



Guangdong Meide Testing Technology Co., Ltd.



TEST REPORT OF IES LM-79-08

Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

Client..... : Blackjack Lighting LLC

Address..... : 1547 Barclay Blvd Buffalo Grove, IL 60089

Test Model..... : PSM-431-SN-27U-30K

Brand Name..... : Blackjack Lighting

Testing Laboratory..... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,
Songshan Lake Hi-tech Industrial Development Zone, Dongguan City,
Guangdong Pr., China.

Testing location..... : As above

Report No..... : CA1910185L 01007

Test Date..... : Oct.28,2019

Report Date..... : Oct.30,2019

Tested by:

Tim Qian

Tim Qian/ Test Engineer

Checked by:

Luke Lei

Luke Lei/ Project Engineer

Approved by:

Jessie Li

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



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1. Product Information

Manufacturer.....: Blackjack Lighting LLC

Product Type.....: 43" PRISM SINGLE TIER CHANDELIER

Rated Voltage/Frequency.....: 120-277V AC 50/60Hz

Rated Power.....: 17W

Declared CCT.....: 3000K

LED Manufacturer.....: N/A

LED Model No.....: N/A

Receipt samples.....: 1 unit

Date of Receipt samples.....: Oct.28,2019

2. Standards Used

- IES LM-79-08:Approved Method:Electrical and Photometric Measurements of Solid-State Lighting Products

3. Test equipment list

Test Equipment	Serial No	Model No	Range Used	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	1600mm,3000W/10A	2020/10/06
Digital Power Meter	MD-E001	PF2010	0-600V,0-20A,0-4KW	2020/10/06
AC Testing Power Source	MD-E002	DPS1060	0-300Vac,0-20A,0-5KW	2020/10/06
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	7.295A,2856K,11227lm,94.35V	2020/10/06
Integrating Sphere System	MD-E029	2M	--	2020/10/06
High Accuracy Array Spectroradiometer	MD-E011	HAAS-3000	380-780nm	2020/10/06
Digital Power Meter	MD-E008	PF310	0-600Vac,0-20A	2020/10/06
AC Testing Power Source	MD-E010	DPS1010	0-300Vac,0-10A,0-1000W	2020/10/06
Standard Lamp	MD-E012	D204	3.9424A,20.75V,2856K,1332.3lm	2020/02/20

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).



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4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ during measurement. And relative humidity is less than 65%.

Goniophotometer System

The sample was tested according to the IES LM-79-2008.

Photometric parameters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

Integrating Sphere System

The sample was tested according to the IES LM-79-2008.

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.



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5. Integrating Sphere Test Results

5.1 Test Data

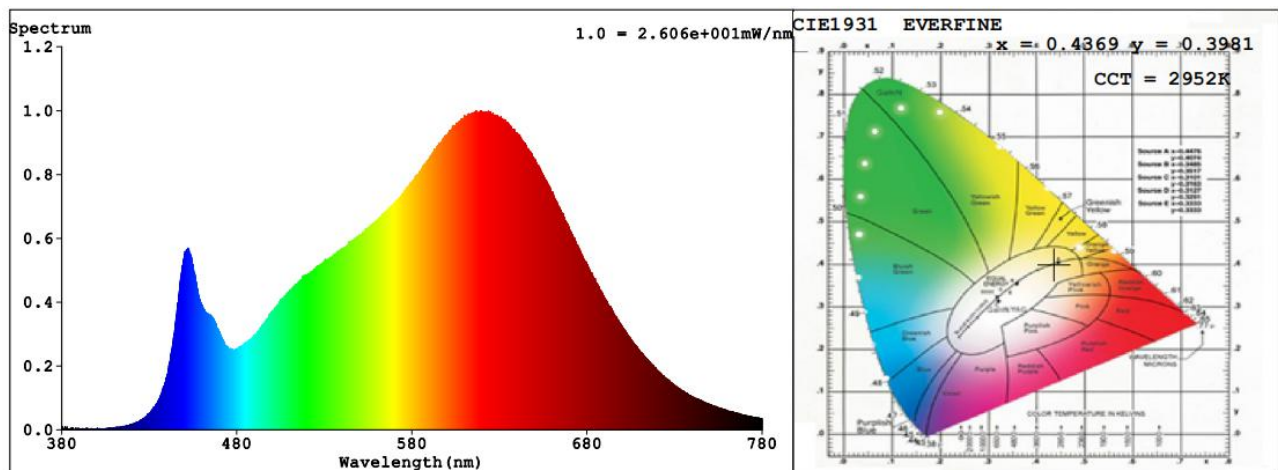
Test Ambient Temperature	25.1℃	Test orientation	Downward
Operate time(Min.)	60	stabilization time(Min.)	45

Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.1466	16.87	0.9591	1269.8	75.27

CCT (K)	Ra	R9	x	y	u'	v'
2952	93.7	63	0.4369	0.3981	0.2531	0.5190

5.2 Spectrum



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4369$ $y = 0.3981$ / $u' = 0.2531$ $v' = 0.5190$ ($duv = -2.38e-03$)

CCT= 2952K Prcp WL: $L_d = 583.9nm$ Purity=50.6%

Peak WL: $L_p = 617nm$ FWHM: $\approx 158.1nm$ Ratio: R=24.9% G=72.1% B=3.1%

Render Index: $R_a = 93.7$

R1 =95 R2 =98 R3 =98 R4 =94 R5 =95 R6 =96 R7 =91
R8 =83 R9 =63 R10=95 R11=95 R12=84 R13=96 R14=100 R15=91



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6. Goniophotometer Test results

6.1 Test Data

Test Ambient Temperature	25.1℃	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	60

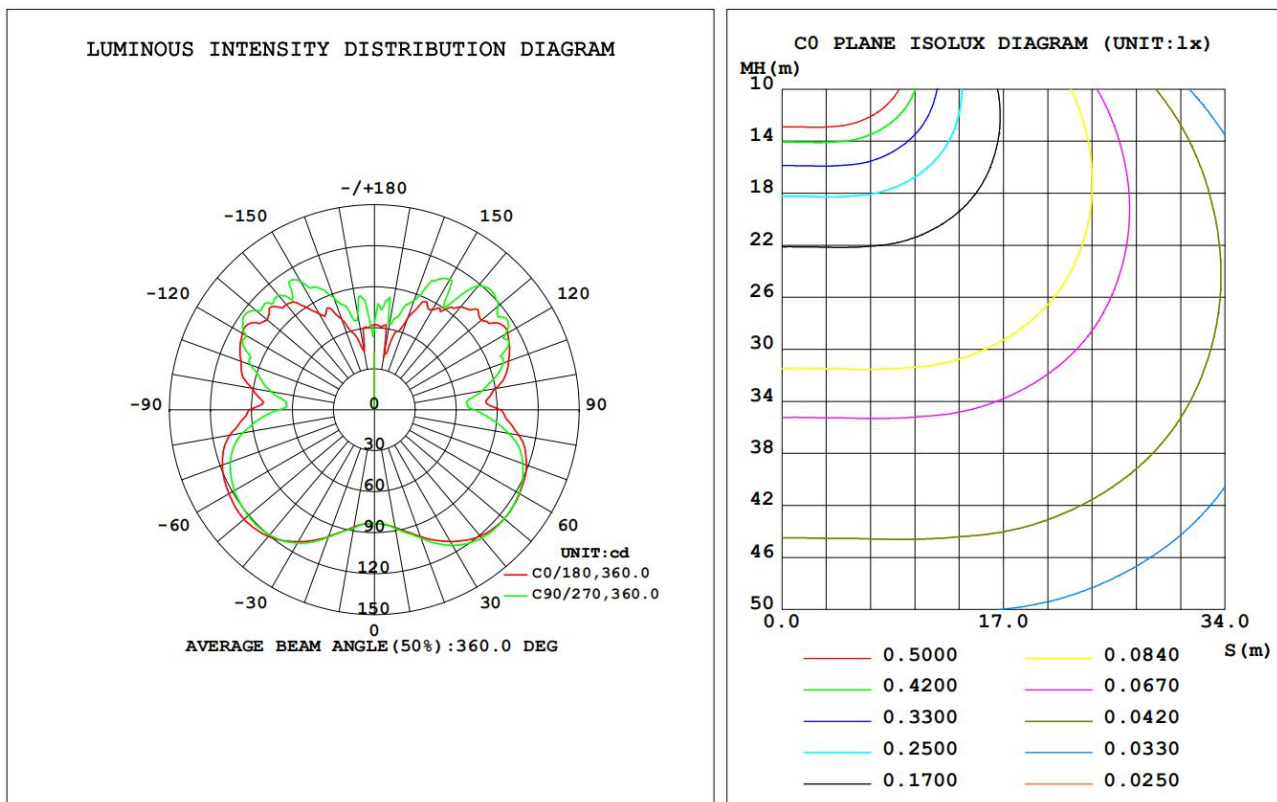
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.0	60	0.1464	0.9599	16.86

