

LM-79-08 Test Report

For

Beyond LED Technology **(Brand Name: Beyond LED Technology)**

Internal Driver/Line Voltage (UL Type B) Lamps

Model name(s): DYSYHU-T8GBBE2UL1218AM-50-B
Remark: YY--35=3500K/40=4000K/45=4500K/50=5000K

Representative (Tested) Model: DYSYHU-T8GBBE2UL1218AM-50-BB

Model Difference: All construction and rating are the same, except CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.26,2020

Review By:

Johnson Sun

Manager: Johnson Sun

Note: 1. The results contained in this report pertain only to the tested samples.

2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	DYSYHU-T8GBBE2UL1218AM-50-B	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Internal Driver/Line Voltage (UL Type B) Lamps	
Rated Voltage / Frequency	120-277 Vac, 50/60 Hz	
Nominal Power	18W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K,4500K,5000K	
LED Manufacturer	Beyond LED Technology	
LED Model	ZT2835WOH1	
Integral Controls Availability	No	
Sample Number	JAE200313-C1,C2(3500K),C3(5000K)	
Lamp Length	1200	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Mar.13, 2020
Date of Test	Mar.16, 2020
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2020-03-16	Test Ambient:	25±1 ° C
Test Orientation	Horizontal	Stabilization Time (min)	60
Model Number	DYSYHU-T8GBBE2UL1218AM-50-B, Connected to line voltage	Total Operating Time (min)	61

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE200313-	120.0	60	0.1485	17.57	0.9858	19.75
C1	277.0	60	0.0658	18.02	0.9889	11.39
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer

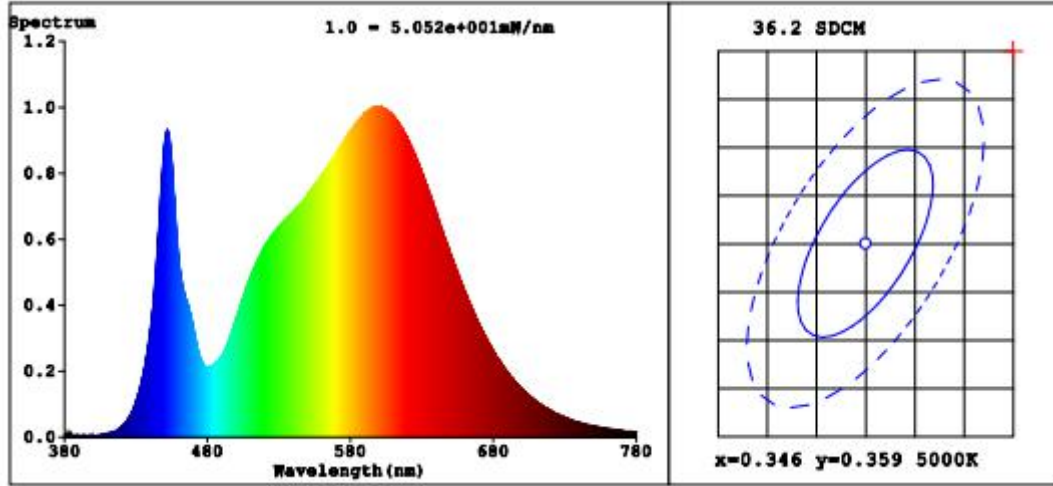
Method(Self-absorption:1.0293):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	81	R9	10
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	3499	R3	95	R11	80
Duv	-0.0002	R4	81	R12	61
Chromaticity (x, y)	x=0.4052 y=0.3902	R5	81	R13	83
Chromaticity (u', v')	u'=0.2358 v'=0.5110	R6	85	R14	97
Color Rendering Index (CRI)	82.5	R7	85	R15	75
R9	10	R8	63	--	--

Photometric Measurement for Bare-lamp –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.0 Pass Criteria
Test Voltage (V)	120	277	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2717	2830	Bare Lamp: >= 1600(-10%)
Luminous Efficacy (lm/W)	154.64	157.05	Bare lamp: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2020-03-16	Test Ambient:	25±1 ° C
Test Orientation	Horizontal	Stabilization Time (min)	60
Model Number	DYSYHU-T8GBBE2UL1218AM-50-B, Connected to line voltage	Total Operating Time (min)	75

Electrical Measurement for 2-lamp in Lithonia 2GT8 lensed 2x4:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE200313-C	120.1	60	0.2966	34.87	0.9790	20.40
1,C2	277.0	60	0.1313	35.76	0.9830	11.90
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

