Test Report issued under the responsibility of:

Intertek Testing Services, NA Inc.

TEST REPORT
IEC 62471
Photobiological safety of lamps and lamp systems

Report Reference No. ..... :	103125175CRT-002
Date of issue ..... :	2017-06-28
Total number of pages ..... :	17
Testing Laboratory ..... :	**Intertek Testing Services NA Inc.**
Address ..... :	Cortland Lighting Safety
	3933 US Route 11
	Cortland, NY 13045
	USA
Applicant's name ..... :	OLEDWorks LLC
Address ..... :	1645 Lyell Ave., Suite 140
	Rochester, NY 14606
	USA
Test specification:	
Standard ..... :	IEC 62471:2006 (First Edition)
Test procedure ..... :	CB
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62471A
TRF Originator ..... :	VDE Testing and Certification Institute
Master TRF ..... :	Dated 2009-05

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description ..... :	OLED Panel
Trade Mark ..... :	OLEDWorks Naturally Illuminating
Manufacturer ..... :	OLEDWorks LLC
Model/Type reference ..... :	LumiBlade Brite2 FL300 WW
Ratings ..... :	25.5V DC max, 260 mA, 10 W max.

Testing procedure and testing location:

☒ **CB Testing Laboratory**:	
Testing location/ address.....:	Intertek 3933 US Route 11 Cortland, NY 13045 USA
☐ **Associated Laboratory:**	
Testing location/ address.....:	
Tested by (name + signature) .....:	David Ellis Senior Project Engineer 
Approved by (+ signature).....:	Peter Leshkiv Senior Associate Engineer 
☐ Testing procedure: TMP	
Tested by (name + signature) .....:	
Approved by (+ signature).....:	
Testing location/ address.....:	
☐ Testing procedure: WMT	
Tested by (name + signature) .....:	
Witnessed by (+ signature) .....:	
Approved by (+ signature).....:	
Testing location/ address.....:	
☐ Testing procedure: SMT	
Tested by (name + signature) .....:	
Approved by (+ signature).....:	
Supervised by (+ signature) .....:	
Testing location/ address.....:	
☐ Testing procedure: RMT	
Tested by (name + signature) .....:	
Approved by (+ signature).....:	
Supervised by (+ signature) .....:	
Testing location/ address.....:	

Summary of testing:

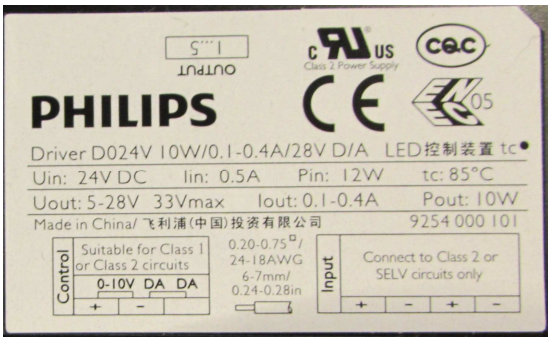
Tests performed (name of test and test clause):	**Testing location:**
4.2.2 Angular subtense of source and measurement field-of-view 4.3.1 Actinic UV hazard exposure limit for the skin and eye 4.3.2 Near-UV hazard exposure limit for the eye 4.3.3 Retina blue light hazard exposure limit 4.3.4 Retina blue light hazard exposure limit – small source 4.3.5 Retina thermal hazard exposure limit 4.3.6 Retina thermal hazard exposure limit – weak visual stimulus 4.3.7 Infrared radiation hazard exposure limit for the eye 4.3.8 Thermal hazard exposure limit for the skin 5.2.1 Irradiance measurements 5.2.2. Radiance Measurements 5.2.2.2 Alternative method 5.3 Analysis Method 6.1 Continuous Wave lamps – Lamp classification	Intertek Cortland Lighting Safety 3933 Route 11 Cortland, NY 13045 USA

Summary of compliance with National Differences:
EN

Copy of marking plate:

Label for Lumiblade OLED Panel Brite 2 FL300 ww

Label for Philip Driver D024V 10W



Test item particulars ..... :	
Tested lamp ..... :	☒ continuous wave lamps ☐ pulsed lamps
Tested lamp system ..... :	LED
Lamp classification group ..... :	☒ exempt ☐ risk 1 ☐ risk 2 ☐ risk 3
Lamp cap ..... :	N/A
Bulb ..... :	OLED Panel Lumiblade Brite2 FL300 WW
Rated of the lamp ..... :	V_F=20.0DC@ I_F=260 mA max.
Furthermore marking on the lamp ..... :	N/A
Seasoning of lamps according IEC standard ..... :	No seasoning on LEDs
Used measurement instrument ..... :	See attachment 3
Temperature by measurement ..... :	25.8°C
Information for safety use ..... :	See attachment 1 Exempt Group for Actinic UV, Near UV, Retinal thermal weak visual stimulus, Retinal thermal, IR Eye and Blue light Hazard.

Possible test case verdicts:

– test case does not apply to the test object ..... : N/A

– test object does meet the requirement ..... : P (Pass)

– test object does not meet the requirement ..... : F (Fail)

Testing:

Date of receipt of test item ..... : 2017-06-22

Date (s) of performance of tests ..... : 2017-06-26 through 2017-06-27

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a comma (point) is used as the decimal separator.
List of test equipment must be kept on file and available for review.

General product information:

The OLED panel model LumiBlade Brite2 FL300 WW, Part Number LPM 2300S1WWL201, is designed for general lighting application. The OLED panel was operated from a LED driver. The LED driver is powered by 24 V DC and outputs 20V DC to the OLED panel. The spectral measurements were taken at 38.5 cm distance at the location of highest illuminance.

The sample control number for the test sample was CRT1706221513-001B

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
4	**EXPOSURE LIMITS**		P
4.1	General		P
	The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure	Information noted	P
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds 10^4 cd·m^{-2}	see clause 4.3	P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is 30 J·m^{-2} within any 8-hour period	See table 6.1	P
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broad-band source, the effective integrated spectral irradiance , E_S, of the light source shall not exceed the levels defined by:	Equation below	P
	$E_s \cdot t = \sum_{200}^{400} \sum_{t} E_\lambda(\lambda,t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 30$ J·m^{-2}	See table 6.1	P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:	Equation below	P
	$t_{max} = \frac{30}{E_s}$ s	See table 6.1	P
4.3.2	Near-UV hazard exposure limit for eye		P
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J·m^{-2} for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, E_{UVA}, shall not exceed 10 W·m^{-2}.	See table 6.1	P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:	Equation below	P
	$t_{max} \le \frac{10\,000}{E_{UVA}}$ s	See table 6.1	P
4.3.3	Retinal blue light hazard exposure limit		P
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B(λ), i.e., the blue-light weighted radiance , L_B, shall not exceed the levels defined by:	Equation Below See table 6.1	P

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Clause	Requirement + Test	Result – Remark	Verdict
	$L_B \cdot t = \sum_{300}^{700} \sum_{t} L_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 10^6$ J · m^{-2} · sr^{-1}	for t ≤ 10^4 s $t_{max} = \frac{10^6}{L_B}$	P
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 100$ W · m^{-2} · sr^{-1}	for t > 10^4 s	P
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
	Thus the spectral irradiance at the eye E_λ, weighted against the blue-light hazard function B(λ) shall not exceed the levels defined by:	Not this type	N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_{t} E_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 100$ J · m^{-2}		N/A
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 1$ W · m^{-2}		N/A
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_λ, weighted by the burn hazard weighting function R(λ) (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:	Equation Below	P
	$L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{50\,000}{\alpha \cdot t^{0,25}}$ W · m^{-2} · sr^{-1}	See table 6.1 (10 µs ≤ t ≤ 10 s)	P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		N/A
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, L_{IR}, as viewed by the eye for exposure times greater than 10 s shall be limited to:	Not this type	N/A
	$L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{6\,000}{\alpha}$ W · m^{-2} · sr^{-1}		N/A
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E_{IR}, over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:	Equation below	P
	$E_{IR} = \sum_{780}^{3\,000} E_\lambda \cdot \Delta\lambda \le 18\,000 \cdot t^{-0,75}$ W · m^{-2}	t ≤ 1000 s	P
	For times greater than 1000 s the limit becomes:		N/A