Photometric Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
1266.7	75.13	125.2	2.07	2.04

6.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)





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6.3 Zonal Flux Diagram

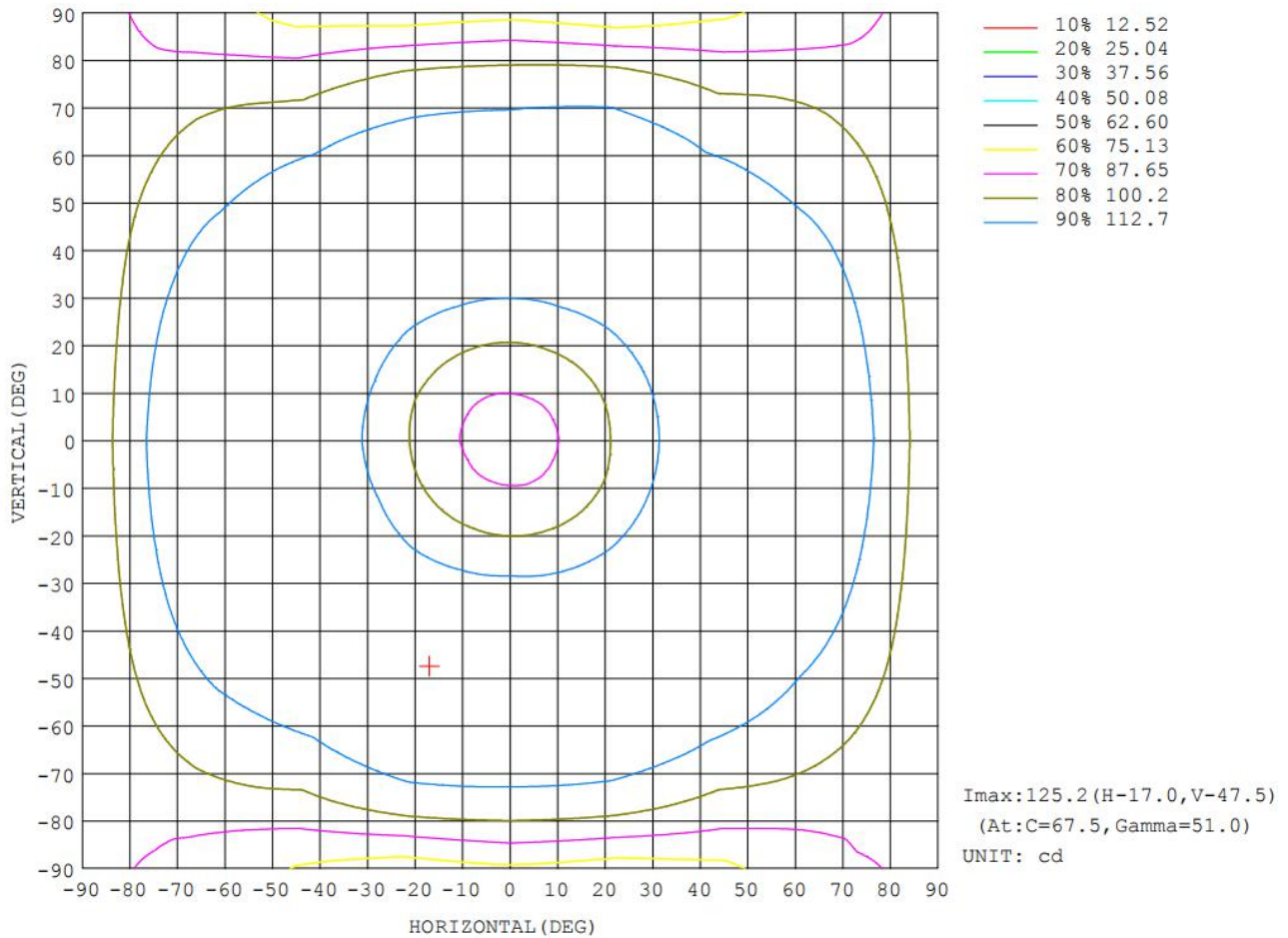
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	ξ lum, lamp
10	87.50	87.65	88.15	87.89	87.14	87.19	87.78	87.59	0- 10	8.143	8.143	0.64,0.64
20	98.82	98.74	100.0	99.62	98.60	98.40	99.13	98.71	10- 20	26.50	34.64	2.73,2.73
30	111.2	111.9	114.5	112.4	111.4	111.3	112.7	111.6	20- 30	49.20	83.84	6.62,6.62
40	120.7	120.4	122.4	120.7	121.0	119.3	119.6	119.4	30- 40	73.58	157.4	12.4,12.4
50	124.0	123.1	124.1	123.0	124.6	121.5	120.7	121.2	40- 50	94.53	251.9	19.9,19.9
60	122.6	120.5	122.2	120.1	123.0	118.5	118.4	118.0	50- 60	109.3	361.3	28.5,28.5
70	118.4	113.1	115.7	112.2	118.5	110.7	112.3	111.0	60- 70	116.8	478.1	37.7,37.7
80	107.4	96.77	100.1	96.96	107.5	94.26	97.87	96.51	70- 80	114.4	592.4	46.8,46.8
