NGEAB-T Use Cases Characterization of WAP Cabling Topologies

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Scope

- Characterization of WAP structured cabling topologies;
  - Cat5e, Cat6, Cat6A
  - In channel; IL, RL, etc…
  - Between channels; alien crosstalk

- Evaluate alien crosstalk mitigation strategies for initially failing links
  - Pass/fail criteria

- External noise (e.g., impulse noise due to ESD and power devices on-off) to be considered. (TBD)

Deployment configuration objectives

- Define a 2.5 Gb/s PHY for operation over
  - Up to at least 100m on four-pair Class D (Cat5e) balanced copper cabling[1] on defined use cases and deployment configurations
- Define a 5 Gb/s PHY for operation over
  - Up to at least 100m on Class E (Cat6) balanced copper cabling on defined (2) use cases and deployment configurations
  - Up to 100m on Class D (Cat5e) balanced copper cabling on defined use cases and deployment configurations

1) Use cases and deployment configurations for 2.5 Gb/s PHY for operation over
   - Up to at least 100m on four-pair Class D (Cat5e) balanced copper cabling

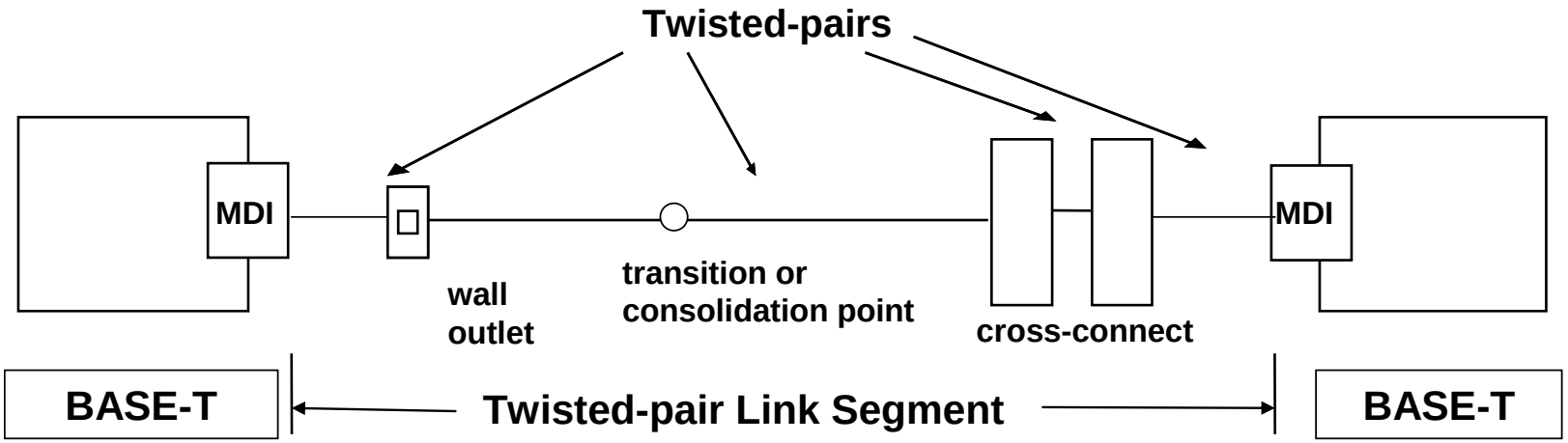
2) Use cases and deployment configurations for a 5 Gb/s PHY for operation over
   - Up to at least 100m on Class E (Cat6) balanced copper cabling

3) Use cases and deployment configurations for a 5 Gb/s PHY for operation over
   - Up to 100m on Class D (Cat5e) balanced copper cabling

- Use case based deployment configurations not required for PHYs demonstrating operation over “worse case” cabling configurations.

