



## TEST REPORT

For

### Beyond LED Technology

<b>Model Number:</b>	BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	
<b>Report Type:</b>	Electrical, Photometric and ISTMT tests according to the following standards and show the compliance to DLC Program SSL Technical Requirements V5.1	
<b>Standards:</b>	IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting ANSI/UL 1598-2008: Standard for Safety of Luminaires CIE 190:2010 Calculation and presentation of unified glare rating tables for indoor lighting luminaires IES TM-30-18: IES Method for Evaluating Light Source Color Rendition	
<b>Project Engineer:</b>	Bay Wang	
<b>Report Number:</b>	RKSB220606010-10	
<b>Sample Size:</b>	Two samples were received on 2022-06-06 and used for testing.	
<b>Test Date:</b>	2022-06-16 to 2022-06-18	
<b>Report Date:</b>	2022-06-20	
<b>Reviewed By:</b>	Seven Xia / EE Engineer	
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Kunshan). No. 248 Chenghu Road, Kunshan, Jiangsu, People's Republic of China Tel: +86-0512-86175000 Fax: +86-0512-88934268	

### 1. Product Information and Description<sup>#</sup>

Product Primary Use:	Direct Linear Ambient
Voltage and Frequency:	Luminaires 120-277VAC, 50/60Hz
LED Source Manufacturer:	Beyond LED Technology.
LED Source Model:	BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)
Driver Model:	SIE46-I1000-42 120-277 W D1 B 4ft
Luminaire length:	NA
Auxiliary Ballast Model:	
Auxiliary Housing Model:	NA
White Tunable:	No
Field-Adjustable Light Output:	No

### 2. Product Rated Values<sup>#</sup>

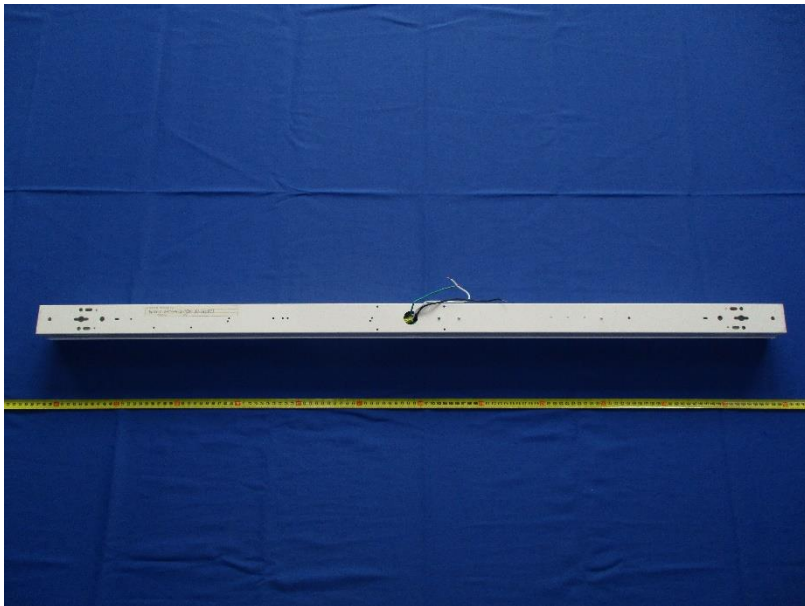
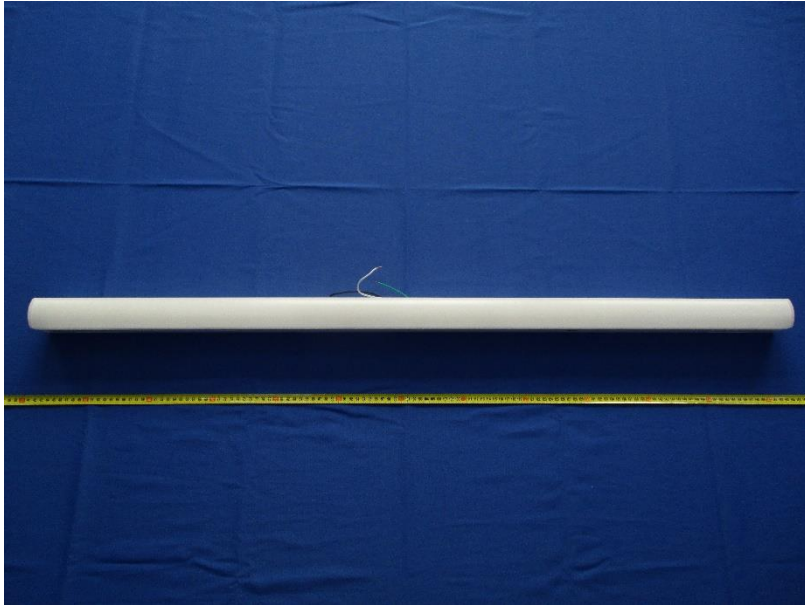
Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	3500	5760	45	128
BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	4000	5805	45	129
BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	5000	5850	45	130

### 3. Test List

Test Model	Test Item			
	Goniophotometer Test	Integrating Sphere Test	THDi and PF Test	In-Situ Temperature Measurement Test
BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	Yes	Yes	Yes	Yes
BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)	Yes	Yes	Yes	NA

#### 4. Product Photo

Product Photo of Model: BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)



LED Driver Photo



## 5. Test Result

### Test Model: BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5997.7	≥1500	≥1350	Pass
Power(W)	47.35	None.	None.	N/A
Total Efficacy(lm/W)	126.66	≥115	≥111.55	Pass
CCT(K)	3463	3220~3710	No tolerances	Pass
Duv	0.000314	-0.0055~0.0065	No tolerances	Pass
IES R <sub>f</sub>	82	70	69	Pass
IES R <sub>g</sub>	97	89	88	
IES Rcs,h1	-13%	-12%~23%	-13%~24%	
R <sub>a</sub>	80.4	≥80	≥79	
R <sub>9</sub>	-1	≥0	≥-1	

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	6005.4	≥1500	≥1350	Pass
Power(W)	47.3	None.	None.	N/A
Total Efficacy(lm/W)	127.01	≥115	≥111.55	Pass
Zonal Lumen Distribution(0-60°)	59.29%	0-60°≥40%	0-60°≥37%	Pass

Goniophotometer THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9961	Pass	≥0.87	Pass
120	THDi	9.47%	Pass	≤25%	Pass
277	Power Factor	0.9774	Pass	≥0.87	Pass
277	THDi	15.76%	Pass	≤25%	Pass

Integrating Sphere THDi、PF Test; Orientation: Downward;

