

## TESTING INSTALLED OPTICAL FIBRE CABLING

### Random number generation or verifiable verification technique?

#### A half-day intensive seminar

#### BACKGROUND

It is well known that the testing of multimode optical fibre cabling attenuation can produce highly variable results - in some cases dwarfing the actual measurements.

The source of the problem often lies in the test method used, a lack of control in the use of test cords and a liberal, but variable, amount of end-face contamination due to poor test procedures.

However, recent detailed investigations have shown that the launch conditions created by the test equipment can influence the results by as much as 2.0dB. It was even suggested in a recent presentation that we have reached the point where the most results are obtained are non-repeatable and where end-face inspection is more indicative of a quality assured installation than test results - results that are not right, or wrong, but simply irrelevant.

Such a situation cannot be allowed to continue, control has to be regained and this seminar seeks to re-establish the ground rules

#### PRESENTATION OVERVIEW

In this half-day seminar, Mike Gilmore introduces the subject by reviewing the existing standards-based test methods and explains why they fail to be applicable in all cases and why installers are tempted to deviate from them. However, even using the correct method can produce a large variation in measured results using different test equipment (even from the same supplier). Mike will demonstrate the scale of the problem using the results of his own development work in this area.

Presenting what will be, to many, new information concerning modal power distribution (MPD), Mike shows how the variations of equipment and test cord MPD produces enormous variations in the measured results. The production of a standard MPD, either within the test equipment or by the use of "magic" cords is critical to repeatability. Mike concludes with discussion of the "universal test method" being proposed in the latest ISO/IEC work.

#### "IT'S TIME TO GET REAL"

Optical fibre usage continues to increase in areas where its correct function is critical - as the concept of plug-and-play optical infrastructures in data centres serves to testify. We are not paying enough attention to the commissioning of such installations.

Let's face it, Category 5e cabling supporting typical data rates of 10/100 Mb/s is being tested with test cords and assemblies costing hundreds of pounds and which have to be replaced regularly. Yet optical fibre installations required to support data rates of 10 and 100 times greater are tested with cords which, in many cases, are nothing more than patch cords costing little more than £10 - it is hardly surprising that we have problems.

The ISO/IEC committee responsible for ISO/IEC 14763-3 have "bitten the bullet" and decided to properly quantify the underlying issues. It appears that, finally, there is light at the end of the tunnel and this seminar explains the approach being adopted. In the meantime, all involved in producing, managing and receiving test results need to be aware of the value of the results for which they have responsible

#### WHO SHOULD ATTEND

- Cabling system suppliers responsible for specifying warranty test techniques
  - Installers
- Infrastructure consultants/specifiers and QA inspectors
  - Users

....how to book? .... Go to page 3



## TESTING INSTALLED OPTICAL FIBRE CABLING

Random number generation or verifiable verification technique?

### AGENDA

	<b>Introduction</b>	<b>1100 hrs</b>	<b>Light source dependency</b>
<b>0900 hrs</b>	<b>Why do we test optical fibre cabling?</b>		<b>The impact of changing light sources</b> <b>The effect of mandrels</b> <b>Analysing the value of test results</b>
	<b>Reasons for testing</b> <ul style="list-style-type: none"> <li>• component performance</li> <li>• installed cabling performance</li> <li>• installation quality assurance</li> </ul> <b>Parameters to test</b> <ul style="list-style-type: none"> <li>• attenuation</li> <li>• return loss</li> </ul>	<b>1115 hrs</b>	<b>Modal Power Distribution and CPR</b>
<b>0930 hrs</b>	<b>Measurement of attenuation</b>		<b>Introducing mode groups</b> <b>Modal power distribution (MPD)</b> <b>Coupled power ratio (CPR)</b> <b>The impact of controlled launch conditions</b> <b>The need for standardisation</b>
	<b>Light source - power meter</b> <b>OTDR</b> <b>Visual inspection</b> <b>Contrasts and comparisons</b>	<b>1200 hrs</b>	<b>Refinements underway</b>
<b>0945 hrs</b>	<b>Attenuation testing - according to standards</b>		<b>ISO/IEC 14763-3 and BS EN 50346</b> <b>The MPD Template</b> <b>Installer's choices for MPD Control</b> <ul style="list-style-type: none"> <li>• new test equipment</li> <li>• defined test cords</li> </ul> <b>Changes to underlying test methods</b> <ul style="list-style-type: none"> <li>• a single test method</li> <li>• the use of reference connections</li> </ul>
	<b>ANSI/TIA/EIA, ISO/IEC, IEC, EN AND BS</b> <ul style="list-style-type: none"> <li>• Configuration A, One Jumper</li> <li>• Configuration B, Three Jumper</li> <li>• Configuration C, Two Jumper</li> </ul> <b>Singlemode vs Multimode</b> <b>The equilibrium condition myth</b> <b>The use of mandrels</b>	<b>1230 hrs</b>	<b>What do we do in the meantime?</b>
<b>1015 hrs</b>	<b>Evolution of "standard" methods</b>		<b>Value and repeatability of test results</b> <b>Control of test methods</b> <b>Documentation of test systems</b> <b>Management of test processes</b> <b>The risk of overemphasis</b>
	<b>Fixed head test equipment</b> <b>Duplex connectivity</b> <b>FIA-TSD-2000-4-2-1</b>	<b>1300 hrs</b>	<b>Close</b>
<b>1045 hrs</b>	<b>Break</b>		<b>Lunch</b>

### SCHEDULE 2005

Date: 23rd June 2005  
Location: London, England

### COST

Scheduled Courses	Service Packs
Sterling: £220.00 per person  Euro: €330 per person	In addition to the training course, The Cabling Partnership offers a 12-month service pack agreement.  The service pack provides details of all changes relevant to the training received. This takes the form of an e-Newsletter together with copies of all applicable documentation.  Sterling: £75.00 per person Euro: €120 per person
The above costs include refreshments during the courses but exclude accommodation.	

The above costs are subject to VAT where applicable.

....how to book? .... Go to page 3

## TESTING INSTALLED OPTICAL FIBRE CABLING

Random number generation or verifiable verification technique?

A half-day intensive seminar

### COSTS

Scheduled Courses	Service Packs (see Page 2)
Sterling: £220.00 per person  Euro: €330 per person	Sterling: £75.00 per person Euro: €120 per person
The above costs include refreshments during the courses but exclude accommodation.	
The above costs are subject to VAT where applicable.	

### ....how to book?

You can reserve places on the courses listed below in the following ways:

- by faxing this page, complete with your requirements and contact details to +44 (0) 113 293 2632
- by telephone: +44 (0) 113 232 3721
- by e-mailing your requirements to The Cabling Partnership
  - automatically, by clicking on this hyperlink
  - manually, to [mike.gilmore@btinternet.com](mailto:mike.gilmore@btinternet.com)

### RESERVATION FORM

JUNE	Date: 23rd June 2005 Location: London, England	No. of places required			
		Service Pack required	YES		NO

### MY DETAILS

COMPANY NAME				
COMPANY ADDRESS				
	CITY		POST/ZIPCODE	
TELEPHONE				
FAX				
RESERVATION MADE BY				
e-MAIL ADDRESS				
SIGNED				
DATED				