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The Standards Advisor

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Standards Quarterly Update:

What you need to know now for the future of your network

Welcome to the 26th edition of the *Standards Advisor*. This report is issued quarterly and provides updates on the standards relevant to the structured cabling industry, and the impact they have on your network design, planning and operations.

This summary represents standards meetings held during the first quarter of 2020 and reports on activities from all aspects of the cabling industry. These activities range from the applications standards (IEEE 802.3 and 802.11 and T11—Fiber Channel) to the cabling standards (ANSI/TIA, ISO/IEC, CENELEC). It also covers new developments in the world of multi-source agreements (MSAs).

TIA TR-42 meeting: January 2020, New Orleans, LA, USA

Executive Summary

The following standards were re-affirmed or approved for publication:

- ANSI/TIA-PN-5069 TSB on Optical Fiber Channel Polarity – duplex-single and double row fiber
- ANSI/TIA-492CAAC Sectional specification for class B singlemode optical fibers
- ANSI/TIA-492AAAF Sectional specification for category A1 graded-index multimode optical fibers
- ANSI/TIA-455-82C (FOTP-82C), Fluid Penetration
- ANSI/TIA-455-244 (FOTP-244), Temperature Cycling of Expressed Tubes
- ANSI/TIA-455-191 (FOTP-191), Mode Field Diameter (adopting IEC-60793-1-45)
- ANSI/TIA-568.0-E Generic telecommunications cabling for customer premises
- ANSI/TIA-568.1-E Commercial building cabling infrastructure standard
- TIA TSB-5019, High Performance Structured Cabling Use Cases for Data Centers and Other Premises

The following standards were approved for ballot, re-ballot, or default ballot:

- ANSI/TIA-568.5 single balanced twisted-pair telecommunications cabling and components standard
- ANSI/TIA-5071 draft standard for field testing of single-pair cabling systems
- ANSI/TIA-568.2-D-2 the normative version of TSB-184-A
- ANSI/TIA-4920000 Generic specification for optical fibers
- ANSI/TIA-604-19 (FOCIS 19), CS Connector
- ANSI/TIA-604-10B (FOCIS 10), fiber optic connector intermateability standard-type LC

Commercial Building Cabling

- Publication was authorized for ANSI/TIA-568.0-E generic telecommunications cabling standard and ANSI/TIA-568.1-E commercial cabling infrastructure standard.
- Ballot comments were reviewed and a new ballot authorized for TIA-TSB-162-B, Wireless Access Points.
- Ballot comments on ANSI/TIA-758-C (OSP) were partially resolved. Certain issues were sent to a task group for study and resolution at the next meeting.
- A PAR was authorized to start work to revise ANSI/TIA-862-B to include single-pair.
- There was a brief review of the work of the edge data centers task group work, developing addendum 1 of ANSI/TIA-942-B-1.
- A proposal to define and recognize hybrid cables that include both fiber elements for signal transmission and copper elements for power delivery was deferred for further study.

Pathways and Spaces

- There was a presentation from guest members of TR-14, the committee on antennas and structures.
- Efforts continue to harmonize with TR-14 the requirements for structures.
- TR42.3 reviewed ISO/IEC18598 amendment for remote powering administration, inviting comments from members to pass on to WG3.
- When complete the ISO/IEC JTC1/SC25 WG3 amendment will published as an addendum to ISO/IEC 18598.
- TR42.3 reviewed the FDIS of the ISO/IEC 14763-2 infrastructure standard.

