

Application Note

Testing of the Opt-X PON™ Passive Optical LAN System

The Leviton Opt-X PON solution provides a full channel connectivity solution to distribute Passive Optical LAN topology.

This application note provides information that identifies the recommended testing methods for successful installation, performance and compliance.

Note: This applications note is intended for passive, out of service fiber during the installation phase or for additions and maintenance. In service “Active” fiber requires specific procedures and testing equipment and is not addressed in this document.

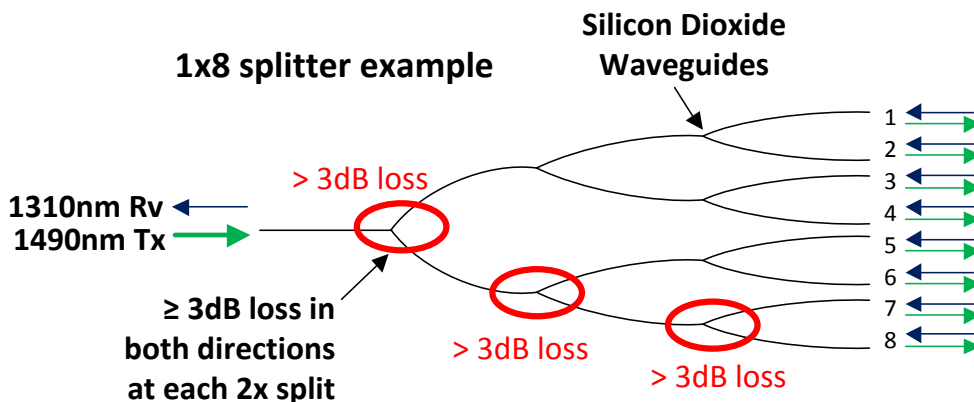
Testing a channel that includes a passive optical splitter provides some additional challenges. The ITU-T G.984 GPON Class B+ standard allows for a maximum channel loss of -28dB. At a minimum Tier 1 (Optical loss test set) testing for Insertion loss at the two performing wavelengths is required. Certain situations may require Tier 2 (OTDR) testing. Planning for and understanding the loss budget is crucial. In passive Optical LAN’s, the PON splitter must be included in the loss budget for the link. The amount of loss expected in the splitter is determined by the type of splitter and number of splits that occur.

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NS-AN-14-0001-07-14-14

Date:
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Product Line:
Opt-X PON

Part Numbers Affected:
PLC16-003
PLC26-003
PLC12-003
PLC22-003
MTO SC/APC Assemblies
SC/APC Patch Cords

