the documents that have been past due for action. Several IEC standards related to optical interfaces are in the process of being adopted into a new section of TIA standards (TIA-623).

The following documents have been published in 2024:

- **ANSI/TIA-455-224-A FOTP-224** Calibration of Fibre-Optic Chromatic Dispersion Test Sets
- **ANSI/TIA-455-225-A FOTP-225** End-Face Image Analysis Procedure for the Calibration of Optical Fibre Geometry Test Sets
- **ANSI/TIA-455-231-A FOTP-231** Calibration of Fibre-Optic Power Meters

The following documents were reaffirmed during 2024:

- **ANSI/TIA-455-171-B FOTP-171** Attenuation by Substitution Measurement for Short Length Multimode Graded Index and Single-Mode Optical Fiber Cable Assemblies
- **ANSI/TIA-604-5-F FOCIS 5** Fiber Optic Connector Interchangeability Standard — Type MPO
- **ANSI/TIA-604-18-A FOCIS 18** Fiber Optic Connector Interchangeability Standard — Type MPO-16

The following documents are open for review:

- **TIA-455-11-E FOTP-11** Vibration Test Procedure for Fiber Optic Components and Cables
- **ANSI/TIA-604-10-D FOCIS 10** Fiber Optic Connector Interchangeability Standard — Type LC
- **ANSI/TIA-604-19 FOCIS 19** Fiber Optic Connector Interchangeability Standard — Type SEN

ISO/IEC JTC1/SC25 WG3 - CUSTOMER PREMISES CABLING**Active Projects:**

- **ISO/IEC 11801-1/AMD1 ED1: Amendment 1 - Information technology - Generic cabling for customer premises - Part 1: General requirement**
 - Circulated to National Committees as draft standard for comment and vote
- **ISO/IEC 11801-6 - Distributed Building Services**
 - The number of service outlets per room was changed from a required calculation to a recommended list of potential applications in each room. Shared sheath references were strengthened to state that cables used for shared sheath applications shall comply with the shared sheath specifications of ISO/IEC 11801-1.
 - All comments were resolved, and another CD will be circulated.
 - Channel and Permanent Link discrepancies in ISO/IEC cabling standards.
 - A contribution from the previous meeting highlighted discrepancies in the maximum calculated Channel and Permanent Link lengths between various ISO/IEC 11801 standards, ISO/IEC 14763-2, and other documents developed by WG3, due to inconsistent formulas for cord attenuation and temperature de-rating.
 - A new calculation formula will be proposed as a comment to the CDV of ISO/IEC 11801-1, with the intent to update the other documents over time to point to ISO/IEC 11801-1 for the length calculation.
- **ISO/IEC TS 11801-9903 - Matrix Modelling of channels and links**
 - All editorial comments were resolved, and some complex comments were deferred for a future edition. A New Proposal (NP) for a 2nd Edition will be circulated
 - ISO/IEC TS 11801-9903 Matrix Modelling of channels and links
 - All editorial comments were resolved, and some complex comments were deferred for a future edition.
 - A New Proposal (NP) for a 2nd Edition will be circulated
- **ISO/IEC TR 11801-9911 - Guidelines for use of balanced single pair applications in 4-pair cabling**
 - Technical comments were not discussed since only editorial comments were allowed at this stage The document was approved for publication as a Technical Report.
- **ISO/IEC 14763-2 - Installation**
 - There were many general comments on integrating and differentiating single pair cabling thermal performance with existing 4-pair cabling thermal specifications. These were deferred pending more specific proposals. Several comments to clarify the use of paper based, electronic, and automated documentation were resolved, with AIM systems required for level 3 installations. AIM system usage was expanded to cover documenting and administration of 4 pair cabling/equipment used for remote powering. All comments were resolved, and a new WD will be circulated.
- **ISO/IEC 14763-5 - Sustainability of Cabling Installations**
 - There were several comments and much discussion to remove or minimize the mention of cost as one of the considerations for sustainability. These were either rejected or accommodated by changing "cost" to "total cost" in some places. Comments to move skill set qualification and certification annexes to either the new ISO 14763-6 installation skills standard, or a "living list" were rejected since these annexes were first steps that need to be expanded in ISO 14763-6. All comments were resolved, and an FDIS will be circulated.
- **ISO/IEC 24383 - Network Physical Security (NPS)**
 - The scope was modified to exclude external events such as fire, flood, earthquake, explosion and natural disasters. Definitions for closures, frames and cabinets were added. Definitions for locks and access control systems were harmonized with definitions in (EN/IEC) 60839-11-1. Comments to focus the document on physical network security instead of cyber security were accepted. Comments to improve flexibility and allow customization of security to the particular risk assessment of the premise were accepted. Clarification text was added to require cabinets to be used where there is a security need instead of open racks and frames. The implication that different connector types be used for different classifications was deleted since it conflicts with the generic approach in the ISO/IEC 11801 series and ISO 14763-2. All comments were resolved, and another CD will be circulated.
- **ISO/IEC TS 29125 - Remote Powering**
 - Amendment 1 containing additional thermal performance specifications for single pair had only minor editorial comments and was approved for publication.
- **ISO/IEC 30129 - Bonding networks for buildings and other structures**
 - Several clarification comments related to scope, applicability, and purpose of the document were accepted with the clarification statement: "minimise the d.c. and a.c. potential differences in telecommunications networks due to electromagnetic disturbance, power trANSients, and other causes to reduce the risk of malfunction of equipment." The use of AIM system relating to administration of bonding cables and terminations was added as a consideration depending on the complexity of the installation. All comments were resolved, and another CDV will be circulated.
- **ISO/IEC TR 11801-9911 - Guidelines for use of balanced single pair applications in 4-pair cabling**
 - Technical comments were not discussed since only editorial comments were allowed at this stage. The document was approved for publication as a Technical Report.
- **prEN 50173-10:2024 Information technology - Generic cabling systems - Part 10: Single pair cabling**
 - Different from the ISO implementation as not included in EN 50173-1.
 - Has a different channel structure than ISO 11801-1.
 - Committee Draft Circulation.
- **prEN 50174-4 EN Implementation of ISO 14763-3 Testing of optical Fibre**
 - Committee Draft.

