

The Standards Report

Quarter 4 | 2023

The latest industry changes and what they mean to you

IEEE 802.3 (Ethernet)

ACTIVE IEEE 802.3 PROJECTS:

- **IEEE P802.3cw 400 Gb/s over DWDM systems**
 - This standard supports 400 Gb/s operation on a single wavelength of at least 80 km over a DWDM system
 - Target publication is September 2024
- **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
 - Target publication March 2025
- **IEEE P802.3df 400 Gb/s and 800 Gb/s**
 - This project supports 400 Gb/s and 800 Gb/s optical interfaces for servers and other intra-data center applications using a MAC signaling rate of 100 Gb/s
 - Draft 3.1 is circulating for review at the Nov 2023 meeting. Target publication is June 2024
- **IEEE P802.3dg 100 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of Conductors with a reach longer than 40m**
 - This project supports Single Pair Ethernet transmission at 100Mb/s to a distance of 500 meters
- **IEEE P802.3dh Multi-gigabit optical Ethernet using plastic optical fiber for application in the automotive environment**
 - This project supports greater than 1 Gb/s transmission over plastic optical fiber for automotive applications
- **IEEE P802.3dj 200 Gb/s, 400 Gb/s, 800 Gb/s and 1.6 Tb/s**
 - This project supports 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s optical interfaces for servers and other intra-data center applications using a MAC signaling rate of 200 Gb/s
 - Task Group is developing Draft 1.0 for review at the November 2023 meeting. Target publication is March 2026
- **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
 - Target publication is December 2026

Next Meetings:

- Interim - January 22 - 25, 2024 - St. Petersburg, FL - Hybrid
- Plenary - March 11 - 14, 2024 - Denver
- Plenary - May 13 - 16, 2024 - Annapolis, MD

IEEE 802.11 (Wireless)

ACTIVE IEEE 802.11 PROJECTS:

- **IEEE P802.11be Extremely High Throughput WLAN (Wi-Fi 7)**
 - The target for the first ballot cycle (draft 1.0) is Nov 2022. The target publication date is May 2024.
 - 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-1179-B Healthcare Facility Telecommunications Infrastructure Standard
- ANSI/TIA-4996-1 Telecommunications Infrastructure Standard For Educational Facilities (Addendum 1)
- TIA-526-14-D Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant; IEC 61280-4-1 edition 3, Fiber-Optic Communications Subsystem Test Procedures-Part 4-1: Installed Cable Plant - Multimode Attenuation Measurement
- ANSI/TIA-568.1-E-1 Commercial Building Telecommunications Infrastructure Standard, (Addendum 1) This addendum adds single pair Ethernet cabling and provides additional WAP cabling guidance
- ANSI/TIA-1183-B Measurement Methods and Test Fixtures for Balun-less Measurements of Balanced Components and Systems
- ANSI/TIA-4920000-C Generic Specification for Optical Fibers, modification of the IEC 60793-2:2019
- ANSI/TIA-621.1 (Adoption of IEC 61755-1-4:2022) SM Connector Optical Interface - General and Guidance
- ANSI/TIA-622.1 (Adoption of IEC 61755-2-1:2022) SM Connector Optical Interface - Non-angled
- ANSI/TIA-622.2 (Adoption of IEC 61755-2-2:2022) SM Connector Optical Interface - Angled

- **ANSI/TIA-622.4 (Adoption of IEC 61755-2-4:2015) non-angled, reference connection**
- **ANSI/TIA-622.5 (Adoption of IEC 61755-2-5:2015) angled, reference connection**

TR 42.1 – Generic Telecommunications Cabling and Premises Cabling

- **ANSI/TIA-758-C (Outside Plant):** Recirculation ballot limited to technical changes.
- **ANSI/TIA-942-C (Data Centers):** Recirculation ballot comments were resolved. The committee approved a limited recirculation ballot with conditional approval to publish
- **ANSI/TIA-570-E (Residential Cabling Standard):** Completed comment resolution of Recirculation Ballot #1 and approved for publication
- **ANSI/TIA-5017-A (Physical Security):** Recirculation Ballot after September meeting
- **TSB-6000 Application Tables:** Provides information regarding applications support for many of the available applications across media types recognized in ANSI/TIA-568. This document used to reside in the '568 standard as an informative Annex D. The document was approved to be published
- The committee reviewed and approved a Project Authorization Request (PAR) to begin work on the consolidation of the '568.0, '568.1, and '862 (intelligent building) documents into one since there is redundancy in them and it would allow the purchase of a single document instead of three

