



Report No.:
BLC1810012E-U-A-PL

LM-79-08 Test Report

For

ATG Electronics Corp

(Brand Name: ATG)

10700 7th Street Rancho Cucamonga, CA

2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model name(s): FPBL24-30W-XX

Remark: XX represents for CCT, can be 27=2700K, 30=3000K, 35=3500K, 40=4000K,
45=4500K, 50=5000K.

This is a multiple list report, the original report No. is BLC1810012E-U-A.

Representative (Tested) Model: FPBL24-30W-27,
FPBL24-30W-50

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: Oct 22, 2018

Review By:

Tommy Liang

Manager: Tommy Liang



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1.1 Product Information:

Organization Name	ATG Electronics Corp	
Brand Name	ATG	
Model Number	FPBL24-30W-XX	
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	100-277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K	
LED Manufacturer	EBRIGHT SHENZHEN OPTO-ELECTRONIC CO.,LTD	
LED Model	ETRC-3030WB-MASD	
Sample Number	BLC1810012E-U-A1(2700K),A2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		



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1.2 Test Specifications:

Date of Receipt	Oct 19, 2018
Date of Test	Oct 19, 2018
Test item	<ol style="list-style-type: none">1. Total Luminous Flux2. Luminous Distribution Intensity3. Luminous Efficacy4. Correlated Color Temperature5. Color Rendering Index6. Chromaticity Coordinate7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none">1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources4. CIE 15-2004 Technical Report Colorimetry5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source6. 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.



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2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction BL-QP-033)

Test date	2018-10-19	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FPBL24-30W-27		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC181001	120.0	60	0.2464	29.3	0.991	11.55
2E-U-A1	277.0	60	0.1157	29.3	0.914	10.92
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	10
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	2721	R3	95	R11	82
Duv	-0.00003	R4	82	R12	77
Chromaticity (x, y)	x=0.4581 y=0.4101	R5	84	R13	85
Chromaticity (u', v')	u(u')=0.2616 v'=0.5269	R6	94	R14	98
Color Rendering Index (CRI)	83.5	R7	80	R15	74
R9	10	R8	58	--	--

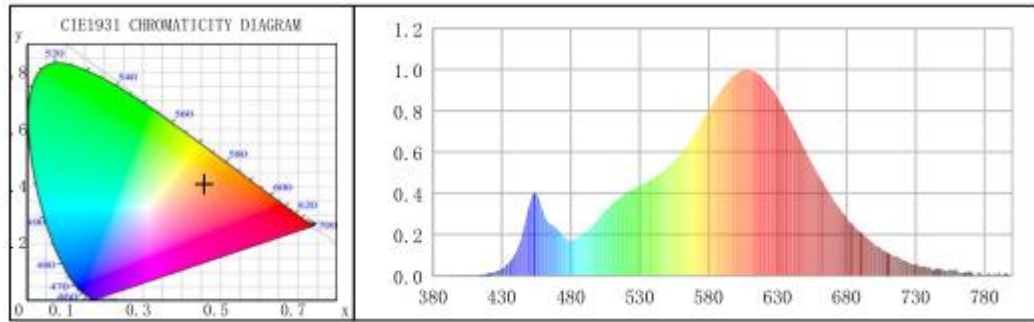
Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3719.2	3666.6	≥2000 (-10%)
Luminous Efficacy (lm/W)	126.94	125.14	Premium: >= 125(-3%)
Most worst Luminous/Highest Watts	125.14		
SC: 0-180°	1.26		0.9-2.1
SC: 90-270°	1.27		0.9-2.1
Zonal lumens in the 0-60° zone (%)	77.6	--	>=75(-3)
Beam Angle (°)	113.8	--	--
Center Beam Candle Power (cd)	1269	--	--



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Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	988.1	26.6%	26.6%
0-40	1,622.9	43.6%	43.6%
0-60	2,887.4	77.6%	77.6%
60-90	820.5	22.1%	22.1%
70-100	358.9	9.7%	9.7%
90-120	5.3	0.1%	0.1%
0-90	3,707.9	99.7%	99.7%
90-180	11.0	0.3%	0.3%
0-180	3,718.9	100%	100%

