

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond LED Technology)

2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model name(s): TR24-DM-TWTP

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

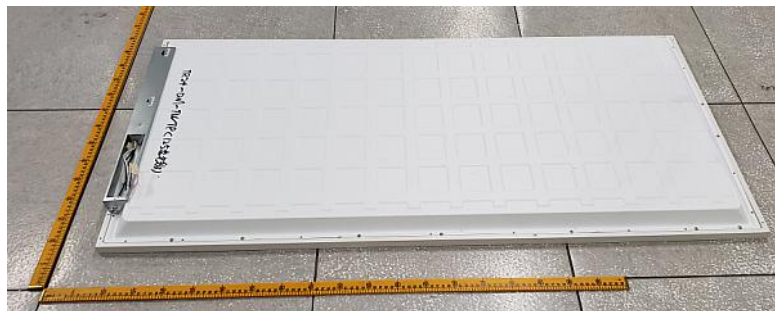
Note: 1. The results contained in this report pertain only to the tested samples.

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-TR24-DM-TWTS	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces	
Rated Voltage / Frequency	110-347Vac, 50/60Hz	
Nominal Power	30/40/50W	
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-J1	
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.19,2022
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	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR24-DM-TWTS	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-	120.0	60	0.4037	48.04	0.9917	10.91
J1	347.0	60	0.1489	46.51	0.9003	16.60
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

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

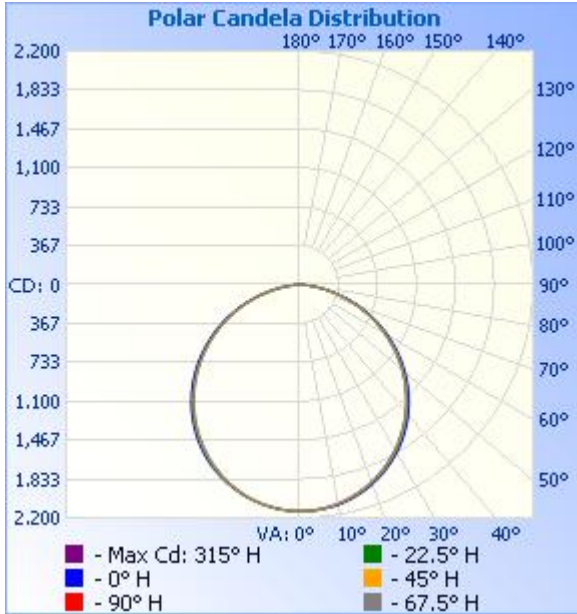
Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	6069.9	5950.3	>=3000 (-10%)	
Luminous Efficacy (lm/W)	126.34	127.93	Standard: >= 110(-3%)	Premium: >= 125(-3%)
Zonal lumens in the 0-60° zone (%)	79.2	--	>= 75(-3)	
SC: 0-180° (if applicable)	1.25	--	1.0-2.0(±0.1)	
SC: 90-270° (if applicable)	1.27	--	1.0-2.0(±0.1)	
Corrected UGR(Crosswise)	20.3	--	Premium: <22.0	
Corrected UGR(Endwise)	20.0	--	Premium: <22.0	
Beam Angle (°)	112.7	--	--	
Center Beam Candle Power (cd)	2135	--	--	

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,658.7	27.3%
0-40	2,718.9	44.8%
0-60	4,808.4	79.2%
60-90	1,256.2	20.7%
70-100	510.4	8.4%
90-120	2.6	0%
0-90	6,064.5	99.9%
90-180	4.8	0.1%
0-180	6,069.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	202.0	3.3%	90-100	0.8	0%
10-20	578.6	9.5%	100-110	0.8	0%
20-30	878.1	14.5%	110-120	1.0	0%
30-40	1,060.2	17.5%	120-130	0.7	0%
40-50	1,099.6	18.1%	130-140	0.6	0%
50-60	989.8	16.3%	140-150	0.4	0%
60-70	746.6	12.3%	150-160	0.2	0%
70-80	413.5	6.8%	160-170	0.1	0%
80-90	96.1	1.6%	170-180	0.0	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
4.0ft	133.5 fc	12.2 ft	11.8 ft
8.0ft	33.4 fc	24.4 ft	23.6 ft
12.0ft	14.8 fc	36.5 ft	35.4 ft
16.0ft	8.3 fc	48.7 ft	47.2 ft
20.0ft	5.3 fc	60.9 ft	59.0 ft

