
SPE TIA Specification References

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Purpose

- In response to Peter Jones presentation.
>>https://www.ieee802.org/3/dg/public/May_2022/jones_3ssep2p_2a_110222.pdf.
- **ANSI/TIA-5071-2022 - TIA Standard- Requirements for Field Test Instruments and Measurements for Balanced Single Twisted-Pair Cabling**
- **ANSI/TIA-862-C-2022 - TIA Standard- Structured Cabling Infrastructure Standard for Intelligent Building Systems**
- **Not a tutorial of the reference standards.**

ANSI/TIA-5071-2022

- ANSI/TIA-5071-2022 APPROVED: JUNE 16, 2022 TIA STANDARD Requirements for Field Test Instruments and Measurements for Balanced Single Twisted-Pair Cabling

- General

The Standard specifies the reporting and accuracy performance requirements of field testers and provides additional guidelines for field testing procedures. Two field tester designations based on frequency ranges are defined:

- SP-I : 0.1 MHz to 20 MHz
- SP-II : 1 MHz to 600 MHz

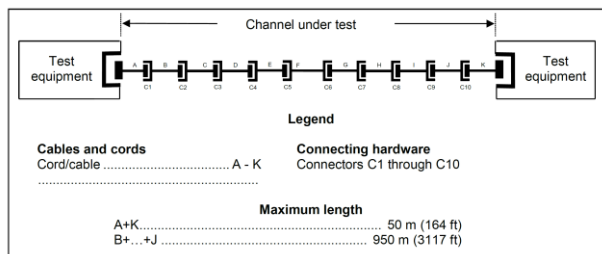
- Test Configurations

The field test instrument shall be able to measure and report the following link parameters for the permanent link and channel test configurations as defined in ANSI/TIA 568.5 Balanced Single Twisted-pair Telecommunications Cabling and Components Standard . SP1-400 not illustrated; 400 m with 5 inline connectors.

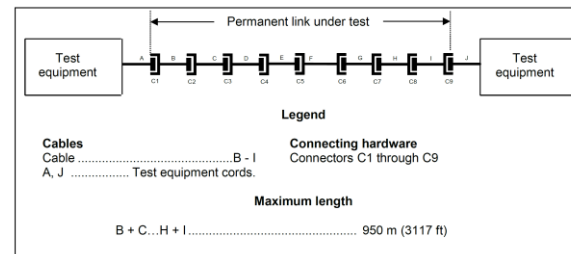
Source: ANSI/TIA 568.5.

Category	Channel reach	Frequency range, MHz
SP1-1000	1000 m	0.1 - 20
SP1-400	400 m	0.1 - 20

Balanced single twisted-pair categories



Channel Test Configuration SP1-1000



Permanent Link Test Configuration SP1-1000

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- Parameters to be reported

The field test instrument shall be able to measure and report the following link parameters for the permanent link and channel test configurations as defined in ANSI/TIA 568.5.

- Wire map, including shield connection if present
- Insertion loss
- Length
- Return loss, measured from near-end
- Return loss, measured from far-end
- Transverse Conversion Loss, measured from near-end
- Transverse Conversion Loss, measured from far-end
- Transverse Conversion Transfer Loss, measured from near-end
- Transverse Conversion Transfer Loss, measured from far-end
- Propagation delay
- DC loop resistance
- DC resistance unbalance if shield is present

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- Wire Map

The wire map test is intended to verify pin-to-pin termination at each end and check for installation connectivity errors. For each of the 2 conductors and shield if present in the cabling, the wire map indicates:

- a) continuity to the remote end
- b) short between the two conductors and shield if present
- c) reversed pair
- d) continuity of the screen along the path of the cabling to remote end (if present)

- Alien crosstalk measurement requirements test parameters

The field tester shall be able to measure the following parameters for the permanent link and channel test configurations:

- NEXT loss
- AFEXT loss

The field tester shall be able to report the following parameters for the permanent link and channel test configurations:

- PSANEXT loss
- PSAACRF

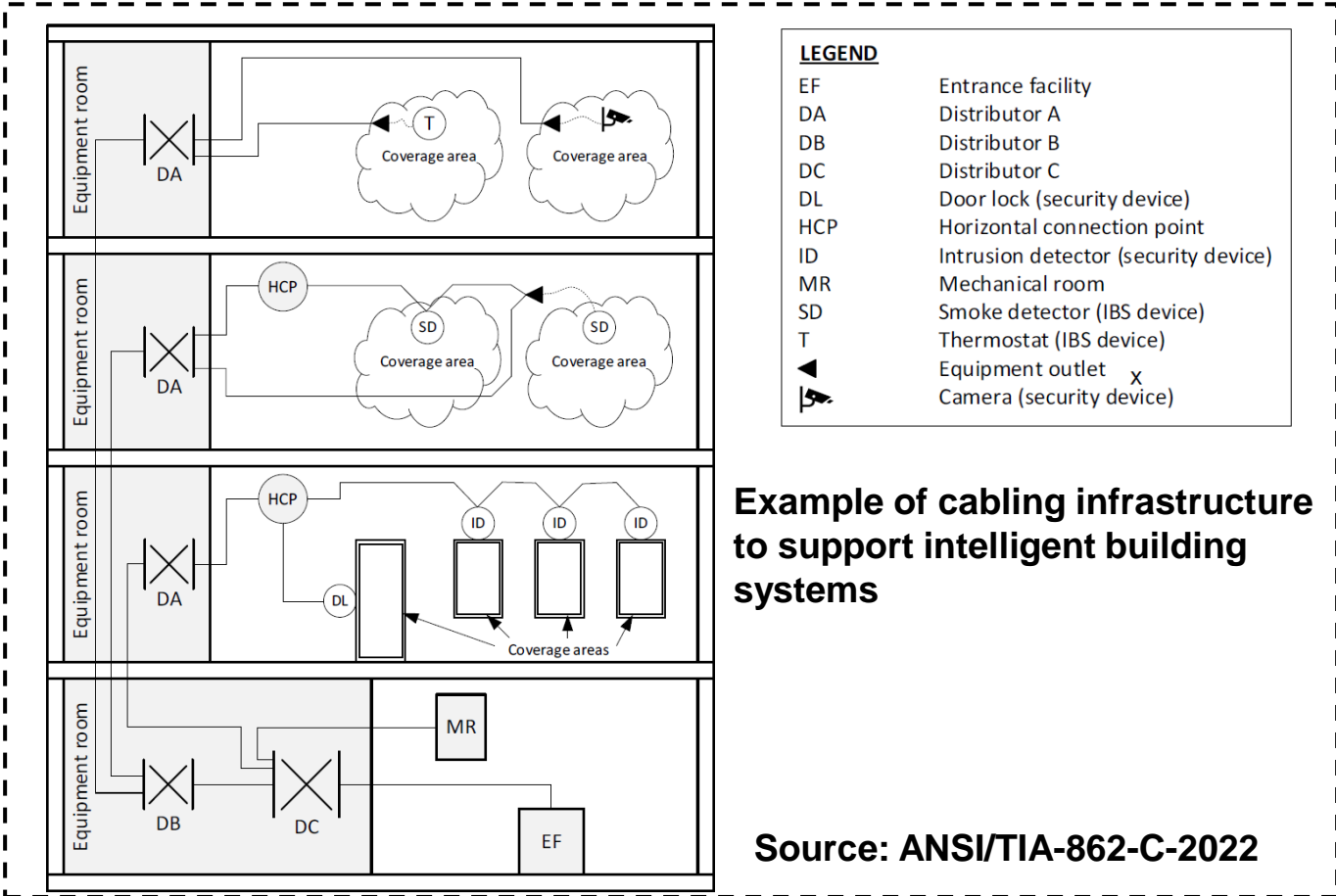
The field tester shall report results and their associated test orientation (i.e. from the local end or remote end).

ANSI/TIA-862-C-2022

- Scope

The Standard specifies requirements for intelligent building system cabling infrastructure including cabling topology, architecture, design and installation, test procedures, and components.

The cabling infrastructure specified by this Standard is intended to support a wide range of systems, particularly those that utilize or can utilize IP-based infrastructure.



ANSI/TIA-862-C-2022

- One of the recognized media is
 - balanced single twisted-pair cabling in compliance with ANSI/TIA-568.5.
- Transmission and field test requirements
 - Refer to ANSI/TIA-568.0, ANSI/TIA-568.2, ANSI/TIA-568.3, ANSI/TIA-568.5, ANSI/TIA-1152 and ANSI/TIA-5071 for information regarding transmission and field test requirements.

ANSI/TIA-586-C-1-2016

- **Standard includes Category 8 Channel Length Scaling Equations – referenced in IEEE Std 802.3bq-2016 - Types 25GBASE-T and 40GBASE-T**

Table 113–21 lists the supported cabling types and distances.

Table 113–21—Cabling types and distances

Cabling	Supported link segment distances	Cabling references
ISO/IEC Class I / Class II	30 m	ISO/IEC DIS 11801-1:2016
Category 8	30 m	ANSI/TIA-568-C.2-1-2016

Summary

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