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Test report of

IES LM-79-08

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

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Suite 5, Valley Towers, Valley Road, Birkirkara BKR9022, Malta

For products:

LED STRIP LIGHT

Models No.:

BLU-FLEXI-4.8W-830-IP20-5M

Test Date: Aug. 20, 2019 to Aug. 23, 2019

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1. General

1.1 Product Information

Brand Name	BLUi
Product Type	LED STRIP LIGHT
Model Number	BLU-FLEXI-4.8W-830-IP20-5M
Rated Inputs	24VDC
Rated Power	4.8W
Rated Light output	480lm
Declared CCT	3000K
Power Supply	Integrated in luminaire
LED Package, Array or Module	SAMSUNG
Receipt Samples	1 unit
Sample Code of lab.	190812105007
Date of Receipt Samples	Aug. 12, 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	24.02 V	24.01 V
Input Current(A)	0.201	0.201
Total Power(W)	4.82	4.84
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)	-	556.69
Luminaire Efficacy(Lm/W)	-	115.02
Correlated Color Temperature (CCT)(K)	3009	-
Color Rendering Index (CRI)	83.1	-
R9	8	-
Chromaticity Coordinate (x,y)	x = 0.4356 y = 0.4023	-
Chromaticity Coordinate (u,v)	u = 0.2505 v = 0.3470	-
Chromaticity Coordinate (u',v')	u' = 0.2505 v' = 0.5205	-
Duv	-0.0005	-
Zone Lumens between 0-60 °	-	77.50%
Beam Angle(50%Imax)	-	C0/180=115.7° C90/270=116.5°

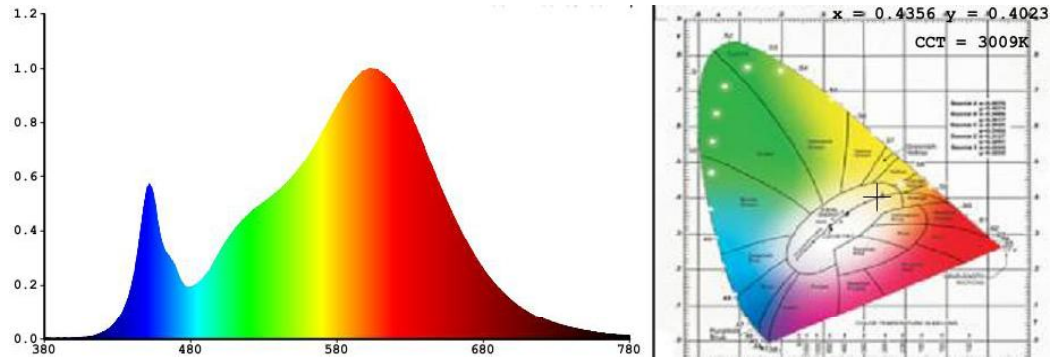
3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
82	92	96	81	82	90	82	59
R9	R10	R11	R12	R13	R14	R15	-
8	81	81	72	84	99	74	-

