Access Network Transport

Standards Work Plan

April 2021 Q1/15 meeting

Contact persons for the project updating:

|  |  |  |
| --- | --- | --- |
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Access Network Transport is an ITU-T Project dealing with studies and Recommendations on the Access Network.

Access Network Transport Standards Work Plan

**Issue 33, April 2021**

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ACCESS NETWORK TRANSPORT STANDARDS WORK PLAN

ISSUE 33, APRIL 2021

# General

ANT Standards Work Plan is a living document. The actual version is available at <http://www.itu.int/en/ITU-T/studygroups/com15/Pages/ant.aspx> .

# Introduction

Today's global communications world has obscured traditional boundaries in network access between Telecommunication Network Operators, Private Network Providers, Satellite and Cable TV Networks, Mobile Networks and Information Technologies. This has resulted in a number of different Study Groups within the ITU-T, e.g. SG 9, 13, 15 developing Recommendations related to transport in the access. Moreover, ITU-R and other standards bodies, fora and consortia are also active in this area.

Recognizing that without a strong coordination effort there is the danger of duplication of work as well as the development of incompatible and non-interoperable standards, the WTSC 96 designated Study Group 15 as **Lead Study Group** on **Access Network Transport (ANT) - reaffirmed at the WTSA-16 -** with the mandate to:

1. study the appropriate core Questions (Question 1, 2 and 4/15),
2. define and maintain an overall (standards) framework, in collaboration with other SGs and standards bodies
3. coordinate, assign and prioritize the studies done by the Study Groups (recognizing their mandates) to ensure the development of consistent, complete and timely Recommendations.

Study Group 15 entrusted WP 1/15, under Question 1/15, with the task to manage and carry out the Lead Study Group activities on coordination of Access Network Transport standards.

# 1. Scope

As the mandate of this Lead Study Group role implies, the standards area covered relates to transport, i.e. Circuit Layer (CL), Path Layer (PL) and Transmission Media Layer (TM) in terms of the general protocol reference model for the Access Network ITU-T Recommendation G.902, Fig. 2/G.902.
The corresponding transport functions include:

1. multiplexing function
2. cross connect function, including grooming and configuration
3. management functions
4. physical media functions.

The outcome of the Lead Study Group activities is twofold, consisting of an:

* access network transport (ANT) standards overview
* access network transport (ANT) standards work plan

The main purpose of **the standards overview** is to identify the existing standards related to the Access Network Transport technologies.

The presentation of the standards overview consists of two matrixes identifying key elements of the access network transport technologies and a listing of the various standards organizations and their standards identified, including their titles and publication dates.

The main purpose of **the standards work plan** is to:

* define a corresponding matrix table, including the various standards organizations,
* provide an overview of ongoing ANT activities,
* monitor progress of ANT standards work,
1. facilitate the coordination/negotiation for additional standards work on ANT to be undertaken,
2. identify lack of standards,
3. identify duplication and/or overlap,
4. discover priorities and market needs.

The **work plan** will reflect the agreement reached between the parties concerned on the necessary actions to remedy the deficiencies identified.

Apart from taking the Lead Study Group role within the ITU-T, Study Group 15 also endeavor to cooperate with ITU-R and other relevant organizations, such as Broadband Forum, ETSI, IEEE , ISO/IEC, etc..

# 2.  General Access Network architecture

**Access Network Transport (ANT):**

Based on definitions specified in ITU-T Rec. G.902 the Access Network (AN) provides transport bearer capabilities for the provision of telecommunications services inside of the AN between a service node interface (SNI) providing customer access to a service node and each of the associated interfaces towards the Customer Premises Network(s) which are being grouped as user network interfaces (UNIs) . An Access Network implementation comprises transmission media and access network element (NE) entities.
An Access Network is delimited by its interfaces. Users are connected via a User Network Interface (UNI) to the network. The AN is connected to the Service Node (SN) via the Service Node Interface (SNI) and to the Telecommunication Management Network (TMN) via a Q3 interface.
Figure 1 “ General Access Network architecture and boundaries” shows the AN with the UNI, SNI and Q3 interface as the boundaries to other network entities.



Figure 1 “ General Access Network architecture and boundaries” (extracted from ITU-T G.902)

An Access Network element can be configured and managed through a Q3 interface which may be implemented at the Q reference point. This Q reference point is the access point for management information, configuration control, performance monitoring and maintenance as defined in ITU-T Rec. M.3010.

In principle there are no restrictions on the types and number of SNIs and UNIs which an Access Network may implement. The Access Network does not include Customer Premises Networks and/or terminal equipment respectively.

**Functions of Access Network Transport (ANT):**

The Transport Function (TF) provides the paths for the transport of common bearers between different locations in the Access Network (AN) and the media adaptation for the relevant transmission media used.

Examples of transport functions are:

1. multiplexing function,
2. cross connect function including grooming, on demand connection and configuration,
3. management functions,
4. physical media function.

# 3. Correspondents and contacts

A critical part of the ANT standardization work is the network of contacts for the development of relevant standards and the tracking of correspondence, usually in the form of liaisons, to guide the work. The list of contacts below provides an overview of the other relevant Study Groups in the ITU and other Standardization Groups corresponding through liaisons with Study Group 15 about matters related to the ANT Standards Overview and Work Plan.