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

- **ANSI/TIA-569-F (Pathways and Spaces)** — This draft would remove pathway and spaces content from TIA-568.1 after it is merged with '568.0 and '862 and put it back in TIA-569. On hold until that project is further along
- **ANSI/TIA-607-E (Bonding and Grounding)** — Ballot comments were resolved and this document was approved to publish

TR-42.5 – Telecommunications Infrastructure Terms and Symbols

The following definitions were added or deleted in the dictionary

- **Antenna cabling:** Cabling that extends to an antenna
- **Array patch cord:** An optical fiber patch cord with array connector(s) on each end
- **Attenuation:** The decrease in signal power between two points
- **Attenuation to alien crosstalk ratio far-end:** The difference, in dB, between the alien far-end crosstalk from a disturbing pair of a channel, permanent link, or component, and the insertion loss of the disturbed pair in another channel, permanent link, or component
- **Equipment outlet space:** DELETED
- **Grounding:** The act of creating a ground
- **Service fitting:** An outlet box to house the connections for telecommunications in the service or work area. See also: insert

TR 42.7 – Telecommunications Copper Cabling Systems

- **ANSI/TIA-568.5 addendum 1: Balanced Single Twisted-Pair Telecommunications Cabling and Components Standard Addendum 1: Technical Corrections to Transmission Requirements** — Comments were resolved and a recirculation ballot was approved
- **TIA-TSB-184-A-2: Guidelines for Supporting Power Delivery over Balanced Single Twisted-Pair Cabling Ballot** — comments from ballot were resolved. It was agreed to send the document out for a recirculation ballot

- **ANSI/TIA-568.6 Single Pair Multi-Drop (SPMD) Cabling and Component Specification** — No comments or contributions on this subject were received, but it was agreed to keep it on the agenda for the next meeting in 2024 where there are contributions expected
- **ANSI/TIA-568.2-E Balanced Twisted-Pair Telecommunications Cabling and Components** — All comments were resolved. The document was approved for publication
- **TSB-190-A: Guidelines on Shared Pathways and Shared Sheaths** – Initial draft reviewed and document was approved for 1st ballot
- The committee discussed providing a framework for SPE application topology to include Centralized SPE cabling. It is expected that there will be contributions on this subject at the next meeting
- The committee discussed the need for a potential new project for 100Mbps, 500 meter Single Pair Ethernet cabling to support the IEEE project for this speed and reach. This will likely need coordination with TR-42.9

TR-42.11 – Optical Fiber Systems

- **ANSI/TIA-568.3-E-1 Optical Fiber Cabling and Components** — The planned addendum to 568.3-E - Contributions were discussed on the following topics:
 - Clearer language on Tier1/Tier 2 testing
 - Polarity for vertically oriented connectors
 - Implementation of polarity symbols
- **Document Maintenance Activity** – a large number of documents have had the ANSI designation removed since they have not been reviewed in a timely fashion. Most of these documents are in the TIA-455 series, better known as the Fiber Optic Test Procedures (FOTP's). The documents have been sorted between the three fiber committees (4.2.11, 4.2.12, 4.2.13) to work on determining a proper disposition. As individual documents are reaffirmed, they will be listed under the "Recently Published" section

TR-42.12 –Optical Fibers and Cables

- **TIA-455-3 (FOTP-3) – Temperature Ramps and Precision** – Comments resolved and a recirculation ballot was approved
- **ANSI/TIA-492AAAF – Detail Specification for Graded Index Multimode Optical Fibers** – Adopted with modifications of IEC 60793-2-10:2019 has been approved to publish
- **TIA-455-203-A (FOTP-203) – Light Source Encircled Flux Measurement Method** – Plan to adopt IEC 61280-1-4, moved to first ballot authorization
- **ANSI/TIA-598-D-2014 – Optical Fiber Cable Color Coding** – Open for revision, but there is confusion on who is responsible for editing the document
- **Multicore Fiber** – There was a discussion about whether TIA should be attempting to standardize on any of the multicore fiber properties. A review of some recent IWCS presentations was made. A straw poll was held showing that there was opposition to TIA being directly involved. The ITU liaisons will be used to keep TIA informed
- **Document Maintenance Activity** – A large number of documents have had the ANSI designation removed since they have not been reviewed in a timely fashion. Most of these documents are in the TIA-455 series, better known as the Fiber Optic Test Procedures (FOTP's). The documents have been sorted between the three fiber committees (4.2.11, 4.2.12, 4.2.13) to work on determining a proper disposition. As individual documents are reaffirmed, they will be listed under the "Recently Published" section

