TEST REPORT

REPORT NO.:CTNT210914004

Product name: LED bulb

Model No.: LE-GL-5W-G（G45）

Test standard: (EU) 2019/2015&(EU) 2019/2020

Test Date: Sep 18.2021

Shenzhen CTNT Testing Technology Co., Ltd.

TEST REPORT

COMMISSION DELEGATED REGULATION (EU) 2019/2015of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources

COMMISSION REGULATION (EU) 2019/2020of 1 October 2019 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

Report Number.....:	CTNT210914004
Date of issue.....:	September 27, 2021
Laboratory Name.....:	Shenzhen CTNT Testing Technology Co., Ltd
Testing location/ address.....:	1A106 No. 109 of Lijia Road, Henggang Community, Henggang Street, Longgang District, Shenzhen, China
Tested by(Test Engineer) .....:	Rock Zhou
Reviewed By(Supervisor).....:	Adam Xie
Approved by(Chief Engineer).....:	Flight Lee

Applicant's name.....:	-Fuzhou Reacheight Imp & Exp Co., Ltd.
Address.....:	-No. 6, Hou Xiang Lu, Cang Shan District,Fuzhou
Manufacturer name.....:	-Fuzhou Reacheight Imp & Exp Co., Ltd.
Address.....:	-No. 6, Hou Xiang Lu, Cang Shan District,Fuzhou
Factory name.....:	-Fuzhou Reacheight Imp & Exp Co., Ltd.
Address.....:	-No. 6, Hou Xiang Lu, Cang Shan District,Fuzhou

Test specification:	
Standard..... :	COMMISSION DELEGATED REGULATION (EU) 2019/2015of 11March 2019&COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019
Date of receipt of test item.....:	Sep18, 2021
Date(s) of performance of teses....:	Sep18, 2021
Test item description.....:	-LED bulb
Trade Mark.....:	-N/A
Manufacturer.....:	-Fuzhou Reacheight Imp & Exp Co., Ltd.
Model/Type reference.....:	-LE-GL-5W-G（G45）
Ratings.....:	-AC85-265V
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)
Test item particulars:	
- mains light source (MLS)	☒
- non-mains light source (NMLS)	☐
Light Source Type:	
- directional light source (DLS)	☐
- non-directional light source (NDLS)	☒
Control gear:	
- Integrated	☒
- External	☐
Use of light source:	
- Indoor	☒
- Outdoor	☐
- Industry	☐
Dimmable light source:	☐
Declared data for light source:	
Rated Voltage/Frequency……:	85-265V 50/60Hz
Rated lamp power ……..……..…(W):	5
Rated useful luminous flux…..…..……..…(lm):	500lm
Rated Ra.....:	>80

Peak luminous intensity…….. (cd):	N/A
Rated beam angle ……..……...(°):	>120°
Rated CCT ……..……...……..(K):	2700~7000K
Rated life time ……..……...…..(h):	>50000

Attachments:

-Test data diagram

- Photo documentation

Summary of testing:

According to COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019. The energy efficiency class of this product is F.

The LED Lamp meets the requirements of table 4 according to the implementation measure No. EU 2019/2020.

These tests were conducted by test lab that fulfils the requirements of standard ISO/IEC 17025.

Generalremarks：

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 testinglaboratory.

"(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.

Remark:

Version……...:	-1.0
Report No.……...…...:	- CTNT210914004
Revision Data……:	- /
Summary……...:	-Original Version