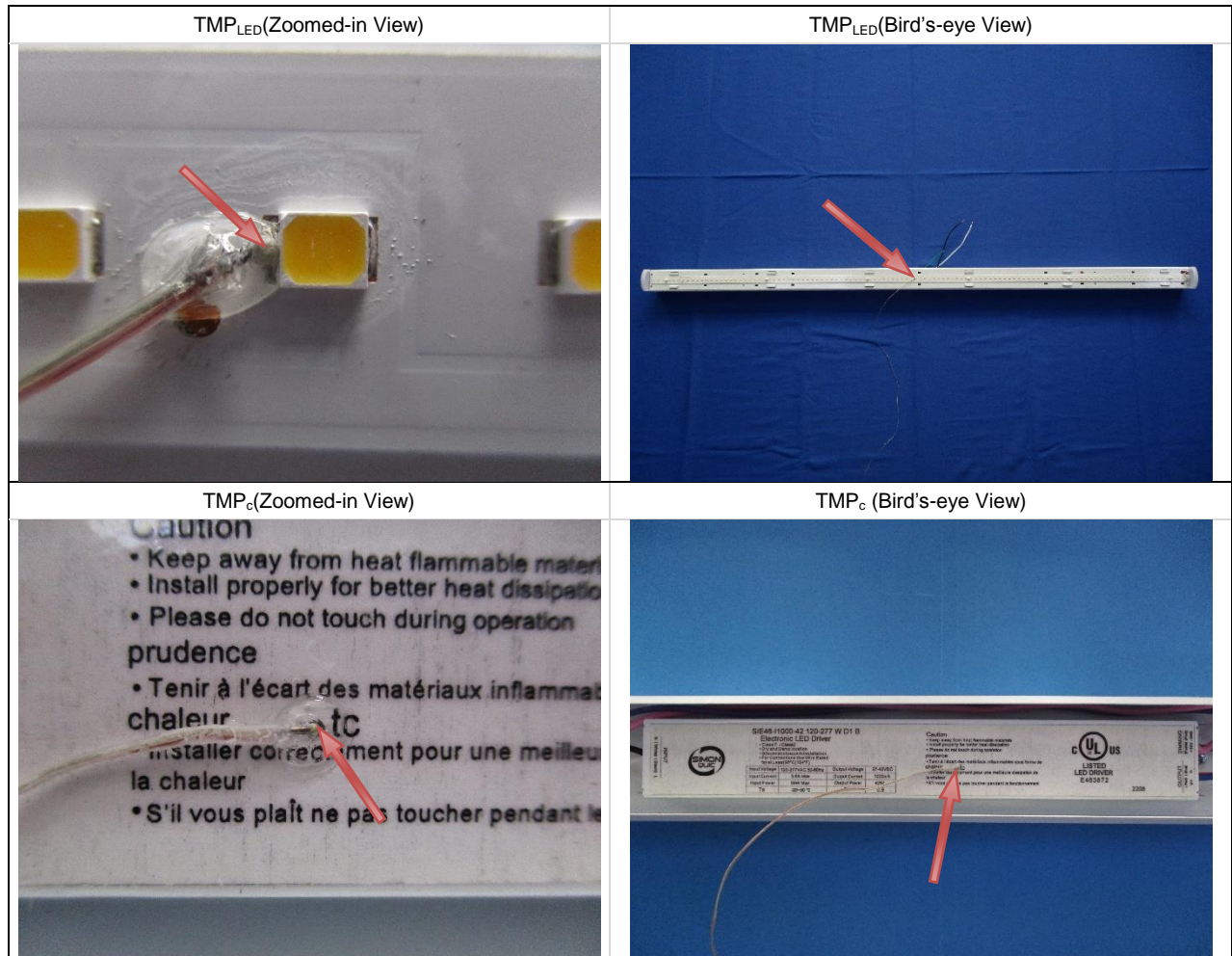
Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9945	≥0.9	≥0.87	Pass
120	THDi	9.43%	≤20%	≤25%	Pass
277	Power Factor	0.9739	≥0.9	≥0.87	Pass
277	THDi	15.96%	≤20%	≤25%	Pass

In-Situ Temperature Measurement Test: Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
TMP <sub>LED</sub> (°C)	50.6	≤105	With tolerance of ≤ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
TMP <sub>c</sub> (°C)	54.4	≤90	With tolerance of ≤ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
Drive Current/Individual LED source(mA)	123.5	≤150	With +5% tolerance	Pass
L <sub>70</sub> Lumen Maintenance Life (Hours)	> 60000	≥ 50000	None.	Pass
Color Maintenance	0.0017	≤ 0.004	≤ 0.0044	Pass

Note:

1. The test results were measured directly from the test equipment.
2. The DLC requirements were listed according to DLC Technical Requirements V5.1.
3. The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.



**Test Data**

[Integrating Sphere System]

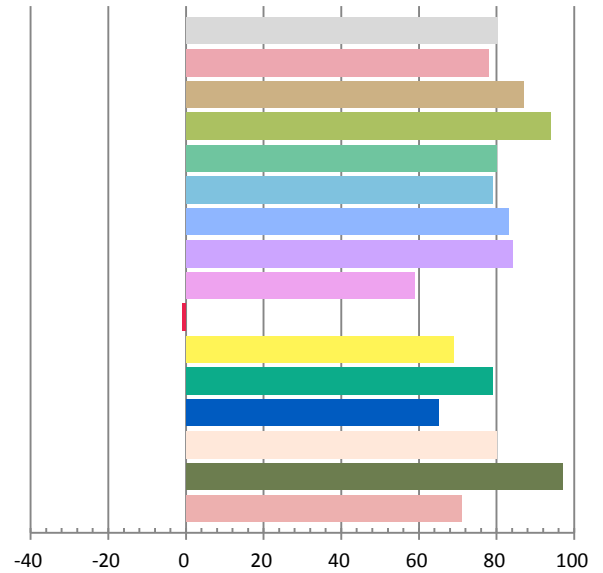
**Photometric and Electrical Measurement Result**

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3968	47.35	0.9945	5997.7	126.66

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.957	3463	0.000314	0.4078	0.3927	0.2365	0.5124