TR 42.13 – Passive Optical Devices and Fiber Optic Metrology

- **TIA-604-10 (FOCIS-10) – Fiber Optic Connector Intermateability Standard – Type LC** – A discussion was held regarding the desire of the QSFP-DD and OSFP-DD MSA's to standardize the connector dimensions for the transceiver interface for “belly-to-belly” connections. A PAR was approved to add an informative annex to the FOCIS-10 document for this application
- **Document Maintenance Activity** – A large number of documents have had the ANSI designation removed since they have not been reviewed in a timely fashion. Most of these documents are in the TIA-455 series, better known as the Fiber Optic Test Procedures (FOTP's). The documents have been sorted between the three fiber committees (42.11, 42.12, 42.13) to work on determining a proper disposition. As individual documents are reaffirmed, they will be listed under the “Recently Published” section

Next Meetings:

- Plenary – February 5 – 9, 2024
- Plenary – June 3 – 7, 2024
- Plenary – Oct 7 – 11, 2024

ISO/IEC

ISO/IEC JTC1/SC25 WG3 – CUSTOMER PREMISES CABLING

Active Projects:

- **ISO/IEC 11801-1 Amendment** [Single-pair components & channels for Generic Cabling]
 - The next step for this amendment to 11801-1 is a Committee Draft for Vote (CDV), with a voting period until end of August 2023
- **ISO/IEC 11801-9903** [Matrix Modeling of Channels and Links]
 - A next working draft will be distributed for comment by the end of April 2023
- **ISO/IEC 11801-9906** [Application Specific SPE Channels]
 - The document will go as a CD for commenting prior to the October meeting
- **ISO/IEC 11801-9911** [SPE Cable Sharing]
 - There will be an interim meeting in March/April 2023 to resolve the remaining comments, after which a working draft will be distributed, with the goal to get to a Draft Technical Report after the October meeting in Berlin
- **ISO/IEC 14763-2** [Cabling installation]
 - The second working draft, to include 2 amp issues, is being planned for the start of April 2023 with an 8 week commenting period. An interim ad hoc meeting will then follow by the end of June 2023 for this document, to be followed by a 3rd working draft for comments prior to the next WG3 meeting in Berlin on the 9th of October 2023
- **ISO/IEC 14763-5** [Sustainability]
 - A new committee draft will be distributed by mid-April, to circulate for a 16-week commenting period prior to the October meeting
- **ISO/IEC 24383** [Infrastructure Security]
 - A new Committee Draft will be distributed by the editor for comment at the next stage in progressing this standard. This draft will be provided by the end of March to enable commenting prior to the next meeting in October 2023

- **ISO/IEC 29125** [Remote Powering]
 - An interim review has been scheduled for the 23rd March, 2023, to resolve open comments
- **ISO/IEC 30129** [Bonding]
 - The document will be circulated as another CD for 16 week commenting period by 11th April at the latest
- **ISO/IEC 11801-991x** [SP Multidrop]
 - There was not discussion on this topic during these meetings. This topic will be picked up again at the October Plenary meeting

IEC SC46C WG7 – WIRES AND SYMMETRICAL CABLES

- **IEC 61156-12 ED2 Multicore and symmetrical pair/quad cables for digital communications - Part 12: Symmetrical single pair cables with transmission characteristics up to 1,25 GHz - Work area wiring** –
 - Target Publication 2025
- **IEC 61156-14: Multicore and symmetrical pair/quad cables for digital communications - Part 14: Symmetrical single pair cables with transmission characteristics up to 20 MHz**
 - Target Publication 2025
- **IEC 62807-2 ED1 Hybrid telecommunication cables -Part 2: Indoor hybrid cables -Sectional specification**
 - Target Publication 2026

IEC SC48B – ELECTRICAL CONNECTORS

Active Projects:

- **IEC 63171 ED2:** Connectors for electrical and electronic equipment – Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity – General requirements and tests
 - Committee draft for vote being circulated
- **IEC 63171-1 ED2:** Connectors for electrical and electronic equipment – Part 1: Detail specification for 2-way, shielded or unshielded, free and fixed connectors – Mechanical mating information, pin assignment and additional requirements for Type 1 (copper LC style)
 - Final Draft Standard being prepared for publication in 2024

