Test Report

Report No.: HB-123E-0697/21

Product	**:**	Fixed luminaires
Model/Type	**:**	See model list
Brand Name	**:**	ERDU
Applicant	**:**	ZHONGSHAN ERDU LIGHTING TECHONOLOGY CO., LTD
Application No.	**:**	20210908004
Date of Issue	**:**	2021-09-25
Standards	**:**	Commission Regulation (EU) 2019/2020 Commission Regulation (EU) 2021/341

Zhongshan Bontek Compliance Testing Laboratory Co., Ltd.

Tongyi Industrial Zone Dongxing East Road, Guzhen Town
Zhongshan City, Guangdong Province, China

TEST REPORT

COMMISSION REGULATION (EU) 2019/2020

Ecodesign requirements for light sources and separate control gears

Report No. .....:	HB-123E-0697/21
Application No. .....:	20210908004
Testing Laboratory.....:	Zhongshan Bontek Compliance Testing Laboratory Co., Ltd.
Address .....:	Tongyi Industrial Zone Dongxing East Road, Gu Zhen Town, Zhongshan City, Guang Dong Province, China
Applicant's name .....:	ZHONGSHAN ERDU LIGHTING TECHONOLOGY CO., LTD
Address .....:	6th Floor, Building B, No.3 LeLin Street, GuZhen, ZhongShan, GuangDong, China
Test specification	
Standard(s).....:	Commission Regulation (EU) 2019/2020 Commission Regulation (EU) 2021/341
Test procedure.....:	☐Partial test ☒Type test ☐Verification test
Non-standard test method ...:	N/A
Test Report Form No. .....:	HB-5S-123E-2
TRF Originator.....:	LTS
Master TRF.....:	2021-09
Test item description.....:	Fixed luminaires
Trade Mark .....:	ERDU
Manufacturer.....:	Same as applicant
Address.....:	Same as applicant
Model/Type reference.....:	See model list
Ratings .....:	See model list

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Summary of testing:

This report is a type test report according to specific requirements:
- Commission Regulation (EU) 2019/2020
- Commission Regulation (EU) 2021/341
- Commission Regulation (EU) 2019/2015
- Commission Regulation (EU) 2021/340

Information on product and website is not considered in this report.
Until now, all tests were completed and the products are found to comply with all requirements.
For Energy efficiency class, see page 7 for details.

Tested by (signature).....	Zhaoyi Deng	Zhaoyi Deng
Reviewed by (signature).....	Lechun Guan	Lechun Guan
Approved by (signature).....	Zhaofu Peng	Z Peng
Date of issue.....	2021-09-25	

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 Appendix #)"refers to additional information 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.

Page 1 to 11 for test report
Page 12 to 15 for test data.
Page 16 to 17 for photo documentation

Possible test case verdicts:

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

Testing:

Date of receipt of test item ..... : 2021-04-04
Date (s) of performance of tests..... : 2021-04-06 to 2021-09-19

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Test item particulars:

EUT type ..... :	☐Light source ☐Separate control gears ☐Containing product is a light source ☒Containing product with separable light source and/or separable control gear.
Light source type ..... :	☐CFL ☒LED ☐Halogen ☐HID ☐Metal halide ☐Others: _____
Classification..... :	☐Directional ☒Non-directional ☐Mains light source ☒Non-mains light source ☐Connected light source ☐Colour-tuneable light source ☐High-luminance light source
Rated voltage and frequency..... :	See model list
Rated / nominal wattage (0,1W) ..... :	See model list
Rated / nominal useful lumen (lm)..... :	See model list
Declared color temperature (K) ..... :	See model list
Rated / nominal beam angle (°)..... :	N/A
Rated life (h) ..... :	30000
Rated colour rendering index ..... :	90
Optimum use in standard condition ta=25°C..... :	☒Yes ☐No
Dimmable	☐Yes ☒No
Application for outdoor / industrial ..... :	☐Yes ☒No
Mercury content x,x mg ..... :	☐Yes ____mg ☒No

Copy of marking plate:

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(not provided)

General product information:

1. The product is Class III track light, using with separable light source and separable control gear.
2. There are two models of light source, which are identical except CCT.