**Color Rendering Index**

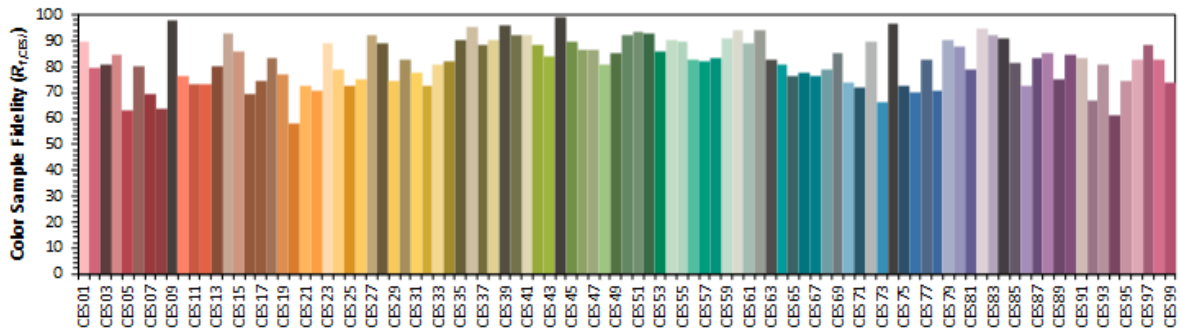
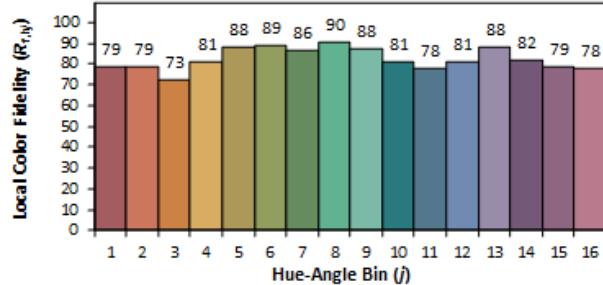
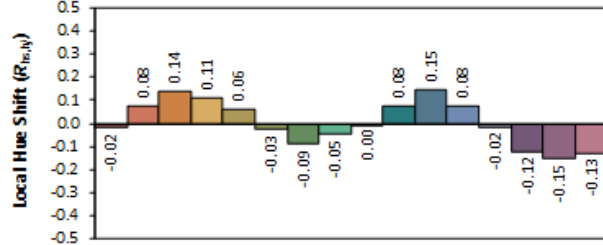
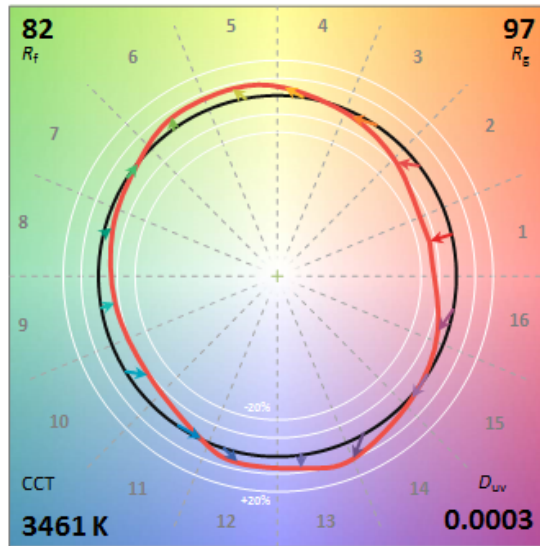
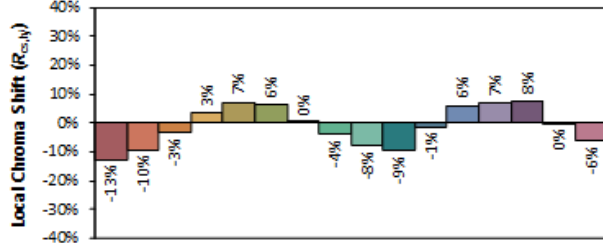
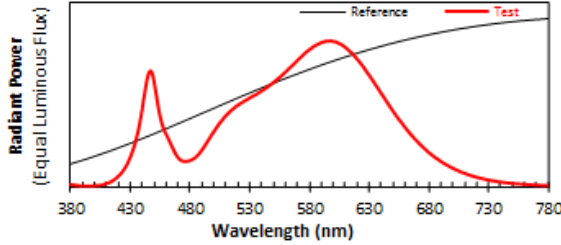
<b>Ra</b>			
<b>80.4</b>			
<b>R1</b>	<b>R2</b>	<b>R3</b>	<b>R4</b>
78	87	94	80
<b>R5</b>	<b>R6</b>	<b>R7</b>	<b>R8</b>
79	83	84	59
<b>R9</b>	<b>R10</b>	<b>R11</b>	<b>R12</b>
-1	69	79	65
<b>R13</b>	<b>R14</b>	<b>R15</b>	
80	97	71	



## ANSI/IES TM-30-18 Color Rendition Report

**Source:** User SPD  
**Date:** 2022/6/17

**Manufacturer:** Beyond LED Technology  
**Model:** BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

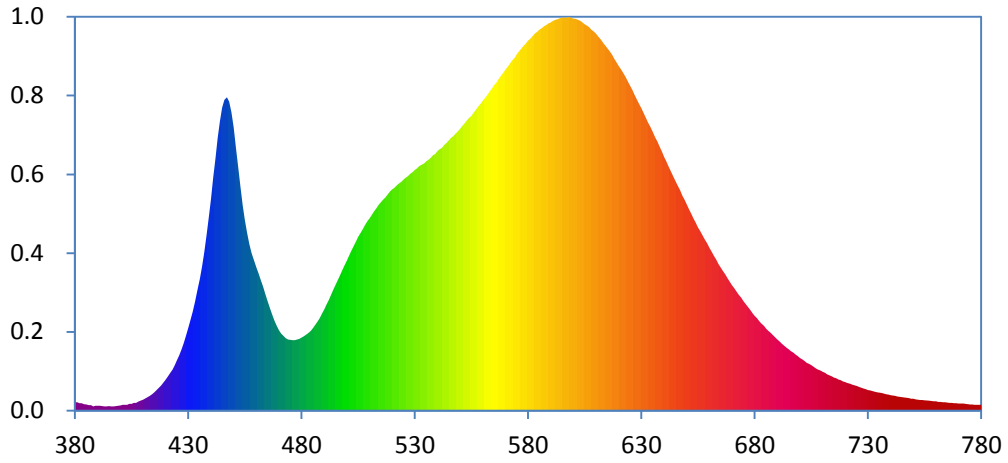
$x$     **0.4078**  
 $y$     **0.3925**  
 $u'$    **0.2366**  
 $v'$    **0.5124**

CIE 13.3-1995 (CRI)	
$R_a$	80
$R_g$	-1

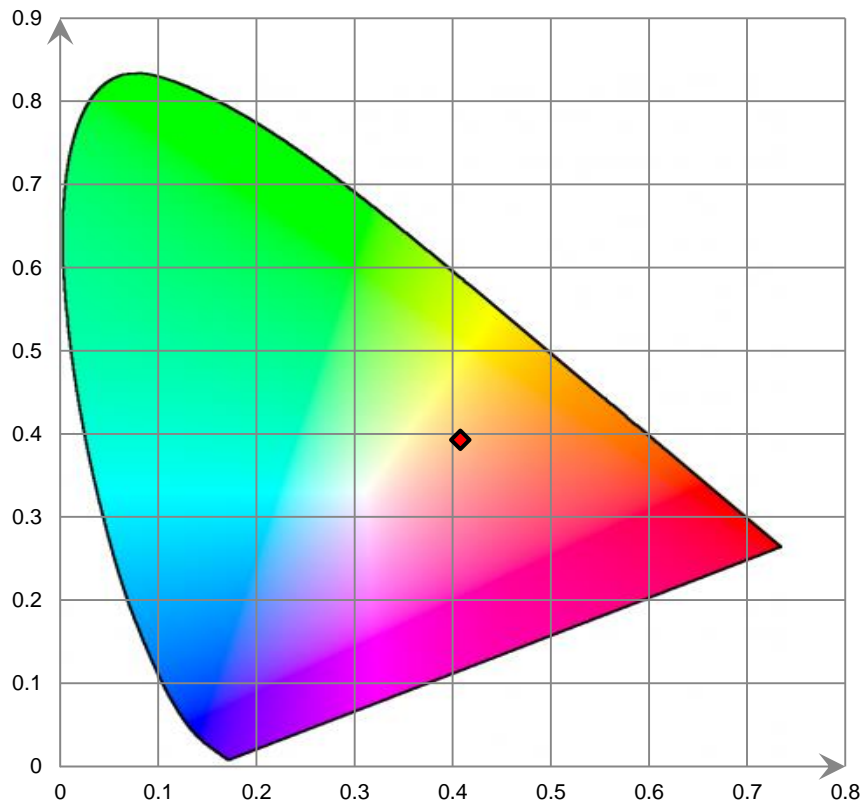
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



