

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond LED Technology)

2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model name(s): BLT-TR22-DM-TWTS

Representative (Tested) Model:
BLT-TR22-DM-TWTS

Model Different: N/A

Test & Report By:

Ferrum Li

Engineer: Ferrum Li

Date: Jan.25,2022

Review By:

Garman Mo

Manager: Garman Mo

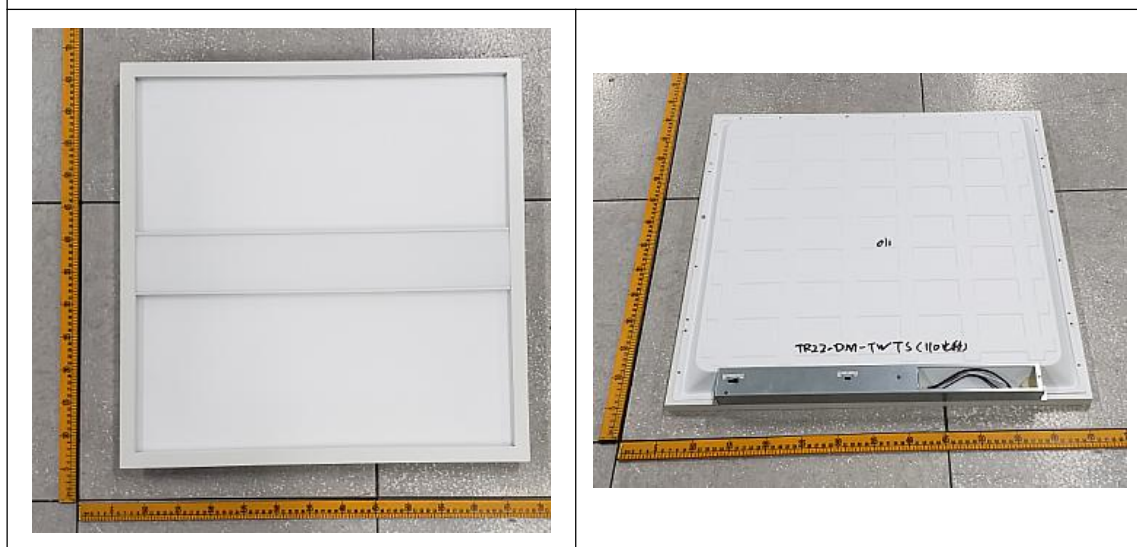
Note: 1. The results contained in this report pertain only to the tested samples.

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	BLT-TR22-DM-TWTS	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces	
Rated Voltage / Frequency	110-347Vac, 50/60Hz	
Nominal Power	25/30/35W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K,5000K	
LED Manufacturer	ShenZhen JuFei Optoelectronics Co., Ltd	
LED Model	01.JT.AJ2835W80N05	
Integral Controls Availability	No	
Dimming	Continuous	
Sample Number	JAE220116-I1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Jan.14,2022
Date of Test	Jan.18,2022
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 C78.377-2017 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

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	2022-01-18	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	Beyond LED Technology	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-I	120.0	60	0.2844	33.80	0.9903	11.71
1	347.0	60	0.1081	33.15	0.8835	16.60
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Photometric Measurement – Goniophotometer Method(Test Distance: 26.000m):

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3747.4	3694.4	>=2000 (-10%)	
Luminous Efficacy (lm/W)	110.86	111.46	Standard: >= 110(-3%)	Premium: >= 125(-3%)
Zonal lumens in the 0-60° zone (%)	79.3	--	>= 75(-3)	
SC: 0-180° (if applicable)	1.24	--	1.0-2.0(±0.1)	
SC: 90-270° (if applicable)	1.25	--	1.0-2.0(±0.1)	
Beam Angle (°)	111.7	--	--	
Center Beam Candle Power (cd)	1334	--	--	

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,030.8	27.5%
0-40	1,686.0	45%
0-60	2,971.6	79.3%
60-90	773.0	20.6%
70-100	314.8	8.4%
90-120	0.2	0%
0-90	3,744.6	99.9%
90-180	2.4	0.1%
0-180	3,747.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	126.1	3.4%	90-100	0.0	0%
10-20	360.2	9.6%	100-110	0.0	0%
20-30	544.6	14.5%	110-120	0.2	0%
30-40	655.1	17.5%	120-130	0.5	0%
40-50	677.5	18.1%	130-140	0.6	0%
50-60	608.1	16.2%	140-150	0.5	0%
60-70	458.3	12.2%	150-160	0.3	0%
70-80	256.2	6.8%	160-170	0.2	0%
80-90	58.6	1.6%	170-180	0.1	0%

