Certificate#4810.01

LM-79-08 Test Report

Beyond LED Technology

(Brand Name: Beyond LED Technology)

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires

Model name(s): BLT-SWP03-60BA1-WH50

Remark: "a" can be any two letters to represent lamp colors; "b" can be "S" or blank for Surge-Protective Device provided or not; "c" can be "M" or blank for Motion sensor provided or not; "d" can be any two digits to represent CCT.

Representative (Tested) Model: BLT-SWP03-60BA1-WH50

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

Test & Report By:

Grace Li

Engineer: Grace Li

Review By:

Jason Luo

Manager: Jason Luo

Date: Mar 17, 2020

Update: April 03, 2020(Corrected the table of Calculated Efficacy Data for family models)

1.1 Product Information:

Model Number	BLT-SWP03-60BA1-WH50	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	60W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	L130-AA80003000X2C	
Sample Number	BLC2002018E-D1(4000K),D2(5700K)	
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	Feb 26, 2020
Date of Test	Feb 27, 2020
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 C78.377-2015 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	BL-QP-033

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 25º C ± 1º 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 25º C ± 1º 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.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2020-02-27	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-SWP03-60BA1-WH50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200201 8E-D1	120.0	60	0.5065	59.99	0.987	14.62
	277.0	60	0.2359	60.37	0.924	11.94
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

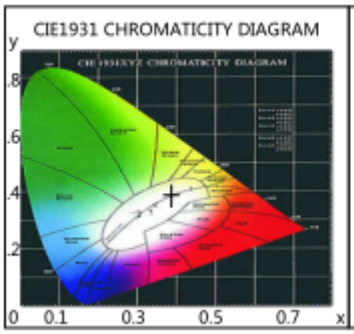
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3897
Duv	0.00347
Chromaticity (x, y)	x=0.3878 y=0.3888
Chromaticity (u′, v′)	u(u')=0.2251 v'=0.5079
Color Rendering Index (CRI)	81.3
R9	5

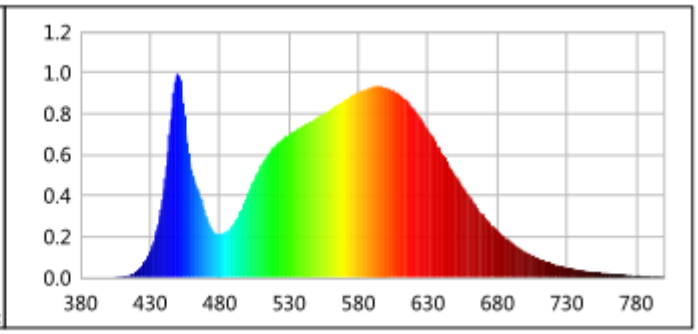
Special Color Rendering Indices			
R1	79	R9	5
R2	86	R10	67
R3	91	R11	80
R4	81	R12	56
R5	79	R13	81
R6	81	R14	95
R7	87	R15	73
R8	64	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V5.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	7470.2	7552.1	300-5000 (-10%)
0-90° Luminous (lm)	7060.2	7138.9	
Luminous Efficacy (lm/W)	124.52	125.10	Premium: >= 120(-3%)
0-90° Luminous Efficacy (lm/W)	117.69	118.25	
Most worst Luminous/Highest	123.74		
Zonal lumens in the 80-90° zone (%) 80-90°/0-90°	4.4	--	<=10(+3)
Beam Angle (°)	63.4	--	--
Center Beam Candle Power (cd)	3485	--	--

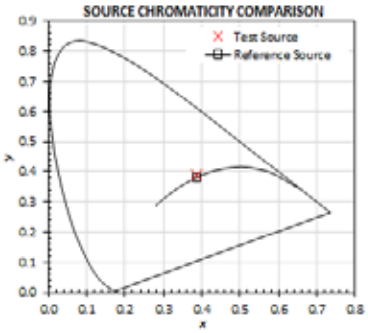
Spectral Power Distribution & Chromaticity Diagram

