

# **Test Report**

Report No.: AGC05443230510SS01A

**PRODUCT DESIGNATION**: Spirit level pen in SS

**BRAND NAME** : N/A

MODEL NAME : MO2072

**CLIENT**: MID OCEAN BRANDS B.V

**DATE OF ISSUE** : May 19, 2023

**STANDARD(S)** : EN 62471:2008

**REPORT VERSION**: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.



Phil ry

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## TEST REPORT EN 62471

Photobiological safety of lamps and lamp systems

Report reference No. ...... AGC05443230510SS01A

Tested by (+ signature) ...... Mody Mo

Reviewed by (+ signature) ...... Phil Zhang

..... (Authorized officer )

Date of issue ...... May 29, 2023

Contents...... Total 17 pages

Test location....

**Testing laboratory** 

Heping Community, Fuhai Street, Bao 'an District, Shenzhen,

Guangdong, China Same as above

**Applicant** 

Name ...... MID OCEAN BRANDS B.V

Kowloon, Hong Kong

Manufacturer

Name ...... MID OCEAN BRANDS B.V

Kowloon, Hong Kong

**Factory** 

Name ...... MID OCEAN BRANDS B.V

Kowloon, Hong Kong

Test specification

Standard .....: EN 62471:2008

Non-standard test method ...... N/A

Test Report Form/blank test report

Test Report Form No...... AGC62471A1

TRF originator ...... AGC

Master TTRF .....: Dated 2009-06

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Test item						
Product designation	:	Spirit level pe	n in SS			
Brand name	:	N/A				
Test model	:	MO2072				
Series models	:	N/A				
Rating(s)	:	3 * AG3 cell				
Test item Particulars						
Tested lamp	:	⊠continuous	wave lan	nps 🗌	pulsed lamp	)
Lamp classification group	:	⊠exempt	□risk 1	□risk 2	□risk 3	
Lamp cap	:	N/A				
Bulb	:	N/A				
Used measurement instrument	:	SPECTRORA	DIOMET	ER		
Temperature by measurement	:	24.5°C				
Information for safety use	:	N/A				
Test case verdicts						
Test case does not apply to the test of	object:	N(/A)				
Test item does meet the requirement	::	P(ass)				
Test item does not meet the requiren	nent:	F(ail)				
Testing						
Date of receipt of test item	:	May 29, 2023				
Date(s) of performance of test	:	N(/A)				
Attachments						
Attachment A	:	Photos of pro	duct			
General remarks						
This report shall not be reproduced e The test results presented in this repo "(see remark #)" refers to a remark a "(see Annex #)" refers to an annex ap Throughout this report a comma is us Report Revise Record:	ort relate only ppended to tho ppended to the	to the item test e report. e report.	ted.	al of the test	ting laborator	ry.
Report Version Revise Time	Issued	d Date	Valid Ve	rsion	Notes	
V1.0 /	May 1	8, 2023	Valid		1	
					•	
General product information This report only evaluate the result of The LED specification as follows:		200nm to 800r	ım.			
Model Manufacturer		TECHNOLOGY		Vf(V)	If(mA)	CCT(K)
/ SHENZHEN CO.LTD	KUIGUANG I	TECHNOLOGY		1.8-3.2	20	5000
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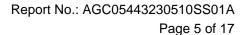


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Note: The original test report Ref. No. AGC05443230510SS01 (dated May 18, 2023, tested MAY 18, 20232), Was Modified On May 29, 2023 To Change The Product Name, No Further Testing Necessary.

#### Summary of testing

The sample tested complies with the requirements of EN 62471:2008 and which is classified as exempt group according to the requirements of EN 62471:2008.