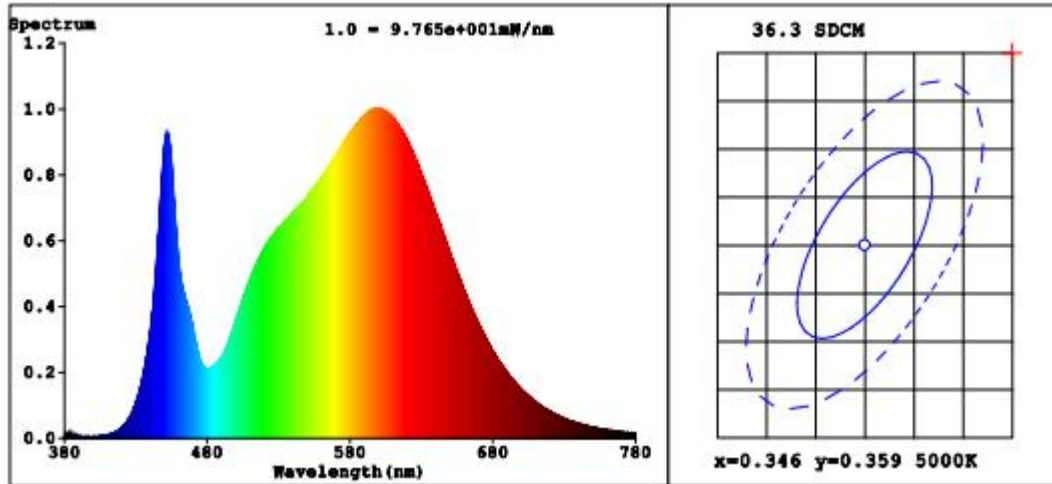
Chromaticity Measurement for 2-lamp in Lithonia 2GT8 lensed 2x4 - Sphere-Spectroradiometer Method(Self-absorption:1.0438):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	81	R9	11
Frequency (Hz)	60	R2	89	R10	74
CCT (K)	3494	R3	95	R11	80
Duv	-0.0004	R4	81	R12	62
Chromaticity (x, y)	x=0.4053 y=0.3899	R5	81	R13	83
Chromaticity (u', v')	u'=0.2360 v'=0.5109	R6	85	R14	97
Color Rendering Index (CRI)	82.6	R7	85	R15	75
R9	11	R8	64	--	--

Photometric Measurement 2-lamp in Lithonia 2GT8 lensed 2x4 – Goniophotometer Method(Test Distance: 26.000m):

Parameter	Result		DLC V5.0 Pass Criteria
Test Voltage (V)	120	277	--
Frequency (Hz)	60	60	
Total Luminous (lm)	4313.8	4493.8	In luminaire (2 lamps): >= 3000(-10%)
Luminous Efficacy (lm/W)	123.72	125.68	In luminaire: >= 110(-3%)
Zonal lumens in the 0-60° zone (%)	84.4	--	>= 75(-3)
SC: 0-180° (if applicable)	1.22	--	1.0-2.0(±0.1)
SC: 90-270° (if applicable)	1.24	--	1.0-2.0(±0.1)
Beam Angle (°)	99.9	--	--
Center Beam Candle Power (cd)	1743	--	--