Telecommunications Infrastructure Terms and Symbols

- TR42.5 added the following acronyms:
  - SPE—single-pair Ethernet
  - IIoT—industrial internet of things

Copper Cabling Systems

- TR42.7 completed comment resolutions for the ballot of ANSI/TIA-568.5, single-pair cabling and components standard. The annex containing SP3 (40 m) and SP4 (15 m) was deleted. Motions to add a 100 m SP1 were not successful. A motion to add color codes for connectors was not successful. A 2nd committee ballot reflecting these changes was authorized.
- TR42.7 authorized a committee ballot for the ANSI/TIA 5071 draft standard for field testing of single-pair cabling systems.
- TR42.7 re-affirmed TSB-5019, High Performance Structured Cabling Use Cases for Data Centers and Other Premises.
- TR42.7 reviewed the draft of ANSI/TIA-568.2-D-2, which will be a normative version of TSB-184-A. A 2nd ANSI industry ballot was authorized.
- A task group continues to study the far end grounding issue for TCL. The study will clarify the dependency of a single-pair channel on the grounding of the far end. Round robin testing is being planned.
- A Project Authorization Request (PAR) was approved and a project authorized for single-pair multi-drop. A task group was authorized to develop this.
- A public input proposal to include single-pair ampacity tables in the 2023 NEC code was reviewed and received support.

Industrial cabling

- TR42.9 re-affirmed ANSI/TIA-1005-A.
- This will be revised and published as ANSI/TIA-1005-B.
- TR42.9 cancelled the industrial cabling addendum 2 to ANSI/TIA-1005-A-2012 for cabling supporting 1000BASE-T for E2 and E3 environments.
- TR42.9 cancelled ANSI/TIA-1005-A addendum 3 on single-pair cabling in support of IEEE 802.3bp type B, IEEE 802.3bw 100 BASE-T1 and IEEE 802.3cg 10 BASE-1.
- A new PAR is planned for balanced single twisted-pair for industrial premises.
- A liaison letter to IEEE 802.3cr regarding isolation common mode voltage requirements for Ethernet PHYs was drafted for approval by the TIA TR42 plenary.

Optical Fiber Systems

- The committe resolved all comments on TSB-5069 "Optical Fiber Channel Polarity – duplex – single and double row fiber", document is approved for publication.
- A new project request has been approved for ANSI/TIA-PN-568.3-E, revision of TIA-568.3-D and inclusion of D-1 Addendum. Draft document which contains TIA-568.3-D and D-1 Addendum will move to the committee ballot.
- A new project request has been approved for ANSI/TIA-PN-526-14-D. The TR42.11 committee is to coordinate with IEC prior to next meeting on the use of NBIMMF vs. BIMMF as launch cable for MMF system testing.
- In TIA-568.3-D, reference quality cable is currently required for SM testing, but not required for MMF testing. The committe discussed whether to change this requirement and associated maximum loss requirement.
- A proposal of polarity specification for new duplex connectors types (SN and MDC) was reviewed. The committee reached consensus to hold development due to connector FOCIS documents not yet defined in TIA.

Optical Fibers and Cables

- ANSI/TIA-492 Document Series Restructuring: adoption of IEC documents.
  - Generic (adapt IEC 60793-2:2015 as ANSI/TIA-4920000-C): IEC Ed. 9 published in 11/19, ready for TIA adaption ballot
  - Multimode (adapt IEC 60793-2-10:2019 as ANSI/TIA-492AAAF): comments resolved, approved for publication.
  - Singlemode (adapt IEC 60793-2-50:2018 as ANSI/TIA-492CAAC): comments resolved, approved for publication.
- ANSI/TIA-455-3 (FOTP-3), Temperature Ramps and Precision (harmonize with IEC 60794-1-22, Method F1 and IEC-613002-22): ballot closes on 2/2/20.
- ANSI/TIA-455-111 (FOTP-111), Fiber Curl (adoption of IEC 60793-1-34): IEC document is at CDV, should publish this calendar year. Confirming that project for work at TIA is still valid or needs to be renewed.
- Approved for publication
  - ANSI/TIA-455-82C (FOTP-82C), Fluid Penetration
  - ANSI/TIA-455-244 (FOTP-244), Temperature Cycling of Expressed Tubes
  - ANSI/TIA-455-191 (FOTP-191), Mode Field Diameter (adopting IEC-60793-1-45)

Optical Fibers and Cables

- ANSI/TIA-598-D-2014 Revision
  - Munsell Colorchip Round Robin measurements from four cable manufacturers were analyzed. Results show inconsistent trend and high variability (ΔE) across all four manufacturers. A bake-off session is proposed to be held at the June meeting – each manufacturer will bring their spectrophotometer and Munsell book to further study the root cause.

