TEST REPORT

Ecodesign Requirements for light sources and separate control gears

Report Reference No.....:	6104176.50P
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Approved by (name + signature).....:	Bingshan Wang
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Applicant's name.....:	Xiamen Yankon Energetic Lighting Co., Ltd.
Address .....:	No. 88 Houxiang Road, Haicang District, Xiamen, China
Test specification:	
Implementing Measure of Energy-related Product .....:	COMMISSION REGULATION (EU) 2019/2020 of 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 and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012 COMMISSION REGULATION (EU) 2021/341 of 23 February 2021 amending Regulations (EU) 2019/424, (EU) 2019/1781, (EU) 2019/2019, (EU) 2019/2020, (EU) 2019/2021, (EU) 2019/2022, (EU) 2019/2023 and (EU) 2019/2024 with regard to ecodesign requirements for servers and data storage products, electric motors and variable speed drives, refrigerating appliances, light sources and separate control gears, electronic displays, household dishwashers, household washing machines and household washer-dryers and refrigerating appliances with a direct sales function
Non-standard test method……..:	N/A
Test Report Form No.....:	(EU) 2019/2020 of 1 October 2019-V2.2
Test procedure .....:	☐ Partial test ☐ Type test ☒ Verification test

Test item description:	
Trade Mark .....:	
Manufacturer .....:	Xiamen Yankon Energetic Lighting Co., Ltd. No. 88 Houxiang Road, Haicang District, Xiamen, China
Model/Type reference.....:	See appendix IX
EUT type.....:	☒ light sources ☐ control gears
Product information .....:	See appendix IV
Summary of testing:	
Pass All the test results meet the (EU) 2019/2020 requirements.	

Standard Reference:

☒EU 2019/2015	☐EN 61000-3-2:2019
☒EN 13032-1: 2004+ A1:2012	☐EN60188:2001 (incl. all amendments up to A11:2019)
☒prEN 13032-4	☒prEN 60969:2017
☒CIE 13.3:1995	☐EN 62612:2013 (incl. all amendments up to A2:2018)
☒CIE 015:2018	☐EN 62717:2017 (incl. all amendments up to A2:2019)
☒CIE 018:2019	☒EN 62722-1:2016
☒CIE 84:1989	☒EN 62722-2-1:2016
☒CIE 97:2005	☒ EN 60081: 1998 (incl. all amendments up to A11:2018)
☐CIE 154:2003	☒ ANSI/UL 1598-2008
☐ EN 12464-1	☒ EN 60061-1: 1993 (incl. all amendments up to A59:2019)
☐ EN 12464-2	☐ EN 62471: 2008
☐ EN 62035: 2014	☒ EN 60901: 1996 (incl. all amendments up to A6:2017)
☐ EN 61167: 2018	☐ EN 60662: 2012 (incl. all amendments up to A11:2019)
☐ EN 62442-1: 2018	
☐ EN 60598-1: 2015	

Possible test case verdicts:

- test case does not apply to the test object.....: N/A
- test object does meet the requirement of the regulation .....: P (Pass)
- test object does not meet the requirement of the regulation .....: F (Fail)

Testing:

Test on .....: ☒DEKRA ☐Manufacturer

Date of receipt of test item .....: 2021-06-16

Date (s) of performance of tests .....: 2021-06-16 to 2021-12-27

The test results shown in this report relate only to the tests performed according to the test program. The test object has not been submitted to a full test program.

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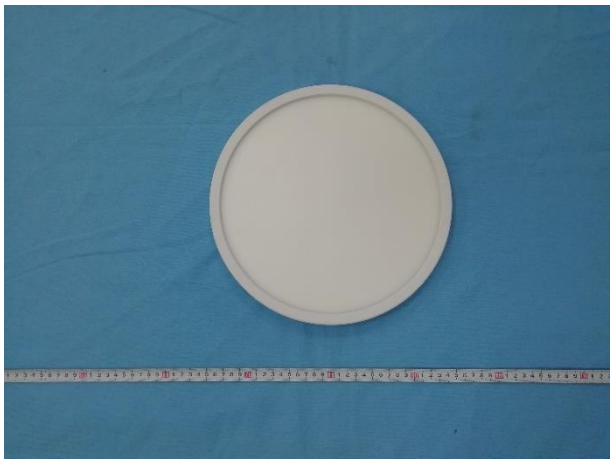
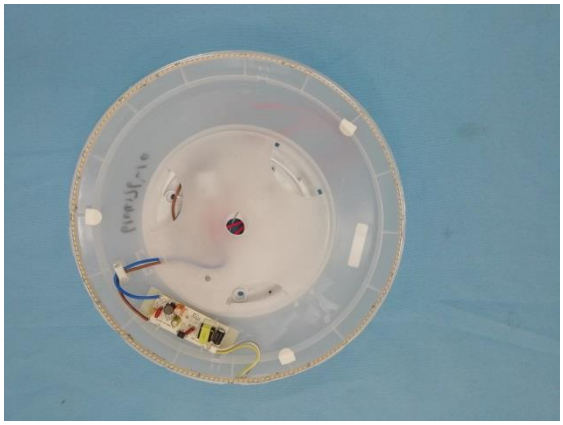
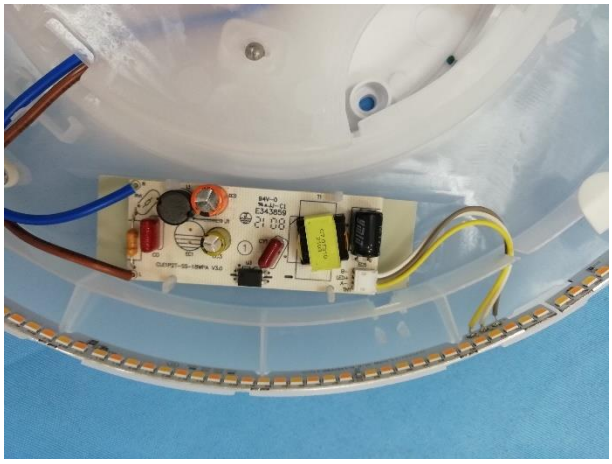
Number of the tested samples for each items			
Test	☐ Partial test	☐ Type Test	☒ Verification test
Full-load on-mode power P_{on}	10	10	10
Displacement factor	10	10	10
Useful luminous flux	10	10	10
No-load power P_{no}	10	10	10
Standby power P_{sb}	10	10	10
Networked standby power P_{net}	10	10	10
CRI	10	10	10
stroboscopic effect	10	10	10
Flicker	10	10	10
Colour consistency	10	10	10
Beam angle	10	10	10
Control gear efficiency	3	3	3
Lumen maintenance factor	--	10	10
Survival factor	--	10	10
Excitation purity	10	10	10
Correlated colour temperature	10	10	10
product information requirements	--	1	1
Standard / Regulation	(EU) 2019/2020 of 1 October		