■ Vert. Spread: 113.4°
■ Horiz. Spread: 111.8°

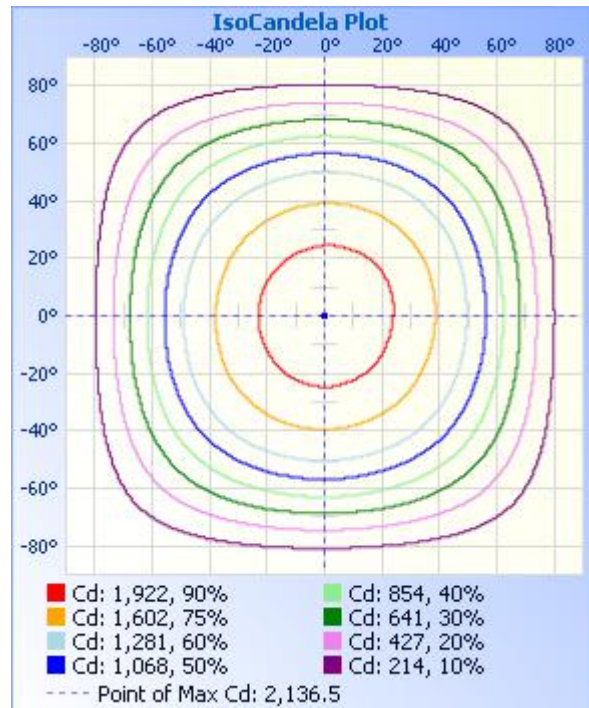
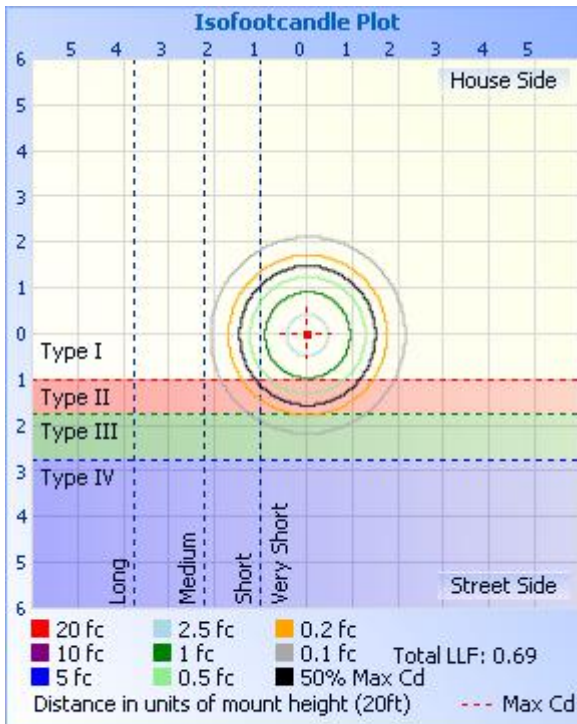


