

<p align="center"><b>TEST REPORT</b></p> <p align="center"><b>COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019</b></p> <p align="center"><b>laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council</b></p>	
<b>Report Reference No.</b> .....:	CstarWJ13ERP05
<b>Compiled by (+ signature)</b> .....:	Jesse Fu 
<b>Approved by (+ signature)</b> .....	Jasan Zhang 
<b>Date of issue</b> .....	Oct. 13, 2022
<b>Testing laboratory:</b>	<b>Shenzhen C-Star Test Co., Ltd.</b>
<b>Address</b> .....:	Room 208, 2/F., Building A3, No.416, Xuegang North Road, Qinghu Community, Longhua Subdistrict, Longhua District, Shenzhen, Guangdong, China
<b>Testing location</b> .....:	as above
<b>Applicant</b> .....:	LEXON
<b>Address</b> .....:	125 avenue des Champs-Élysées 75008 Paris FRANCE
<b>Standard</b> .....:	COMMISSION REGULATION (EU) 2019/2020 COMMISSION DELEGATED REGULATION (EU) 2019/2015 COMMISSION DELEGATED REGULATION (EU) 2021/340 COMMISSION DELEGATED REGULATION (EU) 2021/341
<b>Test Report Form No</b> .....:	TRF (EU) No 2019/2020
<b>TRF originated by</b> .....:	Shenzhen C-Star Test Co., Ltd.
<b>Master TRF (date)</b> .....:	Dated 2021-11
<b>Test item description</b> .....	LUMA M
<b>Trade Mark</b> .....	LEXON
<b>Manufacturer</b> .....	Same as applicant
<b>Model /Type reference</b> .....	LH87
<b>Serial number reference</b> .....	Pre-production engineering samples without any serial numbers
<b>Ratings</b> .....:	DC5V, 5W.



<b>Test case verdicts</b>	
Test case does not apply to the test object.....:	N(N/A)
Test item does meet the requirement .....	P(Pass)
Test item does not meet the requirement .....	F(Fail)
<b>Testing</b>	
Date of receipt of test item .....	Oct. 08, 2022
Date(s) of performance of test.....:	Oct. 08, 2022– Oct. 13, 2022
<b>Test item particulars:</b>	
<b>Type of light source:</b>	
Lighting technology used	<input type="checkbox"/> HL <input type="checkbox"/> LFLT5HE <input type="checkbox"/> LFL T5HO CFLni <input type="checkbox"/> HPS <input type="checkbox"/> MH <input type="checkbox"/> other HID <input checked="" type="checkbox"/> LED <input type="checkbox"/> mixed <input type="checkbox"/> OLED <input type="checkbox"/> Others: _____
Non-directional or directional	<input type="checkbox"/> NDLS <input checked="" type="checkbox"/> DLS
Mains or non-mains	<input type="checkbox"/> NMLS <input checked="" type="checkbox"/> MLS
Connected light source (CLS)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Colour-tuneable light source.....:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Envelope	<input checked="" type="checkbox"/> NO <input type="checkbox"/> second <input type="checkbox"/> non-clear
Anti-glare shield	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
High luminance light source	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Dimmable	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> only with pecific dimmers <input type="checkbox"/> No
Control gear	<input type="checkbox"/> Integrated <input checked="" type="checkbox"/> External
Use of light source:	<input checked="" type="checkbox"/> Indoor <input checked="" type="checkbox"/> Outdoor <input type="checkbox"/> Industry
<b>Lamp cap installed:</b>	N/A
<b>General product parameters :</b>	
Energy consumption in on-mode (kWh/1 000 h)...	5
Energy efficiency class.....:	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G
Rated useful luminous flux (lm).....:	10.5
Rated CCT (K).....:	3000/6000
On-mode power (Pon), expressed in W.....:	5
Standby power (Psb) (W).....:	N/A
Networked standbypower(Pnet)for CLS (W).....:	N/A
Rated Ra.....:	82.3
Outer dimensions.....(mm):	See attachment 3