90	92.63	73.15	72.87	74.59	91.74	70.98	69.94	73.23	80- 90	96.16	688.6	54.4,54.4
100	89.98	74.05	80.08	74.36	91.37	71.69	76.58	71.76	90-100	81.10	769.7	60.8,60.8
110	104.5	86.04	100.3	85.74	103.9	89.52	96.72	88.59	100-110	94.56	864.3	68.2,68.2
120	112.6	86.63	110.7	87.29	111.7	97.86	108.2	96.79	110-120	101.6	965.8	76.2,76.2
130	102.0	98.96	118.1	100.2	102.3	103.7	113.3	101.2	120-130	94.32	1060	83.7,83.7
140	98.35	92.37	118.6	90.53	100.5	88.74	109.6	93.60	130-140	79.60	1140	90,90
150	85.00	102.2	110.3	100.7	81.15	101.5	108.2	105.0	140-150	59.60	1199	94.7,94.7
160	71.46	75.27	85.37	78.77	70.68	77.80	87.23	72.21	150-160	41.61	1241	98,98
170	39.60	70.53	64.91	61.04	43.94	52.43	70.63	75.69	160-170	19.02	1260	99.5,99.5
180	62.38	49.07	63.34	57.25	62.25	61.98	59.69	58.14	170-180	6.703	1267	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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6.4 Isocandela Diagram