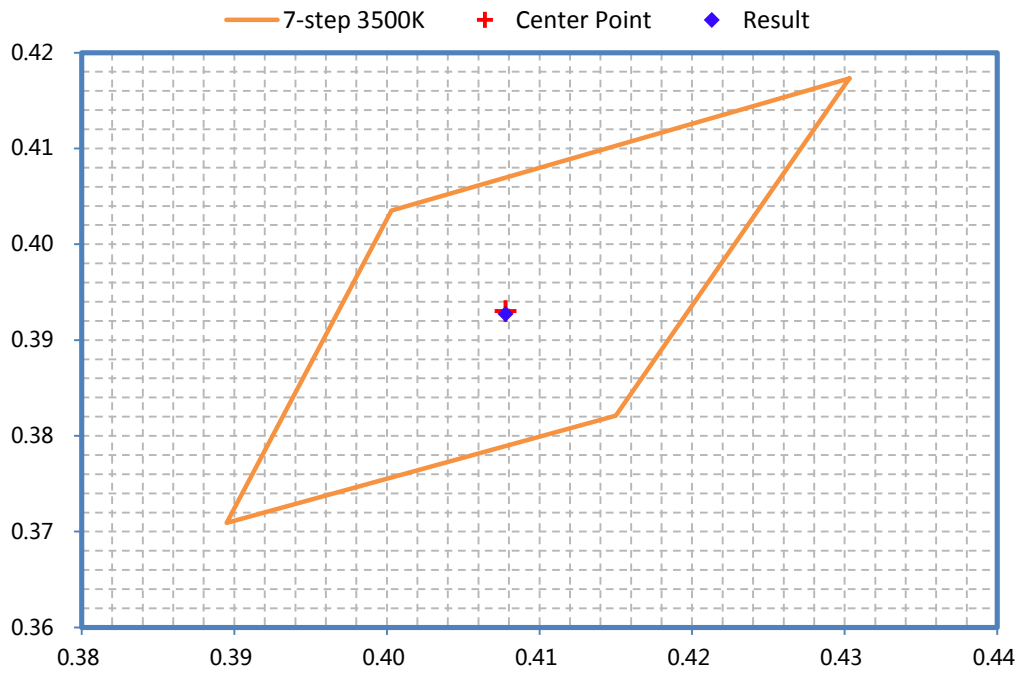
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



### ANSI C78.377-2017 Chromaticity Quadrangles



**[Goniophotometer System]**

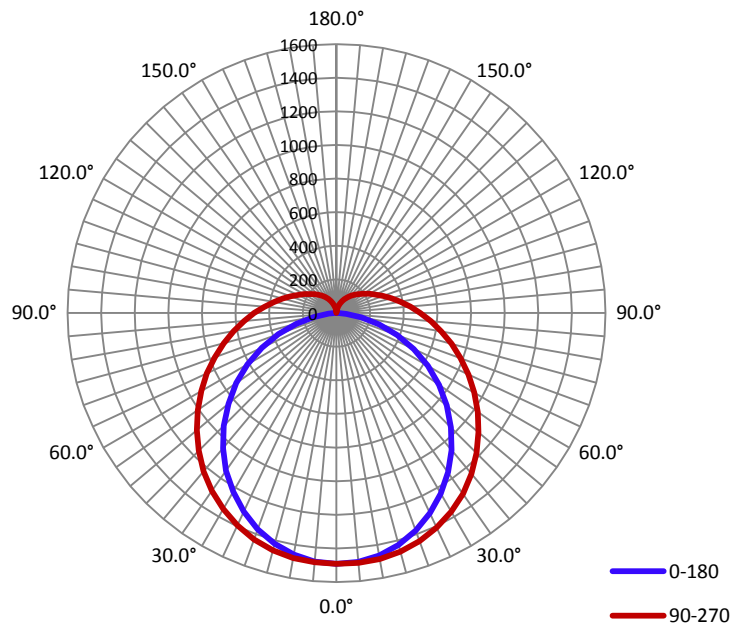
**Electrical Measurement**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.396	47.3	0.996

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I <sub>max</sub> (cd)	S/MH (C0/180)	S/MH (C90/270)
6005.4	127.01	1493.0	1.23	1.35

**Luminous Intensity Distribution**



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I <sub>max</sub> ):	109.1	125.7	144.2	124.7	125.9
Field Angle (10% I <sub>max</sub> ):	159.6	234.0	272.4	229.1	223.8

**Luminous Intensity (cd) Distribution Data**

$\frac{C}{Y}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8
5.0°	1485.9	1485.6	1487.1	1490.1	1492.4	1491.2	1487.9	1485.9
10.0°	1463.9	1468.2	1473.9	1482.1	1486.1	1483.5	1474.7	1466.5
15.0°	1427.4	1437.2	1448.9	1463.0	1470.2	1464.2	1448.6	1434.7
20.0°	1377.4	1392.6	1412.6	1433.5	1444.2	1435.3	1410.7	1390.3
25.0°	1314.8	1335.5	1364.6	1394.0	1408.6	1395.9	1361.5	1330.8
30.0°	1241.4	1268.6	1307.5	1343.8	1364.8	1345.5	1301.4	1262.6
35.0°	1156.4	1191.0	1240.4	1285.8	1311.4	1289.0	1232.8	1182.5
40.0°	1064.4	1106.0	1166.0	1220.3	1249.2	1221.6	1158.9	1096.9
45.0°	962.7	1014.0	1082.6	1147.6	1178.6	1149.4	1073.1	999.8
50.0°	855.7	915.2	995.4	1069.1	1103.0	1067.8	986.6	901.7
55.0°	744.9	813.1	902.1	987.3	1027.3	984.7	893.8	798.1
60.0°	627.3	702.3	806.8	903.6	946.7	900.0	799.7	688.0
65.0°	507.1	593.6	713.0	821.4	866.3	817.4	704.2	577.6
70.0°	383.4	482.3	621.2	737.1	786.1	734.1	611.5	466.6
75.0°	263.5	381.5	534.5	655.0	707.9	651.6	522.7	362.3
80.0°	152.4	289.7	453.5	580.2	634.0	572.1	440.2	268.4
85.0°	58.4	210.1	384.0	508.5	564.0	498.8	367.9	189.1
90.0°	8.1	154.1	322.3	444.7	498.9	433.4	305.9	132.7
95.0°	6.9	119.3	276.2	391.4	439.8	380.2	257.8	100.0
100.0°	6.7	98.3	237.2	344.5	386.1	333.7	219.8	82.0
105.0°	6.4	84.5	204.9	303.4	338.2	292.3	189.5	70.5
110.0°	4.6	76.4	180.0	267.0	296.4	256.5	165.7	64.2
115.0°	1.8	70.0	158.9	233.4	259.6	224.3	146.6	58.9
120.0°	1.4	64.2	140.9	205.5	227.5	197.5	130.6	54.0
125.0°	1.9	59.1	126.6	180.1	199.4	174.3	117.7	49.3
130.0°	2.3	54.0	114.1	159.1	174.9	153.7	105.9	44.5
135.0°	2.9	48.1	101.3	140.8	153.7	136.2	93.9	39.6
140.0°	2.7	43.3	88.9	123.4	134.1	118.2	81.1	33.8
145.0°	4.2	39.3	78.8	106.8	114.8	100.3	66.5	27.6
150.0°	5.3	36.4	68.1	90.4	95.3	82.7	49.0	22.8
155.0°	7.4	33.2	57.7	74.3	78.0	62.3	37.4	18.6
160.0°	8.7	29.1	46.9	58.2	59.7	41.8	25.4	14.1
165.0°	9.1	23.0	35.9	42.2	40.9	27.3	15.9	11.0
170.0°	7.8	15.7	23.3	26.1	21.2	15.6	10.3	8.4
175.0°	5.7	10.0	11.6	13.8	10.2	9.5	6.2	6.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Luminous Intensity (cd) Distribution Data (cont.)**