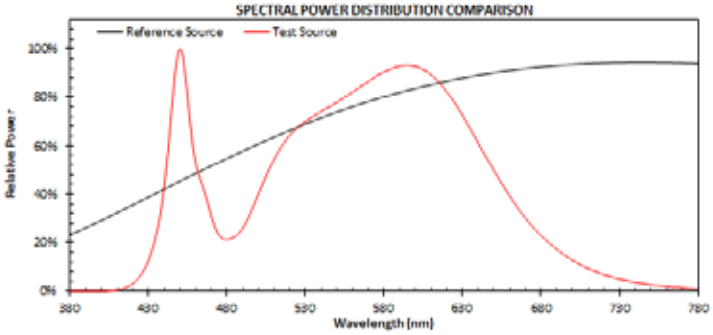


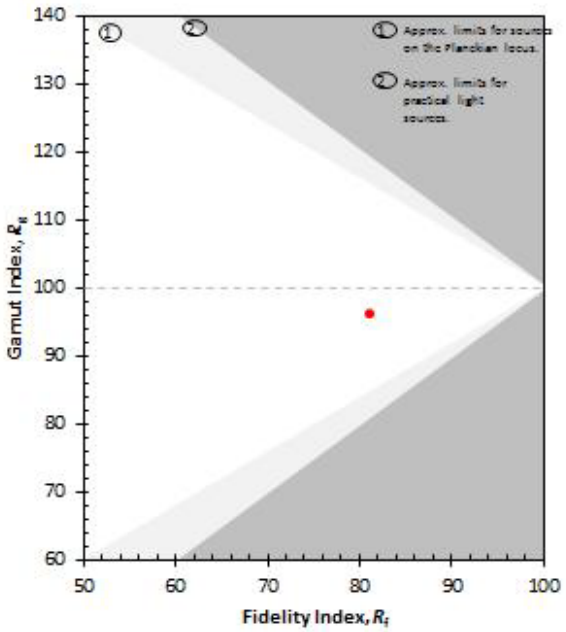


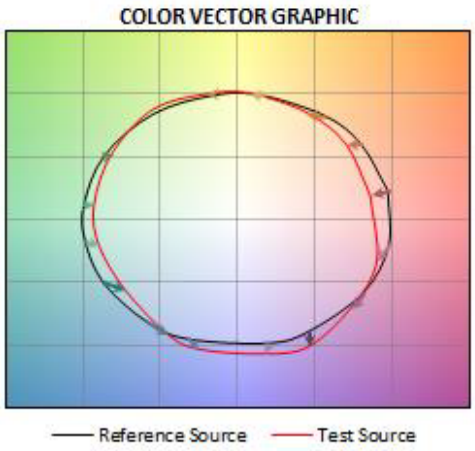
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0539	525	0.6744	88.5876	670	0.3022	39.6939
385	0.0004	0.0522	530	0.6978	91.6610	675	0.2630	34.5429
390	0.0003	0.0458	535	0.7213	94.7402	680	0.2289	30.0705
395	0.0004	0.0504	540	0.7418	97.4315	685	0.1986	26.0832
400	0.0012	0.1533	545	0.7582	99.5884	690	0.1726	22.6768
405	0.0022	0.2833	550	0.7786	102.2732	695	0.1482	19.4653
410	0.0054	0.7121	555	0.8013	105.2481	700	0.1259	16.5425
415	0.0135	1.7667	560	0.8224	108.0187	705	0.1088	14.2959
420	0.0308	4.0522	565	0.8459	111.1067	710	0.0929	12.2014
425	0.0654	8.5968	570	0.8659	113.7422	715	0.0807	10.5981
430	0.1273	16.7233	575	0.8886	116.7168	720	0.0682	8.9635
435	0.2365	31.0678	580	0.9046	118.8261	725	0.0581	7.6347
440	0.4331	56.8880	585	0.9178	120.5580	730	0.0491	6.4471
445	0.7712	101.3043	590	0.9306	122.2394	735	0.0427	5.6058
450	1.0000	131.3529	595	0.9329	122.5406	740	0.0366	4.8028
455	0.7934	104.2164	600	0.9283	121.9350	745	0.0321	4.2171
460	0.5311	69.7617	605	0.9143	120.0982	750	0.0268	3.5194
465	0.4236	55.6434	610	0.8925	117.2315	755	0.0228	2.9948
470	0.3092	40.6190	615	0.8628	113.3306	760	0.0202	2.6549
475	0.2297	30.1771	620	0.8227	108.0618	765	0.0162	2.1341
480	0.2125	27.9135	625	0.7769	102.0527	770	0.0144	1.8873
485	0.2250	29.5598	630	0.7247	95.1865	775	0.0119	1.5684
490	0.2601	34.1602	635	0.6698	87.9788	780	0.0105	1.3758
495	0.3244	42.6116	640	0.6106	80.2102	785	0.0074	0.9731
500	0.4017	52.7615	645	0.5545	72.8362	790	0.0087	1.1426
505	0.4757	62.4900	650	0.4971	65.2918	795	0.0067	0.8752
510	0.5446	71.5342	655	0.4434	58.2452	800	0.0050	0.6520
515	0.6006	78.8856	660	0.3929	51.6115			
520	0.6431	84.4726	665	0.3446	45.2707			

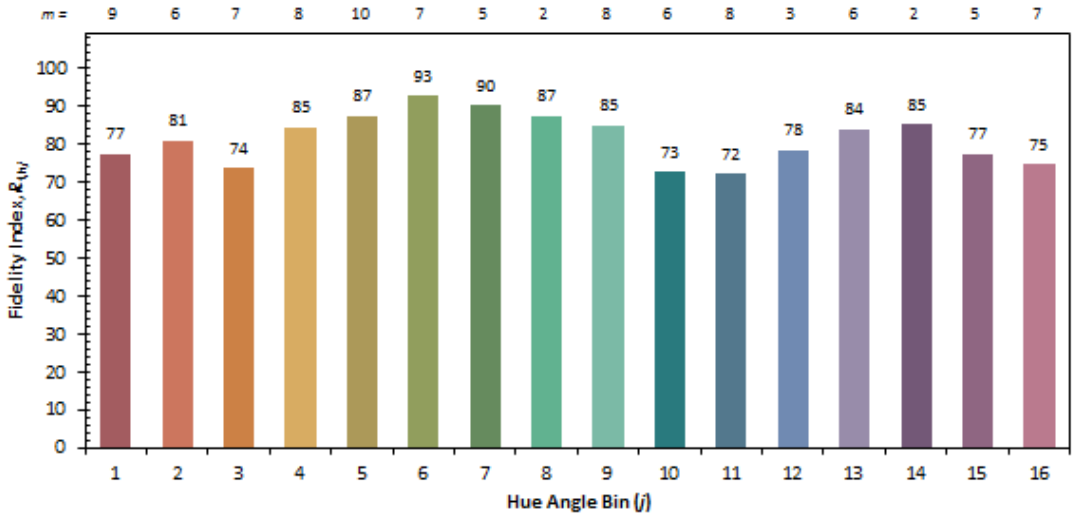
TM30


SOURCE CHROMATICITY COMPARISON
Test Source
Reference Source
y
x


SPECTRAL POWER DISTRIBUTION COMPARISON
Reference Source
Test Source
Relative Power
Wavelength (nm)


Approx. limits for sources on the Planckian locus.
Approx. limits for practical light sources.
Gamut Index, R_g
Fidelity Index, R_f


COLOR VECTOR GRAPHIC
Reference Source
Test Source


m =
9 6 7 8 10 7 5 2 8 6 8 3 6 2 5 7
77 81 74 85 87 93 90 87 85 73 72 78 84 85 77 75
Fidelity Index, $R_{f,hj}$
Hue Angle Bin (j)