Table--1

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	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135	2135		
5	2124	2128	2132	2131	2130	2127	2125	2125	2124	2120	2119	2121	2125	2124	2125	2123		
10	2094	2102	2110	2107	2106	2099	2095	2094	2093	2088	2087	2091	2097	2095	2095	2092		
15	2045	2059	2068	2065	2063	2053	2048	2046	2043	2038	2040	2046	2052	2049	2047	2042		
20	1979	1995	2006	2003	2002	1990	1983	1979	1978	1973	1977	1984	1992	1984	1981	1973		
25	1896	1915	1925	1925	1923	1910	1900	1895	1896	1893	1901	1907	1914	1902	1898	1889		
30	1797	1816	1827	1829	1830	1812	1802	1796	1798	1798	1808	1813	1818	1804	1798	1789		
35	1682	1701	1712	1717	1720	1700	1689	1682	1685	1688	1698	1701	1707	1690	1683	1673		
40	1555	1570	1584	1589	1593	1573	1562	1554	1558	1563	1571	1574	1579	1562	1553	1544		
45	1413	1427	1441	1447	1453	1433	1421	1414	1418	1425	1429	1434	1439	1419	1410	1402		
50	1259	1271	1285	1292	1300	1280	1268	1262	1267	1272	1276	1280	1286	1266	1254	1249		
55	1094	1105	1117	1127	1137	1116	1105	1099	1104	1108	1110	1115	1122	1101	1089	1085		
60	920	931	941	952	964	945	933	928	933	934	936	941	949	929	917	913		
65	740	748	759	771	783	766	754	750	754	753	755	760	769	749	737	734		
70	557	563	573	587	599	584	572	568	572	570	571	577	585	567	554	553		
75	373	378	391	403	415	403	393	383	387	387	391	396	401	386	377	374		
80	201	208	222	234	243	235	222	212	216	217	221	227	231	219	211	207		
85	63.5	68.8	78.5	89.0	96.3	89.9	79.8	71.6	72.3	73.2	77.0	83.0	86.3	78.6	71.1	67.6		
90	0.11	0.26	0.77	1.19	1.43	1.17	0.59	0.34	0.00	0.09	3.26	3.94	4.70	3.19	0.21	0.04		
95	0.00	0.09	0.74	1.14	1.37	0.99	0.53	0.00	0.00	0.00	1.18	0.77	2.01	0.67	0.00	0.00		
100	0.00	0.09	0.71	1.19	1.31	1.08	0.47	0.00	0.00	0.17	0.80	1.19	1.35	1.09	0.37	0.08		
105	0.00	0.34	0.94	1.11	1.32	1.12	0.42	0.00	0.26	0.50	1.06	1.19	1.61	1.43	0.68	0.39		
110	0.34	0.69	1.04	1.39	1.36	1.15	0.98	0.48	0.65	0.69	1.15	1.19	1.69	1.43	1.10	0.62		
115	1.11	1.28	1.15	0.68	1.10	0.92	1.27	0.99	0.88	1.11	1.19	1.11	1.44	1.08	1.10	0.84		
120	1.24	1.25	1.25	0.00	0.25	0.00	1.24	1.21	1.04	1.41	1.17	0.09	0.93	0.25	1.10	1.11		
125	1.29	1.22	1.35	0.00	0.17	0.00	1.20	1.34	1.21	1.46	1.14	0.00	0.25	0.00	1.10	1.11		
130	1.35	1.19	1.06	0.00	0.17	0.00	1.12	1.40	1.37	1.46	1.07	0.00	0.25	0.00	1.10	1.13		
135	1.37	1.16	0.68	0.00	0.17	0.00	0.67	1.44	1.46	1.46	1.07	0.00	0.25	0.00	0.85	1.15		
140	1.37	1.13	0.17	0.09	0.17	0.00	0.25	1.21	1.46	1.46	1.10	0.17	0.25	0.20	0.34	1.17		
145	1.37	1.03	0.00	0.09	0.17	0.00	0.08	0.92	1.46	1.46	1.16	0.32	0.50	0.37	0.17	1.18		
150	1.11	0.69	0.00	0.09	0.17	0.00	0.00	0.60	1.46	1.46	1.23	0.29	0.50	0.43	0.17	1.07		
155	0.69	0.60	0.00	0.09	0.17	0.00	0.00	0.44	1.46	1.46	1.33	0.27	0.50	0.41	0.17	0.85		
160	0.95	0.34	0.00	0.09	0.17	0.00	0.00	0.39	1.46	1.46	1.37	0.24	0.50	0.39	0.17	0.43		
165	1.19	0.38	0.00	0.09	0.17	0.00	0.00	0.41	1.46	1.46	1.42	0.22	0.50	0.37	0.17	0.26		
170	1.44	0.51	0.00	0.09	0.17	0.25	0.00	0.51	1.46	1.46	1.37	0.19	0.50	0.35	0.17	0.17		
175	1.39	0.70	0.00	0.09	0.17	0.19	0.00	0.80	1.46	1.38	1.10	0.09	0.24	0.25	0.17	0.00		
180	1.37	0.77	0.00	0.09	0.17	0.17	0.00	0.94	1.46	1.38	0.77	0.00	0.08	0.17	0.17	0.00		