Model list for luminaires

Model	Rated voltage	Rated power	LED driver	LED light source
L20/GD-12	48VDC	12W	CXQD0104	COB12C3B02, or COB12C3B03
ED-DX-12W				

Model list for light source:

Model	Rated input	Rated power	Rated luminous flux	Rated CCT	CRI	R9
COB12C3B02	0.3ADC	10.7W	1250lm	3000K	≥90	≥10
COB12C3B03	0.3ADC	10.7W	1300lm	4000K	≥90	≥10

Model list for separate control gear.

Model	Rated input voltage	Rated output voltage	Rated output current	Rated output power
CXQD0104	48VDC	30-36V	0.3A	Max. 10.8W

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(EU) 2019/2020			
Clause	**Requirement - Test**	**Result - Remark**	**Verdict**
ANNEX II	**Ecodesign requirements**		**P**
1	**Energy efficiency requirements**		**P**
(a)	For light source		P
	The declared power consumption P_{on} shall not exceed the maximum allowed power P_{onmax}: $P_{onmax} = C \times (L + \Phi_{use} / (F \times \eta)) \times R$		P
	C (correction factor) ..... :	1.00	—
	L (end loss factor) ..... :	1.5	—
	F (efficacy factor) ..... :	1.00	—
	η (threshold efficacy)..... :	120	—
	R (CRI factor)..... :	1.06	—
	Calculated P_{onmax}..... :	(see appended table)	P
	Standby power P_{sb} shall not exceed 0.5W		N/A
	Networked standby power P_{net} shall not exceed 0.5W		N/A
(b)	For separate control gear		P
	Minimum energy efficiency at full-load shall in table shall apply	(see appended table)	P
	No-load power P_{no} shall not exceed 0.5W		N/A
	Standby power P_{sb} shall not exceed 0.5W		N/A
	Networked standby power P_{net} shall not exceed 0.5W		N/A
2	**Functional requirements**		**P**
	Below requirements shall be applied to light sources		P
	Colour rendering index ≥80	(see appended table)	P
	- exception for CRI<80		N/A
	Displacement factor at P_{on} for LED and OLED MLS		N/A
	Lumen maintenance factor for LED and OLED	(see appended table)	P
	Survival factor for LED and OLED	(see appended table)	P
	Colour consistency for LED and OLED ≤ 6	(see appended table)	P
	Flicker for LED and OLED MLS, $P_{st}LM \leq 1$		N/A
	Stroboscopic effect for LED and OLED MLS, SVM ≤ 0.9 (from 2024-09-01, ≤0.4)		N/A
	- exception for light sources intended for use in outdoor applications, industrial application or other applications where allow a CRI<80		N/A
3.	**Information requirements**		**N/A**
(a)	Information to be displayed on the light source itself		N/A
	Useful luminous flux (except CTLS, LFL, CFLni, other FL, HID)		N/A
	Correlated colour temperature		N/A
	Beam angle		N/A

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(EU) 2019/2020			
Clause	**Requirement - Test**	**Result - Remark**	**Verdict**
(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
	(a) useful luminous flux, clearly indicating the angle		N/A
	(b) correlated colour temperature		N/A
	(c) beam angle		N/A
	(d) electrical interface details		N/A
	(e) the $L_{70}B_{50}$ lifetime for LED and OLED light sources		N/A
	(f) the on-mode power		N/A
	(g) the standby power		N/A
	(h) the networked standby power		N/A
	(i) the colour rendering index		N/A
	(j) if CRI< 80, indication for intended use situation		N/A
	(k) if the light source is designed for optimum use in non-standard conditions		N/A
	(l) warning for dimming methods		N/A
	(m) warning if contain mercury		N/A
	(n) a warning that it shall not be disposed of as unsorted municipal waste.		N/A
	(2) Separate controlgear:		N/A
	(a) the maximum output power of the control gear for HL, LED and OLED, or the power of the light sources for FL and HID		N/A
	(b) the type of light sources		N/A
	(c) the efficiency in full-load		N/A
	(d) the no-load power		N/A
	(e) the standby power		N/A
	(f) the networked standby power		N/A
	(g) warning for dimming methods		N/A
	(h) a QR-code redirecting to a free-access website		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
	(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,		N/A
	(d) instructions on how to remove lighting control parts and non-lighting parts or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes		N/A

