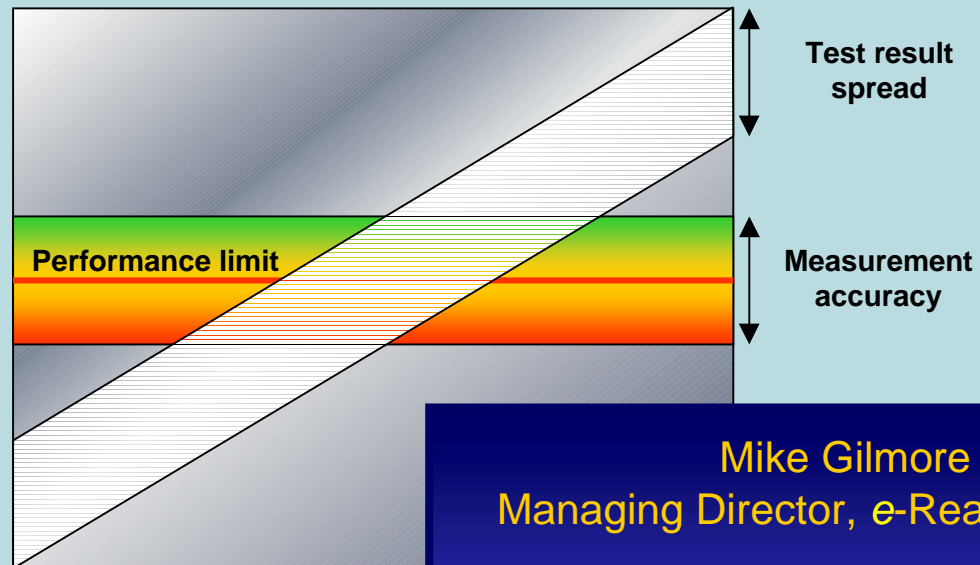


# MARGINAL PERFORMANCE and INSTALLER PROFITS



**Mike Gilmore**  
Managing Director, e-Ready Building

Chairman: BSI TCT7/-/1 and TCT7/-/3  
Convenor: CLC TC215 WG1  
Convenor: ISO/IEC JTC1 SC25 WG3 IPTG  
Technical Director: Fibreoptic Industry Association