## 3.1 List of Contacts

| **Body**  | **Contact person** | **Link to the Web-Site** | **Status of contact****NotesLiaison Tracking** |
| --- | --- | --- | --- |
| ATIS |  | <https://www.atis.org/> |  |
| Broadband Forum | Lincoln LavoieBroadband Forum Technical Committee Chairlylavoie@iol.unh.edu | [www.broadband-forum.org/](http://www.broadband-forum.org/) | TD 334 GENJan-Feb 2020Liaison RapporteurFrank Van der Puttenfrank.van\_der\_putten@nokia.com |
| CENELECEUROPEAN COMMITTEE FOR ELECTROTECHNICAL STANDARDIZATION |  | [www.cenelec.eu/](http://www.cenelec.eu/) |  |
| CENELEC CLC/TC205, "Home and Building Electronic Systems (HBES)"  |  | <https://www.cenelec.eu/dyn/www/f?p=104:7:224592411655001::::FSP_ORG_ID,FSP_LANG_ID:1258281,25> |  |
| CENELEC CLC/TC209, "Cable networks for television signals, sound signals and interactive services"  |  | <https://www.cenelec.eu/dyn/www/f?p=104:7:224592411655001::::FSP_ORG_ID,FSP_LANG_ID:1258287,25> |  |
| CENELEC CLC/TC215, "Electrotechnical aspects of telecommunication equipment” |  | <https://www.cenelec.eu/dyn/www/f?p=104:7:224592411655001::::FSP_ORG_ID,FSP_LANG_ID:1258297,25> |  |
| CENELEC TC86A“Optical fibres and optical fibre cables”CENELEC TC86BXA“Fibre optic interconnect, passive and connectorised components” |  | <https://www.cenelec.eu/dyn/www/f?p=104:7:224592411655001::::FSP_ORG_ID,FSP_LANG_ID:1258369,25> | TD 462 GEN April 2021Liaison RapporteurDaniel Daems daniel.daems@commscope.comTD 461 GENApril 2021 Liaison RapporteurDaniel Daemsdaniel.daems@commscope.com |
| ETSI ETSI BRAN, ETSI DECT, ETSI 3GPP, ETSI ATTMETSI= European Telecommunications Standards Institute |  | [www.etsi.org](http://www.etsi.org) |  |
| ETSI TC ATTM (Access Terminals, Transmission and Multiplexing)ATTM has the following Working Groups **AT2**: (Infrastructure, Physical Networks & Communication Systems)**TM4**: (Fixed Radio Systems)**TM6** (Wireline Access Network Systems)TG IC CG: (Co-ordination Group Cenelec-ETSI Installations & Cabling) | Chairman: ATTMDominique RocheeG4Udominique.roche@eg4u.orgATTM Technical SecretaryPat O’Keeffe eG4U Pat.okeeffe@eg4u.ie | [portal.etsi.org/home.aspx](http://portal.etsi.org/home.aspx) | TD 466 WP1Jan – Feb 2020 |
| ATTM AT2 | Chairman : Olivier Bouffant Orange2 avenue Pierre MarzinLannionFranceolivier.bouffant@orange.com  | [portal.etsi.org/home.aspx](http://portal.etsi.org/home.aspx) | TD 579 WP1April 2021 |
| ATTM TM4 | ChairmanDr. Roberto MacchiSIAE Microelettronica SpAVia MichelangeloBuonarroti 21I-20093Cologno MonzeseItalyRoberto.Macchi@SIAEMIC.it Vice Chairman & SecretaryDr. Nader ZeinNEC Europe Ltd.Athene, Odyssey Business ParkWest End RoadHA46QE South Ru–slip - UKnader.zein@emea.nec.com | [portal.etsi.org/home.aspx](http://portal.etsi.org/home.aspx) |  |
| ATTM TM6 | ChairmanPat O’KeeffeeG4U Pat.okeeffe@eg4u.ie | [portal.etsi.org/home.aspx](http://portal.etsi.org/home.aspx) | TD 466 WP1Jan – Feb 2020 |
| ETSI TC CABLEIntegrated Broadband Cable Telecommunication Networks |  | [portal.etsi.org/home.aspx](http://portal.etsi.org/home.aspx) |  |
| ETSI ISG F5G5th Generation Fixed Network |  | <https://www.etsi.org/committee/1696-f5g> | TD 575 WP1April 2021Liaison RapporteurTony ZengHuaweiChinatony.zengyan@huawei.com |
| FSAN=Full Service Access NetworkThe single FSAN Working Group is called Optical Access Network (OAN). Within OAN are the following active Task Groups:Operation and Engineering Task GroupNext Generation PON (NG-PON) Task Group | OAN Working Group Chair:Junichi KaniOperation and Engineering Task Group Co-Chairs: Wang Bo and Jiang MingNext Generation PON Task Group Co-Chairs: Peter Dawes | <https://www.fsan.org/> | Contact made through those attending SG15/Q2 meetings. |
| IECIEC = International Electro-technical Commission |  | [www.iec.ch](http://www.iec.ch) |  |
| IEC SC 86AFibres and cables |  | <https://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:1398> | TD 477 GEN April 2021Liaison RapporteurPeter PondilloCorning Incorporatedpondillopl@corning.com |
| IEC SC 86BFibre optic interconnecting devices and passive components |  | https://www.iec.ch/dyn/www/f?p=103:7:0::::FSP\_ORG\_ID:1401 | TD 472 GENApril 2021Makoto MurakamiLiaison RapporteurNTTmurakami.makoto@lab.ntt.co.jp |
| IEC SC 86CFibre optic systems and active devices |  | https://www.iec.ch/dyn/www/f?p=103:7:0::::FSP\_ORG\_ID:1403 | TD 478 GENApril 2021Peter PondilloLiaison RapporteurCorning Incorporated pondillopl@]corning.com |
| IEEE 802IEEE=Institute of Electrical and Electronics EngineersLAN/MAN Standards Committee |  | [www.ieee802.org/](http://www.ieee802.org/) | [Joint IEEE 802 and ITU-T Study Group 15 Workshop](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/202001/Pages/default.aspx)Geneva, 25 January 2020 |