Approved new project requests:

- TIA-455-xxx adoptions from IEC 60793-1-xx Optical Fibres: Measurement Methods and Test Procedures
  - TIA-455-78 adoption from IEC 60793 Part 1-40: Attenuation
  - TIA-455-62 adoption from IEC 60793 Part 1-47: Macrobending Loss
  - TIA-455-80 adoption from IEC 60793 Part 1-44: Cut-off Wavelength
  - TIA-455-175 adoption from IEC 60793 Part 1-42: Chromatic Dispersion
  - TIA-455-176 adoption from IEC 60793 Part 1-20: Fiber Geometry
  - TIA-455-177 adoption from IEC 60793 Part 1-43: Numerical Aperture
  - TIA-455-178 adoption from IEC 60793 Part 1-32: Coating Stripability
  - TIA-455-67 adoption from IEC 60793 Part 1-51: Dry Heat
  - TIA-455-74 adoption from IEC 60793 Part 1-53: Water Immersion
  - TIA-455-160 adoption from IEC 60793 Part 1-50: Damp Heat (Steady State)
  - TIA-455-122 adoption from IEC 60793 Part 1-48: Polarization Mode Dispersion

Passive Optical Devices and Metrology

- The committee resolved all comments for ANSI/TIA-604-19 (FOCIS 19), CS Connector. Document will go to default committee ballot.

- The committee reviewed a revision proposal for ANSI/TIA-604-10B (FOCIS 10), Fiber Optic Connector Intermateability Standard-Type LC, to standardize the center to center spacing beyond duplex configurations. Document will move to committee ballot and the committee will explore updating LC adapter, plug and receptacle interfaces.
- A new project initiated to adopt IEC 61753 standards which includes ferrule to ferrule specification and fiber to fiber specifications. Connector series (FOCIS) specifications are to follow.

Plenary

- TIA TR-42 reviewed the reports from each engineering sub-committee.
- A liaison letter to IEEE 802.3cr regarding isolation common mode voltage requirements for Ethernet PHYs was reviewed and approved following some changes.

The next meeting of TIA TR-42 will be held the week of June 8 2020, in Denver, CO, USA

68th ISO/IEC JTC1/SC25 WG3 meeting: February 24-28, 2020, Sydney, Australia

Working Group 3 Meeting Highlights

The 68th ISO/IEC JTC1/SC25 Working Group 3 (WG3) meeting was attended by 29 experts and observers from 10 countries including Australia, Canada, Denmark, France, Germany, Great Britain, Israel, Japan, Mexico, and the United States. Participation was significantly lower than usual since key experts from multiple countries declined or were unable to attend due to Covid-19 concerns and travel restrictions.

The Working Group continued the standards work as best as it could without many key experts. A New Work Item Proposal was approved unanimously as ISO/IEC 14763-5 information technology – implementation and operation of customer premises cabling – part 5 sustainability, and an editing team was established to develop the contents of the first working draft. The Draft Technical Specification (DTS) for Amendment 1 to ISO/IEC 29125, to include single-pair thermal performance, had unanimous approval from P-members and was endorsed for publication. Amendment 1 to ISO/IEC 11801-1, to include generic single-pair cabling, continued to make progress with contributions to fill in several areas including the permanent link sections. Another Committee Draft (CD) of the ISO/IEC 24383 Physical Network Security standard will be circulated, filling in several missing sections. Comments on several technical reports including ISO/IEC 11801-9908, ISO/IEC 11801-9909, ISO/IEC 11801-9910 (MPTL) were resolved and the documents progressed to the next stage (publication or DTR). There was much discussion and progress regarding the revision of ISO 14763-3 for optical fiber testing, leading to an initial working draft that will be completed at the next meeting. The Amendments to ISO/IEC 11801-3 for industrial single-pair cabling and ISO/IEC 18598 for administration of remote powering were not discussed since these documents are currently out for ballot. Other topics also progressed as detailed below.

