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Safety of laser products -- Part 9: Compilation of maximum permissible exposure to incoherent optical radiation

激光产品的安全 第9部分：非相干光辐射最大允许照射量

(English Translation)

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Foreword

"Safety of laser products" is divided into the following sections.

- Part 1. Classification of equipment, requirements;

- Part 3. Laser display and performance guide;

- Part 4. Laser shields;

- Part 9. Maximum allowable exposure to incoherent optical radiation;

- Part 13. Classification of laser products;

- Part 14. User Guide.

This section is part 9 of "Safety of Laser Products".

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

This part uses the translation method equivalent to the use of IEC/T R60825-9..1999 "Safety of Laser Products Part 9. Noncoherent Optical Radiation Large allowable exposure ".

In this part of the normative reference to the international documents have a consistent correspondence between the following documents.

GB/T 2900.65-2004 Electrical terminology lighting (IEC 60050-845. 1987, MOD) GB 3100-1993 International System of Units and Applications (eqvISO 1000..1992) GB/T

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15313-2008 Laser terminology (ISO 11145.:2006, MOD) this section makes the following editorial changes.

--- Remove the preamble of IEC/T R60825-9..1999.

1 Scope

This section of the "Safety of Laser Products" gives the general maximum allowable exposure (MPE) value, which is consistent with the exposure limit.

Suitable for 180nm ~ 3000nm wavelength range of artificial light irradiation of the human eye and skin incoherent optical radiation. Wavelength at 3000nm ~ the exposure limit between 1mm is not yet known.

The establishment of these values is based on the best information obtained from existing experimental studies and should be used as a guide to control the light radiation of artificial light sources, and should not be regarded as a strict line between the level of safety and the level of harm.

Note: The values in this section apply to most individuals. However, some individuals may be due to allergies, or genetic, age, personal habits (smoke, alcohol, or other Narcotic drugs), drugs or previously irradiated and other factors, the optical radiation will produce abnormal reactions. The optical radiation is equal to or less than the maximum permissible given in this section Depending on the amount of exposure, these individuals may not be adequately protected from the health effects of light radiation. Medical advice, try to assess what is needed Additional protection.

These values are mainly used for the illumination of artificial light sources. It can also be used for evaluation under daylighting.

MPE values are not applicable for medical purposes, for patients with light exposure.

The maximum allowable exposure of the laser light source should be in accordance with IEC 60825-1.

Note 1: The basic documentation for this section is IEC 60825-1 (for laser) and IRPA/ICNIRP (for non-coherent sources). ACGIH gives the limit in the wave Long range and limit values are slightly different from the base files in this section.

Note 2: In fact, although the main emission of non-coherent radiation LED, but still in line with the provisions of IEC 60825-1.

Note 3: The difference in the mechanism of the coherent light source and the incoherent light source is not clear. However, in many cases, the limits given by IEC 60825-1 are greater than this the limits given are more stringent since there is an undiscovered laser wavelength interval when IEC 60825-1 was originally developed.

Note 4: Eye or skin may feel uncomfortable when the exposure value reaches MPE level.

Note 5: In the UV-B and UV-C spectral ranges, the irradiated amount is close to the MPE value, and

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the surface corneal cells can produce the smallest detectable biological changes. and the level of radiation that actually causes harm is two to three times greater than the MPE value.

The purpose of this part is to give a 180 ° ~ 1mm wavelength range, non-coherent light radiation protection guidelines, given the optical the level of safety is considered safe for most individuals and does not adversely affect exposure at or below the safety level.

Since the knowledge of the long-term exposure effect is limited, most of the MPE values in this section apply only to the 8-hour working day of the strong light radiation.

For comparison with the maximum allowable exposure, this section specifies procedures and methods for measuring and evaluating the level of optical radiation.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

IEC 60050 (845). 1987 International Electrotechnical Vocabulary Chapter 845. Illumination (InternationalElectrotechnicalVocabula-ry-chapter845. Lighting) IEC 60825-1.:1993 and Ammendment1..19971) Safety of laser products - Part 1. Classification, requirements and User Guide (Safetyoflaserproducts-Part 1. Equipmentclassification, requirementsanduser'sguide)

1) has a consolidated version 1.1 (1998) containing IEC 60825-1 (1993) and revision 1 (1997).

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