$\frac{C}{\gamma}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8	1491.8
5.0°	1483.8	1484.1	1484.1	1488.3	1488.7	1487.8	1485.6	1483.4
10.0°	1458.8	1463.1	1468.5	1475.9	1479.9	1476.8	1468.8	1464.1
15.0°	1420.9	1429.1	1442.4	1455.8	1461.1	1455.3	1441.2	1429.2
20.0°	1369.1	1383.2	1402.2	1423.7	1432.7	1423.1	1401.1	1383.2
25.0°	1303.7	1325.0	1352.6	1382.0	1394.3	1382.2	1350.8	1322.9
30.0°	1227.8	1255.5	1294.4	1331.9	1346.4	1331.6	1289.4	1253.7
35.0°	1144.8	1176.9	1225.4	1271.0	1292.5	1272.1	1218.1	1173.3
40.0°	1050.2	1089.7	1149.9	1203.1	1228.8	1204.5	1140.5	1084.4
45.0°	949.0	994.5	1067.2	1128.5	1158.2	1127.3	1055.7	990.4
50.0°	839.4	897.3	977.5	1051.4	1084.0	1047.1	967.7	889.6
55.0°	727.4	794.2	885.7	970.2	1007.9	964.7	875.1	782.4
60.0°	610.7	684.8	791.2	885.2	929.1	883.2	781.1	673.0
65.0°	489.9	578.0	699.6	801.9	851.5	800.6	688.1	563.6
70.0°	366.8	465.3	606.7	722.0	770.8	716.5	596.2	455.5
75.0°	247.2	364.3	518.9	640.7	694.2	632.6	509.0	352.5
80.0°	137.8	274.5	438.9	563.2	621.5	555.7	428.6	259.5
85.0°	47.4	197.8	368.6	494.5	552.7	486.6	358.3	183.5
90.0°	4.5	143.5	310.4	434.0	489.3	426.6	299.5	131.8
95.0°	4.1	111.4	264.3	378.4	430.7	373.1	252.4	102.4
100.0°	4.0	92.2	227.7	333.2	377.8	327.1	217.5	85.2
105.0°	4.4	80.0	197.3	294.1	331.9	289.1	189.3	74.3
110.0°	2.9	72.7	173.6	259.9	291.1	253.7	167.1	68.5
115.0°	0.8	67.1	154.5	228.0	255.0	223.6	148.8	63.3
120.0°	1.0	61.3	138.2	201.2	224.7	198.5	134.1	58.7
125.0°	1.6	55.9	124.7	177.7	197.2	175.4	121.9	53.8
130.0°	1.3	50.3	111.8	158.2	174.0	157.0	110.0	49.0
135.0°	1.6	44.9	99.4	140.4	154.2	138.7	98.5	44.3
140.0°	1.9	38.2	86.7	122.4	135.0	121.5	86.5	39.5
145.0°	2.2	31.1	74.5	105.1	115.8	104.1	75.1	34.9
150.0°	3.0	26.6	58.0	87.8	96.7	87.5	63.4	30.3
155.0°	3.1	21.8	45.1	70.8	79.0	71.3	51.9	25.5
160.0°	3.8	17.2	35.4	52.0	60.6	55.7	41.1	21.3
165.0°	4.2	13.1	24.6	34.5	43.5	40.2	30.5	16.1
170.0°	4.8	9.2	16.2	21.0	28.3	26.1	19.5	11.9
175.0°	4.6	5.6	9.7	10.4	14.6	12.9	10.8	8.2
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Test Model: BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)**

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	6015.6	≥1500	≥1350	Pass
Power(W)	47.37	None.	None.	N/A
Total Efficacy(lm/W)	126.99	≥115	≥111.55	Pass
CCT(K)	5050	4746~5312	No tolerances	Pass
Duv	0.00201	-0.004~0.008	No tolerances	Pass
IES R <sub>f</sub>	83	70	69	Pass
IES R <sub>g</sub>	97	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R <sub>a</sub>	81.9	≥80	≥79	
R <sub>9</sub>	5	≥0	≥-1	

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	6023.4	≥1500	≥1350	Pass
Power(W)	47.2	None.	None.	N/A
Total Efficacy(lm/W)	127.67	≥115	≥111.55	Pass
Zonal Lumen Distribution(0-60°)	59.27%	0-60°≥40%	0-60°≥37%	Pass

Goniophotometer THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9958	Pass	≥0.87	Pass
120	THDi	9.73%	Pass	≤25%	Pass
277	Power Factor	0.9771	Pass	≥0.87	Pass
277	THDi	15.76%	Pass	≤25%	Pass

Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9947	≥0.9	≥0.87	Pass
120	THDi	9.46%	≤20%	≤25%	Pass
277	Power Factor	0.974	≥0.9	≥0.87	Pass
277	THDi	15.92%	≤20%	≤25%	Pass

Note:

- The test results were measured directly from the test equipment.
- The DLC requirements were listed according to DLC Technical Requirements V5.1.
- The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.

**Test Data**

[Integrating Sphere System]

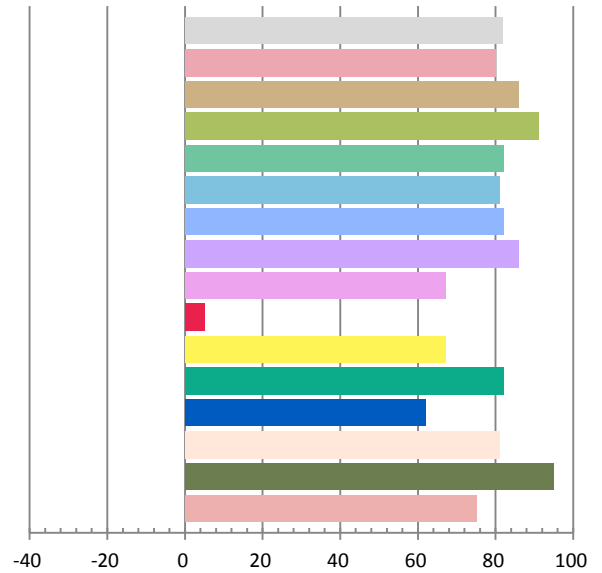
**Photometric and Electrical Measurement Result**

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3969	47.37	0.9947	6015.6	126.99

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
18.865	5050	0.00201	0.3440	0.3547	0.2095	0.4860

