

Scope

This document shall be used as a guideline to test the performance of Belden Field Mount Modular Plugs in order to apply for system certification. It explains why technicians shall NOT USE CHANNEL ADAPTERS - only Permanent Link adapters with a test coupler. The Category 6A Field Mount Plugs can be certified in System 1200, 2400, 3600, 4800 as well as 10GX.

Materials

Belden Field Mount Modular Plugs and accessories

CAPFMUS-S1	Category 6A Field Mount Plug 568A/B, UTP, Small AWG
CAPFMUL-S1	Category 6A Field Mount Plug, 568A/B, UTP, Large AWG
CAPFMFS-S1	Category 6A Field Mount Plug, 568A/B, Shielded, Small AWG
CAPFMFL-S1	Category 6A Field Mount Plug, 568A/B, Shielded, Large AWG
AX104552	Belden Coupler Test Adapter

Certification Test Methods

Method A

This method is to be used when the Permanent Link has a Field Mount Plug on both ends. This would be the case when a cable run is used in a direct connect scenario from a networking equipment to an IP-enabled device.

1. Field tester main unit
2. Field tester remote unit
3. Permanent Link Adapter
4. Belden Coupler Test Adapter
5. Permanent Link under test

Steps:

- Install the tester and the remote unit on both sides of the Permanent Link as shown in Fig.3.
- Select the cable type to be tested (Cat 5e, Cat 6, Cat 6A).
- Select the "Permanent link" limit with the appropriate category and standards (ISO or TIA)
- Test all permanent links

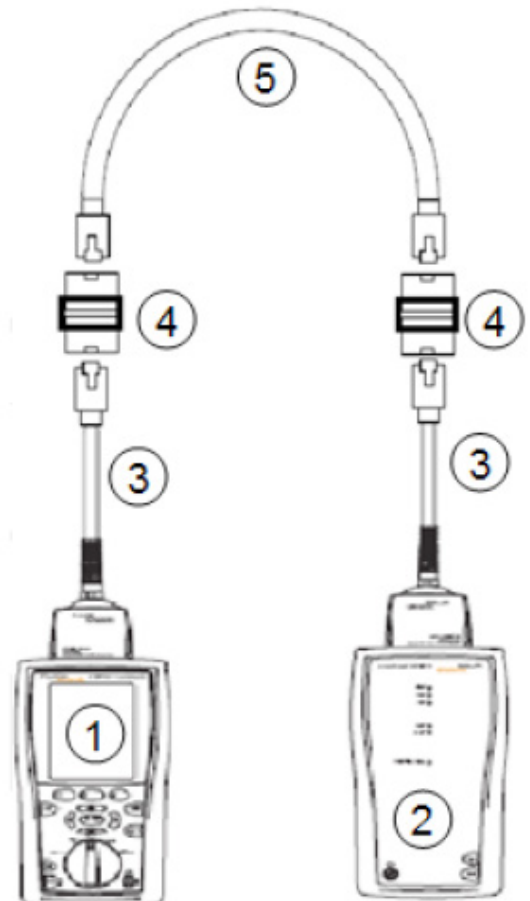


Figure 1: Method A Test set-up

Certification Test Methods (cont.)

Method B

This method is to be used when the Permanent Link has a Field Mount Plug on one end and a modular jack on the other end. This would be the case when a cable run terminates on a patch panel in the Telecommunications Room and on a Field Mount Plug connecting directly in an IP-enabled device at the other end.

1. Field tester main unit
2. Field tester remote unit
3. Permanent Link Adapter
4. Belden Coupler Test Adapter
5. Permanent Link under test

Steps:

- Install the tester and the remote unit on both sides of the Permanent Link as shown in Fig.4
- Select the cable type to be tested (Cat 5e, Cat 6, Cat 6A).
- Select the “Permanent link” limit with the appropriate category and standards (ISO or TIA)
- Test all permanent links