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-19	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR24-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-	120.0	60	0.4043	48.15	0.9924	10.84
J1	347.0	60	0.1491	46.62	0.9010	16.53
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

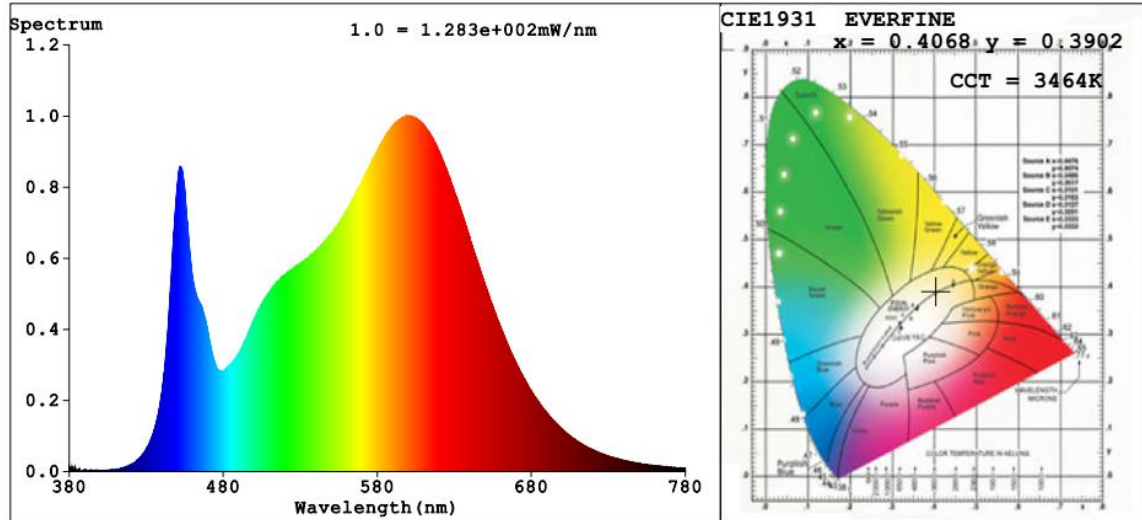
Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-absorption:1.2219)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	84.5
Frequency (Hz)	60	R9	11
CCT (K)	3464	Rg	95
Duv	-0.0006	Rf	85
Chromaticity (x, y)	x=0.4068 y=0.3902	Rcs,h1(%)	-12
Chromaticity (u', v')	u'=0.2369 v'=0.5113		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	6094	5974	>=3000 (-10%)	
Luminous Efficacy (lm/W)	126.56	128.14	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =84	R2 =93	R3 =95	R4 =83	R5 =84	R6 =91	R7 =83		
R8 =62	R9 =11	R10=85	R11=83	R12=70	R13=86	R14=98	R15=76	