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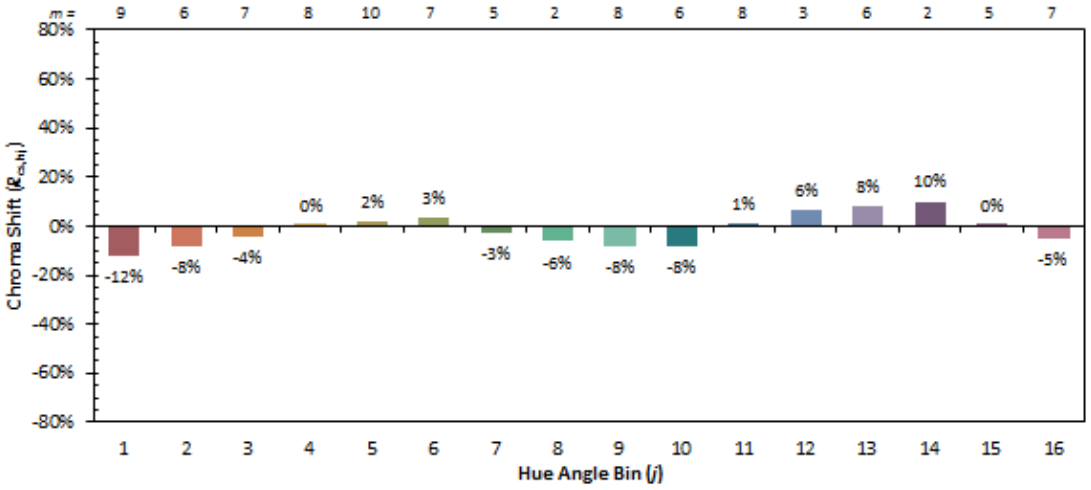
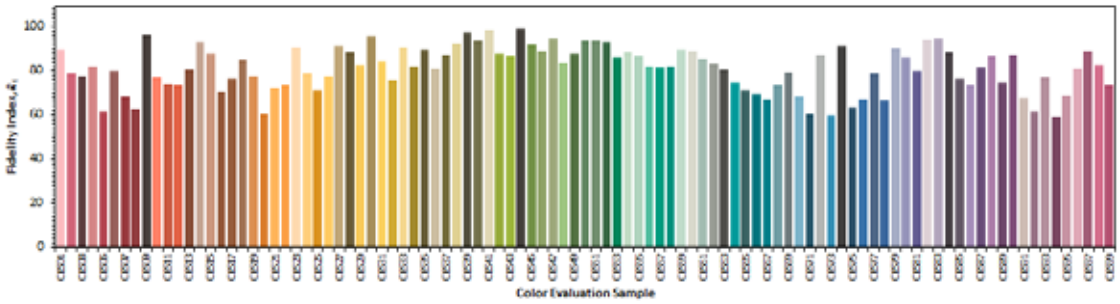




Zonal Lumen Tabulation

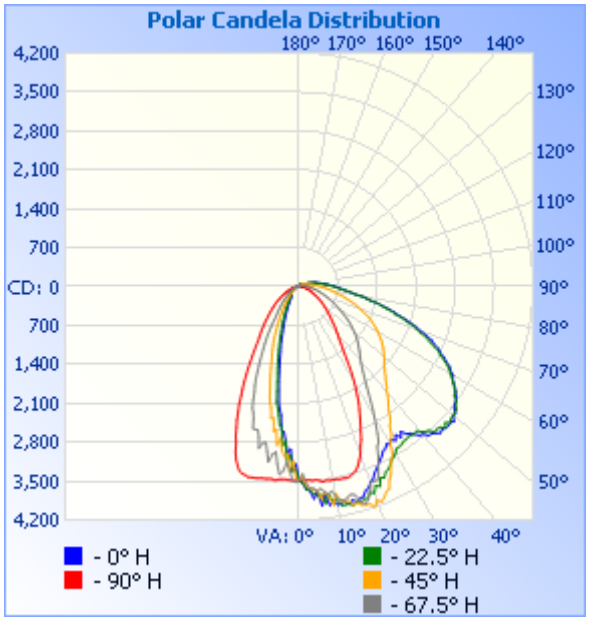
Zonal Lumen Summary

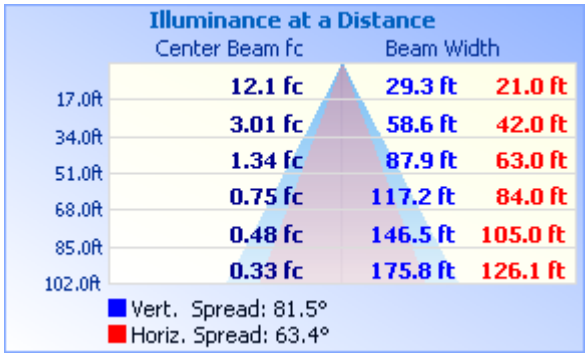
Zone	Lumens	% Lamp	% Luminaire
0-30	2,243.2	30%	30%
0-40	3,264.9	43.7%	43.7%
0-60	5,329.1	71.3%	71.3%
60-90	1,731.1	23.2%	23.2%
70-100	1,053.0	14.1%	14.1%
90-120	330.7	4.4%	4.4%
0-90	7,060.2	94.5%	94.5%
90-180	409.4	5.5%	5.5%
0-180	7,469.5	100%	100%