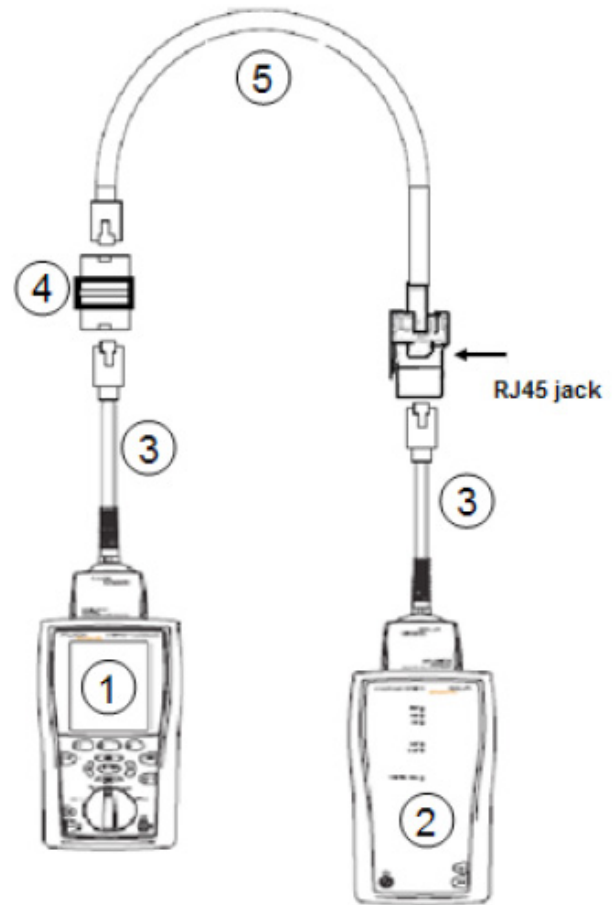


Figure 2: Method B Test set-up

Background

There are 2 different ways recognized in the TIA-568-C.2 standard to validate structured cabling installations: a) Channel testing and b) Permanent Link testing. The latter is the one we see most often performed in the field as all elements in the channel are not always available to complete channel testing (patch cables not available at all ports). Also, when testing a field mount plug, the technician may be tempted to use the channel adapter since they have a female RJ45 interface ready to connect the terminated plug. Please note that in such a case, the tester will exclude the terminated plug from the channel under test and the performance of the Field Mount Plug will not be measured. For that reason, Belden recommends to perform Permanent Link testing with the standard test method and using a Coupler Test Adapter to certify a cabling infrastructure before applying for certification. For applications where the field mount plugs are used at the Consolidation Point (segment B), regular test methods can be used and the field plug will be included in the permanent link or channel test results.