TM30

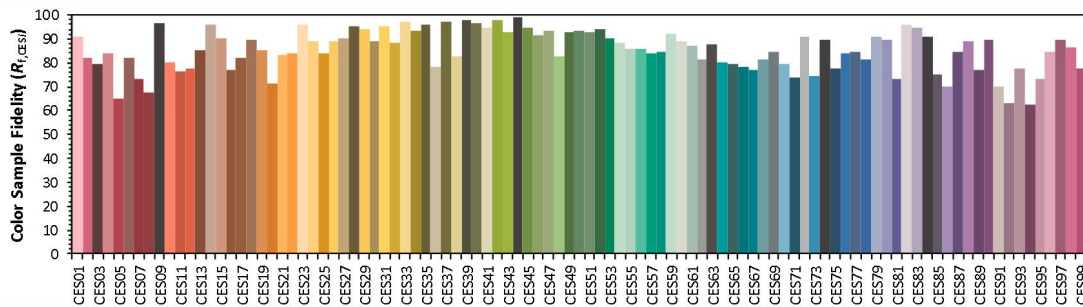
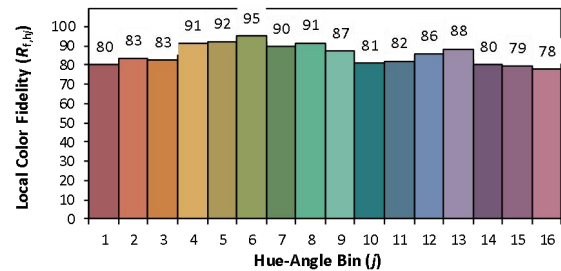
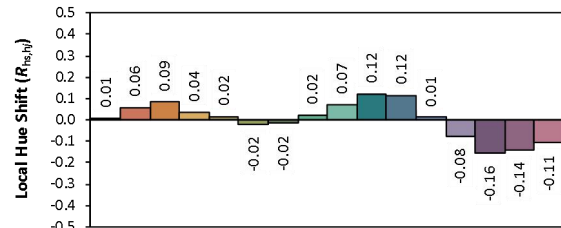
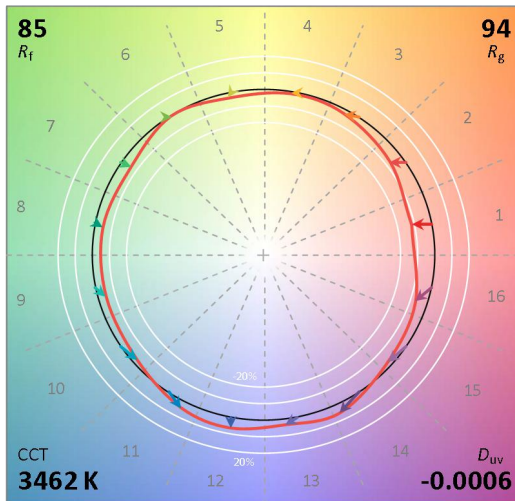
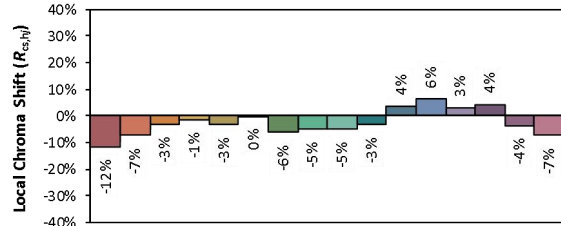
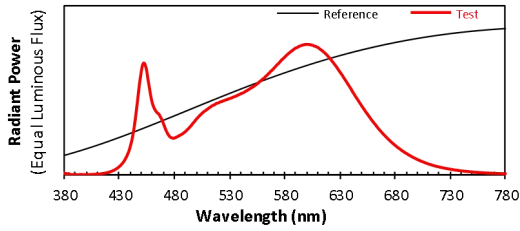
ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05

Manufacturer: Beyond LED Technology

Date: 2022-01-19

Model: BLT-TR24-DM-TWTS



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

x 0.4068
 y 0.3900
 u' 0.2369
 v' 0.5112

CIE 13.3-1995
 (CRI)
 R_a 84
 R_0 11

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-19	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR24-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-	120.0	60	0.3923	46.78	0.9938	10.45
J1	347.0	60	0.1447	45.31	0.9024	16.08
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer

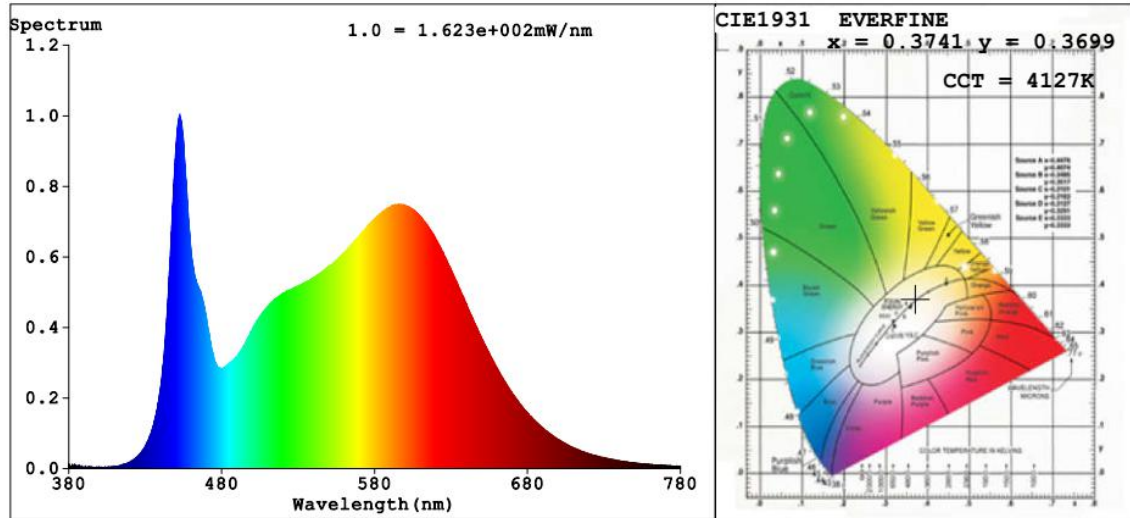
Method(Self-absorption:1.2220)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	85.7
Frequency (Hz)	60	R9	17
CCT (K)	4127	Rg	95
Duv	-0.0014	Rf	85
Chromaticity (x, y)	x=0.3741 y=0.3699	Rcs,h1(%)	-12
Chromaticity (u', v')	u'=0.2237 v'=0.4976		