IEEE Cabling Topology

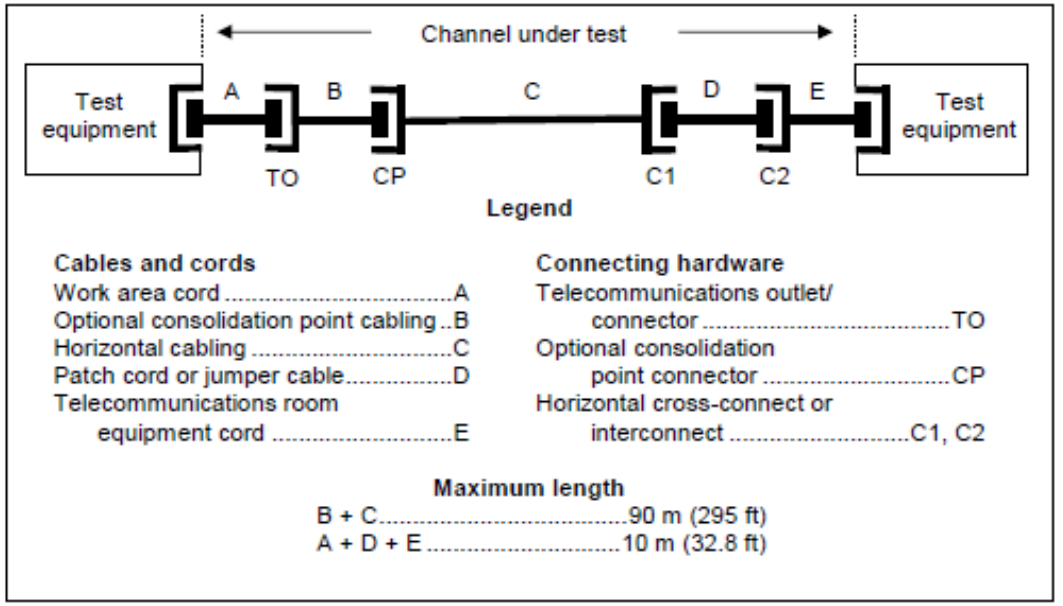
- **IEEE 802.3 Twisted-Pair Link Segment**



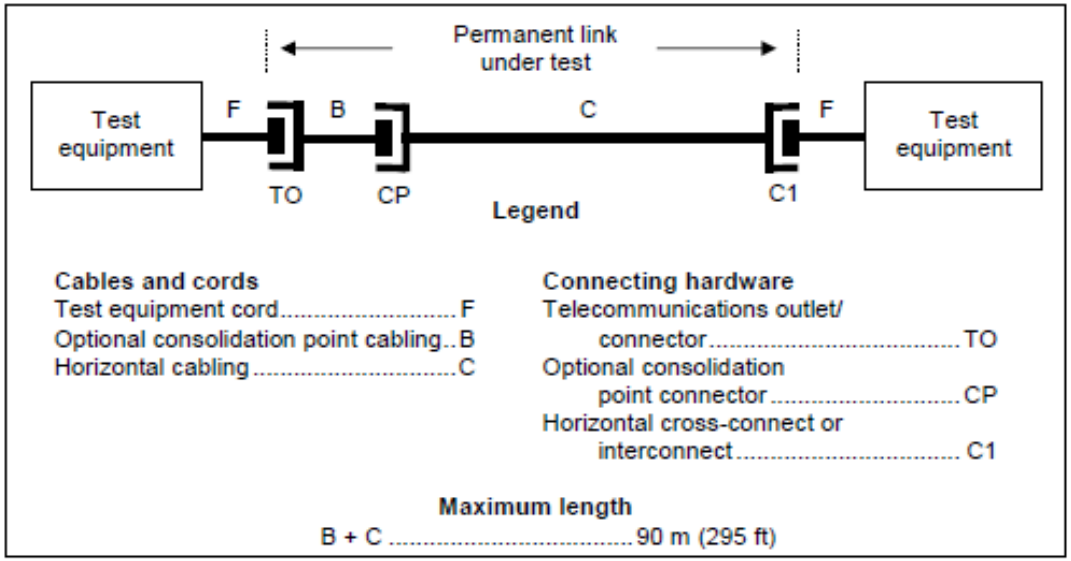
10BASE-T/100BASE-T/1000BASE-T/10GBASE-T

Channel and Permanent Link

•Channel test configuration to emulate IEEE link segments enabling IEEE to reference cabling standards .



