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NVLAP LAB CODE 500080-0

IESNA SUSTAINING MEMBER

Ref. No.: LCZP21010174
Version: 1.0
Date of Issue: Mar. 10, 2021
Total pages: 11

Test report of

IES LM-79-08

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

Rendered to:

ETI Solid State Lighting (Zhuhai) Ltd
No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China

For products:

LED Security Light

Models No.:

514032###(##=11-30,#=0-9)

(This is a color tunable product tunable to 3000K, 4000K and 5000K, ## can be 11-30, # can be 0-9 and represent different client and sales districts.)

Test Date:	Mar. 4, 2021 to Mar. 5, 2021
Test Lab.:	**LCTECH Guangdong Testing Services Co., Ltd.** 2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China Tel:+86-760-22833366 Fax:+86-760-22833399 E-mail:Service@lccert.com http://www.lccert.com
Test Sites:	1/F., Building I, Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Template No.:	LC-RT-PL-001 Rev.1.4
Test Note:	

Complied by:	Fish Tan	**Reviewed by:**	Lin Qiu
Fish Tan		**Lin Qiu**	
Mar. 10, 2021		**Mar. 10, 2021**	

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1. General

1.1 Product Information

Brand Name	Commercial Electric
Factory 1	Name: ETI Solid State Lighting (Zhuhai) Ltd Address: No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China
Factory 2	Name: NVC VIETNAM TECHNOLOGY AND LIGHTING COMPANY LIMITED Address: Lot CN23-1, Yen Phong Industrial park, Dong Phong commune, Yen Phong district, Bac Ninh province VIETNAM
Product Type	LED Security Light
Model Number	514032###(##=11-30,#=0-9)
Rated Inputs	120VAC, 60Hz
Rated Power	42W
Rated Light output	3600lm
Declared CCT	3000K/4000K/5000K
Power Supply	ETI-AD04200284132SDA
LED Package, Array or Module	SPMWHX228FD5WAW0XX, Samsung Electronics Co., LTD.
Receipt Samples	1 unit
Sample Code of lab.	210304102004
Date of Receipt Samples	Mar. 4, 2021
Note	3000K was selected for the test.

1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG C78.377-2011 or 2015 or 2017	Specifications for the Chromaticity of Solid State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

1.3 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-987	APW-120N	2020-12-23	2021-12-22
AC Power supply	LC-I-989	APW-120N	2020-12-23	2021-12-22
Power analyzer	LC-I-928	WT210	2020-12-25	2021-12-24
Power analyzer	LC-I-954	WT210	2020-12-25	2021-12-24
Multimeter	LC-I-972	FLUKE	2020-07-20	2021-07-19
Photometric colorimetric electric system* (2 meter sphere)	LC-I-956	HAAS-2000	Before use	Before use
Standard lamp**	LC-PL-I-011	D204C	2020-07-14	2021-07-13
Luminous Flux Standard Lamp***	LC-PL-I-003	24V/100W	2020-07-14	2021-07-13
Goniophotometer(with mirror)	LC-I-902	GMS-2000	2020-04-23	2021-04-22
Wireless temperature transmitter	LC-I-PL-009	DWLR-DLR	2020-12-24	2021-12-23
Wireless temperature transmitter	LC-I-PL-008	DWLR-DLR	2020-12-24	2021-12-23

Note:

** Bandwidth of spectroradiometer is 1 nm.*

*** halogen lamp, 100W, omni-directional type, and its traceability to NIM.*

**** halogen lamp, 100W, omni-directional type, and its traceability to NIM.*

2. Test conducted and method

The lamp/luminaire was operated at least 2 hours to reach stabilization and temperature equilibrium before test.

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at 25 °C ± 1°C; the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within±0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent(95 % confidence interval, k=2).

2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by type C goniophotometer system.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.