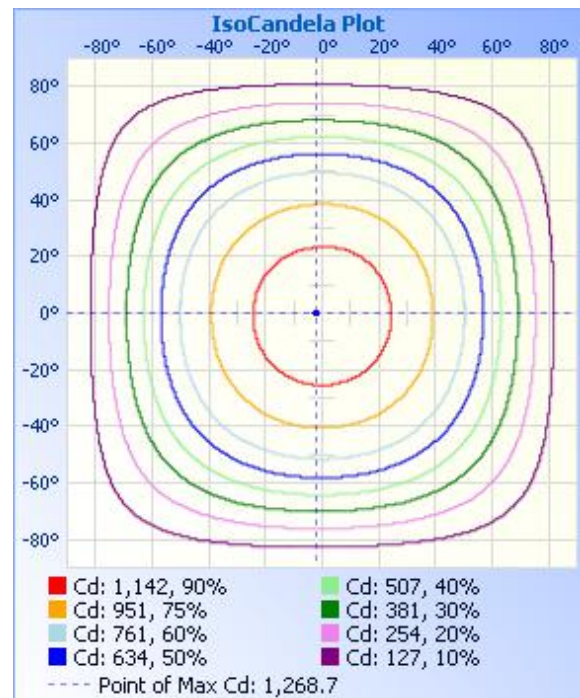
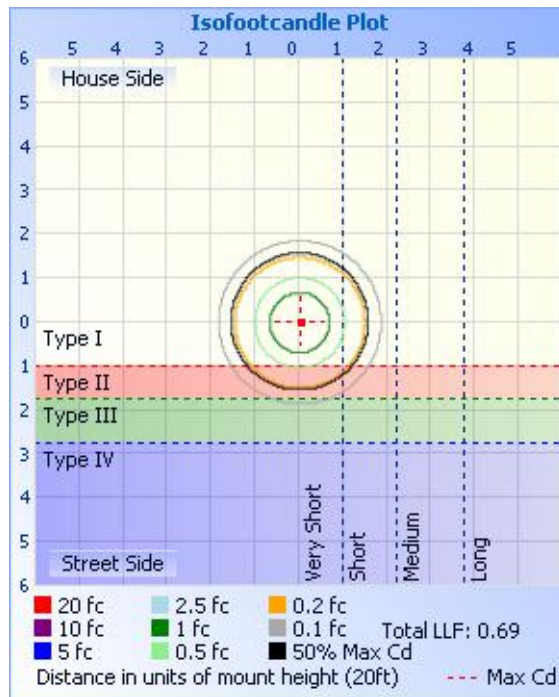
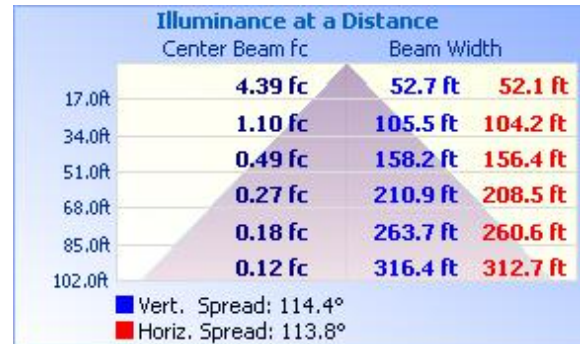
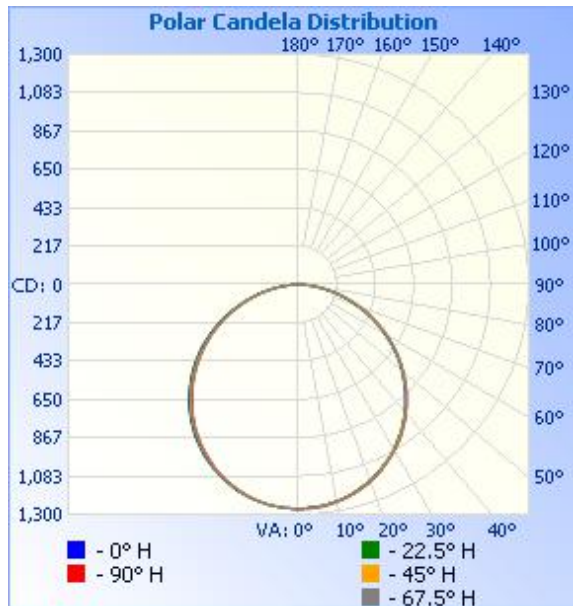
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	120.0	3.2%	90-100	2.2	0.1%
10-20	344.3	9.3%	100-110	1.6	0%
20-30	523.8	14.1%	110-120	1.5	0%
30-40	634.8	17.1%	120-130	1.4	0%
40-50	662.2	17.8%	130-140	1.3	0%
50-60	602.3	16.2%	140-150	1.2	0%
60-70	463.8	12.5%	150-160	1.0	0%
70-80	274.6	7.4%	160-170	0.6	0%
80-90	82.2	2.2%	170-180	0.2	0%