1. Development of generic single-pair cabling specifications

Comments to the first CD of the Amendment to ISO/IEC 11801-1 were resolved and the document was approved for circulation as a second CD. The document includes the following single-pair classes:

- Class T1-A, specified up to 20 MHz, using 23 AWG (0,57 mm conductors) up to 400 m and 18 AWG (1,02 mm conductors) up to 1000 m.
- Class T1-B, specified up to 600 MHz, based on IEC 61156-11 cable specifications using IEC 63171-1 copper LC style connectors or the IEC 63171-6 industrial connector depending on the environment.
- Class T1-C, specified up to 1,250 GHz, with new cable specifications to be developed by IEC SC46C.

2. ISO/IEC TS 29125 Remote Powering and single-pair cabling

The DTS for Amendment 1 received unanimous support during the national ballot with 18 out of 18 P-members approving the document. Some minor editorial comments were resolved, and the document was approved for publication. Comments on the first Working Draft of the 2nd Amendment with guidelines for use of 4-pair cords with 28 AWG (0,32 mm) conductors proved controversial since this size is not recognized in ISO/IEC 11801-1 or in the IEC 61156 series of cable standards. The smallest size recognized by both committees is 26 AWG (0,40 mm) conductor diameter. Because of this, the working group agreed to cancel thermal performance of 28 AWG cords and add a note in the Amendment 1 to ISO/IEC 11801-1 that 28 AWG or smaller conductors are not recognized for PoE applications.

3. ISO/IEC 11801-3 (Industrial) Amendment 1, to include single-pair cabling

There was no discussion since the CD is currently out for national ballot.

4. ISO/IEC 11801-6 Amendment 1, to include single-pair cabling

Comments to the working draft were resolved and the document was approved for recirculation. The major changes were to include single-pair cabling T1-A, T1-B, and T1-C as specified in ISO/IEC 11801-1 Amendment 1 instead of creating new classes of cabling in ISO/IEC 11801-6. This simplifies ISO/IEC 11801-6 and aligns with the three generic single-pair cabling classes.

5. ISO/IEC 11801-9909 25 Gb/s over balanced cabling to distances greater than 30 m

All comments were resolved with minimal changes since the DTR was approved by national ballot. The TR was approved for publication.

6. Modular Plug Terminated Links (MPTL)

All comments were resolved with minimal changes since the DTR was approved by national ballot. The TR was approved for publication.

7. ISO/IEC 30129 Telecommunications Bonding Networks

The bonding and earthing ad hoc reviewed a German proposal to include coupling attenuation as a metric to qualify the sensitivity of cables to outside noise. The ad hoc agreed that this level of qualification for cabling was beyond the scope of ISO/IEC 30129 and should be placed in the "living list" for further discussion.

8. ISO/IEC 14763-2 Planning and Installation

The Final Draft International Standard (FDIS) of ISO/IEC 14763-2 was approved by national ballot. The standard was approved for publication.

9. ISO/IEC 14763-3 Testing of Optical Fiber

There was much detailed discussion and development of the ISO 14763-3 revision. A working draft was created for further refinement at the next WG3 meeting.

10. ISO/IEC TR 11801-9908: Guidelines for High-speed Applications over optical fibre

All comments were resolved with minimal changes since the DTR was approved by national ballot, and the TR was approved for publication. It includes duplex and parallel multimode and singlemode high speed applications that are either standardized, in progress of standardization, or have published multi-source agreements. It provides examples of duplex and parallel implementations using MPO cassettes and adapters, and provides migration guidance. The inclusion of 100G and 400G MSAs, as well as 400GBASE-SR4.2 also highlights the reach advantages of OM5 multimode fiber for multi-wavelength applications.

