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
And Commission Delegated Regulation (EU) 2021/340 of 17 December 2020
And Commission Regulation (EU) 2021/341 of 23 February 2021

Report reference No.....:	RKEYS250512074R01
Tested by.....:	Sunny Li
Approved by .....:	Jason Zhan
Date of issue.....:	May. 14, 2025
Contents.....:	16 pages
Testing Laboratory:	
Name.....	Guangdong KEYS Testing Technology Co., Ltd.
Address.....:	Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Testing location .....:	As above
Client:	
Name.....	Ningbo Ehome Electronic Co.,Ltd
Address.....:	Yonghe Road, Qiaotouhu Industrial Zone,Ninghai,Ningbo,China
Manufacturer:	
Name.....	Ningbo Ehome Electronic Co.,Ltd
Address.....:	Yonghe Road, Qiaotouhu Industrial Zone,Ninghai,Ningbo,China

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Test specification:	
Standard..... :	COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019 COMMISSION DELEGATED REGULATION (EU) 2019/2015 Commission Delegated Regulation (EU) 2021/340 of 17 December 2020 Commission Regulation (EU) 2021/341 of 23 February 2021
Test procedure..... :	COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019 COMMISSION DELEGATED REGULATION (EU) 2019/2015 Commission Delegated Regulation (EU) 2021/340 of 17 December 2020 Commission Regulation (EU) 2021/341 of 23 February 2021
Non-standard test method.....:	N/A
Test item description.....:	Infrared LED Sensor Lamp
Trade Mark..... :	N/A
Model and/or type reference.....:	ST61XQD
Rating(s)(V/Hz).....:	AC220-240V, 50/60Hz, 40W
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..... :	Dec. 11, 2023
Date(s) of performance of test.....:	Dec. 11, 2023 to May. 14, 2025

Test item particulars:	
Type of light source:	
- Lighting technology used	☐HL ☐LFLT5HE ☐LFL T5 ☐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
Lamp cap installed:	N/A
General product parameters	
Energy consumption in on-mode (kWh/1 000 h)	40W
Energy efficiency class	☐A ☐B ☐C ☐D ☐E ■F ☐G
Rated useful luminous flux.....(lm):	4500lm
Rated CCT …..…….…....(K):	3000K
Power (Pon), expressed in W.....:	40W
Standby power (Psb)…….....(W):	N/A
Networked standbypower(Pnet)for CLS.(W):	N/A
Rated Ra.....:	>80
Outer dimensions.....(mm):	--

Spectral power distribution.....:	See Table 4: Spectral power distribution
Claim of equivalent power .....:	□YES ■ No
Chromaticity coordinates (x and y)...:	x: 0.447 y:0.410
Peak luminous intensity .....(cd) :	1244
Beam angle in degrees.....(°):	123.8
R9 colour rendering index value R9..:	37
Survival factor .....:	≥90%
The lumen maintenance factor.....:	≥93.12%
Displacement factor (cosφ1).....:	≥0.9
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 ■ No
Flicker metric (Pst LM) .....:	≤1.0
Stroboscopic effect metric (SVM)....:	≤0.4
Rated life time .....(h):	15000

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 AC230V and a stable ambient temperature 25±10℃.
3. THD≤ 3%

General remarks:

The test results presented in this report relate only to the object tested.
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"(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.
Remark: This test report replaces test report No. RKEYS250512074 released on May. 14, 2025 as the current valid report, the original test report is void.

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
Annex I (Clause)	**Definitions in Regulation (EU) 2019/2020**		**P**
	Number of sample used for test ……..…:	10 pcs	P
(3)	Directional Light Source		N
	at least 80 % of total luminous flux within a solid angle of π sr (corresponding to a cone with angle of 120°)		N
(15)	Useful luminous flux Φuse		P
	for non-directional light sources it is the total flux emitted in a solid angle of 4π sr (corresponding to a 360° sphere)		P
	for directional light sources with beam angle ≥ 90°it is the flux emitted in a solid angle of πsr (corresponding to a cone with angle of 120°)		N
	for directional light sources with beam angle < 90° it is the flux emitted in a solid angle of 0,586π sr (corresponding to a cone with angle of 90°)		N
Annex II (Clause)	**Energy Efficiency Requirements in Regulation (EU) 2019/2020**		**P**
1.(a)	**Energy Efficiency Requirements – Light Source**		P
	On-mode Power Pon (W):	Pon=39.56W	P
	Maximum Allowed Power Ponmax (W): Ponmax = C x (L + Φuse/(F x η)） x R	Ponmax=42.57W	P
	Φuse:	4446.4lm	P
	Threshold efficacy η (lm/W): η for LED:	112	P
	End loss factor L (W) depending on light source: L for LED:	1.5	P
	End loss factor L (W) for connected light sources: 2.0		N
	Efficacy Factor F: 1.00 for non-directional light sources (NDLS, using total flux)	1.00	P
	Efficacy Factor F:		N