Spectral power distribution.....	See attachment 2
Claim of equivalent power .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
Chromaticity coordinates (x and y).....	x:0.4411, y:0.4017
Peak luminous intensity(cd) .....	N/A
Beam angle in degrees(°).....	N/A
R9 colour rendering index value R9.....	0
Survival factor .....	100%
The lumen maintenance factor.....	96%
Displacement factor (cos $\phi_1$ ).....	0.9
Colour consistency in McAdam ellipses.....	3
Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Flicker metric (Pst LM) .....	0.05
Stroboscopic effect metric (SVM).....	0.00
Rated life time(h) .....	25000h

**Attachments:**

The test report includes: ATTACHMENT 1(S) of Energy efficiency classes

The test report includes: ATTACHMENT 2(S) of Spectral power distribution

The test report includes: ATTACHMENT 3(S) of Photos

**Summary of testing:**

- 1. According to the luminous flux, the light source is outside the scope of the ecodesign requirements of the European Commission Regulation (EC)2019/2020.**
2. Measurement was conducted at voltage DC5V and a stable ambient temperature  $25\pm 10^{\circ}\text{C}$ .
3. THD $\leq$  3%

#### Equipment List:

Instrument	Equipment ID	Model	Calibration Date	Calibration DueDate
Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2022/07/02	2022/07/01
Digital Power Meter	SLCS-S-103	PF2010	2022/07/02	2022/07/01
AC Testing Power Source	SLCS-S-115	DPS1060	2022/07/02	2022/07/01
Total SpectralRadiant FluxStandard Lamp	SLCS-S-143	D908S	2022/07/02	2022/07/01
2m IntegratingSphere System	SLCS-S-038	SPR-3000	2022/07/02	2022/07/01
Digital Power Meter	SLCS-S-058	WT310	2022/07/02	2022/07/01
AC Testing Power Source	SLCS-S-111	APW-105N	2022/07/02	2022/07/01
Standard Lamp	SLCS-S-118	S11010017	2022/07/02	2022/07/01
Power Meter	SLCS-S-060	PF9800	2022/07/02	2022/07/01
Flicker Photometer	SLCS-S-119	FP-210	2022/07/02	2022/07/01

#### General remarks

The test results presented in this report relate only to the object tested.

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"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

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**Due to the luminous flux is less than 60lm, this is not classed as a light source under (EC)2019/2020 and (EC)2019/2015, and so is outside the scope.**