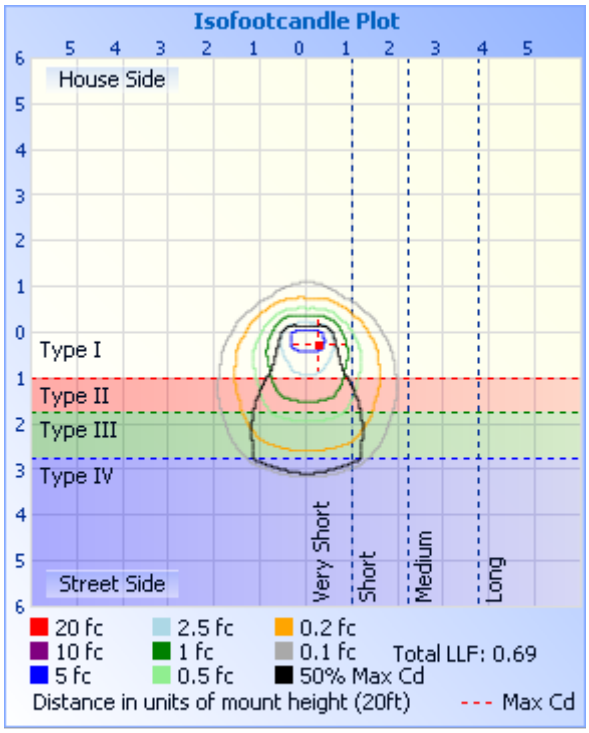
Lumens Per Zone

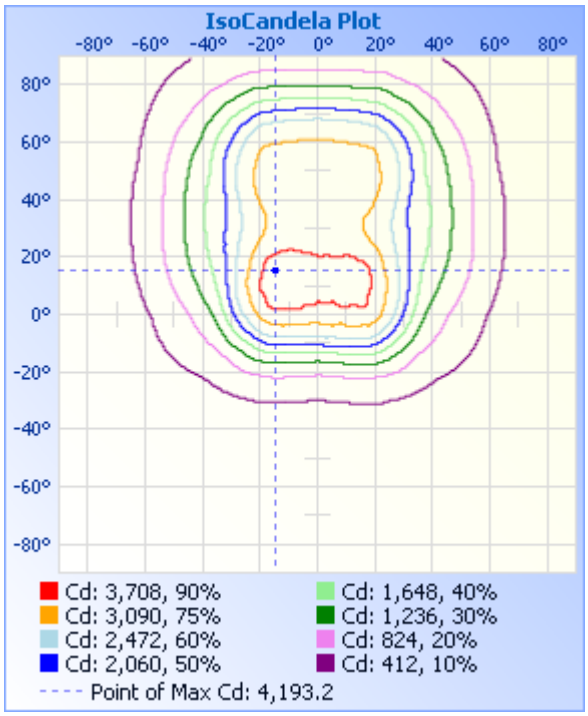
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	317.7	4.3%	90-100	174.5	2.3%
10-20	850.7	11.4%	100-110	100.2	1.3%
20-30	1,074.8	14.4%	110-120	56.0	0.7%
30-40	1,021.7	13.7%	120-130	33.9	0.5%
40-50	1,044.7	14.0%	130-140	22.7	0.3%
50-60	1,019.5	13.6%	140-150	13.5	0.2%
60-70	852.6	11.4%	150-160	5.6	0.1%
70-80	567.9	7.6%	160-170	2.3	0%
80-90	310.6	4.2%	170-180	0.8	0%

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485	3485
1	3528	3530	3433	3370	3487	3474	3360	3264	3198	3289	3435	3519	3491	3373	3362	3461	3528
2	3645	3643	3577	3522	3482	3354	3170	3313	3315	3319	3134	3497	3488	3398	3579	3647	3645
3	3679	3665	3629	3644	3485	3166	3290	3005	2925	3030	3343	3290	3486	3583	3622	3656	3679
4	3828	3735	3663	3636	3500	3257	2940	3113	3006	3142	3012	3169	3474	3578	3630	3729	3828
5	3704	3777	3672	3700	3489	3335	3125	2744	2785	2784	3064	3334	3478	3646	3647	3765	3704
6	3968	3760	3849	3654	3511	3223	2858	2794	2627	2887	2965	3397	3483	3572	3815	3744	3968
7	3752	3928	3721	3712	3539	3048	2832	2544	2605	2543	2753	3219	3513	3606	3701	3923	3752
8	3973	3758	3806	3768	3519	3019	2684	2428	2332	2519	2877	3003	3493	3683	3777	3778	3973
9	3888	3930	3982	3725	3532	3151	2584	2351	2231	2341	2598	3056	3501	3662	3974	3957	3888
10	3985	3885	3776	3840	3530	3017	2546	2136	2113	2214	2646	3202	3509	3748	3737	3869	3985
11	3968	4012	3921	3918	3526	2859	2340	2059	1906	2123	2410	3020	3507	3790	3874	3992	3968
12	3955	4012	3948	3925	3541	2865	2327	1867	1746	1912	2420	2872	3524	3794	3884	3958	3955
13	4022	4003	3946	3887	3537	2946	2137	1720	1588	1752	2234	2881	3534	3761	3872	3961	4022
14	3955	4060	4068	3852	3549	2760	2075	1577	1439	1615	2157	2998	3536	3770	3972	3986	3955
15	4003	4003	4019	3881	3534	2659	1946	1456	1328	1501	2050	2802	3548	3815	3905	3954	4003
16	3967	4046	4087	4032	3497	2668	1829	1342	1216	1382	1895	2687	3525	3931	4000	3967	3967
17	3949	3991	4108	4085	3464	2607	1690	1240	1135	1284	1781	2684	3515	3958	3972	3916	3949
18	3858	4005	4112	4023	3403	2467	1608	1155	1037	1184	1673	2684	3483	3790	3984	3914	3858
19	3829	3917	4193	3876	3310	2414	1499	1067	940	1098	1557	2515	3401	3684	3993	3824	3829
20	3743	3953	4087	3755	3215	2340	1390	983	861	1016	1458	2411	3312	3662	3983	3850	3743
21	3707	3831	4143	3750	3070	2186	1327	900	792	940	1367	2345	3188	3661	3946	3708	3707
22	3615	3877	4084	3760	2973	2062	1239	832	739	864	1301	2205	3021	3580	3888	3792	3615
23	3561	3736	4006	3651	2832	1957	1168	772	676	801	1226	2058	2913	3417	3867	3608	3561
24	3499	3766	3984	3492	2707	1829	1092	724	625	745	1150	1958	2766	3273	3751	3643	3499
25	3441	3675	3836	3358	2585	1698	1032	663	574	695	1089	1847	2648	3189	3624	3538	3441
26	3389	3653	3762	3200	2472	1578	956	622	531	647	1011	1712	2494	3098	3580	3527	3389
27	3320	3599	3640	3145	2361	1478	895	574	495	600	942	1597	2376	2985	3424	3450	3320
28	3302	3533	3519	2999	2231	1382	832	536	453	555	871	1484	2220	2823	3325	3439	3302
29	3237	3505	3464	2841	2100	1283	773	498	420	518	816	1379	2100	2673	3278	3321	3237

