



UNDERSTANDING OPTICAL FIBRE "TYPES" AND "CLASSES"

Optical Fibre Types

We have witnessed developments recently of multi-mode optical fibre for the LAN and the industry standards have now defined multi-mode fibre into types and classes. Let's not confuse the two definitions. We'll look at types first. I am sure most of us have at least seen the description of OM1, OM2 and OM3.

OM1. This is very much the optical fibre that has been specified and we have been using for the past number of years. This can be either 62.5 or 50 micron optical fibre. Typical Overfilled Launch Bandwidth, (LED), as per Table 1. The use is legacy application support and short run Gigabit networks.

OM2. This is either 62.5 or 50 micron fibre with Overfilled Launch Bandwidth of 500MHz/Km for both. The applications will be legacy application support and Gigabit networks up to 500 meters.

OM3. This is essentially the new Laser Optimized Fibre with refractive index profile optimized for laser light insertion @ 850nm. The applications can be legacy network support, but is targeted at 10G Base-SR/SW.

The briefs above and table below are industry standard profiles for multimode fibre types. Manufacturers of optical fibre are targeting the market with various enhanced abilities of the glass equal to and of course beyond these specifications and characteristics.

		Minimum Modal Bandwidth MHz/Km		
		Overfilled Launch Bandwidth MHz/Km		Effective Laser Launch Bandwidth
Wavelength		850nm	1300nm	850nm
Type	Core diameter			
OM1	50 or 62.5	200	500	Not specified
OM2	50 or 62.5	500	500	Not specified
OM3	50	1500	500	2000

Table 1

(Reference ISO/IEC 11801, AS/NZS 3080, TIA/EIA B.3-1)

Single Mode fibre is also given a designation - OS1. Single mode fibre may start to play a bigger part in the LAN where traditional multimode has ruled. We'll save that for a later issue of the Newsletter.

Optical Fibre Classes

The Class of fibre relates to the ability of a particular fibre channel to support specific applications for a maximum distance. The definition of Optical Fibre Classes at this level will assist in specifying the correct fibre type for the application support and distance required.

- Class OF-300. Channels that support specific applications over a **Type** of fibre to at least 300 meters.
- Class OF-500. Channels that support specific applications over a **Type** of fibre to at least 500 meters.
- Class OF-2000. Channels that support specific applications over a **Type** of fibre to at least 2000 meters.

To provide an example. When considering what fibre type to install or specify you will need to look at the expected application support and the distance required. An installed OM1 fibre can be considered a Class OF-2000 channel and will support applications such as FDDI and 100BaseFX using 1300 LED light source for a distance of 2000 meters. However this fibre type will only perform as a Class OF-300 when support of 1000BaseSX is required using the VCSEL 850nm laser. A simple matrix in the table below, using familiar speeds, will assist with understanding the concept.

Mbps	Distance by Class of Fibre		
	OF-300	OF-500	OF-2000
100	OM1	OM1	OM1
1000	OM1	OM2	OS1
10000	OM3	OS1	OS1

