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Test methods of optical isolators

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Optoelectronics Industry and Technology Development Association (OITDA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently, **JIS C 5933:1993** is replaced with this Standard, and **JIS C 5873:1992** has been withdrawn and replaced with this Standard.

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Test methods of optical isolators

1 Scope

This Japanese Industrial Standard specifies test methods of optical isolators used for fiber optic transmission (hereafter referred to as “optical isolators”).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 5860 *General rules of passive devices for light beam transmission*

JIS C 5877-1 *General specifications of polarizer*

JIS C 5900 *General rules of passive devices for fiber optic transmission*

JIS C 5901 *Test methods of passive devices for fibre optic transmission*

JIS C 5932 *General rules of optical isolator*

JIS C 60068-1 *Environmental testing Part 1: General and guidance*

JIS C 61300-3-2 *Fiber optic interconnecting devices and passive components—Basic test and measurement procedures—Part 3-2: Examinations and measurements—Polarization dependent loss in a single-mode fiber optic device*

JIS C 61300-3-6 *Fiber optic interconnecting devices and passive components—Basic test and measurement procedures—Part 3-6: Examinations and measurements—Return loss*

JIS Z 8120 *Glossary of optical terms*

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*

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in clause 3 of **JIS C 5860**, clause 3 of **JIS C 5877-1**, clause 3 of **JIS C 5900**, clause 3 of **JIS C 5901**, clause 3 of **JIS C 5932** and clause 4 of **JIS Z 8120** together with the following apply.

3.1 polarization rotator

optical element that can rotate the polarization direction from that of incident linearly-polarized light to that of launched linearly-polarized light in any direction

4 Test conditions

4.1 Standard condition

The test and measurement, unless otherwise specified, shall be performed in the standard range of the atmospheric condition specified in **5.3** of **JIS C 60068-1**. However, if any doubt arises as to the measured values in this standard condition or if specially requested, those shall be performed as specified in **4.3**. When the test condition (temperature and atmospheric pressure) is different from the standard condition, the reference condition shall be as specified in **4.2** in the case where the conversion method of test results or measured values is individually specified. Furthermore, when it is difficult to measure in the standard condition, if any doubt does not arise as to the judgment, the test and measurement may be performed in the condition other than the standard condition.

4.2 Reference condition

The reference condition shall be as specified in **5.1** of **JIS C 60068-1**. However, it may be determined only by temperature.

4.3 Judgment condition

The judgment conditions shall be of the temperature of $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, the relative humidity of 60 % to 70 % and the atmospheric pressure of 86 kPa to 106 kPa among conditions specified in **5.2** of **JIS C 60068-1**.

4.4 Condition of test location

The test location shall be kept clean enough so that there may be no foreign particles, dust, etc.

5 Appearance and structure

The test method of appearance and structure shall be as specified in clause **5** of **JIS C 5901**.

6 Common equipment

6.1 General matter

The common equipment, unless otherwise specified, shall be as specified in the following requirements and those of **6.2** to **6.4**.

The joint between each test apparatus and equipment shall be brought to a non-reflective state by means of matching oil or the like. It may be made to become non-reflective by the method using a splice (fusion splice), an angled polished optical connector, etc.

6.2 Optical source (S)

For the optical source, unless otherwise specified, the following laser of which the output is stable shall be used.

- a) That of which the polarization extinction ratio of launched light is adequate. The polarization extinction ratio of launched light of the optical source, unless otherwise specified, shall be not less than 20 dB. When the polarization extinction ratio