30	3272	3458	3279	2703	1974	1193	719	464	386	482	753	1287	1970	2563	3102	3327	3272
31	3209	3400	3202	2565	1844	1111	671	433	356	452	703	1194	1843	2439	3018	3215	3209
32	3267	3394	3132	2421	1715	1033	627	399	330	423	651	1111	1734	2308	2927	3276	3267
33	3180	3383	2980	2292	1577	950	582	377	306	392	609	1034	1613	2183	2844	3217	3180
34	3273	3353	2932	2173	1463	889	545	346	285	361	566	954	1504	2063	2752	3206	3273
35	3180	3353	2837	2068	1364	814	508	325	269	336	528	883	1407	1971	2677	3205	3180
36	3278	3339	2735	1983	1281	753	474	303	255	315	491	804	1317	1883	2598	3200	3278
37	3303	3348	2666	1901	1203	688	439	287	243	294	457	737	1239	1805	2509	3209	3303
38	3373	3354	2596	1832	1156	639	407	270	231	278	426	684	1170	1747	2467	3245	3373
39	3443	3343	2531	1766	1096	596	382	256	221	262	396	639	1123	1698	2375	3294	3443
40	3464	3402	2435	1714	1048	557	353	244	211	251	368	597	1064	1650	2330	3342	3464
41	3549	3452	2405	1671	997	524	330	235	204	240	342	560	1017	1616	2287	3413	3549
42	3558	3486	2332	1627	947	494	303	227	199	231	319	523	965	1583	2231	3399	3558
43	3602	3571	2274	1589	899	463	283	218	196	223	295	495	922	1545	2175	3477	3602
44	3657	3561	2236	1547	858	438	262	210	194	216	275	468	871	1508	2146	3470	3657
45	3631	3577	2175	1507	812	415	244	204	194	213	256	439	833	1472	2094	3532	3631
46	3661	3653	2141	1469	774	391	225	200	194	207	237	415	785	1439	2062	3526	3661
47	3668	3589	2088	1431	739	370	210	198	196	202	222	392	754	1403	2031	3525	3668
48	3649	3654	2052	1392	706	347	197	194	198	197	208	370	712	1367	1999	3547	3649
49	3690	3614	2027	1352	668	328	186	189	198	194	196	349	680	1326	1964	3536	3690
50	3608	3619	2000	1309	636	309	175	184	199	192	185	327	647	1289	1943	3531	3608
51	3613	3595	1960	1266	606	291	165	182	201	189	174	308	614	1245	1909	3525	3613
52	3530	3594	1928	1221	579	271	156	180	201	186	165	290	585	1200	1876	3462	3530
53	3500	3516	1890	1177	554	255	149	177	201	181	157	272	557	1160	1855	3448	3500
54	3481	3498	1871	1132	525	241	142	172	199	176	149	256	529	1117	1817	3377	3481
55	3443	3397	1823	1088	500	228	134	167	197	173	141	240	505	1070	1788	3352	3443
56	3383	3400	1795	1043	474	214	128	161	192	168	134	227	477	1027	1752	3293	3383
57	3337	3320	1755	997	449	203	123	156	185	162	129	214	452	978	1712	3253	3337
58	3269	3276	1716	950	425	193	118	150	178	155	123	203	425	936	1680	3195	3269
59	3214	3204	1674	911	400	183	113	143	170	149	118	193	404	890	1638	3173	3214
60	3197	3139	1636	867	377	174	108	138	163	142	114	182	380	847	1602	3093	3197
61	3106	3088	1596	829	355	165	104	131	156	136	110	173	358	810	1565	3047	3106

62	3062	3018	1552	788	332	157	101	126	147	130	107	165	336	767	1529	2982	3062
63	2963	2924	1509	749	313	149	98	120	140	125	104	156	315	726	1488	2891	2963
64	2892	2828	1462	712	295	142	95	115	132	119	100	148	296	691	1447	2835	2892
65	2788	2777	1422	677	278	134	92	110	126	112	97	141	280	657	1411	2716	2788
66	2743	2659	1376	645	261	127	89	105	118	108	95	133	262	622	1373	2638	2743
67	2628	2552	1325	613	244	120	86	100	112	102	92	127	248	591	1316	2506	2628
68	2566	2477	1270	580	230	114	84	95	105	97	89	120	233	560	1269	2440	2566
69	2447	2350	1215	552	217	108	81	91	99	92	86	114	218	531	1216	2310	2447
70	2315	2257	1162	522	204	103	78	85	92	87	83	108	205	503	1169	2226	2315
71	2233	2173	1116	495	191	98	76	81	87	82	80	103	193	476	1113	2122	2233
72	2091	2019	1069	470	180	93	73	76	81	77	78	98	183	450	1057	1973	2091
73	1990	1948	1021	445	169	89	70	71	76	73	74	93	171	426	1007	1915	1990
74	1858	1785	968	419	160	84	68	67	71	68	71	90	161	401	954	1760	1858
75	1768	1727	918	397	149	81	65	63	66	64	69	86	151	379	905	1687	1768
76	1648	1613	865	375	140	77	62	59	61	60	66	82	142	359	859	1570	1648
77	1544	1513	827	356	131	73	60	56	57	56	63	78	134	340	822	1478	1544
78	1446	1440	778	335	124	69	57	52	52	52	60	74	126	322	765	1440	1446
79	1299	1307	736	318	116	67	55	48	48	48	57	71	118	303	720	1258	1299
80	1240	1236	694	299	109	63	52	45	44	45	55	68	111	287	680	1166	1240
81	1188	1152	656	282	102	60	49	42	40	41	51	64	104	272	639	1149	1188
82	1046	1032	621	269	96	57	47	38	36	38	49	61	97	258	604	1033	1046
83	968	968	590	254	90	54	45	35	32	35	47	58	92	244	573	937	968
84	933	919	558	239	84	52	42	32	28	31	44	55	86	230	542	884	933
85	858	851	530	226	79	50	40	30	25	28	42	53	80	216	513	841	858
86	799	790	500	213	74	47	38	27	22	26	40	50	75	204	483	774	799
87	761	734	472	201	70	46	35	25	18	23	37	48	71	192	456	724	761
88	729	697	443	190	66	43	34	22	15	21	35	46	66	182	427	685	729
89	698	663	419	180	63	42	32	20	13	19	33	45	63	172	403	651	698
90	663	627	397	170	60	41	30	18	10	17	31	43	61	162	382	617	663
91	629	596	373	161	59	39	29	16	8	15	29	42	58	155	359	582	629
92	594	562	352	151	56	38	27	14	7	13	28	41	56	146	339	549	594
93	559	529	332	143	55	37	26	13	6	13	28	40	55	139	320	518	559

