PANDUIT®

TX6A™ CATEGORY 6A UTP FIELD TERM RJ45 PLUG
And
TX6A™ CATEGORY 6A SHIELDED FIELD TERM RJ45 PLUG

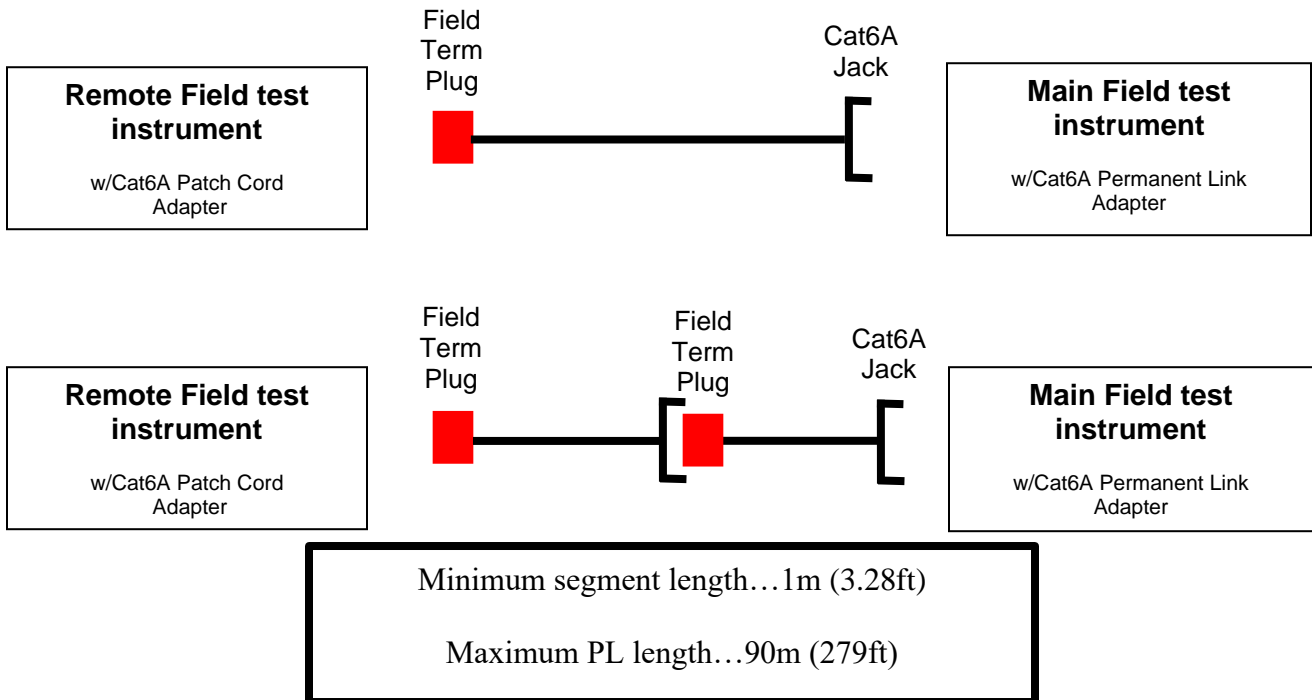## TESTING PROCEDURES (PN614)

Introduction
Copper cabling transmission performance depends on cable characteristics, connecting hardware, patch cords and cross-connect wiring, the total number of connections, and the care with which they are installed and maintained. To qualify for a *PANDUIT* System Warranty, post-installation performance testing must be done using Panduit approved field test instruments to verify the installed cabling will meet or exceed the performance requirements of the designated classification defined in the Commercial Building Telecommunication Standards. These standards-based test results should then be submitted to the *PANDUIT* Warranty Department for review.

PANDUIT offers warranty on the *TX6A™ 10GIG™* Copper Cabling System for the current standards including ANSI/TIA-568D.2 to channel and permanent link, ANSI/TIA-568D.2 to MPTL for Modular Plug Terminated Link or ISO 11801 Channel, PL2, PL3, and MPTL Class E$_A$.