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	347	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	6278	6154	>=3000 (-10%)	
Luminous Efficacy (lm/W)	134.20	135.82	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =85	R2 =94	R3 =96	R4 =83	R5 =85	R6 =90	R7 =85		
R8 =66	R9 =17	R10=85	R11=84	R12=65	R13=88	R14=98	R15=79	

TM30

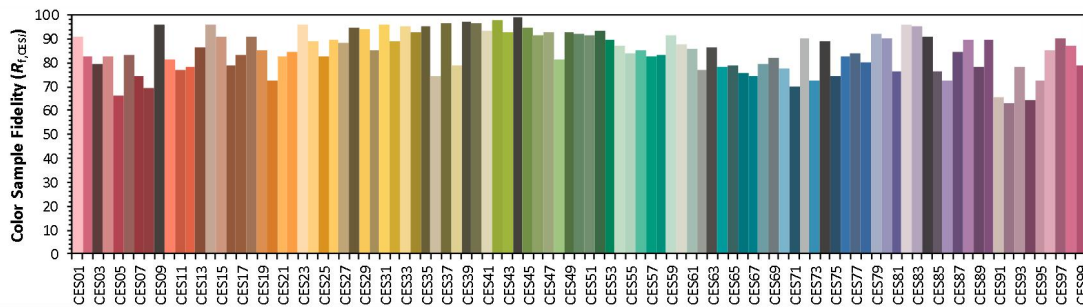
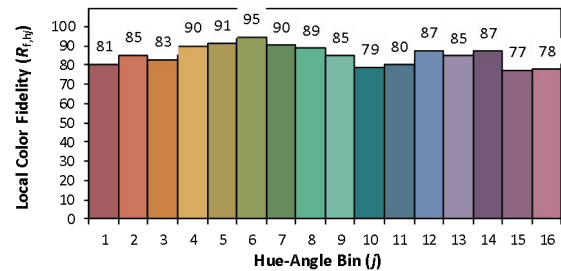
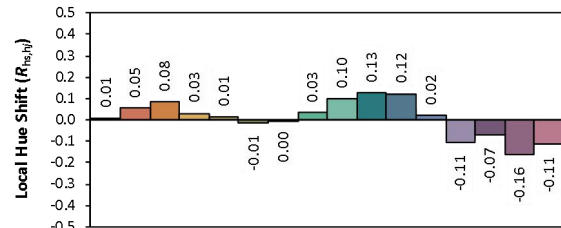
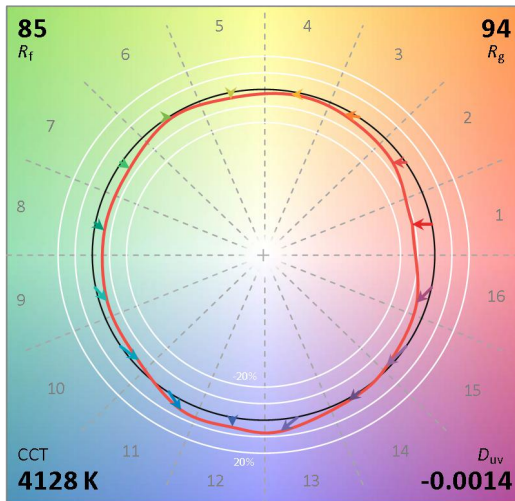
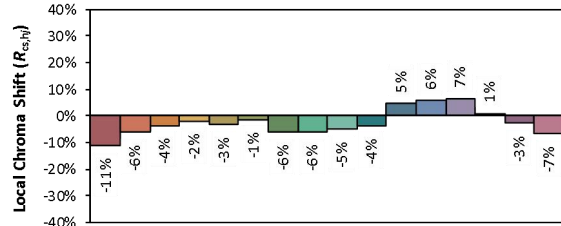
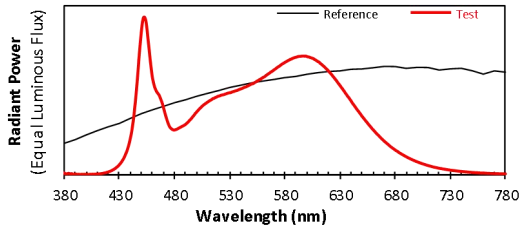
ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05

