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 repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012

COMMISSION DELEGATED REGULATION (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012

Report Number.....:	HST20260512036R
Tested by (name + signature).....:	Jess Chen/ Test engineer
Approved by (name + signature).....:	Johnson Wang/ Project manager
Date of issue.....:	2026-05-12
Total number of pages.....:	15
Testing Laboratory .....:	**Shenzhen HST Testing Co., Ltd**
Address .....:	Room 402, Building 1, Oushute Factory, No. 19 Rongxing Road, Shatian Community, Kengzi Street, Pingshan District, Shenzhen, Guangdong Province, China
Applicant's name.....:	**Shenzhen Ketuo Hengtong Electronics Co.,Ltd.**
Address.....:	522 Maoye Painting and Calligraphy Plaza, Buji Street,Longgang District 518000 Shenzhen,Guangdong
Manufacturer's name.....:	**Shenzhen Ketuo Hengtong Electronics Co.,Ltd.**
Address.....:	522 Maoye Painting and Calligraphy Plaza, Buji Street,Longgang District 518000 Shenzhen,Guangdong
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.....:	Test report
Non-standard test method.....:	N/A
Test Report Form No.....:	COMMISSION REGULATION (EU) 2019/2020
Test Report Form(s) Originator.....:	HST
Master TRF.....:	Dated 2025-08

Summary of testing:

The sample(s) tested complies with the requirements of COMMISSION REGULATION (EU) 2019/2020

General disclaimer:

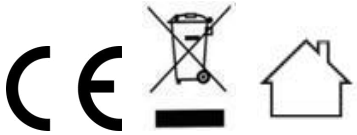
The test results presented in this report relate only to the object tested.

Test item description.....:	Lamp
Trade Mark.....:	N/A
Model/Type reference.....:	H30
Ratings.....:	85-265V~, 50/60Hz, 18W
Rated useful luminous (lm).....:	1900 lm
Rated color temperature (CCT).....:	6000 K
Rated Ra.....:	80
Rated life (h).....:	26280 h
Test item particulars:	
Type of light source.....:	
- Lighting technology used .....:	☐ HL ☐ LFLT5HE ☐ LFL T5HO ☐ CFLni ☐ other FL ☐ HPS ☐ MH ☐ other HI ☒ 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
- Cap-type (or other electric interface.....:	Conductor jointing
General product parameters:	
Energy consumption in on mode (kWh/1000 h).....:	18
Energy efficiency class .....:	☐A ☐B ☐C ☐D ☐E ☒F ☐G
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°)....:	See Appendix 2
Correlated colour temperature (K):	See Appendix 2
On-mode power (Pon), expressed in W .....:	See Appendix 1
Standby power (Psb) ..... (W):	See Appendix 1
Networked standby power (Pnet) for CLS.....:	See Appendix 1
Rated Ra .....:	See Appendix 2

Colour rendering index range (Minimum) ..... :	See Appendix 2
Colour rendering index range (Maximum) ..... :	See Appendix 2
Outer dimensions(mm)..... :	L300*W300*H120
Spectral power distribution in the range 250 nm to 800 nm, at full-load .....:	See Appendix 4
Claim of equivalent power .....:	☐ Yes: ☒ N/A
Chromaticity coordinates (x and y):	See Appendix 2
Peak luminous intensity(cd) .....:	See Appendix 3
Beam angle in degrees (°).....:	See Appendix 3
R9 colour rendering index value ...:	See Appendix 2
Survival factor .....:	See Appendix 3
The lumen maintenance factor .....:	See Appendix 3
Displacement factor (cos φ1) .....:	See Appendix 1
Colour consistency in McAdam ellipses .....:	See Appendix 2
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) .....:	See Appendix 3
Stroboscopic effect metric (SVM) .:	See Appendix 3

Copy of marking plate:

Lamp
Model: H30
Rating: 85-265V~, 50/60Hz, 18W



Shenzhen Ketuo Hengtong Electronics Co.,Ltd.
Made in China

Notes:

1. The above marking are the minimum requirements by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

Possible test case verdicts:	
Test case does not apply to the test object..... :	N (Not applicable)
Test object does meet the requirement..... :	P (Pass)
Test object does not meet the requirement..... :	F (Fail)
Name and address of factory..... :	Shenzhen Ketuo Hengtong Electronics Co.,Ltd. 522 Maoye Painting and Calligraphy Plaza, Buji Street,Longgang District 518000 Shenzhen, Guangdong

Testing..... :	
Test parameter..... :	230V~, 50Hz
Date of receipt of test item..... :	2025-08-18
Date (s) of performance of tests..... :	2025-08-18 to 2026-05-12
General product information and other remarks:	
N/A	