Photometric Data

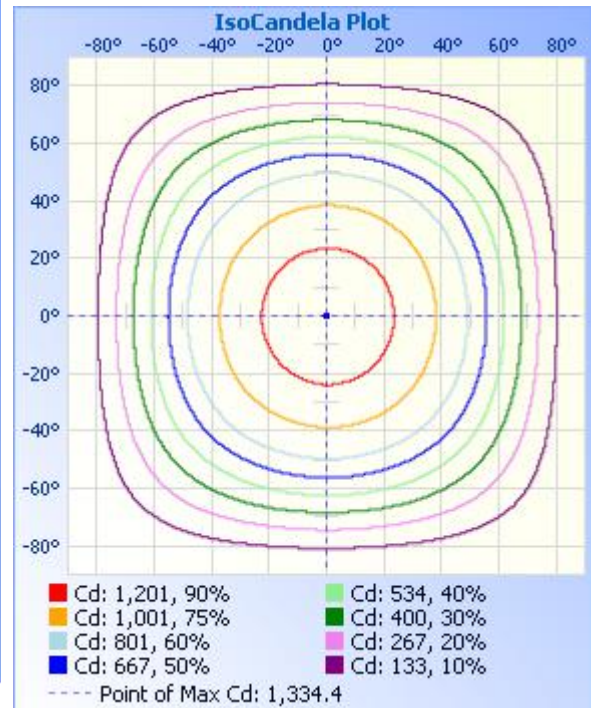
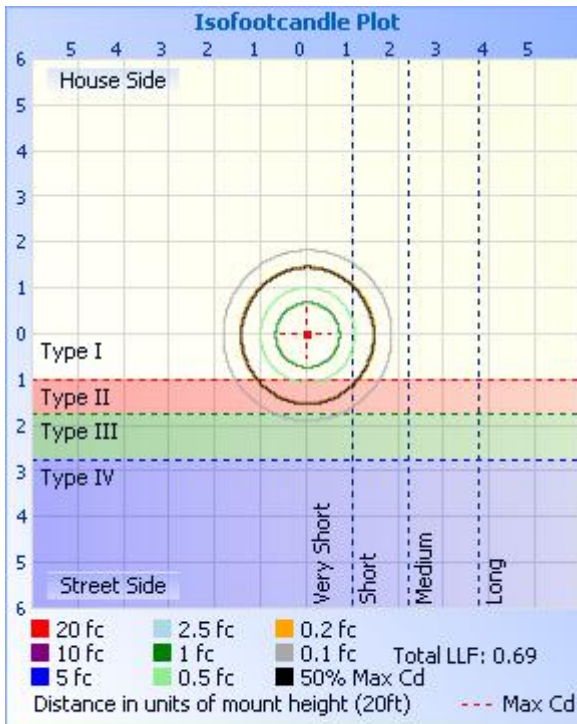
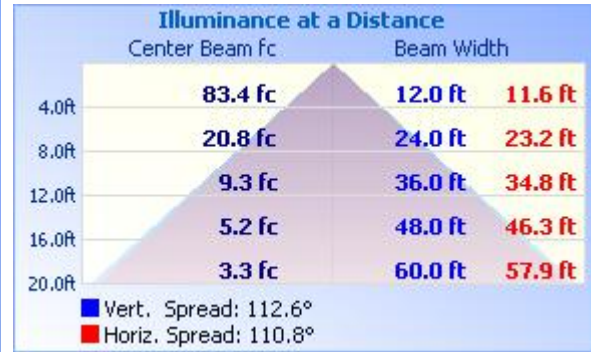
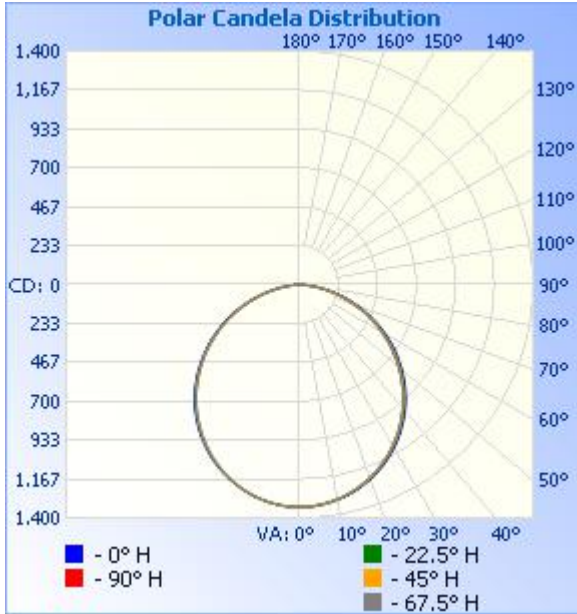


