



Attachment No.3

IEC/EN 62471			
Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict
4	EXPOSURE LIMITS (EL'S)		---
4.2	Specific factors involved in the determination and application of retinal exposure limits		P
4.2.1	Pupil diameter		P
4.2.2	Angular subtense of source and measurement field-of-view		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		N/A
4.3.2	Near-UV hazard exposure limit for the eye		N/A
4.3.3	Retinal blue light hazard exposure limit		P
4.3.4	Retinal blue light hazard exposure limit - small source		P
4.3.5	Retinal thermal hazard exposure limit		N/A
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
4.3.7	Infrared radiation hazard exposure limits for the eye		N/A
4.3.8	Thermal hazard exposure limit for the skin		P
5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.1	Measurement conditions		P
5.1.1	Lamp ageing (seasoning)		P
5.1.2	Test environment		P
5.1.3	Extraneous radiation		P
5.1.4	Lamp operation		P
5.1.5	Lamp system operation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
5.2.2	Radiance measurements		P
5.2.3	Measurement of source size		P
5.2.4	Pulse width measurement for pulsed sources		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
5.3.2	Calculations		P
5.3.3	Measurement uncertainty		P
6	LAMP CLASSIFICATION		N/A
6.1	Continuous wave lamps		N/A
6.1.1	Exempt group		N/A
6.1.2	Risk Group 1 (Low-Risk)		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A

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6.1.4	Risk Group 3 (High-Risk)		N/A
6.2	Pulsed lamps		N/A
Annex A	SUMMARY OF BIOLOGICAL EFFECTS		--
Annex B	MEASUREMENT METHOD		--
Annex C	UNCERTAINTY ANALYSIS		--
Annex D	GENERAL REFERENCES		--

Table 6.1	Emission limits for risk groups of continuous wave lamps								N/A
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	E _s	W•m ⁻²	0,001	-	-	-	-	-
Near UV		E _{UVA}	W•m ⁻²	0,33	-	-	-	-	-
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	-	10000	-	4000000	-
Blue light, small source	B(λ)	E _B	W•m ⁻²	0,01*	-	1,0	-	400	-
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/ α	-	28000/ α	-	71000/ α	-
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	545000	-	-	-	-	-
				0,0017 $\leq \alpha \leq$ 0,011	-	-	-	-	-
				6000/ α	-	-	-	-	-
				0,011 $\leq \alpha \leq$ 0.1	-	-	-	-	-
IR radiation, eye		E _{IR}	W•m ⁻²	100	-	570	-	3200	-

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Table 6.1	Emission limits for risk groups of continuous wave lamps	N/A
<p>* Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source Note: The action functions: see Table 4.1 and Table 4.2 The applicable aperture diameters: see 4.2.1 The limitations for the angular subtenses: see 4.2.2 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5</p>		

Table 22.7 (4.24)	Spectroradiometric measurement (IEC 62778)	--
	Measurement performed on:	Luminaire
	Model number	BAWATY-60W-EM-65
	Test voltage (V)	240V
	Test current (mA)	--
	Test frequency (Hz)	50
	Ambient, t (°C)	25,0
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm
	Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)

Item	Symbol	Units	Result	Risk Group
Correlated colour temperature	CCT	K	--	--
x/y colour coordinates	--	--	--	--
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	48	<input checked="" type="checkbox"/> RG0: <100 <input type="checkbox"/> RG1: <10000 <input type="checkbox"/> RG2: <4000000
Blue light hazard irradiance	E _B	W/m ²	--	--
Luminance	L	cd/m ²	--	--
Illuminance	E	lx	--	--

Supplementary information:

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