Spectral Power Distribution & Chromaticity Diagram

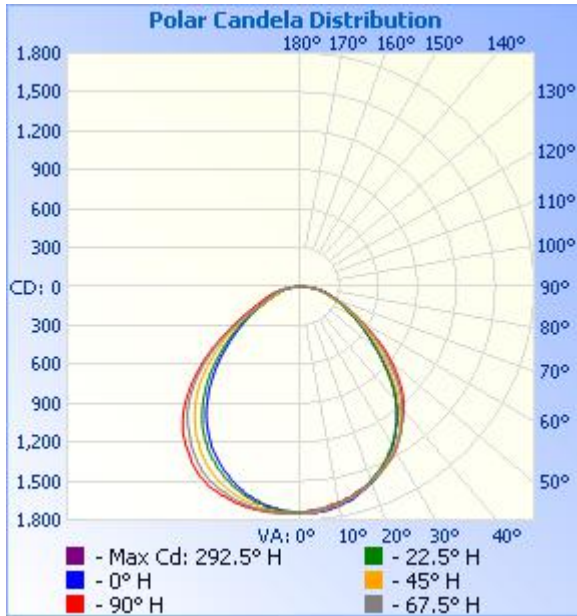


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,357.6	31.5%
0-40	2,207.9	51.2%
0-60	3,642.5	84.4%
60-90	662.1	15.3%
70-100	288.6	6.7%
90-120	3.9	0.1%
0-90	4,304.6	99.8%
90-180	8.8	0.2%
0-180	4,313.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	165.0	3.8%	90-100	1.4	0%
10-20	473.6	11.0%	100-110	1.1	0%
20-30	718.9	16.7%	110-120	1.4	0%
30-40	850.4	19.7%	120-130	1.2	0%
40-50	815.1	18.9%	130-140	1.1	0%
50-60	619.5	14.4%	140-150	1.0	0%
60-70	374.9	8.7%	150-160	0.8	0%
70-80	213.4	4.9%	160-170	0.5	0%
80-90	73.8	1.7%	170-180	0.2	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.3ft	160.1 fc	7.2 ft	8.6 ft
6.6ft	40.0 fc	14.3 ft	17.2 ft
9.9ft	17.8 fc	21.5 ft	25.7 ft
13.2ft	10.0 fc	28.6 ft	34.3 ft
16.5ft	6.4 fc	35.8 ft	42.9 ft
19.8ft	4.4 fc	42.9 ft	51.5 ft

■ Vert. Spread: 94.6°
■ Horiz. Spread: 104.9°

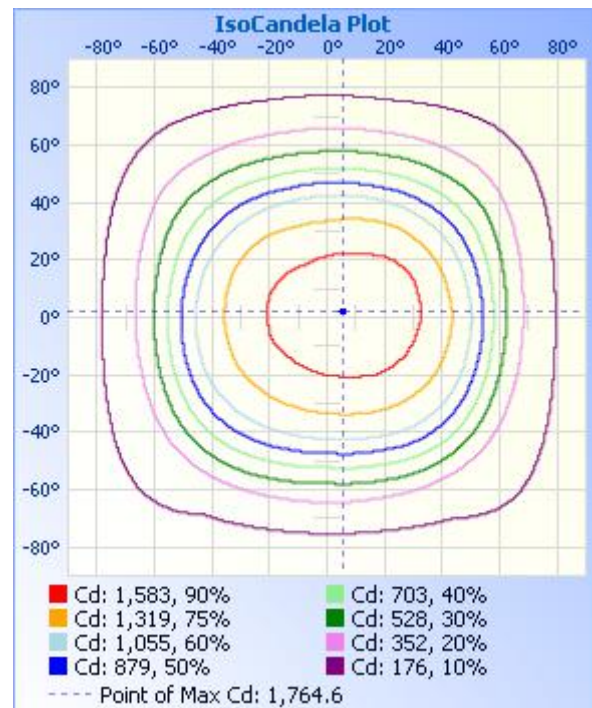
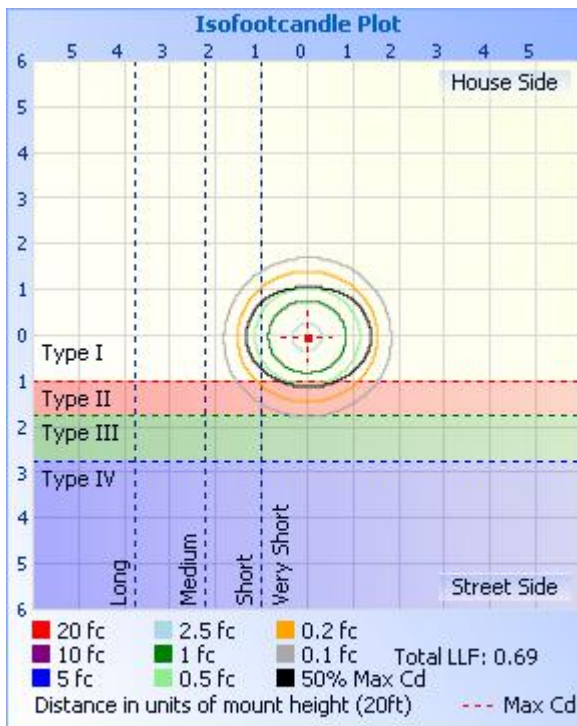


