NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond LED)

1939 Parker Ct
Stone Mountain, GA 30087

AC 4' T8 Tube

(UL Type B)

Model name(s): BLTT84TYB22WSDMF

Test & Report By:

Johnson Sun

Engineer: Johnson Sun
Date: Aug.18,2016

Review By:

Tommy Liang

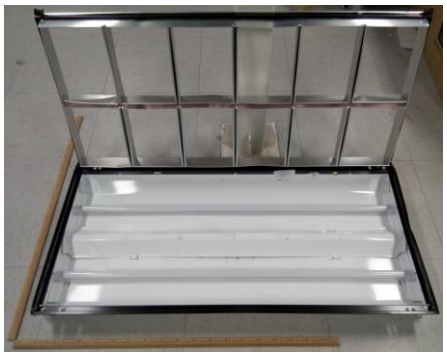
Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED	
Model Number	BLTT84TYB22WSDMF	
SKU (if available)	150919, 150938, 150941	
Type of Luminaire (for integral lamps, list base type and lamp type)	Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B)	
Rated Voltage / Frequency	100 ~ 277 Vac, 60 Hz	
Nominal Power	22W	
Rated Initial Lamp Lumen	--	
Declared CCT	5000K	
LED Manufacturer	ShenZhen JuFei Optoelectronics Co., Ltd.	
LED Model	2835 White SMD LED	
Sample Number	GZE160832-C1,C2(3000K),C3(5000K)	
Lamp Length	1200	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

Photo



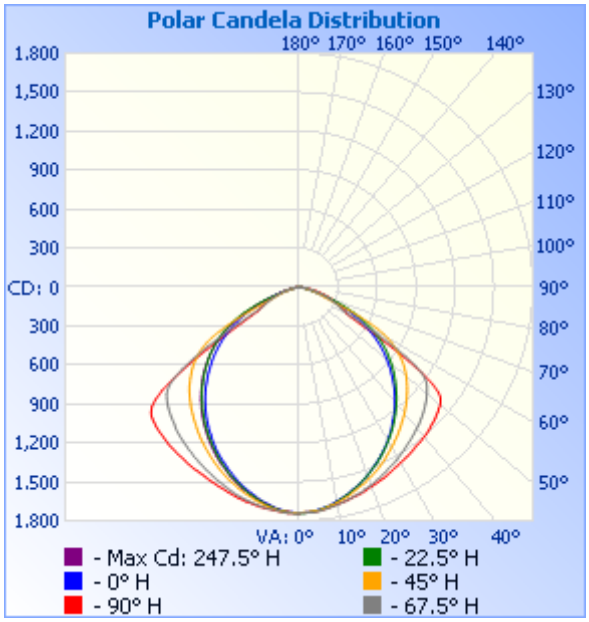
1.2 Test Specifications:

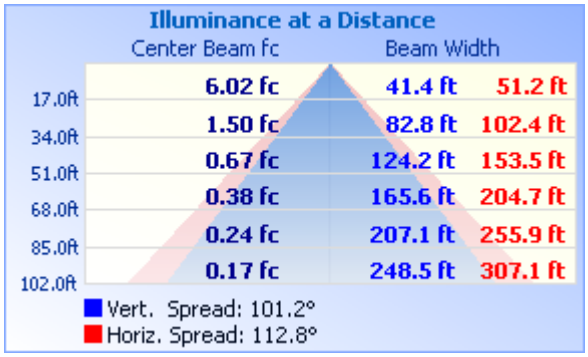
Date of Receipt	Aug.15, 2016
Date of Test	Aug.16, 2016
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical 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 Colour 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
Reference Work Instruction	QD25