Picture of test object:



P2T3SS30WT

Led module 	**Led driver** 
Led driver **N/A**	
Copy of Package: **For example: N/A**	

General remarks:

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

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 testing laboratory.

- Appendix: Test Results

The information needs to be showed on free-access websites should based on this report.

General product information :

There are nine models covered in this report: P2T3SS30WT, P2T3SS30BK,P2T3SS30WD,CLE1P2T-3SS-D3014, CLE1P2TWC-3SS-D3014,CLE1P2T-3SS-D3014 BK,CLE1P2T-3SS-D3014 WD,CLE1P2TWC-3SS-D3014 WD,CLE1RAT-3SS-D3014 BN,CLE1P2TWC-3SS-D3014 BK,CLE1RATWC-3SS-D3014 CH.

According to the declaration from applicant, these models are almost the same, except the LED light source outer ring different construction and model No. Details as shown below table:

Testing model	Additional model no.	Difference
P2T3SS30WT	P2T3SS30BK	black outer ring
	P2T3SS30WD	wood outer ring
	CLE1P2T-3SS-D3014	white outer ring
	CLE1P2TWC-3SS-D3014	white outer ring
	CLE1P2T-3SS-D3014 BK	black outer ring
	CLE1P2T-3SS-D3014 WD	wood outer ring
	CLE1P2TWC-3SS-D3014 WD	wood outer ring
	CLE1RAT-3SS-D3014 BN	Brushed Nickel color outer ring
	CLE1P2TWC-3SS-D3014 BK	black outer ring
	CLE1RATWC-3SS-D3014 CH	Chrome outer ring

After review the model P2T3SS30WT with white outer ring was selected for all items measurement, and the corresponding data is representative for other models.

There is a switch-dimming function in the product with three light styles-1600lm(4000K) / 1500lm(3000K) / 290lm(3000K). When on default state is max lumen (i.e. default model 1600lm luminous flux, CCT 4000K), it by switching can change to 1500lm luminous flux, CCT 3000K and it by switching again can change to 290lm luminous flux, CCT 3000K,30% rated power. After review the life test is tested at 100%luminous flux which represents most unfavorable condition.

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(EU) 2019/2020 of 1 October				
Clause	Test Item	Requirements		Verdict
Annex I	Definitions applicable for the Annexes			
3	Directional light source (DLS): light source having at least 80 % of total luminous flux within a solid angle of π sr (%)	Checked on Sample 1#, Test Result:		N/A
4	Non-Directional light source(NDLS): light source is not a directional light source	74,9 %		P
Annex II	Ecodesign requirements **(Test results see appendix if applicable)**			
	For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonized standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art.			
1	Energy efficiency requirements			P
(a)	From 1 September 2021, the declared power consumption of a light source $\mathbf{P}_{on}$ shall not exceed the maximum allowed power $\mathbf{P}_{onmax}$ (in W), defined as a function of the declared useful luminous flux Φuse (in lm) and the declared colour rendering index CRI (-) as follows:			P
	$\mathbf{P}_{onmax}=\mathbf{C} \times (\mathbf{L} + \mathbf{\Phi}_{use}/(\mathbf{F} \times \eta)) \times R$	$\mathbf{P}_{onmax}$=16,02W		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.			
	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.			
	Efficacy factor (**F**) is:			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**) is:			P
	0,65 for CRI ≤ 25			N/A
	(CRI+80)/160 for CRI > 25, rounded to two decimals			P
	Table 1 — Threshold efficacy (η) and end loss factor (L)			
	Light source description	η (lm/W)	**L**(W)	
	LFL T5-HE	98,8	1,9	N/A
	LFL T5-HO, 4000≤Φ≤5000 lm	83,0	1,9	N/A
	LFL T5-HO, other lm output	79,0	1,9	N/A
	FL T5 circular	79,0	1,9	N/A
	FL T8 (including FL T8 U-shaped)	89,7	4,5	N/A