•Channel and permanent link transmission requirements developed from cables, cords, and connecting hardware transmission requirements



TIA/TSB-162-A – Cabling Guidelines WAPs

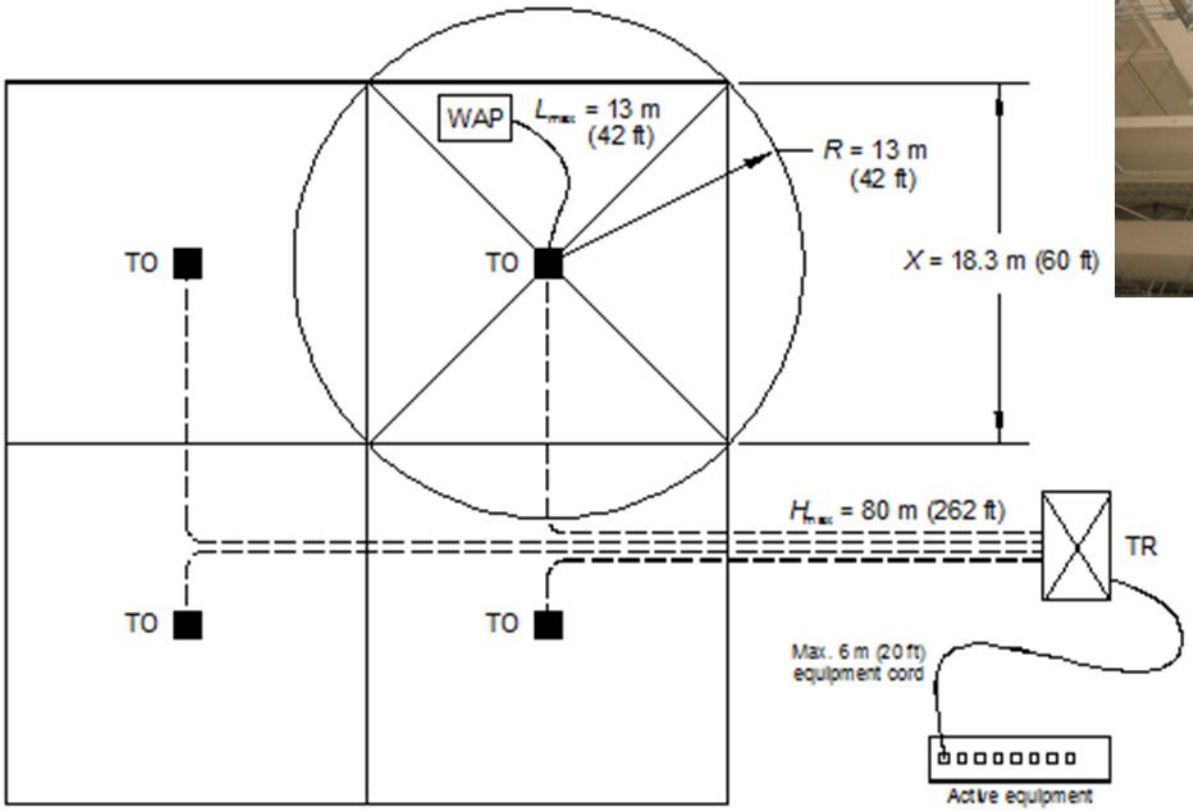
- Use WAP cabling guidelines as basis for initial cabling deployment configurations for testing.

- Scope
  - –TSB to provides guidelines on the topology, design, installation, and testing of telecommunications cabling infrastructure, in compliance with ANSI/TIA-568-C.0 and ANSI/TIA 569 C, for supporting wireless local area networks (WLAN).