Table--1

UNIT: cd

C (DEG) □ (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	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	
5	1328	1328	1328	1328	1328	1327	1326	1326	1326	1327	1326	1327	1327	1327	1328	1328	
10	1308	1309	1309	1310	1311	1308	1307	1305	1306	1305	1306	1307	1308	1308	1308	1308	
15	1277	1277	1278	1280	1282	1278	1275	1274	1274	1273	1273	1275	1278	1277	1276	1276	
20	1233	1234	1236	1239	1242	1238	1233	1231	1232	1230	1231	1233	1238	1235	1233	1232	
25	1181	1181	1183	1188	1191	1186	1180	1178	1178	1176	1177	1181	1187	1183	1180	1178	
30	1118	1117	1121	1127	1132	1124	1118	1115	1115	1113	1114	1119	1125	1121	1117	1115	
35	1045	1045	1049	1056	1061	1053	1046	1042	1043	1041	1042	1047	1054	1049	1045	1043	
40	964	964	969	977	983	975	966	962	962	960	961	967	975	969	964	961	
45	874	875	881	889	897	887	878	873	873	871	873	878	887	880	874	872	
50	778	779	785	794	803	792	783	778	777	774	776	782	790	783	778	776	
55	675	678	683	693	702	691	682	676	675	673	674	679	688	680	675	673	
60	567	568	576	587	595	585	575	569	569	566	566	572	581	573	567	566	
65	456	458	466	475	484	474	466	459	458	456	456	462	471	462	455	455	
70	344	347	354	363	372	363	354	349	346	345	345	351	360	351	344	343	
75	233	236	245	252	261	252	245	238	235	235	238	242	249	241	236	232	
80	129	132	139	148	155	149	140	134	133	132	135	140	145	138	132	129	
85	40.2	42.6	47.8	54.9	60.1	55.0	48.5	44.2	43.4	42.9	44.0	48.1	51.8	46.6	42.1	40.5	
90	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	
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	0.00	0.00	0.00	0.00	0.00	
105	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
110	0.00	0.09	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
115	0.42	0.31	0.00	0.00	0.00	0.32	0.09	0.43	0.09	0.25	0.30	0.09	0.00	0.00	0.24	0.14	
120	1.02	0.51	0.06	0.00	0.00	0.44	0.07	0.63	0.31	0.58	0.46	0.09	0.26	0.09	0.45	0.51	
125	1.25	0.70	0.12	0.26	1.03	0.68	0.05	0.90	0.52	0.74	0.55	0.34	0.43	0.36	0.55	0.69	
130	1.33	0.80	0.17	0.26	1.15	0.99	0.03	1.04	0.94	0.91	0.64	0.64	0.87	1.11	0.58	0.75	
135	1.31	0.80	0.23	0.26	1.22	0.94	0.02	1.08	1.18	1.09	0.73	0.69	0.94	1.20	0.61	0.93	
140	1.30	0.79	0.00	0.26	1.28	0.89	0.00	1.05	1.41	1.30	0.81	0.74	1.01	1.20	0.64	0.87	
145	1.29	0.78	0.00	0.26	0.77	0.82	0.00	0.96	1.45	1.41	0.90	0.79	1.08	1.20	0.67	0.81	
150	1.21	0.65	0.00	0.26	0.77	0.67	0.00	0.68	1.45	1.41	0.94	0.84	1.04	1.21	0.67	0.77	
155	0.89	0.46	0.00	0.26	0.77	0.43	0.00	0.65	1.45	1.38	1.09	0.60	0.98	1.23	0.68	0.39	
160	0.81	0.42	0.00	0.26	0.77	0.41	0.00	0.60	1.45	1.38	1.28	0.33	0.91	1.24	0.68	0.00	
165	0.84	0.37	0.09	0.26	0.77	0.31	0.00	0.60	1.45	1.37	1.45	0.28	0.84	1.26	0.68	0.00	
170	1.02	0.43	0.11	0.26	0.77	0.47	0.00	0.60	1.45	1.37	1.45	0.24	0.77	1.27	0.68	0.00	
175	1.20	0.52	0.15	0.43	0.91	0.68	0.00	0.95	1.45	1.37	1.28	0.19	0.55	1.03	0.68	0.00	
180	1.20	0.77	0.17	0.51	0.94	0.68	0.00	0.94	1.45	1.28	0.77	0.17	0.51	0.94	0.68	0.00	

