

**TEST REPORT****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

Report reference No...... : LCSB01304040S

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Approved by..... : Jesse Liu (Manager)

Jesse Liu

Date of issue : November 15, 2024

Contents..... : 15 pages

Testing laboratory

Name : Shenzhen Southern LCS Compliance Testing Co., Ltd

Address : Room 101-201, Building 39, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China

Testing location : As above

Client

Name : Shenzhen PULUZ Technology Limited

Address..... : 8/F, 614 Bldg, Bagua 1st Road, Futian, Shenzhen, China

Manufacturer

Name : Shenzhen PULUZ Technology Limited

Address..... : 8/F, 614 Bldg, Bagua 1st Road, Futian, Shenzhen, China

Test specification

Standard..... : COMMISSION REGULATION (EU) 2019/2020
COMMISSION DELEGATED REGULATION (EU) 2019/2015
COMMISSION DELEGATED REGULATION (EU) 2021/340
COMMISSION DELEGATED REGULATION (EU) 2021/341

Test procedure : COMMISSION REGULATION (EU) 2019/2020
COMMISSION DELEGATED REGULATION (EU) 2019/2015
COMMISSION DELEGATED REGULATION (EU) 2021/340
COMMISSION DELEGATED REGULATION (EU) 2021/341

Non-standard test method : N/A

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Test item Description: PULUZ 17cm Full Color RGB Fill Light

Trademark: PULUZ

Model and/or type reference.....: PU4138

Rating(s)(V/Hz).....: DC3.7V, 6W

Test case verdicts

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)

Testing

Date of receipt of test item: June 14, 2024

Date(s) of performance of test.....: June 14, 2024 – November 11, 2024

Test item particulars:

Type of light source:

- Lighting technology used ☐ HL ☐ LFLT5HE ☐ LFL T5HO ☐ CFLni ☐ other FL
☐ HPS ☐ MH ☐ other HID ☒ LED ☐ OLED
☐ mixed ☐ other
- Non-directional or directional ☒ NDLS ☐ DLS
- Mains or non-mains ☐ MLS ☒ NMLS
- Connected light source (CLS) ☐ Yes ☒ No
- Colour-tuneable light source ☐ Yes ☒ No
- Envelope ☒ no ☐ second ☐ non-clear
- High luminance light source ☐ Yes ☒ No
- Anti-glare shield ☐ Yes ☒ No
- Dimmable ☐ Yes ☐ only with specific dimmers ☒ No
- Control gear ☒ Integrated ☐ External
- Use of light source: ☒ Indoor ☐ Outdoor ☐ Industry

Lamp cap installed: N/A

General product parameters :

Energy consumption in on-mode

6

(kWh/1 000 h)

Energy efficiency class

☐ A ☐ B ☐ C ☐ D ☐ E ☒ F ☐ G

Rated useful luminous flux.....(lm): 600lm

Rated CCT(K): 2500-9000K

On-mode power (Pon), expressed in W.....: 6W

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Standby power (Psb).....(W): N/A
Networked standby power (Pnet) for CLS. (W): N/A
Rated Ra.....: 95
Outer dimensions.....(mm): N/A
Spectral power distribution.....: See attachment 2
Claim of equivalent power: ☐ Yes: ☒ N/A
Chromaticity coordinates (x and y).....: x:0.4400, y:0.4030
Peak luminous intensity(cd): N/A
Beam angle in degrees.....(°): N/A
R9 colour rendering index value R9.....: 70
Survival factor: 100%
The lumen maintenance factor.....: 95.8%
Displacement factor (cos ϕ 1).....: N/A
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: ☒ N/A
Flicker metric (Pst LM): N/A
Stroboscopic effect metric (SVM).....: N/A
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、These results are in compliance with the ecodesign requirements of the Commission Regulation (EU) 2019/2020.
- 2、Measurement was conducted at voltage DC3.7V and a stable ambient temperature $25 \pm 10^{\circ}\text{C}$.
- 3、 $\text{THDu} \leq 3\%$
- 4、Note: Because the sample tested had batteries, this model is exempt.