Manufacturer: Beyond LED Technology

Date: 2022-01-19

Model: BLT-TR24-DM-TWTS



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

x 0.3741
 y 0.3698
 u' 0.2237
 v' 0.4975

CIE 13.3-1995 (CRI)	
R_a	86
R_0	17

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-19	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	BLT-TR24-DM-TWTS	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE220116-	120.0	60	0.4034	48.02	0.9921	10.74
J1	347.0	60	0.1486	46.48	0.9011	16.53
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer

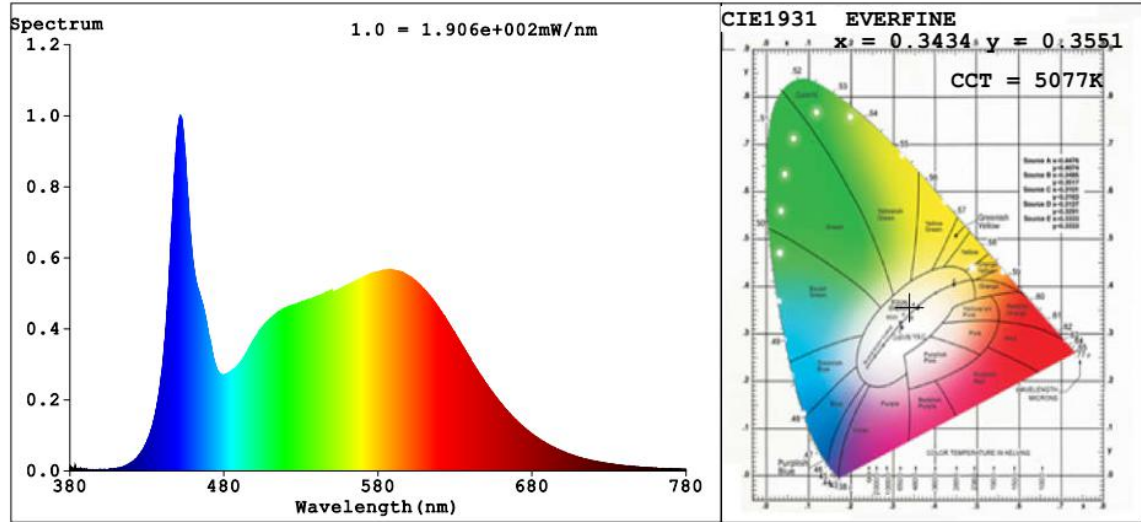
Method(Self-absorption:1.2221)(4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	84.6
Frequency (Hz)	60	R9	8
CCT (K)	5077	Rg	95
Duv	0.0024	Rf	85
Chromaticity (x, y)	x=0.3434 y=0.3551	Rcs,h1(%)	-13
Chromaticity (u', v')	u'=0.2089 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)	6156	6035	>=3000 (-10%)	
Luminous Efficacy (lm/W)	128.20	129.84	Standard: >= 110(-3%)	Premium: >= 125(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =83	R2 =91	R3 =95	R4 =84	R5 =84	R6 =87	R7 =86	
R8 =66	R9 =8	R10=79	R11=84	R12=65	R13=86	R14=98	R15=77