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-18	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR22-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-I	120.0	60	0.2866	34.07	0.9905	11.68
1	347.0	60	0.1087	33.34	0.8840	16.54
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

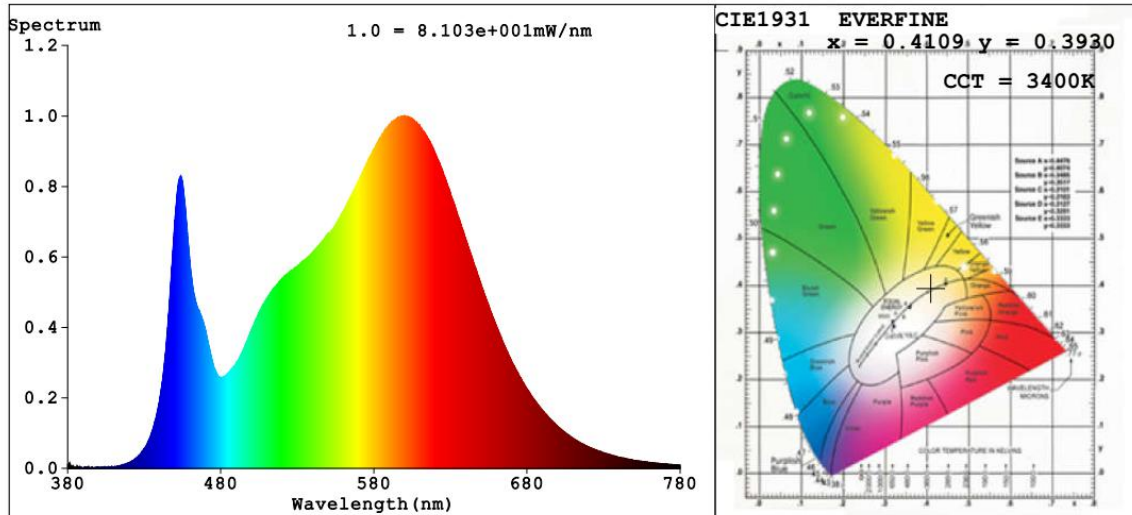
Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-absorption:1.1600)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	83.3
Frequency (Hz)	60	R9	7
CCT (K)	3400	Rg	94
Duv	-0.0002	Rf	84
Chromaticity (x, y)	x=0.4109 y=0.3930	Rcs,h1(%)	-12
Chromaticity (u', v')	u'=0.2384 v'=0.5130		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3787	3733	>=2000 (-10%)	
Luminous Efficacy (lm/W)	111.15	111.97	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =82 R2 =92 R3 =95 R4 =81 R5 =83 R6 =90 R7 =83
 R8 =60 R9 =7 R10=82 R11=81 R12=68 R13=85 R14=98 R15=75