3. Test Result Summary

3.1 Electrical data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	120.00 V~60Hz	120.04V~60Hz
Input Current(A)	0.331	0.326
Total Power(W)	39.50	38.72
Power Factor	0.996	0.989
Off-state Power(W)	-	-

3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	-	4051.28
Luminaire Efficacy(lm/W)	-	104.63
Correlated Color Temperature (CCT)(K)	3033	-
Color Rendering Index (CRI)	83.5	-
R9	10	-
Chromaticity Coordinate (x,y)	x = 0.4354 y = 0.4049	-
Chromaticity Coordinate (u,v)	u = 0.2492 v = 0.3477	-
Chromaticity Coordinate (u',v')	u' = 0.2492 v' = 0.5215	-
Duv	0.0005	-
Zone Lumens between 0-60 °	-	89.22%
Beam Angle(50%Imax)	-	C0/180=78.8° C90/270=76.8°

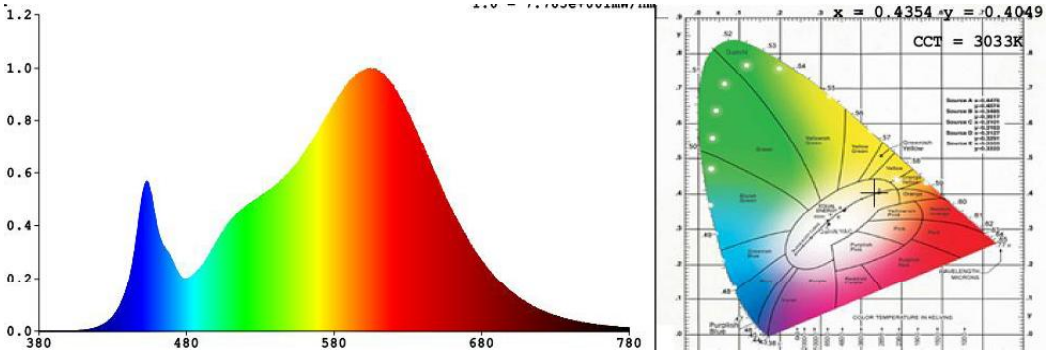
3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
82	92	96	82	83	91	83	60
R9	R10	R11	R12	R13	R14	R15	-
10	82	81	72	85	99	75	-