Ρ

Р

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Ρ



4.3.2

4.3.3

EN 62471 Result Clause Requirement - Test Verdict Ρ 4 **Exposure Limits** 4.1 Р General The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and Ρ should be used as guides in the control of exposure Detailed spectral data of a light source are generally see clause 4.3 Ρ required only if the luminance of the source exceeds 10<sup>4</sup> cd m<sup>-2</sup> 4.3 Hazard exposure limits Ρ 4.3.1 Ρ Actinic UV hazard exposure limit for the skin and eye The exposure limit for effective radiant exposure is 30 Р J m<sup>-2</sup> within any 8-hour period To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broadband source, the effective integrated spectral irradiance, Es, of the light source shall not exceed the levels defined by:  $E_{s} \cdot t = \sum_{200}^{400} \sum_{r} E_{\lambda}(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 30$ Ρ The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall Ρ be computed by:  $t_{\text{max}} = \frac{30}{E_{\text{s}}}$  s Ρ

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Near-UV hazard exposure limit for eve

E<sub>UVA</sub>, shall not exceed 10 W m<sup>-2</sup>.

 $t_{\text{max}} \leq \frac{10000}{E_{\text{LIVA}}}$ 

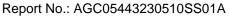
For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J'm<sup>-2</sup> for exposure times less than 1000 s. For

exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye,

The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time

less than 1000 s, shall be computed by:

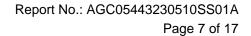
Retinal blue light hazard exposure limit





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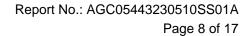
	EN 62471		
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	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B( $\lambda$ ), i.e., the blue-light weighted radiance , L <sub>B</sub> , shall not exceed the levels defined by:		Р
	$L_{B} \cdot t = \sum_{300}^{700} \sum_{t} L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 10^6 \text{ J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$		N
	$L_{\rm B} = \sum_{300}^{300} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 100  \text{W·m}^{-2} \cdot \text{sr}^{-1}$		Р
4.3.4	Retinal blue light hazard exposure limit - small source		N
	Thus the spectral irradiance at the eye $E_{\lambda}$ , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:		N
	$E_{B} \cdot t = \sum_{300}^{700} \sum_{t} E_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 100 \ J \cdot m^{-2}$		N
	$E_{\rm B} = \sum_{300}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 1  \text{W} \cdot \text{m}^{-2}$		N
4.3.5	Retinal thermal hazard exposure limit		Р
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, $L_{\lambda}$ , weighted by the burn hazard weighting function $R(_{\lambda})$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:		Р
	$L_{R} = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{50000}{\alpha \cdot t^{0.25}}  \text{W·m}^{-2} \cdot \text{sr}^{-1}$	(10 µs ≤ t ≤ 10 s)	Р
4.3.6	Retinal thermal hazard exposure limit – weak visual stim	ulus	N
	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, $L_{\rm IR}$ , as viewed by the eye for exposure times greater than 10 s shall be limited to:		N
	$L_{\rm IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{6000}{\alpha}  \text{W·m}^{-2} \cdot \text{sr}^{-1}$	t > 10 s	N
4.3.7	Infrared radiation hazard exposure limits for the eye		N
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, $E_{\rm IR}$ , over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		N





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Clause	Requirement – Test	Result	Verdict
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 18000 \cdot t^{-0.75} \text{ W} \cdot \text{m}^{-2}$	t ≤ 1000 s	N
	For times greater than 1000 s the limit becomes:		N
	$E_{\rm IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 100  \text{W} \cdot \text{m}^{-2}$	t > 1000 s	N
4.3.8	Thermal hazard exposure limit for the skin		N
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		N
	$E_{H} \cdot t = \sum_{380}^{3000} \sum_{t} E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta \lambda \le 20000 \cdot t^{0,25}  J \cdot m^{-2}$		N

5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS	Р
5.1	Measurement conditions	Р
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.	Р
5.1.1	Lamp ageing (seasoning)	Р
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.	N
5.1.2	Test environment	Р
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.	Р
5.1.3	Extraneous radiation	Р
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.	Р
5.1.4	Lamp operation	Р
	Operation of the test lamp shall be provided in accordance with:	Р
	the appropriate EN lamp standard, or	N
	the manufacturer's recommendation	Р
5.1.5	Lamp system operation	N
_	The power source for operation of the test lamp shall be provided in accordance with:	N
	the appropriate EN standard, or	N