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(EU) 2019/2020			
Clause	**Requirement - Test**	**Result - Remark**	**Verdict**
	(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:		N/A
	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		N/A
	The intended purpose shall be stated in the technical documentation 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

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	Commission Delegated Regulation (EU) 2019/2015	**P**

	Table: Energy efficiency classes for lamps		P
	Type of lamp..... :	☒Non-directional ☐Directional ☐Mains light source ☒Non-mains light source	—
	Applicable factor F_{TM} ..... :	0.926	—
	Rated η_{TM} ..... :	COB12C3B02: 108.2lm/W COB12C3B03: 112.5lm/W	—
	Measure η_{TM} ..... :	COB12C3B02: 113.9lm/W COB12C3B03: 119.4lm/W	—
	Classification ..... :	COB12C3B02: Class F COB12C3B03: Class E	—

Energy efficiency class	Total mains efficacy η_{TM} (lm/W) $\eta_{TM} = (\Phi_{use} / P_{on}) \times F_{TM}$
A (most efficient)	$210 \leq \eta_{TM}$
B	$185 \leq \eta_{TM} < 210$
C	$160 \leq \eta_{TM} < 185$
D	$135 \leq \eta_{TM} < 160$
E	$110 \leq \eta_{TM} < 135$
F	$85 \leq \eta_{TM} < 110$
G (least efficient)	$\eta_{TM} < 85$
Remark: N/A	

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Table		**Product information sheet**		
Supplier's name or trade mark:		ZHONGSHAN ERDU LIGHTING TECHONOLOGY CO., LTD		
Supplier's address:		6th Floor, Building B, No.3 LeLin Street, GuZhen, ZhongShan, GuangDong, China		
Model identifier:		COB12C3B02		
Type of light source:		LED module		
Light source cap-type (or other electric interface)		Connecting lead		
Lighting technology used:		LED	Non-directional or directional:	NDLS
Mains or non-mains:		NMLS	Connected light source (CLS):	no
Colour-tuneable light source:		no	Envelope:	no
High luminance light source:		no		
Anti-glare shield:		no	Dimmable:	no
Product parameters				
Parameter		Value	Parameter	Value
General product parameters:				
Energy consumption in on-mode (kWh/1 000 h)		11	Energy efficiency class	F
Useful luminous flux (Φ_{use}), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)		1250 in sphere	Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K, that can be set	3000
On-mode power (P_{on}), expressed in W		10.7	Standby power (P_{sb}), expressed in W and rounded to the second decimal	N/A
Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal		N/A	Colour rendering index, rounded to the nearest integer, or the range of CRI values that can be set	90
Outer dimensions without separate control gear, lighting control parts and nonlighting control parts, if any (millimetre)	Height	16	Spectral power distribution in the range 250 nm to 800 nm, at full-load	See attachment 1
	Width	16		
	Depth	2		
Claim of equivalent power		-	If yes, equivalent power (W)	N/A

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		Chromaticity coordinates (x and y)	0.440 0.403
Parameters for directional light sources:			
Peak luminous intensity (cd)	N/A	Beam angle in degrees, or the range of beam angles that can be set	N/A
Parameters for LED and OLED light sources:			
R9 colour rendering index value	10	Survival factor	0.90
the lumen maintenance factor	0.96		
Parameters for LED and OLED mains light sources:			
displacement factor (cos φ1)	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.	-	If yes then replacement claim (W)	N/A
Flicker metric (P_{st} LM)	N/A	Stroboscopic effect metric (SVM)	N/A