Table--1

UNIT: cd

C (DEG) \ Q (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	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743
5	1756	1754	1749	1752	1737	1730	1736	1726	1721	1723	1714	1726	1730	1735	1749	1750
10	1753	1759	1744	1735	1716	1700	1706	1697	1689	1685	1679	1688	1700	1700	1730	1746
15	1746	1746	1725	1693	1671	1652	1657	1657	1644	1643	1632	1634	1650	1668	1702	1727
20	1719	1730	1682	1645	1610	1588	1601	1597	1595	1589	1570	1565	1578	1602	1658	1692
25	1690	1685	1635	1572	1523	1508	1531	1536	1537	1525	1492	1479	1491	1533	1597	1655
30	1623	1637	1569	1478	1420	1408	1441	1463	1456	1435	1399	1378	1388	1436	1507	1577
35	1525	1528	1464	1364	1292	1289	1336	1355	1344	1322	1282	1257	1265	1319	1403	1475
40	1414	1390	1303	1212	1143	1140	1185	1218	1233	1205	1160	1116	1110	1171	1270	1354
45	1255	1208	1102	1015	975	958	1004	1063	1099	1070	1010	959	945	1006	1115	1208
50	1054	997	895	819	774	774	825	882	924	901	844	782	768	821	921	1011
55	829	795	714	649	618	615	659	711	738	717	671	617	600	642	724	791
60	607	615	548	502	484	477	504	553	548	529	494	463	453	472	519	566
65	426	453	406	384	376	366	375	415	396	355	320	317	328	321	331	372
70	313	319	291	282	285	272	273	301	295	258	215	223	237	227	222	271
75	237	221	210	206	212	202	199	211	224	204	172	170	176	175	178	216
80	163	151	143	139	148	138	139	145	158	150	132	123	124	122	137	158
85	66.4	74.8	70.1	72.9	75.7	74.9	68.8	75.1	68.1	71.6	65.1	61.5	62.7	62.3	64.7	69.9
90	1.00	0.89	0.84	1.22	0.99	1.21	0.98	0.95	0.61	0.98	0.83	11.4	12.7	2.73	1.36	0.94
95	0.64	0.61	0.76	0.00	1.05	0.94	0.72	0.66	0.44	0.91	0.81	0.88	2.85	1.61	1.10	0.83
100	0.39	0.59	0.66	0.74	1.05	0.94	0.89	0.65	0.67	0.83	1.03	1.10	1.05	1.13	1.00	0.83
105	0.83	0.82	0.94	0.87	1.18	1.02	1.02	0.78	0.89	1.02	1.24	1.49	1.41	1.37	1.10	0.99
110	1.00	1.11	1.16	0.94	1.27	1.00	1.28	1.16	1.15	1.28	1.49	1.71	1.77	1.71	1.22	1.09
115	1.22	1.56	1.25	0.99	1.27	0.95	1.66	1.58	1.50	1.54	1.68	1.60	1.72	1.49	1.50	1.27
120	1.44	1.67	1.46	0.51	0.77	0.89	1.61	1.72	1.59	1.83	1.76	1.16	1.43	1.05	1.67	1.39
125	1.52	1.67	1.52	0.54	0.77	0.88	1.61	1.73	1.66	2.06	1.85	1.13	1.16	0.77	1.65	1.57
130	1.56	1.68	1.50	0.57	0.92	0.91	1.59	1.75	1.99	2.09	2.05	1.11	1.16	0.72	1.65	1.66
135	1.60	1.69	1.44	0.60	0.95	0.94	1.55	1.76	2.10	2.17	2.28	1.22	1.16	0.87	1.66	1.67
140	1.63	1.70	1.13	0.72	0.99	1.08	1.51	1.77	2.22	2.44	2.32	1.38	1.21	1.14	1.66	1.69
145	1.82	1.71	1.00	0.89	1.03	1.32	1.54	2.10	2.49	2.65	2.43	1.82	1.43	1.25	1.47	1.70
150	1.76	1.61	0.93	0.96	1.12	1.46	1.55	2.11	2.58	2.70	2.50	1.90	1.56	1.35	1.51	1.72
155	1.68	1.42	0.92	1.01	1.21	1.56	1.59	2.00	2.65	2.74	2.54	1.94	1.77	1.60	1.55	1.73
160	1.57	1.28	0.99	1.06	1.54	1.47	1.72	1.88	2.70	2.78	2.48	1.98	1.79	1.92	1.58	1.75
165	1.83	1.56	1.05	1.22	1.68	1.56	1.62	2.11	2.78	2.73	2.32	1.85	1.83	2.04	1.83	1.76
170	2.07	1.74	1.27	1.64	1.82	1.90	1.61	2.02	2.50	2.33	2.16	1.76	1.85	2.01	1.91	1.79
175	2.17	1.94	1.64	1.84	2.15	2.00	1.89	2.00	2.55	2.50	2.38	1.73	1.82	1.88	1.93	1.82
180	2.33	2.06	1.88	1.83	2.04	2.04	1.83	2.22	2.38	2.45	2.05	1.71	1.82	2.04	2.11	1.83