(EU) 2019/2020 of 1 October				
Clause	Test Item	Requirements		Verdict
	From 1 September 2023, for FL T8 of 2-, 4- and 5-foot	120,0	1,5	N/A
	Magnetic induction light source, any length/flux	70,2	2,3	N/A
	CFLni	70,2	2,3	N/A
	FL T9 circular	71,5	6,2	N/A
	HPS single-ended	88,0	50,0	N/A
	HPS double-ended	78,0	47,7	N/A
	MH ≤ 405 W single-ended	84,5	7,7	N/A
	MH > 405 W single-ended	79,3	12,3	N/A
	MH ceramic double-ended	84,5	7,7	N/A
	MH quartz double-ended	79,3	12,3	N/A
	Organic light-emitting diode (OLED)	65,0	1,5	N/A
	Until 1 September 2023: HL G9, G4 and GY6.35	19,5	7,7	N/A
	HL R7s ≤ 2700 lm	26,0	13,0	N/A
	Other light sources in scope not mentioned above	120,0	1,5*	P
	(*) For connected light sources (CLS) a factor L=2,0 shall be applied			N/A
	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		N/A
	Non-directional (NDLS) operating on mains (MLS)	1,08		P
	Directional (DLS) not operating on mains (NMLS)	1,15		N/A
	Directional (DLS) operating on mains (MLS)	1,23		N/A
	Special light source feature	**Bonus on C**		
	FL or HID with CCT >5000 K	+0,10		N/A
	FL with CRI > 90	+0,10		N/A
	HID with second envelope	+0,10		N/A
	MH NDLS >405 W with non-clear envelope	+0,10		N/A
	DLS with anti-glare shield	+0,20		N/A
	Colour-tuneable light source (CTLS)	+0,10		N/A
	High luminance light sources (HLLS)	+0,0058 • Luminance-HLLS – 0,0167		N/A

(EU) 2019/2020 of 1 October			
Clause	Test Item	Requirements	Verdict
	Where applicable, bonuses on correction factor C are cumulative The bonus for HLLS shall not be combined with the basic C-value for DLS (basic C-value for NDLS shall be used for HLLS).		
	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
(b)	From 1 September 2021, the values set in Table 3 for the minimum energy efficiency requirements of a separate control gear operating at full-load shall apply:		N/A
	Table 3 — Minimum energy efficiency for separate control gear at full-load		
	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**	
	Control gear for HL light sources all wattages P_{cg}	0,91	N/A
	Control gear for FL light sources $P_{ls} \leq 5$ $5 < P_{ls} \leq 100$ $100 < P_{ls}$	 0,71 $P_{ls}/(2 \times \sqrt{\frac{P_{ls}}{36}} + 38/36 \times P_{ls} + 1)$ 0,91	N/A
	Control gear for HID light sources $P_{ls} \leq 30$ $30 < P_{ls} \leq 75$ $75 < P_{ls} \leq 105$ $105 < P_{ls} \leq 405$ $405 < P_{ls}$	 0,78 0,85 0,87 0,90 0,92	N/A
	Control gear for LED or OLED light sources all wattages P_{cg}	$P_{cg}^{0,81} / (1,09 \times P_{cg}^{0,81} + 2,10)$	N/A
	Multi-wattage separate control gears shall comply with the requirements in Table 3 according to the maximum declared power on which they can operate		N/A
	The no-load power P_{no} of a separate control gear shall not exceed 0,5 *W*		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 light source shall not exceed 0,5 *W*. The allowable values for P_{sb} and P_{net} shall not be added together.		N/A

(EU) 2019/2020 of 1 October			
Clause	Test Item	Requirements	Verdict
2	Functional requirements		
	From 1 September 2021, the functional requirements specified in Table 4 shall apply for light sources:		P
	Table 4 — Functional requirements for light sources		
	Colour rendering	CRI ≥ 80 (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 packaging and in all relevant printed and electronic documentation)	P
	Displacement factor (DF, cos Φ_1) at power input P_{on} for LED and OLED MLS	No limit at $P_{on} \leq 5$ W, DF ≥ 0,5 at 5 W < $P_{on} \leq 10$ W, DF ≥ 0,7 at 10 W < $P_{on} \leq 25$ W DF ≥ 0,9 at 25 W < P_{on}	P
	Lumen maintenance factor (for LED and OLED)	The lumen maintenance factor X_{LMF}% after endurance testing according to Annex V shall be at least $X_{LMF,MIN}$ % calculated as follows: $X_{LMF,MIN}\% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$ where L_{70} is the declared L70B50 lifetime (in hours) If the calculated value for $X_{LMF,MIN}$ exceeds 96,0 %, an $X_{LMF,MIN}$ value of 96,0 % shall be used	P
	Survival factor (for LED and OLED)	Light sources should be operational as specified in row “Survival factor (for LED and OLED)” of Annex IV, Table 6, following the endurance testing given in Annex V.	P
	Colour consistency for LED and OLED light sources	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	P
	Flicker for LED and OLED MLS	P_{st} LM ≤ 1,0 at full-load	P
	Stroboscopic effect for LED and OLED MLS	SVM ≤ 0,9 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) From 1 September 2024: SVM ≤ 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)	P

