IEC 62343-1-2

Edition 2.0 2015-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Dynamic modules –
Part 1-2: Performance standards – Tuneable chromatic dispersion compensator (non-connectorized)

Modules dynamiques –
Partie 1-2: Normes de performance – Compensateur de dispersion chromatique réglable (non connectorisé)

IEC 62343-1-2:2015-06(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DYNAMIC MODULES –

Part 1-2: Performance standards – Tuneable chromatic dispersion compensator (non-connectorized)

FOREWORD

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International Standard IEC 62343-1-2 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2007. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) substantial addition of definitions and removal of type C performances.
b) change in the title to reflect standard terminology.

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

FDIS	Report on voting
86C/1315/FDIS	86C/1336/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 in the IEC 62343 series, published under the general title *Dynamic modules*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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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DYNAMIC MODULES –

Part 1-2: Performance standards – Tuneable chromatic dispersion compensator (non-connectorized)

1 Scope

This part of IEC 62343 contains the recommended minimum initialization test and measurement requirements and severities for optical tuneable chromatic dispersion compensators (TDC).

2 Normative references

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

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

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

IEC 61300-3-2, *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 61300-3-29, *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 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 61300-3-38, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-38: Examinations and measurements – Group delay, chromatic dispersion and phase ripple*

IEC 61753-021-2, *Fibre optic interconnecting devices and passive components performance standard – Part 021-2: Grade C/3 single-mode fibre optic connectors for category C – Controlled environment*

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

IEC 62343, *Dynamic modules – General and guidance*

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

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

ITU-T G-series Recommendations – Supplement 39, *Optical system design and engineering considerations*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62074-1, IEC 62343 and the following apply.

3.1
group delay
time required by an optical pulse to transit an optical element

Note 1 to entry: Group delay that depends on optical wavelength (or frequencies) causes optical pulse distortion through the optical element.

Note 2 to entry: It is expressed as the derivation of the propagation constant with respect to angular frequency, $\partial\beta/\partial\omega$, through the optical element, where β is the propagation constant, and ω is the angular frequency equal to $2\pi c/\lambda$, where λ is the wavelength.

3.2
GDR
group delay ripple
maximum peak-to-peak variation of the group delay approximated by a desired function, typically a linear fit, within a channel wavelength (or frequency) range

Note 1 to entry This note applies to the French languange only.

3.3
phase ripple
standard deviation of the peak-to-peak variation in measured phase spectrum when compared to a quadratic fit within a channel wavelength (or frequencies) range

3.4
CD
chromatic dispersion
group delay difference between two closely spaced wavelengths inside an optical signal going through a pair of conducting ports of a DWDM device

Note 1 to entry: It corresponds to the difference between the arrival times of these two closely spaced wavelengths. Chromatic dispersion is defined as the variation (first order derivative) of this group delay over a range of wavelengths especially over the channel operating wavelength range at the given time, temperature, pressure and humidity. It is expressed in terms of units of ps/nm or ps/GHz and it is a predictor of the broadening of a pulse transmitted through the module.

Note 2 to entry: This note applies to the French languange only.

3.5
tuneable chromatic dispersion compensator
two-port in-line device that is capable of transforming, by internal or external automatic control, an input signal with time-varying dispersion into an output signal in which an output channel dispersion value is set for a required level of value

3.6
operating wavelength range
specified range of wavelengths from λ_{imin} to λ_{imax} about a nominal operating wavelength λ_I, within which a dynamic optical module is designed to operate with a specified performance

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