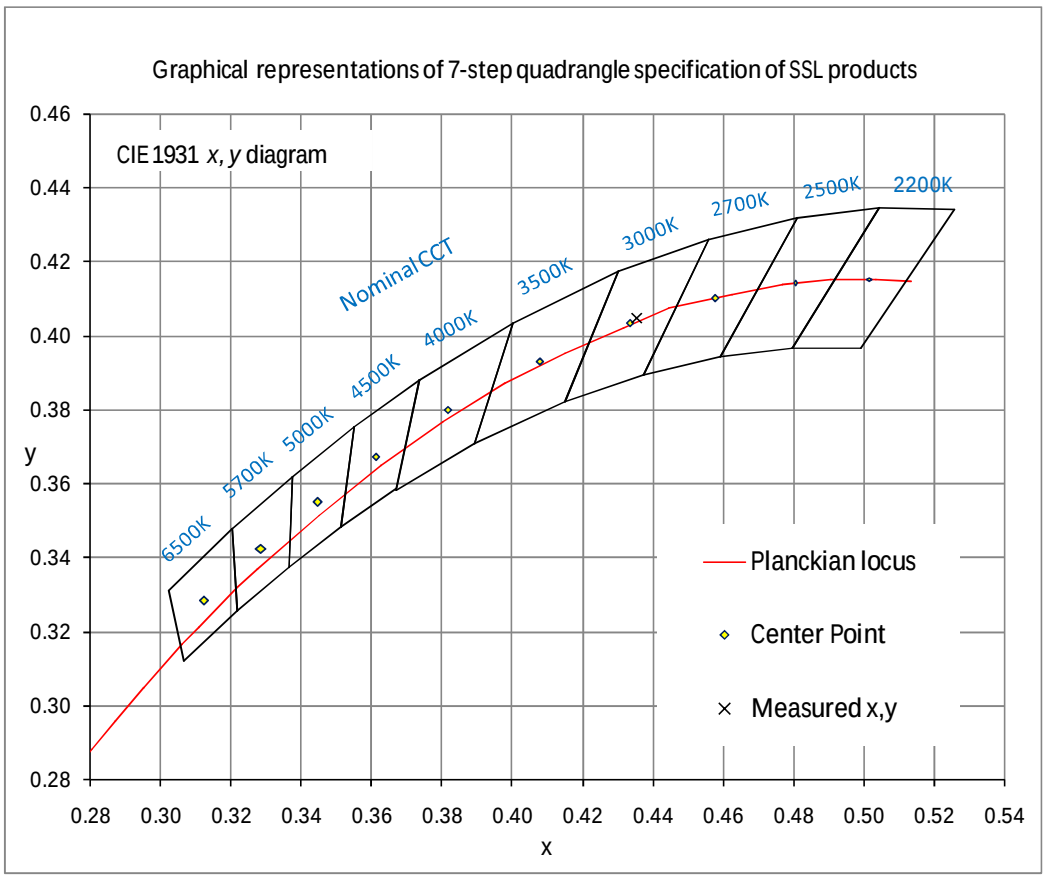
Note: N/A

4. Test Data

4.1 Spectral Distribution



4.2 ANSI Chromaticity Quadrangles Diagram



4.3 Goniometry Test Data

CIE Type	Direct	Basic Luminous Shape	Rectangular
Spacing Criteria (0-180)	1.10	Luminous Length	0.28 m
Spacing Criteria (90-270)	1.08	Luminous Width	0.16 m
Spacing Criteria (Diagonal)	1.12	Luminous Height	0.00 m
Test Distance	30.13 m		