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Clause	Requirement – Test	Result	Verdict
	the manufacturer's recommendation		N
5.2	Measurement procedure		Р
5.2.1	Irradiance measurements		Р
	Minimum aperture diameter 7mm.		Р
	Maximum aperture diameter 50 mm.		Р
	The measurement shall be made in that position of the beam giving the maximum reading.		Р
	The measurement instrument is adequate calibrated.		Р
5.2.2	Radiance measurements		Р
5.2.2.1	Standard method		Р
	The measurements made with an optical system.		Р
	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.		Р
5.2.2.2	Alternative method		N
	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.		N
5.2.3	Measurement of source size		Р
	The determination of $\alpha$ , the angle subtended by a source, requires the determination of the 50% emission points of the source.		Р
5.2.4	Pulse width measurement for pulsed sources		N
	The determination of $\Delta t$ , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N
5.3	Analysis methods		Р
5.3.1	Weighting curve interpolations		N
	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	N
5.3.2	Calculations		Р
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		Р
5.3.3	Measurement uncertainty		Р



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Clause	Requirement – Test	Result	Verdict
	The quality of all measurement results must be quantified by an analysis of the uncertainty.	see Annex C in the norm	Р

6	LAMP CLASSIFICATION		Р
	For the purposes of this standard it was decided that the values shall be reported as follows:	see table 6.1	Р
	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		Р
	for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		N
6.1	Continuous wave lamps		Р
6.1.1	Except Group		Р
	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		Р
	<ul> <li>an actinic ultraviolet hazard (E<sub>S</sub>) within 8-hours exposure (30000 s), nor</li> </ul>		Р
	<ul> <li>a near-UV hazard (E<sub>UVA</sub>) within 1000 s, (about 16 min), nor</li> </ul>		Р
	<ul> <li>a retinal blue-light hazard (L<sub>B</sub>) within 10000 s (about 2,8 h), nor</li> </ul>		Р
	<ul> <li>a retinal thermal hazard (L<sub>R</sub>) within 10 s, nor</li> </ul>		Р
	<ul> <li>an infrared radiation hazard for the eye (E<sub>IR</sub>) within 1000 s</li> </ul>		N
6.1.2	Risk Group 1 (Low-Risk)		N
	In this group are lamps, which exceeds the limits for the except group but that does not pose:		N
	<ul> <li>an actinic ultraviolet hazard (E<sub>S</sub>) within 10000 s, nor</li> </ul>		N
	<ul> <li>a near ultraviolet hazard (E<sub>UVA</sub>) within 300 s, nor</li> </ul>		N
	<ul> <li>a retinal blue-light hazard (L<sub>B</sub>) within 100 s, nor</li> </ul>		N
	<ul> <li>a retinal thermal hazard (L<sub>R</sub>) within 10 s, nor</li> </ul>		N
	<ul> <li>an infrared radiation hazard for the eye (E<sub>IR</sub>) within 100 s</li> </ul>		N
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal		N



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Clause	Requirement – Test	Result	Verdict
	hazard (L <sub>IR</sub> ), within 100 s are in Risk Group 1.		
6.1.3	Risk Group 2 (Moderate-Risk)		N
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N
	<ul> <li>an actinic ultraviolet hazard (E<sub>s</sub>) within 1000 s exposure, nor</li> </ul>		N
	<ul> <li>a near ultraviolet hazard (E<sub>UVA</sub>) within 100 s, nor</li> </ul>		N
	<ul> <li>a retinal blue-light hazard (L<sub>B</sub>) within 0,25 s (aversion response), nor</li> </ul>		N
	<ul> <li>a retinal thermal hazard (L<sub>R</sub>) within 0,25 s (aversion response), nor</li> </ul>		N
	<ul> <li>an infrared radiation hazard for the eye (E<sub>IR</sub>) within 10 s</li> </ul>		N
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L <sub>IR</sub> ), within 10 s are in Risk Group 2.		N
6.1.4	Risk Group 3 (High-Risk)		N
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N
6.2	Pulsed lamps		N
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.		N
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N
	The risk group determination of the lamp being tested shall be made as follows:		N
	<ul> <li>a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)</li> </ul>		N
	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
	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