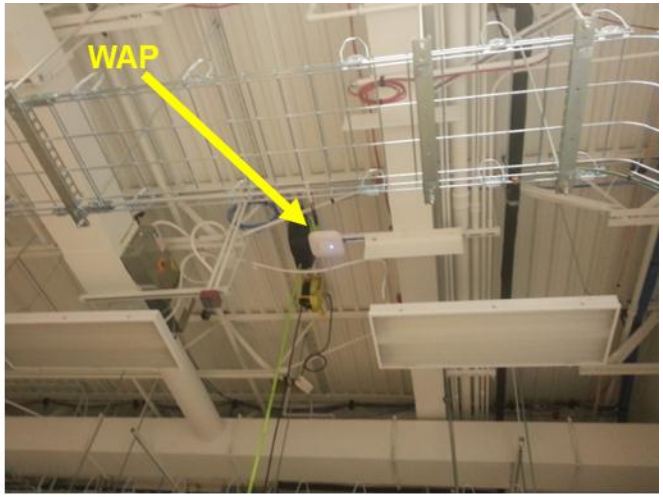
  - –The TSB includes the cabling between local area network (LAN) equipment and wireless access points including pathways and spaces to support the cabling and wireless access points.

TSB-162 WAP

Typical uniform cell size

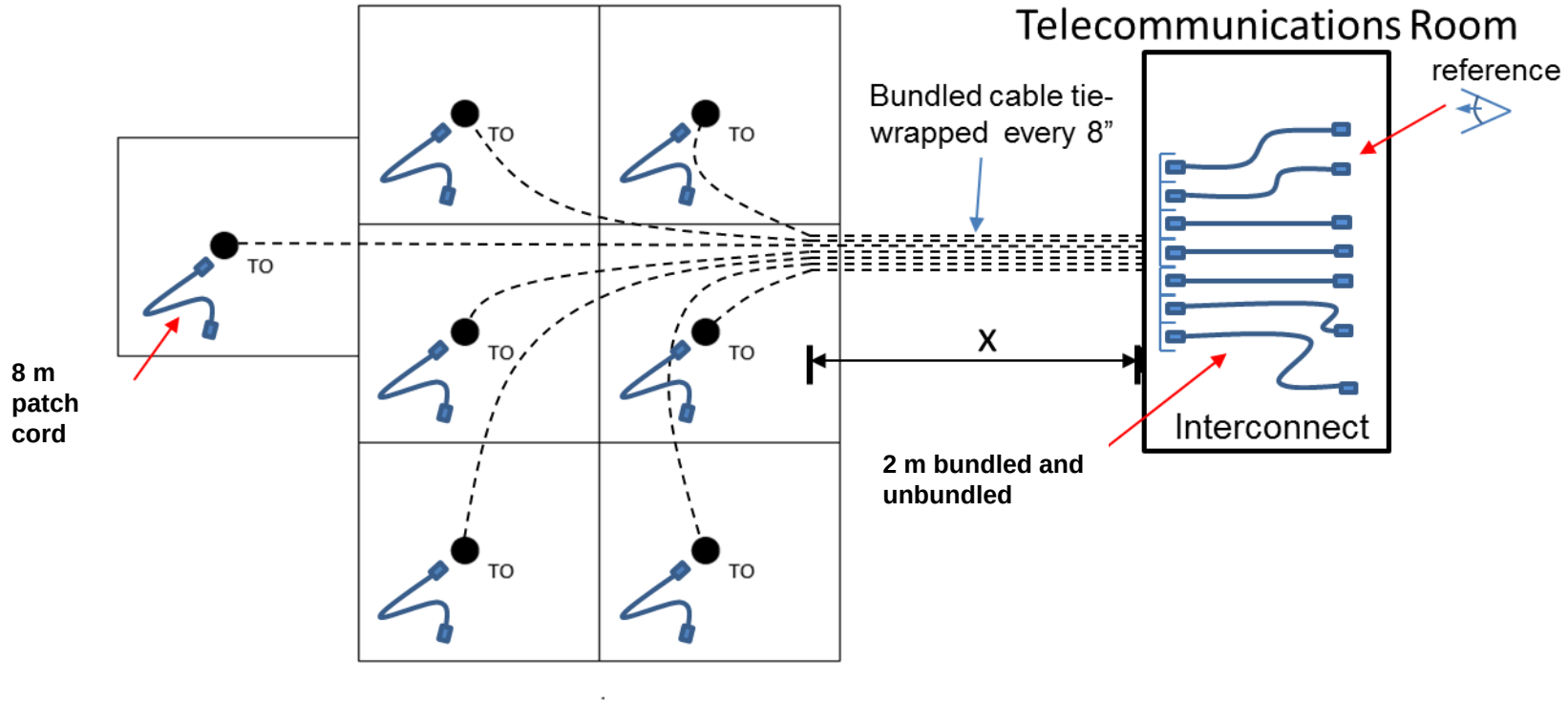


Cell sizing (wireless access point placed anywhere inside the cell)