TM30

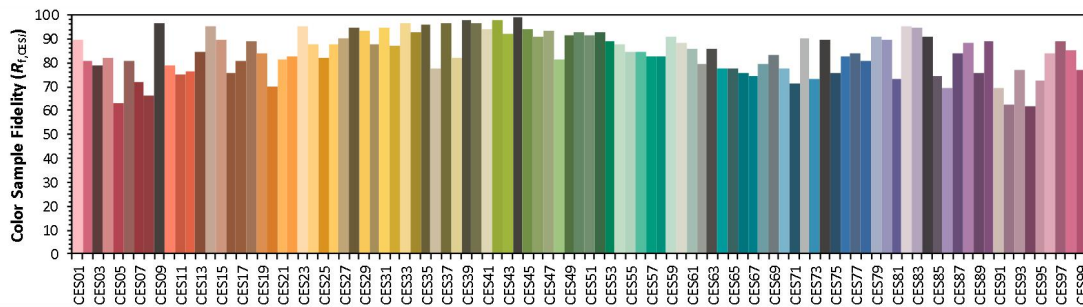
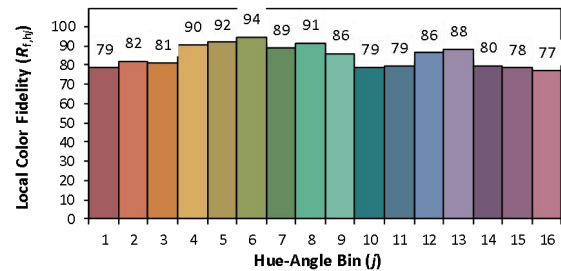
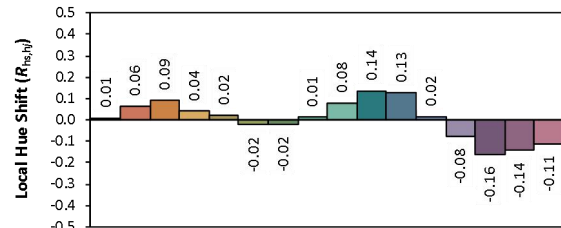
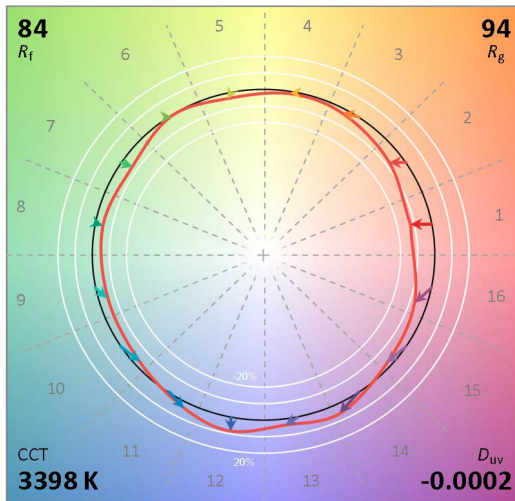
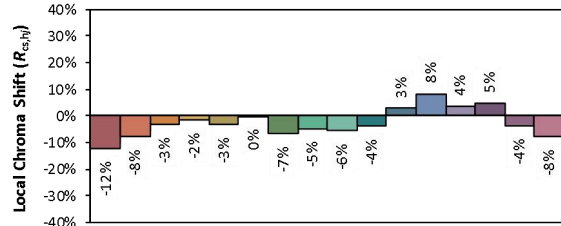
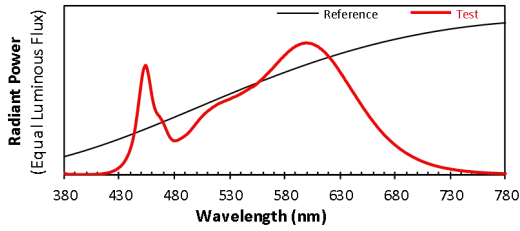
ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05

Manufacturer: Beyond LED Technology

Date: 2022-01-18

Model: BLT-TR22-DM-TWTS



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

x 0.4109
 y 0.3929
 u' 0.2384
 v' 0.5130

CIE 13.3-1995 (CRI)	
R_a	83
R_0	7

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-18	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR22-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-I	120.0	60	0.2768	33.02	0.9941	11.32
1	347.0	60	0.1049	32.37	0.8894	16.24
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer

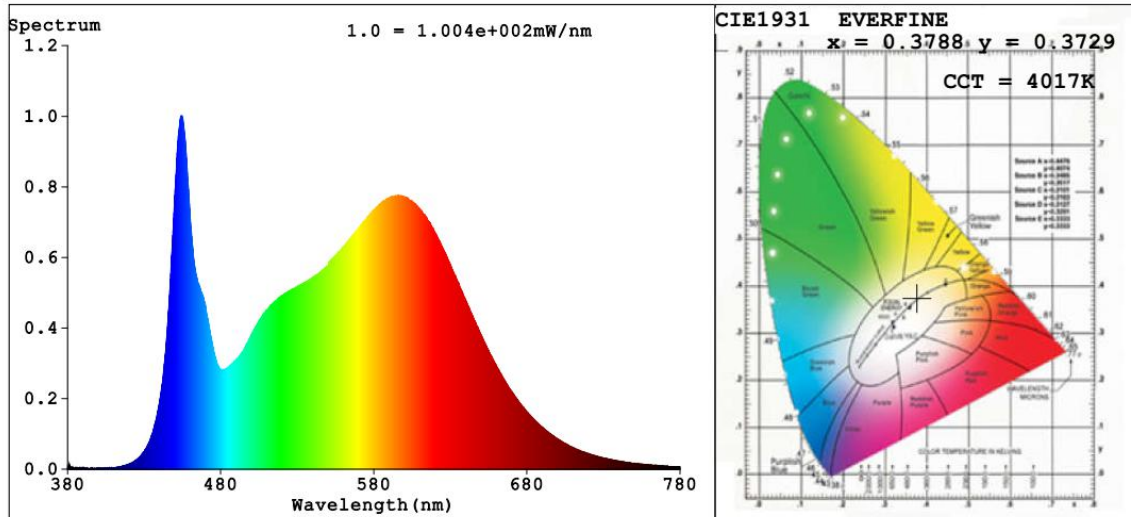
Method(Self-absorption:1.1602)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	84.6
Frequency (Hz)	60	R9	14
CCT (K)	4017	Rg	94
Duv	-0.0013	Rf	84
Chromaticity (x, y)	x=0.3788 y=0.3729	Rcs,h1(%)	-12
Chromaticity (u', v')	u'=0.2255 v'=0.4996		

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3938	3882	>=2000 (-10%)	
Luminous Efficacy (lm/W)	119.26	119.93	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =84	R2 =94	R3 =95	R4 =81	R5 =84	R6 =90	R7 =84		
R8 =64	R9 =14	R10=85	R11=81	R12=64	R13=88	R14=98	R15=78	

TM30

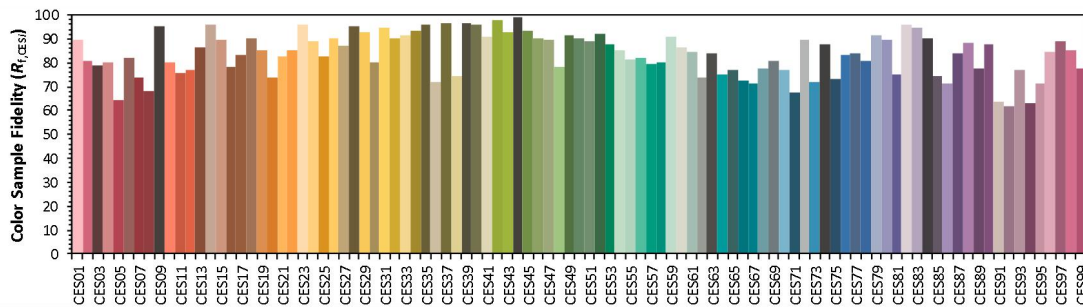
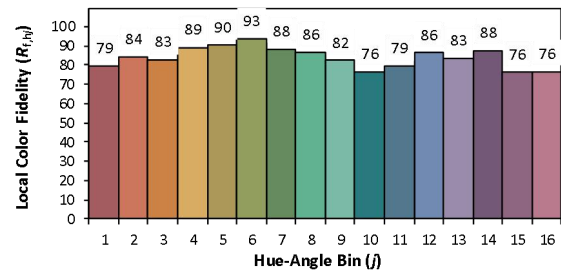
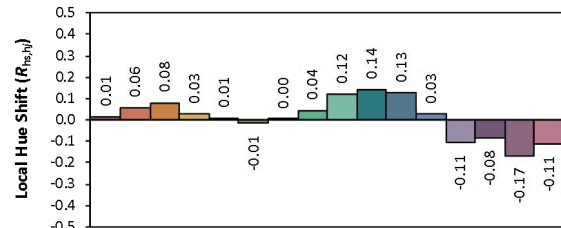
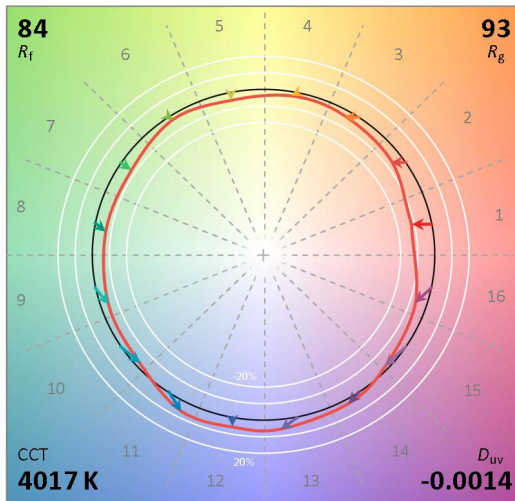
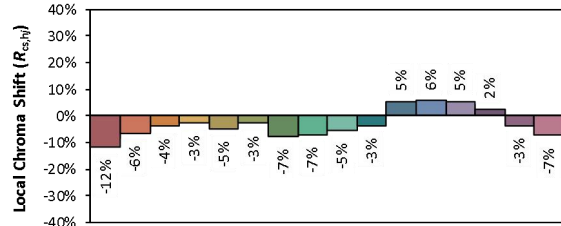
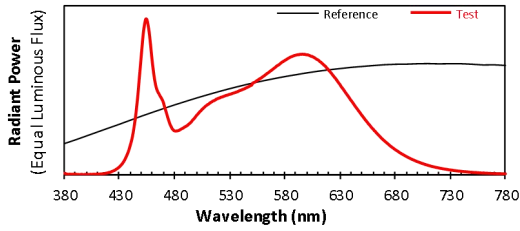
ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05

