

Wide Band Multimode Fiber (WB MMF) (OM5) (50/125 μm) Frequently Asked Questions

What's new in Standards?

Telecommunications Industry Association (TIA) initiated a work group in October 2014 to develop guidance for a wide band multimode fiber (WB MMF) 50/125 μm fiber standard to support short wavelength division multiplexing (SWDM) transmission. The TIA-492AAAE detailed fiber standard was published in June 2016. The designation OM5 was approved by the ISO/IEC JT1/SC25 in October 2016. The IEC WB MMF (OM5) standard is anticipated to be updated to include OM5.

What is WB MMF (OM5)?

OM5 is the new approved designation for WB MMF. It is compliant with OM4 specifications at 850 nm, but includes additional bandwidth characterization at 953 nm to support extended distances when using SWDM.

What is different about WB MMF (OM5)?

The OM5 optical and mechanical attributes are compliant with OM4 50/125 μm specifications and include the additional specifications of effective modal bandwidth (EMB) and attenuation at 953 nm. OM5 is intended for SWDM operation using vertical-cavity surface-emitting laser (VCSEL) transceivers across the 846 to 953 nm wavelength range.

What is SWDM?

Short wavelength division multiplexing (SWDM) is a proprietary wavelength division multiplexing (WDM) technology that uses four wavelengths across the 850 nm to 940 nm range. SWDM transceivers can use 2-fiber connectivity into the transceiver with OM3/OM4 fiber in both brownfield and greenfield installations.

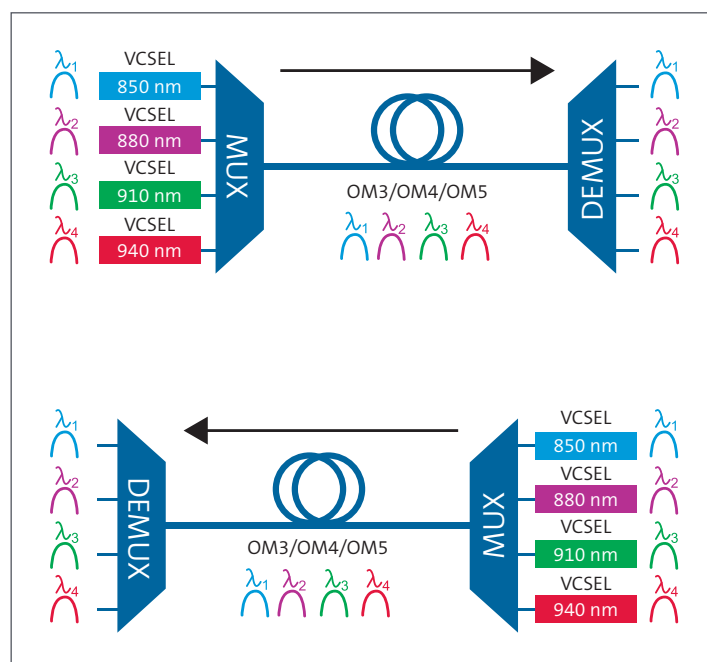


Figure 1: 100GbE (4x25GbE/Wavelength 2-Fiber SWDM)

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Can SWDM be used over OM3/OM4?

Yes, SWDM transceivers are primarily designed to utilize OM3/OM4 optical connectivity solutions.

Are there SWDM data rate and distance objectives?

The expected operation distances are given in the table below. To date, 40/100GbE SWDM has focused on providing an upgrade path over legacy brownfield OM3/OM4 installations. OM5 may be used when the expected distance range is > 100 m when using 100G SWDM (4 x 25G optical lanes).

	OM3	OM4	OM5
40G SWDM	240 m	350 m	440 m
100G SWDM	75 m	100 m	150 m

Table 1: Operation distances for OM3/OM4/OM5

Did Corning participate in the WB MMF (OM5) working group?

Yes. Corning was a very active participant.

Did transceiver manufacturers participate in the WB MMF (OM5) working group?

Yes. Finisar®, Foxconn® Interconnect Technologies (FIT), and Lumentum participated.

Does Corning offer WB MMF (OM5)?

Yes, Corning offers Corning® ClearCurve® OM5 wide band multimode fiber.

What are the specified OM5 effective modal bandwidth (EMB) values?

$\text{EMB} \geq 4700 \text{ MHz}\cdot\text{km}$ at 850 nm

$\text{EMB} \geq 2470 \text{ MHz}\cdot\text{km}$ at 953 nm

How do OM3/OM4 EMB values compare to OM5?

EMB is specified only at 850 nm for OM3/OM4 at 2000/4700 MHz·km, respectively. OM5 EMB values are specified at both 850 and 953 nm.

Why is the OM5 EMB lower at 953 nm compared to 850 nm?

The best system performance is achieved by a combination of low chromatic dispersion and high EMB. For typical optical fiber, the ideal zero dispersion wavelength occurs at 1310 nm. Because 953 nm is closer to 1310 nm than 850 nm, the chromatic dispersion is lower and consequently the EMB requirement is lower to achieve the same system performance.

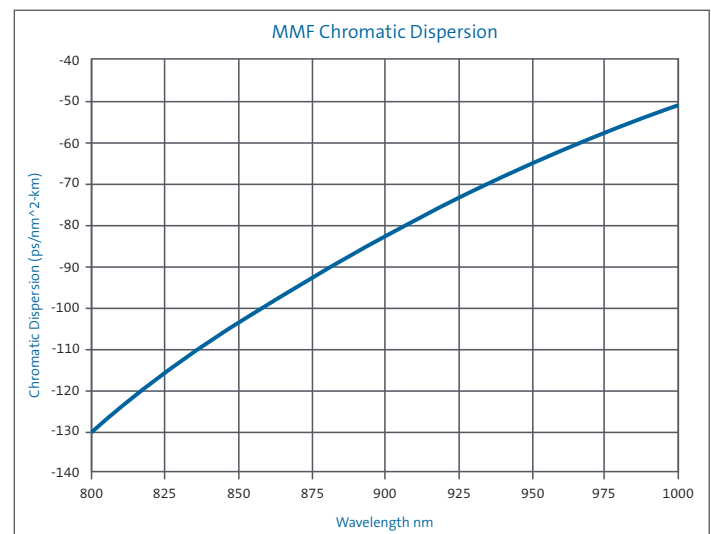


Figure 2: Typical MMF Chromatic Dispersion as a Function of Wavelength

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Is WB MMF (OM5) specified in optical transmission standards such as Ethernet and Fibre Channel?

There are no transmission standards that specify OM5 or SWDM. Transmission standards typically include only one multimode fiber variant that is selected based on economic, commercial, and technical criteria. Parallel transmission is the default multimode fiber variant for data rates $\geq 40\text{G}$.

Will ClearCurve® OM5 wide band fiber have the same bend performance as ClearCurve OM3/OM4 fiber?

Yes. ClearCurve OM5 wide band fiber has the same macrobend performance at 850 and 953 nm as specified for ClearCurve OM3/OM4 at 850 nm.

Will field channel loss measurements be required at both 850 and 953 nm?

No. Compliant 850 nm field channel loss measurements can be used to demonstrate 953 nm channel loss conformance.

Can BiDi transceivers be used with OM5?

Since OM5 is OM4 compliant, BiDi transceivers can be utilized.

The Corning logo is a solid blue square with the word "CORNING" in white, uppercase, serif font centered within it.

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