141.9 Characteristics of the fiber optic cabling

~~The fiber optic cabling shall meet the dispersion specifications defined in ITU-T G.652 Section 6.1~~ The fiber optic cabling consists of one or more sections of fiber optic cable and any intermediate connections required to connect sections together. It also includes a connector plug at each end to connect to the MDI. The fiber optic cabling spans from one MDI to another MDI, as shown in Figure 141–2.

141.9.1 Fiber optic cabling model

The fiber optic cabling model is shown in Figure 141–2.

NOTE—The optical splitter presented in Figure 141–2 may be replaced by a number of smaller 1:n splitters such that a different topology may be implemented while preserving the link characteristics and power budget.

The maximum channel insertion losses shall meet the requirements specified in Table 141–1. Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280–4–2:2000. The fiber optic cabling model (channel) defined here is the same as a simplex fiber optic link segment. The term channel is used here for consistency with generic cabling standards.

141.9.2 Optical fiber and cable

The fiber optic cabling shall meet the dispersion specifications defined in ITU-T G.652 Section 6.1. Maximum and minimum dispersion levels at the maximum 20 km reach at the nominal transmission wavelengths bands are described in Table 141.20.

Table 141–20—Optical fiber and cable characteristics

Parameter	UW0	UW1	UW2	DW1	DW0	Unit
Nominal Wavelength	1270	1300	1320	1342	1358	(nm)
Max Dispersion (at 20km) [ab]	-45.4	0	36.0	73.7	100.1	(ps/nm)
Min Dispersion (at 20km) [ab]	-105.9	-45.4	-7.4	25.8	47.8	(ps/nm)

[a] These dispersion values are informative and were calculated using inequalities specified in ITU-T G.652 (2016) section 6.10.

[b] These dispersion requirements are satisfied by fibers specified in ITU–T G.652D (low water peak, dispersion un-shifted SMF) and ITU–T G.657A (bend–insensitive SMF). Other fiber types are acceptable if the resulting ODN meets the dispersion requirements.

141.9.3 Optical fiber connection

An optical fiber connection consists of a mated pair of optical connectors or an optical splice point~~. The PQ-type PMD is coupled to the fiber optic cabling through an optical connection and any optical splitters into the MDI optical receiver, as shown in Figure 141–2. The channel insertion loss includes the loss for connectors, splices and other passive components such as splitters, including splitters specified in IEC 61753-031-3. The channel insertion loss was calculated under the assumption of 14.5 dB loss for a 1:16 splitter, 18.1 dB loss for a 1:32 splitter and 21.5 for a 1x64 splitter (ITU-T G.671 am 1) Unitary fiber attenuation for particular transmission wavelength is calculated using attenuation values provided in ITU-T G.652 and G.657)provided in Table 141–15~~ The number of splices/connectors is not predefined; the number of individual fiber sections between the OLT MDI and the ONU MDI is not defined. The only requirements are that the resulting channel insertion loss at all specified transmission wavelengths is within the limits specified in Table 141–1. Other fiber arrangements (e.g., increasing the split ratio while decreasing the fiber length) are supported as long as the limits for the channel insertion loss specified in Table 141–1 are observed.

The maximum discrete reflectance for single-mode connections shall be less than –26 dB