Manufacturer: Beyond LED Technology

Date: 2022-01-18

Model: BLT-TR22-DM-TWTS



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

x 0.3787
 y 0.3728
 u' 0.2256
 v' 0.4996

CIE 13.3-1995 (CRI)	
R_a	85
R_0	14

2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-18	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR22-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-I	120.0	60	0.2852	33.93	0.9913	11.60
1	347.0	60	0.1085	33.32	0.8854	16.42
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer

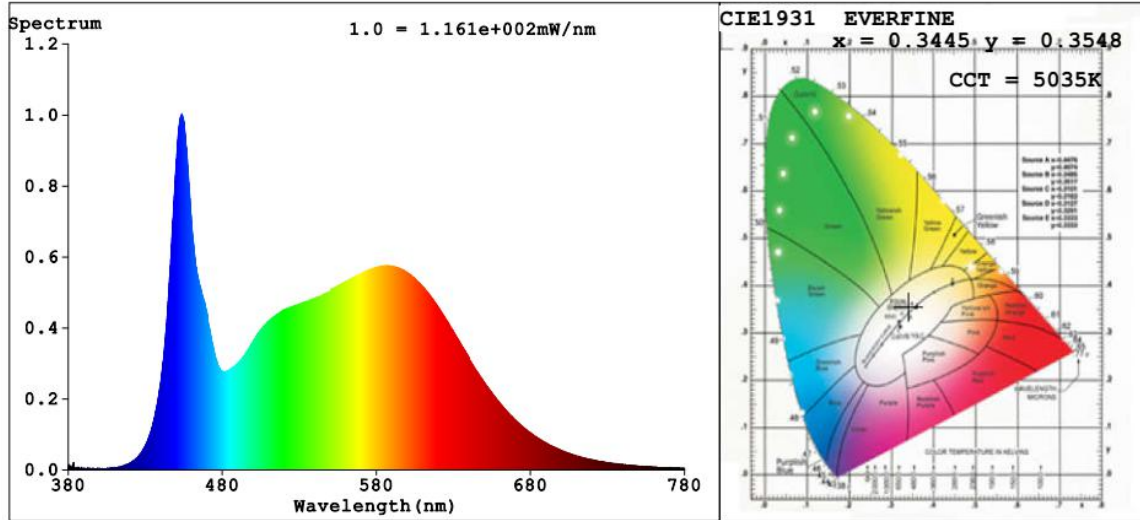
Method(Self-absorption:1.1605)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	84.2
Frequency (Hz)	60	R9	7
CCT (K)	5035	Rg	94
Duv	0.0018	Rf	84
Chromaticity (x, y)	x=0.3445 y=0.3548	Rcs,h1(%)	-13
Chromaticity (u', v')	u'=0.2098 v'=0.4861		

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3817	3763	>=2000 (-10%)	
Luminous Efficacy (lm/W)	112.50	112.94	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