Key Cabling Standards

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IEEE

- **IEEE Std. 802.3-2018** Standard for Ethernet*
- **IEEE Std. 802.3bt-2018** 4-pair POE (up to 90 watts)
- **IEEE Std. 802.3cg-2019** 10Mb/s Single Pair Ethernet
- **IEEE Std. 802.3ca-2020** 25/50 Gb/s PON
- **IEEE Std. 802.3cm-2020** 400 Gb/s over MM Fiber
- **IEEE Std. 802.3cn-2020** 50/200/400 Gb/s over SM Fiber
- **IEEE Std. 802.3cu-2021** 100/400 Gb/s over SM Fiber at 100 Gb/s per Wavelength
- **IEEE Std. 802.11-2020** Wireless LAN*
- **IEEE Std. 802.11ax-2021** High Efficiency WLAN (Wi-Fi 6)

* Every 3 years, IEEE 802.3 and IEEE 802.11 are revised to include all amendments and maintenance work since the last publication.

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-B** Outside Plant
- **ANSI/TIA-862-B** Intelligent Building Systems
- **ANSI/TIA-5017** Physical Network Security

Premises Standards

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

Component Standards

- **ANSI/TIA-568.2-D** 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

ISO/IEC

Performance and Design

- **ISO/IEC 11801-1 ED1: 2017** Generic Cabling Systems
- **ISO/IEC 18598 ED1: 2016AIM** Management Systems
- **ISO/IEC 30129 ED1: 2015** Grounding and Bonding

Premises Standards

- **ISO/IEC 11801-2 ED1: 2017** Office Premises Cabling
- **ISO/IEC 11801-3 ED1: 2017** Industrial Cabling
- **ISO/IEC 11801-4 ED1: 2017** Residential Cabling
- **ISO/IEC 11801-5 ED1: 2017** Data Center Cabling
- **ISO/IEC 11801-6 ED1: 2017** Distributed Building Cabling

Technical Reports

- **ISO/IEC TR 11801-9904:2017** 2.5G and 5GBASE-T Cabling
- **ISO/IEC TR 11801-9910:2020** MPLS Cabling

Implementation

- **IEC 14763-2 ED2: 2019** Planning and Implementation

Testing and Validation

- **IEC 61935-2 ED3: 2010** Testing Copper Cables (4-pair)
- **ISO/IEC 14763-3 ED2: 2014** Testing of Optical Fiber

CENELEC

Performance and Design

- **EN 50173-1: 2018** Generic Cabling Requirements
- **EN 50310:2016** Grounding and Bonding
- **EN 50667:2016** AIM Management Systems
- **EN 50174-99-1: 2015** Remote Powering (POE)

Premises Standards

- **EN 50173-2: 2018** Commercial Office Premises
- **EN 50173-3: 2018** Industrial Cabling
- **EN 50173-4: 2018** Cabling for Homes
- **EN 50173-5: 2018** Data Center Cabling
- **EN 50173-6: 2018** Distributed Building Systems

Implementation

- **EN 50174-1: 2018** Installation and Quality Assurance
- **EN 50174-2: 2018** Cabling Installation Inside Plant
- **EN 50174-3: 2013** Cabling Installation Outside Plant

Testing and Validation

- **EN 50346: 2002** Testing of installed cabling

BICSI

- **BICSI 001-2017** Educational Facilities
- **BICSI 002-2019** Data Center Design
- **BICSI 003-2014** BIM
- **BICSI 004-2018** Healthcare
- **BICSI 006-2020** Distributed Antenna Systems (DAS)
- **BICSI 007-2020** IoT/Intelligent Buildings
- **BICSI 008-2018** WLAN
- **BICSI 009-2019** Data Center Operations
- **BICSI N1-2019** ICT Installation
- **BICSI N2-2017** PoE Installation
- **BICSI N3-2020** Bonding & Grounding
- **BICSI G1-2017** Outside Plant (OSP)
- **TDMM-2020** Telecommunications Distribution Methods Manual
- **ITSIMM-2017** Information Technology Systems Installation Methods Manual
- **TPMM-2016** Telecommunications Project Management Manual
- **OSPDRM-2018** Outside Plant Design Reference Manual