

TIA TR-42.7 Next Generation Cabling Project Update

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**Vice Chair, TIA TR-42 Telecommunications
Cabling Systems Engineering Committee**

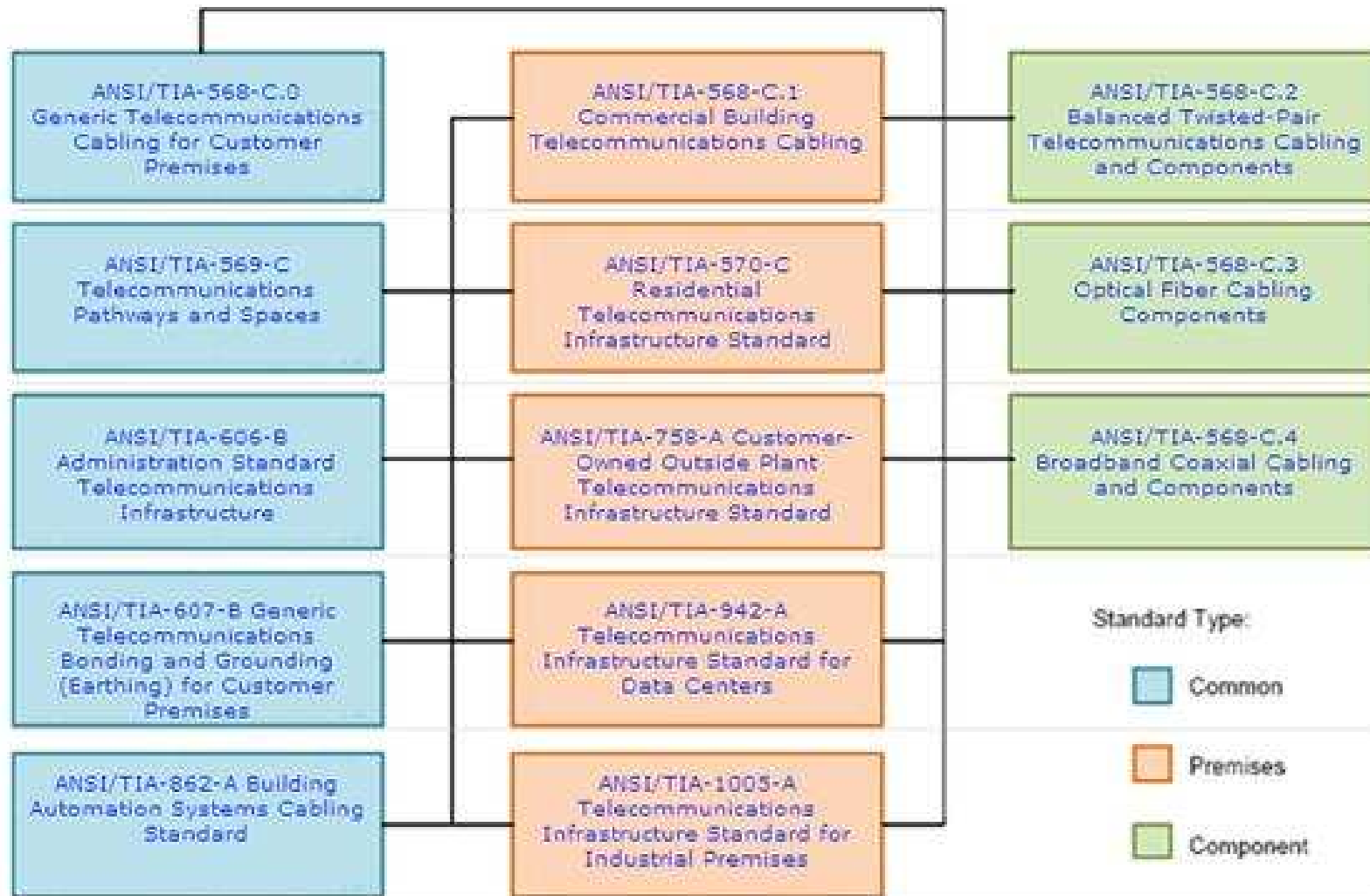
**Vice Chair, TIA TR-42.7 Copper Cabling
Subcommittee**

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Geneva, Switzerland**

Introduction to TIA

- **Telecommunications Industry Association**
- **www.tiaonline.org**
- **TR-42: Defines mechanical and transmission requirements for copper twisted-pair, optical fiber, and coaxial cabling and components**
- **11 subcommittees work to develop Standards**