**A luminous flux < 60 or > 82000 lumen.**

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
<b>1</b>	<b>ENERGY EFFICIENCY REQUIREMENTS</b>		
1.1	From 1 September 2021, the declared power consumption of a light source $P_{on}$ shall not exceed the maximum allowed power $P_{onmax}$ (in W), defined as a function of the declared useful luminous flux $\Phi_{use}$ (in lm) and the declared colour rendering index CRI (-) as follows:		N/A
	$P_{on} < P_{onmax} = C \times (L + \Phi_{use} / (F \times \eta)) \times R$		N/A
	Correction factor(C): The value for correction factor(C) is specified in Table 2 of (EU) No 2019/2020, depending on the light source type		N/A
	End loss factor(L): The value for end loss factor is specified in Table 1 of (EU) No 2019/2020, depending on the light source type		N/A
	Useful luminous flux ( $\Phi_{use}$ ):	10.5lm	N/A
	Efficacy factor (F):		N/A
	1,00 for non-directional light sources (NDLC, using total flux)		N/A
	0,85 for directional light sources (DLS, using flux in a cone)		N/A
	Threshold efficacy( $\eta$ ): The value for threshold efficacy is specified in Table 1 of (EU) No 2019/2020, depending on the light source type		N/A
	CRI factor (R):		N/A
	0,65 for CRI $\leq 25$		N/A
	(CRI+80)/160 for CRI $> 25$ , rounded to two decimals		N/A
1.1	Standby power		N/A
	The standby power $P_{sb}$ of a light source shall not exceed 0,5 W.		N/A
	The networked standby power $P_{net}$ of a connected light source shall not exceed 0,5 W.		N/A
1.2	From 1 September 2021, the minimum energy efficiency requirements of a separate control gear operating at full-load as follows		N/A
	Declared output power of the control gear ( $P_{cg}$ ) or declared power of the light source ( $P_{ls}$ ) in W, as applicable		N/A
	Control gear for HL light sources all wattages $P_{cg}: 0,91$		N/A
	Control gear for FL light sources		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	$P_{ls} \ 5: \ 0,71$		N/A
	$5 < P_{ls} \ 100: \ P_{ls} / (2 \times \sqrt{P_{ls}/36} + 38/36 \times P_{ls} + 1)$		N/A
	$100 \ P_{ls}: \ 0,91$		N/A
	<u>Control gear for HID light sources</u>		N/A
	$P_{ls} \ 30: \ 0,78$		N/A
	$30 < P_{ls} \ 75: \ 0,85$		N/A
	$75 < P_{ls} \ 105: \ 0,87$		N/A
	$105 < P_{ls} \ 405: \ 0,90$		N/A
	$405 < P_{ls}: \ 0,92$		N/A
	<u>Control gear for LED or OLED light source</u> all wattages $P_{cg}: P_{cg}^{0,81} / (1,09 \times P_{cg}^{0,81} + 2,10)$		N/A
1.2.1	No-load power		N/A
	The no-load power $P_{no}$ of a separate control gear shall not exceed 0,5 W.		N/A
1.2.2	Standby power		N/A
	The standby power $P_{sb}$ of a separate control gear shall not exceed 0,5 W.		N/A
1.2.3	Networked standby power		N/A
	The networked standby power $P_{net}$ of a connected separate control gear shall not exceed 0,5 W.		N/A
<b>2</b>	<b>FUNCTIONALITY REQUIREMENTS</b>		N/A
<b>2.1</b>	<b>Functional requirements for light sources from 1 September 2021</b>		N/A
2.1.1	Colour rendering		P
	For HID with $u_{se} > 4$ km and for light sources intended for use in out door applications, industrial applications or other applications: $CRI < 80$		N/A
	Other light sources: $CRI \geq 80$		N/A
2.1.2	Displacement factor (DF, $\cos \phi$ ) at power input $P_{on}$ for LED and OLED MLS		N/A
	$P_{on} \ 5 \text{ W}: \text{No limit}$		N/A
	$5 \text{ W} < P_{on} \ 10 \text{ W}: \text{DF } 0,5$		N/A
	$10 \text{ W} < P_{on} \ 25 \text{ W}: \text{DF } 0,5$		N/A
	$25 \text{ W} < P_{on}: \text{DF } 0,9$		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
2.1.3	Lumen maintenance factor (for LED and OLED)		N/A
	<p>The lumen maintenance factor <math>X_{LMF}</math>% after endurance testing shall be at least <math>X_{LMF, MIN}</math>%, calculated as follows:</p> $X_{LMF, MIN} \% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$ <p>where <math>L_{70}</math> is the declared <math>L_{70}B_{50}</math> lifetime (in hours)</p>		N/A
	The calculated value for $X_{LMF, MIN}$ exceeds 96,0%, an $X_{LMF, MIN}$ value of 96,0 % shall be used		N/A
2.1.4	Survival factor after endurance testing (for LED and OLED)		N/A
	>0.9		N/A
2.1.5	Colour consistency for LED and OLED light sources		N/A
	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.		N/A
2.1.6	Flicker for LED and OLED MLS		N/A
	$P_{stLM} \leq 1,0$ at full-load		N/A
2.1.7	Stroboscopic effect for LED and LED MLS		N/A
	SVM $\leq 0,9$ at full-load (except for HID with $\Phi_{use} > 4$ klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI < 80)		N/A
	From 1 September 2024: SVM $\leq 0,4$ at full-load (except for light sources intended for use in outdoor applications, industrial applications, or other applications where lighting standards allow a CRI < 80)		N/A
3.(a)	Information to be displayed on the light source itself		N/A
	Useful luminous flux (lm)		N/A
	Correlated colour temperature (K)		N/A
	Beam angle (°) For directional light sources		N/A
3.(b)	Information to be visibly displayed on the packaging		N/A
3.(b)(1)	Light source placed on the market, not in a containing product		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	(a) Useful luminous flux (lm): - In a font at least twice as large as the display of the on-mode power (Pon) - Clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)		N/A
	(b) Correlated Colour Temperature, rounded to the nearest 100 K		N/A
	(c) Beam angle in degrees For directional light sources		N/A
	(d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 VAC 50 Hz, 12 V DC)		N/A
	(e) L70B50 lifetime for LED and OLED light sources, expressed in hours		N/A
	(f) on-mode power (Pon), expressed in W		N/A
	(g) standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging		N/A
	(h) networked standby power (Pnet) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging		N/A
	(i) Colour Rendering Index, rounded to the nearest integer		N/A
	(j) Clear indication to this effect, if CRI < 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI < 80.		N/A
	(k) Information on non-standard conditions (such as ambient temperature $T_a \neq 25^\circ \text{C}$ or specific thermal management is necessary)		N/A
	(l) a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods shall be provided on the manufacturer's website		N/A
	(m) if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place		N/A