2003

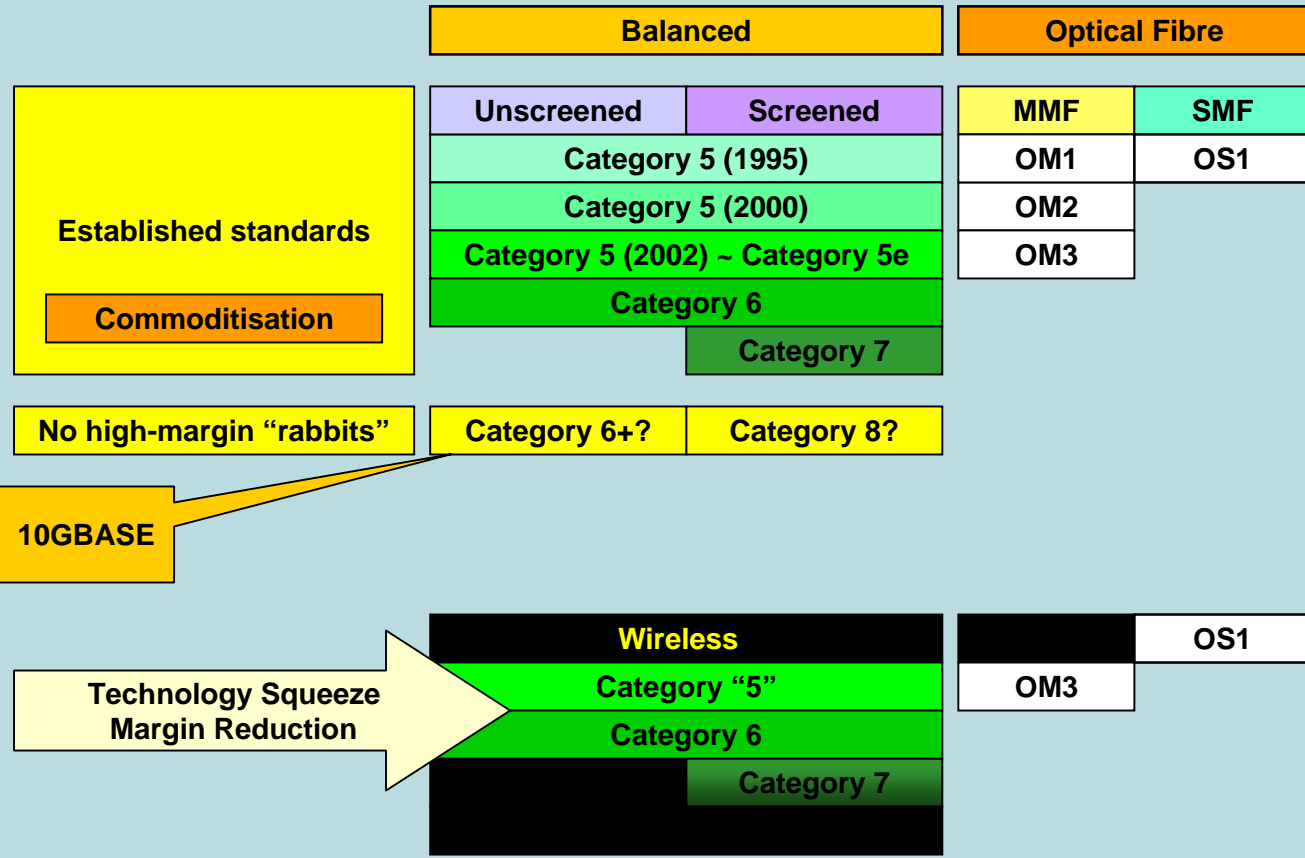
**EURO**



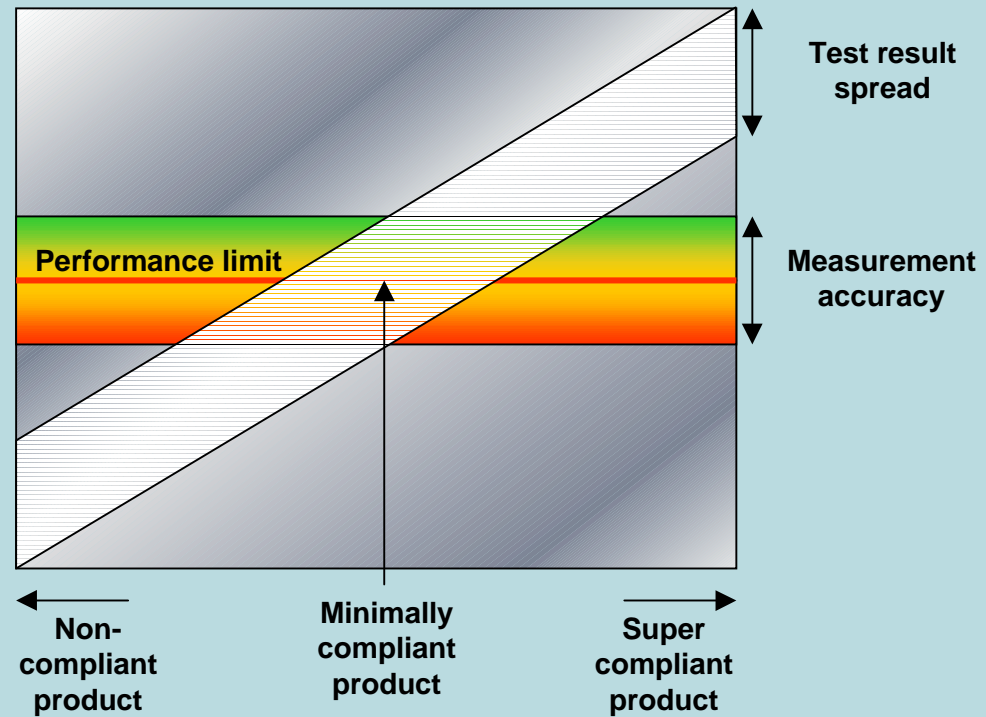
# Acceptance Testing - The Ideal World

<b>TESTING AS VERIFICATION</b>	<b>No substitute for installation Q.A.</b>
	<b>“Good” installs shall pass</b>
↓	
<b>SUPER-COMPLIANT PRODUCT</b>	<b>Performance margin/overhead</b>
<b>ZERO MEASUREMENT ERROR</b>	<b>No marginal results</b>
<b>CONFIGURATION INDEPENDENT RESULTS</b>	<b>Length-independence Connection-dependence</b>
<b>COMMON TEST LIMITS</b>	<b>ISO/IEC, EN and TIA</b>
<b>UNIVERSAL TEST SYSTEM</b>	<b>Supplier-independent</b>