**Color Rendering Index**

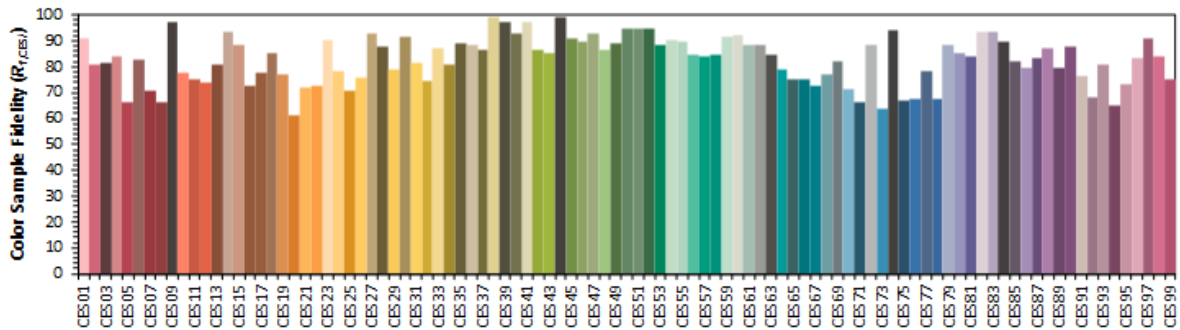
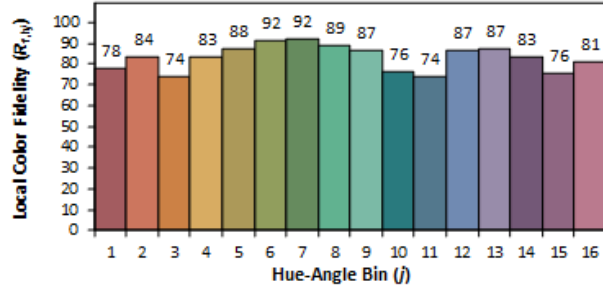
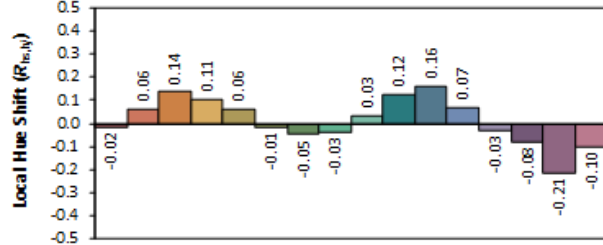
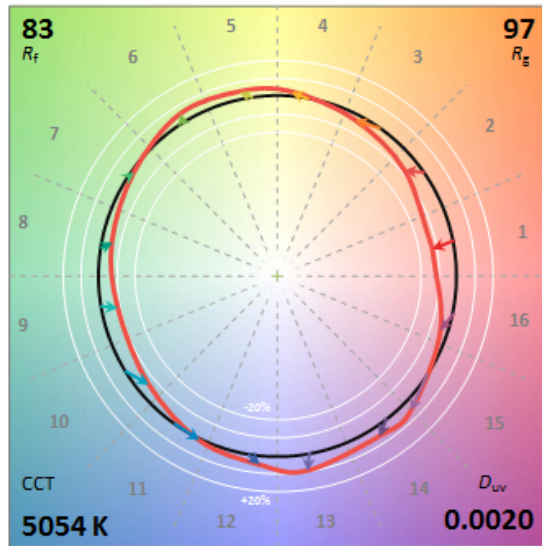
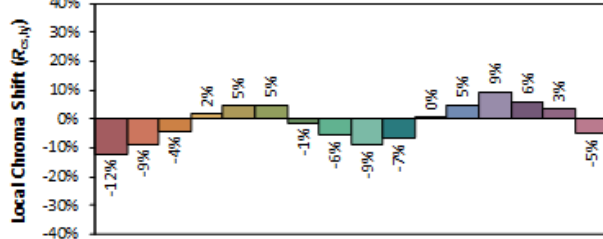
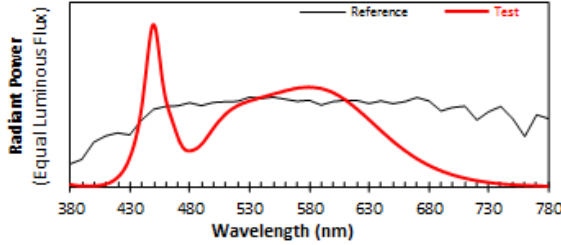
<b>Ra</b>			
<b>81.9</b>			
<b>R1</b>	<b>R2</b>	<b>R3</b>	<b>R4</b>
80	86	91	82
<b>R5</b>	<b>R6</b>	<b>R7</b>	<b>R8</b>
81	82	86	67
<b>R9</b>	<b>R10</b>	<b>R11</b>	<b>R12</b>
5	67	82	62
<b>R13</b>	<b>R14</b>	<b>R15</b>	
81	95	75	



## ANSI/IES TM-30-18 Color Rendition Report

**Source:** User SPD  
**Date:** 2022/6/17

**Manufacturer:** Beyond LED Technology  
**Model:** BLT-SN-V-4FT/FH/45/YDM 850 (A3+B7)



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

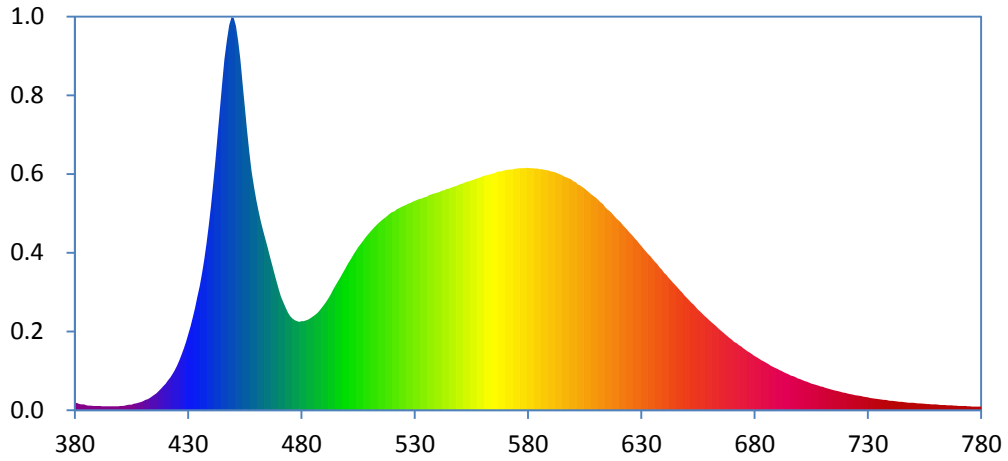
$x$     **0.3439**  
 $y$     **0.3546**  
 $u'$    **0.2095**  
 $v'$    **0.4859**

CIE 13.3-1995 (CRI)	
$R_a$	82
$R_g$	5

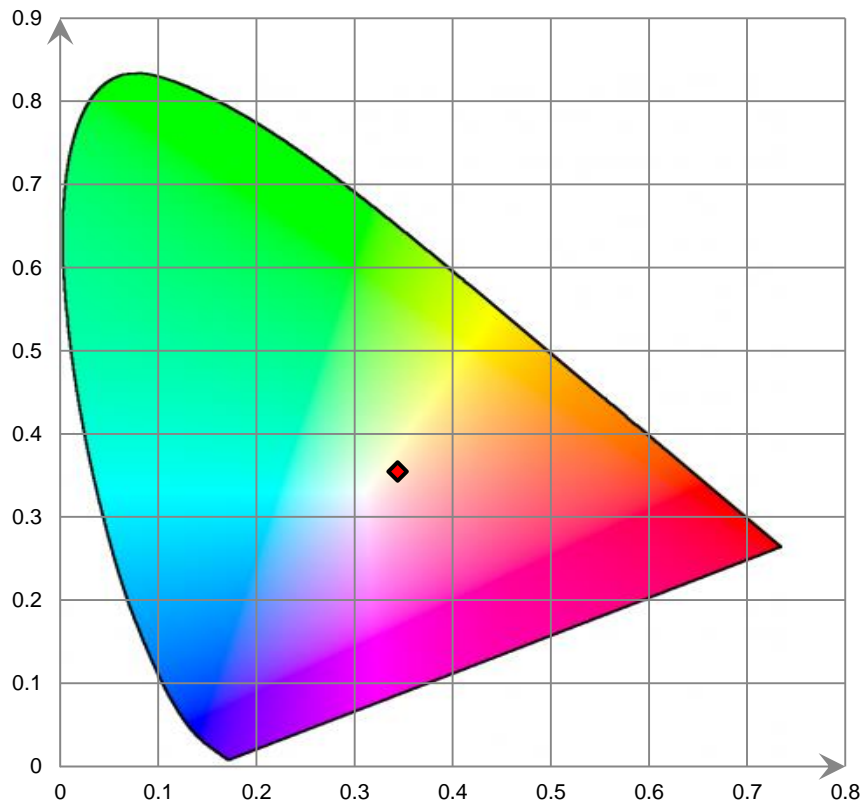
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



