

ICS 33.180.99
CCS M 33



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

GB/T 46385.24-2025

**Optical circuit boards - Part 2-4: Basic test and measurement
procedures - Optical transmission test for optical circuit boards
without input/output fibres**

光路板 第2-4部分：基本试验和测量程序 不带输入/输出尾纤光路板的光传输试验
(English Translation)

Issued on: October 31, 2025

Implemented on: May 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface

Introduction

1 Scope

2 Normative References

3 Terms, Definitions, and Abbreviations

4 Measurement conditions

5 Detection Method

Appendix A (Informative) Example of Optical Transmission Test for Optical Circuit Boards Without I/O Pigtails

Appendix B (Informative) Measurement of Position Deviation of Input and Output Ports
Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Parts 2-4 of GB/T 46385 "Optical Circuit Boards". GB/T 46385 has already published the following parts.

---Part 1: General Provisions;

---Part 2: Basic Test and Measurement Procedures - Guidelines for Optical Property Measurement Conditions;

---Part 2-1. Basic Test and Measurement Procedures for Optical Attenuation and Isolation Measurement;

---Part 2-2. Basic Test and Measurement Procedures for Dimensional Measurement;

---Parts 2-4. Basic Test and Measurement Procedures for Optical Transmission Tests Without Input/Output Pigtail Optical Circuit Boards this document is equivalent to IEC 62496-2-4:2013 "Essential test and measurement procedures for optical circuit boards - Part 2-4. Without input/output..." Optical transmission test of the fiber optic circuit board.

The following minimal editorial changes have been made to this document.

---To maintain harmony among the standards, the standard name has been changed to

"Optical Circuit Boards Part 2-4. Basic Test and Measurement Procedures (without...)".

"Optical Transmission Experiment of Input/Output Pigtail Optical Circuit Board";

---The evaluative description "The first one is better, but the second one is more convenient" in section 5.2.1 has been removed;

---The description of "other uncited references" in IEC 62496-2-4:2013 has been removed from the references.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the Ministry of Industry and Information Technology of the People's Republic of China.

Introduction

High-density optical interconnects are a significant trend in high-capacity, low-latency communication networks. As a typical product of high-density optical interconnect technology, optical circuit boards are based on an integrated structure of optical fiber or optical waveguide, which carries optical devices and enables optical interconnection between optical devices or systems, is crucial for supercomputing.

This provides a new board-level optical interconnect solution for fields such as computers, data centers, and broadband communications. GB/T 46385 "Optical Circuit Board" aims to standardize optical...

The terminology definitions, technical requirements, measurement procedures, and test methods for circuit boards are essential for improving domestic standards for fiber optic interconnect devices and passive devices.

Establishing a system and standardizing the research, development, and testing of optical circuit boards, as well as guiding the technological and industrial development of optical circuit boards, is of great significance. This is to meet the needs of the optical circuit board industry.

The requirements, GB/T 46385, are proposed to consist of the following parts.

---Part 1: General Provisions. The purpose is to standardize the terminology and product classification of optical circuit boards, and to clarify common technical requirements and testing methods.

And quality evaluation.

---Part 2: Basic Test and Measurement Procedures - Guidelines for Optical Characteristic Measurement Conditions. The purpose is to determine the optical characteristics measurement conditions for optical path plates.

The encoding rules and information of quantity conditions.

---Part 2-1.Basic Test and Measurement Procedures for Optical Attenuation and Isolation Measurement. The purpose is to standardize the optical attenuation and isolation of optical circuit boards.

Methods for measuring separation.

---Part 2-2.Basic Test and Measurement Procedures for Dimensional Measurement. The purpose is to standardize the methods for measuring the dimensions of optical circuit boards.

---Parts 2-4.Basic Test and Measurement Procedures for Optical Transmission Without Input/Output Pigtail Optical Circuit Boards. The purpose is to standardize...

A method for measuring the optical transmission performance of fiber optic circuit boards without input/output pigtails.

---Parts 2-5.Basic Test and Measurement Procedures for Flexural Testing of Flexible Optoelectronic Composite Panels. The aim is to standardize the testing procedures for flexible optoelectronic composite panels.

Methods for flexural testing of plywood.

---Part 3: General Performance Principles and Guidelines. The purpose is to standardize the general performance requirements and evaluation methods for optical circuit boards.

---Part 3-1.Performance of Glass Fiber Optic Pigtail Flexible Optical Circuit Boards. The purpose is to standardize glass fiber optic pigtail flexible optical circuit boards.

Performance requirements and evaluation methods.

---Part 4: Interface General Principles and Guidelines. The purpose is to standardize the general interface requirements for optical circuit boards.

---Part 4-1.Waveguide-type optical circuit board assembly with single-row twelve-channel PMT connectors for interface termination. The purpose is to standardize the termination.

Interface requirements for waveguide-type optical circuit board assemblies with single-row twelve-channel PMT connectors.

---Part 4-214.Waveguide-type optical circuit board assembly with single-row 32-channel PMT connectors at the interface termination. The purpose is to standardize...

Interface requirements for waveguide-type optical circuit board assemblies that terminate with single-row 32-channel PMT connectors.

Optical Circuit Board Parts 2-4.Basic Tests and Measurements the program does not include input/output fiber optic circuit boards.

Transmission test

1 Scope

This document describes a test method for determining the qualification of an optical circuit board based on illumination. Direct illumination is applied to the injection port, using a surface imaging sensor.

The instrument detects the light intensity at the output port of the optical path board. The additional optical loss is calculated from the total detected light intensity of the sample under test and the reference sample.

Uniform illumination is achieved using light with an area larger than the injection end waveguide core region of the optical circuit board (OCB). The light is then transmitted through a surface imaging sensor to the phase of the optical circuit board.

The output port obtains the radiance of the area imaging and compares it with the radiance of the reference sample to evaluate whether the optical path board is qualified.

The advantage of this testing method is that it eliminates the alignment procedure between the injected fiber and the OCB. An example of the testing method can be found in Appendix A.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

guidance)

Note: GB/T 2421-2020 Overview and Guidelines for Environmental Testing (IEC 60068-1:2013, IDT)

3.1 Terms and Definitions

The following terms and definitions apply to this document.

3.1.1

shading

Non-uniformity of image detection intensity caused by pixel sensitivity non-uniformity and optical system vignetting.

Note: Correcting the non-uniformity of pixel detection sensitivity is called "shadow correction".