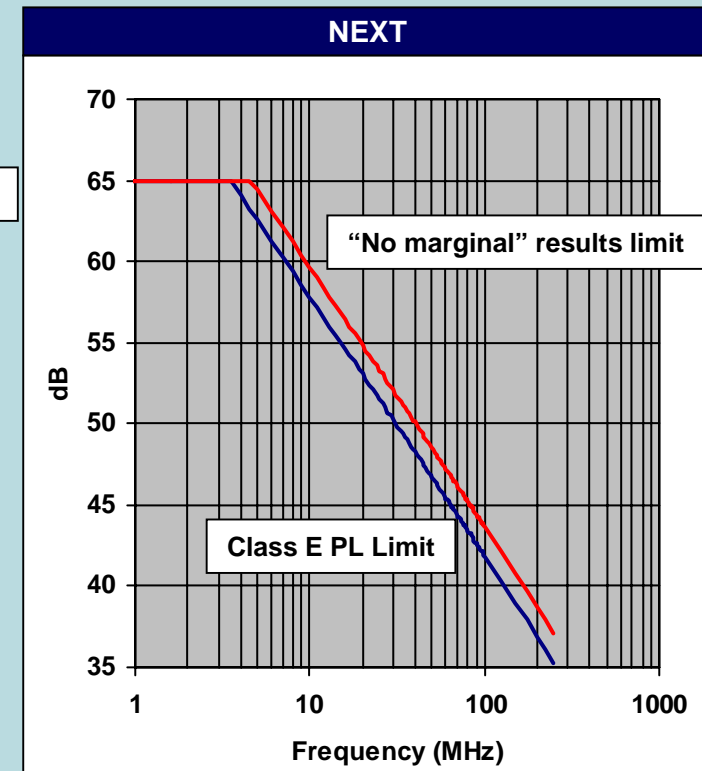
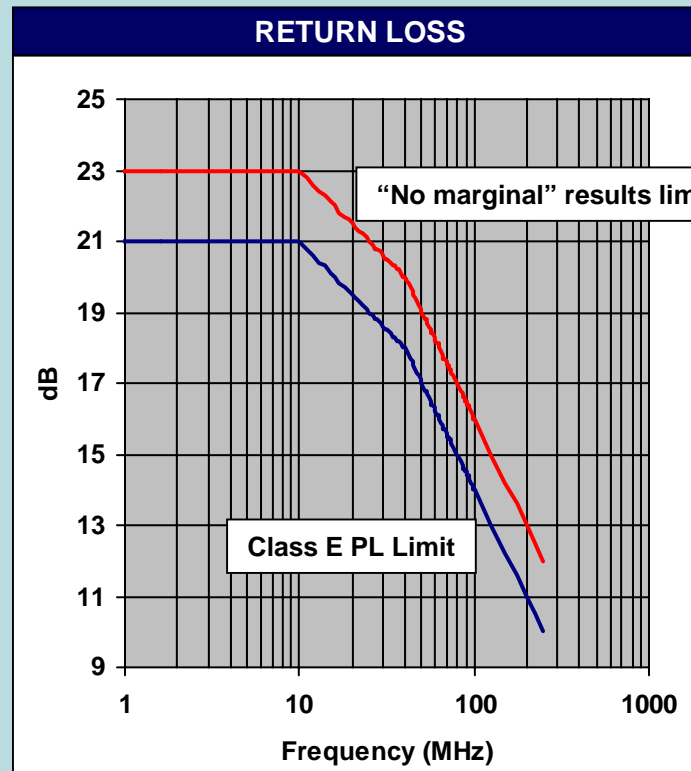
# The Market