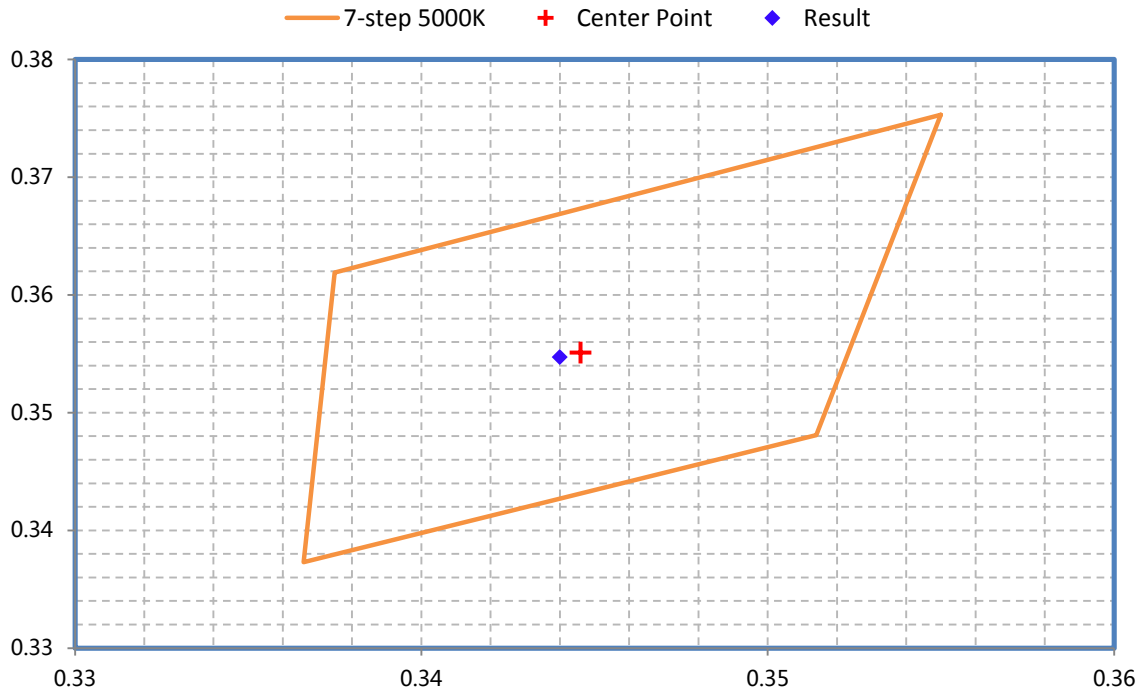
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



### ANSI C78.377-2017 Chromaticity Quadrangles



**[Goniophotometer System]**

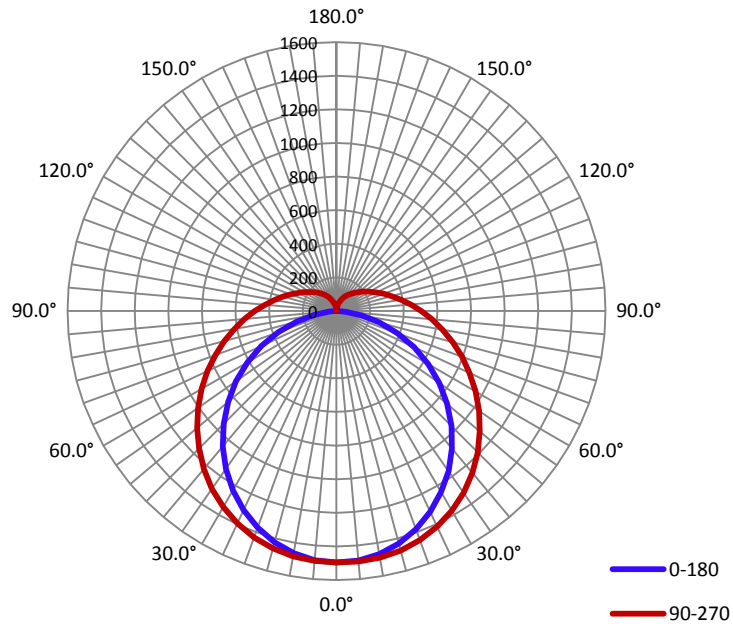
**Electrical Measurement**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.395	47.2	0.996

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I <sub>max</sub> (cd)	S/MH (C0/180)	S/MH (C90/270)
6023.4	127.67	1497.0	1.23	1.35

**Luminous Intensity Distribution**



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I <sub>max</sub> ):	109.2	125.8	144.2	124.6	126.0
Field Angle (10% I <sub>max</sub> ):	159.5	234.5	272.6	228.8	223.9