| IEEE 802.1Working Group | Glenn ParsonsChair IEEE 802.1 Working GroupGlenn.parsons@ericsson.com | [www.ieee802.org/1/](http://www.ieee802.org/1/) | TD 468 GENApril 2021Liaison RapporteurGlenn ParsonsGlenn.parsons@ericsson.com  |
| IEEE 802.3Ethernet Working Group | David LawChair IEEE 802.3 Ethernet Working Groupdlaw@hpe.com | [www.ieee802.org/3/](http://www.ieee802.org/3/) | TD 583 WP1April 2021TD 466 GENApril 2021Liaison RapporteurPeter StassarHuawei Technologiespeter.stassar@huawei.com |
| IEEE 802.11Working Group for WLAN Standards |  | [www.ieee802.org/11/](http://www.ieee802.org/11/) |  |
| IEEE 802.16Working Group on Broadband Wireless Access |  | [www.ieee802.org/16/](http://www.ieee802.org/16/) |   |
| IEEE 1901Working Group on Power Line Communications (COM/PLC) | Chair, Jean-Philippe Faure jean-philippe.faure@progilon.com  | <https://sagroups.ieee.org/1901/> | TD 639 WP1April 2021 |
| IEEE 1904Access Networks Working GroupIEEE 1904.1Working GroupStandard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON) |  | <http://www.ieee1904.org/>[www.ieee1904.org/1/](http://www.ieee1904.org/1/) |  |
| ITU=International Telecommunication Union |  | [www.itu.int/en/Pages/default.aspx](http://www.itu.int/en/Pages/default.aspx) |  |
| ITU-RITU Radiocommunication Sector |  | [www.itu.int/en/ITU-R/Pages/default.aspx](http://www.itu.int/en/ITU-R/Pages/default.aspx) |  |
| ITU-R WP1A | Philippe AubineauCounsellor, ITU-R SG1philippe.aubineau@itu.intJohn ShawChairman, Correspondence Group on EMC- Related Interference and Coexistence of wired telecommunication systems with radiocommunication systemsshawzone@gmail.com | [www.itu.int/en/ITU-R/study-groups/Pages/default.aspx](http://www.itu.int/en/ITU-R/study-groups/Pages/default.aspx) | TD 554 WP1April 2021 |
| ITU-R WP5C |  | [www.itu.int/en/ITU-R/study-groups/rsg5/rwp5c/Pages/default.aspx](http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5c/Pages/default.aspx) |  |
| ITU-R WP5D |  | [www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/Pages/default.aspx](http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/Pages/default.aspx) |  |
| ITU-R WP6A | John ShawRapporteur on Power Line Telecommunication (PLT) and general EMC-related potentialshawzone@gmail.com | <https://www.itu.int/en/ITU-R/study-groups/rsg6/rwp6a/Pages/default.aspx> | TD 547 WP1April 2021 |
| ITU-R WP6B | Paul GardinerChairman, WP6BPaul.Gardiner@sony.com | <https://www.itu.int/en/ITU-R/study-groups/rsg6/rwp6b/Pages/default.aspx> | TD 220 WP1October 2018 |
| ITU-TITU Telecommunication Standardization Sector |  |  |  |
| ITU-T SG2 |   | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx> |  |
| ITU-T SG9  | Satoshi MiyajiChairman SG9KDDI Corporation, Japansa-miyaji@kddi.comKei Kawamura Rapporteur for Q1/9KDDI Corporationki-kawamura@kddi.com | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx> | TD 487 WP1September 2020 |
| ITU-T SG11 | Andrey KucheryavyChairman SG11Saint-Petersburg State University of Telecommunications, Russian Federationakouch@mail.ru | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx> | TD 471 GENApril 2021 |
| ITU-T SG12  |  | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx> |  |
| ITU-T SG13 |  | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx> |  |
| ITU-T SG16 |   | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx> |  |
| ITU-T SG17 |   | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx> |  |
| ITU-T SG20 |  | <http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx> |  |
| ITU-DTelecommunication Development Sector |  |  |  |
| ITU-D SG1  |  | <https://www.itu.int/net4/ITU-D/CDS/sg/index.asp?lg=1&sp=2018&stg=1> |  |
| ITU-D SG2 |  | <https://www.itu.int/net4/ITU-D/CDS/sg/index.asp?lg=1&sp=2018&stg=2> |  |
| MEF Metro Ethernet Forum |  | [metroethernetforum.org/](http://metroethernetforum.org/) | Liaison RapporteurJessy ROUYERNokiajessy.rouyer@nokia.com |
| SCTE SCTE=Society of Cable Telecommunications Engineers |  | <https://www.scte.org/> |  |
| OIFOIF = Optical Internetworking ForumOIF Physical and Link Layer (PLL) Track |  | [www.oiforum.com/](http://www.oiforum.com/) | Liaison RapporteurBernd TeichmannNokiabernd.teichmann@nokia.com |
| TIA FO 4 TIA = Telecommunication Industry Association |  | [www.tia.online.org](http://www.tia.online.org) |  |
| TIA TR-41  |  | [www.tia.online.org](http://www.tia.online.org) |  |
| TIA TR-42 |  | [www.tia.online.org](http://www.tia.online.org) |  |
| TTA = Telecommunications Technology AssociationTTA PG 05, Korea |  | [www.tta.or.kr/English/](http://www.tta.or.kr/English/) |  |