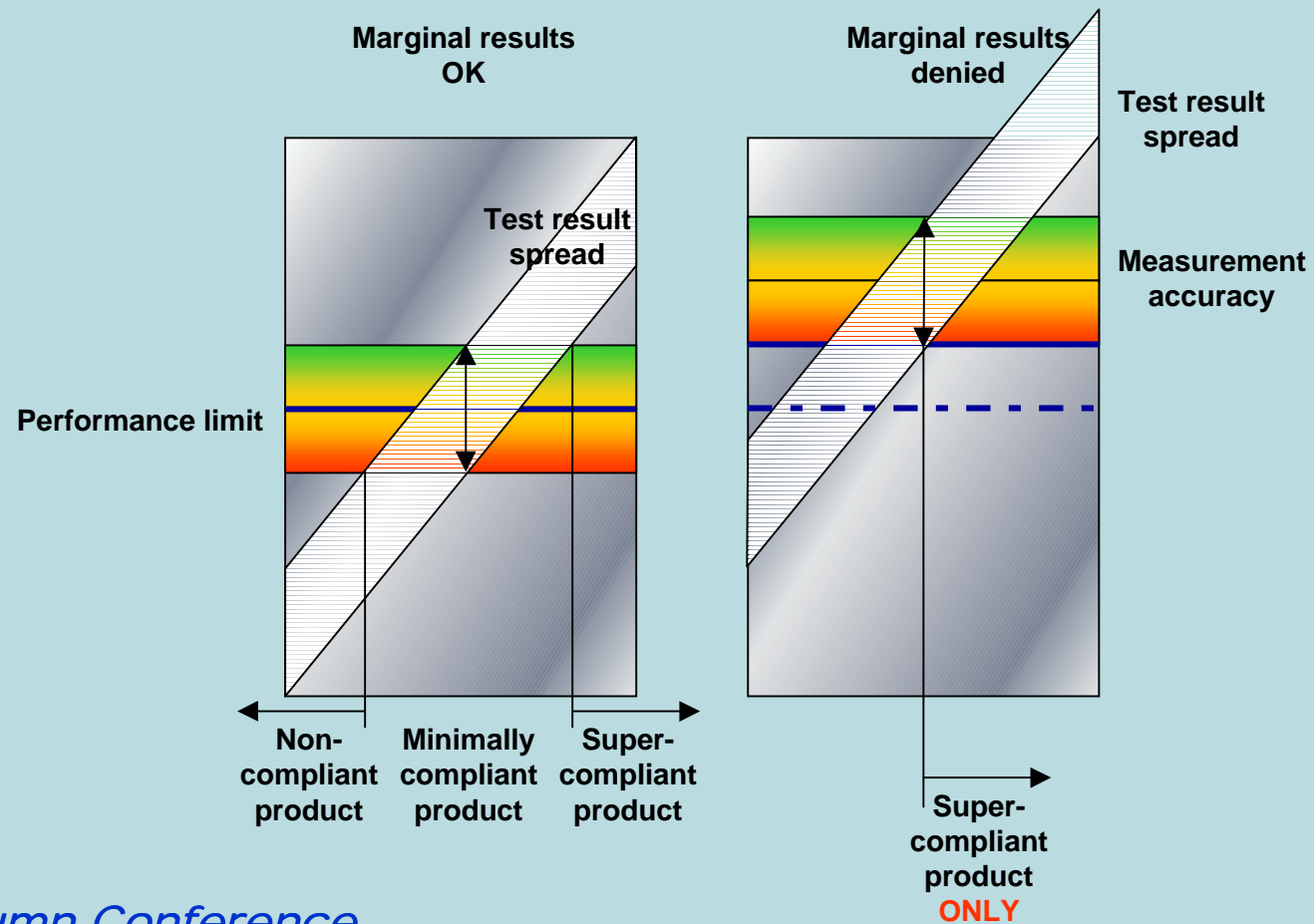
# Marginal Results



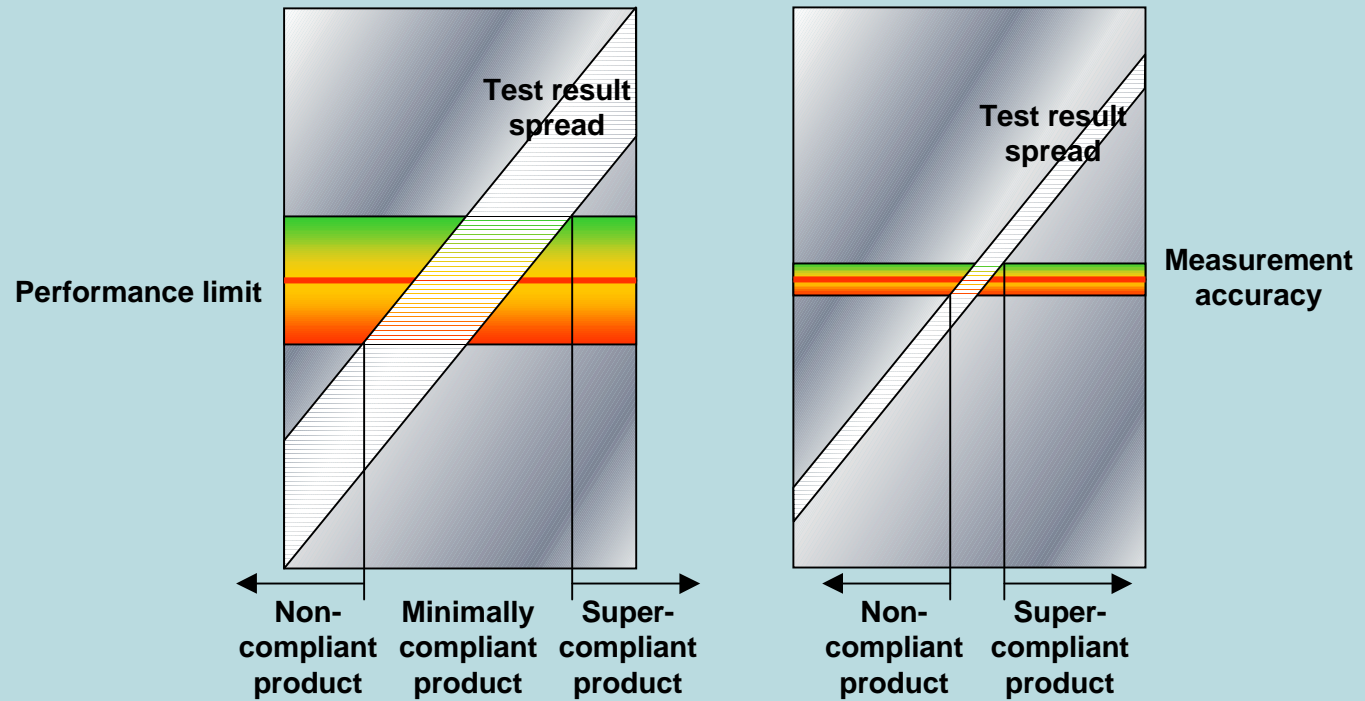
# Marginal Denial - Copper



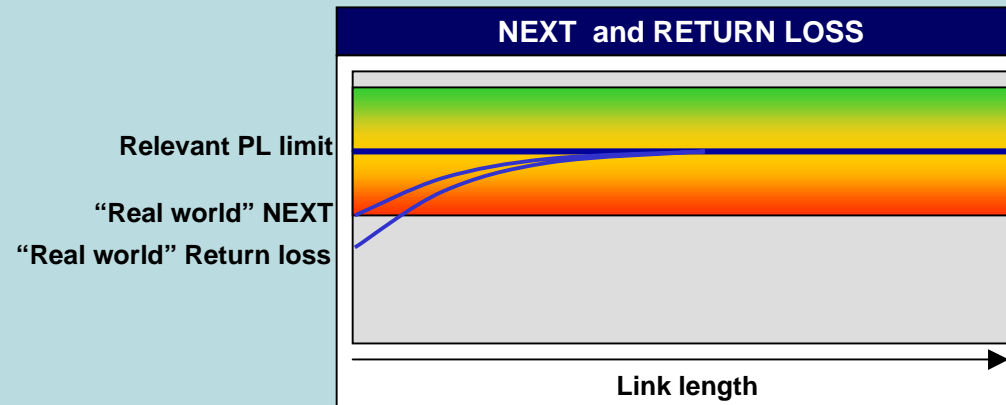
# Denial and Component Choice



# Measurement Accuracy



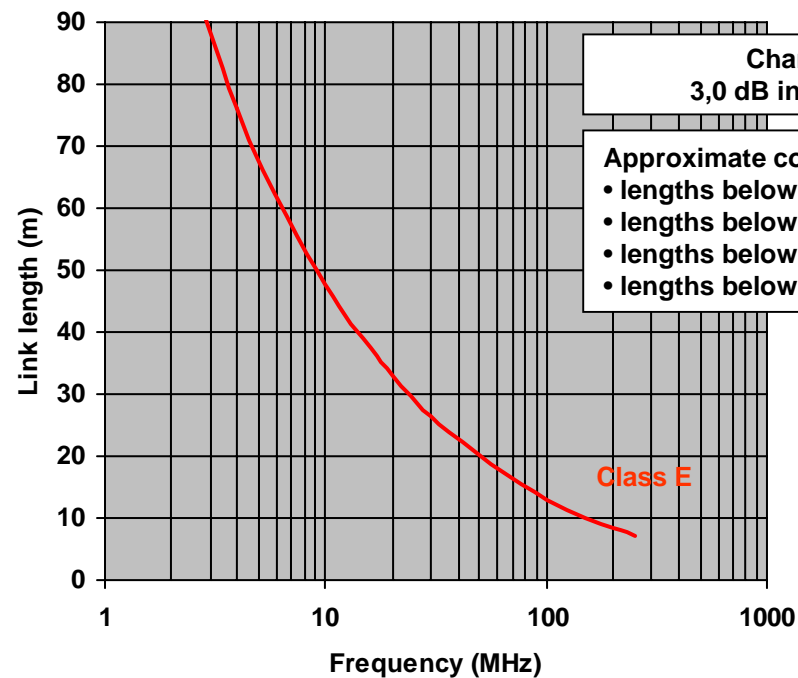
# Short Length



<p>CP link</p> <p>Permanent link</p> <p>MUTOA</p> <p>TO</p> <p>PP</p>	<p><b>ISO/IEC 11801 (2002), BS EN 50173-1 and ANSI/TIA/EIA-568-B.2.3</b></p>
	<p><b>Minimum link return loss (dB)</b></p>
	<p>Return loss requirements at frequencies at which the insertion loss/attenuation is below 3,0 dB are informative only</p>
	<p><b>ISO/IEC 11801 AND BS EN 50173-1</b></p> <p><b>Minimum link NEXT (dB)</b></p>
<p>NEXT requirements at frequencies at which the insertion loss/attenuation is below 4,0 dB are informative only (ACR is mandatory)</p>	

