

OPTICAL FIBRE STANDARDS UPDATE

Ros Neat, Consultant Engineer, Brand-Rex, provides a summary of the activities of the International Standardisation committee's working in the optical fibre market during Q4 2009. The report provides information on the status of the development of new and revised standards and highlights the key points within each document which should be considered.

1. New standards for multimode optical cable and optical fibre

The way forward for the new category OM4 cabled optical fibre has been opened up by the IEC committee SC86A WG1.

The OM4 cabled optical fibre category has been written into the Amendment 2 of ISO/IEC 11801, this document is undergoing the ISO/IEC national committee voting process and is expected to be published Q2 2010. During the development of the new 50/125 multimode optical fibre, by IEC, the main technical issues resolved were the OFL (over filled launch) bandwidth of the optical fibre at the wavelengths of 850 nm and 1300 nm (i.e. 3500 MHz.km and 500 MHz.km respectively), the DMD (differential mode delay) values required for the high bandwidth operation and that the minEMB (minimum effective modal bandwidth) is a system related parameter and not a fibre parameter. Hence the value of 4700 MHz.km is achieved when the light from a conforming transmitter is launched into a conforming optical fibre. This new optical fibre (A1a.3) will be published in the next edition of IEC 60793-2-10 expected Q2 2010.

This is welcome news to Brand-Rex as we have been promoting and supplying this exact specification of high bandwidth 50/125 multimode cabled optical fibre for over four years with our "Z50" cabled range.

2. Testing of multimode optical fibre cabling

The ISO/IEC 11801 requires that the testing of optical fibre cabling is carried out using ISO/IEC 14763-3 Ed 1. This standard has now been revised based on the new publication ISO/IEC 14763-3-am1 Ed1. The main change is that IEC/PAS 61300-3-43 has been replaced by:

IEC 61280-4-1, Fibre-optic communication subsystem test procedures – Part 4-1: Cable plant and links – Multimode fibre-optic cable plant attenuation measurement.

The measurement technique for multimode links has been changed in order to provide a more reliable result and is now based on EF (encircled flux) which is "the fraction of cumulative

near-field power to the total output power as a function of radial distance from the optical centre of the core". This EF method fills the core of a multimode 50/125 optical fibre more than a VCSEL but less than a LED.

The test method now requires that all tests are carried out using reference grade terminations on the multimode test cords and that the required EF launch conditions are met by using appropriate equipment inside the light source, or by applying mode controlling or conditioning devices on or in series with the launch cord. A reference grade termination will have $IL \leq 0.1$ dB when connected to another reference grade termination or $IL \leq 0.3$ dB when connected to a standard termination. A mode conditioning device typically is a small device with input and output patch cable terminated with a reference termination in the connector of choice. It should be connected between the light source and test lead to provide a conforming EF source for the multimode test.

The Brand-Rex training courses and seminars are updated regularly to inform you of changing standards, see our website for details.