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# 4. Overview of existing holes/overlaps/conflicts

## 4.1 List of ANT Issues identified/mostly gaps (missing Standardization activities)

**Status: April 2021**

| **No.** | **Subject** | **Status** | **Action** |
| --- | --- | --- | --- |
| 1. | Practicability of the ANT Standards OverviewContribution C 1169 (June – July 2015)Proposal to initiate a plan to improve the format of the ANT Standards Overview using a web-based method. The implementation of the web-based ANT Standards Overview is closed.The update takes place at the same time as the ANT Standards Overview document update.The updated web-based ANT Standards Overview is available at [Web-based Access Network Transport (ANT) Standards Overview​](https://www.itu.int/net4/ITU-T/landscape#?topic=0.105&workgroup=1&searchValue=&page=1&sort=Revelance) . |   |   |
| 2.  | ITU-T SG15 - Question 1 - noted that ETSI launches a new group on 5th Generation Fixed Network (F5G) “*shifting the paradigm from Fibre to the Home to Fibre to Everything Everywhere*”. |  | To follow up ETSI 5GN activities with Q2/15 and Q18/15 |

## 5. Ongoing Standardization activities in the area of Access Network Transport

**5.1 List of ongoing standardization activities in the area of Access Network Transport within ITU-T SG15 - WP1/15**

**Status: April 2021
Table updated with the latest Q2 and Q4 activities resulting from April 2021 ITU-T SG15 - WP1 plenary meeting**

| **Work item** | **Question** | **Status** | **Timing** | **Approval process** | **Subject / Title** | **Base text(s)** | **Editor(s)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [G.984.5 Revised](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16798) | Q2/15 | Under study | 2021-12 | AAP | Gigabit-capable passive optical networks (G-PON): Enhancement band - Revised | G.984.5 Amd2C-2469 | Dezhi (James) Zhang |
| [G.987.3 Amd.2](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16799) | Q2/15 | Consented | 2021-04 | AAP | 10-Gigabit-capable passive optical networks (XG-PON): Transmission convergence (TC) layer specification – Amendment 2 | TD-710-PLEN  | Frank Effenberger |
| [G.988 (2017) Amd.4](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16471) | Q2/15 | Consented | 2021-04 | AAP | ONU management and control interface (OMCI) specification: Amendment 4 | TD-703-PLEN | Marta Seda, Lin Wei |
| G.988 (2017) Amd.5 | Q2/15 | Under study | 2021-12 | AAP | ONU management and control interface (OMCI) specification: Amendment 5 | - | Marta Seda, Lin Wei |
| [G.989.3 Revised](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16800) | Q2/15 | Consented | 2021-04 | AAP | 40-Gigabit-capable passive optical networks (NG-PON2): Transmission convergence layer specification – Revised | TD-729-PLEN  | Peter Dawes, Denis A. Khotimsky, Dezhi (James) Zhang |
| [G.9803 (2018) Amd.2](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16801) | Q2/15 | Under study | 2021-12 | AAP | Radio over fibre systems – Amendment 2 | [C-1987](http://www.itu.int/md/T17-SG15-C-1987)  | Toshiaki Kuri, Yuanqiu Luo |
| [G.9804.1 Amd.1 (ex G.hsp.req)](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=15229) | Q2/15 | Consented | 2021-04 | AAP | Higher Speed Passive Optical Networks: Requirements – Amendment 1 | TD-702-PLEN | Dezhi (James) Zhang |
| G.9805 | Q2/15 | Under study | 2021-12 | AAP | Coexistence of Passive Optical Network Systems | G.984.5 Amd2, C-2469 | Dezhi (James) Zhang, Dekun Liu |
| [G.9806 Amd.2](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16802) | Q2/15 | Consented | 2021-04 | AAP | Higher speed bidirectional, single fibre, point-to-point optical access system - Amendment 2 | TD-697-PLEN | Fabrice Bourgart, Shan Wey |
| G.9806 Amd.3 | Q2/15 | Under study | 2022 | AAP | Higher speed bidirectional, single fibre, point-to-point optical access system - Amendment 3 | C-2455 | Fabrice Bourgart, Shan Wey |
| [G.9807.3 (ex G.SuperPON)](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=15208) | Q2/15 | Under study | 2021-12 | AAP | Wavelength multiplexed point-to-multipoint 10-Gigabit-capable passive optical network | TD-585-WP1  | Cedric Lam, Xuming Wu |
| G.9804.3 (ex.[G.hsp.50Gpmd](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14550)) | Q2/15 | Consented | 2021-04 | AAP | Higher Speed Passive Optical Networks: 50G PMD | TD-718-PLEN | Dechao Zhang, Dekun Liu, Rene Bonk |
| G.9804.3 Amd.1 | Q2/15 | Under study | 2022 | AAP | Higher Speed Passive Optical Networks: 50G PMD: Amendment 1 | - | Dechao Zhang, Dekun Liu, Rene Bonk |
| G.9804.2 (ex.[G.hsp.comTC](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14549)) | Q2/15 | Consented | 2021-04 | AAP | Higher Speed Passive Optical Networks: Common Transmission Convergence layer | TD-709-PLEN  | Dan Geng, Yuanqiu Luo, Shan Wey |
| G.9804.2 Amd.1 | Q2/15  | Under study | 2021-12 | AAP | Higher Speed Passive Optical Networks: Common Transmission Convergence layer: Amendment 1 | - | Dan Geng, Yuanqiu Luo, Shan Wey |
| [G.hsp.TWDMpmd](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14551) | Q2/15 | Under study | 2022 | AAP | Higher Speed Passive Optical Networks: TWDM PMD | [TD-574-WP1](http://www.itu.int/md/T17-SG15-C-1136)  | Richard Goodson, Hal Roberts |
| [G.sup55](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16553) | Q2/15 | Under study | 2021-12 | Agreement | Radio-over-fibre (RoF) technologies and their applications” | [TD-632-WP1](http://www.itu.int/md/T17-SG15-200907-TD-WP1-0533)  | Toshiaki Kuri |
| [G.sup.5GBH](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16823) | Q2/15 | Under study | 2021-12 | Agreement | G.Sup document on 5G small cell backhaul/midhaul over TDM-PON(G.sup 5GBH) | TD-619-WP1  | Pascal Dom, Wu Jia, Xuming Wu |
| [G.sup.CoDBA](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16809) | Q2/15 | Agreed | 2021-04 | Agreement | OLT capabilities for Cooperative DBA (G.sup.CODBA) | [TD-](http://www.itu.int/md/T17-SG15-C-2264)717-PLEN  | Francois Fredricx, Edward Walter |
| G.9802.2(ex.[G.WDMPON.pmd&tc](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16804" \o "See more details)) | Q2/15 | Under study | 2022 | AAP | Wavelength Division Multiplexed Passive Optical Network: Physical media dependent (PMD) and Transmission Convergence (TC) (G.WDMPON.pmd&tc)  | [C-2067](http://www.itu.int/md/T17-SG15-C-2067)  | Peter Dawes, Derek Nesset, Shan Wey |
| [G.9802.1 (ex.G.WDMPON.req](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16803)) | Q2/15 | Consented | 2021-04 | AAP | Wavelength Division Multiplexed Passive Optical Network: general requirement (G.WDMPON.req)  | TD-711-PLEN | Dezhi (James) Zhang, Fabrice Bourgart  |
| G.9802.1 Amd.1 | Q2/15 | Under study | 2022 | AAP | Wavelength Division Multiplexed Passive Optical Network: general requirement (G.WDMPON.req): Amendment 1 | TD-711-PLEN | Dezhi (James) Zhang, Fabrice Bourgart |
| G.9802 Revised | Q2/15 | Under study | 2022 | AAP | Multiple-wavelength passive optical networks (MW-PONs) | G.9802 | Dechao Zhang, Yuanqiu Luo |
| G.sup.45 revised | Q2/15 | Under study | 2022 | Agreement | [Optical access power conservation](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=10013) | C-2309 | Fabrice Bourgart |
| G.sup.PONslicing | Q2/15 | Under study | 2021-12 | Agreement | PON slicing | - | Peter Dawes, Francois Fredricx, Gyaneshwar Gupta |
| [G.994.1 Amd.1](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16824) | Q4/15 | Under study | 2021-12 | AAP | Handshake procedures for digital subscriber line transceivers - Amendment 1 | - | Miguel Peeters |
| [G.997.2 Amd.3](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16825) | Q4/15 | Under study | 2021-12 | AAP | Physical layer management for G.fast transceivers: Amendment 3 | - | Miguel Peeters |
| [G.997.3 Amd.1](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16826) | Q4/15 | Under study | 2021-12 | AAP | Physical layer management for MGfast transceivers - Amendment 1 | - | Miguel Peeters |
| [G.997.3 (ex G.ploam-MGfast)](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16477) | Q4/15 | Approved 2021-04-23 | 2021-04 | AAP | Physical layer management for MGfast transceivers | TD-701R1-PLEN | Miguel Peeters |
| [G.9701 (2019) Amd.4](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16829) | Q4/15 | Under study | 2021-12 | AAP | Fast access to subscriber terminals (G.fast) - Physical layer specification: Amendment 4 | - | Les Brown |
| [G.9710 Amd.1](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16827) | Q4/15 | Under study | 2021-12 | TAP | Multi-gigabit fast access to subscriber terminals (MGfast) - Power spectral density specification - Amendment 1 | - | Eric Wang |
| [G.9711 Amd.1](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16828) | Q4/15 | Under study | 2021-12 | AAP | Multi-gigabit fast access to subscriber terminals (MGfast) - Physical layer specification- Amendment 1 | TD-598-WP1 | Eric Wang |
| [G.9711 (ex G.mgfast-PHY)](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14267) | Q4/15 | Approved 2021-04-23 | 2021-04 | AAP | Multi-gigabit fast access to subscriber terminals (MGfast) - Physical layer specification (New) | TD-708R1-PLEN | Eric Wang |
| [G.fastback](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14895) | Q4/15 | Under study | 2021-12 | AAP | Transceiver and system specifications for backhaul applications based on G.fast | [TD-595-WP1](http://www.itu.int/md/T17-SG15-200907-TD-WP1-0524)  | Les Brown |
| [G.Sup50](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=15230) | Q4/15 | Under study | 2021-12 | Agreement | Overview of digital subscriber line Recommendations - Revision | - | Miguel Peeters |

