



Edition 1.0 2009-08

INTERNATIONAL STANDARD

Fibre optic interconnecting devices and passive components performance standard –

Part 081-2: Non-connectorized single-mode fibre optic middle-scale $1 \times N$ DWDM devices for category C – Controlled environments

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE

ICS 33.180.10

ISBN 2-8318-1054-6

R

CONTENTS

FOI	REWO)RD	3
1	Scop	e	5
2	Norm	ative references	5
3	Term	s and definitions	6
4	Test conditions – General6		
5	Test report7		
6	Refe	rence components	7
7	Perfo	ormance requirements	7
	7.1	Dimensions	7
	7.2	Test details and requirements	7
Anr	nex A	(normative) Sample size, sequencing and grouping requirements	. 17
Bib	liogra	phy	. 18

Table 1 – Spectral bands for single-mode systems ^a	7
Table 2 – Test and requirements for type A (Gaussian passband profile)	8
Table 3 – Test and requirements for type B (Flat-top passband profile)	11
Table 4 – Environmental test for all types	14
Table A.1 – Sequencing and number of samples for each test	17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD –

Part 081-2: Non-connectorized single-mode fibre optic middle-scale 1 × N DWDM devices for category C – Controlled environments

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61753-081-2 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This standard cancels and replaces IEC/PAS 61753-081-2 published in 2005. This first edition constitutes a technical revision.

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

FDIS	Report on voting
86B/2863/FDIS	86B/2901/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.

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

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

A bilingual version of this publication may be issued at a later date.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD –

Part 081-2: Non-connectorized single-mode fibre optic middle-scale 1 × N DWDM devices for category C – Controlled environments

1 Scope

This part of IEC 61753 contains the minimum initial test and measurement requirements and severities which a fibre optic middle-scale 1 x N ($16 \le N \le 64$) DWDM (Dense Wavelength Division Multiplexing) device with channel spacing of 50 GHz, 100 GHz and 200 GHz needs to satisfy in order to be categorized as meeting the requirements of category C-controlled environments. The requirements cover devices with single-mode non-connectorized pigtails and no circuit board. There is also a distinction between small-scale (N < 16) and large-scale (N > 64) 1 x N DWDM devices for the purpose of this standard.

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

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 – 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 61300-3-2, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-2: Examinations and measurements – Polarization dependence of attenuation in a 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: Examinations and measurements – Return loss

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 61300-3-32, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-32: Examinations and measurements – Polarization mode dispersion measurement for passive optical components

IEC 61753-021-2, Fibre optic interconnecting devices and passive components performance standard – Part 021-2 Fibre optic connectors terminated on single mode fibre for category C – Controlled environment

IEC/PAS 62074-1, Fibre optic WDM devices – Part 1: Generic specification

ITU-T Supplement N.39:2003, Optical system design and engineering considerations

ITU-T Recommendation G.671:2005, *Transmission characteristics of optical components and subsystems*

ITU-T Recommendation G.692:1998, Optical interfaces for multichannel systems with optical amplifiers

ITU-T Recommendation G.694.1:2002, *Spectral grids for WDM applications: DWDM frequency grid*