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
	0.85 for directional light sources (DLS, using flux in a cone)		N
	CRI Factor R: 0.65 for CRI ≤ 25		N
	CRI Factor R: (CRI+80)/160 for CRI > 25, rounded to two decimals	R=(83.6+80)/160=1.0225	P
	Correction Factor C Depending on Light Source Characteristics in Table 2		N
	Non-directional (NDLS) not operating on mains (NMLS), Basic Value: 1.00		N
	Non-directional (NDLS) operating on mains (MLS), Basic Value: 1.08		P
	Directional (DLS) not operating on mains (NMLS), Basic Value: 1.15		N
	Directional (DLS) operating on mains(MLS), Basic Value: 1.23		N
	Special Light Source Bonus on C		N
1.(a)	**Standby power – Light Source**		**N**
	The standby power Psb of a light source shall not exceed 0.5 W		N
	The networked standby power Pnet of a connected light source shall not exceed 0.5 W		N
	The allowable values for Psb and Pnet shall not be added together		N
1.(b)	**Energy Efficiency Requirements – Separate Control Gear (at full-load)**		**N**
	Control gear for LED or OLED light sources: $P_{eg}^{0.81}/(1.09 \times P_{eg}^{0.81} + 2.10)$		N
	The no-load power Pno of a separate control gear shall not exceed 0.5 W		N

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
	The standby power Psb of a separate control gear shall not exceed 0.5 W		N
	The networked standby power Pnet of a connected separate control gear shall not exceed 0.5 W		N
	The allowable values for Psb and Pnet shall not be added together		N
2.	**Functional Requirements – Light Source (Table 4)**		**P**
	Colour Rendering Index CRI: ≥80	83.6	P
	Displacement Factor DF at Power Input Pon for LED and OLED MLS:		P
	No limit at Pon ≤ 5 W DF ≥ 0.5 at 5 W < Pon ≤ 10 W, DF ≥ 0.7 at 10 W < Pon ≤ 25 W DF ≥ 0.9 at 25 W < Pon	0.96	P
	Lumen Maintenance Factor (for LED and OLED): $X_{LMF,MIN}\% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$	98.41%	P
	Survival Factor (for LED and OLED): At least 9 light sources of the test sample must be operational after completing the test in Annex V of this Regulation.	100%	P
	Colour consistency for LED and OLED light	1.5	P
	sources: Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.		P
	Flicker for LED and OLED MLS: Pst LM ≤ 1.0 at full-load	0.010	P
	Stroboscopic effect for LED and OLED MLS: SVM ≤ 0.9 at full-load; From 1 September 2024 SVM ≤ 0.4 at full-load	0.008	P

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
3.(a)	**Information to be displayed on the light source itself**		P
	Useful luminous flux (lm)		P
	Correlated colour temperature (K)		P
	Beam angle (°)..... For directional light sources		N
3.(b)	**Information to be visibly displayed on the packaging**		P
3.(b)(1)	**Light source placed on the market, not in a containing product**		P
	Useful luminous flux (lm): In a font at least twice as large as the display of the on-mode power (Pon) Clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)		P
	(b) Correlated Colour Temperature, rounded to the nearest 100 K		P
	(c) Beam angle in degrees For directional light sources		N
	(d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC)		P
	(e) L70B50 lifetime for LED and OLED light sources, expressed in hours		P
	(f) on-mode power (Pon), expressed in W		P
	(g) standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging		N
	(h) networked standby power (Pnet) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging		N
	(i) Colour Rendering Index, rounded to the nearest		P

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
	integer		
	(j) Clear indication to this effect, if CRI< 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80.		N
	(k) Information on non-standard conditions (such as ambient temperature Ta ≠ 25 ℃ or specific thermal management is necessary)		P
	(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
	(m) if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place		N
	(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
3.(b)(2)	**Separate control gears** For separate control gear placed on the market as a stand-alone product, not as a part of a containing product		**N**
	(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
	(b) the type of light source(s) for which it is intended		N
	(c) the efficiency in full-load, expressed in percentage		N

