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NEW CABLED OPTICAL FIBRE CATEGORIES - PART II

by
**Mike Gilmore, Technical Director of the FIA
for Networking+ (April 2008)**

At their February meeting in Barcelona, ISO/IEC JTC1 SC25 WG3 proposed the establishment of two new optical fibre types or Categories - one multimode and one singlemode. In terms of standardisation, it is unlikely that changes to the list of "OM"s and "OS"s will take place before 2009. However, it is likely that marketing literature will contain the new designations quite soon and it may be useful to provide advance information for specifiers and installers alike.

The new "OS", which currently has no designation, provides performance levels somewhere between those of OS1 and OS2 - and was introduced in last months FIA column in Networking+.

The multimode variant, currently termed OM4, will provide twice the laser/VCSEL bandwidth of OM3 and is targeted to provide greater useable distance and/or lower system implementation costs for the next generation 40 Gb/s and 100 Gb/s Ethernet solutions that are currently in development.

While there is clear logic for a new OS designation, as discussed last month, the case for a new OM is more to do with state-of-the-art a la "Category 6A" etc. It is recognised that while OM3, introduced in 2002, represented a significant development in terms of bandwidth of multimode optical fibre, the performance levels attained by premium products today are significantly in excess of that milestone. Manufacturers have long since been describing their products as OM3+, enhanced OM3 or equivalent. Of course there is no basis for comparison for their individual claims and OM4 would provide a benchmark for such products.

That in itself does not always justify a new "Category" - although it sometimes seems to be enough in the balanced cabling arena. It is also considered important by the cabling standards bodies to offer that performance uplift to an application that can then demonstrate its benefits. This is what happened for OM3 cabled optical fibre performance when IEEE used it as their 300 metre mapping of 10GBASE-SR. In line with that practice, the further improved bandwidth performance designation "OM4" has been offered to both IEEE and Fibre Channel.

Unfortunately, the questions raised by this offer begin to grow in number as the detail of the offer is analysed. It is generally true that that increased bandwidth would offer greater distances of support for current networks - but that will probably not be of interest to the applications committees who rarely if ever re-visit already published standards (for example we have no standards-based support for 1000BASE-SX over OM3). The main hope is that the new performance specification may be of interest to new applications, currently in development, such as 40 Gb/s and 100 Gb/s Ethernet. The benefits may be either that the distance of support over multimode optical fibre may be increased or that the number of parallel optical fibres required (currently four in each direction for the 40 Gb/s application) may be reduced. However, there are many that cast doubt on these hopes, intimating that the equipment providers objective is to reduce the cost of the VCSEL/laser sources, loosening performance tolerances, which may negate any benefit obtained for the higher bandwidth optical fibre cables.

Category	Maximum cable attenuation (dB/km)		Minimum modal bandwidth (MHz.km)		
	850 nm	1300 nm	Over-filled launch		"Laser" launch
			850 nm	1300 nm	850 nm
OM1	3.5	1.5	200	500	Not specified
OM2	3.5	1.5	500	500	Not specified
OM3	3.5	1.5	1500	500	2000
OM4	3.5	1.5	1500	500	4700

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Nevertheless, history has proved that once a new "Category" of anything is discussed, even at an elementary level, it will become a reality in due course. The current proposals are shown in the Table above (alongside all the other OM specifications). It has at least been agreed that the new specification products have to be backwards compatible with the existing OMs – only the laser launch bandwidth is different - although there may be many twists and turns ahead.

Further information is available via an White Paper on the FIA web-site (www.fia-online.co.uk). Enquiries can be e-mailed to jane@fiasec.demon.co.uk.or, alternatively, you can contact the FIA Secretariat in 01763 273039.

Biography

As the Technical and Standards Director of the UK Fibreoptic Industry Association, Mike is heavily involved in the development of training and competence standards for the fibre installation industry and sets down policy in this area. In addition he chairs the audit and arbitration committees for the FIA. His book "Fibre optic cabling; theory design and installation practice" published in 1991 remains a reference for both experts and entrants into this field.

Mike also initiated the establishment of the Telecommunications Infrastructure Advisory Board (TIA-B) along with the relevant directors of its other host organisations CMA and ECA-ITEC.

In the UK, Mike is Chairman of TCT/7, the BSI Technical Committee responsible for the three panels on telecommunication cabling. He also chairs two of these panels (TCT7/-1 and TCT7/-3) and is Secretary of TCT7/-2. TCT7/-1 and TCT7/-2 act to assist development of European and international standards for the design and installation of telecommunications cabling respectively. TCT7/-2 also manages the implementation of these standards in the UK, where necessary producing supporting national standards.

Mike is involved in CENELEC TC215 - as Convenor of Working Group 1 and Secretary of Working Group 2. These committees are responsible for the development of an integrated series of standards for the design and installation of telecommunications cabling in a range of premises. In 2008 he led the ETSI STF362 on energy efficiency in broadband deployment resulting in the ETSI TS 105174 series documents, allowing Mike to assist in a new TC215 activity covering data centre facilities and infrastructures (monitored in the UK by BSI TCT7/-3).

At international level, Mike is Convenor of the Cabling Implementation Task Group (CITG) within ISO/IEC JTC1 SC25 WG3. This group is responsible for the strategic management of the international standards covering the specification, QA, installation, administration, operation, maintenance and repair of generic cabling. This work supports all the cabling design standards produced by ISO/IEC JTC1 SC25 WG3 including ISO/IEC 11801, ISO/IEC 15018, ISO/IEC 24764 and ISO/IEC 24702 for industrial premises produced by ISO/IEC JTC1 SC25 WG3 IPTG (also convened by Mike Gilmore).

Mike is a regular speaker at seminars and conferences in all five continents. He has provided the keynote address and opening presentation in many conferences in the UK, Germany and the Netherlands. His seminars, providing regular updates on the progression of cabling standards are particularly well attended and are operating in the UK and continental Europe.



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