TM30

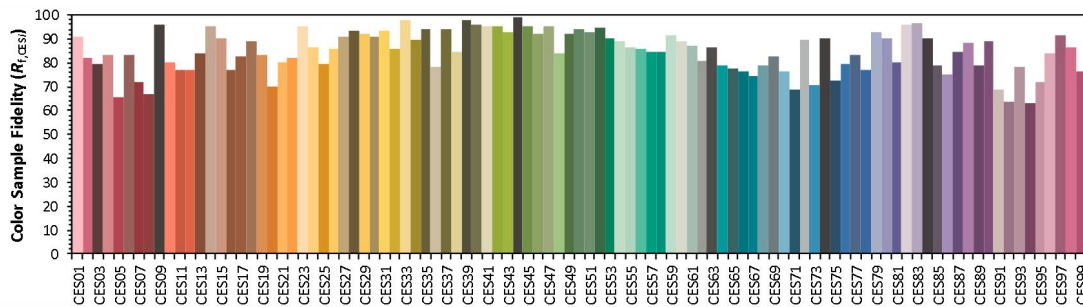
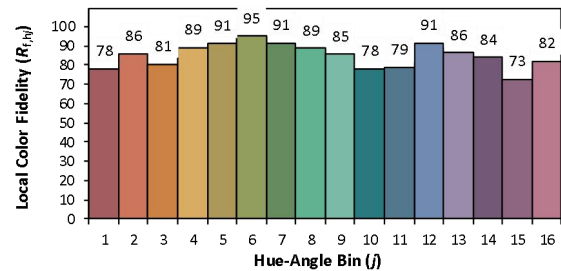
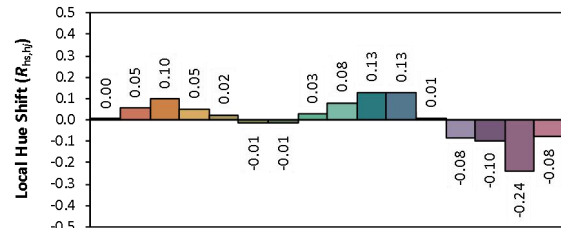
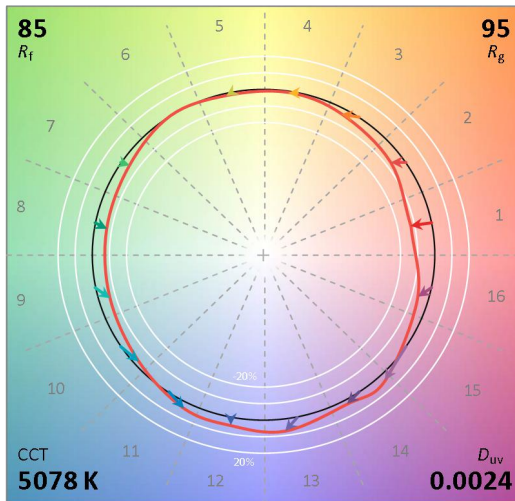
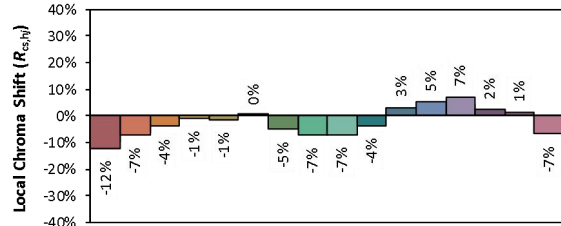
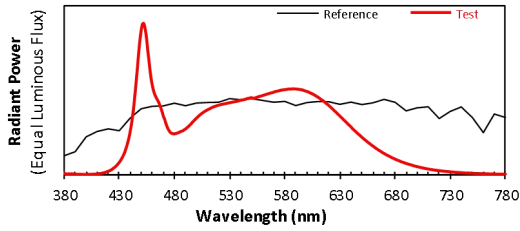
ANSI/IES TM-30-18 Color Rendition Report

Source: 01. JT. AJ2835W80N05

Manufacturer: Beyond LED Technology

Date: 2022-01-19

Model: BLT-TR24-DM-TWTS



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

x 0.3433
 y 0.3549
 u' 0.2090
 v' 0.4860

CIE 13.3-1995 (CRI)	
R_a	85
R_0	8

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 *******