11. Proposal for single-pair multi-drop cabling

A proposal to develop single-pair multi-drop cabling as a technical report was received positively. The committee agreed to propose this as a NWIP at the next SC25 meeting in September, 2020.

12. PoE Amendment to ISO/IEC 18598 Automated Infrastructure Management

There was no discussion since the PDAM is still out for national ballot.

13. Network Physical Security (NPS)

All comments were resolved, and the document will be re-circulated as a CD.

14. New Standard on Sustainability of Cabling Installations

The NWIP for ISO/IEC 14763-5 and its proposed outline were approved unanimously by national ballot. An editing team was established to develop the first working draft using teleconference meetings.

The next meeting of ISO/IEC JTC1/SC25 WG3 will be held September 21-24 2020, in Reutlingen, Germany.

CENELEC TC215 WG1 meeting: No meetings were held during Q1, 2020

CENELEC TC215 WG2 meeting: No meetings were held during Q1, 2020

The next meeting of CENELEC TC215 WG2 will be held April 22-23, 2020, location TBD.

1. IEEE 802.3cq maintenance on 2-pair power over Ethernet (PoE)

This task force is now complete. This task force cleaned up discrepancies in the existing 2 pair PoE standard (commonly known as 802.3af and 802.3at, or PoE and PoE+) found during the development of 802.3bt. The modifications do not change the functionality in 2 pair systems. The amendment, IEEE Std 802.3cq-2020, was approved at the IEEE-SA Standards Board meeting January 30, 2020. The amendment was released for publication on March 16, 2020.

2. IEEE 802.3cv maintenance on four-pair power over Ethernet (PoE)

This task force is cleaning up minor issues found in initial testing of the 802.3bt standard for 4 pair PoE. The modifications do not change the functionality and are not expected to present interoperability or compliance issues. In January, the task force completed draft 1.2, believing it to be nearly technically complete and entering working group ballot at the next IEEE 802.3 working group meeting. This was expected to be the March 2020 meeting, but due to cancellation is expected to move to the next 802.3 working group meeting, whether that is an interim, or a telephonic interim.

Single-twisted-pair copper standards

3. IEEE 802.3 Single-pair Multidrop Enhancements Study Group

- This study group has continued to add use cases for multidrop single-pair Ethernet networks at the January meeting, including lighting control and requirements for determinism, topology discovery, and error-correction robustness in harsh EMC environments.
- This study group began meeting in September 2019 to examine extensions to the 10BASE-T1S multidrop (10 Mbps shared media) PHY defined in 802.3cg, and focus has been on interoperable extensions to the 10BASE-T1S PHY. The study group has proposed adding interoperable multidrop power over Ethernet and reach extensions for multidrop to better accommodate building automation.
- The study group is finalizing objectives as it prepares to submit project documents to become a task force. This will need to wait until the next IEEE 802 plenary meeting, currently scheduled for July 2020.
- At the January meeting, the group formed consensus around the initial objectives including:
  - To extend multidrop networks to support at least 16 nodes and 50m of reach.
  - Define plug-and-play multidrop powering, select a single equipment connector, support the time synchronous interface (for determinism), and support operation in the EMC environments found in industrial and building automation, as well as transportation environments.

4. IEEE P802.3ch Multigigabit Automotive Ethernet PHY Task Force

- The 802.3ch task force responded to comments on the initial Standards Association ballot. No material changes were made (only minor corrections), and a recirculation ballot was issued. The project is expected to complete balloting around the end of March and proceed to the IEEE Standards Board for approval in Q2 2020. The approval process for this project should not be impacted by the cancellation of the March 2020 802 plenary meeting.
- This task force is focused on short-reach automotive links at rates of 2.5Gbps, 5Gbps, and 10Gbps. The objectives call for up to 15m and 4 connectors, and the project has adopted transmission characteristics for shielded cabling with bandwidths up to 6 GHz to provide headroom for PHY developers to study. At the interim, the group adopted PAM 4 PHY proposals for all rates, along with Reed-Solomon forward error correction coding to deal with impulse noise, and link segment (cabling) specifications using shielded cabling specified to 1 GHz, 2 GHz, and 4 GHz for 2.5 Gb/s, 5 Gb/s and 10 Gb/s rates respectively.
- The project includes use of the 802.3bu powering but does not expect to extend that powering specification.