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$E_{IR} = \sum_{780}^{3\,000} E_\lambda \cdot \Delta\lambda \le 100 \qquad W \cdot m^{-2}$	t > 1000 s	N/A
4.3.8	Thermal hazard exposure limit for the skin		P
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:	Equation below	P
	$E_H \cdot t = \sum_{380}^{3\,000} \sum_{t} E_\lambda(\lambda,t) \cdot \Delta t \cdot \Delta\lambda \le 20\,000 \cdot t^{0,25} \qquad J \cdot m^{-2}$	See table 6.1	P
5	**MEASUREMENT OF LAMPS AND LAMP SYSTEMS**		P
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.	Lab conditions: 26.4°C, 17 %RH	P
5.1.1	Lamp ageing (seasoning)		P
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.	No Seasoning of LED's	N/A
5.1.2	Test environment		N/A
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.	No specific test environment required by end product standard	N/A
5.1.3	Extraneous radiation		P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.	Test Sample did not exceed the viewing angle, no baffling was required	P
5.1.4	Lamp operation		P
	Operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC lamp standard, or	Tested to manufacturer specification	N/A
	– the manufacturer' s recommendation	Tested to manufacturer specification	P
5.1.5	Lamp system operation		P
	The power source for operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC standard, or	Tested to manufacturer specification	N/A
	– the manufacturer' s recommendation	Tested to manufacturer specification	P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	Minimum aperture diameter 7mm.	20 mm used	P
	Maximum aperture diameter 50 mm.	20 mm used	P
	The measurement shall be made in that position of the beam giving the maximum reading.	Measurement made in a position to give the maximum reading.	P
	The measurement instrument is adequate calibrated.	Equipment was calibrated as required	P
5.2.2	Radiance measurements	Radiance measurements were derived from the irradiance	P
5.2.2.1	Standard method	Equipment was calibrated as required	P
	The measurements made with an optical system.	Radiance measurements were derived from the irradiance	P
	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument.	See above	N/A
5.2.2.2	Alternative method	See above	N/A
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.	See above	N/A
5.2.3	Measurement of source size		P
	The determination of α, the angle subtended by a source, requires the determination of the 50% emission points of the source.	Irradiance measurements were made with the aperture	P
5.2.4	Pulse width measurement for pulsed sources		N/A
	The determination of Δt, the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.	Not Pulsed Source	N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.	see table 4.1	P
5.3.2	Calculations		P
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.	The spectral measurements were weighted by the appropriate weighting functions to determine the total weighted energy for each hazard function	P
5.3.3	Measurement uncertainty		P
	The quality of all measurement results must be quantified by an analysis of the uncertainty.	see Annex C in the norm	P

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Clause	Requirement + Test	Result – Remark	Verdict
6	**LAMP CLASSIFICATION**		P
	For the purposes of this standard it was decided that the values shall be reported as follows:	see table 6.1	P
	– for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm	Product is a GLS device. Measurements were taken at a test distance of 385 mm	P
	– for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		N/A
6.1	Continuous wave lamps		P
6.1.1	Except Group		P
	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:	see Tables 6.1 for detail Exempt Group	P
	– an actinic ultraviolet hazard (E_S) within 8-hours exposure (30000 s), nor	see Tables 6.1 for detail Exempt Group	P
	– a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor	see Tables 6.1 for detail Exempt Group	P
	– a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor	see Tables 6.1 for detail Exempt Group Permissible Exposure Time 324187 Sec	P
	– a retinal thermal hazard (L_R) within 10 s, nor	see Tables 6.1 for detail Exempt Group	P
	– an infrared radiation hazard for the eye (E_{IR}) within 1000 s	see Tables 6.1 for detail Exempt Group	P
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the except group but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 10000 s, nor	Exempt Group	N/A
	– a near ultraviolet hazard (E_{UVA}) within 300 s, nor	Exempt Group	N/A
	– a retinal blue-light hazard (L_B) within 100 s, nor	Exempt Group	N/A
	– a retinal thermal hazard (L_R) within 10 s, nor	Exempt Group	N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 100 s	Exempt Group	N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1.	Exempt Group	N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 1000 s exposure, nor	Exempt Group	N/A
	– a near ultraviolet hazard (E_{UVA}) within 100 s, nor	Exempt Group	N/A
	– a retinal blue-light hazard (L_B) within 0,25 s (aversion response), nor	Exempt Group	N/A
	– a retinal thermal hazard (L_R) within 0,25 s (aversion response), nor	Exempt Group	N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 10 s	Exempt Group	N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 10 s are in Risk Group 2.	Exempt Group	N/A
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.	Exempt Group	N/A
6.2	Pulsed lamps		N/A
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.	Not a pulsed source	N/A
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N/A
	The risk group determination of the lamp being tested shall be made as follows:		N/A
	– a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)		N/A
	– for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group:		N/A
	– for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission		N/A