(EU) 2019/2020 of 1 October			
Clause	Test Item	Requirements	Verdict
3	Information requirements		N/A
	From 1 September 2021 the following information requirements shall apply:		N/A
(a)	Information to be displayed on the light source itself 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 colour temperature (*K*) shall be displayed in a legible font on the surface if, after the inclusion 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 displayed. 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 product		N/A
	If 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 prominently displayed on the packaging:		N/A
(a)	the useful luminous flux (Φuse) 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 (P_{on}), expressed in W;		N/A
(g)	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;		N/A
(h)	the networked standby power (P_{net}) 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)	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

(EU) 2019/2020 of 1 October			
Clause	Test Item	Requirements	Verdict
(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
(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:		N/A
	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 purchase, 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 (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 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
(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 authorised representative, 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:		N/A
	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

(EU) 2019/2020 of 1 October			
Clause	Test Item	Requirements	Verdict
(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)	recommendation 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 III 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 or separate control gear is not intended for use in other applications. 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. 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
Additional	In Situ Temperature Measurement Test		P
	LED driver current	Not exceed rated current	P
	T_{MP} temperature	Not exceed LM-80 maximum temperature	P

Appendix I: Test Results
Table 1: Initial Test Results:-4000K

		Test Results												P
Sample No	Test Voltage (V)	Test Current (A)	P_{on} (W)	Displacement factor (DF)	¢$_{total}$ (lm)	¢$_{use}$ (lm)	Peak Intensity (cd)	Beam angle (°)	CCT	CRI	R9	Excitation purity [%]	Colour consistency (SDCM)	Total mains efficacy (lm/W)
1	230,0	0,1079	14,7	0,861	1592,9	1592,9	/	/	3805	83,9	11,0	32,3	4,0	108,3
2	230,0	0,1073	14,6	0,861	1578,4	1578,4	/	/	3810	84,0	12,0	31,8	3,9	108,2
3	230,0	0,1081	14,7	0,862	1644,3	1644,3	/	/	3791	83,8	11,0	32,7	4,4	111,6
4	230,0	0,1079	14,7	0,863	1632,8	1632,8	/	/	3799	84,0	12,0	32,2	4,2	110,9
5	230,0	0,1082	14,7	0,863	1587,8	1587,8	/	/	3781	83,8	11,0	33,0	4,6	107,7
6	230,0	0,1080	14,7	0,862	1656,8	1656,8	/	/	3794	83,8	11,0	32,7	4,3	112,6
7	230,0	0,1081	14,8	0,863	1652,7	1652,7	/	/	3787	83,8	11,0	33,0	4,5	112,0
8	230,0	0,1086	14,8	0,863	1596,7	1596,7	/	/	3767	83,8	11,0	33,2	4,9	107,7
9	230,0	0,1084	14,8	0,863	1619,0	1619,0	/	/	3792	83,7	10,0	32,9	4,4	109,5
10	230,0	0,1073	14,7	0,862	1631,4	1631,4	/	/	3764	83,8	11,0	33,2	5,0	111,4
Average	230,0	0,1080	14,7	0,862	1619,3	1619,3	/	/	3789	83,8	11,1	32,7	4,4	110,0

Initial Test Results:-3000K

		Test Results												P
Sample No	Test Voltage (V)	Test Current (A)	P_{on} (W)	Displacement factor (DF)	¢$_{total}$ (lm)	¢$_{use}$ (lm)	Peak Intensity (cd)	Beam angle (°)	CCT	CRI	R9	Excitation purity [%]	Colour consistency (SDCM)	Total mains efficacy (lm/W)
1	230,0	0,1080	14,7	0,860	1563,8	1563,8	/	/	3019	82,7	8,0	52,7	3,1	106,2
2	230,0	0,1076	14,6	0,859	1524,4	1524,4	/	/	3021	82,8	8,0	52,3	3,1	104,2
3	230,0	0,1079	14,7	0,862	1560,9	1560,9	/	/	3018	82,8	8,0	52,4	3,0	106,3
4	230,0	0,1078	14,7	0,863	1551,2	1551,2	/	/	3011	82,8	8,0	52,6	2,7	105,5
5	230,0	0,1080	14,7	0,862	1508,2	1508,2	/	/	3010	82,7	8,0	52,4	2,7	102,5
6	230,0	0,1077	14,7	0,861	1579,6	1579,6	/	/	3027	82,8	8,0	52,0	3,3	107,6
7	230,0	0,1081	14,8	0,861	1573,4	1573,4	/	/	3005	82,6	7,0	53,5	2,9	106,7
8	230,0	0,1086	14,8	0,861	1526,1	1526,1	/	/	2996	82,7	8,0	53,3	2,4	103,0
9	230,0	0,1081	14,7	0,861	1536,9	1536,9	/	/	3006	82,6	7,0	53,1	2,8	104,3
10	230,0	0,1073	14,7	0,862	1560,2	1560,2	/	/	2999	82,6	7,0	53,3	2,6	106,5
Average	230,0	0,1079	14,7	0,861	1548,5	1548,5	/	/	3011	82,7	7,7	52,8	2,9	105,3

Initial Test Results: (3000K 4W for reference)