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**Equipment List:**

Instrument	Equipment ID	Model	Calibration Date	Calibration Due Date
Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2024/06/14	2025/06/13
Digital Power Meter	SLCS-S-103	PF2010	2024/06/14	2025/06/13
AC Testing Power Source	SLCS-S-115	DPS1060	2024/06/14	2025/06/13
Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2024/06/17	2025/06/16
2m Integrating Sphere System	SLCS-S-312	HAAS2000	2024/06/14	2025/06/13
Digital Power Meter	SLCS-S-309	PF9810	2024/06/14	2025/06/13
AC Testing Power Source	SLCS-S-310	DPS1005	2024/06/14	2025/06/13
Standard Lamp	SLCS-S-313	DC24V/50W	2024/06/12	2025/06/11
Power Meter	SLCS-S-060	PF9800	2024/06/14	2025/06/13
Flicker Photometer	SLCS-S-233	FLA-3000	2024/02/09	2025/02/08

General remarks

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

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

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

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

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(EU) 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
0	Measurement methods		P
	Recognised state of art measurement methods incl. the one published in the Official Journal taking into account the measurement methods of (EU) 2019/2020		P
1	Regulation (EU) 2019/2020 – Exempted products		P
1.1	Product does not meet a definition of point (1) or (2) of Article 2 of (EU) 2019/2020		N/A
1.1.1	Is a product with one of following optical characteristics (not fulfill the definition of light source) (point (1) of Article 2 of (EU) 2019/2020)		N/A
(a)	chromaticity coordinates x and y are <u>not</u> in the range: $0,270 < x < 0,530$ and $-2,3172 x^2 + 2,3653 x - 0,2199 < y < -2,3172 x^2 + 2,3653 x - 0,1595$		N/A
(b)	a luminous flux ≥ 500 lumen per mm ² of projected light-emitting surface area as defined in Annex I		N/A
(c)	a luminous flux < 60 or $> 82\,000$ lumen		N/A
(d)	a colour rendering index (CRI) = 0		N/A
1.1.2	Product does have one of following characteristics (not fulfill the definition of light source)(point (1) of Article 2 of (EU) 2019/2020)		N/A
(a)	LED dies or LED chips		N/A
(b)	LED packages		N/A
(c)	products containing light source(s) from which these light source(s) can be removed for verification		N/A
(d)	light-emitting parts contained in a light source from which these parts can be removed for verification as a light source		N/A
1.1.3	Product with one of following optical characteristics (not fulfill the definition of control gear) (point (2) of Article 2 of (EU) 2019/2020)		N/A
(a)	Is a power supply within the scope of Commission Regulation (EC) No 278/2009		N/A
(b)	Is a lighting control parts or non-lighting parts (as defined in Annex I), although such parts may be physically integrated with a control gear or marketed together as a single product		N/A
(c)	'Power-over-Ethernet switch or' or 'PoE switch', which means equipment for power-supply and data-handling that is installed between the mains and office equipment and/or light sources for the purpose of data transfer and power supply		N/A
1.2	Exemptions product (point 1 and 2 of Annex III of (EU) 2019/2020)		N/A

