

OM4 Standard for Multimode Laser-Optimized Fiber and Cable

White Paper
August 2011

The ISO, IEC and TIA standards committees have defined OM4 - a new standard for multimode 50 micron laser-optimized fiber and cable, allowing OM4 to be specified by Ethernet and Fibre Channel applications.

Previously OM3 was the highest bandwidth multimode standard, with 2000 MHz·km Effective Modal Bandwidth (EMB). The new OM4 standard specifies increased bandwidths at 850 nm of 4700 MHz·km EMB for laser sources and 3500 MHz·km for overfilled launch (OFL), while retaining the 500 MHz·km OFL specification at 1300 nm for legacy application compatibility. See table below. These bandwidth specifications meet or exceed those specified by all previous application standards, and enable the longest supportable distances on multimode fiber for several recent applications.

The ISO, IEC and TIA OM4 standards are harmonized to the same specifications creating a common set of requirements worldwide.

COMMSCOPE LAZRSPEED® 550 OPTICAL CHARACTERISTICS

Parameter	850 nm	1300 nm
Min Bandwidth – EMB (Laser)	4700 MHz·km	500 MHz·km
Min Bandwidth – OFL	3500 MHz·km	500 MHz·km
Max Attenuation for Loose Tube Cable	3.0 dB/km	1.0 dB/km
Max Attenuation for Tight Buffer Cable	3.0 dB/km	1.0 dB/km

OM4 fiber gives the cabling infrastructure designer better performance to support longer distances or more connections for applications such as Ethernet and Fibre Channel. It also provides a cost effective way of avoiding the use of expensive single-mode transceivers.

The optical characteristics of CommScope LazrSPEED 550 cables match, or are superior to, those of the OM4 standards. Just as LazrSPEED 300 parameters provided the fundamental specifications of the OM3 standard, LazrSPEED 550 specs provided the blue print of the new OM4 standard.

Application for 40 & 100 Gbps Ethernet (GE)

The IEEE 802.3 standard for 40GE and 100GE includes specifications for operation over OM3 and OM4. OM3 is specified to 100 m and OM4 to 150 m using parallel optic transmission. The superior performance of CommScope's solutions with LazrSPEED 300 and 550 extend these distances up to 140 m and 175 m respectively. Together these provide the most cost effective solutions for data centers by avoiding the higher costs associated with single-mode laser sources.

Application for Fibre Channel

The INCITS T11.2 committee published its FC-P1-4 standard that defines 8 Gbps Fibre Channel (8GFC), and the FC-P1-5 project for 16GFC is in final approval stage. OM4 is specified in FC-P1-5 not only to support 16GFC but also retroactively to support 8GFC and 4GFC where it extends the reach beyond that of OM3 for each data rate. For example, for 16GFC the standard specifies 100 m on OM3 and 125 m on OM4 using serial transmission. Once again the superior performance of CommScope's LazrSPEED 300 and 550 solutions go beyond the standard limits allowing up to 135 m and 170 m distances respectively.

What this means

Investment in LazrSPEED 550 cabling infrastructure today provides full compatibility for newly emerging, current and older applications while providing the longest reach possible over multimode fiber. Under the protective umbrella of North American and international standards, LazrSPEED 550 enables lowest total cost of ownership for several reasons. It reduces immediate capital costs by extending the reach of the lowest-cost optical transceivers, thereby reducing or eliminating the need to deploy higher-cost single-mode alternatives. It reduces electric power operating costs because multimode transceivers require less power than single-mode alternatives. LazrSPEED 550 can also reduce future capital costs by providing a superior future upgrade path to faster applications without having to replace the cabling infrastructure or reconfigure the data center.



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08/11