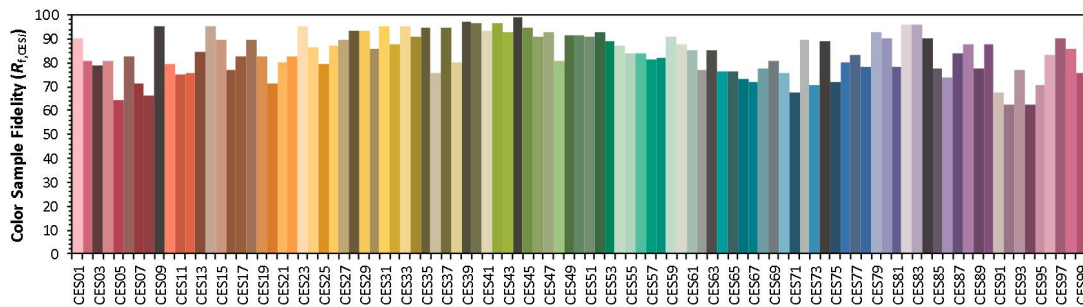
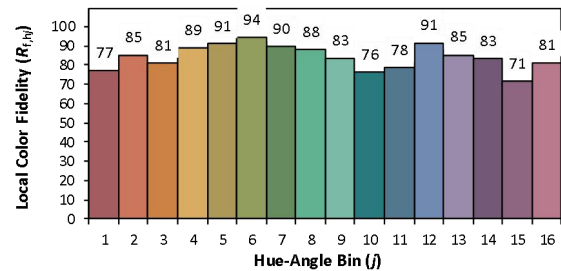
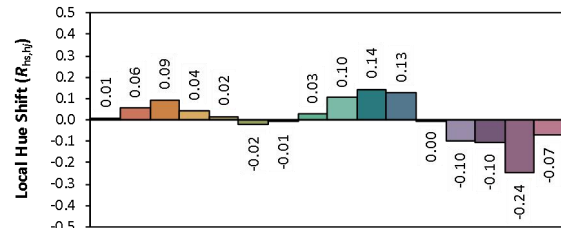
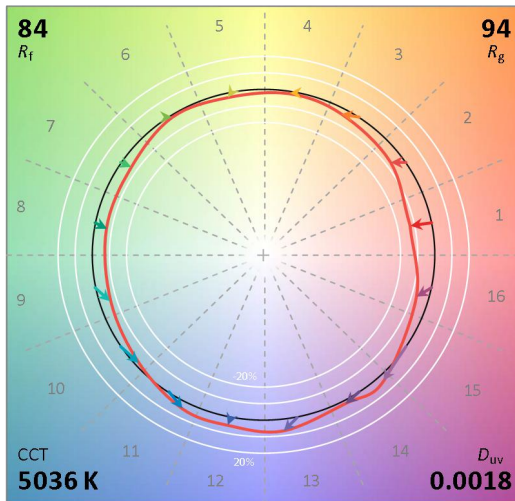
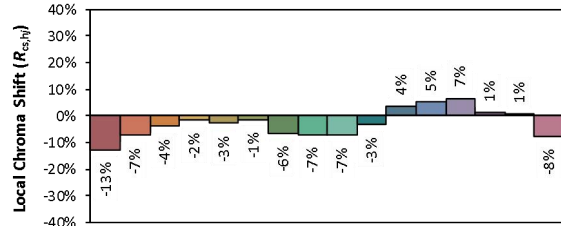
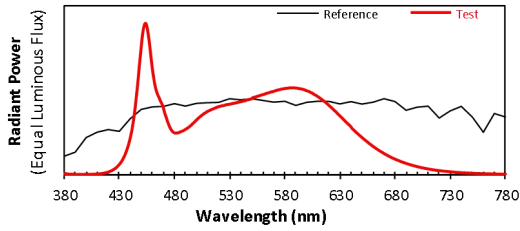
R1 =83	R2 =92	R3 =95	R4 =82	R5 =84	R6 =88	R7 =85		
R8 =65	R9 =7	R10=81	R11=82	R12=64	R13=86	R14=98	R15=77	

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05
Date: 2022-01-18

Manufacturer: Beyond LED Technology
Model: BLT-TR22-DM-TWTS



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

x 0.3444
 y 0.3546
 u' 0.2098
 v' 0.4860

CIE 13.3-1995 (CRI)	
R_a	84
R_9	7

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	2021-07-07	2022-07-06
ST-R-333	Power Meter for Integrating Sphere	2021-06-25	2022-06-24
ST-R-405	Temperature Probe for Integrating Sphere	2021-01-22	2022-01-21
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2021-07-07	2022-07-06
ST-R-358	Power Meter for Goniophotometer	2021-07-07	2022-07-06
ST-R-354	hygrothermograph for Goniophotometer	2021-06-26	2022-06-25

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 *******