(EU) No 2019/2015			
Clause	Requirement - Test	Result - Remark	Verdict

Annex Ⅱ	**Energy efficiency classes and calculation method**			**P**
	The energy efficiency class of light sources shall be determined as set out in Table 1, on the basis of the total mains efficacy η_{TM}, which is calculated by dividing the declared useful luminous flux Φ_{use} (expressed in lm) by the declared on-mode power consumption P_{on} (expressed in W) and multiplying by the applicable factor F_{TM} of Table 2, as follows: $\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM}$ (lm/W).		η_{TM}: (500/5)x1.000=100(lm/W)	P
Table 1	**Energy efficiency classes of light sources**			P
	Energy efficiency class	Total mains efficacy η_{TM} (lm/W)		P
	A	210 $\leqslant \eta_{TM}$		N/A
	B	185 $\leqslant \eta_{TM} <$ 210		N/A
	C	160 $\leqslant \eta_{TM} <$ 185		N/A
	D	135 $\leqslant \eta_{TM} <$ 160		N/A
	E	110 $\leqslant \eta_{TM} <$ 135		N/A
	F	85 $\leqslant \eta_{TM} <$ 110	η_{TM} :100 lm/W Energy efficiency class: F	P
	G	$\eta_{TM} <$ 85		N/A
Table 2	**Factors F_{TM} by light source type**			P
	Light source type	Factor F_{TM}		P
	Non-directional (NDLS) operating on mains (MLS)	1,000		P
	Non-directional (NDLS) not operating on mains (NMLS)	0,926		N/A
	Directional (DLS) operating on mains (MLS)	1,176		N/A
	Directional (DLS) not operating on mains (NMLS)	1,089		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict

0	**Measurement methods**			**P**
	Recognized state of art measurement methods incl. the one published in the Official Journal taking into account the measurement methods of (EU) 2019/2020			P
	Sample			P
	Number of sample used for test ……:	10 pcs		P
Annex Ⅱ	**Ecodesign requirements**			P
1	**Energy efficiency requirements**			
a	Light source P_{on}			P
	Evaluation : $P \leq P_{onmax}$	P: 5W P_{onmax}: 6.12W		P
	Limit definition:			P
	$P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R$			P
	The values for threshold efficacy (η in lm/W) and end loss factor (L in W) are specified in Table 1, depending on the light source type.	η=120.0 lm/W L =1.5 W		P
Table 1	**Threshold efficacy (η) and end loss factor (L)**			P
	Light source description	**η [lm/W]**	**L [W]**	
	LFL T5-HE	98.8	1.9	
	LFL T5-HO, 4 000 ≤ Φ ≤ 5 000 lm	83.0	1.9	
	LFL T5-HO, other lm output	79.0	1.9	
	FL T5 circular	79.0	1.9	
	FL T8 (including FL T8 U-shaped)	89.7	4.5	
	From 1 September 2023, for FL T8 of 2-, 4- and 5-foot	120.0	1.5	
	Magnetic induction light source, any length/flux	70.2	2.3	
	CFLni	70.2	2.3	
	FL T9 circular	71.5	6.2	
	HPS single-ended	88.0	50.0	
	HPS double-ended	78.0	47.7	
	MH ≤ 405 W single-ended	84.5	7.7	
	MH > 405 W single-ended	79.3	12.3	
	MH ceramic double-ended	84.5	7.7	
	MH quartz double-ended	79.3	12.3	
	Organic light-emitting diode (OLED)	65.0	1.5	
	Until 1 September 2023: HL G9, G4 and GY6.35	19.5	7.7	
	HL R7s ≤ 2 700 lm	26.0	13.0	
	Other light sources in scope not mentioned above	120.0	1.5(*)	
	(*) For connected light sources (CLS) a factor L = 2,0 shall be applied			