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Clause	Requirement – Test	Result	Verdict

able 4.1	Spectral w	eighting function for assessing of	ultraviolet hazards for sk	rin and eye P
	elength <sup>1</sup>	UV hazard function S <sub>ω</sub> (λ)	Wavelength λ, nm	UV hazard function S <sub>ω</sub> (λ)
2	200	0,030	313*	0,006
2	205	0,051	315	0,003
2	210	0,075	316	0,0024
2	215	0,095	317	0,0020
2	220	0,120	318	0,0016
2	225	0,150	319	0,0012
2	230	0,190	320	0,0010
2	235	0,240	322	0,00067
2	240	0,300	323	0,00054
2	245	0,360	325	0,00050
2	250	0,430	328	0,00044
2	54*	0,500	330	0,00041
2	255	0,520	333*	0,00037
2	260	0,650	335	0,00034
2	265	0,810	340	0,00028
2	270	1,000	345	0,00024
2	275	0,960	350	0,00020
2	80*	0,880	355	0,00016
2	285	0,770	360	0,00013
2	290	0,640	365*	0,00011
2	295	0,540	370	0,00093
2	97*	0,460	375	0,000077
3	300	0,300	380	0,00064
3	03*	0,120	385	0,00053
3	305	0,060	390	0,000044
3	308	0,026	395	0,00036
3	310	0,015	400	0,000030

Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.

<sup>\*</sup> Emission lines of a mercury discharge spectrum.

Table 4.2	Spectral weighting fun	ctions for assessing retinal hazards from	broadband optical sources
W	avelength nm	Blue-light hazard function Β (λ)	Burn hazard function $R(\lambda)$
	300	0,01	
	305	0,01	
	310	0,01	
	315	0,01	
	320	0,01	



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		IEC 6247	1	
Clause	Requirement – Test		Result	Verdict
	205	0.04		
	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	$0,16$ $10^{[(450-\lambda)/50]}$		1,6
	500-600			1,0
	600-700	0,001		1,0 10 <sup>[(700-λ)/500]</sup>
	700-1050			
	1050-1150			0,2
	1150-1200		(	0,2·10 <sup>0,02(1150-λ)</sup>
	1200-1400			0,02



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Clause	Requirement – Test	Result	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 irradiand W•m <sup>-2</sup>	ce
Actinic UV skir & eye	$E_{S} = \sum E_{\lambda} \cdot S(\lambda) \cdot \Delta \lambda$	200 – 400	< 30000	1,4 (80)	30/t	
Eye UV-A	$E_{\text{UVA}} = \sum E_{\lambda} \cdot \Delta \lambda$	315 – 400	≤1000 >1000	1,4 (80)	10000/ 10	t
Blue-light small source	$E_B = \sum E_\lambda \bullet B(\lambda) \bullet \Delta\lambda$	300 – 700	≤100 >100	< 0,011	100/t 1,0	
Eye IR	$E_{IR} = \sum E_{\lambda} \bullet \Delta \lambda$	780 –3000	≤1000 >1000	1,4 (80)	18000/t <sup>0,75</sup>	
Skin thermal	$E_H = \sum E_{\lambda} \cdot \Delta \lambda$	380 – 3000	< 10	2π sr	20000/t <sup>c</sup>	),75

Table 5.5	Sur	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 term		
Blue light		$L_B = \sum L_\lambda \bullet B(\lambda) \bullet \Delta \lambda$	300 – 700	0,25 - 10 10-100 100-10000 ≥ 10000	0,011•√(t/10) 0,011 0,0011•√t 0,1	10 <sup>6</sup> /t 10 <sup>6</sup> /t 10 <sup>6</sup> /t 100		
Retinal thermal		$L_R = \sum L_\lambda \bullet R(\lambda) \bullet \Delta\lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 0,011•√(t/10)	50000/(α•t 50000/(α•t		
Retinal thermal (weak visual stimulus)		$L_{IR} = \sum L_{\lambda} \bullet R(\lambda) \bullet \Delta \lambda$	780 – 1400	> 10	0,011	6000/o	(	



