SLOVENSKI STANDARD
oSIST prEN IEC 61753-082-02:2023

01-julij-2023

Tehnični standard za optične spojne elemente in pasivne komponente - 082-02. del: Naprave WWDM (širokopasovni multipleks) s svitkastim enorodovnim optičnim vlaknom 1,31/1,55 µm za kategorijo C - Notranje nadzorovano okolje

Fibre optic interconnecting devices and passive components performance standard - Part 082-02: Pigtailed single-mode fibre optic 1,31/1,55 µm WWDM devices for category C - Indoor controlled environment

Ta slovenski standard je istoveten z: **prEN IEC 61753-082-02:2023**

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COMMITTEE DRAFT FOR VOTE (CDV)

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IEC SC 86B : FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS	
SECRETARIAT:	SECRETARY:
Japan	Mr Shigeru Tomita
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED:	
☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

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TITLE:

Fibre optic interconnecting devices and passive components performance standard - Part 082 - 02: Pigtailed single-mode fibre optic 1,31/1,55 µm WWDM devices for category C - Indoor controlled environment

PROPOSED STABILITY DATE: 2030

NOTE FROM TC/SC OFFICERS:

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FOREWORD

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International Standard IEC 61753-082-02 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This first edition cancels and replaces the first edition of IEC 61753-082-2 published in 2008 and constitutes a technical revision. The specific technical changes from the previous edition are as follows:

a) Change of test conditions harmonizing with IEC 61753-1: 2018;

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

FDIS	Report on voting
86B/XX/FDIS	86B/XX/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until _____. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD

Part 082-02: Pigtailed single-mode fibre optic 1,31/1,55 µm WWDM devices for category C – Indoor controlled environment

1 Scope

This part of IEC 61753 contains the minimum initial test and measurement requirements and severities which a fibre optic 1,31/1,55 µm wide wavelength division multiplexing (WWDM) device satisfies in order to be categorised as meeting the requirements of categorie C (Indoor controlled environment), as defined in Annex A of IEC 61753-1: 2018. WWDM is defined in IEC 62074-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

IEC 60794-2-50, *Optical fibre cables Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies*

IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*

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

IEC 61300-2-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre or cable retention*

IEC 61300-2-5, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-5: Tests – Torsion*

IEC 61300-2-9, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-9: Tests – Shock*

IEC 61300-2-14, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-14: Tests – High optical power*

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*

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 strain relief*

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 61300-1, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 1: General and guidance, Amendment 1*

IEC 61300-3-2, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-2: Examination and measurements - Polarization dependent loss in a single-mode fibre optic device*

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

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

IEC 61300-3-29, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-29: Examinations and measurements – Spectral transfer characteristics of DWDM devices*

IEC 61753-1, *Fibre optic interconnecting devices and passive components - Performance standard - Part 1: General and guidance*

IEC 62074-1, *Fibre optic interconnecting devices and passive components – Fibre optic WDM devices - Part 1: Generic specification*

IEC TS 62627-09, *Fibre optic interconnecting devices and passive components - Vocabulary for passive optical devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62074-1 and IEC TS 62627-09 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

· IEC Electropedia: available at http://www.electropedia.org/

· ISO Online browsing platform: available at http://www.iso.org/obp

4 Test

All test methods are in accordance with a specific IEC 61300 series standard, of which parts applicable to this document are mentioned in 6.4 (see Table 3).

The samples shall be terminated onto single-mode fibres as per IEC 60793-2-50 category B-652.B, B-652.D or B-657 in either coated fibres (primary and secondary) or reinforced cable format as per IEC 60794-2-50.

Table 1 is intended to provide guidance on the wavelength ranges of the various spectral bands. It is not intended for specification. All tests shall be carried out over the wavelength range defined by the customer's application. The operating wavelength ranges for used WWDM are pointed out in Table 2.

Table 1 – Single-mode spectral bands

Band	Descriptor	Range nm
O-band	Original	1 260 to 1 360
E-band	Extended	1 360 to 1 460
S-band	Short wavelength	1 460 to 1 530
C-band	Conventional	1 530 to 1 565
L-band	Long wavelength	1 565 to 1 625
U-band	Ultralong wavelength	1 625 to 1 675
Source: ITU-T G.supplement 39. NOTE The complete title of the source document can be found inside bibliography.		

Table 2 – Operating wavelength range

	Operating wavelength range	Operating wavelength range
Variant 1	1 290 nm to 1 330 nm	1 530 nm to 1 570 nm
Variant 2	1 270 nm to 1 350 nm	1 510 nm to 1 590 nm

NOTE Other variants with different nominal channel central wavelengths and operating wavelength ranges can be defined similarly in accordance with IEC 62074-1.

5 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.