94	527	496	314	135	53	36	26	12	6	12	27	39	53	130	302	487	527
95	498	468	297	128	52	36	25	12	6	12	26	38	52	124	286	459	498
96	471	440	280	122	50	35	24	11	6	11	25	38	50	117	270	434	471
97	444	416	265	115	49	34	24	11	6	11	25	37	49	112	256	409	444
98	420	392	250	109	48	34	23	10	6	10	25	37	48	105	241	386	420
99	398	371	237	103	47	34	23	10	5	10	24	37	46	100	228	365	398
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Certificate#4810.01

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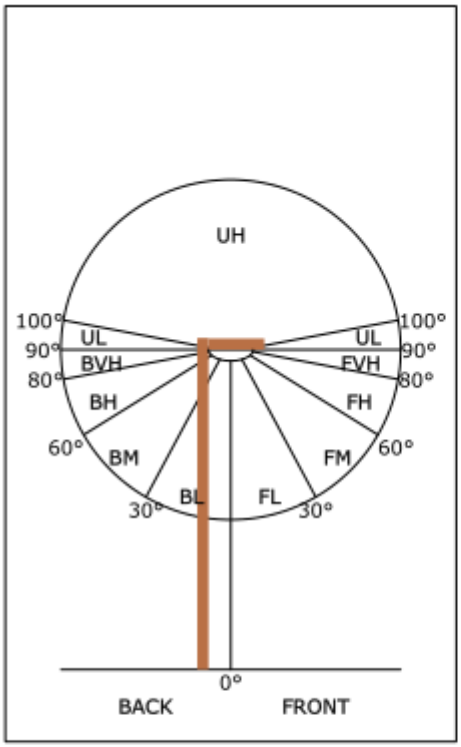
Certificate#4810.01



ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	5757	77.1
FL (0°-30°)	1511	20.2
FM (30°-60°)	2650	35.5
FH (60°-80°)	1310	17.5
FVH (80°-90°)	286	3.8
BACK LIGHT	1304	17.5
BL (0°-30°)	733	9.8
BM (30°-60°)	437	5.8
BH (60°-80°)	111	1.5
BVH (80°-90°)	24	0.3
UP LIGHT	409	5.5
UL (90°-100°)	175	2.3
UH (100°-180°)	235	3.1
TRAPPED LIGHT	NA	NA

BUG(Backlight,Uplight,Glare) Rating Base On TM-15-11	
Asymmetrical Luminaire Types (Type I,II,III,IV)	B2 U3 G3
Quadrilateral Symmetrical Luminaire Types (Type V,Area Light)	B2 U3 G3

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2020-02-27	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-SWP03-60BA1-WH50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200201 8E-D2	120.0	60	0.5114	60.53	0.9864	14.17
	277.0	60	0.2354	60.91	0.934	11.37
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

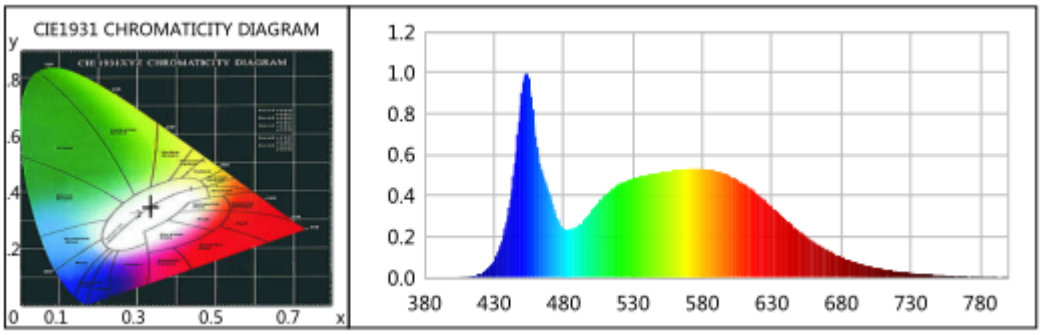
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5446
Duv	0.0043
Chromaticity (x, y)	x=0.3339 y=0.3508
Chromaticity (u′, v′)	u(u')=0.2041 v'=0.4826
Color Rendering Index (CRI)	82.3
R9	3

Special Color Rendering Indices			
R1	80	R9	3
R2	88	R10	71
R3	93	R11	79
R4	81	R12	56
R5	81	R13	83
R6	83	R14	96
R7	87	R15	75
R8	66	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

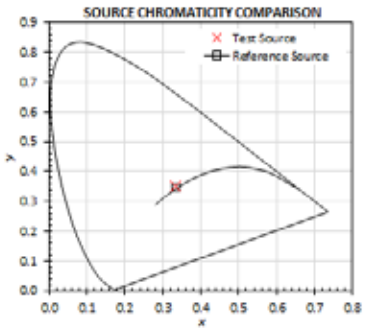
Parameter	Result		DLC V5.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	7733.3	7818.1	300-5000 (-10%)
Luminous Efficacy (lm/W)	127.76	128.35	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	126.96		