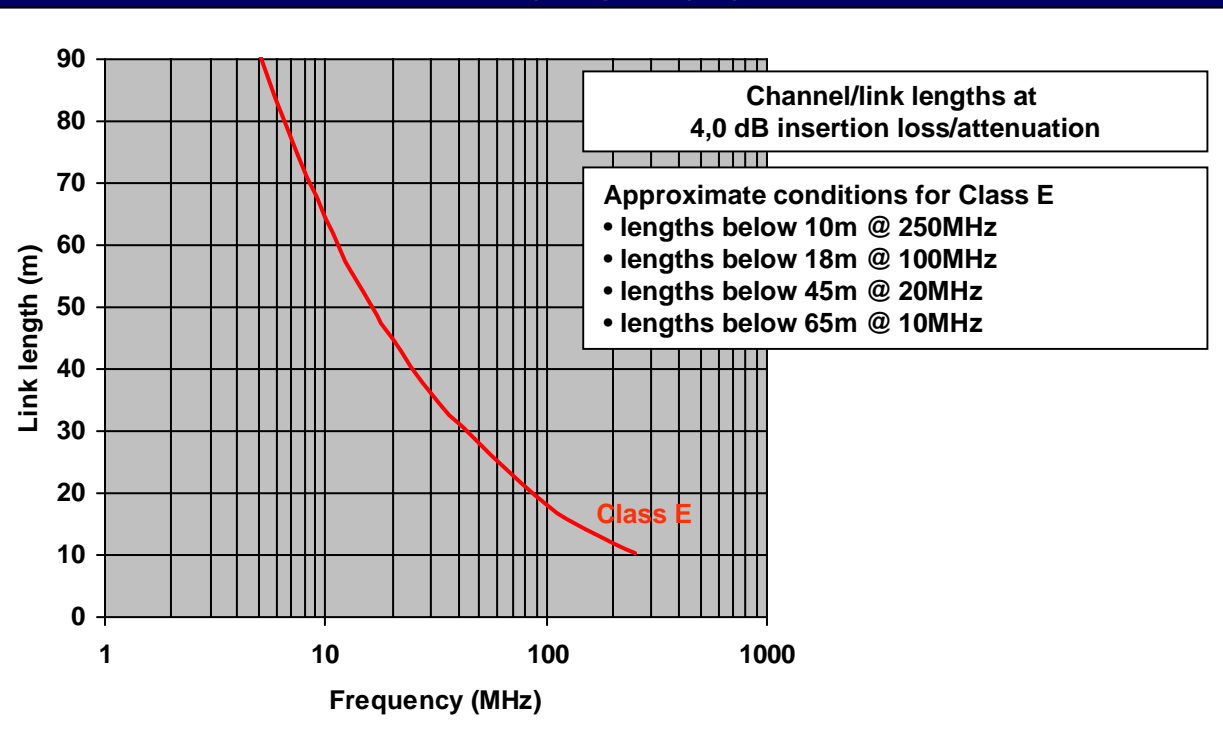
# Short Length RL Get-Out

ISO/IEC 11801 (2002), (BS) EN 50173-1 and ANSI/TIA/EIA-568-B.2.3

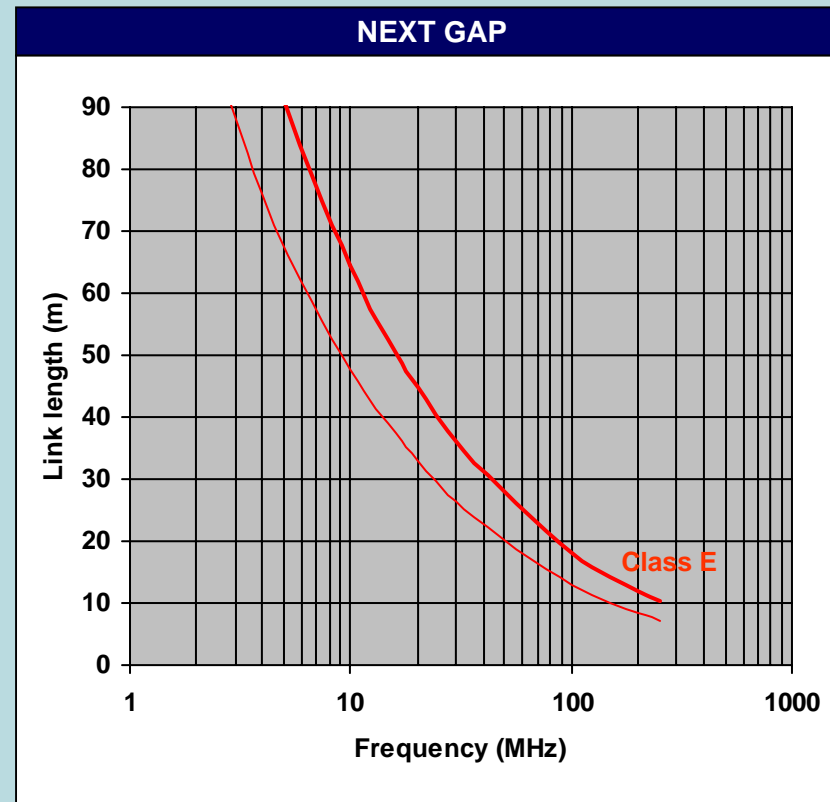


# Short Length NEXT Get-Out

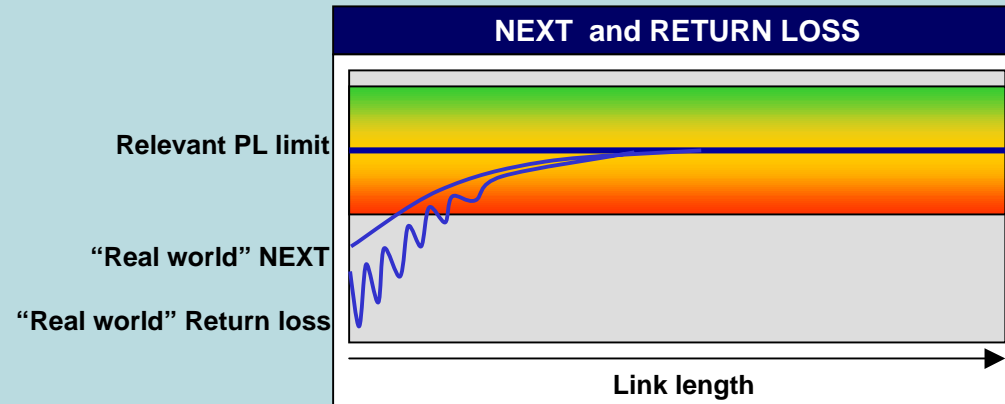
ISO/IEC 11801 (2002) and (BS) EN 50173-1