6.5 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2	83.2			
5	84.3	84.3	84.3	84.2	84.2	84.3	84.2	84.1	83.9	83.9	83.9	84.0	84.0	83.9	84.1	84.2			
10	87.5	87.7	87.6	87.8	88.1	88.1	87.9	87.8	87.1	87.2	87.2	87.4	87.8	87.8	87.6	87.6			
15	92.5	92.5	92.3	92.7	93.4	93.5	93.3	93.2	92.3	92.1	92.0	92.4	92.6	92.9	92.4	92.4			
20	98.8	98.1	98.7	99.6	100	100	99.6	99.1	98.6	97.8	98.4	99.0	99.1	99.3	98.7	98.2			
25	105	105	105	107	108	107	106	106	105	105	105	106	107	106	105	105			
30	111	112	112	113	115	114	112	113	111	112	111	113	113	113	112	111			
35	117	116	117	119	119	119	117	117	117	117	116	118	117	118	116	116			
40	121	119	120	122	122	123	121	120	121	120	119	121	120	121	119	119			
45	123	121	122	124	124	125	123	122	123	121	121	123	121	123	121	120			
50	124	121	123	125	124	125	123	122	125	121	121	123	121	123	121	120			
55	124	121	122	125	124	125	122	122	124	121	120	122	120	122	120	119			
60	123	119	120	123	122	123	120	120	123	119	118	120	118	121	118	118			
65	121	117	117	121	120	121	117	118	121	117	115	117	116	118	115	116			
70	118	114	113	116	116	117	112	115	119	114	111	112	112	114	111	113			
75	114	110	106	109	110	110	105	111	114	109	103	106	107	108	104	110			
80	107	102	96.8	99.3	100	99.5	97.0	104	107	103	94.3	96.9	97.9	98.7	96.5	104			
85	98.7	91.8	85.1	84.2	86.7	82.9	84.9	93.0	98.2	92.0	83.1	82.5	85.5	82.1	85.3	92.7			
90	92.6	83.2	73.2	71.4	72.9	71.5	74.6	83.4	91.7	82.4	71.0	69.7	69.9	68.8	73.2	83.0			
95	82.2	75.6	68.9	69.7	67.6	69.4	69.4	78.0	83.1	76.3	66.6	68.3	64.6	67.3	67.2	75.4			
100	90.0	87.1	74.1	79.8	80.1	79.8	74.4	87.9	91.4	86.6	71.7	77.2	76.6	78.7	71.8	85.3			
105	99.6	97.1	79.7	89.8	91.5	89.9	79.1	97.8	100	96.0	80.1	85.7	85.9	87.1	79.9	95.4			
110	104	103	86.0	98.0	100	96.9	85.7	104	104	101	89.5	97.3	96.7	98.4	88.6	101			
115	109	107	92.1	107	107	104	92.1	107	109	105	98.8	104	105	106	97.9	106			
120	113	111	86.6	107	111	105	87.3	110	112	109	97.9	104	108	106	96.8	110			
125	111	104	97.3	106	117	103	100	104	111	103	108	103	117	107	104	104			
130	102	106	99.0	101	118	100	100	108	102	102	104	95.9	113	99.0	101	99.8			
135	104	99.4	87.6	114	122	114	90.7	104	107	101	98.5	101	111	104	94.3	96.6			
140	98.3	98.9	92.4	102	119	103	90.5	100	101	99.6	88.7	97.6	110	94.9	93.6	95.1			
145	89.7	92.8	99.6	89.0	92.9	90.5	97.6	88.7	93.4	85.4	87.8	98.1	105	91.4	95.1	87.2			
150	85.0	98.1	102	89.0	110	90.6	101	91.2	81.2	88.2	102	92.5	108	84.6	105	96.1			
155	87.4	102	88.9	84.8	104	82.1	91.3	97.3	82.2	91.5	94.2	92.0	98.9	92.3	84.6	98.7			
160	71.5	77.0	75.3	79.5	85.4	71.8	78.8	79.2	70.7	68.9	77.8	73.0	87.2	84.1	72.2	79.2			
165	58.4	63.0	64.1	78.4	72.8	73.5	60.6	66.2	57.3	53.3	64.6	61.4	77.6	72.4	73.6	65.7			
170	39.6	56.4	70.5	74.6	64.9	64.3	61.0	47.6	43.9	45.6	52.4	61.0	70.6	66.2	75.7	67.8			
175	60.7	71.9	85.3	80.3	75.5	81.8	85.2	74.5	60.4	60.4	60.9	78.0	80.6	74.2	75.8	74.9			
180	62.4	61.1	49.1	57.3	63.3	57.7	57.2	70.2	62.2	62.2	62.0	49.8	59.7	63.3	58.1	58.5			