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Clause	Requirement + Test	Result – Remark	Verdict

Table 4.1 Spectral weighting function for assessing ultraviolet hazards for skin and eye

Wavelength[1] λ, nm	UV hazard function $S_{UV}(\lambda)$	Wavelength λ, nm	UV hazard function $S_{UV}(\lambda)$
200	0,030	313*	0,006
205	0,051	315	0,003
210	0,075	316	0,0024
215	0,095	317	0,0020
220	0,120	318	0,0016
225	0,150	319	0,0012
230	0,190	320	0,0010
235	0,240	322	0,00067
240	0,300	323	0,00054
245	0,360	325	0,00050
250	0,430	328	0,00044
254*	0,500	330	0,00041
255	0,520	333*	0,00037
260	0,650	335	0,00034
265	0,810	340	0,00028
270	1,000	345	0,00024
275	0,960	350	0,00020
280*	0,880	355	0,00016
285	0,770	360	0,00013
290	0,640	365*	0,00011
295	0,540	370	0,000093
297*	0,460	375	0,000077
300	0,300	380	0,000064
303*	0,120	385	0,000053
305	0,060	390	0,000044
308	0,026	395	0,000036
310	0,015	400	0,000030

[1] Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.
* Emission lines of a mercury discharge spectrum.

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict

Table 4.2	Spectral weighting functions for assessing retinal hazards from broadband optical sources	

Wavelength nm	**Blue-light hazard function B (λ)**	**Burn hazard function R (λ)**
300	0,01	
305	0,01	
310	0,01	
315	0,01	
320	0,01	
325	0,01	
330	0,01	
335	0,01	
340	0,01	
345	0,01	
350	0,01	
355	0,01	
360	0,01	
365	0,01	
370	0,01	
375	0,01	
380	0,01	0,1
385	0,013	0,13
390	0,025	0,25
395	0,05	0,5
400	0,10	1,0
405	0,20	2,0
410	0,40	4,0
415	0,80	8,0
420	0,90	9,0
425	0,95	9,5
430	0,98	9,8
435	1,00	10,0
440	1,00	10,0
445	0,97	9,7
450	0,94	9,4
455	0,90	9,0
460	0,80	8,0
465	0,70	7,0
470	0,62	6,2
475	0,55	5,5
480	0,45	4,5
485	0,40	4,0
490	0,22	2,2
495	0,16	1,6
500-600	$10^{[(450-\lambda)/50]}$	1,0
600-700	0,001	1,0
700-1050		$10^{[(700-\lambda)/500]}$
1050-1150		0,2
1150-1200		$0{,}2 \cdot 10^{0{,}02(1150-\lambda)}$
1200-1400		0,02

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Clause	Requirement + Test	Result – Remark	Verdict

Table 5.4 Summary of the ELs for the surface of the skin or cornea (irradiance based values)

Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Limiting aperture rad (deg)	EL in terms of constant irradiance $W \cdot m^{-2}$
Actinic UV skin & eye	$E_S = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t
Eye UV-A	$E_{UVA} = \sum E_\lambda \cdot \Delta\lambda$	315 – 400	≤1000 >1000	1,4 (80)	10000/t 10
Blue-light small source	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤100 >100	< 0,011	100/t 1,0
Eye IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780 –3000	≤1000 >1000	1,4 (80)	$18000/t^{0,75}$ 100
Skin thermal	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	$20000/t^{0,75}$

Table 5.5 Summary of the ELs for the retina (radiance based values)

Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$)
Blue light	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10 10-100 100-10000 ≥ 10000	$0,011 \cdot \sqrt{(t/10)}$ 0,011 $0,0011 \cdot \sqrt{t}$ 0,1	$10^6/t$ $10^6/t$ $10^6/t$ 100
Retinal thermal	$L_R = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 $0,011 \cdot \sqrt{(t/10)}$	$50000/(\alpha \cdot t^{0,25})$ $50000/(\alpha \cdot t^{0,25})$
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	6000/α

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict

Table 6.1 Emission limits for risk groups of continuous wave lamps - Model: LumiBlade Brite2 FL300 WW

Risk	Action spectrum	Symbol	Units	Emission Measurement						
				Exempt		Low risk		Mod risk		High Risk
				Limit	Result	Limit	Result	Limit	Result	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$W \bullet m^{-2}$	0,001	1,49E-05	0.003	N/A	0,03	N/A	N/A
Near UV		E_{UVA}	$W \bullet m^{-2}$	10	1,14E-05	33	N/A	100	N/A	N/A
Blue light	$B(\lambda)$	L_B	$W \bullet m^{-2} \bullet sr^{-1}$	100	3,08	10000	N/A	4000000	N/A	N/A
Blue light, small source	$B(\lambda)$	E_B	$W \bullet m^{-2}$	1.0	N/A	1.0	N/A	400	N/A	N/A
Retinal thermal	$R(\lambda)$	L_R	$W \bullet m^{-2} \bullet sr^{-1}$	2545455	39,5	2545455	N/A	6454545	N/A	N/A
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$W \bullet m^{-2} \bullet sr^{-1}$	545455	0,200	545455	N/A	545455	N/A	N/A
IR radiation, eye		E_{IR}	$W \bullet m^{-2}$	100	1,30E-2	570	N/A	3200	N/A	N/A
Skin Thermal		E_H	$W \bullet m^{-2}$	3557	1,90	3557	N/A	3557	N/A	N/A

** Involves evaluation of non-GLS source

Note: Unit was not small source, subtended angle used in calculation is 0.1 radians

Attachment 1

Furthermore remarks:

The subtended angle for the device used in the calculations to determine risk levels was 0,1 radians.
The solid angle for the device used in the calculations to determine optical hazard function summations was 0,00785 steradians.

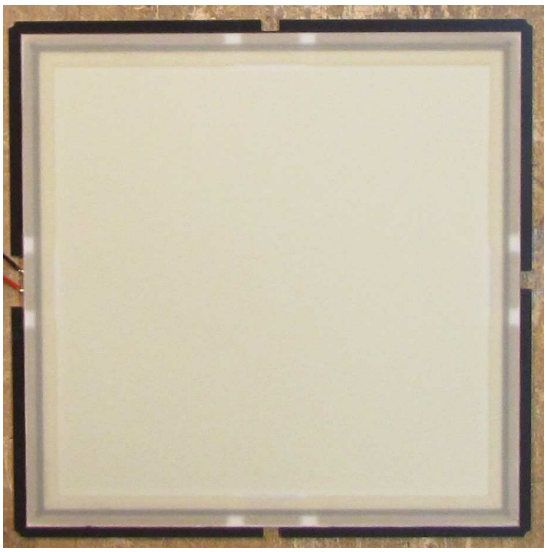
Labeling Requirements:
Per Table 1 of IEC 62471-2/TR:2009, model Lumiblade OLED Panel Brite 2 FL300 ww Part Number LPM 2300S1WWL201 is classified as Exempt for all hazard categories.