4.4 Zonal Lumen Summary

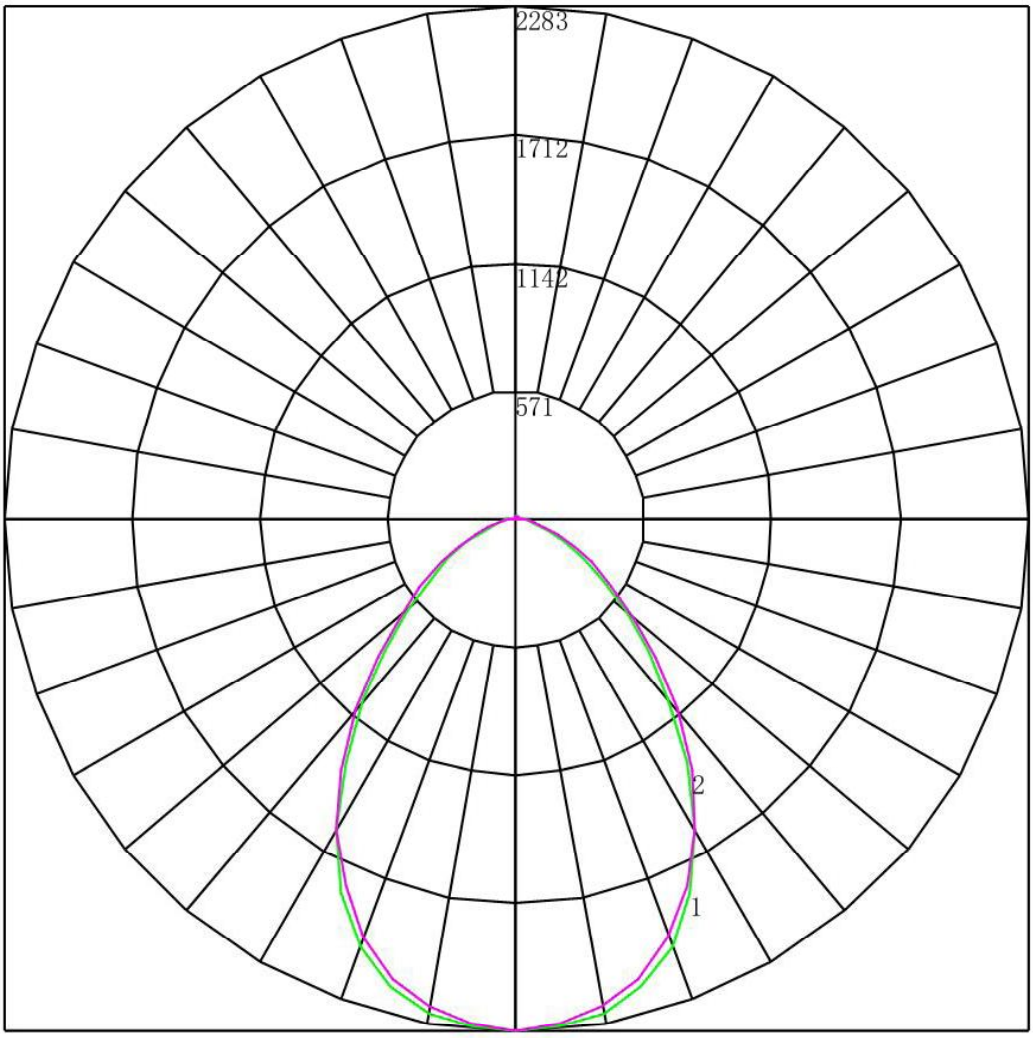
Zone	Lumens	%Lamp	%Fixt
0-20	815.39	20.10	20.10
0-30	1651.16	40.80	40.80
0-40	2492.69	61.50	61.50
0-60	3614.64	89.20	89.20
0-80	3999.6	98.70	98.70
0-90	4035.61	99.60	99.60
10-90	3820.59	94.30	94.30
20-40	1677.3	41.40	41.40
20-50	2345.76	57.90	57.90
40-70	1388.13	34.30	34.30
60-80	384.96	9.50	9.50
70-80	118.78	2.90	2.90
80-90	36.01	0.90	0.90
90-110	6.17	0.20	0.20
90-120	6.91	0.20	0.20
90-130	7.94	0.20	0.20
90-150	10.72	0.30	0.30
90-180	15.67	0.40	0.40
110-180	9.50	0.20	0.20
0-180	4051.28	100.00	100.00

Total Luminaire Efficiency = 100.00%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	215.02
10-20	600.37
20-30	835.77
30-40	841.53
40-50	668.46
50-60	453.49
60-70	266.18
70-80	118.78
80-90	36.01
90-100	5.36
100-110	0.81
110-120	0.74
120-130	1.02
130-140	1.18
140-150	1.60
150-160	2.15
160-170	2.03
170-180	0.78

4.5 Polar Curves



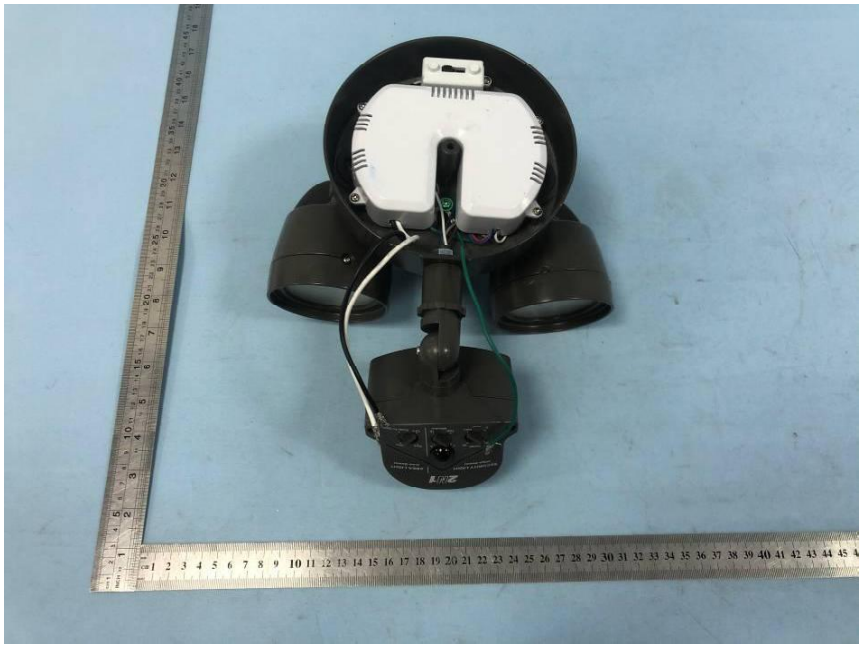
Maximum Candela = 2283.084 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Vertical Plane Through Horizontal Angles (90 - 270)

