

WHITE PAPER

SYDNEY DATA CABLING SOLUTION: TESTED SUCCESSFULLY TO 100G

Is the new data centre cabling system also suitable for future higher-speed applications such as 40/100G Ethernet and 120G InfiniBand®? In order to provide a qualified answer to this question SDC arranged for the system to be tested under stringent conditions.

For many years, Datwyler and fibre optic manufacturer Corning Inc. have enjoyed a close strategic partnership. Among other things, since early 2011 Datwyler has exclusively used Corning's bend-optimised G50/125µm fibres (ClearCurve®) in all multimode fibre optic cables of fibre categories OM2, OM3 and OM4 – including the new Data Centre Solution cables.

Corning made its Sullivan Park R&D lab in New York available to test the suitability of the OM3/OM4 versions of this cabling system on 100G Ethernet and 120G InfiniBand® transmissions.

Test conditions for 100G

An appropriate test method for determining the performance of a system is to measure the Bit Error Rate (BER). All the links must achieve transmission with a bit error rate in excess of 10^{-12} . This test method provides the best possible guarantee that all the components in the cabling system will also work reliably in a "real" installation and will comply with the insertion loss (IL) limit values stipulated for 100G – i.e. that the user will not incur any additional error-related costs.

A test bed conforming to the IEEE 802.3ba 100GBASE-SR10 standard was constructed in the Corning laboratory (Fig. 1). In cabling terms this consisted of a 100Gbit/s transmission system utilising parallel optics. The signals were induced by a VCSEL-based 850-nanometer transceiver (12x 10Gbit/s). All the cables, components, transceivers and connectors used on the test bed were standard-compliant products, selected randomly off-the-shelf. In other words, no "special quality" products were installed which could "artificially" enhance performance readings by comparison with a field installation.

Test bed

During performance testing the modulation of the 850nm VCSEL transmitter and receiver was carried out by a PRBS data pattern generator (PRBS: Pseudo-Random Binary Sequence). The VCSEL transceiver was an Avago Technologies device with a 24-fibre single duplex MTP optical port. A bit error rate analyser was

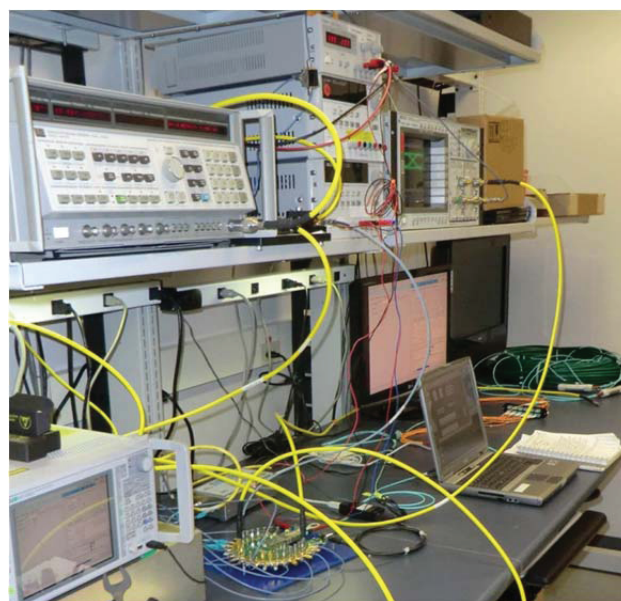


Fig. 1: Test bed in Corning's Sullivan Park laboratory, New York

also connected. A variable optical attenuation (VOA) unit was incorporated in the transmission channel to increase the insertion loss of all twelve transmission lanes (12x 10Gbit/s) as part of the BER assessment (Fig. 2).

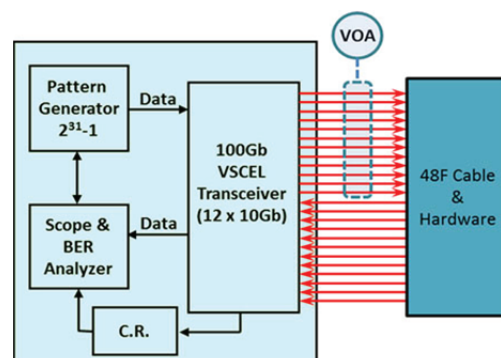


Fig. 2:
Test bed
schematic