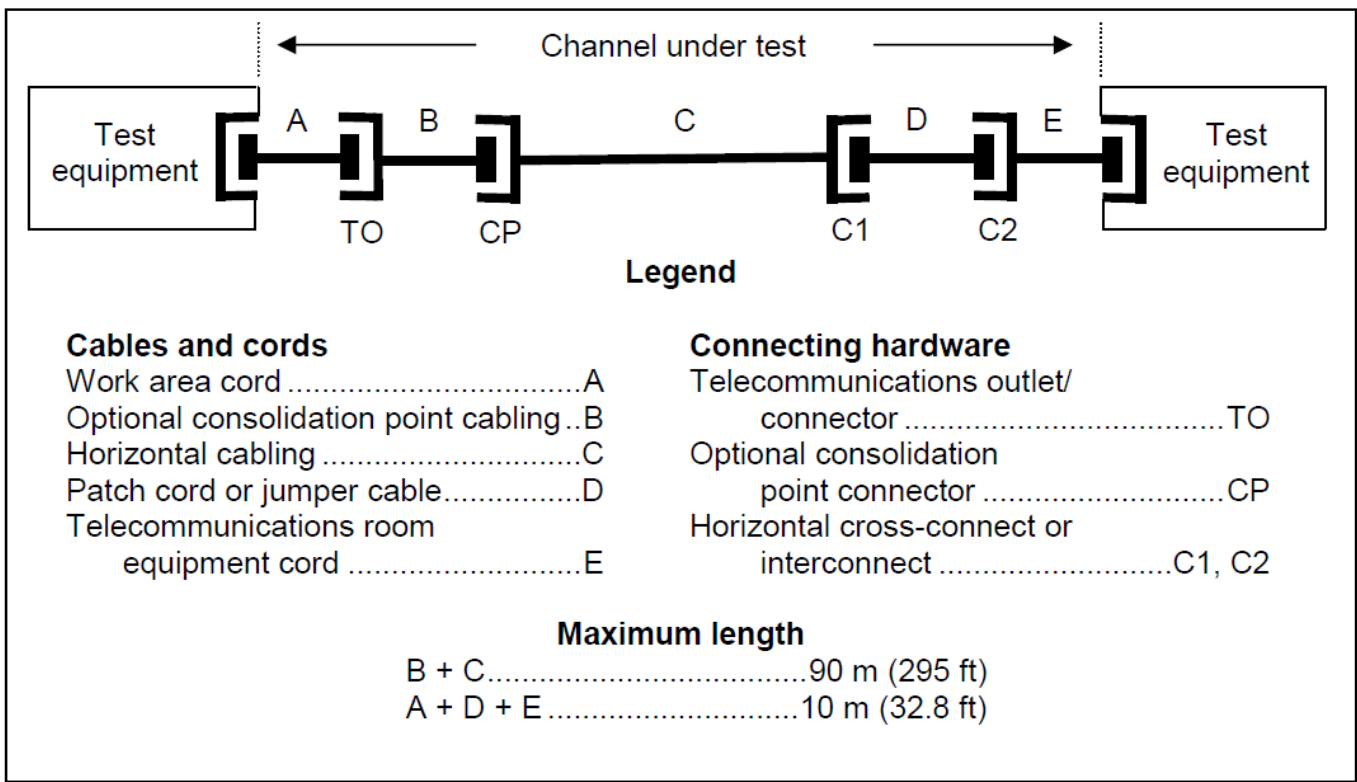


Figure 3: Channel test configuration

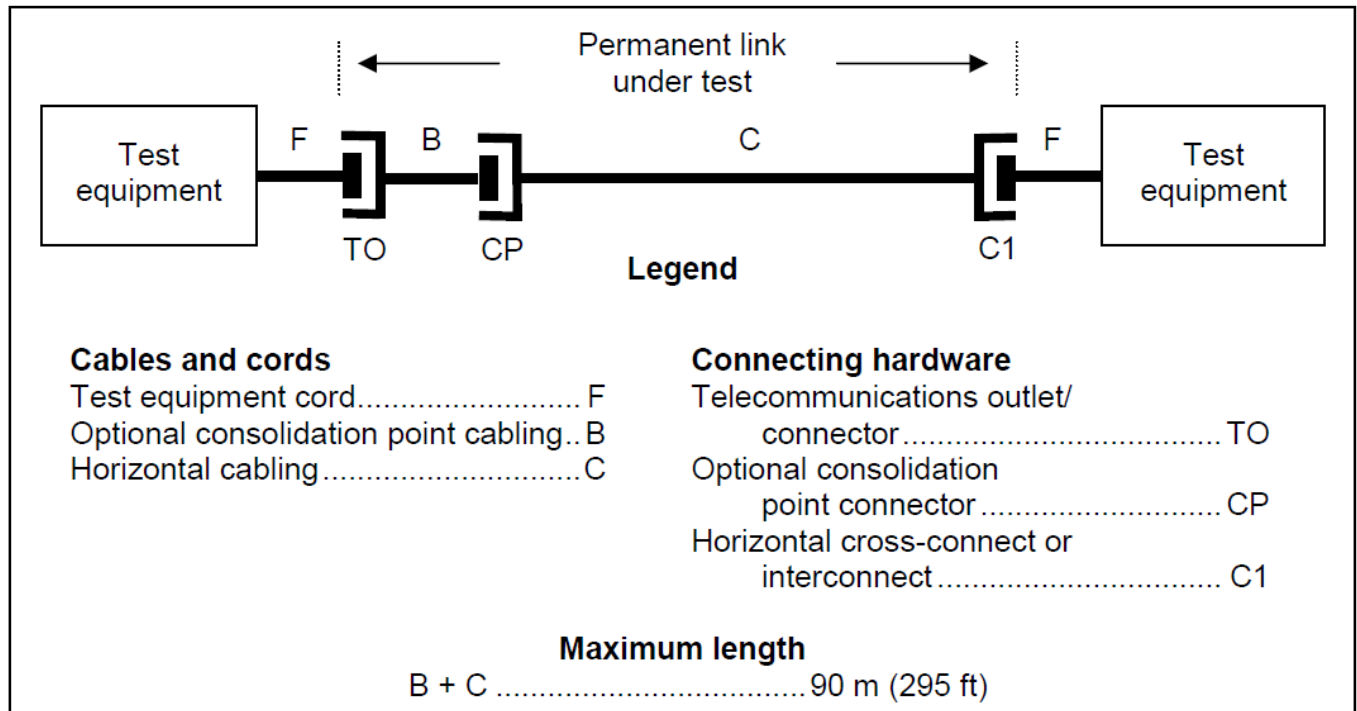


Figure 4: Permanent Link test configuration

Troubleshooting

Item	Issue	Proposed Solution
1	Mapping Error	Verify that the pairs follow the color sequence printed on the wire insertion caps
2	Failing IL	Verify that the permanent link is not exceeding the permit length of 90m.

Annex A

Field Terminated Plug – Cable Compatibility Matrix

Cable Type	Cable AWG	Plug Kit	Shield	AWG	Insulation (inch)
Belden 1585A	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 1583A	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 1213	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 1212	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk 5eLAN CMP	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk 5eLAN CMR	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk MegaLAN CMP	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk MegaLAN CMR	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 10GXS Patch CMR	24	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 2413	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 2412	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 3613	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 3612	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 3633	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 3632	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk 6LAN CMP	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk 6LAN CMR	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk AdvanceNet CMP	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk AdvanceNet CMR	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk GigaLAN CMR	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 1874A	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 4813	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk GigaLAN-10 CMP	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Belden 10GX13	23	CAPFMUS-S1	UTP	27-23	0.035 - 0.042
Mohawk GigaLAN CMP	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 4812	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 1872A	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 7851A	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 7852A	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Mohawk GigaLAN-10 CMR	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Mohawk VersaLAN	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GXS13	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GXS12	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GXS33	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GXS32	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GX12	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GX33	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 10GX32	23	CAPFMUL-S1	UTP	23-22	0.042 - 0.062
