

PHOTOBIOLOGICAL SAFETY EVALUATION OF LED PRODUCTS

The signer of this document certifies on behalf of Nichia Corporation that, to the best of Nichia Corporation's knowledge the product below was tested and evaluated by Nichia Corporation in compliance with IEC 62471(2006) assigned to the risk group specified as follows:

CLASSIFICATION

Product: UV LED
Part No.: NCSU334AT
Risk Group: Risk Group 3 (for general lighting service (GLS) lamps)
Risk Group 3 (for all other light sources)
[I_F = 500 mA DC, Absolute Maximum Ratings]

DETAILS OF EVALUATION

Characteristics:

Apparent source size	Radiant Flux [I _F = 350 mA DC]
1.02 mm	65.5 mW (Rank P14)

Evaluation Results:

Hazard Name	Symbol	Measurement Value ^{*1}	Emission Limits			Units	Risk Group
			Exempt	Low-Risk	Mod-Risk		
Actinic UV	E _S	4.32×10 ⁻¹ *4 4.32×10 ⁻¹ *5	10 ⁻³	3×10 ⁻³	3×10 ⁻²	W/m ²	Risk Group 3 ^{*4} Risk Group 3 ^{*5}
Near UV	E _{UVA}	1.19×10 ⁻² *4 1.19×10 ⁻² *5	10	33	10 ²	W/m ²	Exempt Group ^{*4} Exempt Group ^{*5}
Retinal blue-light ^{*6}	L _B	N/A	10 ²	10 ⁴	4×10 ⁶	W/m ² /sr	N/A
Retinal blue-light, small source	E _B	3.62×10 ⁻³ *4 3.62×10 ⁻³ *5	1	1	4×10 ²	W/m ²	Exempt Group ^{*4} Exempt Group ^{*5}
Retinal thermal	L _R	3.80×10 ² *4 3.80×10 ² *5	5.5×10 ⁶ *4 5.5×10 ⁶ *5	5.5×10 ⁶ *4 5.5×10 ⁶ *5	1.4×10 ⁷ *4 1.4×10 ⁷ *5	W/m ² /sr	Exempt Group ^{*4} Exempt Group ^{*5}
Retinal thermal, weak visual stimulus	L _{IR}	*2	5.5×10 ⁵ *4 5.5×10 ⁵ *5	5.5×10 ⁵ *4 5.5×10 ⁵ *5	5.5×10 ⁵ *4 5.5×10 ⁵ *5	W/m ² /sr	Exempt Group ^{*3}
IR radiation, eye	E _{IR}	*2	10 ²	5.7×10 ²	3.2×10 ³	W/m ²	Exempt Group ^{*3}

*1 Only if the hazard is considered when determining the Risk Group(s) assigned to the product, the measurement values for this hazard is provided.

*2 This product has not been evaluated for the hazard due to no emission in the applicable wavelength range.

*3 This product has been classified as Exempt Group due to no emission in the applicable wavelength range.

*4 For general lighting service lamps Measurement distance: 200 mm, Aperture size: 7 mm, Angular subtense: 5.12 mrad, Ambient: 25°C/40%RH

*5 For all other light sources Measurement distance: 200 mm, Aperture size: 7 mm, Angular subtense: 5.12 mrad, Ambient: 25°C/40%RH

*6 This product is not applicable to this hazard.

NOTES

In accordance with the classification for lamps intended for general lighting service (GLS), this product was classified as Risk Group 3 (High-Risk). The actinic UV hazard value exceeded the emission limit for Risk Group 2 (Mod-Risk).

In accordance with the classification for all other light sources, this product was classified as Risk Group 3 (High-Risk). The actinic UV value exceeded the emission limit for Risk Group 2 (Mod-Risk).

This report shows the LED evaluation results. When using a LED as a component of equipment, please evaluate the equipment that incorporates the LED.

Issue Date: April 10, 2019

Signature:

Name / Title:

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