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Part 5-18: Optoelectronic devices - Light emitting diodes - Test method of the macro photoluminescence for epitaxial wafers of micro light emitting diodes

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Semiconductor devices - Part 5-18: Optoelectronic devices - Light emitting diodes - Test method of the macro photoluminescence for epitaxial wafers of micro light emitting diodes

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The text of this International Standard is based on the following documents:

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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 International Standard 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.

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– reconfirmed,

– withdrawn, or

– revised.

1 Scope

This part of IEC 60747-5 specifies the measuring methods of macro photoluminescence (PL) for red, green, and blue epitaxial wafers of micro light emitting diodes (LEDs) prior to chip fabrication processes. Wafer sizes being considered are 4 in, 6 in, and 8 in in diameter.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

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3.1 Terms and definitions

3.1.1
PL signal
optical radiation emitted from the sample via photoluminescence

Note 1 to entry: PL signal is proportional to the radiant power.

3.1.2
spectral PL signal
$\Phi_{\mathrm{PL},\lambda}(\lambda) = \frac{d\Phi_{\mathrm{PL}}(\lambda)}{d\lambda}$
PL signal measured by a spectrometer per unit wavelength

Note 1 to entry: The unit for the spectral PL signal is arb. unit/nm.

Note 2 to entry: Spectral PL signal is proportional to the spectral radiant power.

3.1.3
peak PL signal
maximum value of the spectral PL signal

3.1.4
threshold
minimum spectral PL signal over which the integrated PL signal is evaluated

3.1.5
minimum wavelength limit
λ_{min}
lower limit of the integration in calculating the integrated PL signal

3.1.6
maximum wavelength limit
λ_{max}
upper limit of the integration in calculating the integrated PL signal