Belden 1533P	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Belden 1213F	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Mohawk 5eLAN CMP	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Mohawk MegaLAN CMP	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Belden 1533R	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Belden 1212F	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Mohawk 5eLAN CMR	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Mohawk MegaLAN CMR	24	CAPFMFS-S1	F/UTP	27-23	0.035 - 0.042
Belden YE03998	26	CAPFMFS-S1	S/FTP	27-23	0.035 - 0.042
Belden 2413F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 2412F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Mohawk 6LAN CMP	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Mohawk 6LAN CMR	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 10GX53F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 10GX52F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 10GX63F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 10GX62F	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062

Mohawk XGO CMP	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Mohawk XGO CMR	23	CAPFMFL-S1	F/UTP	23-22	0.042 - 0.062
Belden 7860ES	23	CAPFMFL-S1	SF/UTP	23-22	0.042 - 0.062
Belden 7860ENS	23	CAPFMFL-S1	SF/UTP	23-22	0.042 - 0.062
Belden 7860ESR	23	CAPFMFL-S1	SF/UTP	23-22	0.042 - 0.062
Belden 10GXEO2	23	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 10GXEO2	23	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 1885ENH	23	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 1888ENH	22	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 7989R	23	CAPFMFL-S1	UTP	23-233	0.042 - 0.062
Belden 7989P	23	CAPFMFL-S1	UTP	23-233	0.042 - 0.062
Belden 1302E	24	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 1303E	24	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062
Belden 1302EPU	24	CAPFMFL-S1	S/FTP	23-22	0.042 - 0.062

Annex B

Replacement parts

The Belden Couplers Test adapters are typically good for 5000 insertions.

When to replace the Coupler test adapter

- Test result margins begin to shrink
- Test result begins to produce intermittent and/or inconsistent results.
- The Couplers have been used for more than 5000 insertions.

The table below provides Belden coupler replacement information.

Description	Belden - Part Number
Belden Coupler Test Adapter	AX104552