**5.2 List of ongoing standardization activities in the area of Access Network Transport in other groups within ITU and other Standards Development Organizations**

The following list contains developing Access Network Transport standards reported by the various groups by incoming Liaison documents or contributions. The list is a living document subject to change from correspondence and liaison statements during interim periods between Study Group meetings.

This list is intended to improve understanding and communication of the on-going work in the different Standardization Groups and may help identify possible gaps or overlaps.

**Status: April 2021**

|  |  |  |  |
| --- | --- | --- | --- |
| Item No. | Source | Subject / Title | Comment |
| 1. | **Broadband Forum***TD 334 GENJan-Feb 2020* | **Broadband Forum** <https://www.broadband-forum.org>Broadband Forum Technical Committee Chair informs that on October 14, 2019, Broadband Forum took the final step to become ‘open’, adopting new Bylaws, which resulted in the Forum considering all its activities to be ‘open’ for the purposes of the U.S. Export Administration Regulations. The new Bylaws eliminate any restrictions on sharing Forum documentation and allow for anyone with interest to have access to Forum deliberations and documents if they apply for it.Information on Broadband Forum Projects “Access-Next” can be found at<https://www.broadband-forum.org/projects/access-next>Published Broadband Forum Technical Reports related to ANT can be found at <https://www.broadband-forum.org/technical-reports>Broadband Forum Abstract Test Plans related to ANT can be found at<https://www.broadband-forum.org/abstract-test-plans> | More information on this change can be found at <https://www.broadband-forum.org/about-bbf/legal>Broadband Forum Work in Progress related to ANT can be found at<https://www.broadband-forum.org/broadband-forum-resources/work-in-progress> |
|  | **CENELEC TC86A***TD 462 GENApril 2021**TD 461 GENApril 2021* | **CENELEC TC 86A - Optical fibres and optical fibre cables**TC86A informs: Revision of CLC/TR 50510, “Fibre optic access to end-user - A guideline to building of FTTX fibre optic network”. The document received approval for a 9-month tolerance (delay). Comments are resolved and Enquiry Draft is planned to circulate before 23 April 2021.TC86BXA WG1 (Fibre optic connectors & passive components) and WG2 (Fibre management systems and protective housings) had no meetings since last ITU-T SG15 meeting in September 2020.  | More information on CLC/TC 86A at<https://www.cenelec.eu/dyn/www/f?p=104:7:1089811682801701::::FSP_ORG_ID,FSP_LANG_ID:1258369,25> |
|  | **IEC TC 86***TD 478 GEN**April 2021* | **IEC SC 86C Fibre optic systems and active devices**IEC SC 86C informs about the progress of 61280-4-3 (New PON attenuation measurement for installed PON networks) - Development was initiated considering that current attenuation measurement procedure, defined by IEC 61280-4-2, is not sufficient for installed passive optical networks. - Installation of PONs often do not follow the traditional installation sequence of point-to-point cable plants, so that some parts of the PON can be still under construction while other parts are already in service; Practically, in absence of appropriate procedures, measurements are often skipped leading to up to 30% of subscriber connection failure.- Document includes an informative annex which provides the description of a process to estimate of the attenuation using a U band filtered optical time-domain reflectometer (FOTDR) in an upstream direction, after partial activation of the PON. This annex also discusses on the effect of the FOTDR on the OLT in absence of any co-existence element. - To make this annex normative, IEC would like ITU-T to consider this measurement and specify the OLT accordingly.- Note that 61280-4-3 includes calculation of measurement uncertainties of all measurement methods showing that measurement uncertainties of the method using the FOTDR are acceptable. | More information on IEC SC 86C at<https://www.iec.ch/dyn/www/f?p=103:7:::::FSP_ORG_ID:1403> |
|  | **ETSI TC ATTM***TD 579 WP1April 20121* | **ETSI TC ATTM - Access, Terminals, Transmission and Multiplexing**<https://www.etsi.org/committee/1390-attm>ETSI ATTM AT2 informs that it will study the new version of the ANT Standards Overview and Work Plan in its next AT2 meeting.TC ATTM activities in achieving eco-efficient use of telecommunications networks are described below:- General eco-efficient engineering of ICT sites and networks: describe practices which shall be taken to improve eco-efficiency of sites and networks for broadband deployment.Documents of TS 105 174 Series: TS 105 174-1 (Generalities), TS 105 174-2 (Broadband Deployment and Energy Management; Part 2: ICT Sites), TS 105 174-4-1 (Broadband Deployment and Energy Management; Part 4: Access networks; Sub-part1: Fixed Access Networks).- Global KPIs (Key Performances Indicators): describe aspects of Global Key Performance Indicators in relation to energy management.Documents of ES 205 200 Series: ES 205 200-1 (Operational infrastructures, Part 1: General requirements), ES 205 200-2-1 (Operational infrastructures; Part 2: Specific requirements; Sub-part 1: Data centres), ES 205 200-2-2 (Operational infrastructures; Part 2: Specific requirements; Sub-part 2: Fixed Broadband access networks), ES 205 200-3 (Operational infrastructures; Part 3: Global KPIs for ICT Sites)Work Programme of ETSI ATTM can be found at following URL<https://portal.etsi.org/tb.aspx?tbid=689&SubTB=689,693,851,706,694,695#/> | See Terms of Reference (ToR) at<https://portal.etsi.org/TB-SiteMap/ATTM/ATTM-ToR>  |
|  | **ETSI TC BRAN** | **ETSI TC BRAN - Broadband Access Radio Networks**<https://www.etsi.org/committee/1389-bran>Work Programme of ETSI BRAN can be found at following URL<https://portal.etsi.org/tb.aspx?tbid=287&SubTB=287#/> | See Terms of Reference (ToR) at<https://portal.etsi.org/TB-SiteMap/bran/bran-tor> |