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
	(d) the no-load power (Pno), 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
	(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		N
	(f) the networked standby power (Pnet), 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
	(g) a warning if the control gear is not suitable for		N
	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
	(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
3.(c)	**Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative**		**N**
3.(c)(1)	Separate control gears For any separate control gear that is placed on the EU market, the following information shall be displayed on at least one free-access website:		N

(EU) 2019/2020			
Clause	Requirement + Test	Result - Remark	Verdict
	(a) the information specified in point 3(b)(2), except 3(b)(2)(h)		N
	(b) the outer dimensions in mm		N
	(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
	(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
	(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
	(f) recommendations on how to dispose of it at		N

Appendix-Test Data Sheet

1、Initial Lumen Measurement and Color Performance:

Sample No.	Power Pon (W)	Disp. Factor	Luminous Flux Φtotal (lm)	Efficacy (lm/W)	Color Temp (CCT)	Color rendering (Ra)	R9	SDCM	x	y
1	39.56	0.960	4446.40	112.40	2903	83.6	37	2.8	0.4451	0.4086
2	38.77	0.962	4401.94	113.54	2932	84.0	38	2.9	0.4540	0.4147
3	40.75	0.955	4490.86	110.21	2918	83.2	38	2.8	0.4464	0.4106
4	39.96	0.965	4477.52	112.05	2883	83.4	37	3.1	0.4429	0.4049
5	40.43	0.970	4504.20	111.41	2929	84.4	37	2.8	0.4496	0.4139
6	40.39	0.950	4424.17	109.54	2947	84.5	38	2.9	0.4460	0.4090
7	40.79	0.941	4495.31	110.21	2923	84.2	39	2.7	0.4469	0.4070
8	40.59	0.931	4473.08	110.20	2888	83.5	37	3.0	0.4478	0.4111
9	40.03	0.970	4504.20	112.52	2935	84.3	38	2.8	0.4442	0.4082
10	40.19	0.967	4526.44	112.63	2888	83.9	37	3.1	0.4420	0.4074
Avg.	40.15	0.957	4474.41	111.44	2915	83.9	38	2.9	0.4465	0.4095

2、Different Mode Power、Flicker、Stroboscopic Effect and Lumen MaintenanceTest:

Sample No.	No-Load Power Pno	Standby Power Psb	Network Sb. Power Pnet	Flicker Pst LM	Stroboscopic Effect SVM	Total Luminous flux (lm)	Lumen Maintenance at 3600h (%)	Survival factor at 3600h
1	N/A	N/A	N/A	0.010	0.008	4375.60	98.41%	P
2	N/A	N/A	N/A	0.009	0.008	4397.48	99.90%	P
3	N/A	N/A	N/A	0.010	0.008	4412.79	98.26%	P
4	N/A	N/A	N/A	0.011	0.009	4401.85	98.31%	P
5	N/A	N/A	N/A	0.010	0.008	4447.80	98.26%	P
6	N/A	N/A	N/A	0.011	0.008	4344.97	98.41%	P
7	N/A	N/A	N/A	0.010	0.008	4414.11	98.19%	P
8	N/A	N/A	N/A	0.009	0.009	4410.60	98.60%	P
9	N/A	N/A	N/A	0.010	0.008	4418.92	98.11%	P
10	N/A	N/A	N/A	0.009	0.009	4432.48	98.21%	P
Avg.	N/A	N/A	N/A	0.010	0.008	4405.66	98.47%	P

ATTACHMENT 1(S)

Energy efficiency classes

Standard	Clause	Model No.	Verdict
(EU) 2019/2015	Energy class	ST61XQD	P
Conditions	-Test conditions: -ambition: 25℃/65%R.H. -Test voltage:AC230V		
Φuse	4446.4lm		
Pon	Pon = 39.56W		
FTM	1.00		
ηTM	112.40lm/W		

Technical requirements	Test result		
$\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM}$ (lm/W).	Energy efficiency class	Total mains efficacy ηTM (lm/W)	--
	A	210 ≤ηTM	N
	B	185 ≤ηTM < 210	N
	C	160 ≤ηTM < 185	N
	D	135 ≤ηTM < 160	N
	E	110 ≤ηTM < 135	N
	F	85 ≤ηTM < 110	P
	G	ηTM < 85	N

Factors FTM by light source type		
Light source type	Factor FTM	--
Non-directional (NDLS) operating on mains (MLS)	1.000	P
Non-directional (NDLS) not operating on mains (NMLS)	0.926	N
Directional (DLS) operating on mains (MLS)	1.176	N
Directional (DLS) not operating on mains (NMLS)	1.089	N