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7.Photo of sample

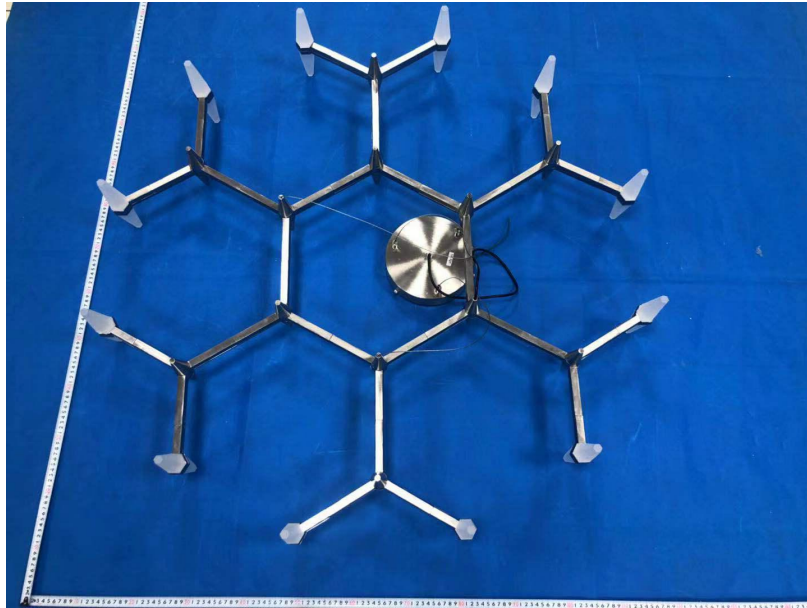


Figure 1

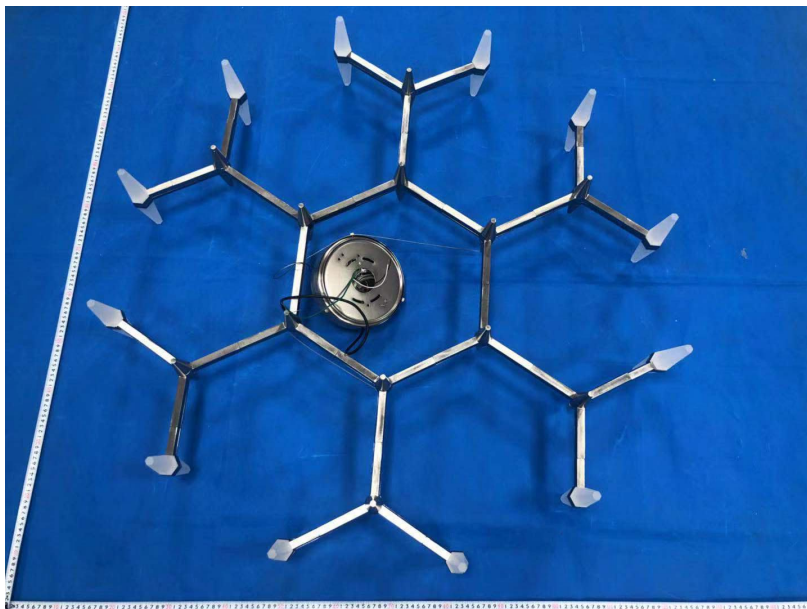


Figure 2



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Figure 3

***** END OF THE TEST REPORT*****