



Ref. No.: LCZP19080139
Version: 1.0
Date of issue: Sep. 23, 2019
Total pages: 11



Test report of

IES LM-79-08

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

Rendered to:

Imminent Teknologies Limited
Suite 5, Valley Towers, Valley Road, Birkirkara BKR9022, Malta

For products:

LED STRIP LIGHT

Models No.:

BLU-FLEXI-9.6W-827-IP20-5M

Test Date: Sep. 21, 2019 to Sep. 23, 2019

Test Lab.: **LCTECH Guangdong Testing Services Co., Ltd.**

2/F., Building II, 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.1.2

Test Note:

Complied by:

Kargel Yuan
Project Engineer
Sep. 23, 2019

Reviewed by:

Lin Qiu
Technical Manager
Sep. 23, 2019

The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of the examination of the product sample submitted by the applicant. A general statement concerning the quality of the products from the series manufacture cannot be derived therefore. 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.



Table of Contents

1. General	3
1.1 Product Information	3
1.2 Standards or methods	4
1.3 Equipment list	4
2. Test conducted and method	5
2.1 Ambient Condition	5
2.2 Power Supply Characteristics	5
2.3 Seasoning and Stabilization	5
2.4 Electrical Instrumentation	5
2.5 Color Measurement Method	5
2.6 Total Luminous Flux Measurement Method	5
2.7 Luminous Intensity Distribution Measurement Method	5
2.8 Spatial Non-uniformity of Chromaticity	5
3. Test Result Summary	6
3.1 Electrical data	6
3.2 Photometric data	6
3.3 Color Rendering Details	6
4. Test Data	7
4.1 Spectral Distribution	7
4.2 ANSI Chromaticity Quadrangles Diagram of 5m	7
4.3 Goniometry Test Data	8
4.4 Zonal Lumen Summary	8
4.5 Polar Curves	9
4.6 Candela Tabulation	10
Appendix A Product Photo	11



LCTECH



1. General

1.1 Product Information

Brand Name	BLUi
Product Type	LED STRIP LIGHT
Model Number	BLU-FLEXI-9.6W-827-IP20-5M
Rated Inputs	24VDC
Rated Power	9.6W
Rated Light output	940lm
Declared CCT	2700K
Power Supply	Integrated in luminaire
LED Package, Array or Module	N/A
Receipt Samples	1 unit
Sample Code of lab.	190919109001
Date of Receipt Samples	Sep. 19, 2019
Note	-

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	2019-01-08	2020-01-07
AC Power supply	LC-I-989	APW-120N	2019-01-08	2020-01-07
Power analyzer	LC-I-928	WT210	2019-01-02	2020-01-01
Power analyzer	LC-I-954	WT210	2019-01-08	2020-01-07
Multimeter	LC-I-972	Fluke 17B	2019-07-29	2020-07-28
Photometric colorimetric electric system* (2 meter sphere)	LC-I-956	HAAS-2000	Before use	Before use
Standard lamp**	LC-PL-I-011	D204C	2018-11-21	2019-11-20
Luminous Flux Standard Lamp***	LC-PL-I-003	24V100W	2018-11-21	2019-11-20
Goniophotometer(with mirror)	LC-I-902	GMS2000	2019-05-06	2020-05-05
Wireless temperature transmitter	LC-I-978	DWRF-B	2019-01-07	2020-01-06
Wireless temperature transmitter	LC-I-979	DWRF-B	2019-01-07	2020-01-06

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 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$; the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The voltage of DC power supply (instantaneous 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 DC voltage and current were less than 0.1 percent.

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	24.00 V	24.01 V
Input Current(A)	0.400	0.400
Total Power(W)	9.59	9.60
Power Factor	1.000	1.000
I-THD	-	-
Off-state Power(W)	-	-

3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	-	958.02
Luminaire Efficacy(Lm/W)	-	99.79
Correlated Color Temperature (CCT)(K)	2679	-
Color Rendering Index (CRI)	81.8	-
R9	6	-
Chromaticity Coordinate (x,y)	x = 0.4585 y = 0.4055	-
Chromaticity Coordinate (u,v)	u = 0.2639 v = 0.3501	-
Chromaticity Coordinate (u',v')	u' = 0.2639 v' = 0.5252	-
Duv	-0.0018	-
Zone Lumens between 0-60 °	-	78.30%
Beam Angle(50%Imax)	-	C0/180=115.6° C90/270=115.3°