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2020-03-16	Test Ambient:	25±1 ° C
Test Orientation	Horizontal	Stabilization Time (min)	60
Model Number	DYSYHU-T8GBBE2UL1218AM-50-B, Connected to line voltage	Total Operating Time (min)	61

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE200313-	120.0	60	0.1465	17.34	0.9863	19.38
C3	277.0	60	0.0648	17.78	0.9901	11.02
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer

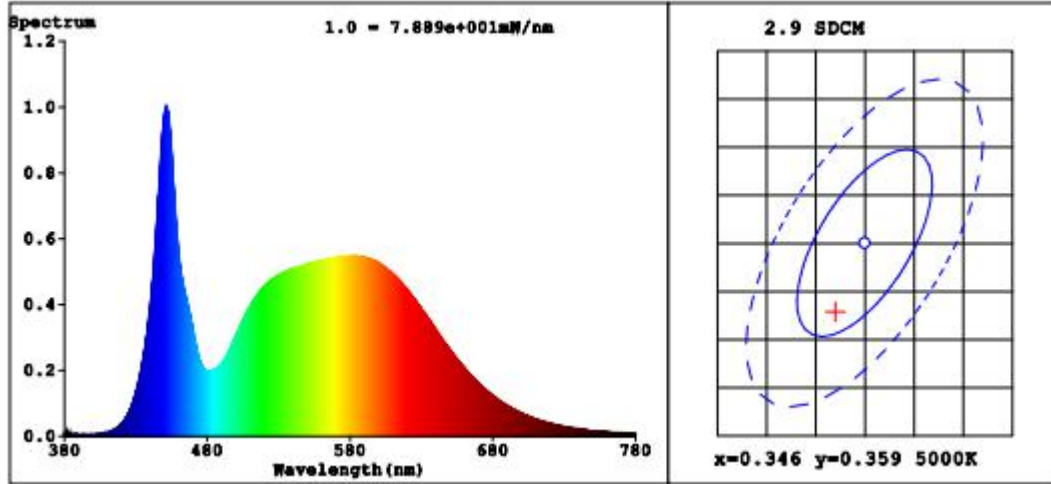
Method(Self-absorption:1.0295):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	82	R9	11
Frequency (Hz)	60	R2	87	R10	69
CCT (K)	5080	R3	90	R11	82
Duv	0.0010	R4	83	R12	59
Chromaticity (x, y)	x=0.3430 y=0.3519	R5	82	R13	83
Chromaticity (u', v')	u'=0.2099 v'=0.4845	R6	82	R14	95
Color Rendering Index (CRI)	82.7	R7	87	R15	77
R9	11	R8	69	--	--

Photometric Measurement for Bare-lamp –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.0 Pass Criteria
Test Voltage (V)	120	277	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2724	2837	Bare Lamp: >= 1600(-10%)
Luminous Efficacy (lm/W)	157.09	159.56	Bare lamp: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



2.4 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
DYSYHU-T8GBBE2UL1218 AM-35-B	3500K	2717	17.57	154.64
DYSYHU-T8GBBE2UL1218 AM-40-B	4000K	2719*1	17.46*2	155.73*3
DYSYHU-T8GBBE2UL1218 AM-45-B	4500K	2722*1	17.46*2	155.90*3
DYSYHU-T8GBBE2UL1218 AM-50-B	5000K	2724	17.34	157.09

*1: This value is calculated and the calculation formula is as below:

$$2719 = (2724 - 2717) / 3 * 1 + 2717$$

$$2722 = (2724 - 2717) / 3 * 2 + 2717$$

*2: This value is calculated and the calculation formula is as below:

$$17.46 = (17.57 + 17.34) / 2$$

*3: This value is calculated and the calculation formula is as below:

$$155.73 = 2719 / 17.46$$

$$155.90 = 2722 / 17.46$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-423	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-332	Standard Lamp	2019-07-09	2020-07-08
ST-R-333	Power Meter for Integrating Sphere	2019-06-27	2020-06-26
ST-R-405	Temperature Probe for Integrating Sphere	2019-01-24	2020-01-23
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2019-07-09	2020-07-08
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
ST-R-354	hygrothermograph for Goniophotometer	2019-06-28	2020-06-27
Expand Uncertainty: Photometric Measurement (Sphere):3.06%, k=2 Chromaticity Measurement(Sphere):43.46K, k=2 Photometric Measurement(Goniophotometer):3.38%, k=2			

******* END OF REPORT *******