6 Performance requirements

6.1 Reference components

The performance testing in this document does not require the use of reference components.

6.2 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.

6.3 Sample size

Sample sizes are defined in Table A.1 of Annex A.

6.4 Test details and requirements

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

A minimum length of fibre or cable of 2,0 m per port shall be used for all tests. Environmental tests shall be in accordance with IEC 61300-1 Amendment 1.

Minimum test details and requirements are shown in Table 3.

189 **Table 3 - Test details and requirements for category C**

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No.	Test	Requirement	Details	
1	**Centre wavelengths (CWL)** IEC 61300-3-7; IEC 61300-3-29	Centre wavelength: - channel 1: 1 310 nm - channel 2: 1 550 nm	Launch patchcord length: Source type: Launch conditions: Measurement uncertainty:	≥ 2 m Unpolarised The wavelength of the source shall be longer than cut-off wavelength of the fibre. ≤ 0,05 nm
2	**Passband** IEC 61300-3-7; IEC 61300-3-29	Variant 1 (of Table 2): CWL ± 20 nm Variant 2 (of Table 2): CWL ± 40 nm Passband is defined as 0,5 dB bandwidth.	Launch patchcord length: Source type: Launch conditions: Measurement uncertainty:	≥ 2 m Unpolarised broadband light The wavelength of the source shall be longer than cut-off wavelength of the fibre. ≤ 0,05 nm
3	**Attenuation (Insertion loss)** IEC 61300-3-7	≤ 1,3 dB Attenuation shall be met over the operating wavelength range according to Table 2. NOTE Attenuation is the maximum value of the attenuations within all passbands.	Launch patchcord length: Source type: Launch conditions: Measurement uncertainty:	≥ 2 m Unpolarised The wavelength of the source shall be longer than cut-off wavelength of the fibre. ≤ 0,1 dB
4	Wavelength isolation IEC 61300-3-7	≥ 15 dB (Type A) ≥ 40 dB (Type B) Wavelength isolation shall be met over the operating wavelength range according to Table 2.	Launch patchcord length: Source type: Launch conditions: Measurement uncertainty:	≥ 2 m Unpolarised The wavelength of the source shall be longer than cut-off wavelength of the fibre. ≤ 0,1 dB
5	**Out-of-band attenuation** IEC 61300-3-7; IEC 61300-3-29	≥ 20 dB Out of band attenuation shall be met over the operating wavelength range according to Table 2.	Launch patchcord length: Source type: Launch conditions: Measurement uncertainty:	≥ 2 m Unpolarised The wavelength of the source shall be longer than cut-off wavelength of the fibre. ≤ 0,1 dB

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192 **Table 3 - Test details and requirements for category C (continued)**
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No.	Test	Requirement	Details	
6	**Return loss** IEC 61300-3-6	≥ 35 dB Grade T ≥ 50 dB Grade U ≥ 60 dB Grade V Return loss shall be met over the operating wavelength range according to Table 2.	Source type: Measurement uncertainty: Other requirements:	Laser diode (LD) ≤ 1 dB All ports not under test shall be terminated to avoid unwanted reflections contributing to the measurement. NOTE the buyer and manufacturer may agree to discard it. However, the potential negative effect of this parameter on system performance must not be neglected.
7	**Polarisation dependent loss (PDL)** IEC 61300-3-2	≤ 0,2 dB PDL shall be met over the operating wavelength range according to Table 2.	Launch patchcord length: Source type: Measurement uncertainty:	≥ 2 m LD ≤ 0,05 dB
8	**High optical power** IEC 61300-2-14	During the test the attenuation limits of test No. 3 shall be met. Moreover, during and on completion of the test, the attenuation shall be within ± 0,5 dB of original value under standard atmospheric conditions. On completion of the test the return loss limits of test No. 6 shall be met. On completion of the test the wavelength isolation limits of test No. 4 shall be met.	Temperature: Source type: Max. total optical power to be applied: Wavelength: Test duration: Measurement uncertainty:	+ 60 °C ± 2 °C LD 300 mW NOTE It is the sum of the input power for all ports. For each port the desired wavelength from test 1 0,5 h attenuation: ≤ 0,1 dB return loss: ≤ 1 dB
9	**Cold** IEC 61300-2-17	During the test the attenuation limits of test No. 3 shall be met. Moreover, during and on completion of the test, the attenuation shall be within ± 0,5 dB of original value under standard atmospheric conditions. During the test the return loss limits of test No. 6 shall be met. On completion of the test the wavelength isolation limits of test No. 4 shall be met.	Temperature: Duration of the exposure: Maximum sampling interval during the test: Measurements required:	- 10 °C ± 2 °C 96 h 1 h Attenuation shall be measured before, during and after the test. Return loss shall be measured before, during and after the test.

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