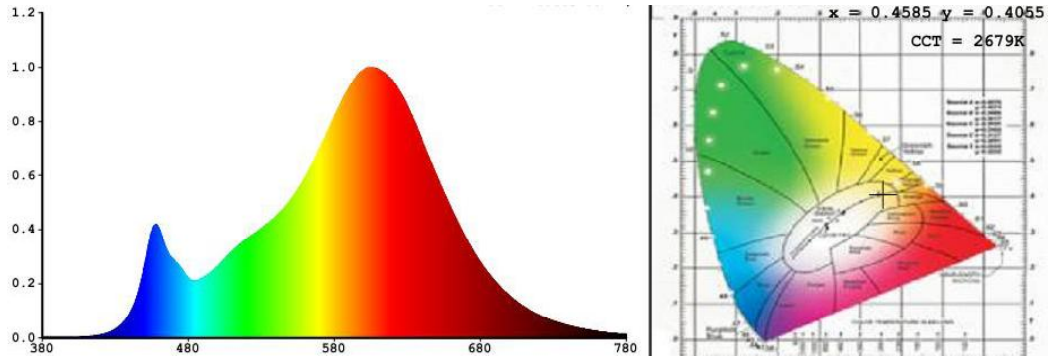
3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
82	95	91	78	82	94	78	55
R9	R10	R11	R12	R13	R14	R15	-
6	88	77	79	85	96	73	-

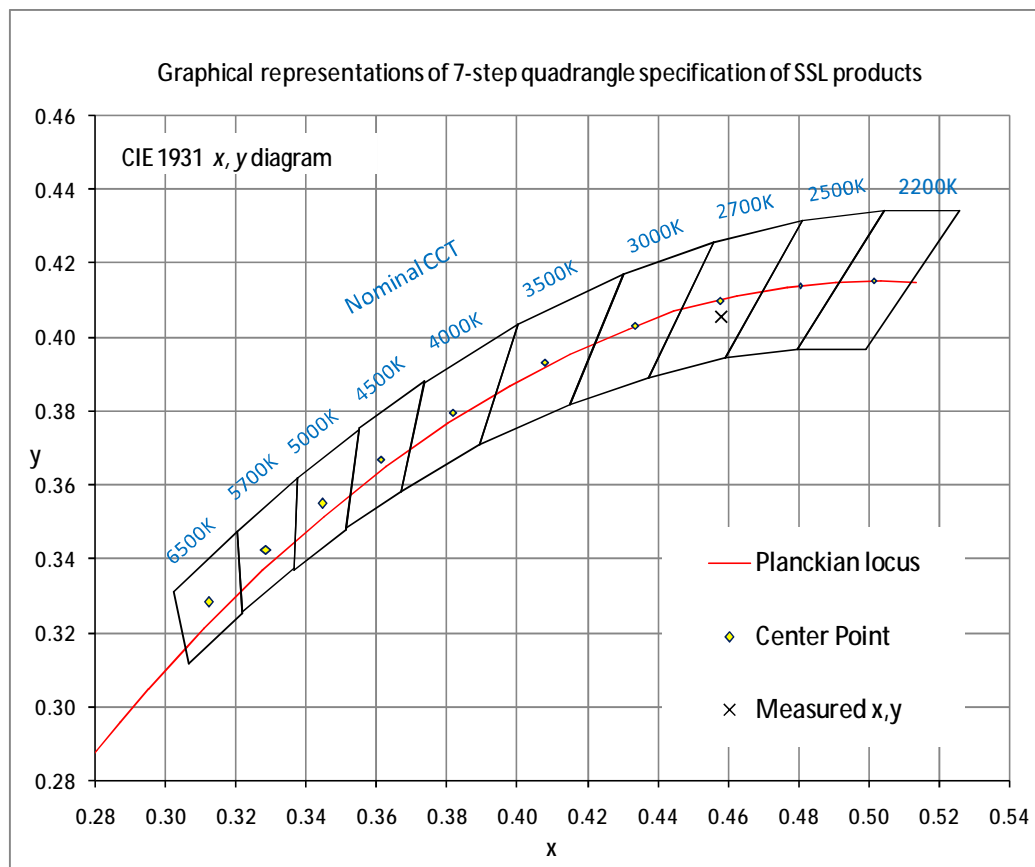
Note: N/A

4. Test Data

4.1 Spectral Distribution



4.2 ANSI Chromaticity Quadrangles Diagram of 5m



4.3 Goniometry Test Data

CIE Type	Direct	Basic Luminous Shape	Rectangular
Spacing Criteria (0-180)	1.30	Luminous Length	1.00 m
Spacing Criteria (90-270)	1.30	Luminous Width	0.02 m
Spacing Criteria (Diagonal)	1.44	Luminous Height	0.00 m
Test Distance	30.00 m		