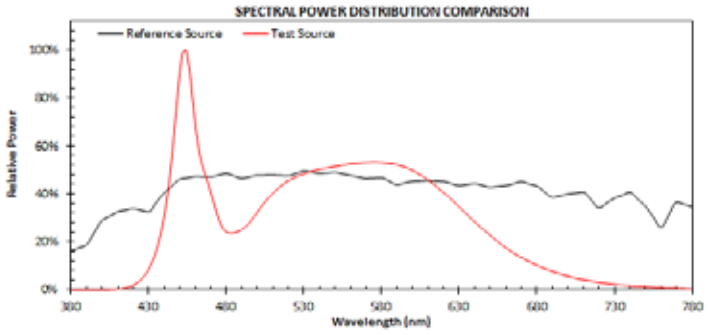
Spectral Power Distribution & Chromaticity Diagram

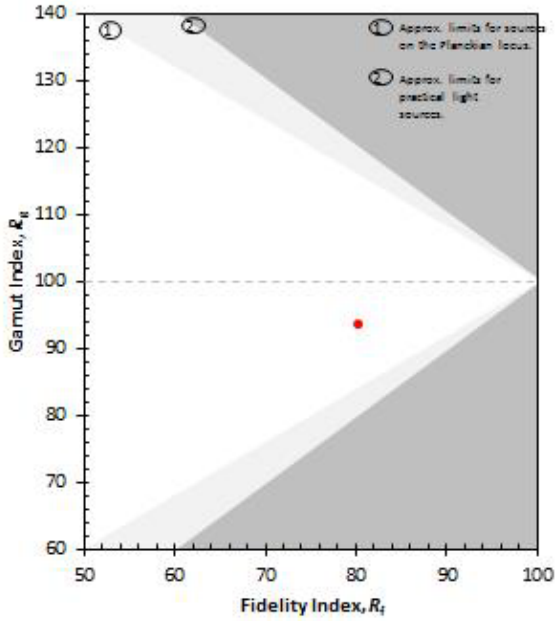


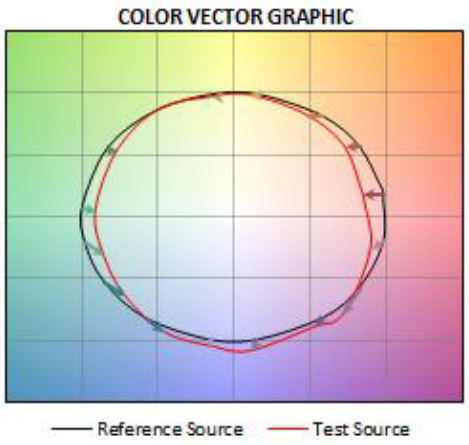
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0547	525	0.4708	93.9248	670	0.1336	26.6481
385	0.0003	0.0653	530	0.4822	96.1992	675	0.1166	23.2616
390	0.0004	0.0874	535	0.4932	98.3929	680	0.1012	20.1928
395	0.0007	0.1435	540	0.5018	100.1056	685	0.0873	17.4249
400	0.0004	0.0785	545	0.5057	100.8740	690	0.0763	15.2301
405	0.0015	0.2958	550	0.5139	102.5239	695	0.0665	13.2696
410	0.0033	0.6496	555	0.5203	103.7838	700	0.0562	11.2141
415	0.0077	1.5405	560	0.5242	104.5715	705	0.0479	9.5477
420	0.0189	3.7718	565	0.5289	105.5014	710	0.0413	8.2452
425	0.0411	8.2044	570	0.5315	106.0234	715	0.0356	7.0928
430	0.0842	16.7878	575	0.5324	106.2098	720	0.0307	6.1286
435	0.1645	32.8100	580	0.5319	106.0995	725	0.0263	5.2469
440	0.3051	60.8579	585	0.5263	104.9914	730	0.0224	4.4612
445	0.5574	111.1903	590	0.5214	104.0118	735	0.0192	3.8243
450	0.9022	179.9844	595	0.5116	102.0572	740	0.0162	3.2240
455	0.9755	194.5950	600	0.4974	99.2235	745	0.0154	3.0813
460	0.6951	138.6667	605	0.4777	95.2983	750	0.0122	2.4392
465	0.5090	101.5383	610	0.4568	91.1161	755	0.0103	2.0624
470	0.4055	80.8839	615	0.4330	86.3780	760	0.0090	1.7981
475	0.2976	59.3653	620	0.4050	80.7858	765	0.0080	1.5898
480	0.2405	47.9720	625	0.3763	75.0593	770	0.0066	1.3215
485	0.2359	47.0595	630	0.3451	68.8516	775	0.0060	1.1937
490	0.2505	49.9615	635	0.3155	62.9293	780	0.0033	0.6630
495	0.2805	55.9539	640	0.2842	56.6890	785	0.0031	0.6173
500	0.3232	64.4698	645	0.2544	50.7514	790	0.0043	0.8672
505	0.3658	72.9746	650	0.2263	45.1368	795	0.0016	0.3159
510	0.4024	80.2763	655	0.2004	39.9780	800	0.0023	0.4568
515	0.4322	86.2152	660	0.1754	34.9864			
520	0.4542	90.6082	665	0.1530	30.5310			