# 3.0dB - 4.0dB

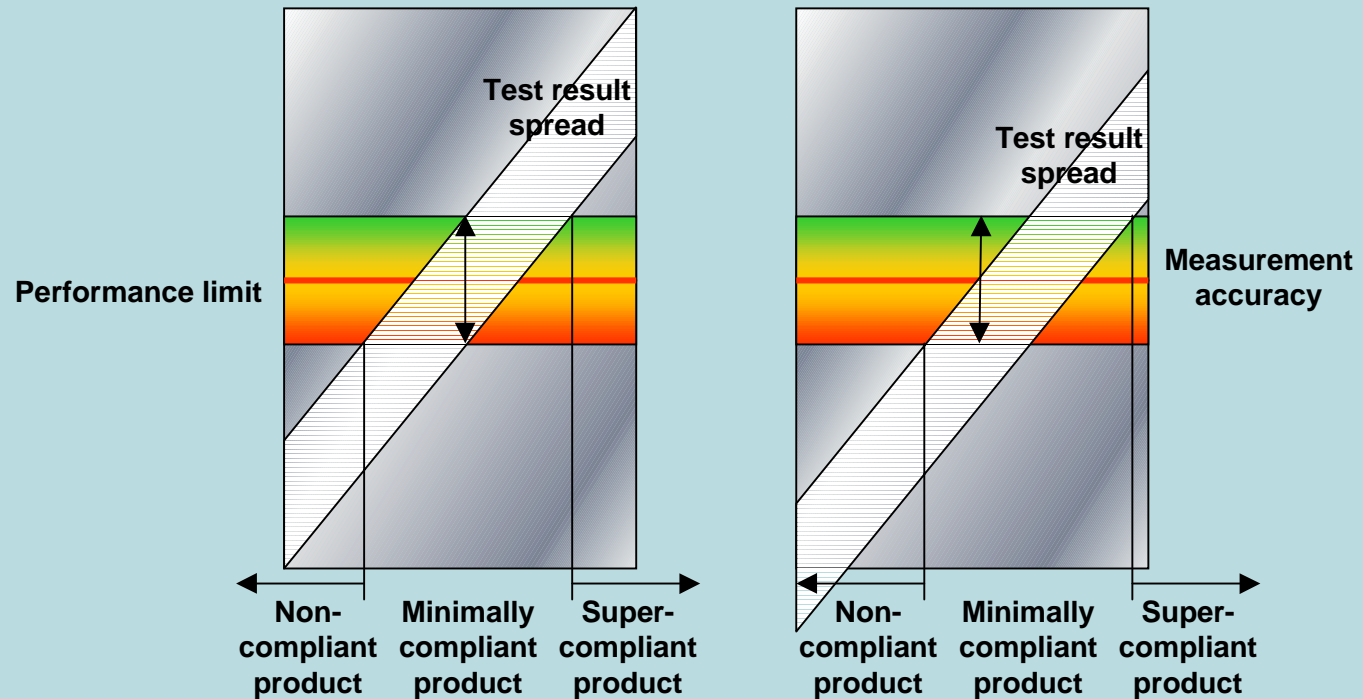


# 3-Connections



	<table border="1"> <thead> <tr> <th colspan="2">ISO/IEC 11801 (2002) and (BS) EN 50173-1</th> </tr> </thead> <tbody> <tr> <td><b>Minimum link return loss (dB)</b></td> <td>Relaxation for short lengths applies BUT risk of failure/marginal result due to CP cord/cable</td> </tr> <tr> <td><b>Minimum link NEXT (dB)</b></td> <td>Relaxation for short lengths applies BUT risk of failure/marginal result due to CP cord/cable</td> </tr> </tbody> </table>	ISO/IEC 11801 (2002) and (BS) EN 50173-1		<b>Minimum link return loss (dB)</b>	Relaxation for short lengths applies BUT risk of failure/marginal result due to CP cord/cable	<b>Minimum link NEXT (dB)</b>	Relaxation for short lengths applies BUT risk of failure/marginal result due to CP cord/cable
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# Short Length - 3c Results

