

ICS 33.180.10
CCS M 33



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

GB/T 12357.1-2024

Replacing GB/T 12357.1-2015

**Multimode optical fibres for telecommunication - Part 1:
Sectional specification for category A1 multimode fibres
(English Translation)**

Issued on: December 31, 2024

Implemented on: April 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Abbreviations
5 Overview
6 Requirement
6.1 General requirements
6.2 Dimensional parameters
6.3 Mechanical properties
6.4 Transmission characteristics
6.5 Environmental performance
Appendix A (Informative) Structural changes in this document compared with IEC 60793-2-10:2022
Appendix B (Informative) Comparison of performance indicators between this document and IEC 60793-2-10:2022
Appendix C (Informative) Category A1 multimode optical fiber in this document and the multimode optical fiber subclasses in relevant international standards of IEC, ISO/IEC and ITU-T
Code comparison table
Appendix D (Normative) Differential Mode Delay (DMD), Calculated Effective Mode Bandwidth (EMBC) and Calculated Fully Injected Bandwidth (OMBC)
Request
Appendix E (Informative) System, mode bandwidth and transmitter considerations
Appendix F (Informative) Notes on bandwidth terminology
Appendix G (Informative) Applications supported by Category A1 multimode optical fiber
Appendix H (Informative) Application Requirements and Capacities of 1Gb/s, 10Gb/s, 25Gb/s, 40Gb/s and 100Gb/s Ethernet
References

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document is part 1 of GB/T 12357 Multimode optical fibre for telecommunications. GB/T 12357 has been published in the following parts.

- Part 1: Characteristics of category A1 multimode optical fibre;
- Part 2: Characteristics of category A2 multimode optical fibre;
- Part 3: Characteristics of category A3 multimode optical fibre;
- Part 4: Characteristics of category A4 multimode optical fibre.

This document replaces GB/T 12357.1-2015 "Multimode optical fibre for telecommunications - Part 1: Characteristics of category A1 multimode optical fibre" Compared with GB/T 12357.1-2015, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) Changed the nomenclature of A1a and A1b subclass multimode optical fibers (see Chapter 1, Chapter 1 of the 2015 edition);
- b) Added abbreviations (see Chapter 4);
- c) Changed the requirements for cladding diameter and cladding non-circularity of A1-OM2, A1-OM3, A1-OM4 and A1-OM5 sub-class multimode optical fibers.

See Table 1, Table 1 of the 2015 edition;

- d) Added A1-OM2b, A1-OM3b, A1-OM4b subclass multimode optical fibers and performance requirements (see Chapter 6, Appendix D);
- e) Added A1-OM5 subclass multimode optical fiber and performance requirements (see Chapter 6, Appendix D);
- f) Added the wavelength of the light source for the core diameter, numerical aperture and differential mode delay tests, as well as the threshold requirements for the core diameter and numerical aperture tests.

Request (see Table 2);

- g) Added OMBC as a measure of the modal bandwidth of A1-OM2, A1-OM3, A1-OM4, A1-OM5 subclass multimode fibers Provisions for benchmark test methods (see Table 5);
- h) Added 850nm wavelength mode bandwidth and the light source accuracy and length requirements for differential mode delay (see Table 7);

i) Changed the maximum attenuation coefficient requirements for 850nm and 1300nm wavelengths for A1-OM2 subclass multimode optical fibers (see

Table 5, Table 5 of the 2015 edition);

j) Changed the fully injected mode bandwidth requirements for 850nm and 1300nm wavelengths for A1-OM2 subclass multimode fiber (see

Table 5, Table 5 of the 2015 edition).

This document is modified to adopt IEC 60793-2-10:2022 "Optical Fiber Part 2-10.Product Specification Category A1 Multimode Fiber Characteristics".

Compared with IEC 60793-2-10:2022, this document has more structural adjustments. The structural number changes between the two documents are as follows.

See Appendix A for a list.

The technical differences between this document and IEC 60793-2-10:2022 and their reasons are as follows.

a) The normative reference GB/T 15972.20 replaced IEC 60793-1-20 to adapt to my country's technical conditions and improve operability.

Sex;

b) The normative reference GB/T 15972.21 replaced IEC 60793-1-21 to adapt to my country's technical conditions and improve operability.

Sex;

c) The normative reference GB/T 15972.22 replaced IEC 60793-1-22 to adapt to my country's technical conditions and improve operability.

Sex;

d) The normative reference GB/T 15972.30 replaced IEC 60793-1-30 to adapt to my country's technical conditions and improve operability.

Sex;

e) The normative reference GB/T 15972.31 replaced IEC 60793-1-31 to adapt to my country's technical conditions and improve operability.

Sex;

f) The normative reference GB/T 15972.32 replaced IEC 60793-1-32 to adapt to my country's technical conditions and improve operability.

Sex;

g) The normative reference GB/T 15972.33 replaced IEC 60793-1-33 to adapt to my

country's technical conditions and improve operability.

Sex;

h) The normative reference GB/T 15972.40 replaced IEC 60793-1-40 to adapt to my country's technical conditions and improve operability.

Sex;

i) The normative reference GB/T 15972.41 replaced IEC 60793-1-41 to adapt to my country's technical conditions and improve operability.

Sex;

j) The normative reference GB/T 15972.42 replaced IEC 60793-1-42 to adapt to my country's technical conditions and improve operability.

Sex;

k) The normative reference GB/T 15972.43 replaced IEC 60793-1-43 to adapt to my country's technical conditions and improve operability.

Sex;

l) The normative reference GB/T 15972.46 replaced IEC 60793-1-46 to adapt to my country's technical conditions and improve operability.

Sex;

m) The normative reference GB/T 15972.47 replaced IEC 60793-1-47 to adapt to my country's technical conditions and improve operability.

Sex;

n) The normative reference GB/T 15972.49 replaced IEC 60793-1-49 to adapt to my country's technical conditions and improve operability.

Sex;

o) The normative reference GB/T 15972.50 replaced IEC 60793-1-50 to adapt to my country's technical conditions and improve operability.

Sex;

p) The normative reference GB/T 15972.51 replaced IEC 60793-1-51 to adapt to my country's technical conditions and improve operability.

Sex;

q) The normative reference GB/T 15972.52 replaced IEC 60793-1-52 to adapt to my country's technical conditions and improve operability.

Sex;