(EU) 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
Annex I	**Definitions in Regulation (EU) 2019/2020**		**P**
1	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 Φ_{use}		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 π sr (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 P_{on} (W):	P_{on}=18 W	P
	Maximum Allowed Power P_{onmax} (W): $P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R$	P_{onmax}=18.72W	P
	Φ_{use}:	1900 lm	P
	Threshold efficacy η (lm/W): η for LED:	120.0	P
	End loss factor L (W) depending on light source: L for LED: 1.5	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: 0.85 for directional light sources (DLS, using flux in a cone)		N

(EU) 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
	CRI Factor R: 0.65 for CRI ≤ 25		N
	CRI Factor R: (CRI+80)/160 for CRI > 25, rounded to two decimals	R=(80+80)/160	P
	Correction Factor C Depending on Light Source Characteristics in Table 2		P
	Non-directional (NDLS) not operating on mains (NMLS), Basic Value: 1.00		N
	Non-directional (NDLS) operating on mains (MLS), Basic Value: 1.08	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 P_{sb} of a light source shall not exceed 0.5 W		N
	The networked standby power P_{net} of a connected light source shall not exceed 0.5 W		N
	The allowable values for P_{sb} and P_{net} 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: $P_{cg}^{0.81}/(1.09 \times P_{cg}^{0.81} + 2.10)$		N
	The no-load power P_{no} of a separate control gear shall not exceed 0.5 W		N
	The standby power P_{sb} of a separate control gear shall not exceed 0.5 W		N
	The networked standby power P_{net} of a connected separate control gear shall not exceed 0.5 W		N
	The allowable values for P_{sb} and P_{net} shall not be added together		N

(EU) 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
2.	**Functional Requirements – Light Source (Table 4)**		P
	Colour Rendering Index CRI: ⩾80	See Appendix 2	P
	Displacement Factor DF at Power Input P_{on} for LED and OLED MLS:		P
	No limit at $P_{on} \leqslant 5$ W DF ⩾ 0.5 at 5 W < $P_{on} \leqslant$ 10 W, DF ⩾ 0.7 at 10 W < $P_{on} \leqslant$ 25 W DF ⩾ 0.9 at 25 W < P_{on}	See Appendix 1	P
	Lumen Maintenance Factor (for LED and OLED): $X_{LMF,MIN}\% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$	See Appendix 3	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.	See Appendix 3	P
	Colour consistency for LED and OLED light sources: Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	See Appendix 2	P
	Flicker for LED and OLED MLS: P_{st} LM ≤ 1.0 at full-load	See Appendix 3	P
	Stroboscopic effect for LED and OLED MLS: SVM ≤ 0.9 at full-load	See Appendix 3	P

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
	(a) Useful luminous flux (lm): - 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°)		P

(EU) 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
	(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)	See the nameplate	P
	(e) L70B50 lifetime for LED and OLED light sources, expressed in hours		P
	(f) on-mode power (P_{on}), expressed in W		P
	(g) 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		P
	(h) 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
	(i) Colour Rendering Index, rounded to the nearest integer		P
	(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 °C or specific thermal management is necessary)		N
	(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		P
	(m) if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place		P
	(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		P

(EU) 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
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
	(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
	(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		N
	(f) 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
	(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
	(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 tables

Appendix 1 (Test results of electrical parameter)						
Sample No.	Measured voltage(V)	Measured Pon(W)	No-Load Power P_{no}(W)	Standby Power P_{sb}(W)	Network Sb. Power P_{net}(W)	Displacement factor (DF)
1	230	17.97	N/A	N/A	N/A	0.743
2	230	17.89	N/A	N/A	N/A	0.731
3	230	18.05	N/A	N/A	N/A	0.732
4	230	17.68	N/A	N/A	N/A	0.728
5	230	17.89	N/A	N/A	N/A	0.730
6	230	17.63	N/A	N/A	N/A	0.743
7	230	17.80	N/A	N/A	N/A	0.739
8	230	18.17	N/A	N/A	N/A	0.738
9	230	17.95	N/A	N/A	N/A	0.737
10	230	17.88	N/A	N/A	N/A	0.737
Average	230	17.89	N/A	N/A	N/A	0.736
Required	--	≤18.72	≤0.5W	≤0.5W	≤0.5W	≥0.7