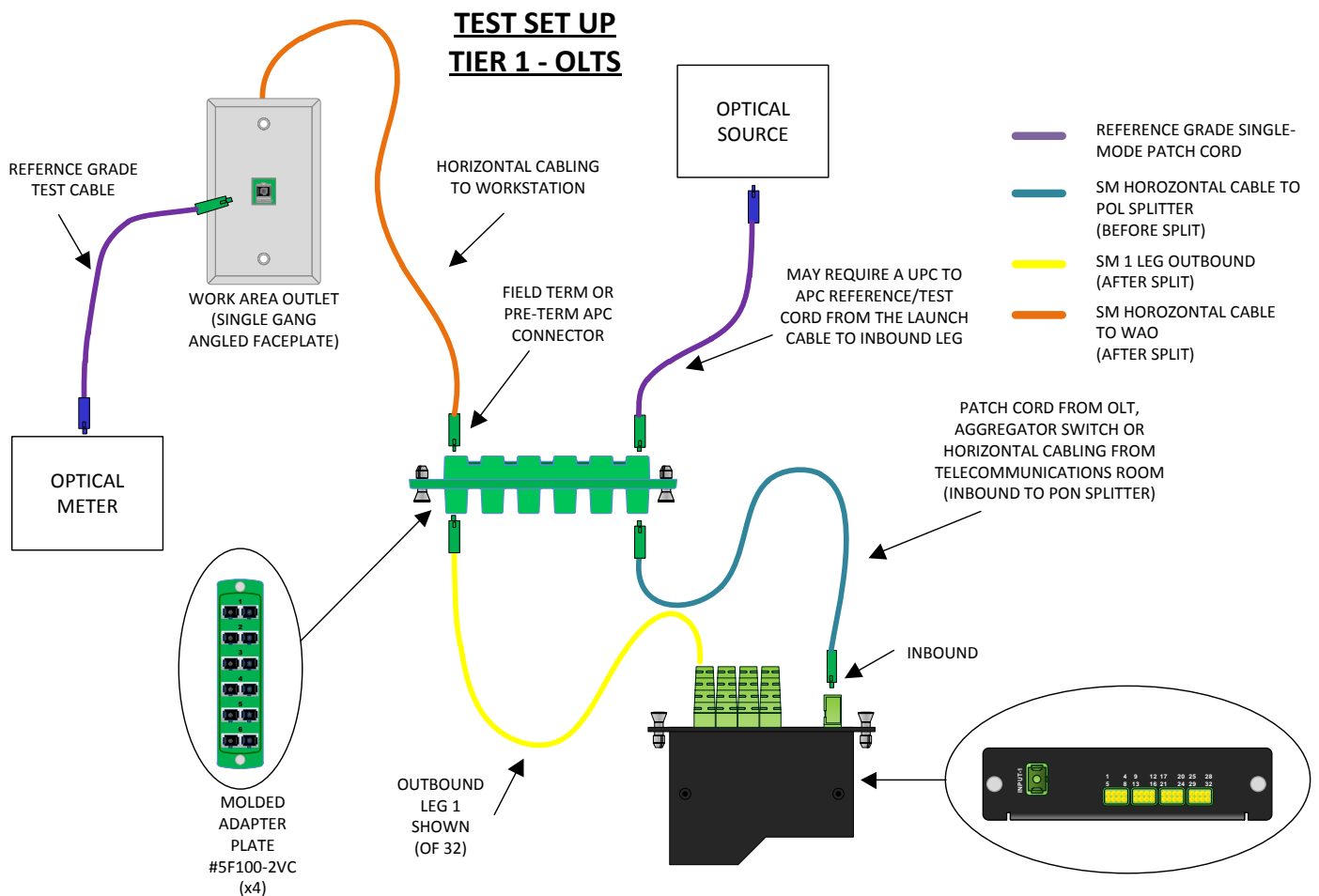
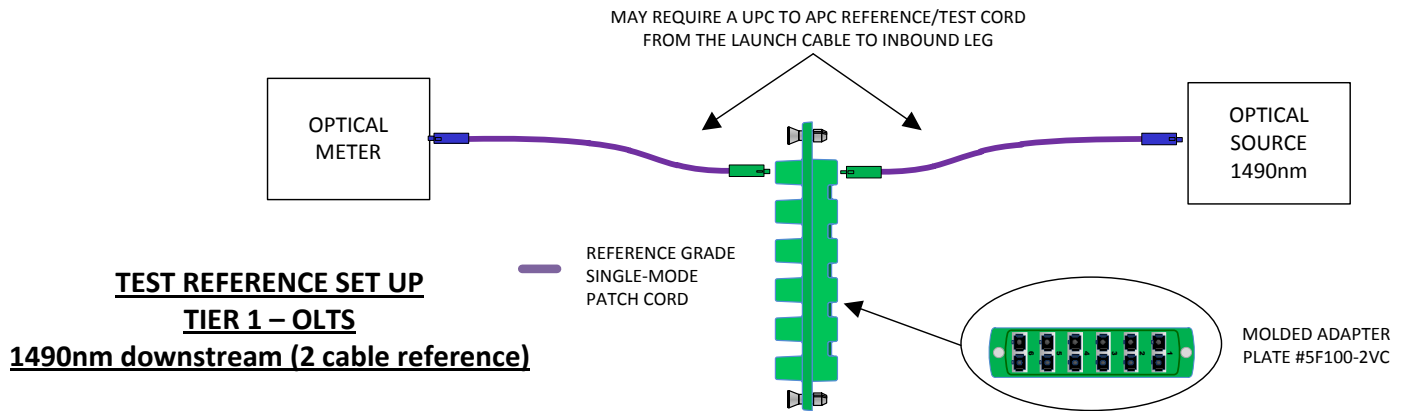