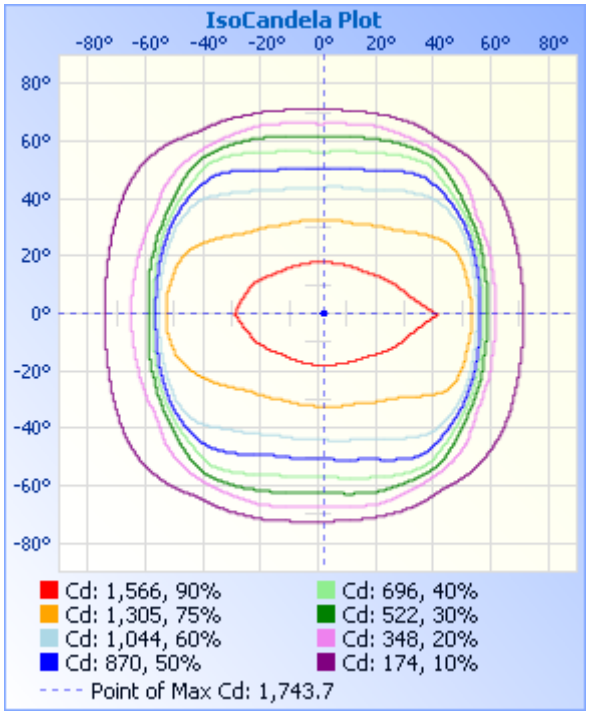
1.3 Test Methods

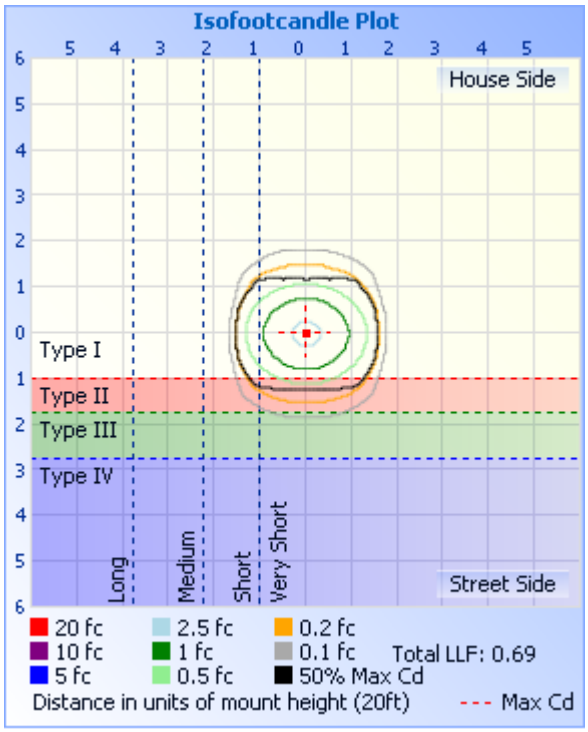
1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. 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.
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.
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.

Photometric Data









C (DEG) / γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739	1739
5	1732	1732	1729	1723	1721	1724	1726	1733	1729	1724	1727	1718	1720	1724	1729	1733
10	1719	1708	1692	1679	1673	1678	1683	1703	1696	1694	1675	1669	1668	1676	1688	1713
15	1693	1676	1639	1618	1611	1615	1628	1663	1666	1655	1619	1602	1602	1614	1639	1681
20	1664	1638	1580	1548	1540	1541	1567	1622	1632	1607	1553	1524	1523	1542	1579	1640
25	1638	1588	1513	1465	1457	1459	1501	1572	1600	1553	1480	1439	1439	1459	1510	1596
30	1617	1541	1441	1376	1364	1369	1423	1519	1561	1497	1398	1342	1344	1364	1435	1549
35	1591	1492	1363	1279	1256	1271	1344	1466	1530	1440	1311	1240	1240	1268	1358	1503
40	1571	1443	1281	1173	1146	1164	1263	1412	1500	1383	1223	1134	1125	1161	1275	1457
45	1542	1384	1195	1059	1022	1049	1173	1355	1463	1317	1135	1018	1001	1050	1192	1398
50	1489	1309	1092	937	889	930	1077	1283	1416	1240	1033	896	872	930	1093	1330
55	1032	1120	957	801	743	797	960	1151	1162	1118	915	767	730	802	973	1100
60	367	472	771	637	580	646	790	561	457	577	761	626	578	658	775	435
65	278	254	395	443	400	457	424	325	357	316	448	455	412	465	333	261
70	193	169	148	224	216	241	186	232	261	224	186	255	236	241	156	174
75	117	96.0	75.9	90.8	98.4	97.9	99.5	141	169	137	98.5	112	109	97.8	79.9	101
80	52.9	42.9	35.3	37.7	40.7	41.6	45.6	64.5	77.6	62.5	45.7	42.7	40.4	37.7	36.8	45.6
85	16.2	13.2	11.0	10.7	11.5	12.1	14.3	19.1	23.3	18.2	13.3	11.4	10.7	10.3	11.1	13.5
90	0.00	0.00	0.00	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.34	0.00	0.00
105	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.63	0.00
110	0.23	0.52	0.57	0.00	0.00	0.00	0.63	0.00	0.06	0.35	0.72	0.00	0.00	0.00	0.40	0.93
115	1.94	1.11	0.20	0.00	0.00	0.00	0.06	1.15	1.38	0.80	0.55	0.00	0.00	0.00	0.00	0.81
120	0.47	0.33	0.13	0.00	0.00	0.00	0.06	0.12	0.26	0.00	0.52	0.00	0.00	0.00	0.00	0.06
125	0.31	0.34	0.08	0.00	1.54	0.00	0.06	0.00	0.20	0.00	0.40	0.00	0.00	0.00	0.00	0.06
130	0.23	0.43	0.06	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.12	0.00	0.00	0.00	0.00	0.06
135	0.17	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.06
140	0.16	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.06	0.00	0.06
145	0.15	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.06	0.00	0.06	0.00	0.00
150	0.13	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.13	0.12	0.21	0.06	0.00
155	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.18	0.32	0.33	0.12	0.00
160	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.34	0.38	0.34	0.20	0.00
165	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.45	0.32	0.25	0.00
170	0.06	0.00	0.06	0.00	0.23	0.23	0.00	0.00	0.00	0.00	0.00	0.38	0.40	0.30	0.23	0.00
175	0.11	0.00	0.06	0.00	0.46	0.31	0.00	0.00	0.00	0.00	0.00	0.06	0.28	0.29	0.23	0.00
180	0.00	0.00	0.06	0.23	0.34	0.29	0.00	0.00	0.00	0.00	0.00	0.06	0.11	0.40	0.29	0.00

