OTDR Testing

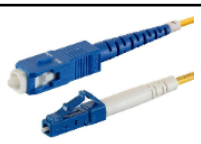
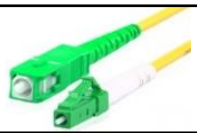
VIAVI Solutions

Tech Tip

TYPICAL ATTENUATION (LOSS) VALUES

Event	Type	Loss
Fiber	Single mode @ 1550nm	0.2 dB/km
	Single mode @ 1310nm	0.35 dB/km
	Multimode @ 850nm	1 dB/km
	Multimode @ 1300nm	3 dB/km
Splice	Fusion	0.10 to 0.30 dB
	Mechanical	0.15 to 0.50 dB
Bend	Macrobend @ 1310nm	Varies
	Macrobend @ 1550nm	Typically, 5x to 10x worse than 1310nm
Connector Pair	UPC or APC	0.15 to 0.5 dB
Splitters	1 x 2	3 to 5 dB
	1 x 4	6 to 7 dB
	1 x 8	9 to 11 dB
	1 x 16	12 to 14 dB
	1 x 32	15 to 17 dB
	1 x 64	18 to 20 dB
Multiplexor /Demultiplexor	CWDM	1 to 4 dB
	DWDM	1 to 5 dB

TYPICAL REFLECTION VALUES

Event	Type	Reflectance
Splice	Fusion	No reflection
	Mechanical	-40 to -50 dB
Bend	Macrobend	No reflection
Connector Pair (connected clean)	**UPC (blue)** 	-50 to -59 dB
	APC (green) 	-65 to -76 dB
Fiber end	**UPC connector open to air**	-14 to -20 dB
	APC connector open to air	-35 to -45 dB
Fiber Break or cut		-30 to -48 dB

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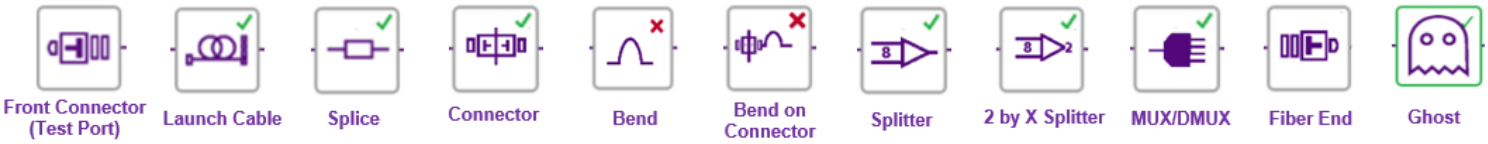
VIAVI SMART ICONS

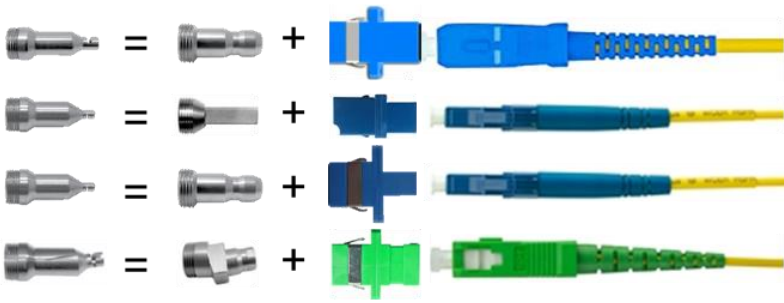


TIPS AND TRICKS

- **Reflections** occur at connector pairs, mechanical splices and the fiber end or break. Fusion splices and bends do not cause reflections.
- **New APC Connectors** may have -77 dB or lower reflections and are not measurable on OTDR's. These events will be shown as *Splice (Possible APC Connector)*.

- **Optical Return Loss (ORL)** is the total amount of reflected power, expressed in dB as a positive number. 40dB ORL is better than 30dB, 50 dB is better than 40 dB.
- **Bend detection** requires testing at both 1310nm and 1550nm wavelengths. Bends or kinks can have a loss greater than 6 dB and can look like the end of the fiber. In Single Wavelength acquisitions, bends cannot be identified by OTDR's. Bends may be identified as *Splice (Possible APC Connector).*
- **IBYC**: **Inspect** all patch cables and bulkhead ports, including the OTDR, **Before You Connect**.

- Use a coupler (mating adapter) with your bulkhead inspection tip to inspect both patch cables and bulkhead ports on the equipment.



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To reach the VIAVI office nearest you, visit viavisolutions.com/contact