(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	(n) if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste		N/A
3.(b)(2)	<b>Separate control gears</b> For separate control gear placed on the market as a stand-alone product, not as a part of a containing product		N/A
	(a) the maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID)		N/A
	(b) the type of light source(s) for which it is intended		N/A
	(c) the efficiency in full-load, expressed in percentage		N/A
	(d) the no-load power ( $P_{no}$ ), expressed in W and rounded to the second decimal, or the indication that the gear is not intended to operate in no-load mode. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites		N/A
	(e) the standby power ( $P_{sb}$ ), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in		N/A
	(f) the networked standby power ( $P_{net}$ ), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites		N/A
	(g) a warning if the control gear is not suitable for		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	dimming of light sources or can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods. In the latter cases, detailed information on the conditions in which the control gear can be used for dimming shall be provided on the manufacturer's or importer's website		
	(h) a QR-code redirecting to a free-access website of the manufacturer, importer or authorised representative, or the internet address for such a website, where full information on the control gear can be found		N/A
3.(c)	<b>Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative</b>		N/A
3.(c)(1)	Separate control gears For any separate control gear that is placed on the EU market, the following information shall be displayed on at least one free-access website:		N/A
	(a) the information specified in point 3(b)(2), except 3(b)(2)(h)		N/A
	(b) the outer dimensions in mm		N/A
	(c) the mass in grams of the control gear, without packaging, and without lighting control parts and non-lighting parts, if any and if they can be physically separated from the control gear		N/A
	(d) instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes		N/A
	(e) if the control gear can be used with dimmable light sources, a list of minimum characteristics that the light sources should have to be fully compatible with the control gear during dimming, and possibly a list of compatible dimmable light sources		N/A
	(f) recommendations on how to dispose of it at		N/A

## Appendix-Test Data Sheet

### **1、 Initial Lumen Measurement :**

Sample No.	Power Pon (W)	Disp. Factor	Luminous Flux $\Phi_{total}$ (lm)	Luminous Flux $\Phi_{use}$ (lm)	Efficacy (lm/W)	Beam angle (° )
1	5	N/A	10.54	10.54	N/A	N/A
2	5	N/A	10.54	10.54	N/A	N/A
3	5	N/A	10.50	10.50	N/A	N/A
4	5	N/A	10.54	10.54	N/A	N/A
5	5	N/A	10.52	10.52	N/A	N/A
6	5	N/A	10.53	10.53	N/A	N/A
7	5	N/A	10.50	10.50	N/A	N/A
8	5	N/A	10.50	10.50	N/A	N/A
9	5	N/A	10.59	10.59	N/A	N/A
10	5	N/A	10.51	10.51	N/A	N/A
Avg.	5	N/A	10.52	10.52	N/A	N/A