TSB-162 WAP test configuration 1

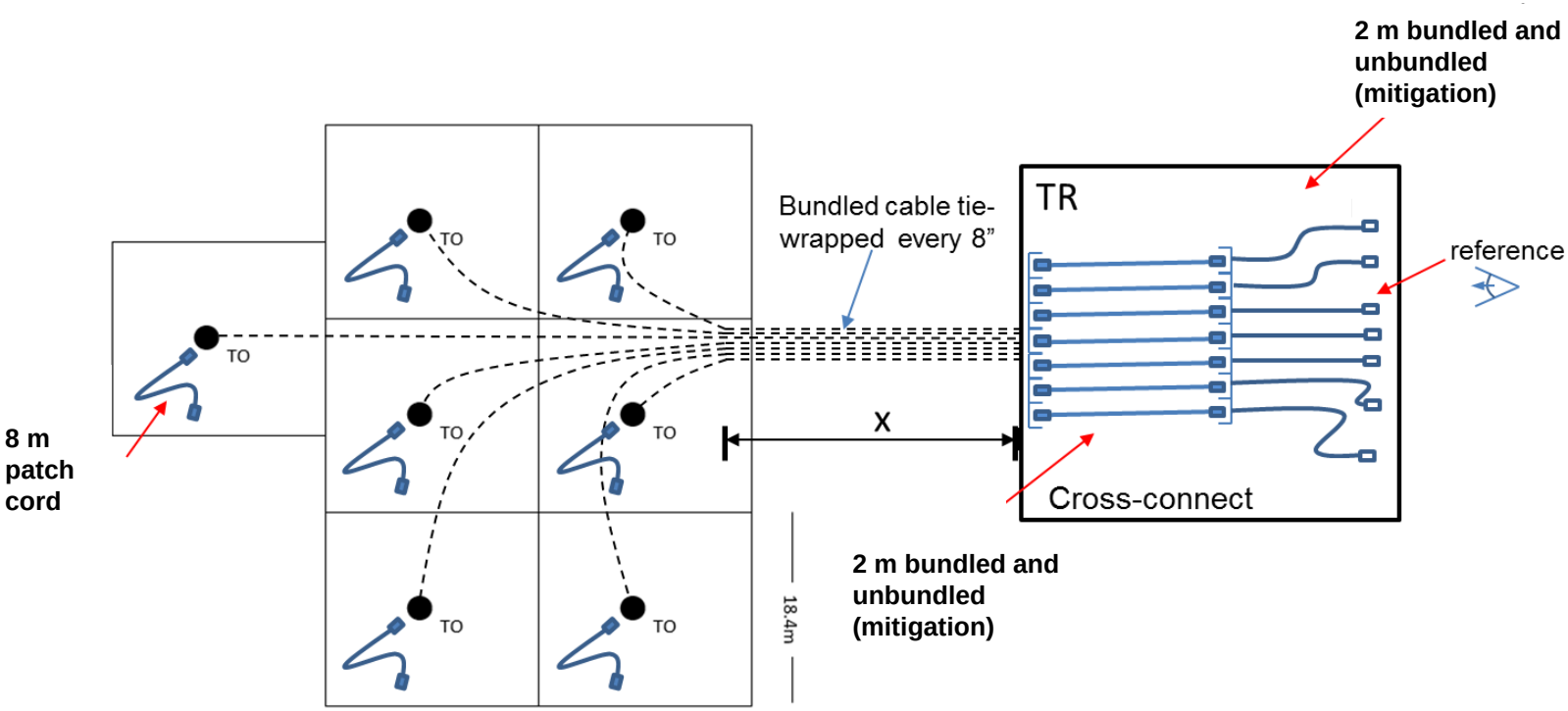
2-connector 100 m topology



Bundled Cable Category	Bundled Cable length x=meters
Cat5e	10, 20, 30, 40, TBD
Cat6	10, 20, 30, 40,TBD
Cat6A	10, 20, 30, 40,TBD

TSB-162 WAP test configuration 2

3-connector topology 100 m topology



Bundled Cable Category	Bundled Cable length x=meters
Cat5e	10, 20, 30, 40, TBD
Cat6	10, 20, 30, 40,TBD
Cat6A	10, 20, 30, 40,TBD

10GBASE-T – 802.3an – Annex 55B

55B.1.2 Alien crosstalk mitigation procedure

This annex provides procedures and cabling guidelines designed to mitigate the alien crosstalk in the event that the alien crosstalk transmission parameters given in 55.7 are not met. For more information on mitigation techniques, see ANSI/TIA-TSB-155 and ISO/IEC TR24750.

The mitigation actions outlined below are based on four connector channels. In the majority of initially non-compliant cases, fewer than all corrective actions are required. Select the option(s) that is most appropriate for your situation.