	Splitter Ratio	Ideal Loss / Port (dB)	Excess Loss (dB, max)	Typical Loss (dB)
	1:02	3	1	4
	1:04	6	1	7
LEVITON PART NUMBERS	1:08	9	2	11
PLC16-003	1:16	12	3	15
PLC26-003	1:32	15	4	19

NOTE: See TIA-526-14-B for information on cord quality including the use of cords with “reference grade” terminations. Proper cleaning endface condition of each connector is essential for meaningful attenuation measurements. The endface condition of all connections under test should be verified according to IEC-61300-3-35. If higher than expected losses are measured, inspect and clean the connectors per IEC-61300-3-35 and retest. If the test cords continue to test high, replace each test cord with a new one until the measured attenuation is in the appropriate range.

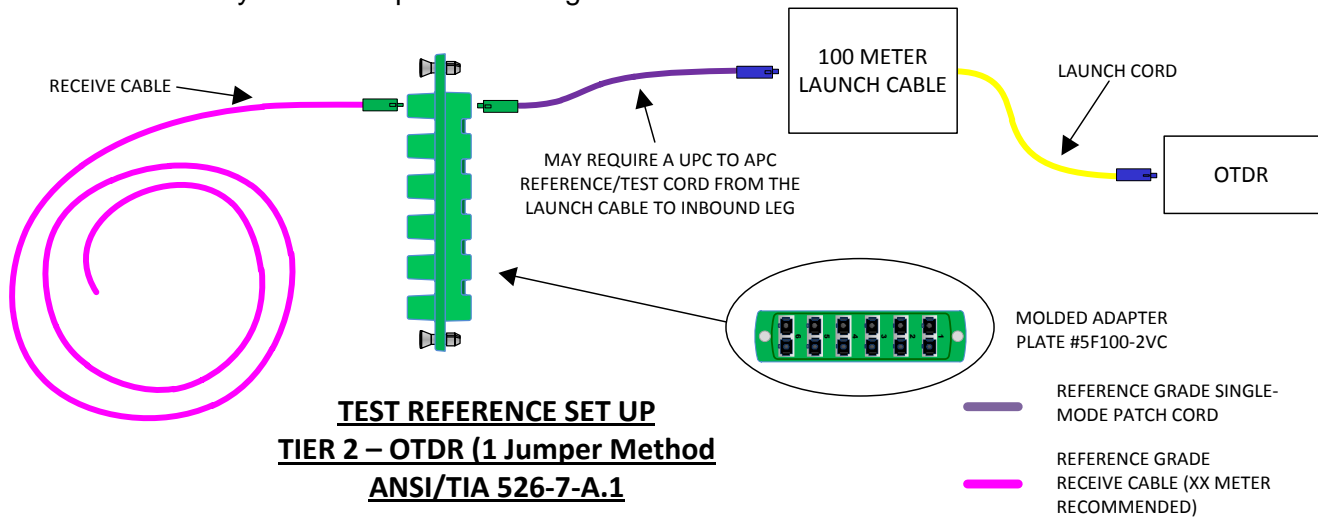
Tier 1 Testing

Tier 1 testing is achieved by using an optical source and optical meter. Testing needs to be performed unidirectionally or bi-directionally at the appropriate wavelengths (1490nm for the downstream and 1310 upstream). As most optical test sets operate at 1550, this wavelength is typically acceptable as a substitute for the 1490 wavelength as the difference in loss will be small. A PON power meter is capable of the specific wavelengths in use: 1310 upstream, 1490 downstream and 1550nm (used for Video BPON [Broadband PON] if applicable).