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict

	Basic values for correction factor (C) depending on light source type, and additions to C for special light source features are specified in Table 2.		C=1.08	
Table 2	**Correction factor C depending on light source characteristics**			
	Light source type		**Basic C value**	
	Non-directional (NDLS) not operating on mains (NMLS)		1.00	P
	Non-directional (NDLS) operating on mains (MLS)		1.08	
	Directional (DLS) not operating on mains (NMLS)		1.15	
	Directional (DLS) operating on mains (MLS)		1.23	
	Special light source feature		**Bonus on C**	
	FL or HID with CCT > 5 000 K		+0.10	
	FL with CRI > 90		0.10	
	HID with second envelope		+0.10	
	MH NDLS > 405 W with non-clear envelope		+0.10	
	DLS with anti-glare shield		+0.20	
	Colour-tuneable light source (CTLS)		+0.10	
	High luminance light sources (HLLS)		+0,0058 • Luminance HLLS - 0,0167	
	Efficacy factor (F) :			P
	1,00 for non-directional light sources (NDLS, using total flux)			P
	0,85 for directional light sources (DLS, using flux in a cone)			N/A
	CRI factor (R):			P
	0,65 for CRI ≤ 25			N/A
	(CRI+80)/160 for CRI > 25		R=1.0	P
	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
	The allowable values for P_{sb} and P_{net} shall not be added together.			N/A
	Minimum energy efficiency for separate control gear at full-load			N/A
b	Minimum energy efficiency for separate control gear at full-load			N/A
	Declared output power of the control gear (P_{cg}) or declared power of the light source (P_{ls}) in W, as applicable	Minimum energy efficiency		N/A
	Control gear for HL light sources:			N/A
	all wattages P_{cg}	0.91		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict

	Control gear for FL light sources:			N/A
	$P_{ls} \leq 5$	0.71		N/A
	$5 < P_{ls} \leq 100$	$Pls/(2 \times \sqrt{(P_{ls}/36)} + 38/36 \times P_{ls}+1)$		N/A
	$100 < P_{ls}$	0.91		N/A
	Control gear for HID light sources:			N/A
	$P_{ls} \leq 30$	0,78		N/A
	$30 < P_{ls} \leq 75$	0.85		N/A
	$75 < P_{ls} \leq 105$	0.87		N/A
	$105 < P_{ls} \leq 405$	0.90		N/A
	$405 < P_{ls}$	0.92		N/A
	Control gear for LED or OLED light sources:			N/A
	all wattages P_{cg}	$P_{cg}0,81/(1,09 \times P_{cg}0,81 + 2,10)$		N/A
	The no-load power P_{no} of a separate control gear shall not exceed 0,5 W. This applies only to separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for no-load mode.			N/A
	The standby power P_{sb} of a separate control gear shall not exceed 0,5 W.			N/A
	The networked standby power P_{net} of a connected separate control gear shall not exceed 0,5 W. The allowable values for P_{sb} and P_{net} shall not be added together.			N/A
2	**Functional requirements for light sources**			P
	Colour rendering			P
	CRI ≥ 80		81.68 (for 3000K).	P
	except for HID with Φ_{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, when a clear indication to this effect is shown on the light source packag-ing and in all relevant printed and electronic documentation			N/A
	Displacement factor (DF, cos φ1) at power input P_{on} for LED and OLED MLS			N/A
	$P_{on} \leq 5$ W:No limit			N/A
	5 W < $P_{on} \leq$ 10 W:DF ≥ 0,5			P
	10 W < $P_{on} \leq$ 25 W:DF ≥ 0,7			N/A
	25 W < P_{on}:DF ≥ 0,9			N/A
	Lumen maintenance factor (for LED and OLED)			P
	$X_{LMF}\% \geq X_{LMF,MIN}\%$ $X_{LMF,MIN}\% = 100 \times e^{\wedge(3000 \times \ln(0.7)) /L70}$		$X_{LMF,MIN}\%$ =96.00% (L70B50=50000h)	P
	Survival factor (for LED and OLED)			P
	SF ≥ 90%			P
	Colour consistency for LED and OLED light sources			P
	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.		4.66 (for 3000K)	P

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	Flicker for LED and OLED MLS		N/A
	P_{st} LM ≤ 1,0 at full-load		P
	Stroboscopic effect for LED and OLED MLS		N/A
	SVM ≤ 0,4 at full-load		P
	except for HID with Φ_{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
3	**Information requirements**		N/A
(a)	Information to be displayed on the light source itself		N/A
	For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the value and physical unit of the useful luminous flux (lm) and correlated colourtemperature (K) shall be displayed in a legible font on the surface if, after the inclu-sion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.		N/A
	For directional light sources, the beam angle (°) shall also be indicated.		N/A
	If there is room for only two values, the useful luminous flux and the correlated colour temperature shall be dis-played. If there is room for only one value, the useful luminous flux shall be displayed.		N/A
(b)	Information to be visibly displayed on the packaging		N/A
(1)	Light source placed on the market, not in a containing productIf a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and promi-nently displayed on the packaging:		N/A
(a)	the useful luminous flux (Φ_{use}) in a font at least twice as large as the display of the on-mode power (P_{on}), 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)	the correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;		N/A
(c)	the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;		N/A
(d)	electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);		N/A
(e)	the $L_{70}B_{50}$ lifetime for LED and OLED light sources, expressed in hours;		N/A
(f)	the on-mode power (Pon), expressed in W;		N/A
(g)	the 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)	the 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