5. IEEE 802 Beyond 10 Gigabit Automotive Ethernet PHY Study Group

- This study group is focused on electrical automotive Ethernet PHYs at rates greater than 10 Gb/s, and is primarily driven by requirements for autonomous vehicle networking. The project adopted objectives for 25 Gbps, 50 Gbps, and 100 Gbps Ethernet links at distances up to 11m, driven by automotive networking requirements. No major changes to the objectives were introduced at the January meeting. The project is still expected to present a project documentation for a new task force. This will need to wait until the next IEEE 802 plenary meeting, currently scheduled for July 2020.

Optical Fiber Standards

6. IEEE P802.3ca 25G and 50G EPON Task Force

- This task force is writing a standard for 25G and 50G EPON.
- The previous objective supporting 100G EPON was removed from the scope.
- The wavelength plan will allow backwards compatibility with networks supporting 10G EPON.
- All upstream and downstream wavelengths will be in O-band (around 1310 nm).
- The standard will allow coexistence of:
  - 25G EPON with GPON (reduced wavelength)
  - 25G EPON and 50G EPON with 10G-EPON, XG-PON1, and XGS-PON
- Comments against draft 3.0 were resolved.
- Draft 3.1 will be generated for Standards Association recirculation ballot.

7. IEEE P802.3cm Next-gen MMF PHYs (i.e. 400Gb/s over fewer pairs of MMF) Task Force

- The task force has written a standard for:
  - 400 Gb/s operation over 8 pairs of MMF with lengths up to at least 100m
  - 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100m
- The work of the IEEE P802.3cm 400 Gb/s over multimode fiber task force completed with the approval of IEEE Std 802.3cm-2020 by the IEEE-SA Standards Boards on January 30, 2020.
- 400GBASE-SR8 follows the precedents set by P802.3cd for 50GBASE-SR, 100GBASE-SR2 and 200GBASE-SR4 and will support 70/100/100m over OM3/OM4/OM5.
- 400GBASE-SR4.2 (4 fiber pairs with 2 wavelengths), a bi-directional transmission solution will support 70/100/150m over OM3/OM4/OM5 and is the first standard to leverage the WDM support capabilities of OM5.

8. **IEEE P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s Operation Over 40 km Singlemode Fiber**

- The main objectives are:
  - 50 Gb/s operation over at least 40 km of SMF (50GBASE-ER)
  - 200 Gb/s operation over four wavelengths capable of at least 40 km of SMF (200GBASE-ER4)
  - 400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF (400GBASE-ER8)
- The work of the IEEE P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s over greater than 10 km of SMF task force completed with the approval of IEEE Std 802.3cn-2019 by the IEEE-SA Standards Boards on November 7, 2019.

9. **IEEE P802.3cp 10G, 25G, and 50G bidirectional access optical PHYs Task Force**

- This task force is developing standards for bidirectional 10G, 25G, and 50G over 10, 20, and 40 km over a single strand of single mode fiber.
- The Task Force reviewed comments against draft 1.1 and draft 1.2 will be generated for Task Force review.

10. **IEEE P802.3cs Central office consolidation (super PON) Task Force**

- The main objectives of this study group are:
  - Support a passive point-to-multipoint ODN with a reach of at least 50 km with at least 1:64 split ratio per wavelength pair
  - Support at least 16 wavelength pairs for point-to-multipoint PON operation
  - Support the MAC data rate of 10Gb/s downstream
  - Support the MAC data rates of 2.5Gb/s and 10Gb/s upstream
  - Support tunable transmitters
- A draft standard will be prepared for task force review.