|  | **ETSI TC Cable** | **ETSI TC Cable – Integrated Broadband Cable Telecommunications Networks**<https://www.etsi.org/committee/1392-cable>Work Programme of ETSI Cable can be found at following URLhttps://portal.etsi.org/tb.aspx?tbid=786&SubTB=786,791,792,793,794#/ | See Terms of Reference (ToR) at<https://portal.etsi.org/TB-SiteMap/CABLE/CABLE-ToR> |
|  | **ETSI TC EE** | **ETSI TC EE – Environmental Engineering**<https://www.etsi.org/committee/1395-ee>Work Programme of ETSI EE can be found at following URL<https://portal.etsi.org/tb.aspx?tbid=28&SubTB=28,29,30,635,853#/> | See Terms of Reference (ToR) at<https://portal.etsi.org/TB-SiteMap/ee/ee-tor> |
|  | **ETSI ISG F5G** | **ETSI ISG - Fifth Generation Fixed Network (F5G)**<https://www.etsi.org/committee/1696-f5g>Work Programme of ETSI F5G can be found at following URL<https://portal.etsi.org/tb.aspx?tbid=885&SubTB=885#/> | See Terms of Reference (ToR) at<https://portal.etsi.org/Portals/0/TBpages/F5G/ISG_F5G_ToR_D-G_APPROVED_20191210.pdf> |
|  | **IEEE 802.1***TD 468 GENApril 2021* | **IEEE 802.1 Working Group**<https://1.ieee802.org/>CFM (Connectivity Fault Management) is widely used in Access and the YANG model was coordinated with ITU-T SG15, BBF & MEF. IEEE 802.1Qcx-2020 - IEEE Standard for Local and Metropolitan Area Networks--Bridges and Bridged Networks Amendment 33: YANG Data Model for Connectivity Fault ManagementPublished Date: 2020-10-05Link Layer Discovery Protocol (LLDP) also has some use in Access. There is new work underway in IEEE to add a YANG model (802.1ABcu) as well as adding longer or multiframe TLVs (802.1ABdh).[P802.1ABcu](https://1.ieee802.org/tsn/802-1abcu/) - LLDP YANG data modelThe draft is currently in working group ballotFor more information on project P802.1ABcu - Standard for Local and Metropolitan Area Networks - Station and Media Access Control Connectivity Discovery Amendment: YANG Data Model see at<https://standards.ieee.org/project/802_1ABcu.html>[P802.1ABdh](https://1.ieee802.org/tsn/802-1abdh/) - Station and Media Access Control Connectivity Discovery - Amendment: Support for Multiframe Protocol Data UnitsThe latest draft ([D1.0](https://www.ieee802.org/1/files/private/dh-drafts/d1/802-1ABdh-d1-0.pdf)) is in TG ballotFor more information on project P802.1ABdh - Standard for Local and Metropolitan Area Networks - Station and Media Access Control Connectivity Discovery Amendment: Support for Multiframe Protocol Data Units see at<https://standards.ieee.org/project/802_1ABdh.html> |  More information on IEEE 802.1Qcx can be found at following URL<https://standards.ieee.org/standard/802_1Qcx-2020.html> |
|  | **IEEE 802.3***TD 583 WP1April 2021* | **IEEE 802.3 Ethernet Working Group**<http://www.ieee802.org/3/>Since last IEEE 802.3 Working Group liaison communication, there were several changes in the status of access-related projects within the IEEE 802.3 Working Group:**Update on IEEE P802.3cp Task Force**The IEEE P802.3cp Task Force is continuing its technical work on the development of bidirectional 10 Gb/s, 25 Gb/s, and 50 Gb/s optical access PHYs, supporting operating distances of at least 10 km, at least 20 km, and at least 40 km.The draft standard for this Task Force is currently in the IEEE SA Ballot stage.**Update on IEEE P802.3cs Task Force**The IEEE P802.3cs Task Force is continuing its technical work on the development of increased-reach Ethernet optical subscriber access (so-called Super-PON), supporting a passive point-to-multipoint ODN with a reach of at least 50 km with at least 1:64 split ratio per wavelength pair, with at least 16 wavelength pairs for point-to-multipoint PON operation. Operation of 10 Gb/s downstream and 2.5 Gb/s and 10 Gb/s upstream is also expected. The draft standard for this Task Force is currently in the IEEE 802.3 Working Group ballot stage.**Update on IEEE P802.3cx Task Force**The IEEE P802.3cx Task Force has started its technical work on the development of optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements.The draft standard for this Task Force is currently in the Task Force review stage. The adopted timeline calls for the start of the IEEE 802.3 Working Group ballot in the second half of 2021. | More information about the IEEE P802.3cp Task Force, including the PAR, CSD, and Objectives, can be found at the following URL <http://www.ieee802.org/3/cp/index.html>More information about the IEEE P802.3cs Task Force, including the PAR, CSD, and Objectives, can be found at the following URL <http://www.ieee802.org/3/cs/index.html>More information about the IEEE P802.3cx Task Force, including the PAR, CSD, and Objectives, can be found at the following URL <http://www.ieee802.org/3/cx/index.html> |
|  | **IEEE 802.16** | **IEEE 802.16 Working Group on Broadband Wireless Access Standards**<https://standards.ieee.org/standard/802_16-2017.html><https://standards.ieee.org/standard/802_16_1-2012.html><https://standards.ieee.org/standard/802_16_2-2004.html> | More information about the IEEE 802.16 WG can be found at following URL<http://www.ieee802.org/16/> |
|  | **IEEE 1904** | **IEEE 1904 Access Networks Working Group**IEEE 1904 WG is responsible for the maintenance of:- IEEE Std 1904.1-2017 - IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)- IEEE Std 1904.1-Conformance01-2014 “Standard for Conformance Test Procedures for Service Interoperability in Ethernet Passive Optical Networks, IEEE Std 1904.1(TM) Package A” - IEEE Std 1904.1-Conformance02-2014 - Standard for Conformance Test Procedures for Service Interoperability in Ethernet Passive Optical Networks, IEEE Std 1904.1(TM) Package B- IEEE Std 1904.1-Conformance03-2014 - Standard for Conformance Test Procedures for Service Interoperability in Ethernet Passive Optical Networks, IEEE Std 1904.1(TM) Package C<https://standards.ieee.org/standard/1904_1-2017.html>The Working Group is currently developing- [P1904.2 - Standard for Universal Management Tunnel for Ethernet-based Subscriber Access Networks](https://standards.ieee.org/project/1904_2.html)- [P1904.4 - Standard for Service Interoperability in 25 Gb/s and 50 Gb/s Ethernet Passive Optical Networks](https://standards.ieee.org/project/1904_4.html) | More information about the IEEE 1904 ANWG can be found at following URL<http://www.ieee1904.org> |