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
(i)	the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;		N/A
(j)	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, a clear indication to this effect. For HID light sources with useful luminous flux > 4000 lm,this indication is not mandatory;		N/A
(k)	if the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta ≠ 25 °C or specific thermal management is necessary): information on those conditions;		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 meth-ods 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
(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
(2)	Separate control gears: If a separate control gear is placed on the market as a stand-alone product and not as a part of a containing product, in a packaging containing information to be visibly displayed to potential buyers, prior to their pur-chase, the following information shall be clearly and prominently displayed on the packaging:		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 (Psb), 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
(f)	where applicable, 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

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
(g)	a warning if the control gear is not suitable for 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;		N/A
(h)	a QR-code redirecting to a free-access website of the manufacturer, importer or authorisedrepresentative, or the internet address for such a website, where full information on the control gear can be found.		N/A
(c)	Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative		N/A
(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-light-ing 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 the end of its life in line with Directive 2012/19/EU.		N/A
(d)	Technical documentation		N/A
(1)	Separate control gears: The information specified in point 3(c)(2) of this Annex shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC.		N/A
(e)	Information for products specified in point 3 of Annex II		N/A
	For the light sources and separate control gears specified in point 3 of Annex III the intended purpose shall be stated in the technical documentation for compliance assessment as per Article 5 of this Regulation and on all forms of packaging, product information and advertisement, together with an explicit indication that the light source orseparate control gear is not intended for use in other applications.		N/A
	The technical documentation file drawn up for the purposes of conformity assessment, in accordance with Article 5 of this Regulation shall list the technical parameters that make the product design specific to qualify for the exemption.		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	In particular for light sources indicated in point 3(p) of Annex III it shall be stated: 'This light source is only for use by photo sensitive patients. Use of this light source will lead to increased energy cost compared to an equivalent more energy efficient product.'		N/A

Table 1Useful luminous flux Φuse(lm)										
Model:	LE-GL-5W-G（G45）		Voltage (V):		230		Frequency(Hz):		50	
TestNo.	1	2	3	4	5	6	7	8	9	10
Φuse Test Data for3000K	464.05	464.41	464.31	464.16	465.40	465.57	466.23	466.71	466.55	466.81
Average Test Data for 3000K	465.42									

Table 2 On-mode power consumption Pon(W)										
Model:	LE-GL-5W-G（G45）		Voltage (V):		230		Frequency(Hz):		50	
TestNo.	1	2	3	4	5	6	7	8	9	10
Pon(W) Test Data for 3000K	5.23	5.14	5.21	5.16	5.23	5.17	5.22	5.19	5.25	5.19
Average Test Data for 3000K	5.199									

Table 3-- Minimum energy efficiency for separate control gear at full-load test data				
LED Driver Model:	-			
Test Voltage (V)/Frequency(Hz):	-			
Measured Value				
Sample No	no-load power Pno(W)	standby power Psb(W)	networked standby power Pnet(W)	Minimum energy efficiency at full-load(%)
S01				
S02				
S03				
Average	--	--	--	--
Limit	≤0.5W	≤0.5W	≤0.5W	≥?
Verdict	N/A	N/A	N/A	N/A
Remark： The control gear (Pcg) is LED or OLED control gear Declared output power. Limit requirement: Minimum energy efficiency at full-load limit ≥ Pcg0,81/(1,09 × Pcg0,81 + 2,10) =? The no-load power Pno of a separate control gear shall not exceed 0,5 W.s				