Appendix 2 (Test results of Initial test results)								
Sample No.	Initial Φuse (lm)	Efficacy (lm/W)	Colour rendering (CRI)	Colour consistency	Chromaticity coordinates		R9	CCT
					x	y		
1	1881.70	104.73	81.9	2.8	0.3162	0.3424	1	6317
2	1909.72	106.74	81.2	1.5	0.3142	0.3400	2	6258
3	1903.84	105.48	81.9	2.7	0.3162	0.3421	2	6209
4	1868.40	105.66	81.9	2.8	0.3164	0.3421	2	6201
5	1893.73	105.86	81.5	2.8	0.3160	0.3424	2	6182
6	1907.63	108.21	81.5	2.9	0.3166	0.3422	2	6397
7	1909.37	107.30	81.0	3.0	0.3165	0.3426	1	6408
8	1935.66	106.53	81.0	1.8	0.3149	0.3404	2	6234
9	1941.73	108.16	81.4	2.7	0.3159	0.3422	3	6214
10	1931.86	108.07	82.0	2.8	0.3162	0.3423	2	6225

Appendix tables

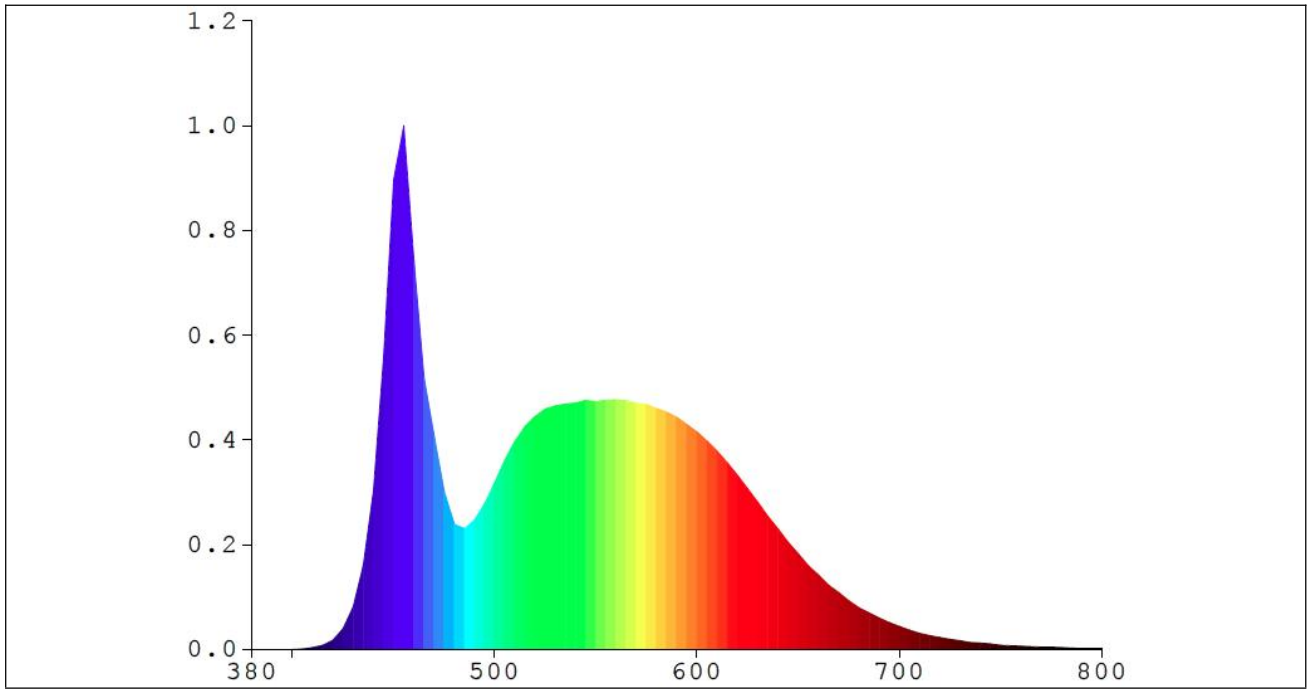
Average	1908.36	106.67	81.5	2.6	0.3159	0.3418	2	6265

Appendix 3 (Test results of survival factor, lumen maintenance, lighting distribution data, Flicker(Pst LM), Stroboscopic effect(SVM))