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(EU) 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
1.2.1	This Regulation shall not apply to light sources and separate control gears specifically tested and approved to operate:		N/A
(a)	in potentially explosive atmospheres, as defined in Directive 2014/34/EU of the European Parliament and of the Council		N/A
(b)	for emergency use, as set out in Directive 2014/35/EU of the European Parliament and of the Council		N/A
(c)	in radiological and nuclear medicine installations, as defined in Article 3 of Council Directive 2009/71/EURATOM		N/A
(d)	in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft, as set out in Member States' regulations or in documents issued by the European Defence Agency		N/A
(e)	in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units as set out in Regulation (EC) No 661/2009, (EU) No 167/2013 and (EU) No 168/2013 of the European Parliament and of the Council		N/A
(f)	in or on non-road mobile machinery as set out in Regulation (EU) 2016/1628 of the European Parliament and of the Council and in or on their trailers		N/A
(g)	in or on interchangeable equipment as set out in Directive 2006/42/EC of the European Parliament and of the Council intended to be towed or to be mounted and fully raised from the ground or that cannot articulate around a vertical axis when the vehicle to which it is attached is in use on a road by vehicles as set out in Regulation (EU) No 167/2013		N/A
(h)	in or on civil aviation aircraft, as set out in Commission Regulation (EU) No 748/2012		N/A
(i)	in railway vehicle lighting, as set out in Directive 2008/57/EC of the European Parliament and of the Council		N/A
(j)	in marine equipment, as set out in Directive 2014/90/EU of the European Parliament and of the Council		N/A
(k)	in medical devices, as set out in Council Directive 93/42/EEC or Regulation (EU) 2017/745 of the European Parliament and of the Council and in vitro medical devices as set out in Directive 98/79/EC of the European Parliament and of the Council		N/A
1.2.2	In addition, this Regulation shall not apply to		N/A
(a)	double-capped fluorescent T5 light sources with power $P \leq 13$ W		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
(b)	electronic displays (e.g. televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including displays within the scope of Commission Regulation (EU) 2019/2021 (15), and Commission Regulation (EU) No 617/2013		N/A
(c)	light sources and separate control gears in battery-operated products, including but not limited to e.g. torches, mobile phones with an integrated torch light, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps	Only powered by 3.7v lithium battery, the light cannot light up when USB charging	P
(d)	light sources for spectroscopy and photometric applications, such as for example UV-VIS spectroscopy, molecular spectroscopy, atomic absorption spectroscopy, nondispersive infrared (NDIR), fourier-transform infrared (FTIR), medical analysis, ellipsometry, layer thickness measurement, process monitoring or environmental monitoring		N/A
(e)	light sources and separate control gears on bicycles and other non-motorised vehicles		N/A
2	Regulation (EU) 2019/2020 – special purpose products		P
2.1	Any light source or separate control gear within the scope of this Regulation shall be exempt from the requirements of this Regulation, with the exception of the information requirements set out in point 3(e) of Annex II, if they are specifically designed and marketed for their intended use in at least one of the following applications (point 3 of Annex III of (EU) 2019/2020)		N/A
(a)	signalling (including, but not limited to, road-, railway-, marine- or air traffic- signalling, traffic control or airfield lamps)		N/A
(b)	image capture and image projection (including, but not limited to, photocopying, printing (directly or in preprocessing), lithography, film and video projection, holography)		N/A
(c)	light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content		N/A
(d)	light sources with a peak radiation around 253,7 nm and intended for germicidal use (destruction of DNA)		N/A
(e)	light sources emitting 5 % or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20 % or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping		N/A
(f)	light sources with the primary purpose of emitting radiation around 185,1 nm and intended to be used for the generation of ozone		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
(g)	light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses		N/A
(h)	FL light sources emitting 80 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning		N/A
(i)	HID light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning		N/A
(j)	light sources with a photosynthetic efficacy > 1,2 $\mu\text{mol/J}$, and/or emitting 25 % or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture		N/A
(k)	HID light sources with correlated colour temperature CCT > 7 000 K and intended for use in applications requiring such a high CCT		N/A
(l)	light sources with a beam angle of less than 10° and intended for spot-lighting applications requiring a very narrow light beam		N/A
(m)	halogen light sources with cap-type G9.5, GX9.5, GY9.5, GZ9.5, GZX9.5, GZY9.5, GZZ9.5, K39d, G9.5HPL, G16d, GES/E40 (low voltage (24V) silver crown only), GX16, GX16d, GY16, G22, G38, GX38, GX38Q, P28s, P40s, PGJX28, PGJX 36, PGJX50, R7s with a luminous flux > 12 000 lm, QXL, designed and marketed specifically for scene-lighting use in film studios, TV studios, and photographic studios, or for stage-lighting use in theatres, discos and during concerts or other entertainment events		N/A
(n)	colour-tuneable light sources that can be set to at least the colours listed in this point and which have for each of these colours, measured at the dominant wavelength, a minimum excitation purity of:and are intended for use in applications requiring high-quality coloured light		N/A
(o)	light sources accompanied by an individual calibration certificate detailing the exact radiometric flux and/or spectrum under specified conditions, and intended for use in photometric calibration (of e.g. wavelength, flux, colour temperature, colour rendering index), or for laboratory use or quality control applications for the evaluation of coloured surfaces and materials		N/A

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(EU) 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	under standard viewing conditions (e.g. standard illuminants)		
(p)	light sources provided specifically for use by photosensitive patients, to be sold in pharmacies and other authorized selling points (e.g. suppliers of disability products), upon presentation of a medical prescription		N/A
(q)	incandescent light sources (not including halogen light sources) fulfilling all of the following conditions: power ≤ 40 W, length ≤ 60 mm, diameter ≤ 30 mm, declared suitable for operation at ambient temperature ≥ 300 °C, and intended for use in high temperature applications such as ovens		N/A
(r)	halogen light sources fulfilling all of the following conditions: cap-type G4, GY6.35 or G9, power ≤ 60 W, declared suitable for operation at ambient temperature ≥ 300 °C, and intended for use in high temperature applications such as ovens		N/A
(s)	halogen light sources with blade contact-, metal lug-, cable-, litz wire- or non-standard customised electrical interface, specifically designed and marketed for industrial or professional electro-heating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening)		N/A
(t)	halogen light sources fulfilling all of the following conditions: R7s cap, CCT $\leq 2\,500$ K, length not in the ranges 75-80 mm and 110-120 mm, specifically designed and marketed for industrial or professional electroheating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening)		N/A
(u)	single capped fluorescent lamps (CFLni) having a diameter of 16 mm (T5), 2G11 4 pin base, with CCT = 3 200 K and chromaticity coordinates $x = 0,415$ $y = 0,377$, or with CCT = 5 500 K and chromaticity coordinates $x = 0,330$ $y = 0,335$, specifically designed and marketed for studio and video applications for traditional filmmaking		N/A
(v)	LED or OLED light sources, complying with the definition of 'original works of art' as defined in Directive 2001/84/EC of the European Parliament and of the Council, made by the artist him/herself in a limited number below 10 pieces		N/A
(w)	white light sources which:		N/A
(1)	are designed and marketed specifically for scene-lighting use in film-studios, TV-studios and locations, and photographic-studios and locations,		N/A