		Test Results												P
Sample No	Test Voltage (V)	Test Current (A)	P_{on} (W)	Displacement factor (DF)	Φ_{total} (lm)	Φ_{use} (lm)	Peak Intensity (cd)	Beam angle (°)	CCT	CRI	R9	Excitation purity [%]	Colour consistency (SDCM)	Total mains efficacy (lm/W)
1	230,1	0,0354	4,0	0,843	283,3	283,3	/	/	3019	83,2	10,0	51,4	2,9	71,0
2	230,1	0,0355	4,0	0,843	284,7	284,7	/	/	3013	83,2	10,0	51,8	2,7	71,2
3	230,1	0,0361	4,1	0,851	300,6	300,6	/	/	3007	83,1	10,0	51,9	2,5	73,5
4	230,1	0,0356	4,0	0,853	290,1	290,1	/	/	3002	83,2	10,0	52,2	2,4	71,8
5	230,1	0,0359	4,1	0,854	284,7	284,7	/	/	3005	83,1	10,0	51,9	2,4	70,1
6	230,1	0,0361	4,1	0,849	302,8	302,8	/	/	3021	83,1	10,0	51,6	3,0	73,8
7	230,1	0,0363	4,1	0,859	304,1	304,1	/	/	3001	83,0	9,0	52,9	2,4	73,6
8	230,1	0,0362	4,1	0,857	290,7	290,7	/	/	2992	83,1	10,0	52,6	2,0	70,7
9	230,1	0,0362	4,1	0,847	297,0	297,0	/	/	3003	83,0	9,0	52,4	2,5	72,4
10	230,1	0,0355	4,1	0,857	294,0	294,0	/	/	2994	83,0	9,0	52,8	2,2	72,6
Average	230,1	0,0359	4,1	0,851	293,2	293,2	/	/	3006	83,1	9,7	52,2	2,5	72,1

Table 2: Test Result of Flicker and Stroboscopic effect: -4000K

		Test Results									P
Flicker P_{st} LM	Sample No.	1	2	3	4	5	6	7	8	9	10
	Test results	0,004	0,004	0,004	0,004	0,004	0,004	0,004	0,004	0,004	0,004
	Average	0,004									
Stroboscopic effect SVM	Sample No.	1	2	3	4	5	6	7	8	9	10
	Test results	0,080	0,081	0,073	0,077	0,073	0,078	0,078	0,077	0,075	0,074
	Average	0,077									

Table 3: Energy Class:-4000K

Energy efficiency classes of light sources (based on rated value)	
Energy efficiency class	Total mains efficacy η_{TM} (lm /W)
☐ A	210≤ η_{TM}
☐ B	185≤ η_{TM}<210
☐ C	160≤ η_{TM}<185
☐ D	135≤ η_{TM}<160
☒ E	110≤ η_{TM}<135
☐ F	85≤ η_{TM}<110
☐ G	η_{TM}<85

Energy efficiency classes of light sources (based on tested value)	
Energy efficiency class	Total mains efficacy η_{TM} (lm /W)
☐ A	210≤ η_{TM}
☐ B	185≤ η_{TM}<210
☐ C	160≤ η_{TM}<185
☐ D	135≤ η_{TM}<160
☒ E	110≤ η_{TM}<135
☐ F	85≤ η_{TM}<110
☐ G	η_{TM}<85

Table 4: Test Result of Lumen Maintenance & Lamp Survival Factor:-3000K

	Test results*					P
Sample No	Test Voltage (V)	Φ_{total} (lm)			Lumen Maintenance		Lamp survival factor
		Initial	1500H	3000 H	1500H	3000 H	At 3000 H
1	230,0	1563,8	1552,5	1559,2	0,993	0,997	X
2	230,0	1524,4	1511,5	1512,5	0,992	0,992	X
3	230,0	1560,9	1578,5	1589,8	1,011	1,019	X
4	230,0	1551,2	1560,7	1553,9	1,006	1,002	X
5	230,0	1508,2	1524,9	1527,6	1,011	1,013	X
6	230,0	1579,6	1594,0	1575,6	1,009	0,997	X
7	230,0	1573,4	1590,0	1585,6	1,011	1,008	X
8	230,0	1526,1	1510,3	1516,0	0,990	0,993	X
9	230,0	1536,9	1552,4	1547,3	1,010	1,007	X
10	230,0	1560,2	1567,1	1560,1	1,004	1,000	X
Average/Result	230,0	1548,5	1554,2	1552,8	1,004	1,003	1,00

Note *: “X” means the lamp still lit when the time(s) reach, “F” means the lamp failed when the time(s) reach.
Switching cycles: operate the light source for 1 200 cycles of repeated, continuous switching cycles without interruption. One complete switching cycle consists of 150 minutes of the light source switched ON at full power followed by 30 minutes of the light source switched OFF. The hours of operation recorded (i.e. 3 000 hours) include only the periods of the switching cycle when the light source was switched ON, i.e. the total test time is 3 600 hours.