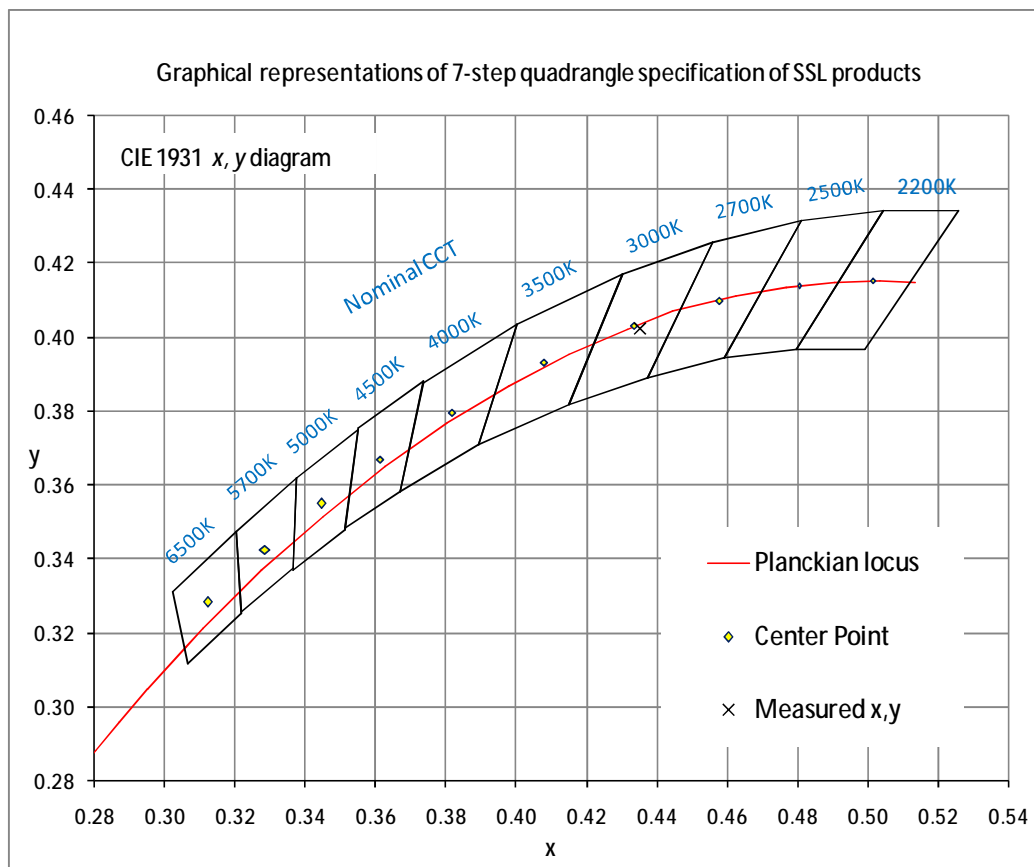
Note: N/A

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)	1.30	Luminous Length	1.00 m
Spacing Criteria (90-270)	1.28	Luminous Width	0.02 m
Spacing Criteria (Diagonal)	1.40	Luminous Height	0.00 m
Test Distance	30.00 m		

4.4 Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	68.39	12.30	12.30
0-30	145.99	26.20	26.20
0-40	240.65	43.20	43.20
0-60	431.56	77.50	77.50
0-80	541.54	97.30	97.30
0-90	553.74	99.50	99.50
10-90	536.07	96.30	96.30
20-40	172.26	30.90	30.90
20-50	271.93	48.80	48.80
40-70	260.90	46.90	46.90
60-80	109.98	19.80	19.80
70-80	39.99	7.20	7.20
80-90	12.21	2.20	2.20
90-110	1.70	0.30	0.30
90-120	1.93	0.30	0.30
90-130	2.10	0.40	0.40
90-150	2.44	0.40	0.40
90-180	2.94	0.50	0.50
110-180	1.24	0.20	0.20
0-180	556.69	100.00	100.00