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	or for stage-lighting use in theatres, during concerts or other entertainment events		
	And which:		-
(2)	provide two or more of the following specifications:		N/A
(I)	LED with high CRI > 90		N/A
(II)	GES/E40, K39d socket with changeable Colour Temperature down to 1 800 K (undimmed), used with low voltage power supply		N/A
(III)	LED rated at 180W and greater and arranged to direct output to an area smaller than the light emitting surface		N/A
(IV)	DWE lamp type which is a tungsten lamp defined by its wattage (650 W) voltage (120 V) and terminal type (pressure screw terminal)		N/A
(V)	white bi-colour LED sources		N/A
(VI)	fluorescent tubes: Min BI Pin T5 and Bi Pin T12 with CRI ≥ 85 and CCT 2900, 3000, 3200, 5600 or 6500 K.		N/A
3	Information requirements according to point 3 (2)(e) of Annex II 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		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
	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
4	Circumvention (Article 7 of EU 2019/2020)		N/A

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(EU) 2019/2020			
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	The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters		N/A
	declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided.		
	The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update.		N/A

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Tables

Appendix-Test Data Sheet

1、Initial Lumen Measurement and Color Performance:

Sample No.	Power Pon (W)	Disp. Factor	Luminous Flux Φ_{total} (lm)	Efficacy (lm/W)	Color Temp (CCT)	Color rendering (Ra)	R9	SDCM	x	y
1	-	N/A	241.89	-	3100	94.4	70	6.3	0.4278	0.3967

2、Different Mode Power 、Flicker、Stroboscopic Effect and Lumen Maintenance Test:

Sample No.	No-Load Power Pno	Standby Power Psb	Network Sb. Power Pnet	Flicker Pst LM	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	232.82	96.25%	P

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ATTACHMENT 1(S)

Energy efficiency classes			
Standard	Clause	Model No.	Verdict
(EU) 2019/2015	Energy class	PU4138	P
Conditions	-Test conditions: -ambient: 24.9°C/60.0%R.H. -Test voltage: DC3.7V		
Φ_{use}	600lm (Declared)		
P_{on}	$P_{on} = 6.00W$ (Declared)		
F_{TM}	0.926		
η_{TM}	92.60lm/w (Declared)		
Technical requirements		Test result	
$\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM} (lm/W).$	Energy efficiency class	Total mains efficacy η_{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	$85 \leq \eta_{TM} < 110$	P
	G	$\eta_{TM} < 85$	N
Factors FTM 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	P
Directional (DLS) operating on mains (MLS)		1.176	N
Directional (DLS) not operating on mains (NMLS)		1.089	N

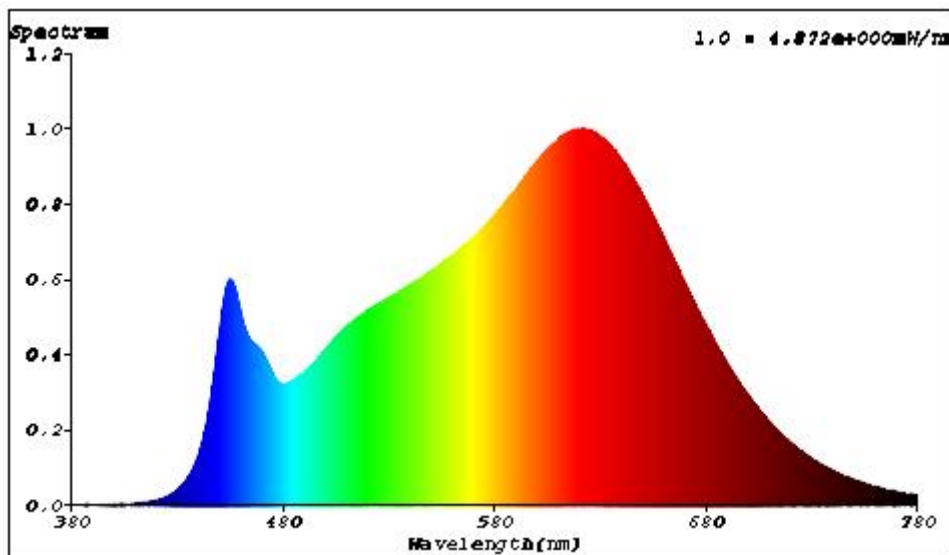
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ATTACHMENT 2(S)

Spectral power distribution



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Tables

ATTACHMENT 3(S)

Photos of PU4138



----- End of test report -----

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