a) When selective deployment of 10GBASE-T is possible, non-adjacent patch panel positions in the equipment room should be used. The adjacent positions may be used for other applications.
b) Reduce the number of co-located connectors by implementing an interconnect configuration to attach equipment to the horizontal cabling rather than a cross-connect. In general, connectors and cordage in the work area are not co-located.
c) Reduce the alien crosstalk coupling in the first 5 m to 20 m of the horizontal cabling by separating the equipment cords and the patch cords and un-bundling the horizontal cabling: in the case of a telecommunications room un-bundle the cabling to the point it exits the telecommunications room. A significant portion of the ANEXT coupling occurs in less than the first 20 m of cabling.
d) An alternative to separating equipment cords is to utilize equipment cords sufficiently specified to mitigate the alien crosstalk coupling.
e) Replace connectors with Augmented Category 6/Class E_A.

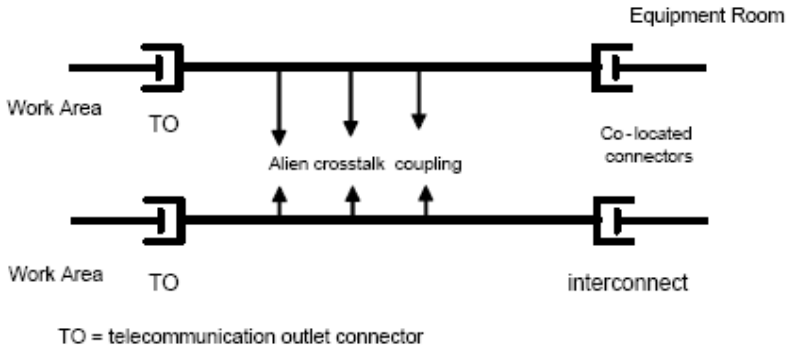


Figure 55B–4—Minimum horizontal cabling configuration

Summary

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