11. **IEEE P802.3ct 100 Gb/s and 400 Gb/s Operation over DWDM Systems Task Force**

- This project was split into P802.3ct for the 100G objective and P802.3cw for the 400G objective.
- The main objective is:
  - 100 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system (100GBASE-ZR).
- DP-DQPSK coherent modulation format will be used for 100GBASE-ZR.
- The Task Force reviewed comments against draft 1.1, and generated draft 1.2 for task force consideration.

12. **IEEE P802.3cu 100 Gb/s and 400 Gb/s over SMF at 100 Gb/s per Wavelength Task Force**

- This task force has the following objectives:
  - Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km and up to at least 10 km
  - Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km and up to at least 10 km
  - Baseline proposals for are being considered.

13. **IEEE P802.3cw 400 Gb/s Operation over DWDM Systems Task Force**

- This project was split from P802.3ct for the 400G objective.
- The main objective is:
  - 400 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system (400GBASE-ZR)
- DP-16QAM coherent modulation format will be used for 400GBASE-ZR.
- Baseline proposals are being considered.

The March plenary meeting for the IEEE 802.3 group was canceled. The May 2020 IEEE 802.3 interim meeting has also been cancelled, and the face-to-face meeting has been replaced by multiple interim teleconference meetings of the task forces, and an interim teleconference meeting of the working group in May. The next face-to-face meeting is scheduled during the IEEE 802 plenary the week of July 13 in Montreal, Canada.

INCITS Fibre Channel T11.2 meeting: February 4, 2020, Fort Worth, TX, USA

FC-PI-7

Single lane (64GFC) document has been published.

FC-PI-7P

Four lane parallel (256GFC) document with accepted comments submitted for RFC review and ballot.

- Document was reviewed and updated with editorial changes.
- Some inconsistencies were identified between PI-7 and PI-7P documents relating to IEEE references. For consistency, references will be made to PI-7 instead of updating PI-7P with information from directly IEEE.
- Motion was made and accepted (16-Yes to 0-No) to submit PI-7P (T11-2020-003v1) for RFC letter ballot.

FC-PI-8

Single lane (128GFC) document – Work in progress. Activity towards meeting FCIA PI-8 (128GFC per lane) continues.

Several contributions were made this meeting:

- Updates to IEEE 802.3ck (100Gb) for Chip to Chip, Chip to Module, and Backplane signaling was reviewed where it relates to PI-8 (128GFC) document.
- New Connector Model simulation show improvement in Chip to Module performance. Differences in 106.25G and 112G are small, but significant in some backplane channels.
- Still being reviewed and deliberated for inclusion into PI-8 (to be voted on at the next meeting) are details related to:
  - CHIP to Module Training,
  - 128GFC speed negotiation
  - Symbol Interleaving vs Bit Muxing
  - Receiver detector capability of 850nm and 940nm at 128GFG.

IEEE 802.3ck

- IEEE shared their P802.3ck draft (100Gb/s standard) with INCITS T11.2 in an effort towards alignment and technical coordination with T11 FC PI-8 single lane 128GFC project.

The next meeting of INCITS/T11 will be held April 7-9, 2020, in Deerfield, FL, USA.

IEC TC46 meeting: No meetings were held during Q1, 2020

The next meeting of IEC TC46 will be held the week of May 4th, 2020, in Tel Avia, Israel.

IEC SC48B meeting: No meetings were held during Q1, 2020

IEC SC48D meeting: No meetings were held during Q1, 2020

IEC SC86A WG1 and WG3 meeting:No meetings were held during Q1, 2020

The next meeting of IEC SC86 WG1 and WG3 will be held May 12-15, 2020, Kyoto, Japan.

IEC SC86B WG2 meeting: No meetings were held during Q1, 2020

The next meeting of IEC SC86B WG2 will be held April 20-24, 2020, in Delft, Netherlands.

CENELEC TC86BXA WG1 meeting: No meetings were held during Q1, 2020

The next meeting of CENELEC TC86BXA WG1 will be held May 19-20, 2020, in Kessel-lo, Belgium.

