IEC 61753-085-2

Edition 1.0 2008-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components performance standard –
Part 085-2: Non-connectorized single-mode pigtailed CWDM devices for category C – Controlled environment

Norme de qualité de fonctionnement des dispositifs d'interconnexion et composants passifs à fibres optiques –
Partie 085-2: Dispositifs CWDM à fibre amorce unimodale non connectorisés de catégorie C – Environnement contrôlé

IEC 61753-085-2:2008

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CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Test 6
4 Test report 6
5 Performance requirements 6
5.1 Reference components 6
5.2 Dimensions 6
5.3 Sample size and grouping 6
5.4 Test details and requirements 6
Annex A (normative) Sample size and grouping 13
Bibliography 14

Table 1 – Test details and requirements 7
Table A.1 – Sample size and grouping of tests 13

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD –

Part 085-2: Non-connectorized single-mode pigtailed CWDM devices for category C – Controlled environment

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International Standard IEC 61753-085-2 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This bilingual version, published in 2009-01 corresponds to the English version.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/2703/FDIS	86B/2724/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

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This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 61753 series, under the general title *Fibre optic interconnecting devices and passive components performance standards*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD –

Part 085-2: Non-connectorized single-mode pigtailed CWDM devices for category C – Controlled environment

1 Scope

This part of IEC 61753 contains the minimum initial test and measurement requirements and severities which a fibre optic pigtailed coarse wavelength division multiplexing (CWDM) device needs to satisfy in order to be categorized as meeting the requirements of category C (controlled environments), as defined in Annex A of IEC 61753-1. CWDM is defined in IEC 62074-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61300-2-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-1: Tests – Vibration (sinusoidal)*

IEC 61300-2-14, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-14: Tests – Optical power handling and damage threshold characterization*

IEC 61300-2-17, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-17: Tests – Cold*

IEC 61300-2-18, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat – High temperature endurance*

IEC 61300-2-19, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)*

IEC 61300-2-22, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*

IEC 61300-2-42, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-42: Tests – Static side load for connectors*

IEC 61300-2-44, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-44: Tests – Flexing of the strain relief of fibre optic devices*

IEC 61300-3-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

IEC 61300-3-7, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-7: Wavelength dependence of attenuation and return loss*

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IEC 61300-3-20, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-20: Examinations and measurements – Directivity of fibre optic branching devices*

IEC 61300-3-29, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-29: Examinations and measurements – Measurement techniques for characterizing the amplitude of the spectral transfer function of DWDM components*

IEC 61753-1, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards*

3 Test

Unless otherwise specified, all test methods are in accordance with the relevant part of IEC 61300.

The samples shall be terminated onto single-mode fibres as per IEC 61753-1 in either coated fibres (primary and secondary) or reinforced cable format. All tests shall be carried out over the wavelength range defined by the customer's application; the complete CWDM wavelength range as defined in ITU-T Recommendation G.694.2 or a wider wavelength range such as from 1 250 nm to 1 650 nm may be used.

4 Test report

Fully documented test reports and supporting evidence shall be prepared and be available for inspection as evidence that the tests have been carried out and complied with.

5 Performance requirements

5.1 Reference components

The testing for these components does not require the use of reference components.

5.2 Dimensions

Dimensions shall comply with either an appropriate IEC interface standard or with those given in appropriate manufacturers drawings, where the IEC interface standard does not exist or cannot be used.

5.3 Sample size and grouping

Sample sizes for the tests are defined in Annex A of this standard.

Test groups shall be performed individually.

5.4 Test details and requirements

The requirements are given only for pigtailed WDM devices. For connectorized components, the connector performances shall be in compliance with IEC 61753-1.

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Table 1 – Test details and requirements

No.	Test	Requirement	Details	
1	Centre wavelength (CWL) IEC 61300-3-7; IEC 61300-3-29	Centre wavelength: - channel 1: 1 271nm - channel 2: 1 291nm - channel 3: 1 311nm - channel 4: 1 331nm - channel 5: 1 351nm - channel 6: 1 371nm - channel 7: 1 391nm - channel 8: 1 411nm - channel 9: 1 431nm - channel 10: 1 451nm - channel 11: 1 471nm - channel 12: 1 491nm - channel 13: 1 511nm - channel 14: 1 531nm - channel 15: 1 551nm - channel 16: 1 571nm - channel 17: 1 591nm - channel 18: 1 611nm NOTE These wavelengths correspond to central wave-lengths as specified in ITU-T Recommendation ITU-G.694.2	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized The wavelength of the source shall be longer than cut-off wavelength of the fibre Test results should be obtained under measurement uncertainty of ± 0,05 nm
2	**Passband** IEC 61300-3-7; IEC 61300-3-29	CWL +/- 6,5 nm Passband is defined as 0,5 dB bandwidth. NOTE This passband corresponds to a maximum central wavelength deviation of ± 6,5 nm as specified in ITU-T Recommendation G.695	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized broadband light. The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under measurement uncertainty of ± 0,05 nm

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Table 1 *(continued)*

No.	Test	Requirement	Details	
3	Attenuation IEC 61300-3-7	Type A: ≤ 1,4 dB (1-channel device) ≤ 2,1 dB (4-channel device) ≤ 2,8 dB (8-channel device) ≤ 3,5 dB (12-channel device) ≤ 4,3 dB (16-channel device) Type B: ≤ 1,7 dB (1-channel device) ≤ 2,7 dB (4-channel device) ≤ 4,0 dB (8-channel device) ≤ 5,3 dB (12-channel device) ≤ 6,1 dB (16-channel device)	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under measurement uncertainty of ± 0,1 dB
4	Total channel isolation IEC 61300-3-7; IEC 61300-3-29	≥ 30 dB	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized. The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under measurement uncertainty of ± 1 dB
5	Ripple IEC 61300-3-7; IEC 61300-3-29	Type A: ≤ 0,3 dB Type B: ≤ 0,5 dB	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized. The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under measurement uncertainty of ± 0,05 dB
6	Channel non-uniformity IEC 61300-3-7; IEC 61300-3-29	≤ 1,0 dB (4-channel device) ≤ 1,5 dB (8-channel device) ≤ 2,0 dB (12-channel device) ≤ 2,5 dB (16-channel device)	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized. The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under non measurement uncertainty of ± 0,1 dB. Depending on applications, channel non-uniformity may not be required. This needs then to be agreed between the buyer and the supplier
7	Out-of-band attenuation IEC 61300-3-7; IEC 61300-3-29	≥ 20 dB; over the complete wavelength range	Launch patchcord length: Source type: Launch conditions: Other requirements:	≥ 2 m Unpolarized . The wavelength of the source shall be longer than cut-off wavelength of the fibre. Test results should be obtained under measurement uncertainty of ± 1 dB

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