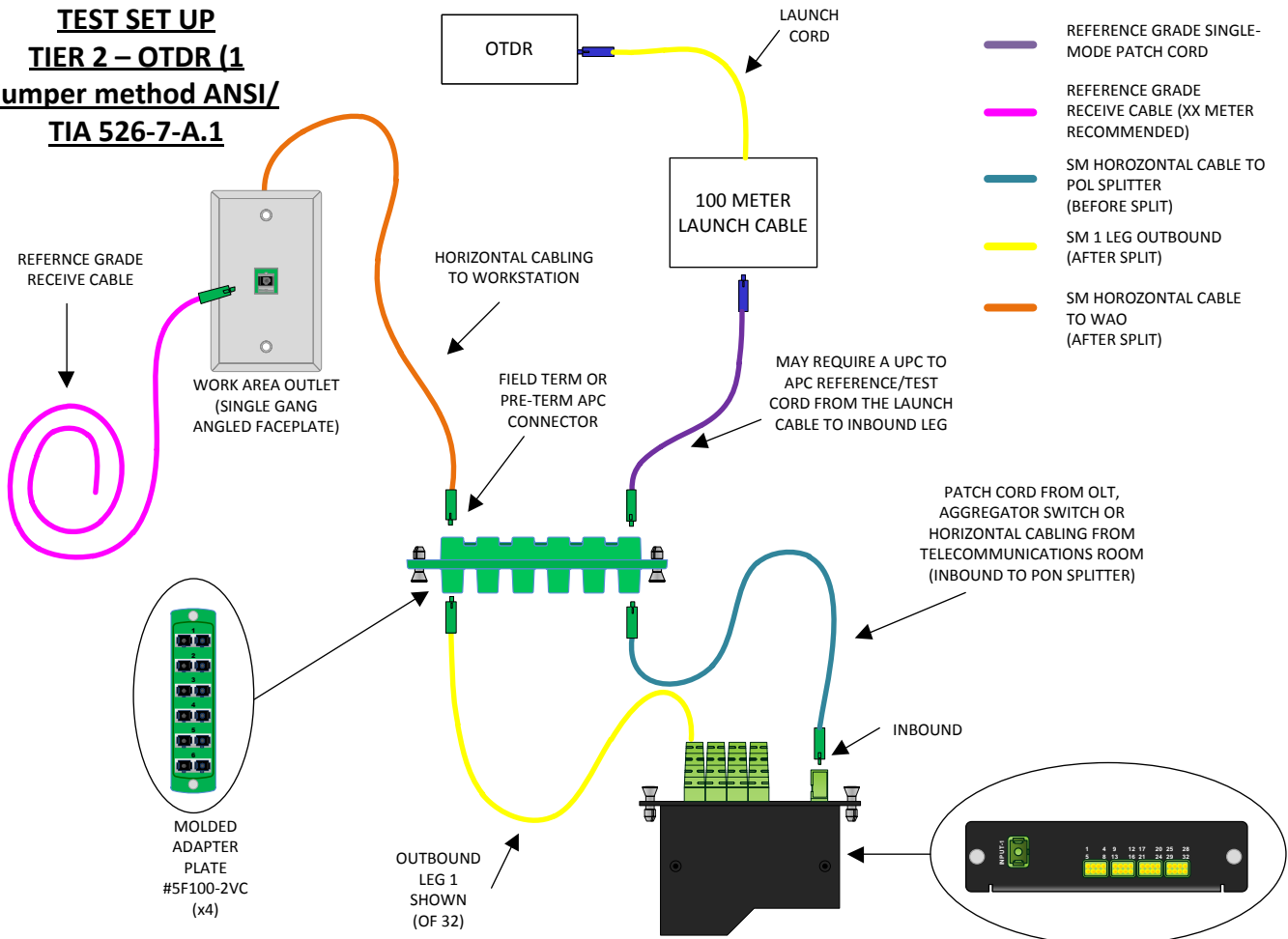
Tier 2 Testing

Tier 2 testing is achieved by using an Optical Time Domain Reflectometer (OTDR). Tier 2 testing is not required by ANSI/TIA standards but may be requested by the end user to provide added test detail and a historical benchmark for each individual channels performance. Testing a passive splitter through an OTDR requires special considerations. The target pulse width range is 250-300ns. A dynamic range of ≥ 35 dB at 1550 nm is required to test through 1/16 splitter type (recommended ≥ 38 dB for 1x32) PON-optimized OTDR utilizing the shortest PON/splitter dead zone possible. All values are tester dependent and should be fully evaluated prior to testing.



TEST SET UP

TIER 2 – OTDR (1 jumper method ANSI/TIA 526-7-A.1)



For more information go to: www.leviton.com/OptXPON.

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