|  | **IEEE 1901***TD 639 WP1April 2021* | **IEEE Working Group on Power Line Communications (COM/PLC)**IEEE Standard for Broadband over Power Line Networks: Medium Access Control and Physical Layer SpecificationsMost recent activities included the development of IEEE 1901a-2019 “Amendment 1: Enhancement for Internet of Things Applications” and the revision of IEEE 1901-2010. This has resulted in the publication of IEEE 1901-2020.The Working Group is currently working on the P1901b project “Standard for Broadband over Power Line Networks: Medium Access Control and Physical Layer Specifications - Amendment: Enhancements for Authentication and Authorization”. | Detailed information on the IEEE 1901 Working Group can be found at <https://sagroups.ieee.org/1901/> |
|  | **ITU-R SG1***TD 554 WP1April 2021* | **ITU-R SG1: Spectrum Management**ITU-R WP1A: Spectrum engineering techniquesIn its liaison in TD 554 WP1 from April 2021, ITU-R WP1A informs that it has started work on studies directed towards the “Evaluation of radiated electromagnetic disturbances of household appliances and their interferences over an IoT network”. The liaison regards Home Networks and IoT. | More information about ITU-R SG1 can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg1/Pages/default.aspx>More information about ITU-R WP1A can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg1/rwp1a/Pages/default.aspx> |
|  | **ITU-R SG5** | **ITU-R SG5: Terrestrial Services**ITU-R WP5C - Fixed wireless systems; HF and other systems below 30 MHz in the fixed and land mobile servicesITU-R WP5D – IMT Systems | More information about ITU-R SG5 can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg5/Pages/default.aspx> |
|  | **ITU-R SG6***TD 547 WP1April 2021* | **ITU-R SG6: Broadcasting Service**ITU-R WP6A: Terrestrial broadcasting deliveryIn its liaison in TD 547 WP1 from April 2021, ITU-R WP6A Rapporteur on “Power Line Telecommunications (PLT) and General EMC-Related Potential Interference Issues” reports that it has analysed the work plan of ITU-T SG15 Question 4 (Section 5.1 in the Access Network Transport Standards Work Plan - Issue 32, September 2020”) and provides a compilation of its work in the document “Update on recent EMC related issues” attached below.ITU-R WP6A Rapporteur notes that no issues have been identified that would need an immediate response on possible concerns, but issues with G.fast/G.mgfast have been identified where further monitoring, supported by studies by the broadcasting community, is essential. | More information about ITU-R SG6 can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg6/Pages/default.aspx>More information about ITU-R WP6A can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg6/rwp6a/Pages/default.aspx> |
|  | Continuation of **ITU-R SG6***TD 220 WP1October 2018* | ITU-R WP6B: Broadcast service assembly and accessITU-R WP6B studies a global platform for the broadcasting services on the basis of Question [ITU‑R 140/6](http://www.itu.int/pub/R-QUE-SG06.140). The global platform is a delivery platform to facilitate distribution of broadcast content to end-users with various receiving devices in multiple reception environments, implemented by using both broadcasting and non-broadcasting (e.g. broadband) technologies. In order to realize such platforms, higher speed and more robust home network transport may be required, for example for multi-channel UHDTV. Report ITU-R BT.2400 “Usage scenarios, requirements and technical elements of a global platform for the broadcasting service” includes technical elements for the global platform and describes delivery of multi-channel 8k content over 10G-EPON network, which is one of the access networks.  | More information about ITU-R WP6B can be found at following URL<https://www.itu.int/en/ITU-R/study-groups/rsg6/rwp6b/Pages/default.aspx> |
|  | **ITU-T SG9** *TD 487 WP1September 2020* | **ITU-T SG9: Broadband cable and TV**ITU-T Study Group 9 proposes two updates of the table on Organization of ANT Relevant Standards by Transmission Medium and Technology – Annex 2.1 of the ANT Standards Overview document :- ITU-T J.225 (05/2020): Fourth-generation transmission systems for interactive cable television services - IP cable modems- ITU-T J Suppl. 10 (04/2020): Correspondence between CableLabs DOCSIS Specifications and ITU-T J-series RecommendationsWork Programme of ITU-T SG9 can be found at following URL<https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=3925&isn_sg=3929&isn_status=-1,1,3,7&details=0&field=acdefghijo> | More information about ITU-T SG9 can be found at following URL<https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx> |
|  | **ITU-D SG1and ITU-D SG2** | **ITU-D SG1: Enabling environment for the development of telecommunications/ICTs**Question 1/1: Strategies and policies for the deployment of broadband in developing countriesQuestion 5/1: Telecommunications/ICTs for rural and remote areasReport from ITU-D SG1: Broadband access technologies, including IMT, for developing countries ( Year 2017) can be found at following URL<https://www.itu.int/pub/D-STG-SG01.02.1-2017>**ITU-D SG2: ICT services and applications for the promotion of sustainable development**Question 1/2 : Creating smart cities and society: Employing information and communication technologies for sustainable social and economic development | More information about ITU-D SG1 can be found at following URL<https://www.itu.int/net4/ITU-D/CDS/sg/mandate.asp?lg=1&sp=2018&stg=1>More information about ITU-D SG2 can be found at following URL<https://www.itu.int/net4/ITU-D/CDS/sg/mandate.asp?lg=1&sp=2018&stg=2> |