Labeling Requirements: None

Pictures:

Lumiblade OLED Panel Brite 2 FL300 ww with Driver

Lumiblade OLED Panel Brite 2 FL300 ww



Attachment 2

ATTACHMENT TO TEST REPORT IEC 62471 **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** Photobiological safety of lamps and lamps systems	
Differences according to ..... :	EN 62471:2008
Attachment Form No. ..... :	EU_GD_IEC62471A
Attachment Originator..... :	IMQ S.p.A.
Master Attachment..... :	2009-07

	CENELEC COMMON MODIFICATIONS (EN)		P
4	**EXPOSURE LIMITS**		P
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB	Information noted	—
	Clause 4 replaced by the following:		P
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006	See appended Table 6.1	P
4.1	General		P
	First paragraph deleted	Information noted	—

Attachment 3

Test Equipment

Equipment				
Description	Model Number	Control Number	Cal Date	Cal Due Date
Hygro-thermometer	Extech 445703	T1362	2017-04-08	2018-04-08
AC Power Source	APT5010 S/N 4020117	4020117	VBU	VBU
Yokogawa AC Power Analyzer	WT 1600	E536	2017-01-06	2018-01-06
Steel Rule	---	N721	2016-07-12	2019-07-12
Gooch and Housego Spectro-radiometer System	Gooch & Housego / OL 750D / 13331416	E288	2017-06-15	2017-07-15
Gooch and Housego-Detector Multiplexor	Gooch & Housego / OL 750-620 / 96101014	E288	2017-06-15	2017-07-15
Gooch and Housego-Automated detector selector	Gooch & Housego / OL 750-630 / 13105048	E288	VBU	VBU
Accessories Box for Automated Spectroradiometric System	Gooch & Housego / OL 750-M-D-Box / none	E288	VBU	VBU
Gooch and Housego-System Controller	Gooch & Housego / OL 750-C Controller / 95413067	E288	2017-06-15	2017-07-15
Gooch and Housego-DH-310 S-20 PMT Detector Module	Gooch & Housego / OL DH-310 / 02201045	E288	2017-06-15	2017-07-15
Gooch and Housego-DH-320 GE PMT Detector Module	Gooch & Housego / OL DH-320 / 02201045	E288	2017-06-15	2017-07-15
Gooch and Housego-DH-340 PbS Detector Module	Gooch & Housego / OL DH-340 / 08101065	E288	2017-06-15	2017-07-15
Gooch and Housego-Automated detector selector	Gooch & Housego / OL 750-C Controller / 95413067	E288	2017-06-15	2017-07-15
OL DSM-1D DC Current Mode Detector Support Module	Gooch & Housego / OL DSM-1D DC / 2100171	E288	2016-08-08	2017-08-08
OL DSM-2 AC Voltage Mode Detector Support Module for PbS Detector	Gooch & Housego / OL DSM-2B AC / 195100046	E288	2016-08-08	2017-08-08
OL DSM-1D DC Current Mode Detector Support Module	Gooch & Housego / OL DSM-1D DC / 95100026	E288	2016-08-08	2017-08-08
OL DSM-1D DC Current Mode Detector Support Module	Gooch & Housego / OL DSM-1D DC / 95100027	E288	2016-08-08	2017-08-08
Plug-in Standard of Spectral Irradiance-Spectral Range: 200 nm - 400 nm. For use with OL 750D Monochromator (ICO) to generate UV calibration file	Gooch and Housego / OL 752-12 / 15301082	15301082	2016-03-31	2017-03-31
Optronic OL 730-7Q-2.02M Fiber Optic Probe	Gooch & Housego / OL 730-7Q-2.0 13610400	E288	VBU	VBU
Tefton Cosine Receptor Input Module OL 85-T	Gooch & Housego /OL 85-T/92201085	E288	VBU	VBU
6 inch Diameter Integrating Sphere - 90° ports, PTFE coating, For use with OL IS 670-MOUNT	Gooch & Housego / OL IS-670 / 02100246	E288	VBU	VBU
2 inch Diameter Integrating Sphere - 90° ports, PTFE coating, For use with OL ISA 670-MOUNT	Gooch and Housego / OL IS-270I / 13160087	E288	VBU	VBU