ANSI/IESNA RP-16-05

Addendum b

Approved American National Standard

ANSI

Nomenclature *and* Definitions *for* Illuminating Engineering

IES

The LIGHTING AUTHORITY®

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Addendum b to ANSI/IESNA RP-16-05
(under continuous maintenance)

(This forward is not part of this standard. It is for information purposes only and does not contain any requirements necessary for conformance to the standard.)

FOREWORD

With the increased use of solid state lighting devices, it has become necessary to establish definitions for these devices, their components, and performance characteristics to insure a common understanding of the terminology. This addendum is intended to be part of the Light Source definitions (Section 6) and specifically in paragraph 6.8 Light Emitting Diode (LED) of ANSI/IESNA RP-16-05, Nomenclature and Definitions for Illuminating Engineering.

Existing:
~~**6.8 Light Emitting Diode (LED) -** A pn junction semiconductor device that emits incoherent optical radiation when biased in the forward direction. The output is a function of its physical construction, material used, and exciting current and may be in the ultraviolet, the visible, or in the infrared regions of the spectrum.~~

Replace with the following:
6.8 Light Emitting Diode (LED) - A pn junction semiconductor device that emits incoherent optical radiation when forward biased. The optical emission may be in the ultraviolet, visible, or infrared wavelength regions.

Existing:
~~**6.8.1 LED die -** A small block of semi conducting material on which a given functional circuit is fabricated..~~

Replace with the following:
6.8.1 LED die - A small block of light-emitting semiconducting material on which a functional LED circuit is fabricated.

Existing:
~~**6.8.2 Bin (LED) -** A restricted range of LED performance characteristics used to delimit a subset of LEDs near a nominal LED performance as identified by chromaticity, and photometric performance. Note: As the result of small but meaningful variations in the manufacturing process of LED wafers and subsequent dies, the electrical and photometric characteristics of LEDs may vary from LED to LED, even when the dies are from the same wafer. LEDs are sorted or binned in accordance with these characteristics, but there is no existing standard for binning.~~

Replace with the following:
6.8.2 Bin A restricted range of LED performance characteristics used to delimit a subset of LEDs near a nominal LED performance as identified by chromaticity, photometric, and/or forward voltage performance. Note: As the result of small but meaningful variations in the manufacturing process of LED wafers and subsequent dies, the electrical and photometric characteristics of LEDs may vary from LED to LED, even when the dies are from the same wafer. LEDs are sorted or binned in accordance with these characteristics, but there is no existing, consensus standard for binning.

6.8.3 Power source - A transformer, power supply, battery, or other device capable of providing current, voltage, or power within its design limits. This device contains no additional control capabilities.

Existing:
~~**6.8.3.1 Power supply -** An electronic device capable of controlling current, voltage, or power within design limits.~~

Replace with the following:
6.8.3.1 Power supply - An electronic device capable of providing and controlling current, voltage, or power within design limits.

Existing:
~~**6.8.4 LED control circuitry -** Electronic components located between the power source and the LED array designed to limit voltage and current, to dim, to switch, or otherwise control the electrical energy to the LED array. The circuitry does not include a power source.~~

Replace with the following:
6.8.4 LED control circuitry - Electronic components designed to control a power source by adjusting output voltage, current or duty cycle to switch or otherwise control the amount and characteristics of the electrical energy delivered to a LED package (component) or an LED array (module). LED control circuitry does not include a power source.

Existing:
~~**6.8.4.1 LED driver -** A power source with integral LED control circuitry designed to meet the specific requirements of a LED lamp or a LED array.~~

Replace with the following:
6.8.4.1 LED driver - A device comprised of a power source and LED control circuitry designed to operate a LED package (component), or an LED array (module) or an LED lamp.

6.8.4.2 LED driver, Class II - An LED driver that operates within Class II limits as defined by the latest version of the National Electrical Code (NEC) and the Canadian Electrical Code (CEC).

Existing:

~~**6.8.5 LED luminaire -** A complete LED lighting unit consisting of a light source and driver together with parts to distribute light, to position and protect the light source, and to connect the light source to a branch circuit. The light source itself may be an LED array, an LED module, or an LED lamp. The LED luminaire is intended to connect directly to a branch circuit.~~

Replace with the following:

6.8.5 LED luminaire - A complete lighting unit consisting of LED-based light emitting elements and a matched driver together with parts to distribute light, to position and protect the light emitting elements, and to connect the unit to a branch circuit. The LED-based light emitting elements may take the form of LED packages (components), LED arrays (modules), LED Light Engine, or LED lamps. The LED luminaire is intended to connect directly to a branch circuit.

Existing:

~~**6.8.5.1 LED package -** An assembly of one or more LED dies that contains wire bond connections, possibly with an optical element and thermal, mechanical, and electrical interfaces. The device does not include a power source, does not include an ANSI standardized base, and is not connected directly to the branch circuit.~~

Replace with the following:

6.8.5.1 LED package -An assembly of one or more LED dies that includes wire bond or other type of electrical connections, possibly with an optical element and thermal, mechanical, and electrical interfaces. Power source and ANSI standardized base are not incorporated into the device. The device cannot be connected directly to the branch circuit.

Existing:

~~**6.8.5.2 LED array -** An assembly of LED packages on a printed circuit board or substrate, possibly with optical elements and additional thermal, mechanical, and electrical interfaces. The device does not contain a power source, does not include an ANSI standardized base, and is not connected directly to the branch circuit.~~

Replace with the following:

6.8.5.2 LED array or module - An assembly of LED packages (components), or dies on a printed circuit board or substrate, possibly with optical elements and additional thermal, mechanical, and electrical interfaces that are intended to connect to the load side of a LED driver. Power source and ANSI standard base are not incorporated into the device. The device cannot be connected directly to the branch circuit.

Existing:

~~**6.8.5.3 LED module -** A component part of an LED light source that includes one or more LEDs connected to the load side of LED power source or LED driver. Electrical, electronic, optical, and mechanical components may also be part of an LED module. The LED module does not contain a power source and is not connected directly to the branch circuit.~~

~~**6.8.5.3 LED lamp, non-integrated -** A lamp with LEDs, without an integrated LED driver or power source and with an ANSI standardized base designed for connection to a LED luminaire.~~

Replace with the following:

6.8.5.3 LED lamp, non-integrated -An assembly comprised of an LED array (module) or LED packages (components) and ANSI standard base. The device is intended to connect to the LED driver of an LED luminaire through an ANSI standard lamp-holder (socket). The device cannot be connected directly to the branch circuit.

Existing:

~~**6.8.5.4 LED lamp, integrated -** A lamp with LEDs, an integrated LED driver, and an ANSI standardized base that is designed to connect to the branch circuit via an ANSI standardized lampholder/socket.~~

Replace with the following:

6.8.5.4 LED lamp, integrated - An integrated assembly comprised of LED packages (components) or LED arrays (modules), LED driver, ANSI standard base and other optical, thermal, mechanical and electrical components. The device is intended to connect directly to the branch circuit through a corresponding ANSI standard lamp-holder (socket).

6.8.5.5 LED light engine - An integrated assembly comprised of LED packages (components) or LED arrays (modules), LED driver, and other optical, thermal, mechanical and electrical components. The device is intended to connect directly to the branch circuit through a custom connector compatible with the LED luminaire for which it was designed and does not use an ANSI standard base.

6.8.5.6 Hybrid LED luminaire - A luminaire which incorporates LED-based light emitting elements and another type of light source such as incandescent or fluorescent lamps