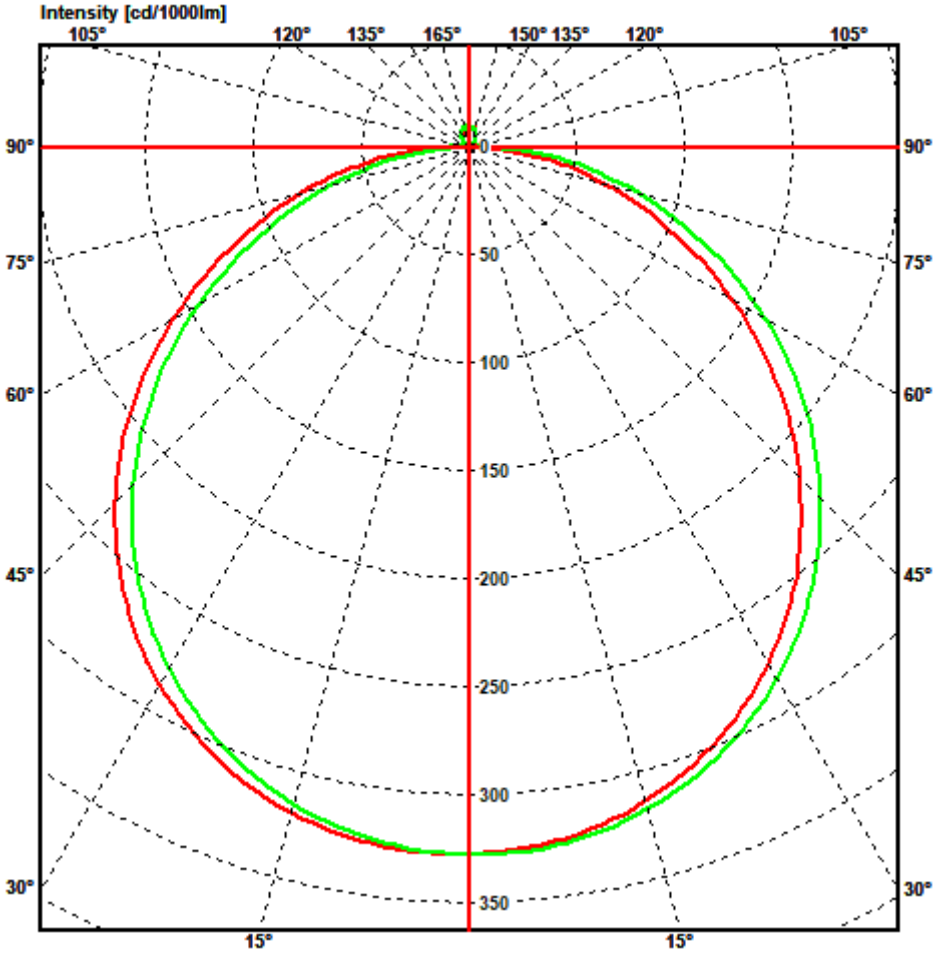
Table 5: No-load Mode and Standby Mode Test Results:

No-load mode and Standby mode Test results			N/A
Mode	Input voltage (V)	Input current (mA)	Input power (W)
No-load mode(P_{no})	--	--	--
Standby mode(P_{sb})	--	--	--
networked Standby mode(P_{net})	--	--	--

Table 6: Test Result of In-situ Temperature Test:-4000K

Mounting position of the luminaire	Mounted according to the practical usage status with AC suppliers
Supply wattage (W)	14,7
Supply current (A)	0,11
Displacement factor (DF)	0,862
Test voltage (V)	230,0
LED current (mA)	11,8
In-situ Temperature Measurement Point	Ts
In-suit Temperature (°C)	53,2

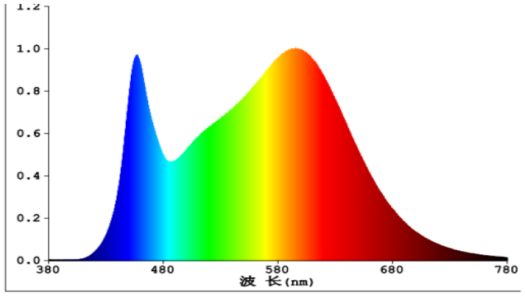
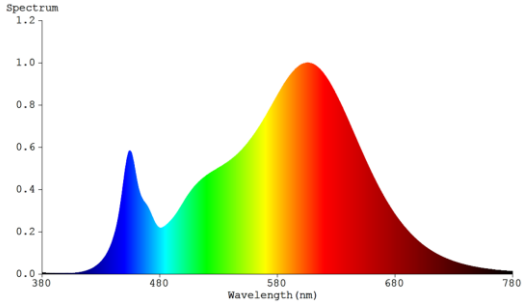
Appendix II: Luminous Intensity Distribution (Sample 1#)-4000K



Io= 326,6 cd
Imax= 326,9 cd
Beam angle= 114,9°
$\Phi_{90°}/\ \Phi_{total}$ = 50,7 %
$\Phi_{120°}/\ \Phi_{total}$ = 74,9 %
Φ_{useful} =1592,9 lm
Φ_{total} =1592,9 lm

Appendix IV: Product information

Product information sheet			
Supplier's name or trade mark:	Xiamen Yankon Energetic Lighting Co., Ltd.		
Supplier's address:	No. 88 Houxiang Road, Haicang District, Xiamen, China		
Model identifier:	See appendix IX		
Type of light source:	LED light sources		
Lighting technology used:	☐ CFLni	☐ HL	☐ LFL T5 HE
	☐ LFL T5 HO	☐ other FL	☐ HPS
	☐ MH	☐ other HID	☒ LED
	☐ OLED	☐ mixed	☐ other
Light source cap-type (or other electric interface):	220-240Vac; 50Hz		
Non-directional or directional:	☒ NDLS ☐ DLS	Mains or non-mains:	☒ MLS ☐ NMLS
Connected light source (CLS):	☐ Yes ☒ No	Colour-tuneable light source:	☐ Yes ☒ No
High luminance light source:	☐ Yes ☒ No	Envelope:	☒ No ☐ second ☐ non-clear
Anti-glare shield:	☐ Yes ☒ No	Dimmable:	☐ Yes ☒ No ☐ only with specific dimmers