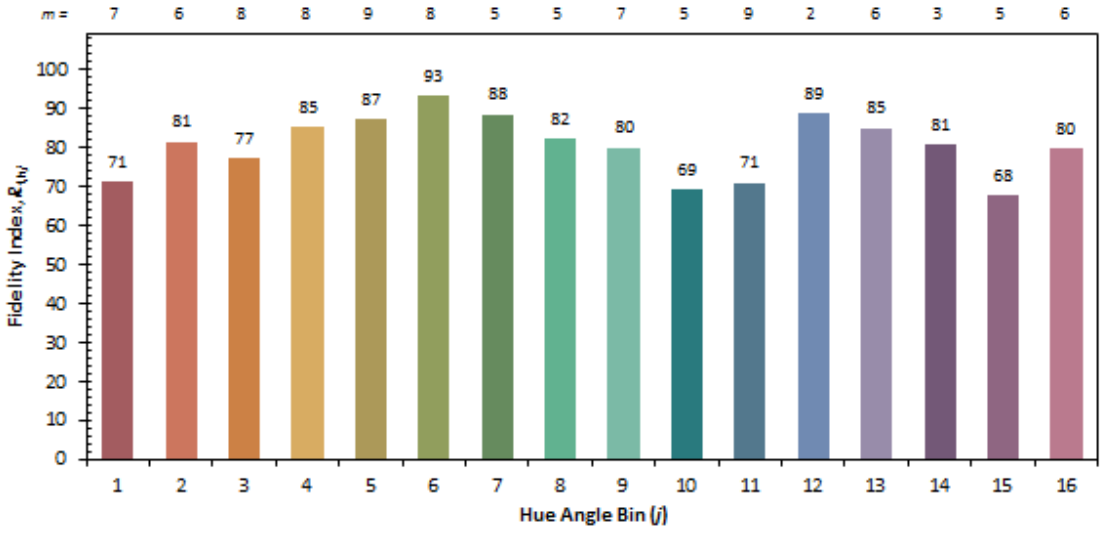
TM30


SOURCE CHROMATICITY COMPARISON
Test Source
Reference Source
x
y

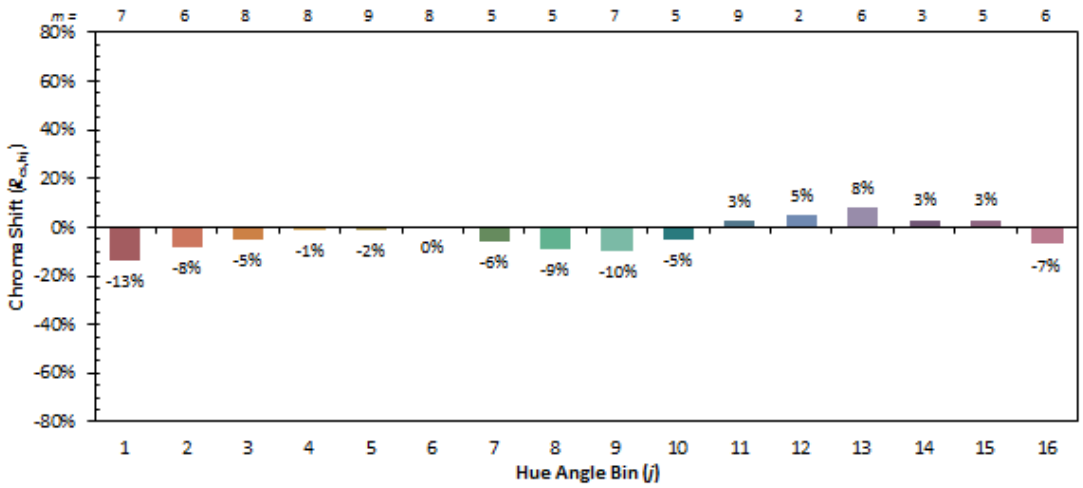

SPECTRAL POWER DISTRIBUTION COMPARISON
Reference Source
Test Source
Relative Power
Wavelength (nm)

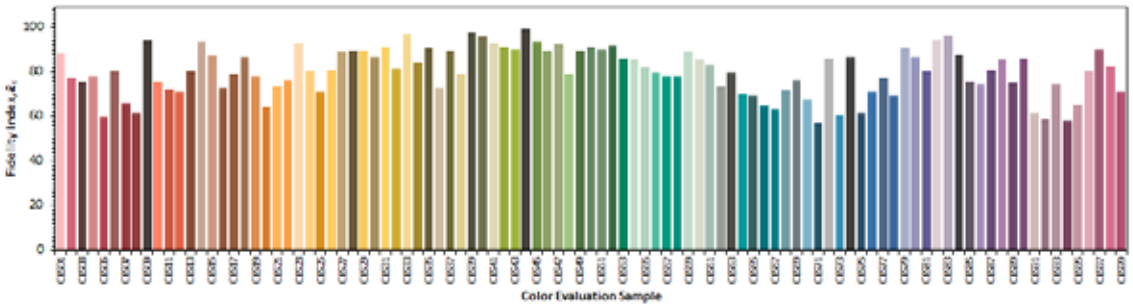

Approx. limits for sources on the Planckian locus.
Approx. limits for practical light sources.
Gamut Index, R_g
Fidelity Index, R_f


COLOR VECTOR GRAPHIC
Reference Source
Test Source


m =
7 6 8 8 9 8 5 5 7 5 9 2 6 3 5 6
71 81 77 85 87 93 88 82 80 69 71 89 85 81 68 80
Fidelity Index, $R_{f,hj}$
Hue Angle Bin (j)

Certificate#4810.01





Calculated Efficacy Data for family models (4500K, 5000K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
BLT-SWP03-60BA1-WH50	7470.2	59.99	124.52
BLT-SWP03-60BA1-WH51	7536.0	60.26	125.06
BLT-SWP03-60BA1-WH52	7601.8	60.26	126.15
BLT-SWP03-60BA1-WH53	7733.3	60.53	127.76

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

7536.0=(7733.3-7470.2)/4+7470.2

7601.8=(7733.3-7470.2)/4+7536.0

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

60.26= (60.53+59.99)/2

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

125.02=7536.0/60.26

126.15=7601.8/60.26

3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2021-01-13
AC Power Source	CHP-500C	N/A	2021-01-12
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2021-01-20
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Integral Sphere (2M)	2M	DYJCE120067	2021-01-13
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2021-01-13
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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