Table 4-- Functional requirements for light source test data (Initial)

Model:	LE-GL-5W-G（G45）	Voltage (V):	230	Frequency (Hz):	50

Measured Value of 3000K

Sample No	P (W)	DF	Φtotal (lm)	Φuse(lm)	CCT (K)	Ra	Color Consistency	P_{st} LM	SVM
1	5.19	0.977	464.05	464.05	3006.9	81.756	4.5	0.12	0.05
2	5.25	0.976	464.41	464.41	3013.6	81.622	4.6	0.12	0.05
3	5.19	0.977	464.31	464.31	3019.2	81.555	4.6	0.11	0.06
4	5.22	0.977	464.16	464.16	3013.7	81.649	4.6	0.11	0.07
5	5.17	0.977	465.40	465.40	3015.6	81.594	4.7	0.11	0.05
6	5.23	0.977	465.57	465.57	3017.2	81.565	4.6	0.12	0.06
7	5.16	0.976	466.23	466.23	3022.1	82.031	4.7	0.11	0.05
8	5.21	0.975	466.71	466.71	3015.3	81.677	4.7	0.12	0.05
9	5.14	0.977	466.55	466.55	3014.7	81.721	4.8	0.12	0.05
10	5.23	0.977	466.81	466.81	3018.9	81.659	4.8	0.12	0.06
Average	5.199	0.9766	465.42	465.42	3015.72	81.68	4.66	0.116	0.055
Limit	--	--	≥ 60	--	--	--	＜6	≤ 1.0	≤ 0.4
Verdict	P	P	P	P	P	P	P	P	P

Supplementary information:
In the harmonic mode of the power meter, the phase difference between the voltage and the fundamental wave of the current is obtained, and then the phase difference cosine is processed to obtain DF.

Table 5-- Functional requirements for light source test data (After 3600h endurance testing)

Model:	LE-GL-5W-G（G45）	Voltage (V):	230	Frequency (Hz):	50

Measured Value of 3000K

SampleNo	Survival factor	Øtotal (lm)	Lumen maintenance factor （%）
1	0	458.77	98.6
2		459.33	98.7
3		459.16	98.7
4		457.89	98.4
5		458.32	98.5
6		458.10	98.4
7		459.3	98.7
8		457.67	98.3
9		458.96	98.6
10		458.43	98.6
Average	100%	458.59	98.5
Limit	≥ 90%	--	⩾96.00%
Verdict	P	--	P