Sample No.	Initial Φuse (lm)	3600H Φuse (lm)	XLMF,MIN% at 3600H	survival factor at 3600H	Beam angle (°)	Peak luminous intensity (cd)	Flicker(Pst LM)	Stroboscopic effect(SVM)
1	1881.70	1816.99	96.56%	100%	N/A	N/A	0.109	0.042
2	1909.72	1837.60	96.22%	100%	N/A	N/A	0.108	0.038
3	1903.84	1843.64	96.84%	100%	N/A	N/A	0.111	0.037
4	1868.40	1798.47	96.26%	100%	N/A	N/A	0.103	0.042
5	1893.73	1821.87	96.21%	100%	N/A	N/A	0.099	0.036
6	1907.63	1846.03	96.77%	100%	N/A	N/A	0.113	0.034
7	1909.37	1845.65	96.66%	100%	N/A	N/A	0.104	0.037
8	1935.66	1871.47	96.68%	100%	N/A	N/A	0.098	0.036
9	1941.73	1879.24	96.78%	100%	N/A	N/A	0.098	0.036
10	1931.86	1866.78	96.63%	100%	N/A	N/A	0.098	0.042
Average	1908.36	1842.77	96.56%	100%	N/A	N/A	0.104	0.038

Appendix 4 (Test results of spectral power distribution)

Appendix tables



Appendix 5（Energy efficiency classes)

Energy efficiency class	Total mains efficacy η_{TM} (lm/W)
A	$210 \leq \eta_{TM}$
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	$\eta_{TM} < 85$

Factors F_{TM} by light source type	
Light source type	Factor FTM
Non-directional (NDLS) operating on mains (MLS)	1,000
Non-directional (NDLS) not operating on mains (NMLS)	0,926
Directional (DLS) operating on mains (MLS)	1,176
Directional (DLS) not operating on mains (NMLS)	1,089

According to rated value

Total mains efficacy η_{TM} (lm/W)	Initial Φuse (lm)	P_{on}(W)	Factor F_{TM}	Energy Efficiency Class
105.6	1900.0	18.0	1.000	F

According to measured value

Total mains efficacy η_{TM} (lm/W)	Initial Φuse (lm)	P_{on}(W)	Factor F_{TM}	Energy Efficiency Class
106.7	1908.36	17.89	1.000	F

Test Equipment list:

Equipment ID	Instrument	Model	Calibration Date	Calibration Due Date
S002	Power Meter	WT310E	2026/04/15	2027/04/15
S003	Oscilloscope	TDS3032	2026/04/15	2027/04/15
S028	Variable frequency power supply	Variable frequency power supply	2026/04/15	2027/04/15
S040	DC source	WYK50010K	2026/04/15	2027/04/15
S055	1.5m Integating Sphere	1.5M	2026/04/15	2027/04/15
S056	Flicker Photometer	Voda	2026/04/15	2027/04/15
S059	Standard Lamp	100W	2026/04/15	2027/04/15
S067	Single-phase frequency conversion power supply	LD-8210	2026/04/15	2027/04/15
S068	Isolation transformer	GWL-1000	2026/04/15	2027/04/15

Product Photos

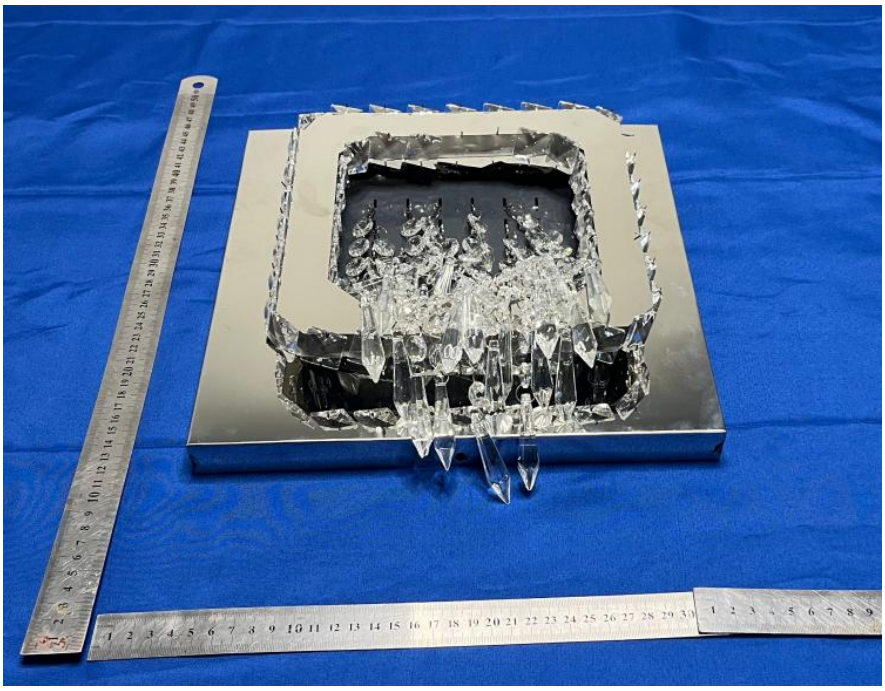


Fig.1

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