4.4 Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	118.99	12.40	12.40
0-30	254.18	26.50	26.50
0-40	418.87	43.70	43.70
0-60	749.81	78.30	78.30
0-80	936.62	97.80	97.80
0-90	954.49	99.60	99.60
10-90	923.80	96.40	96.40
20-40	299.88	31.30	31.30
20-50	472.92	49.40	49.40
40-70	451.00	47.10	47.10
60-80	186.81	19.50	19.50
70-80	66.76	7.00	7.00
80-90	17.87	1.90	1.90
90-110	1.39	0.10	0.10
90-120	1.70	0.20	0.20
90-130	2.01	0.20	0.20
90-150	2.65	0.30	0.30
90-180	3.53	0.40	0.40
110-180	2.14	0.20	0.20
0-180	958.02	100.00	100.00

Total Luminaire Efficiency = 100.00%

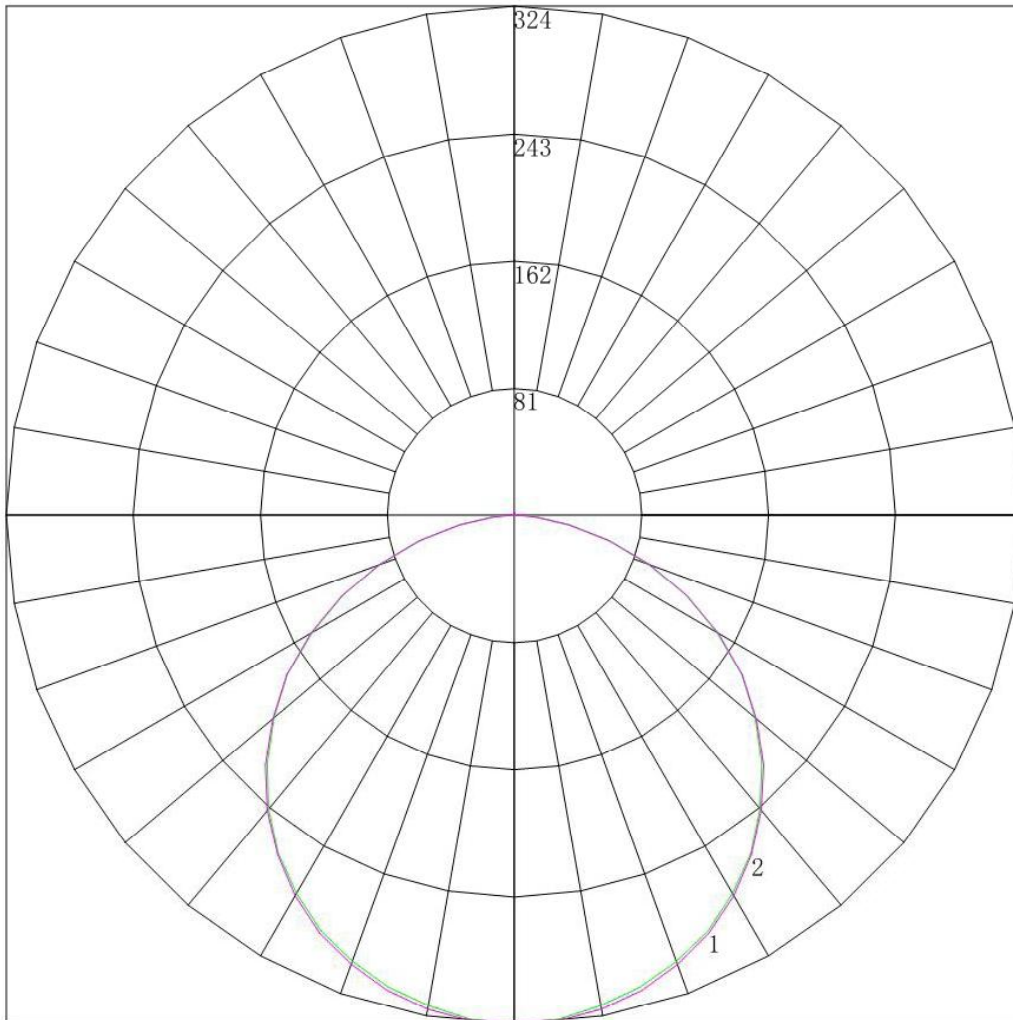
ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	30.69
10-20	88.30
20-30	135.19
30-40	164.70
40-50	173.04
50-60	157.90
60-70	120.05
70-80	66.76
80-90	17.87
90-100	1.05
100-110	0.34
110-120	0.31
120-130	0.31
130-140	0.30
140-150	0.34
150-160	0.39
160-170	0.34
170-180	0.14



