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Safety of laser products -
Part 13: Measurements for classification of laser products

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC TS 60825-13 has been prepared by IEC technical committee 76: Optical radiation safety and laser equipment. It is a Technical Specification.

This first edition cancels and replaces the second edition of IEC TR 60825-13 published in 2011. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TR 60825-13:2011:

a) minor changes and additions have been made in the definitions;
b) classification flow has been updated;
c) apparent source sections have been clarified;
d) scanning has been updated;
e) more examples and useful conversions have been added to the annexes.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
76/786/DTS	76/791/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be used in conjunction with IEC 60825-1:2014.

A list of all parts of the IEC 60825 series, published under the general title *Safety of laser products,* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

1 Scope

This part of IEC 60825, which is a Technical Specification, provides manufacturers, test houses, safety personnel, and others with practical guidance on methods to perform radiometric measurements or analyses to establish the emission level of laser energy or power in accordance with IEC 60825-1:2014. The measurement procedures described in this document are guidance for classification of laser products in accordance with IEC 60825-1:2014. It is possible that other procedures are better or more appropriate.

Information is provided for calculating accessible emission limits (AELs) and maximum permissible exposures (MPEs), since some parameters used in calculating the limits are dependent upon other measured quantities.

This document applies to lasers, including extended sources and laser arrays. The procedures described in this document for extended source viewing conditions can yield more conservative results than when using more rigorous methods.

NOTE Work continues on more complex source evaluations and will be provided as international agreement on the methods is reached.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60825-1:2014, *Safety of laser products – Part 1: Equipment classification and requirements*[1]

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[14] IEC TR 60825-14:2022, *Safety of laser products - Part 14: A user's guide*

[15] ISO 11146-1:2021, *Lasers and laser-related equipment - Test methods for laser beam widths, divergence angles and beam propagation ratios - Part 1: Stigmatic and simple astigmatic beams*

[16] ISO/TR 11146-3:2004, *Lasers and laser-related equipment - Test methods for laser beam widths, divergence angles and beam propagation ratios - Part 3: Intrinsic and geometrical laser beam classification, propagation and details of test methods*

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