



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 15972.49-2021

**Specifications for optical fibre test methods - Part 49:
Measurement methods and test procedures for transmission
characteristics - Differential mode delay**

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Foreword

GB/T 15972 "Specifications for Optical Fiber Test Methods" consists of several parts, and its structure is as follows.

- Part 10.General principles of measurement methods and test procedures;
- Part 20~Part 29.Measurement methods and test procedures of dimensional parameters;
- Part 30~Part 39.Measurement methods and test procedures of mechanical properties;
- Part 40~Part 49.Measurement methods and test procedures for transmission characteristics;
- Part 50~Part 59.Environmental performance measurement methods and test procedures.

Among them, GB/T 15972.4x consists of the following parts.

- Part 40.Measurement methods and test procedures for transmission characteristics attenuation;
- Part 41.Measurement methods of transmission characteristics and test procedure bandwidth;
- Part 42.Measurement methods and test procedures for transmission characteristics. Wavelength dispersion;
- Part 43.Measurement methods of transmission characteristics and test procedures Numerical aperture;
- Part 44.Measurement methods of transmission characteristics and test procedures cut-off wavelength;

---Part 45.Measurement methods and test procedures for transmission characteristics;
Mode field diameter;

---Part 46.Measurement methods of transmission characteristics and test procedures for
light transmittance changes;

---Part 47.Measurement methods and test procedures for transmission characteristics,
macro bending loss;

---Part 48.Measurement methods and test procedures for transmission characteristics
Polarization mode dispersion;

---Part 49.Differential modulus delay for measurement methods and test procedures of
transmission characteristics.

This part is part 49 of GB/T 15972.

This part was drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 15972.49-2008 "Specification for optical fiber test methods-Part
49.Measurement of transmission characteristics and optical characteristics

Methods and Test Procedures Differential Modulus Delay. Compared with GB/T
15972.49-2008, the main technical changes in this part are as follows.

---Added some normative reference documents (see Chapter 2);

---Added the three terms of differential modulus delay, quadrant and 25% full width (see
Chapter 3, Chapter 3 of the.2008 edition);

---Added abbreviations (see Chapter 4);

---Added an overview of the exportable parameters minEMBc and OMBc (see Chapter 5);

---Added "pulse semiconductor laser or mode-locked fiber laser" as a light source that can
meet the requirements (see 6.2,.2008 edition

5.1);

--- Deleted the high-order mode filtering chapter, adjusted the content to the scan pigtail
chapter (see 6.3, 5.3.3 of the.2008 edition);

---Added the requirements of EMBc and OMBc for mode correlation in the detection system
(see 6.7, 5.4.1 of the.2008 edition);

---Added system performance requirements (see 6.10);

---Added deconvolution and pulse overlap (see 9.2.2, 9.2.3);

---Modified the process of DMD determination (see 9.2.4, 8.1 in.2008 edition);

---Added the calculation and result description of the minimum calculation effective mode

bandwidth (see 9.3);

---Added informative Appendix B. Determination of Fiber Optics Center (see Appendix B);

--- Added normative appendix C. mode measurement of the detection system (see appendix C);

---Adjust Appendix B of the.2008 edition to Appendix D of this document (see Appendix D, Appendix B of the.2008 edition);

---Added Appendix E to determine the DMD weight when calculating EMBC (see Appendix E);

---The calculation of EMBC in Appendix F has been added (see Appendix F);

--- Added the structural changes in this part of Appendix G compared with IEC 60793-1-49.2018 (see Appendix G).

This part uses the redrafting method to modify and adopt IEC 60793-1-49.2018 "Optical Fiber Part 1-49.Measurement Methods and Test Procedures

Differential Modular Delay."

Compared with IEC 60793-1-49.2018, this part has structural adjustments. The specific adjustments are as follows.

--- Due to the addition of Chapter 4 and the change of part of Chapter 1 to Chapter 5, the number of subsequent chapters has been postponed;

--- Chapter 8 and Chapter 9 of International Standards are merged into Chapter 10 of this Part.

The technical differences between this part and IEC 60793-1-49.2018 and the reasons are as follows.

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments

It is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace IEC 60793-1-22 with GB/T 15972.22 modified to adopt international standards;

* Replace IEC 60793-1-41 with GB/T 15972.41 modified to adopt international standards;

* Added reference to GB/T 14733.12;

* Removed IEC 60793-1-1.2017, IEC 60793-1-45, IEC 60825-1 and IEC 60825-2.

---Added the reference standard in the chapter on terms and definitions;

--- The terms MFD and benchmark test method have been deleted, and the inner limit of