## 2、Color Performance:

Color Temp (CCT)	Color rendering (Ra)	R9	SDCM	x	y

### **3、Different Mode Power 、 Flicker、 Stroboscopic Effect and Lumen Maintenance Test:**

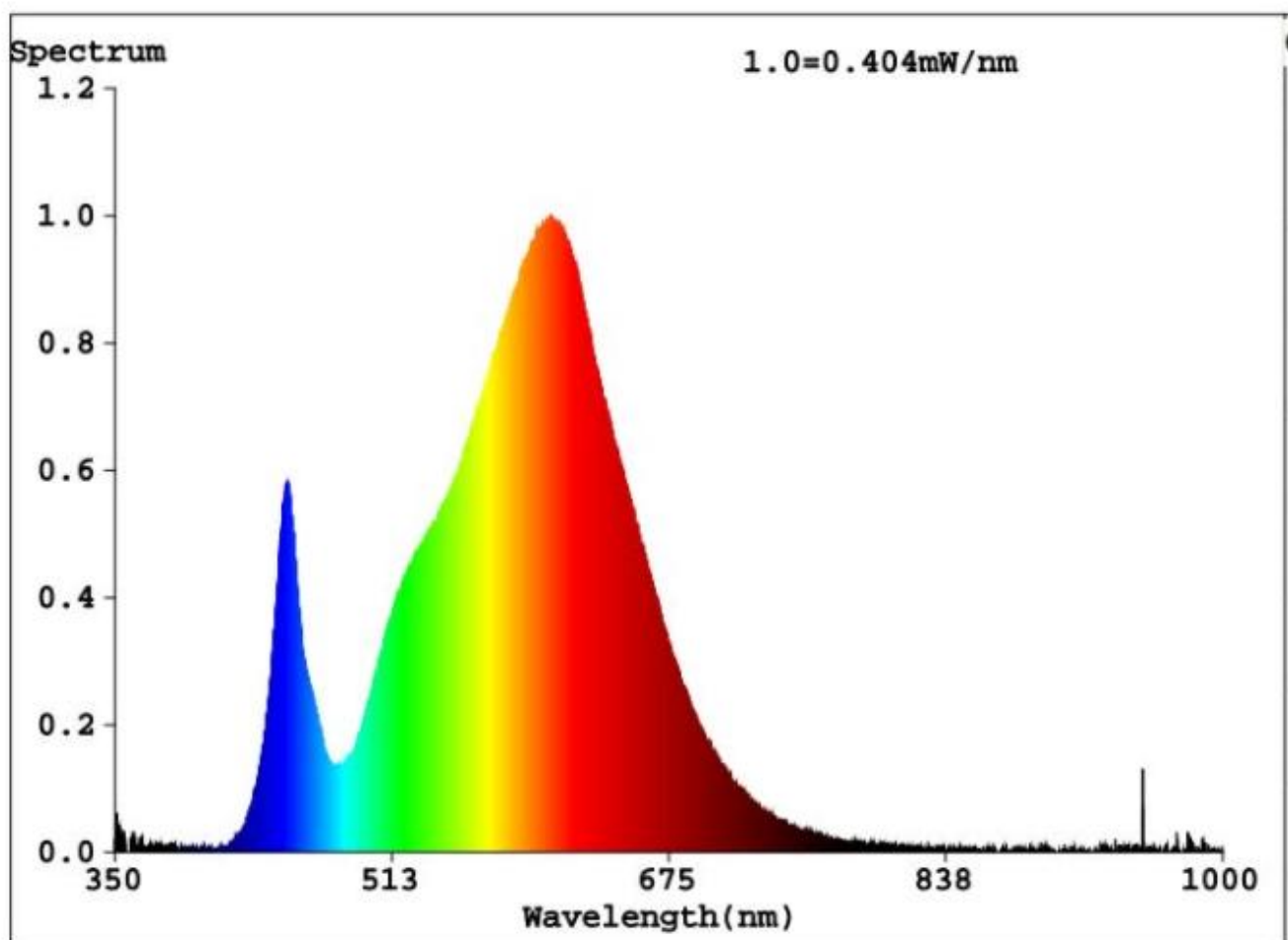
Sample No.	No-Load Power P <sub>no</sub>	Standby Power P <sub>sb</sub>	Network Sb. Power P <sub>net</sub>	Flicker P <sub>stLM</sub>	Stroboscopic Effect SVM	Total Luminous flux (lm) After 3600h	Lumen Maintenance at 3600h (%)	Survival factor at 3600h
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**ATTACHMENT 1(S) of Energy efficiency classes**