Key Cabling Standards

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TIA

Generic Standards

- **ANSI/TIA-568.0-E** Generic Premises Cabling
- **ANSI/TIA-569-E** Pathways and Spaces
- **ANSI/TIA-606-D** Administration
- **ANSI/TIA-607-D** Grounding and Bonding
- **ANSI/TIA-758-C** Outside Plant
- **ANSI/TIA-862-C** Intelligent Building Systems
- **ANSI/TIA-5017** Physical Network Security

Premises Standards

- **ANSI/TIA-568.1-E** Commercial Cabling
- **ANSI/TIA-570-E** Residential
- **ANSI/TIA-942-C** Data Center Cabling
- **ANSI/TIA-1005-A** Industrial Cabling
- **ANSI/TIA-1179-B** Healthcare
- **ANSI/TIA-4966-A** Education

Component Standards

- **ANSI/TIA-568.2-E** Copper Components
- **ANSI/TIA-568.3-D** Fiber Components
- **ANSI/TIA-568.4-D** Coaxial Components
- **ANSI/TIA-1152-A** Field Test Equipment 2GHz
- **ANSI/TIA-1183-A** Lab Test Equipment

Telecommunications System Bulletins

- **TIA TSB-162-B** Cabling for WAPs
- **TIA TSB-184-A** Power Delivery
- **TIA TSB-5018** DAS
- **TIA TSB-190-A** Guidelines on Shared Pathways and Shared Sheaths