**Luminous Intensity (cd) Distribution Data**

$\frac{C}{Y}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2
5.0°	1490.0	1491.3	1491.8	1495.3	1495.3	1494.2	1492.1	1489.2
10.0°	1468.3	1472.6	1479.1	1486.3	1490.1	1486.3	1478.0	1470.6
15.0°	1431.6	1441.2	1455.3	1467.4	1475.1	1468.8	1453.1	1437.9
20.0°	1381.6	1398.8	1418.8	1439.7	1450.8	1439.5	1414.9	1391.3
25.0°	1318.4	1339.9	1372.6	1399.6	1415.5	1400.7	1365.6	1333.8
30.0°	1243.9	1273.8	1315.2	1351.1	1371.8	1352.4	1306.5	1265.3
35.0°	1162.5	1196.9	1248.5	1294.0	1319.4	1294.9	1238.2	1185.9
40.0°	1068.5	1112.1	1175.1	1229.0	1257.2	1229.0	1162.0	1098.8
45.0°	968.2	1019.8	1092.1	1156.9	1189.0	1155.4	1078.5	1005.4
50.0°	859.4	923.5	1004.4	1078.2	1113.0	1076.5	991.5	904.0
55.0°	748.3	821.9	910.9	995.7	1035.8	993.3	899.1	799.9
60.0°	629.9	709.0	817.2	912.9	955.8	907.9	804.3	690.2
65.0°	509.4	599.7	721.3	831.3	873.9	823.0	709.9	580.2
70.0°	384.9	489.8	629.1	745.0	794.5	739.4	615.4	468.5
75.0°	264.5	386.6	541.1	662.4	716.1	658.0	525.7	363.6
80.0°	152.3	294.0	461.3	586.2	640.9	577.8	443.0	268.5
85.0°	58.2	213.8	389.5	514.0	570.3	502.2	369.5	188.6
90.0°	8.9	156.5	327.7	449.2	504.2	437.0	306.1	132.3
95.0°	7.6	121.9	279.2	395.0	444.4	381.8	257.3	100.0
100.0°	7.3	100.5	240.8	348.4	389.5	334.8	220.1	81.2
105.0°	7.3	86.2	208.0	306.9	341.2	294.0	189.9	69.8
110.0°	4.5	77.8	182.7	270.3	299.1	258.6	165.7	63.3
115.0°	2.8	71.8	160.9	236.5	262.0	225.7	146.6	58.8
120.0°	3.0	66.3	143.0	208.1	229.5	199.4	131.2	54.6
125.0°	3.2	61.3	128.5	182.9	201.6	174.8	118.0	50.3
130.0°	3.0	56.4	115.7	160.9	176.4	154.3	106.5	45.7
135.0°	3.4	51.1	103.6	142.5	154.9	136.8	95.1	41.5
140.0°	4.0	46.4	92.5	125.4	135.3	119.7	83.2	35.6
145.0°	5.0	43.3	82.0	109.0	116.7	102.3	68.7	29.4
150.0°	6.5	40.7	71.7	93.0	98.4	85.1	51.8	25.2
155.0°	8.9	36.6	61.8	77.4	80.6	65.1	40.4	21.2
160.0°	11.6	33.2	51.1	62.3	63.4	44.5	28.6	16.6
165.0°	11.3	27.5	39.7	46.3	45.2	30.0	19.2	13.6
170.0°	10.2	19.5	27.6	30.7	25.0	18.5	12.2	9.9
175.0°	8.4	12.0	13.1	16.5	12.6	11.3	7.3	6.5
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Luminous Intensity (cd) Distribution Data (cont.)**

$\frac{C}{Y}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2	1496.2
5.0°	1487.2	1488.5	1489.5	1491.8	1492.7	1491.1	1488.9	1487.5
10.0°	1463.6	1468.0	1472.6	1479.6	1482.2	1478.8	1472.7	1466.5
15.0°	1423.6	1432.8	1445.1	1458.2	1462.4	1456.8	1444.3	1432.0
20.0°	1370.8	1387.0	1406.0	1426.4	1433.4	1424.1	1403.7	1384.7
25.0°	1306.9	1327.9	1353.9	1383.0	1394.5	1382.5	1351.8	1325.6
30.0°	1231.6	1257.8	1294.9	1330.3	1346.4	1330.4	1291.1	1255.2
35.0°	1146.5	1178.3	1225.3	1269.8	1290.7	1270.4	1218.5	1175.1
40.0°	1053.0	1091.8	1149.5	1201.8	1226.6	1200.8	1139.6	1086.9
45.0°	948.7	996.7	1066.7	1125.9	1155.2	1124.7	1055.5	989.8
50.0°	841.5	898.7	975.9	1047.4	1081.8	1044.6	966.6	889.0
55.0°	729.6	793.6	883.3	966.6	1004.9	961.7	871.3	783.7
60.0°	612.1	685.0	788.8	881.8	925.9	877.8	779.1	674.3
65.0°	491.6	574.4	695.0	799.1	846.8	796.4	685.8	563.4
70.0°	367.7	464.7	603.9	716.5	766.7	711.7	593.9	452.4
75.0°	247.7	363.7	516.5	635.3	689.9	628.2	506.1	349.8
80.0°	137.7	274.0	436.5	559.2	617.2	549.0	425.4	257.9
85.0°	46.8	196.4	364.8	490.1	549.0	480.9	353.3	181.7
90.0°	4.9	142.2	307.6	430.0	485.7	421.4	296.6	130.3
95.0°	4.5	111.0	262.5	375.7	427.3	369.7	250.3	101.4
100.0°	4.4	92.4	226.9	330.5	375.9	324.4	216.0	84.4
105.0°	4.9	80.6	197.0	291.6	330.0	286.9	187.8	74.0
110.0°	2.6	73.5	173.4	257.6	289.5	252.4	166.2	68.8
115.0°	1.0	68.0	154.0	227.6	254.2	222.8	148.3	63.9
120.0°	1.0	62.3	138.2	201.4	224.2	197.8	134.1	59.4
125.0°	1.2	56.7	125.2	178.2	197.3	175.8	122.7	54.4
130.0°	1.3	51.4	112.4	159.0	174.7	156.9	110.8	49.4
135.0°	1.4	45.5	100.2	141.2	154.8	139.6	99.2	44.9
140.0°	2.1	38.8	87.2	123.7	135.7	122.5	87.6	39.9
145.0°	2.5	31.3	74.7	106.0	116.2	105.1	75.4	35.2
150.0°	2.9	27.3	58.3	88.4	97.5	88.4	64.1	30.4
155.0°	3.4	21.9	44.8	71.5	79.0	72.0	52.1	25.9
160.0°	3.7	17.5	35.6	52.5	61.6	55.6	41.1	21.9
165.0°	3.8	12.7	24.8	34.7	44.1	40.5	31.1	16.3
170.0°	4.8	8.9	16.2	21.1	28.7	26.8	19.5	11.5
175.0°	4.7	5.9	8.4	10.2	13.9	12.4	10.6	7.2
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## 6. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	G121960CS1361154D	2021-11-02	2022-11-01
spectroradiometer	EVERFINE	HAAS-2000	M12048CS1361148	2021-11-02	2022-11-01
Digital CC&CV DC Power Supply	EVERFINE	WY305	G115986CN1361134	2021-11-02	2022-11-01
Thermal Meter	ANYMETRE	TH-20E	N/A	2021-12-01	2022-11-30
Standard Light Source	Osram	24V/50W	JWWCR020106	2021-09-15	2022-09-14
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2021-11-13	2022-11-12
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2021-11-02	2022-11-01
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2021-11-02	2022-11-01
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2021-11-02	2022-11-01
Power Meter	INVENTFINE	WT500	GSDSQ200007	2021-11-15	2022-11-14
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2021-11-15	2022-11-14
Wireless Weather Station	ZHONGXING	KG218	N/A	2021-11-02	2022-11-01
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2021-12-23	2022-12-22
Digital Multimeter	FLUKE	115C	37840512WS	2021-07-28	2022-07-27
Hybrid Recorder	YOKOGAWA	DR230	47JH0903	2021-11-02	2022-11-01
Power Supply	SC	SC/BP-11003	1608110030553	2021-11-15	2022-11-14

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

## 7. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The ambient temperature of the sample was maintained at 25°C±1°C during measurement. And relative humidity is less than 65%. The product was operated in its intended orientation in application during all testing.

### Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement. 4π geometry was used during measurement.

### Goniophotometer System

Type C goniophotometer was used for measuring luminous intensity distribution. The vertical angle (γ) test intervals were set no more than 1 degree while data for 5 degree intervals is reported. The horizontal angle (C plane) test intervals were set no more than 22.5 degree.

### ISTMT Test

The LED which has the highest temperature was measured at the location of LED case which is specified by LED source manufacturer and detailed by LM-80 report. The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

## Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
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\*\*\*\*\*END OF REPORT\*\*\*\*\*