

OM4 Frequently Asked Questions

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On August 5, 2009 the TIA Standards Committee voted and approved the addition of a new EIA/TIA 492AAAD grade multimode fiber, which will be known as OM4. This new grade has been the topic of discussion within the multimode fiber industry for nearly 3 years, and approval by TIA formalizes the specification and measurement methods of an enhanced bandwidth fiber similar to those already commercialized by Corning and some other fiber manufacturers.

What is OM4?

OM4 is a laser-optimized, high bandwidth 50 μm multimode fiber. OM4 is not a new fiber type. All major fiber manufacturers have been selling a fiber with an effective modal bandwidth (EMB) value equivalent to that specified by OM4 since 2005. The change is that there is now a standard that is specifically targeted at this product. Prior to the standardization of OM4 these higher bandwidth fibers were sold as a part of OM3.

The requirements of the OM4 standard are identical to OM3 with the sole exception of the bandwidth values. Both the 850 nm EMB and the 850 nm over-filled launch (OFL) bandwidth have been increased from the OM3 requirements. See table below for specifics:

	OM3 Requirements	OM4 Requirements
850 nm High Performance EMB (MHz.km)	2000	4700
850 nm Legacy Performance OFL (MHz.km)	1500	3500
1300 nm Legacy Performance OFL (MHz.km)	500	500

The “OM-” multimode classification originates from the Structured Cabling Standard: IEC 11801 and although the IEC standardization of OM4 has not yet been approved it is expected that most, if not all, of the specifications will mirror those of TIA 492AAAD.

Does Corning have an OM4 product?

Yes. Corning’s InfiniCor® eSX+ fiber and ClearCurve® OM4 fiber both meet the requirements of the OM4 standard.

Prior to the finalization of the OM4 standard, Corning’s fibers were sold with an 850 nm OFL BW of 1500 MHz.km. When devising the specifications for InfiniCor eSX+ fiber, Corning conducted extensive functionality testing and demonstrated extended 10 Gb/s reach capability beyond 550 meters. This was driven by the EMB of 4700 MHz.km which remains unchanged by the standardization of OM4.

The logo for Corning, consisting of the word "CORNING" in white, uppercase, sans-serif font, centered on a solid blue rectangular background.

Q. Why was the 850 nm OFL bandwidth increased from 1500 MHz.km to 3500 MHz.km?

A. There is a belief among some members of the standards community that the 850 nm OFL bandwidth needs to be scaled along with the 850 nm EMB bandwidth in order to ensure maximum performance reliability. Corning has done extensive testing in this area and does not see any such correlation for fibers measured with the minEMBc bandwidth measurement. Therefore we originally specified the product with an 850 nm OFL value of 1500 MHz.km and pushed to keep that value for the OM4 standard.

During the standards debate, we also did testing using the DMD-mask method and did see a correlation between lower 850 nm OFL bandwidths and poor system performance. As a result, we support the decision to increase the 850 nm OFL bandwidth from 1500 MHz.km to 3500 MHz.km in order to protect against failures for fibers measured with the DMD-mask test method.

It is for these reasons, we are confident in stating that there is no functional difference in Corning's eSX+ fiber and ClearCurve OM4 fiber products as a result of this change.

Is there an OM4 standard?

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Does this mean OM3 isn't future-proof?

No. Most system requirements will still be met with OM3 – including 40 GbE and 100 GbE. For 10 GbE, OM3 supports 300 meters and proposals for OM4 support 550 meters. The vast majority of enterprise and data center 10 GbE link lengths are less than 300 meters so OM3 address most requirements. For 40 GbE and 100 GbE, the draft standard includes objectives for 100 meters over OM3 and 125 meters over OM4. Studies have shown that approximately 70% of in-building links are less than or equal to 100 meters. Therefore, for ~ 70% of users, OM3 remains the future-proof solution even for 40 GbE and 100 GbE.

When should I consider an OM4 fiber?

For typical premises links up to 600 meters, multimode fiber remains the cost effective solution. This is due to the fact that in a typical link, the cost of transceivers is ~ 10x the cost of the fiber/cable/connectors. While single-mode fiber is relatively cheap, it requires the use of costly 1300 nm transceivers which are roughly 2x – 3x the cost of 850 nm multimode transceivers. By investing a little bit more money in a high quality multimode fiber structured cabling system, substantial overall savings can be reaped by enabling the use of low-cost transceivers. As systems migrate to higher bit rates such as 40 GbE and 100 GbE, initial projections show that the transceiver cost savings enabled by multimode fiber will only get bigger.

Therefore, high data rate systems > 1 Gb/s will continue to use multimode fiber. The benefit of OM4 is that people who need between 300 meters and 600 meters at 10 Gb/s or users that need to go between 100 and 125 meters at 40 Gb/s or 100 Gb/s can benefit from using an OM4 fiber.

In addition, Fibre Channel members recently voted to include OM4 in their specifications with OM4 supporting 400 meters at 4 Gb/s, 200 meters at 8 Gb/s and 130 meters at 16 Gb/s.

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