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Table		**Product information sheet**		
Supplier's name or trade mark:		ZHONGSHAN ERDU LIGHTING TECHONOLOGY CO., LTD		
Supplier's address:		6th Floor, Building B, No.3 LeLin Street, GuZhen, ZhongShan, GuangDong, China		
Model identifier:		COB12C3B03		
Type of light source:		LED module		
Light source cap-type (or other electric interface)		Connecting lead		
Lighting technology used:		LED	Non-directional or directional:	NDLS
Mains or non-mains:		NMLS	Connected light source (CLS):	no
Colour-tuneable light source:		no	Envelope:	no
High luminance light source:		no		
Anti-glare shield:		no	Dimmable:	no
Product parameters				
Parameter		Value	Parameter	Value
General product parameters:				
Energy consumption in on-mode (kWh/1 000 h)		11	Energy efficiency class	E
Useful luminous flux (Φ_{use}), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)		1300 in sphere	Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K, that can be set	4000
On-mode power (P_{on}), expressed in W		10.7	Standby power (P_{sb}), expressed in W and rounded to the second decimal	N/A
Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal		N/A	Colour rendering index, rounded to the nearest integer, or the range of CRI values that can be set	90
Outer dimensions without separate control gear, lighting control parts and nonlighting control parts, if any (millimetre)	Height	16	Spectral power distribution in the range 250 nm to 800 nm, at full-load	See attachment 1
	Width	16		
	Depth	2		
Claim of equivalent power		-	If yes, equivalent power (W)	N/A

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		Chromaticity coordinates (x and y)	0.380 0.380
Parameters for directional light sources:			
Peak luminous intensity (cd)	N/A	Beam angle in degrees, or the range of beam angles that can be set	N/A
Parameters for LED and OLED light sources:			
R9 colour rendering index value	10	Survival factor	0.90
the lumen maintenance factor	0.96		
Parameters for LED and OLED mains light sources:			
displacement factor (cos φ1)	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.	-	If yes then replacement claim (W)	N/A
Flicker metric (P_{st} LM)	N/A	Stroboscopic effect metric (SVM)	N/A

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Attachment 1

Test Result

Table 1: Initial test result for light source												P
Sample No.	Input voltage (V)	P_{on} (W)	P_{sb} (W)	P_{net} (W)	DF	Useful lumen (lm)	η_{TM}	CCT (K)	CRI	SCDM	$P_{st}LM$	SVM
Model: COB12C3B02												
1	35.292	10.58	N/A	N/A	N/A	1297	113.5	3030	90.9	4.2	N/A	N/A
2	35.234	10.57	N/A	N/A	N/A	1299	113.8	3038	91.4	4.2	N/A	N/A
3	35.180	10.55	N/A	N/A	N/A	1300	114.1	3038	91.2	4.2	N/A	N/A
4	35.302	10.59	N/A	N/A	N/A	1302	113.8	3065	90.9	5.4	N/A	N/A
5	35.205	10.56	N/A	N/A	N/A	1297	113.7	3055	91.0	5.3	N/A	N/A
6	35.270	10.58	N/A	N/A	N/A	1293	113.2	3040	91.2	4.2	N/A	N/A
7	35.312	10.59	N/A	N/A	N/A	1305	114.1	3051	91.1	5.0	N/A	N/A
8	35.285	10.58	N/A	N/A	N/A	1305	114.2	3029	91.0	3.9	N/A	N/A
9	35.238	10.57	N/A	N/A	N/A	1307	114.5	3062	90.9	5.0	N/A	N/A
10	35.307	10.59	N/A	N/A	N/A	1299	113.6	3059	91.0	5.2	N/A	N/A
Average value		10.58	N/A	N/A	N/A	1300	113.9	3047	91.1	4.7	N/A	N/A
Rated value		10.7	N/A	N/A	N/A	1250	108.2	3000	90	6	N/A	N/A
Remark: 1. Test condition: 0.3ADC. 2. P_{onmax} = 12.63W 3. Useful lumen = ☒total lumen ☐lumen in 120° cone ☐lumen in 90° cone												
Model: COB12C3B03												
1	35.232	10.57	N/A	N/A	N/A	1370	120.0	4003	94.2	2.5	N/A	N/A
2	35.310	10.59	N/A	N/A	N/A	1366	119.4	3994	94.4	2.4	N/A	N/A
3	35.367	10.61	N/A	N/A	N/A	1356	118.3	3975	94.6	2.6	N/A	N/A
4	35.231	10.57	N/A	N/A	N/A	1354	118.6	4018	94.6	2.0	N/A	N/A
5	35.321	10.59	N/A	N/A	N/A	1370	119.8	3968	94.3	3.0	N/A	N/A
6	35.335	10.60	N/A	N/A	N/A	1372	119.9	4034	94.6	1.6	N/A	N/A
7	35.326	10.59	N/A	N/A	N/A	1368	119.6	3968	94.3	2.7	N/A	N/A
8	35.387	10.61	N/A	N/A	N/A	1361	118.8	4033	94.4	1.7	N/A	N/A
9	35.284	10.58	N/A	N/A	N/A	1362	119.2	3970	94.2	3.0	N/A	N/A
10	35.390	10.61	N/A	N/A	N/A	1374	119.9	3949	94.4	3.3	N/A	N/A
Average value		10.59	N/A	N/A	N/A	1365	119.4	3991	94.4	2.5	N/A	N/A
Rated value		10.7	N/A	N/A	N/A	1300	112.5	4000	90	6	N/A	N/A
Remark: 1. Test condition: 0.3ADC. 2. P_{onmax} = 13.07W 3. Useful lumen = ☒total lumen ☐lumen in 120° cone ☐lumen in 90° cone												