LCTECH

4.5 Polar Curves



Maximum Candela = 324.122 Located At Horizontal Angle = 0, Vertical Angle = 0

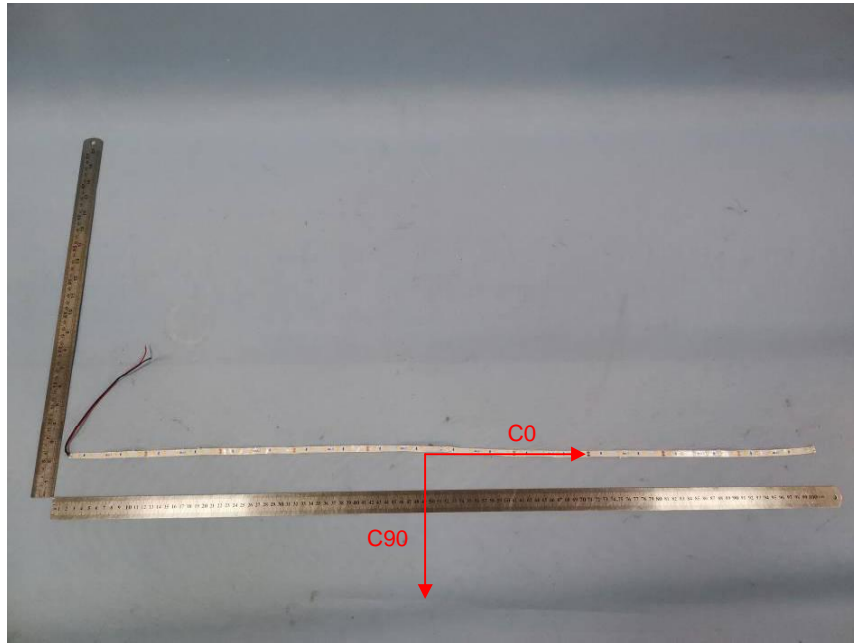
1 - Vertical Plane Through Horizontal Angles (0 - 180)

2 - Vertical Plane Through Horizontal Angles (90 - 270)

4.6 Candela Tabulation

	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
0	324.122	324.122	324.122	324.122	324.122	324.122	324.122
5	322.677	322.604	322.812	322.781	322.906	322.979	323.500
10	317.349	318.799	319.514	318.317	319.575	318.964	319.505
15	310.937	312.411	313.574	311.347	313.199	313.288	313.334
20	302.222	303.462	305.371	303.379	305.139	303.978	304.411
25	291.927	292.657	295.193	292.800	294.549	292.717	293.623
30	277.929	279.744	281.094	278.865	279.486	279.367	279.727
35	262.802	263.230	264.668	262.431	262.684	262.829	263.612
40	243.791	244.587	246.714	242.783	246.042	245.063	244.967
45	223.201	224.584	225.870	222.596	225.546	224.736	224.633
50	200.352	201.093	202.928	200.546	202.464	201.760	201.459
55	176.827	176.808	177.601	176.090	177.532	177.459	177.221
60	148.740	149.081	150.055	149.186	150.488	150.625	150.096
65	120.383	121.784	121.191	120.795	121.887	122.470	121.683
70	91.032	91.542	92.200	91.664	92.653	93.143	91.805
75	61.275	62.410	62.659	62.797	62.835	63.344	63.171
80	34.950	35.090	35.454	35.606	36.128	35.704	35.558
85	12.643	13.524	13.620	14.125	14.169	14.365	13.406
90	1.580	2.243	2.539	2.709	2.749	2.784	2.264
95	0.361	0.385	0.453	0.583	0.654	0.630	0.444
100	0.316	0.362	0.317	0.313	0.293	0.314	0.311
105	0.361	0.340	0.362	0.335	0.293	0.292	0.267
110	0.316	0.317	0.340	0.313	0.315	0.269	0.267
115	0.406	0.317	0.340	0.291	0.270	0.270	0.222
120	0.361	0.385	0.362	0.336	0.338	0.314	0.311
125	0.316	0.385	0.340	0.358	0.338	0.292	0.311
130	0.406	0.408	0.340	0.358	0.360	0.382	0.400
135	0.361	0.362	0.385	0.403	0.383	0.359	0.355
140	0.452	0.498	0.453	0.403	0.428	0.426	0.444
145	0.587	0.521	0.544	0.537	0.473	0.539	0.577
150	0.722	0.725	0.680	0.671	0.653	0.628	0.577
155	0.903	0.883	0.884	0.850	0.878	0.830	0.799
160	1.084	1.042	1.087	1.074	1.036	1.055	0.977
165	1.219	1.291	1.246	1.208	1.194	1.234	1.110
170	1.400	1.427	1.359	1.365	1.374	1.369	1.332
175	1.445	1.518	1.517	1.522	1.509	1.481	1.465
180	1.542	1.542	1.542	1.542	1.542	1.542	1.542

Appendix A Product Photo



Picture 1



Picture 2

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