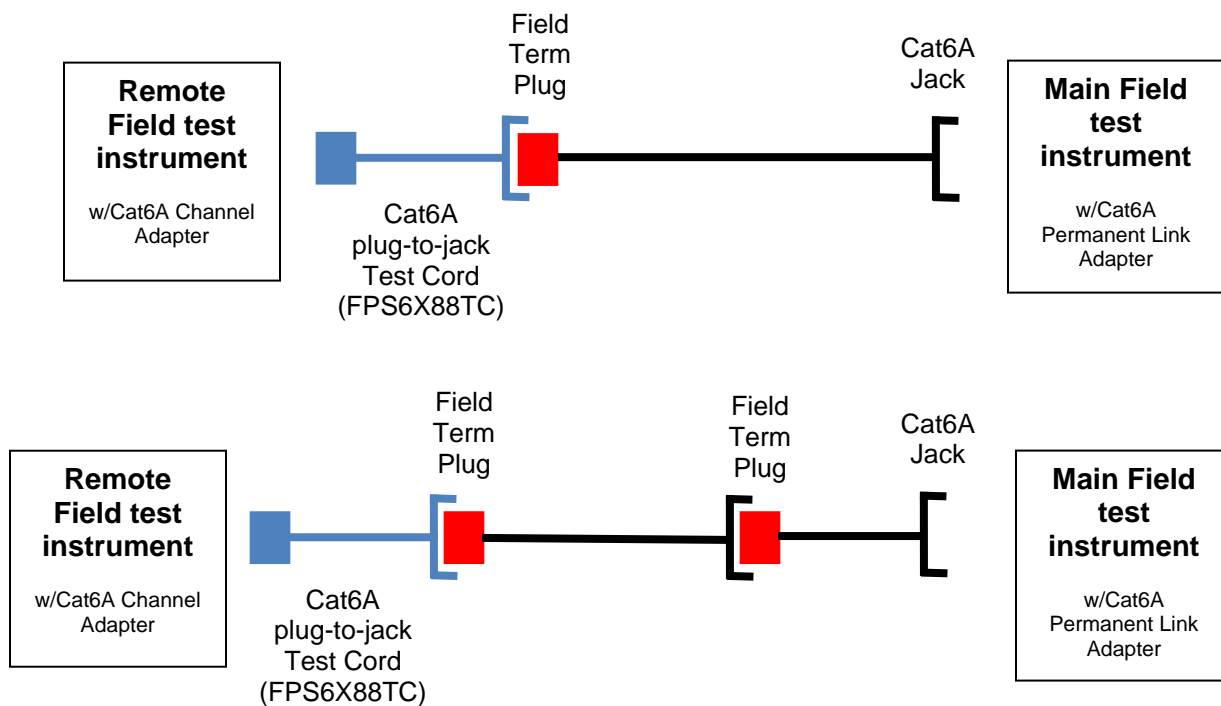### Test Configuration – Standards Model – Modular Plug Terminated Link (MPTL)
The MPTL Standards Model is to be used by system designers and users of data communications systems to verify the performance of the permanent link used in a direct-connect designed infrastructure. Permanent link performance is most critical to the end user, as this is how their network will perform. The permanent link tested in this model includes up to 90m (295ft) of horizontal cable with a maximum of two (2) field terminable plugs. The connection to the equipment at either end of a permanent link is not included in the permanent link test results **unless measured via this Standards Model**. Schematic representations of the permanent link testing via the Standards Model can be found below.

Field Term Plug		Cat6A Jack
Remote Field test instrument w/Cat6A Patch Cord Adapter		**Main Field test instrument** w/Cat6A Permanent Link Adapter

Minimum segment length…1m (3.28ft)

Maximum PL length…90m (279ft)

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Test Configuration – Alternate Model

The Alternate Model field terminable plug test configuration is to be used by system designers and users of data communications systems to verify the performance of the permanent link used in a direct-connect designed infrastructure where the Standards Model is not possible. In the Alternate Model, the permanent link continues to have a maximum total horizontal cable length of 90m (295ft) and a maximum of two (2) field terminable plugs. The connection to the equipment at either end of a permanent link is not included in the Alternate Model testing method and therefore requires a jack-to-plug Test Cord (Panduit part# FPS6X88TC) to properly test permanent link performance. Schematic representations of this permanent link test configuration can be found below.

Minimum segment length…1m (3.28ft)

Maximum PL length…90m (279ft)

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PANDUIT System Warranty

PANDUIT will typically provide a system warranty in the following way:

The warranty of the Field Terminable Plug offered by $PANDUIT$ is based on passing permanent link or channel test results.

Passing test results must be obtained using an approved field test instrument. *PANDUIT* Corp. places each handheld test instrument thru an evaluation before approving it for use in the field. This ensures the integrity of the test data submitted for warranty.

Current field testers approved for 10Gig/Category 6A can be found at:

https://partners.panduit.com/resource/1604068205000/WarrantyApprovedCopperTesters

Testing Required for Category 6A Direct Attach Permanent Link Warranty

PANDUIT requires that internal permanent link performance be verified for each link to obtain the warranty. *PANDUIT* does not require that field alien crosstalk testing be performed, as the *TX6A™ 10GIG™* Copper Cabling System has been thoroughly lab tested and verified to meet alien crosstalk requirements under worse case conditions of a 6-around-1 tightly bundled configuration.