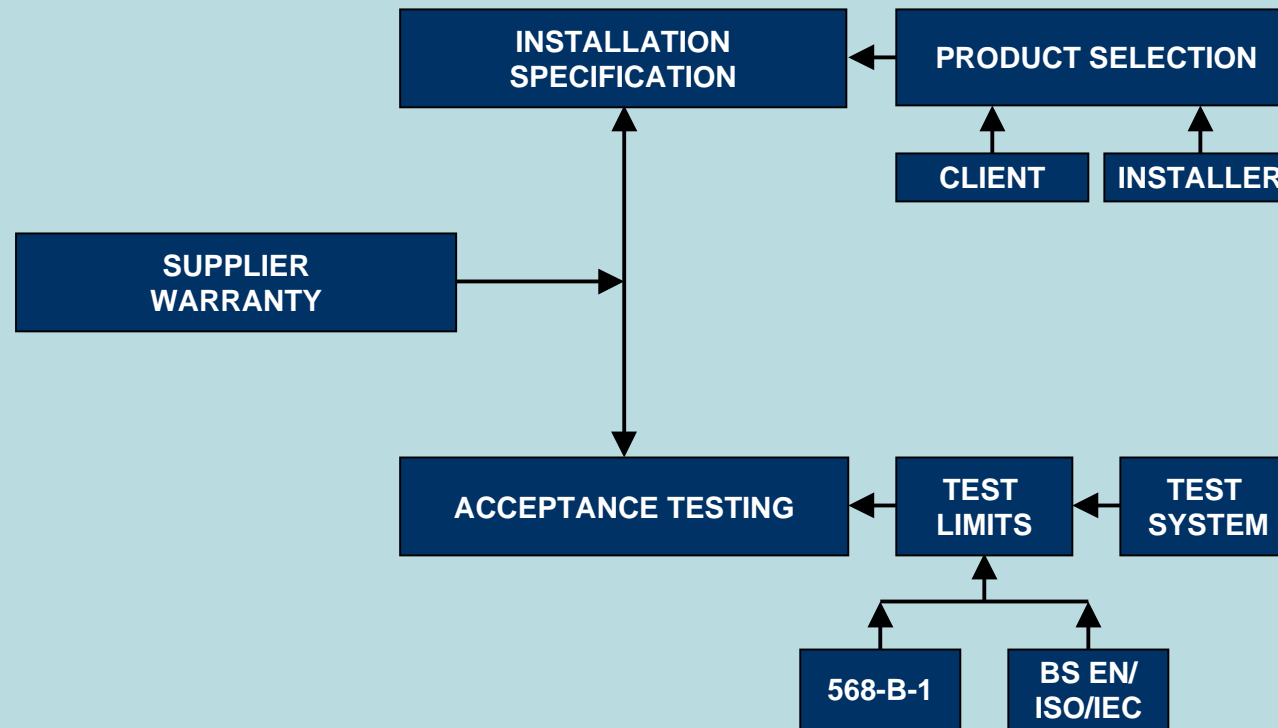


# Test Limit Harmonisation

ISO/IEC 11801 (BS) EN 50173-1	ANSI/TIA/EIA 568-B series
Class D	Category 5e
Class E	Category 6

Return loss	YES	YES	Harmonized
Attenuation	YES	YES	Not harmonized
NEXT	YES	YES	Almost harmonized
PSNEXT	YES	YES	Almost harmonized
ACR	YES	NO	
PSACR	YES	NO	
ELFEXT	YES	YES	Almost harmonized
PSELFEXT	YES	YES	Almost harmonized
Delay	YES	YES	Harmonized
Delay skew	YES	YES	Harmonized
Length	NO	YES	
Loop resistance	YES	YES	Harmonized
Loop resistance unbalance	YES	YES	Almost harmonized
Voltage capacity	YES	YES	Harmonized
Power capacity	YES	YES	Harmonized

# Contracts and Performance



# “Keeping Your Shirt”

UNDERSTAND THE INSTALLATION SPECIFICATION	Who is making the demands?
	What are the demands?
UNDERSTAND THE LIMITS	TIA-568-B-1
	BS EN, ISO/IEC
UNDERSTAND THE INSTALLATION	Short length population
	Presence of CPs

UNDERSTAND THE PRODUCT	Nominally/super-compliant?
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UNDERSTAND THE RISK	MANAGE THE RISK
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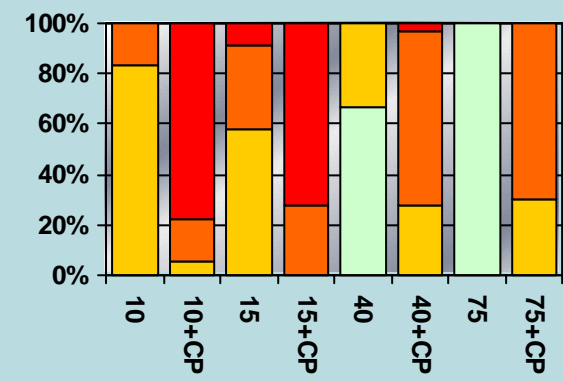
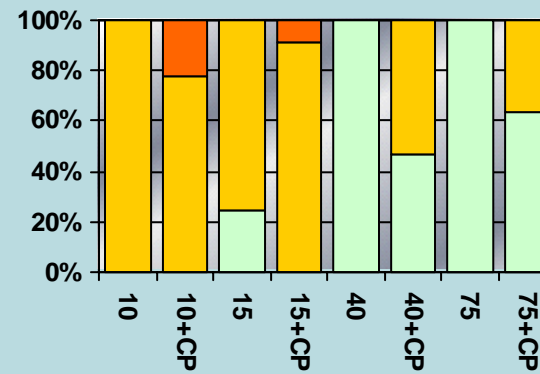
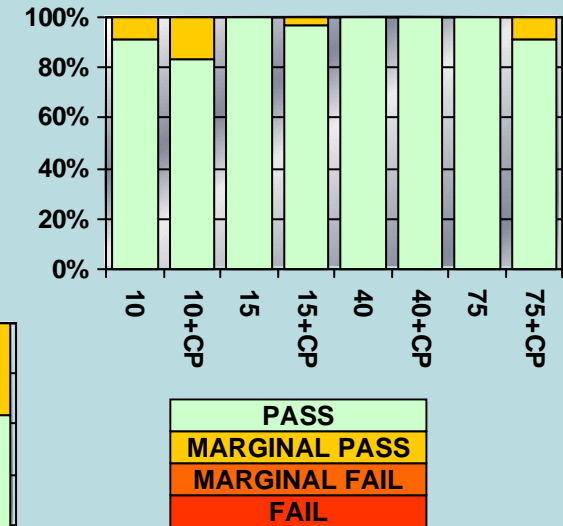
**BS EN 50173-1**

The treatment of measured results that fail to meet the requirements ... or lie within the relevant measurement accuracy, **shall** be clearly documented within a quality plan as described in (BS) EN 50174-1.

# The Real World

Data source: Line Management Group  
Test system: The Cabling Partnership  
Time: July-Sept 2003  
Data: 7 proprietary systems (Category 6)

2 connection PL: 10 m, 15 m, 40 m, 75 m  
3 connection PL: CP cords 2 m, 5 m, 10 m



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Thank you!!