Total Luminaire Efficiency = 100.00%

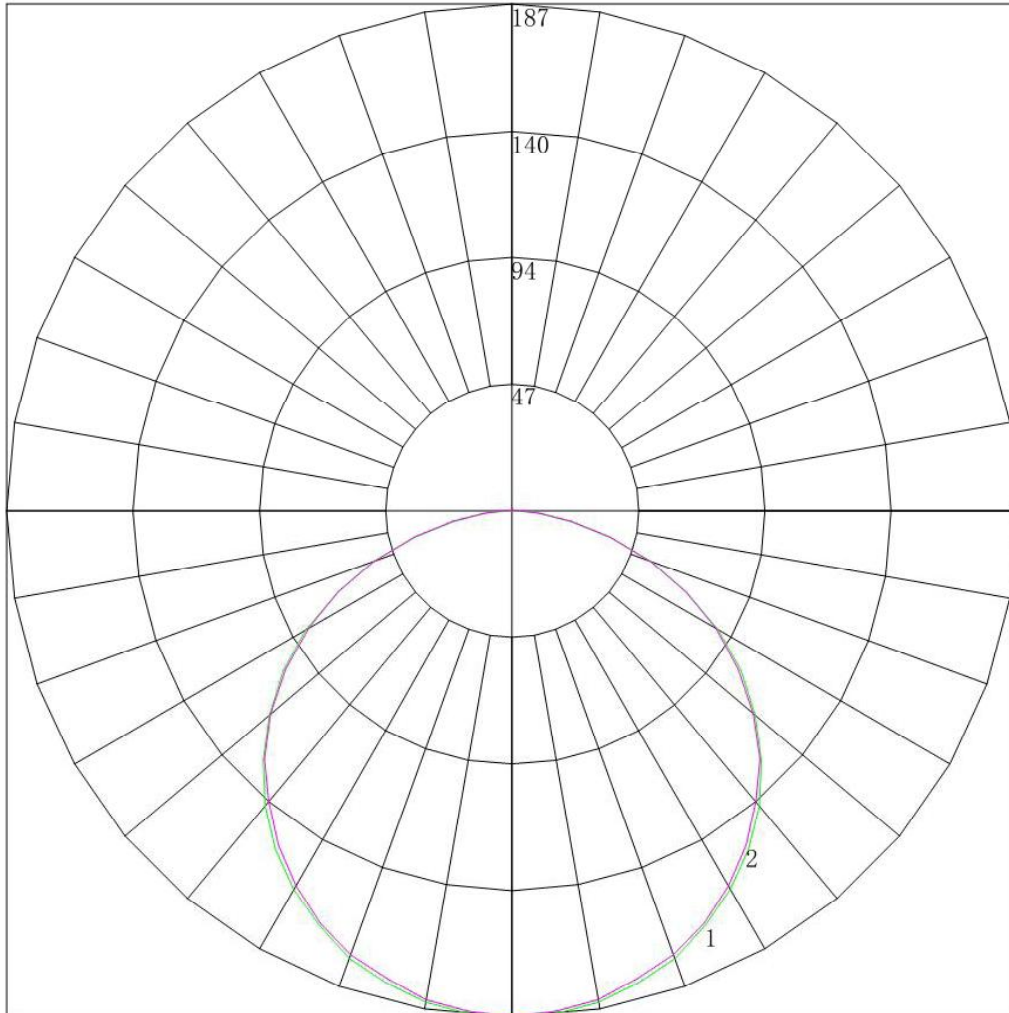
ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	17.67
10-20	50.72
20-30	77.60
30-40	94.67
40-50	99.66
50-60	91.24
60-70	70.00
70-80	39.99
80-90	12.21
90-100	1.34
100-110	0.36
110-120	0.23
120-130	0.17
130-140	0.15
140-150	0.19
150-160	0.22
160-170	0.20
170-180	0.08



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4.5 Polar Curves



Maximum Candela = 187.034 Located At Horizontal Angle = 0, Vertical Angle = 0

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

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



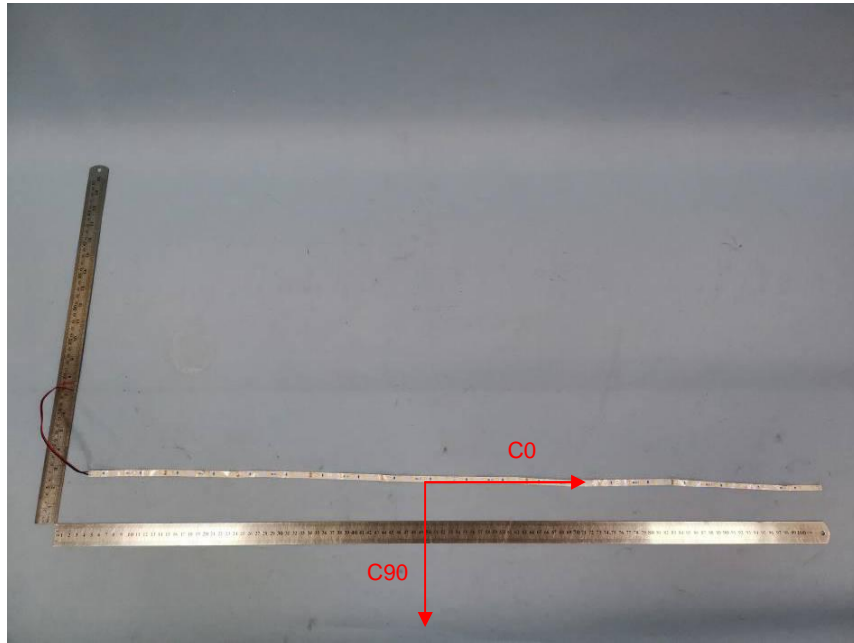
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4.6 Candela Tabulation