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Attachment 1

Test Result

Table 2: Initial test result for separate control gear										P
Sample No.	Input voltage (V)	Input current (A)	Input power (W)	Output voltage (V)	Output current (A)	Output power (W)	Energy efficiency	P_{no} (W)	P_{sb} (W)	P_{net} (W)
1	48	0.242	11.62	36	0.304	10.94	94.21%	--	--	--
2	48	0.233	11.18	36	0.295	10.62	94.96%	--	--	--
3	48	0.235	11.28	36	0.298	10.73	95.11%	--	--	--
Average value		0.237	11.36	36	0.299	10.76	94.76%	--	--	--

Remark:

1. Output is setting to full load (36VDC).
2. Required minimum energy efficiency=71.78%

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Attachment 1

Test Result

Table 3: Test result of lumen maintenance and lamp survival factor					P
Sample No.	Test current (V)	Φ_{total} (lm)		Lumen maintenance factor	Survival factor[2)]
		Initial	3600h[1)]		
Model: COB12C3B02					
1	0.3	1297	1270	97.92%	×
2	0.3	1299	1273	98.00%	×
3	0.3	1300	1271	97.77%	×
4	0.3	1302	1272	97.70%	×
5	0.3	1297	1265	97.53%	×
6	0.3	1293	1266	97.91%	×
7	0.3	1305	1279	98.01%	×
8	0.3	1305	1277	97.85%	×
9	0.3	1307	1278	97.78%	×
10	0.3	1299	1263	97.23%	×
Average value		1300	1271	97.77%	100%
Remark: 1. For the aging test, the product is power on 150min and power off 30min, total 1200 cycle. 3600h is total test time and actual operation time is 3000h. 2. "×" means the lamp still working when the cycles reached. "F" means the lamp failure when the cycles reached. 3. $X_{LMF,MIN}$ =96.00%					
Model: COB12C3B03					
1	0.3	1370	1333	97.30%	×
2	0.3	1366	1330	97.36%	×
3	0.3	1356	1329	98.01%	×
4	0.3	1354	1328	98.08%	×
5	0.3	1370	1343	98.03%	×
6	0.3	1372	1340	97.67%	×
7	0.3	1368	1339	97.88%	×
8	0.3	1361	1334	98.02%	×
9	0.3	1362	1328	97.50%	×
10	0.3	1374	1347	98.03%	×
Average value		1365	1335	97.79%	100%
Remark: 1. For the aging test, the product is power on 150min and power off 30min, total 1200 cycle. 3600h is total test time and actual operation time is 3000h. 2. "×" means the lamp still working when the cycles reached. "F" means the lamp failure when the cycles reached. 3. $X_{LMF,MIN}$ =96.00%					