ISO/IEC

Performance and Design

- **ISO/IEC 11801-1:2017/Cor 1**
Information technology — Generic cabling for customer premises — Part 1: General requirements Technical Corrigendum 1
- **ISO/IEC 18598:2016/Amd 1**
Information technology — Automated infrastructure management (AIM) systems — Requirements, data exchange and applications Amendment 1
- **ISO/IEC 30129:2015/Amd 1**
Information technology — Telecommunications bonding networks for buildings and other structures

Premises Standards

- **ISO/IEC 11801-2:2017/Cor 1**
Information technology — Generic cabling for customer premises — Part 2: Office premises — Technical Corrigendum 1
- **ISO/IEC 11801-3:2017/Amd 1**
Information technology — Generic cabling for customer premises — Part 3: Industrial premises Amendment 1
- **ISO/IEC 11801-4:2017/Cor 1**
Information technology — Generic cabling for customer premises — Part 4: Single-tenant homes Technical Corrigendum 1
- **ISO/IEC 11801-5:2017/Cor 1**
Information technology — Generic cabling for customer premises — Part 5: Data centres Technical Corrigendum 1
- **ISO/IEC 11801-6:2017/Cor 1**
Information technology — Generic cabling for customer premises — Part 6: Distributed building services Technical Corrigendum 1

Technical Reports

- **ISO/IEC TR 11801-9902**
Information technology — Generic cabling for customer premises Part 9902: Specifications for End-to-end link configurations
- **ISO/IEC TR 11801-9910**
Information technology — Generic cabling for customer premises Part 9910: Specifications for modular plug terminated link cabling

Implementation

- **IEC 14763-2 ED2**
Information technology – Generic cabling for customer premises Part 9910: Specifications for modular plug terminated link cabling

Testing and Validation

- **IEC 61935-2**
Specification for the testing of balanced and coaxial information technology cabling - Part 1: Installed balanced cabling as specified in ISO/IEC 11801-1 and related standards
- **ISO/IEC 14763-3**
Information technology — Implementation and operation of customer premises cabling Part 3: Testing of optical fibre cabling

CENELEC

Performance and Design

- **EN 50173-1**
Information technology. Generic cabling systems. General requirements
- **EN 50173-20**
Information technology. Generic cabling systems. Alternative cabling configurations
- **EN 50310:2016+A1**
Telecommunications bonding networks for buildings and other structures
- **EN 50667:2016+A1**
Information technology. Automated infrastructure management (AIM) systems. Requirements, data exchange and applications

Premises Standards

- **EN 50173-2**
Information technology. Generic cabling systems. Office spaces
- **EN 50173-3**
Information technology. Generic cabling systems. Industrial spaces
- **EN 50173-4**
Information technology. Generic cabling systems. Homes
- **EN 50173-5**
Information technology. Generic cabling systems. Data centre spaces
- **EN 50173-6**
Information technology. Generic cabling systems. Distributed building services

Implementation

- **EN 50174-1:2018+A1**
Information technology. Cabling installation. Installation specification and quality assurance
- **EN 50174-2**
Information technology. Cabling installation. Installation planning and practices inside buildings
- **EN 50174-3:2013+A1**
Information technology. Cabling installation. Part 3: Installation planning and practices outside buildings

Testing and Validation

- **EN 50346:2002+A2**
Information technology. Cabling installation. Testing of installed cabling

BICSI

- **BICSI 001** Educational Facilities
- **BICSI 002** Data Center Design
- **BICSI 003** BIM
- **BICSI 004** Healthcare
- **BICSI 006** Distributed Antenna Systems (DAS)
- **BICSI 007** IoT/Intelligent Buildings
- **BICSI 008** WLAN
- **BICSI 009** Data Center Operations
- **BICSI N1** ICT Installation
- **BICSI N2** PoE Installation
- **BICSI N3** Bonding & Grounding
- **BICSI G1** Outside Plant (OSP)
- **TDMM** Telecommunications Distribution Methods Manual
- **ITSIMM** Information Technology Systems Installation Methods Manual
- **TPMM** Telecommunications Project Management Manual
- **OSPDRM** Outside Plant Design Reference Manual