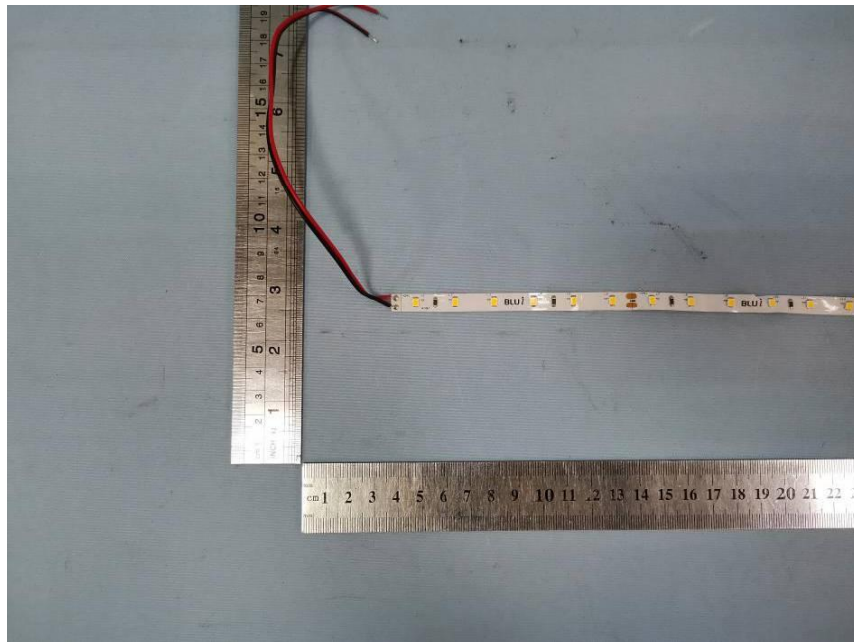


	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
0	187.034	187.034	187.034	187.034	187.034	187.034	187.034
5	186.532	186.317	185.715	185.715	185.558	185.558	185.788
10	184.435	184.122	183.376	183.376	183.296	183.296	183.650
15	180.696	179.936	178.971	178.971	178.936	178.936	179.106
20	176.136	175.697	174.778	174.778	174.452	174.452	174.605
25	168.978	168.873	168.129	168.129	167.818	167.818	168.144
30	161.546	161.374	160.631	160.631	160.026	160.026	159.990
35	152.655	152.451	151.337	151.337	150.664	150.664	150.902
40	142.213	141.737	140.555	140.555	140.051	140.051	140.255
45	130.358	130.429	129.199	129.199	128.776	128.776	129.652
50	117.363	117.379	116.118	116.118	115.719	115.719	116.598
55	103.411	103.357	101.934	101.934	101.387	101.387	102.207
60	88.137	88.422	87.090	87.090	86.175	86.175	86.880
65	71.266	71.810	70.735	70.735	69.956	69.956	70.796
70	54.533	55.175	54.449	54.449	53.562	53.562	54.042
75	37.343	38.269	37.713	37.713	36.917	36.917	37.602
80	21.795	22.857	22.643	22.643	21.843	21.843	22.319
85	9.393	10.146	10.124	10.124	9.842	9.842	10.336
90	1.459	2.213	2.465	2.465	2.764	2.764	3.564
95	0.228	0.470	0.781	0.781	1.249	1.249	1.649
100	0.228	0.315	0.470	0.470	0.737	0.737	0.936
105	0.228	0.204	0.247	0.247	0.359	0.359	0.401
110	0.182	0.158	0.225	0.225	0.269	0.269	0.223
115	0.228	0.226	0.292	0.292	0.269	0.269	0.178
120	0.182	0.158	0.180	0.180	0.180	0.180	0.134
125	0.228	0.204	0.203	0.203	0.180	0.180	0.134
130	0.228	0.227	0.203	0.203	0.179	0.179	0.178
135	0.182	0.181	0.180	0.180	0.179	0.179	0.178
140	0.274	0.250	0.226	0.226	0.224	0.224	0.223
145	0.319	0.318	0.293	0.293	0.291	0.291	0.312
150	0.456	0.431	0.406	0.406	0.381	0.381	0.356
155	0.502	0.499	0.473	0.473	0.470	0.470	0.490
160	0.593	0.589	0.563	0.563	0.560	0.560	0.579
165	0.730	0.725	0.721	0.721	0.717	0.717	0.713
170	0.821	0.839	0.811	0.811	0.806	0.806	0.847
175	0.912	0.884	0.856	0.856	0.851	0.851	0.847
180	0.900	0.900	0.900	0.900	0.900	0.900	0.900

Appendix A Product Photo



Picture 1



Picture 2

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