<b>Energy efficiency classes</b>			
Standard	Clause	Model No.	Verdict
(EU) 2019/2015	Energy class	LH87	N/A
Conditions	-Test conditions: -ambition: 25°C/65%R.H. -Test voltage:AC230V50Hz		
$\Phi_{use}$	10.5 lm (Declared)		
$P_{on}$	$P_{on} = 5W$ (Declared)		
$F_{TM}$			
$\eta_{TM}$			
Technical requirements		Test result	
$\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM} (lm/W).$	Energy efficiency class	Total mains efficacy $\eta_{TM}$ (lm/W)	--
	A	$210 \leq \eta_{TM}$	N
	B	$185 \leq \eta_{TM} < 210$	N
	C	$160 \leq \eta_{TM} < 185$	N
	D	$135 \leq \eta_{TM} < 160$	N
	E	$110 \leq \eta_{TM} < 135$	N
	F	$85 \leq \eta_{TM} < 110$	N
	G	$\eta_{TM} < 85$	N
Factors $F_{TM}$ by light source type			
Light source type		Factor $F_{TM}$	--
Non-directional (NDLS) operating on mains (MLS)		1.000	N
Non-directional (NDLS) not operating on mains (NMLS)		0.926	N
Directional (DLS) operating on mains (MLS)		1.176	N
Directional (DLS) not operating on mains (NMLS)		1.089	N

**ATTACHMENT 2(S) of Spectral power distribution**

Spectral power distribution

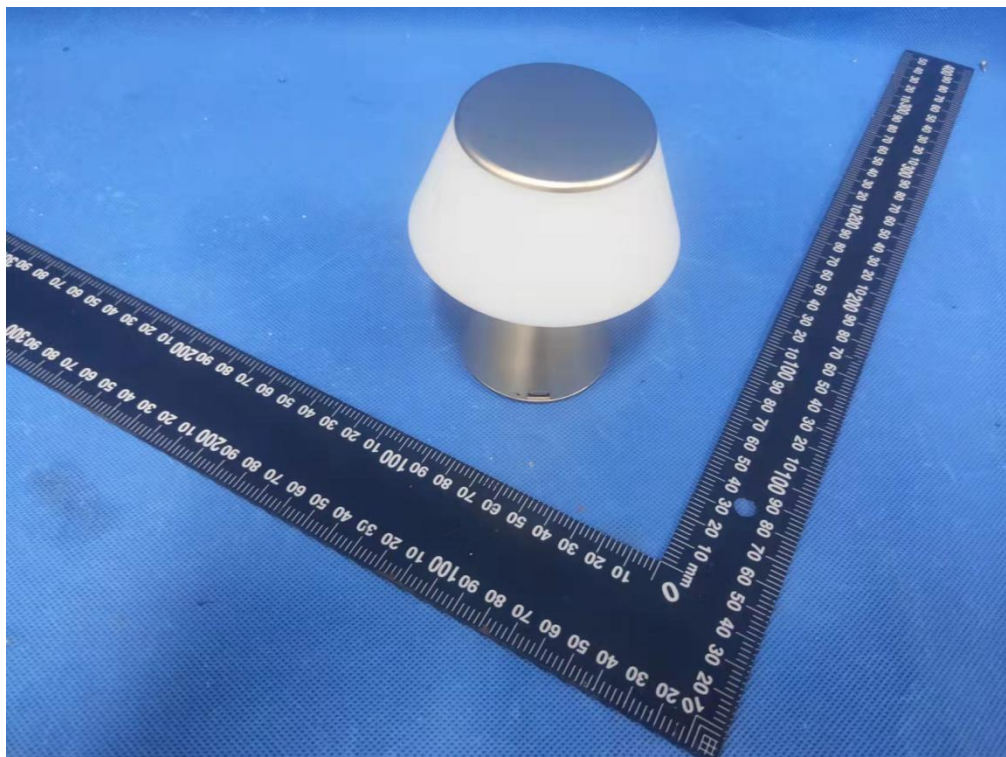


**ATTACHMENT 3(S) of Photos**

**Photo 1:**



**Photo 2:**



\*\*\*\*\* END OF REPORT \*\*\*\*\*