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Clause	Requirement – Test Result							Verdict		
Table 6.1	Emission limits for risk groups of continuous wave lamps								N	
	Action			Emission Measurement						
Risk	spectru	spectru Symbol		Ex	Exempt		Low risk		Mod	risk
	m			Limit	Resu	lt	Limit	Result	Limit	Result
Actinic UV	S <sub>UV</sub> (λ)	Es	W•m <sup>-2</sup>	0.001			0,003		0,03	
Near UV		E <sub>UVA</sub>	W•m <sup>-2</sup>	10			33		100	
Blue light	Β(λ)	L <sub>B</sub>	W•m <sup>-2</sup> •sr <sup>-</sup>	100			10000		4000000	
Blue light, small source	Β(λ)	E <sub>B</sub>	W•m <sup>-2</sup>	1.0*			1,0		400	
Retinal thermal	R(λ)	L <sub>R</sub>	W•m <sup>-2</sup> •sr	28000/α			28000/α		71000/α	
Retinal thermal, weak visual stimulus**	R(λ)	L <sub>IR</sub>	W•m <sup>-2</sup> •sr <sup>-</sup>	6000/α	1		6000/α	-	6000/α	
IR radiation, eye		E <sub>IR</sub>	W•m <sup>-2</sup>	100			570		3200	

<sup>\*</sup> Small source defined as one with  $\alpha$  < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.

<sup>\*\*</sup> Involves evaluation of non-GLS source



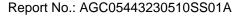
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	EN 62471						
	CENELEC COMMON MODIFICATIONS (EN)						
4	EXPOSURE LIMITS	Р					
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB						
	Clause 4 replaced by the following:	Р					
	Limits of the Artificial Optical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

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								Р		
Risk	Action spectrum				Emission Measurement						
		Symbol	Units	Exempt		Low risk		Mod risk			
	opootrum	GGUIGH		Limit	Result	Limit	Result	Limit	Result		
Actinic UV	S <sub>UV</sub> (λ)	Es	W•m <sup>-2</sup>	0.001	9.983E-04	0.003		0.03			
Near UV		E <sub>UVA</sub>	W•m <sup>-2</sup>	0.33	0.000E+00	33		100			
Blue light	Β(λ)	L <sub>B</sub>	W•m <sup>-</sup> <sup>2</sup> •sr <sup>-1</sup>	100	6.753E+01	10000		4000000			
Blue light, small source	Β(λ)	E <sub>B</sub>	W•m <sup>-2</sup>	0.01*		1,0		400			
Retinal thermal	R(λ)	$L_R$	W•m <sup>-</sup> <sup>2</sup> •sr <sup>-1</sup>	28000/α	8.279E+02	28000/α		1.614E+06			
Retinal thermal, weak visual stimulus**	R(λ)	L <sub>IR</sub>	W•m <sup>-</sup> <sup>2</sup> •sr <sup>-1</sup>								
IR radiation, eye		E <sub>IR</sub>	W•m <sup>-2</sup>	100		570		3200			

<sup>\*</sup> Small source defined as one with  $\alpha$  < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.

<sup>\*\*</sup> Involves evaluation of non-GLS source



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Attachment A Photos of product



Fig.1- Overall view of the product

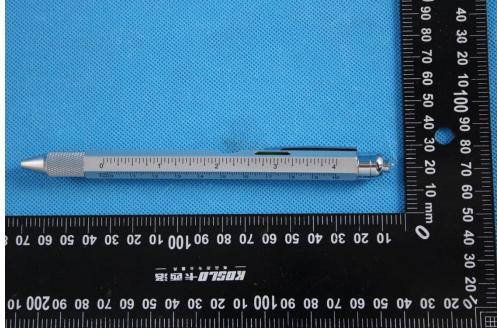
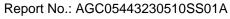


Fig.2- Overall view of the product



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Fig.3- Uncover view of product



Fig.4- LED view of product

### ---- End of Report ----



## Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.