Product parameters			
Parameter	Value	Parameter	Value
General product parameters:			
Energy consumption in on-mode (kWh/1 000 h) rounded up to the nearest integer	15,0	Energy efficiency class	E
Useful luminous flux (Φuse), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)	1600(4000K) / 1500(3000K) / 290(3000K) ☒ in a sphere ☐ in a wide cone ☐ in a narrow cone	Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K	4000/3000K
On-mode power (P_{on}), expressed in W	14,5(Max)	Standby power (P_{sb}), expressed in W and rounded to the second decimal	-
Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal	-	Colour rendering index, rounded to the nearest integer, or the range of CRI-values	80
Outer dimensions without separate control gear, lighting control parts and non-lighting control parts, if any (millimetre)	Height	294	
	Width	294	
	Depth	23	
Spectral power distribution in the range 250 nm to 800 nm, at full-load	 4000K  3000K		
Claim of equivalent power	☐ Yes ☐ -	If yes, equivalent power (W)	-
Chromaticity coordinates (x and y)	0,380 / 0,380 @4000K 0,440 / 0,403 @3000K		

Parameters for directional light sources:			
Peak luminous intensity (cd)	-	Beam angle in degrees, or the range of beam angles	-
Parameters for LED and OLED light sources:			
R9 colour rendering index value	0	Survival factor	0,90
The lumen maintenance factor	0,96		
Parameters for LED and OLED mains light sources:			
displacement factor (cos φ1)	0,80	Colour consistency in McAdam ellipses	6
Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage	☐ Yes ☒ -	If yes, equivalent power (W)	-
Flicker metric (P_{st} LM)	0,7	Stroboscopic effect metric (SVM)	0,3

Appendix V: Information to be displayed on the light source itself -- For example

For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the follow value shall be displayed in a legible font on the surface if, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.

Useful luminous flux (lm)	1600lm(4000K) / 1500lm(3000K) / 290lm(3000K)
Correlated colour temperature (K)	4000K/3000K
Beam angle (^{0}).	N/A

Appendix VI: Information to be visibly displayed on the packaging (light source)-- For example

If 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 prominently displayed on the packaging:

Useful luminous flux(Lm)*	1600lm(4000K) / 1500lm(3000K) / 290lm(3000K) in a sphere
Correlated colour temperature (K) *	4000K/3000K
The beam angel or range of beam angles(^{0})*	N/A
Electrical interface details*	220-240Vac; 50Hz
The $L_{70}B_{50}$ life time expressed in hours	30000h
The on-mode power (P_{on}) expressed in W	14,5W
The standby power (P_{sb}) expressed in W	N/A
The networked standby power (P_{net}) for CLS expressed in W	N/A
The Colour rendering index	80
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.	N/A
If the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta $\neq$ 25 ^{0}C or specific thermal management is necessary)	N/A
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	Non-dimmable
Mercury content x,x mg (if applition)	0,0

*: Information shall be displayed on the packaging in the direction meant to face prospective buyer

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

Appendix VI: Information to be visibly displayed on the packaging (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 purchase, the following information shall be clearly and prominently displayed on the packaging:

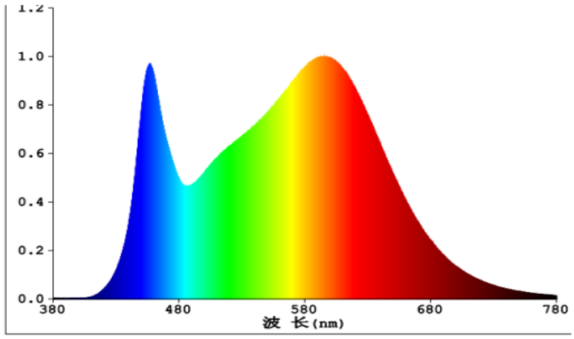
The maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID)	--
The type of light source(s) for which it is intended	--
The efficiency in full-load, expressed in percentage	--
The no-load power (P_{no}), expressed in W	--
The standby power (P_{sb}) expressed in W	--
The networked standby power (P_{net}) expressed in W	--
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	--
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.	--

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

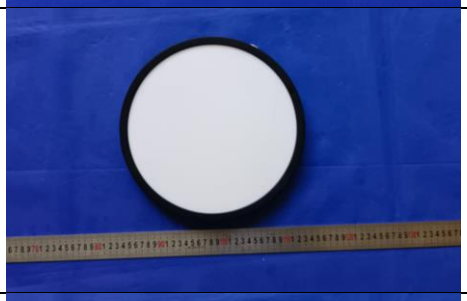
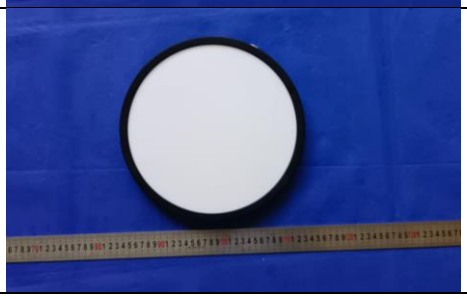
Appendix VIII: ERP PRODUCT SUMMARY:

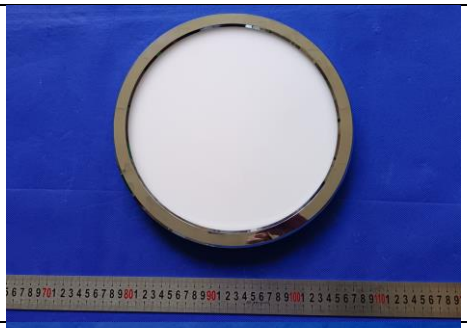
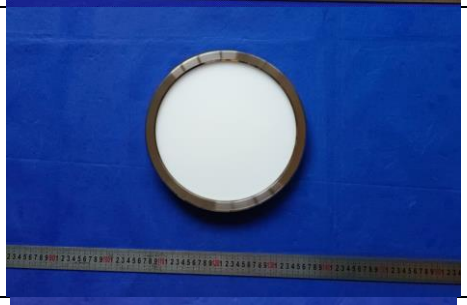
Parameter	Rated/Declare	Measured/Checked	Verdict
Model identifier:	See appendix IX	See appendix IX	N/A
Light source verification condition	Luminaire	Luminaire	N/A
Type of light source:	LED light source	LED light source	N/A
Lighting technology used:	LED	LED	P
Mains or non-mains:	MLS	MLS	P
Non-directional or directional:	NDLS	NDLS	P
Light output within a solid angle of π sr (%)	74	74,9	P
Connected light source (CLS):	No	No	P
Colour-tuneable light source:	No	No	P
High luminance light source:	No	No	P
Envelope:	No	No	P
Anti-glare shield:	No	No	P
Energy consumption in on-mode (kWh/1000h)	15,0	15,0	P
The energy efficiency class	E	E@4000K	P
Nominal Power P_{on} (W)	14,5	14,7@4000K 14,7@3000K	P
The useful luminous flux (Φ_{use}) (Light source)	1600lm(4000K) in a sphere 1500lm(3000K) in a sphere	1619,3lm in a sphere@4000K 1548,5lm in a sphere@3000K	P
Total mains efficacy η_{TM} (lm/W)	110,3@4000K	110,0@4000K	P
Φ90° (lm) (For directional light bulb 90°-120° wide beam only)	-	-	N/A
Correlated Colour Temperature (CCT) in K	4000/3000	3789/3011	P
Chromaticity coordinates (x and y)	0,380/0,380 0,440/0,403	0,3908 / 0,384 0,4369/0,4052	N/A
Beam Angle (°)	-	114,9@4000K	N/A
Peak luminous intensity (cd) (For directional only)	-	-	N/A

Rated voltage in safety certificate	220-240Vac; 50Hz	220-240Vac; 50Hz	N/A
Cap / Connect-type	terminal block	terminal block	N/A
Norminal Life (h) as L70B50 lifetime	30000	Yes	N/A
Standby power Psb	--	--	N/A
Networked standby power Pnet [W]	--	--	N/A
Colour rendering index (CRI), rounded to the nearest integer, or the range of CRI-values that can be set	80	83,8@4000K 82,7@4000K	P
if CRI< 80,	No	No	P
Optiumum use in non-standard condition Ta ≠ 25°C, specific thermal management is necessary	No	No	P
Dimmable or non-dimmable	Non-dimmable	Non-dimmable	P
Mercury content x.xmg	0,0	0,0	P
Claim of equivalent power	-	-	N/A
If yes, equivalent power (W)	-	-	N/A
Dimension of lamp (L x Dia mm) for light bulb only	-	-	N/A
Displacement factor (cos φ1)	0,80	0,862@4000K 0,861@3000K	P
Lumen maintenance factor at 1800 hours (switched on 1500 hours including switching cycle) (for LED and OLED)	0,9798	1,004	P
Lumen maintenance factor at 3600 hours (switched on 3000 hours including switching cycle) (for LED and OLED)	0,96	1,003	P
Survival factor (for LED and OLED)	0,90	1,00	P
Colour consistency [MacAdam ellips steps]	6	<5@4000K <4@3000K	P
Flicker metric (Pst LM)	0,7	0,004@4000K	P
Stroboscopic effect metric (SVM)	0,3	0,077@4000K	P
Excitation purity (%)	30,0	32,7@4000K 52,8@3000K	N/A
No-load power P_{no}	N/A	--	N/A
Control gear efficiency [0-1]	N/A	--	N/A

R9 colour rendering index value	0	11,1@4000K 7,7@3000K	P
Outer dimensions without separate control gear, lighting control parts and non-lighting control parts, if any (millimetre)	294 x 294 x 23	yes	N/A
Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage.	--	--	N/A
Spectral power distribution in the range 250 nm to 800 nm, at full-load	 4000K		P
LED light source manufacturer / brand	SAMSUNG	Yes	N/A
LED light source model	SPMWH1229AQ5SGVKSL SPMWH1229AQ5SGTKSL	Yes	N/A
In-situ temperature / Tc temperature	70	53,2@4000K	N/A
LED current	16	11,8@4000K	N/A

Appendix IX: Model List

image	Model
	P2T3SS30WD
	CLE1P2T-3SS-D3014 WD
	P2T3SS30BK
	CLE1P2T-3SS-D3014 BK,
	CLE1P2TWC-3SS-D3014 BK

		CLE1RATWC-3SS-D3014 CH
		CLE1RAT-3SS-D3014 BN
		CLE1P2T-3SS-D3014 WT
		P2T3SS30WT

----------END----------