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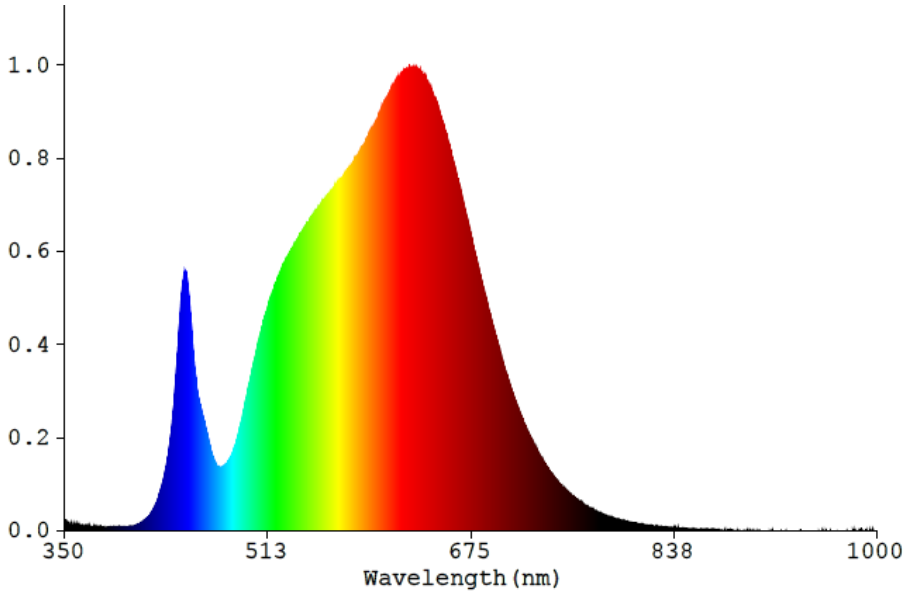
Attachment 1

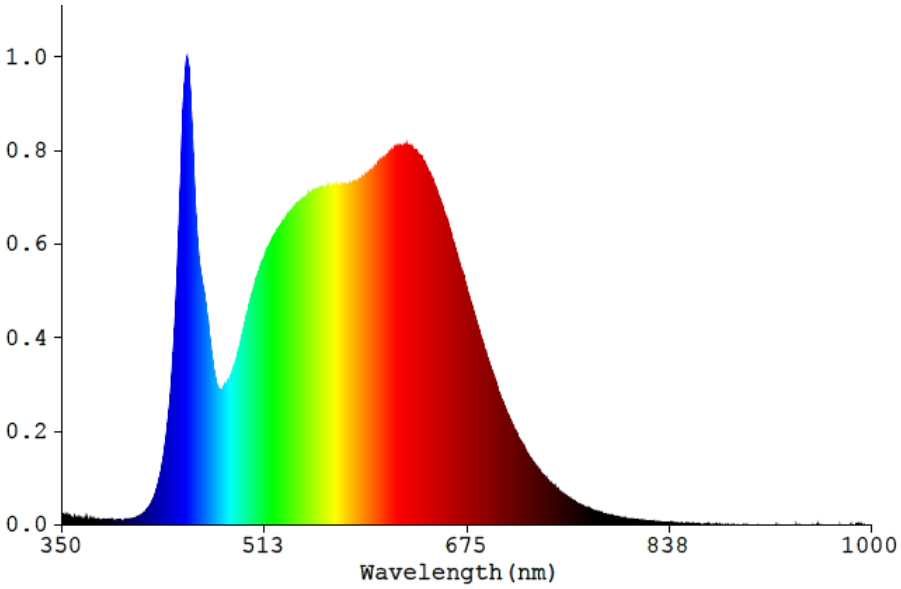
Test Result

Spectrum of sample 1#:

Model: COB12C3B02



Model: COB12C3B03



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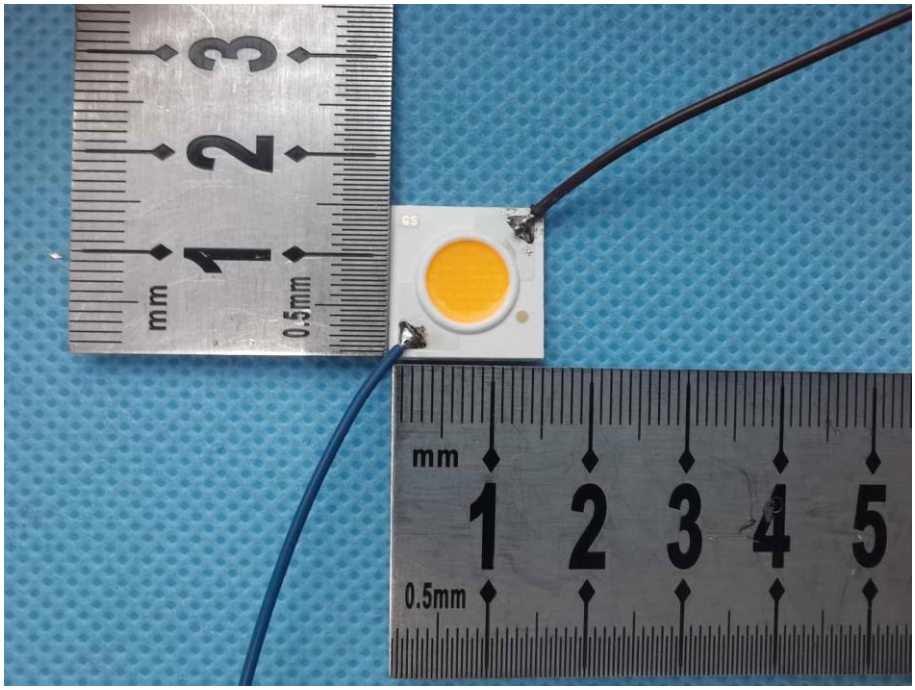
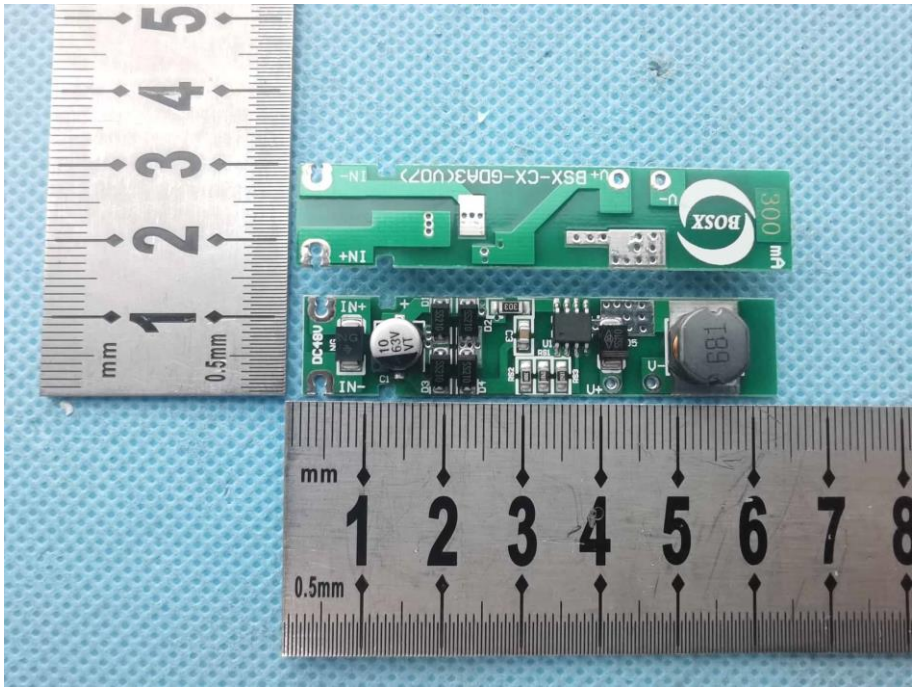
Attachment 2

Photo Documentation



Picture 1: whole view of light source



Picture 2: whole view of LED driver

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Attachment 2

Photo Documentation

Picture 3: whole view of luminaire L20/GD-12

Picture 4: whole view of luminaire ED-DX-12W

---- End of Test Report ----

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