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-16	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	BLTT84TYB22WSDMF		

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160832 -C3	120.0	60	0.1857	21.72	0.9747	12.65
	277.0	60	0.0818	21.54	0.9504	15.68
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer Method:

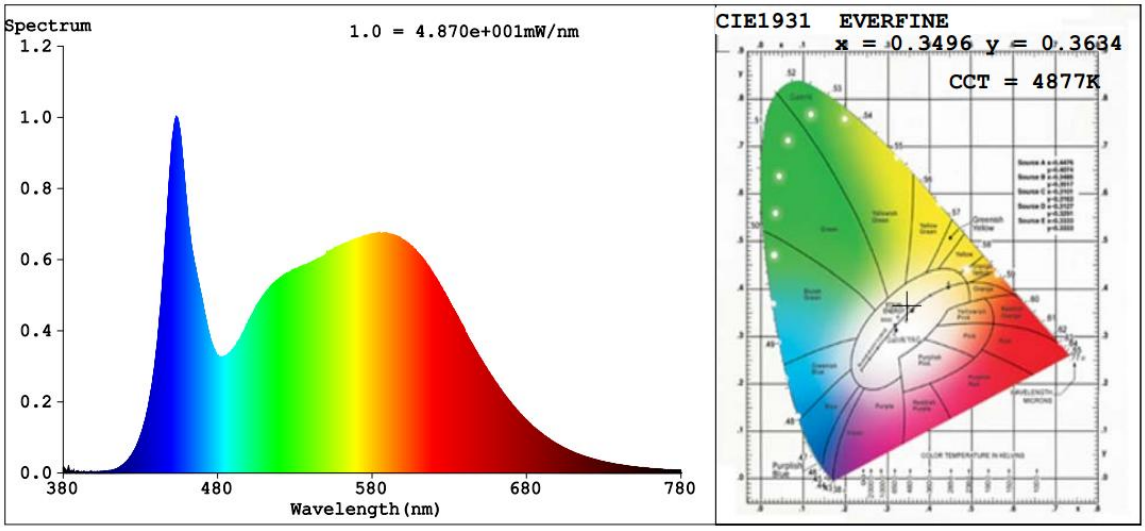
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4877
Duv	0.0040
Chromaticity (x, y)	x=0.3496 y=0.3634
Chromaticity (u', v')	u'=0.2100 v'=0.4910
Color Rendering Index (CRI)	84.2
R9	12

Special Color Rendering Indices			
R1	82	R9	12
R2	91	R10	78
R3	96	R11	80
R4	81	R12	59
R5	82	R13	85
R6	87	R14	98
R7	87	R15	76
R8	67	--	--

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

Parameter	Result		DLC V4.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2763	2793	Bare Lamp: >=1600(-10%)
Luminous Efficacy (lm/W)	127.21	129.67	Bare lamp: >= 110(-3%)

Spectral Power Distribution & Chromaticity Diagram



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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