4.6 Candela Tabulation

	0	15	30	45	60	75	90
0	2283.084	2283.084	2283.084	2283.084	2283.084	2283.084	2283.084
5	2274.467	2271.746	2269.474	2267.207	2264.424	2264.890	2260.054
10	2235.009	2230.051	2229.089	2221.844	2219.363	2214.392	2204.964
15	2161.990	2147.081	2145.596	2135.433	2131.748	2129.547	2120.974
20	2028.198	2014.259	2014.231	2004.340	2009.084	1994.649	1987.312
25	1843.157	1827.798	1830.077	1823.526	1828.314	1813.399	1806.824
30	1601.923	1590.377	1596.309	1598.434	1639.362	1596.612	1599.739
35	1327.218	1323.918	1330.495	1347.642	1368.707	1371.021	1367.863
40	1055.552	1057.151	1076.275	1098.371	1114.456	1111.979	1111.468
45	830.600	830.929	846.936	887.345	872.995	878.605	877.922
50	638.937	637.692	644.474	658.813	668.334	676.508	679.235
55	477.797	475.622	485.652	498.958	510.735	516.155	519.654
60	356.386	354.823	375.837	378.977	392.234	392.273	387.528
65	240.146	243.095	252.138	263.706	274.619	280.811	281.457
70	156.423	157.663	165.396	174.071	183.382	189.725	191.642
75	90.026	97.160	98.538	106.800	115.882	122.273	125.127
80	44.310	47.254	53.183	60.848	68.227	72.862	74.914
85	17.144	19.532	24.690	30.842	36.616	40.172	40.279
90	4.445	4.418	6.729	11.406	15.952	19.334	19.959
95	1.225	1.495	1.858	2.562	4.597	6.278	6.232
100	0.499	0.453	0.522	0.839	1.456	1.911	2.167
105	0.590	0.544	0.613	0.612	0.705	0.751	0.722
110	0.590	0.635	0.635	0.680	0.751	0.774	0.722
115	0.635	0.657	0.680	0.703	0.751	0.796	0.768
120	0.771	0.816	0.839	0.885	0.933	0.933	0.993
125	1.043	1.088	1.112	1.157	1.229	1.206	1.264
130	1.270	1.337	1.361	1.406	1.434	1.456	1.400
135	1.406	1.360	1.407	1.406	1.502	1.524	1.535
140	1.723	1.768	1.815	1.815	1.866	1.911	1.987
145	2.449	2.471	2.428	2.495	2.526	2.593	2.574
150	3.447	3.423	3.426	3.402	3.345	3.503	3.522
155	4.581	4.670	4.629	4.650	4.711	4.686	4.741
160	5.987	6.052	6.036	6.056	6.076	6.119	6.051
165	7.257	7.344	7.329	7.349	7.328	7.212	7.406
170	8.300	8.251	8.237	8.256	8.284	8.258	8.218
175	8.935	8.954	8.918	8.914	8.967	8.940	8.896
180	4.635	4.635	4.635	4.635	4.635	4.635	4.635

Appendix A Product Photo

Picture 1



Picture 2

****End of test report****