TIA Family of Standards



Following TIA Activities

- **www.tiaonline.org**
- **Incoming liaison reports are presented at Opening Plenary meetings and available online**
(<http://www.ieee802.org/3/minutes/index.html>)
- **Valerie Maguire is incoming liaison from TIA to IEEE 802.3**
- **Chris DiMinico is outgoing liaison from IEEE 802.3 to TIA**

Introduction to TIA TR-42.7

TR-42.7 Scope: “The TR-42.7 Subcommittee develops and maintains telecommunications copper cabling component and system requirements for premises networks. This includes performance specifications, qualification procedures, and test methods for connecting hardware (including modular patch cords) and cable.”

TR-42.7 Published Standards

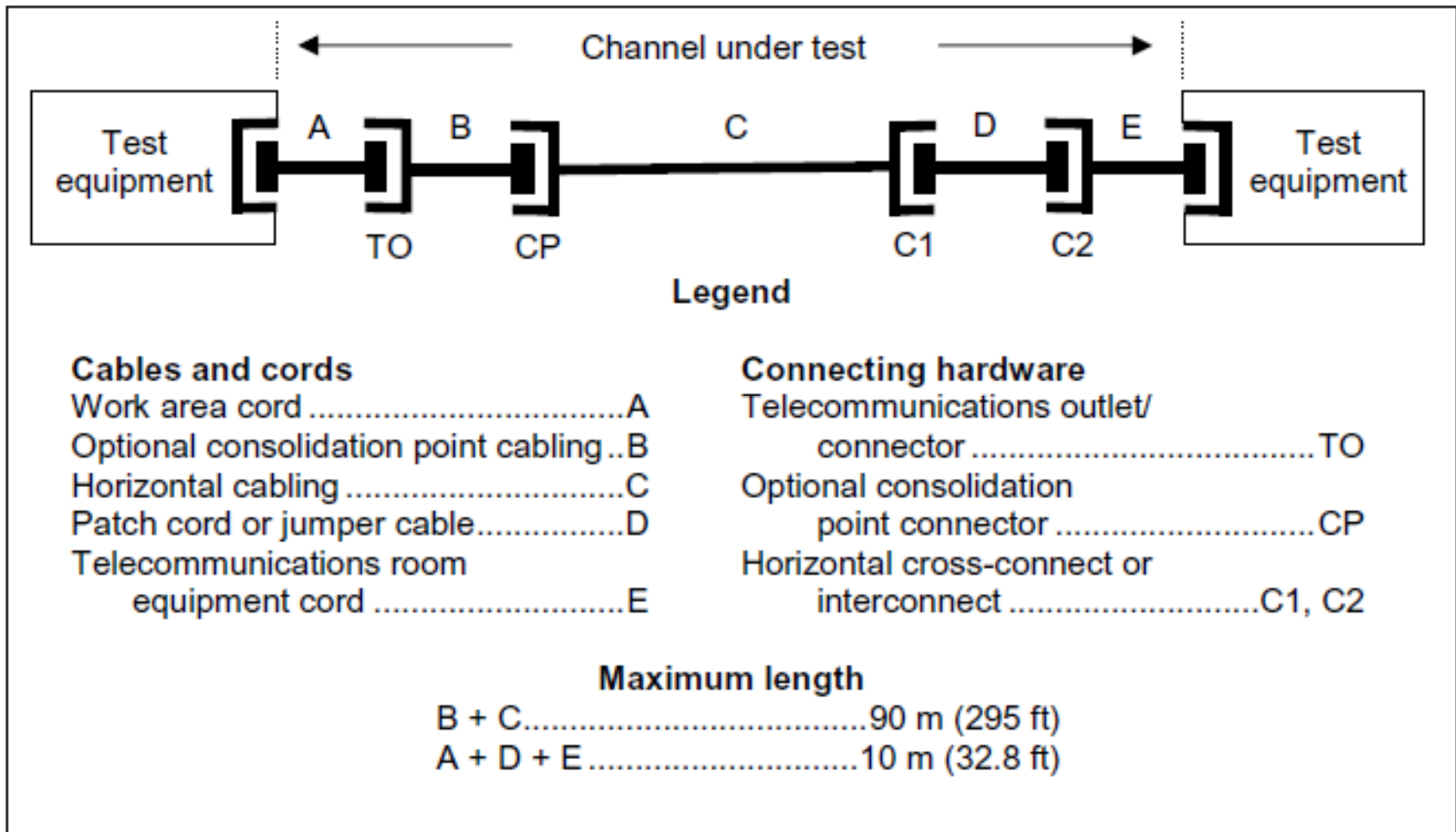
ANSI/TIA-568-C.2-2009 specifies mechanical & transmission performance and laboratory test methods for the following cabling and component types:

| | |
|--------------------|--------------------|
| Category 3 | 1 - 16 MHz |
| Category 5e | 1 - 100 MHz |
| Category 6 | 1 - 250 MHz |
| Category 6A | 1 - 500 MHz |

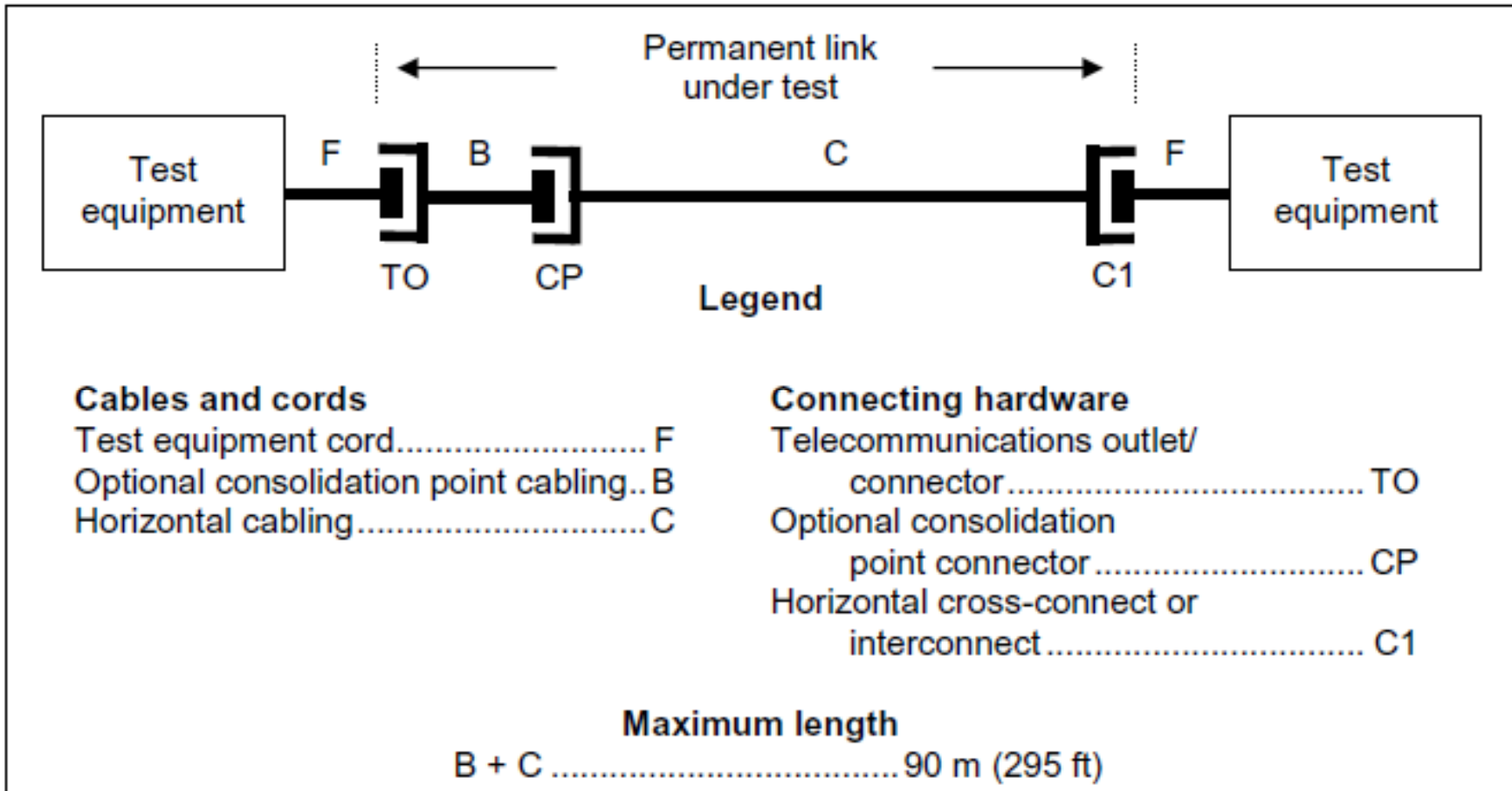
What '568-C.2 Specifies

- **100m channels**
- **90m permanent links**
- **Horizontal cable**
- **Bundled, hybrid, and cord cable**
- **Connecting hardware**
- **Cords and jumpers (NEXT loss and return loss only)**