ATTACHMENT2（S）

Spectral power distribution

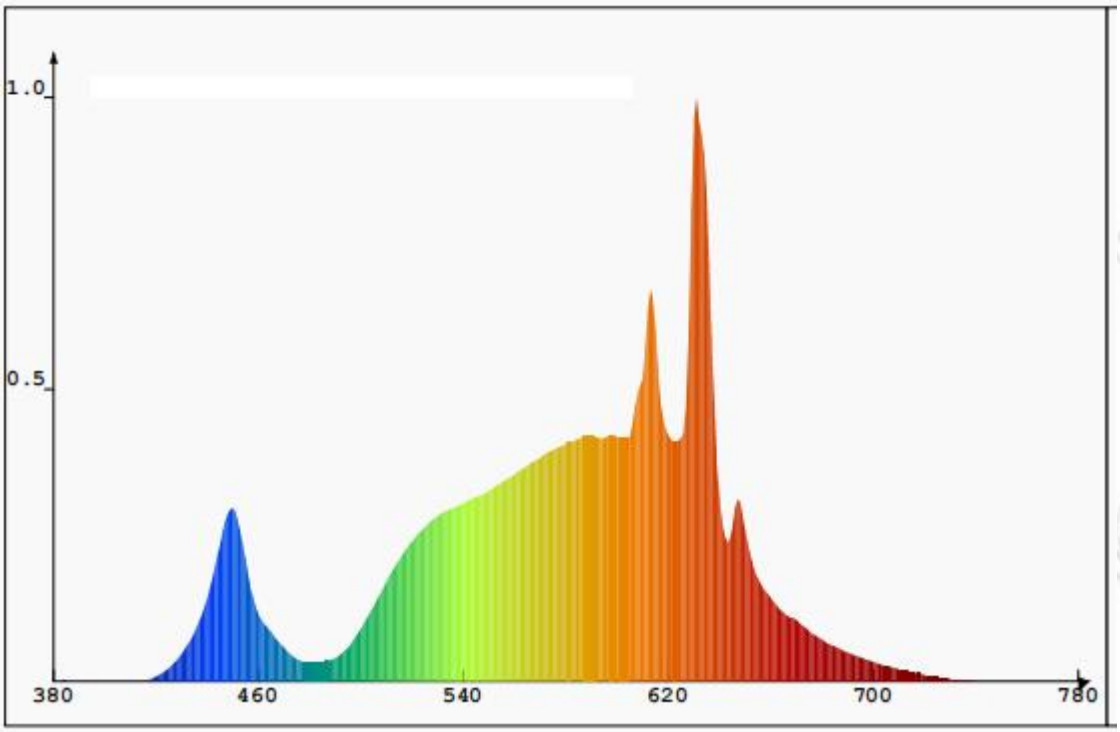

Photo documentation

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☐ rear

☐ right side

☐ left side

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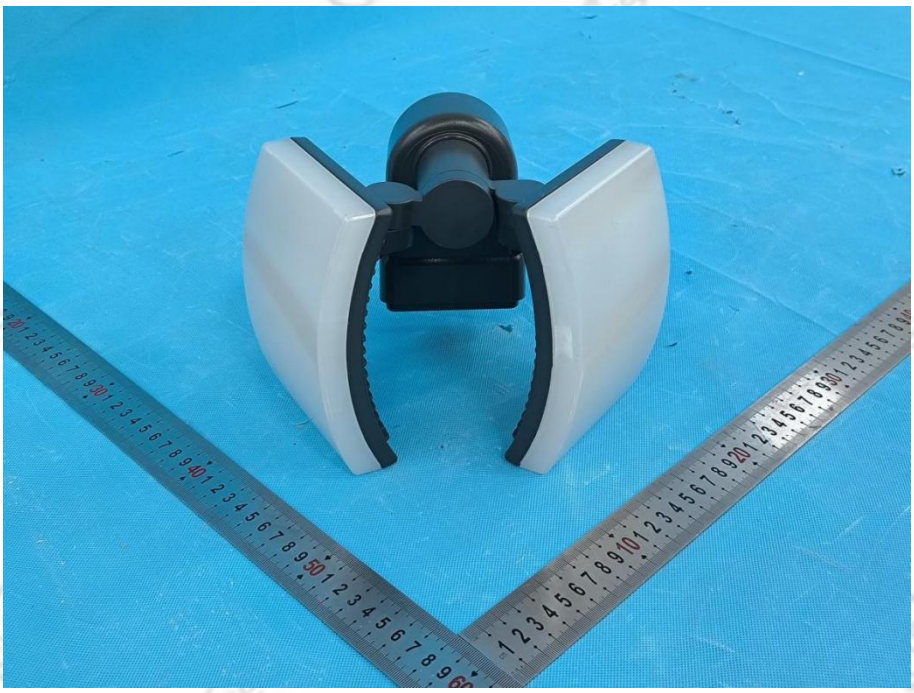