Test data diagram

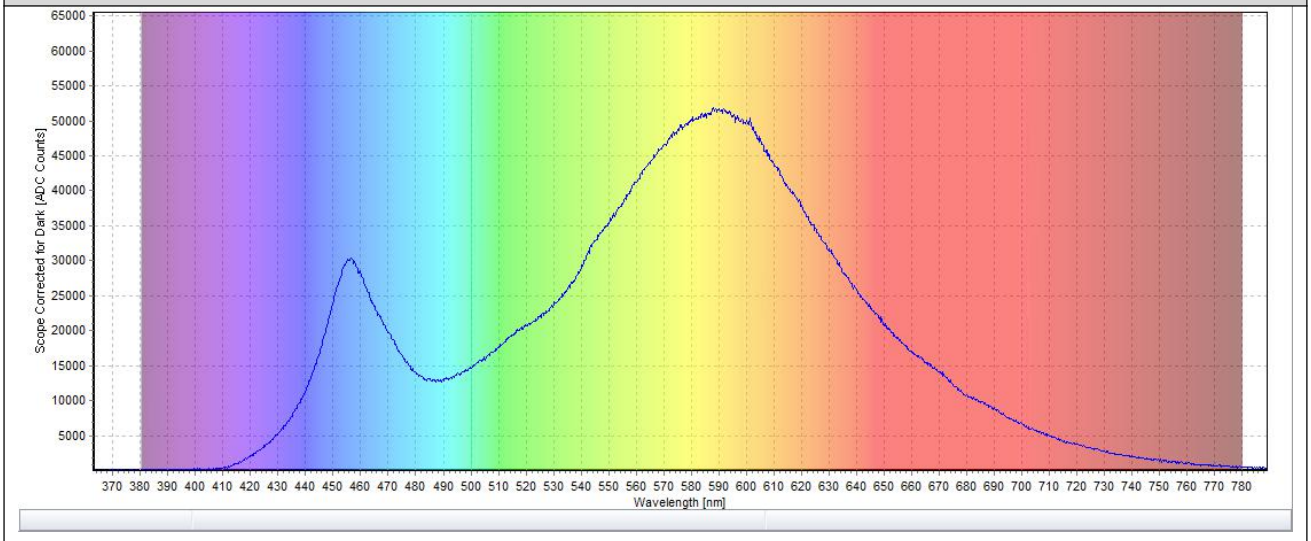

Photo 1: Spectrum

标准	ERP
色温	3000K

序号	x	y	色容差
1	0.4318	0.3939	4.5
2	0.4316	0.3937	4.6
3	0.4315	0.3937	4.6
4	0.4315	0.3937	4.6
5	0.4312	0.3936	4.7
6	0.4314	0.3937	4.6
7	0.4313	0.3937	4.7
8	0.4312	0.3935	4.7
9	0.4311	0.3936	4.8
10	0.4311	0.3936	4.8

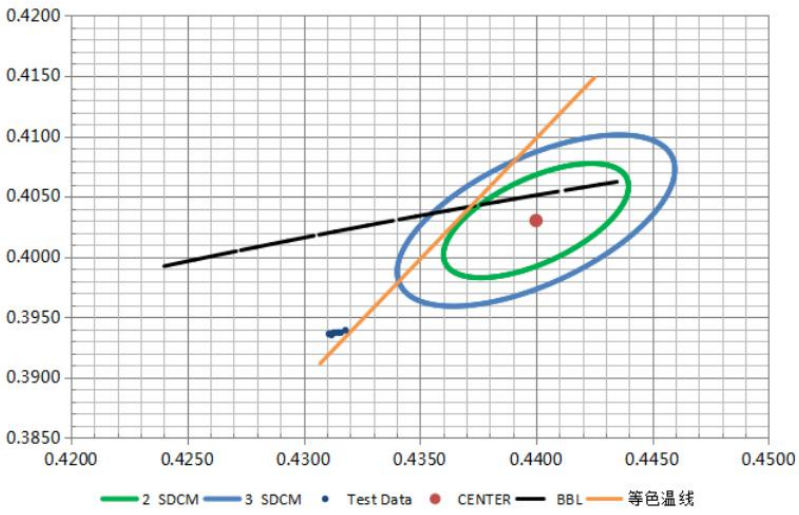

Photo 2: SDCM(3000K)