'568-C.2 Channel



'568-C.2 Permanent Link



What '568-C.2 Do Not Specify

- **Field test methods (see TIA-1152)**
- **Direct connect cords used in ToR deployments**
 - **There is no guarantee that a TIA compliant work area, equipment, or patch cord will meet channel limits**
 - **Return loss may be problematic (short link models are based upon two 1m cords, two connectors, and 10m of cable)**

“Next Generation” Cabling

- **TR-42.7 is currently developing: ANSI/TIA-568-C.2-1, “Balanced Twisted-Pair Telecommunications Cabling and Components Standard, Addendum 1: Specifications for 100Ω Next Generation Cabling”**
- **Strawman draft 0.4 under revision**
- **Target publication: 2013**

Baseline Objectives

| | Characteristic | Required, Highly Desired, Nice to Have, Not Required |
|--|---|--|
| Capability / performance | Support for 40G | Required |
| | Capability for 100G | Nice to Have |
| | Support for IEEE 802 Autonegotiation | Required |
| | Support for IEEE 802 PoE, PoE+ | Required |
| | Must exceed the TIA Cat6a specification in at least 1 parameter | Nice to Have |
| Backward compatibility | Support for 1000BASE-T, 10GBASE-T | Required |
| | Support for 100BASE-TX | Highly Desired |
| | Support for 10BASE-T / 10BASE-T ee | Nice to Have |
| | Backwards compatibility with existing LAN cabling | Required |
| | Capability to interface with existing equipment which uses RJ-45 connectors (plug/jack compatibility) | Required (TBD) |
| | Meets existing TIA specs for Cat5e, Cat6a | Highly Desired |
| Length & physical | Sufficient reach for end-of-row | Required |
| | Sufficient reach for data center room coverage | Highly Desired |
| | Sufficient reach for covering floor (100m) | Not required (TBD) |
| | Diameter ≤ 9 mm | Highly Desired |
| Economic Feasibility, installation & reliability | Economically Viable | Required |
| | Sufficient EMI Isolation | Highly Desired (TBD) |
| | Suitable for at least 48 Equipment ports in 1RU | Required (TBD) |

Next Generation Key Criteria

- **Converging on defining a:**
 - **2-connector, 50-meter channel (TBD) and**
 - **2-connector, 40-meter permanent link (TBD)**
- **Bandwidth specification converging on 1 MHz - 2 GHz (TBD)**
- **Spirited discussion on naming with no convergence**
- **Does not preclude UTP constructions**

Next Generation Progress

| Current Status of TIA Draft Requirements | | | |
|--|--|-----------|---------|
| | Cable | Connector | Channel |
| DC Loop Resistance | Red | Red | Green |
| DC Resistance Unbalance | Red | Red | Yellow |
| Return Loss | Yellow | Yellow | Yellow |
| Insertion Loss | Green | Green | Red |
| NEXT | Green | Red | Red |
| PSNEXT | Green | Red | Red |
| ACRF | Green | Green | Green |
| PSACRF | Green | Green | Green |
| TCL | Yellow | Yellow | Red |
| ELTCTL | Yellow | Yellow | Yellow |
| Coupling Attenuation | Green | Red | Red |
| Propagation Delay | Yellow | Green | Yellow |
| Delay Skew | Yellow | Green | Yellow |
| PSANEXT | Green | Green | Green |
| PSAACRF | Green | Green | Green |
| | | | |
| | Current Hole in the document or very contentious | | |
| | Initial Specification included, but still discussion occurring | | |
| | Specification included with little to no discussion for change | | |

What's Next?

- **Contents of the draft are not publically available; TR-42.7 will discuss sharing and providing a tutorial in the future**
- **IEEE 802.3 should request that specifications for Direct Connect cords be addressed if desired**
- **Next meeting scheduled for October 2 - 3, 2012 in Philadelphia, PA**

Thank you

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