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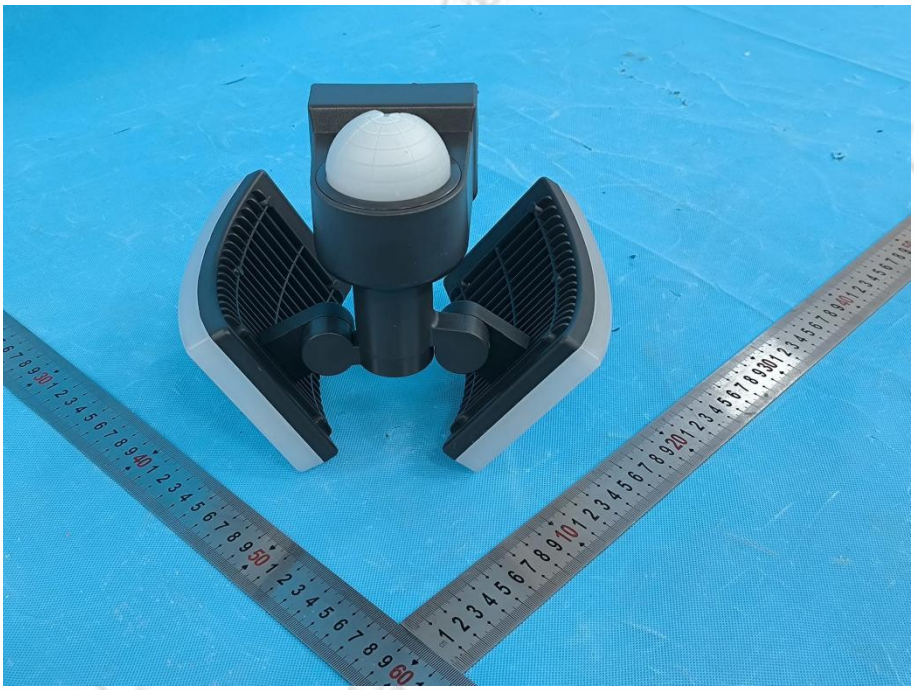

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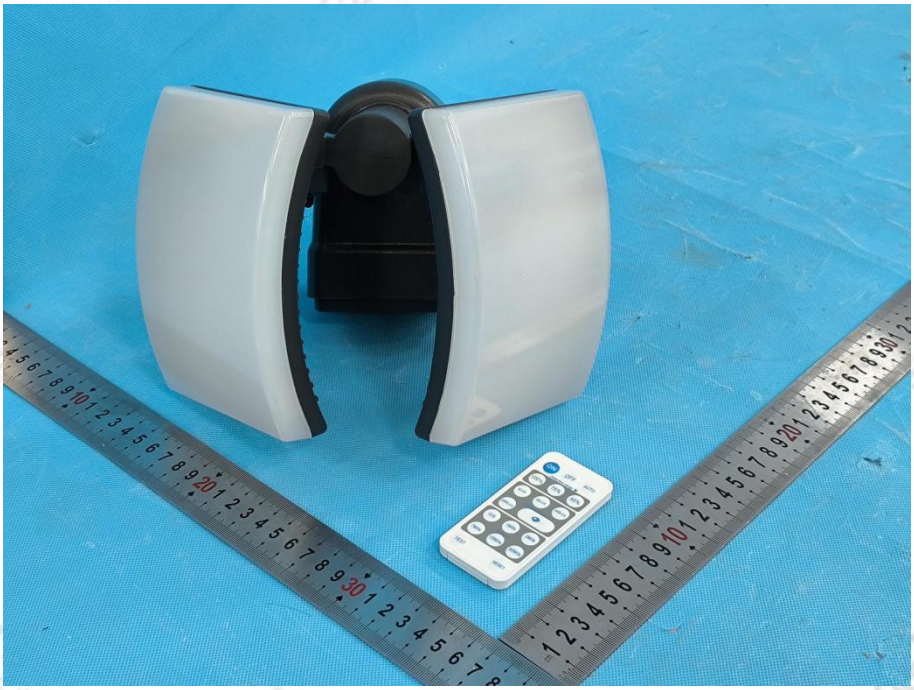

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