Technologies and Infrastructures for Transport, Access and Home

General observation: a massive amount of contributions were submitted by China. Many of these contributions were requesting changes to documents that are published for more than 10 years.

SG15Q5: Characteristics and test methods of optical fibres and cables

- Updated recommendation of the G.654 singlemode fiber was consented and can be published. The cable related activities from SG15Q16 will be transferred to SG15Q5 in the next study period 2021-2026.

SG15Q16: Network Infrastructure

- New request to update the closure performance document L.201/L.13 after presentation of 3 contributions from various Chinese companies. In these contributions failures caused by UV-light exposure, corrosion of metal bolts and cracks of closure housings were shown. A contribution claimed that additional tests need to be added to the specifications like UV, extended salt mist and a 1000 h damp heat test to improve the reliability of the outer closure material.
- The decision was re-directed towards IEC SC86B as performance requirements should remain harmonized. A liaison statement will be sent to IEC SC86B WG6 for harmonization with the IEC 61753-111 closure documents. A new project was initiated in ITU-T to start maintenance of L.201/L.13. Commscope was selected as editor for the revision.
- Request for a new recommendation "node in customer living units" from China.
- The requested products are for indoor (category C) applications and are already classified in IEC 61753-1 Ed2 as "Wall Outlets" and already described in CENELEC EN 50411-3-5. This new recommendation would complete the required network elements or nodes to build a FTTH network. The title was changed into "Nodes for customer indoor premises". Document name for new work item became L.ncip.
- Draft new recommendation L.font. This contribution was given by India.
- Proposal for new work item L.font "Requirements for Fiber Optic Network Terminal Box". This product seems to be a large wall box (better to say wall cabinet) with a lock to avoid theft of the terminal equipment. It includes electronics and for this reason a minimum IP55 protection for outdoor applications and IP40 for indoor was suggested. Temperature range for qualification test is -40°C to +70°C (since heat dissipating of electronics is included). The title was changed into "Requirements for combined fiber distribution and terminal equipment box".
- Request for a new recommendation L.uhc "Ultra-high-fiber-count optical cables and their installations". Contribution from China. These are the cables with the "rollable ribbon" made with 200 µm coated fibers. Driving factor is 5G roll-out. Proposal is to add splicing experience in closures. The Chinese delegates mentioned that these are new cable designs, but the Japanese delegates from NTT mentioned that such cables have already existed for years. Japan recommends making a supplement to the existing cable documents and not to make a new recommendation. The trend is indeed that the number of fibers is increasing in cables, but that does not mean that the existing cable requirements need to change.
- New recommendation proposed by China for optical/electrical hybrid fiber cable and related application scenarios. The introduction of IP cameras requires hybrid cables to provide electrical power (up to 100 W), while high speed communication will be provided by optical fiber over 100 m. In-house applications with ONU and UPC were proposed. 5G room was mentioned.
- This also requires new connector types. An example of a hybrid SC connector was shown.
- More contributions were requested to learn more about the applications (what about polarity?). Decision was made to start project on the cable first. Connector requirements will be for later.

SG15Q7: Characteristics of optical components and subsystems

- Decision made that SG15Q7 will merge with SG15Q6 in the next meeting.
- Request from China to update L.400/L.12 for fiber splices was approved. Splice loss distributions were presented for fusion splices made with ITU-T G.652.D and G.657 fibers. This data confirmed the current performance specification for single fiber splices. Loss distribution for ribbon fiber was shown. Decision was made for adding the attenuation of ribbon splices to the L.400/L.12 document. The proposed limits from China are in-line with the splice values accepted by the industry. The scope of L.400/L.12 should remain the same. An addition of an appendix was proposed to explain the effects of the fiber parameters like mode field diameter when splicing random selected fibers. Commscope was appointed as the preferred editor. This was approved in the general meeting.

The next meeting of ITU-T SG15 will be held September 7-18, 2020, in Geneva, Switzerland.

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