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# 6. Basic field of activities related to the ANT Standards Overview

This list should be used to identify work items, to show the current status and should be taken as a permanent living document that will accompany the work through the Study Period.

Those are:

**Status: April 2021**

| **Work Item** | **Title** | **Meeting results** | **Work during interim period** |
| --- | --- | --- | --- |
| 1 | Maintain and update the ANT Standards Overview together with other Study Groups and in conjunction with ITU-R and other relevant organizations. | The ANT Standards Overview was updated based on liaison statements from cooperating standards bodies and input from WP1/15 in the meeting. These changes have been made and a new version 35 – April 2021 has been created. | Maintain existing correspondence relationships with appropriate groups |
| 2 | Maintain and update the web-based ANT Standards Overview. | The web-based ANT Standards Overview has been updated |  |
| 3 | Maintain and update the ANT Standards Work Plan, identify “gaps and overlaps” by observing ongoing standardization activities. | The ANT Standards Work Plan was updated based on liaison statements from cooperating standards bodies and input from WP1/15 in the meeting. These changes have been made and this new Version 33 - April2021 has been created. | Maintain existing correspondence relationships with the appropriate groups. |
| 4 | ITU inter-Sector coordination: Serve as focal point to and provide co-ordination with other Study Groups | The new version of the Access Network Transport (ANT) and Home Network Transport (HNT) Standards Overviews and Work Plans have been provided via LS to ITU-T SG20 as well as ITU-D SG1 and SG2. | Maintain existing correspondence relationships with the appropriate groups. |
| 5 | Maintain and update a living list of the conformance and interoperability testing (CIT) activities in other organizations related to technologies based on ITU-T Recs. from WP1/15. | Update done during the April 2021 meeting. Updated list has been provided via LS to SG11. | Maintain existing correspondence relationships with the appropriate groups |

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