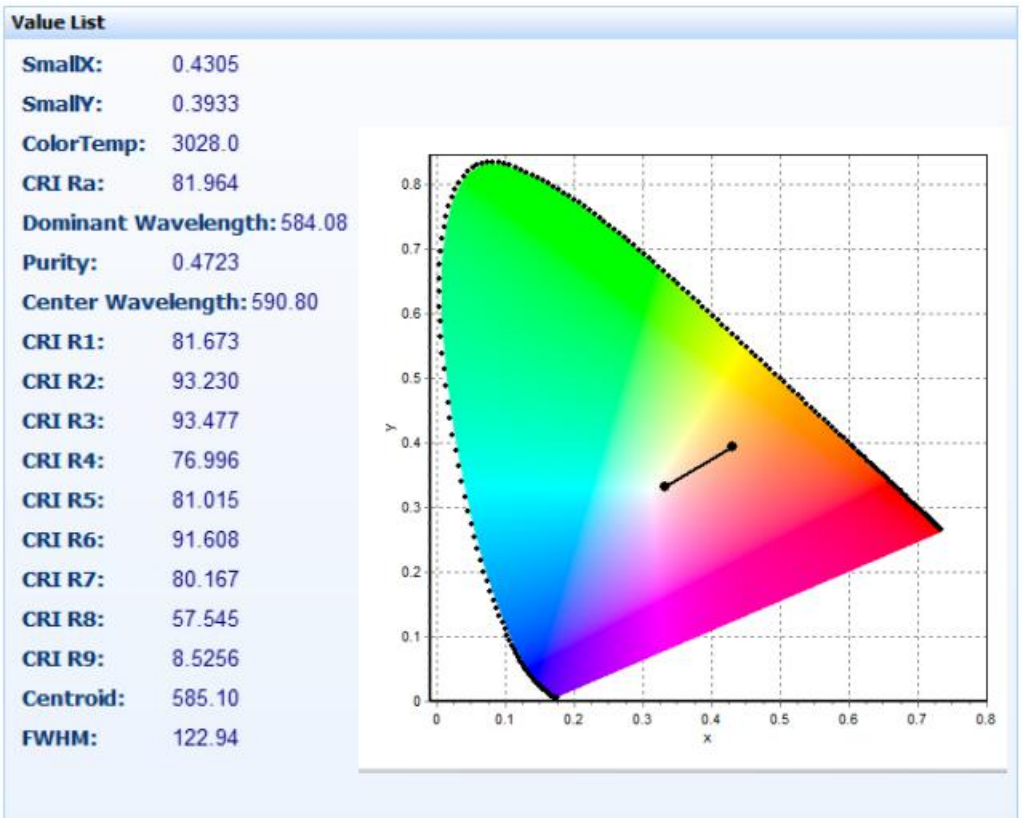

Photo 3: Chromaticity diagram and parameter

Photo Document

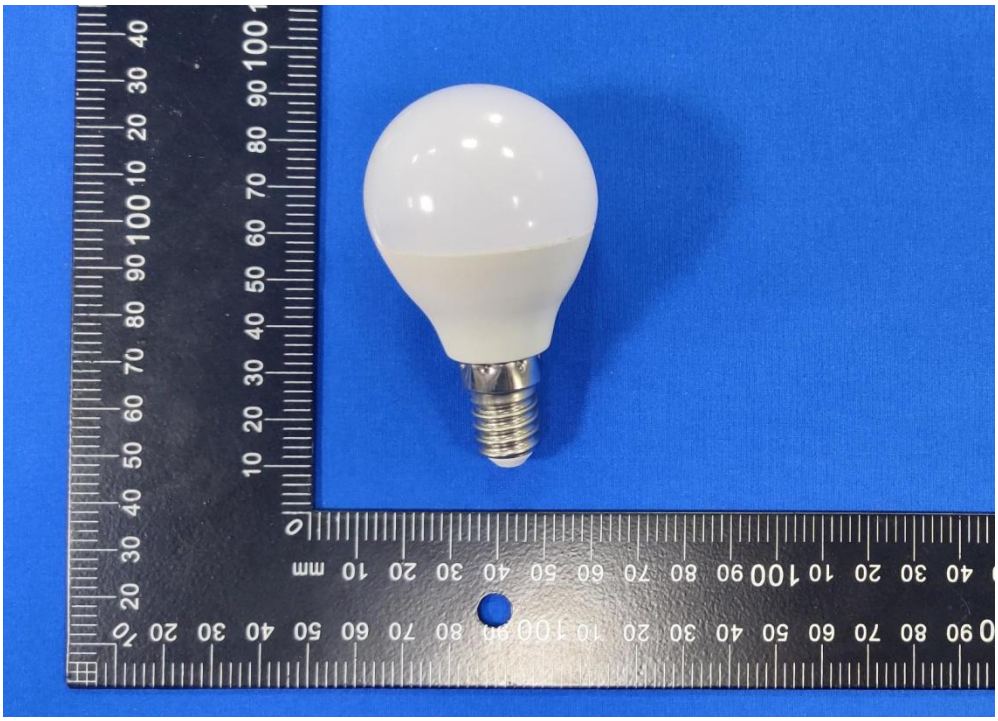

Photo 1: Exterior

---END OF REPORT--