Fluke DSX-5000 Series Digital Cable Analyzer

PANDUIT has evaluated the Fluke DSX-5000 Series Digital Cable Analyzer and approves the use of this tester for the certification of installed Category 6A direct attach cabling permanent links. To verify that the installed cabling will meet or exceed the performance requirements of the designated classification, it is important that the following steps are followed.

Permanent Link Testing (Standards MPTL Method)

1) Verify that your DSX-5000 Series tester has been calibrated by Fluke Networks within the past 12 months.
2) Verify your DSX-5000 Series tester has the most up-to-date software. The latest software updates can be found on the Fluke website at:
   http://www.flukenetworks.com/support/downloads
3) Perform a Set Reference procedure in the special functions prior to testing. DSX Reference Module part# DSX-REFMOD, is recommended for Cat6A testing.

   For detailed instructions on Set Reference procedure, refer to Fluke Network's *DSX-5000 Series Users Manual*, on "Set the Reference". The link for the User's Manual is:
   http://www.flukenetworks.com/support/manuals
   Note: Fluke Networks also recommends factory calibration once a year to ensure that the test tool meets or exceeds the published accuracy specifications.

4) Select the Fluke Permanent Link Adapter (DSX-PLA001) and attach it to the DSX-5000 Series Main unit.
5) Select the Fluke Cat6A Patch Cord Adapter (DSX-PC6A) and attach it to the DSX-5000 Series Remote unit.
6) When testing a shielded solution, be sure to select the appropriate cable type and to turn "Shield Test" to On.
7) Select from the following Fluke Test Limits, for which warranty is desired:
   - **TIA Cat 6A MPTL**
   - **ISO ClassE$_A$ MPTL**

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8) Begin testing your installed permanent link with the Fluke DSX-5000 Series Digital Cable Analyzer and save all test results.
9) Troubleshoot and repair any <u>failing</u> permanent links. Permanent links resulting in a PASS* are considered a PASS and will be acceptable for warranty
10) Submit electronic permanent link test reports to the *PANDUIT* Warranty Department with all required warranty paperwork.

> **Note:** The Fluke HDTDR and HDTDX analyzer are very helpful when troubleshooting test results. Panduit recommends the HDTDR and the HDTDX be turned on for ALL tests. Submit electronic permanent link test reports to the *PANDUIT* Warranty Department with all required warranty paperwork. A warranty will then be given based on passing test results.

Note: *PANDUIT* recommends installers install and test multiple permanent links before completing the entire system.

Permanent Link Testing (Alternate Method)

1) Verify that your DSX-5000 Series tester has been calibrated by Fluke Networks within the past 12 months.
2) Verify your DSX-5000 Series tester has the most up-to-date software. The latest software updates can be found on the Fluke website at:
   http://www.flukenetworks.com/support/downloads
3) Perform a Set Reference procedure in the special functions prior to testing. DSX Reference Module part# DSX-REFMOD, is recommended for Category 6A testing.

   For detailed instructions on Set Reference procedure, refer to Fluke Network's User's Manuals for the tester you are using. Fluke Manuals can be found by searching at:
   http://www.flukenetworks.com/support/manuals
4) Select the Fluke Permanent Link Adapter (DSX-PLA001) and attach it to the DSX-5000 Series Main unit.
5) Select the Fluke Channel Adapter (DSX-CHA004S) and attach it to the DSX-5000 Series Remote unit.
6) <u>When testing a shielded solution, be sure to select the appropriate cable type and to turn "Shield Test" to On.</u>
7) Select from the following Fluke Test Limits, for which warranty is desired:
   - TIA Cat 6A Perm. Link (+ALL)
   - ISO11801 PL2 or ISO11801 PL3 Class Ea (+ALL)
8) Begin testing your installed permanent link with the Fluke DSX-5000 Series Digital Cable Analyzer and save all test results
9) Troubleshoot and repair any <u>failing</u> permanent links. Permanent links resulting in a PASS* are considered a PASS and will be acceptable for warranty.
10) Submit electronic permanent link test reports to the *PANDUIT* Warranty Department with all required warranty paperwork

> **Note:** The Fluke HDTDR and HDTDX analyzer are very helpful when troubleshooting test results. Panduit recommends the HDTDX and the HDTDR be turned on for ALL tests. Submit electronic permanent link test reports to the *PANDUIT* Warranty Department with all required warranty paperwork. A warranty will then be given based on passing test results.

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Note: *PANDUIT* recommends installers install and test multiple permanent links before completing the entire system.

Revisions:

Revision	Date	By	Description
R 3.0	02/07/2023	GFE	Change Footer on page 1-6 and Header on page 2-6 to show proper Date
R 2.0	10/24/2022	GFE	Update to combine UTP and FTP solution
R 1.0	06/13/17	GFE	Initial release

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