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Photometric Data





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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	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267
1	1267	1267	1266	1267	1267	1267	1267	1267	1267	1268	1267	1267	1267	1267	1267	1267	1267
2	1266	1264	1266	1266	1269	1267	1267	1267	1264	1267	1266	1267	1267	1266	1265	1266	1266
3	1262	1263	1265	1267	1268	1267	1267	1268	1264	1267	1265	1266	1266	1265	1264	1266	1262
4	1261	1262	1264	1265	1267	1267	1266	1267	1263	1264	1264	1264	1265	1263	1262	1264	1261
5	1258	1260	1261	1263	1265	1265	1264	1266	1261	1262	1263	1262	1263	1261	1260	1262	1258
6	1256	1258	1258	1260	1263	1263	1262	1265	1259	1260	1259	1260	1260	1258	1259	1260	1256
7	1254	1256	1255	1258	1261	1261	1259	1262	1258	1258	1256	1258	1257	1255	1257	1257	1254
8	1250	1252	1252	1256	1256	1256	1257	1256	1255	1255	1253	1255	1254	1252	1253	1253	1250
9	1245	1248	1248	1250	1252	1252	1253	1253	1252	1251	1249	1252	1249	1249	1249	1249	1245
10	1243	1244	1244	1246	1248	1249	1250	1249	1248	1248	1247	1247	1245	1245	1245	1245	1243
11	1239	1240	1239	1242	1244	1245	1246	1245	1244	1244	1241	1243	1240	1240	1241	1240	1239
12	1234	1235	1236	1237	1240	1241	1239	1241	1239	1239	1238	1237	1236	1234	1233	1235	1234
13	1227	1229	1230	1232	1234	1235	1234	1236	1235	1234	1233	1233	1230	1229	1227	1230	1227
14	1222	1223	1225	1226	1228	1231	1229	1231	1230	1229	1228	1225	1224	1221	1222	1224	1222
15	1215	1216	1218	1221	1222	1224	1223	1225	1225	1223	1222	1218	1216	1214	1215	1216	1215
16	1208	1209	1212	1215	1216	1219	1217	1220	1218	1217	1215	1211	1210	1208	1208	1209	1208
17	1201	1202	1205	1208	1209	1212	1211	1213	1212	1211	1206	1204	1203	1200	1201	1202	1201
18	1194	1195	1199	1202	1202	1205	1204	1205	1202	1204	1198	1197	1195	1193	1194	1195	1194
19	1186	1188	1188	1194	1195	1197	1197	1198	1194	1197	1191	1191	1187	1185	1187	1187	1186
20	1178	1179	1180	1185	1187	1189	1189	1190	1187	1186	1184	1183	1179	1178	1179	1179	1178
21	1170	1170	1170	1176	1178	1180	1181	1182	1179	1178	1175	1175	1170	1169	1170	1171	1170
22	1159	1160	1162	1167	1170	1172	1173	1174	1171	1169	1166	1165	1162	1161	1160	1162	1159
23	1150	1151	1153	1158	1160	1162	1161	1165	1161	1160	1156	1156	1152	1151	1151	1153	1150
24	1140	1141	1144	1149	1151	1153	1151	1155	1152	1150	1147	1146	1143	1141	1140	1143	1140
25	1130	1132	1133	1139	1138	1144	1142	1144	1143	1141	1137	1134	1132	1131	1130	1133	1130
26	1121	1122	1123	1128	1128	1131	1132	1134	1134	1131	1127	1124	1119	1118	1119	1120	1121
27	1110	1111	1112	1117	1118	1121	1120	1123	1123	1121	1116	1113	1108	1107	1108	1108	1110
28	1099	1100	1101	1105	1106	1110	1110	1113	1113	1110	1104	1102	1097	1096	1097	1098	1099
29	1088	1088	1089	1095	1095	1099	1099	1101	1102	1098	1093	1090	1085	1085	1083	1087	1088

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32	1048	1049	1053	1059	1059	1063	1062	1067	1065	1061	1054	1052	1048	1046	1046	1049	1048
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34	1022	1023	1024	1033	1033	1037	1038	1042	1039	1035	1028	1025	1021	1020	1020	1022	1022
35	1008	1010	1010	1019	1019	1023	1024	1028	1026	1022	1014	1012	1008	1005	1006	1008	1008
36	994	996	996	1002	1003	1007	1010	1012	1011	1007	1001	997	993	991	991	994	994
37	979	981	983	989	990	993	996	998	997	993	987	983	979	977	977	980	979
38	964	967	968	974	976	978	979	984	983	979	972	968	963	962	962	964	964
39	949	953	952	959	960	963	965	969	968	965	958	953	948	946	947	949	949
40	935	936	938	944	945	948	950	955	953	949	942	937	932	932	929	934	935
41	919	921	923	928	928	932	935	939	937	934	926	919	917	913	913	918	919
42	902	905	906	912	912	917	919	923	921	918	911	903	898	897	897	899	902
43	885	889	891	896	896	900	903	907	906	903	892	887	882	880	881	883	885
44	869	873	874	880	879	885	887	891	887	887	876	870	865	863	864	866	869
45	852	855	857	863	863	866	871	873	871	868	859	853	848	846	847	849	852
46	835	837	840	846	846	849	854	857	854	850	842	836	831	829	828	832	835
47	815	821	823	827	828	831	837	840	837	834	825	819	814	811	812	814	815
48	798	803	804	810	810	814	817	822	820	816	806	801	796	793	794	797	798
49	780	785	785	792	790	796	798	805	801	799	788	781	778	775	776	779	780
50	762	767	768	774	772	776	781	784	784	780	771	763	760	757	757	761	762
51	743	748	749	755	754	757	763	766	766	762	752	744	741	739	737	742	743
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54	686	692	692	698	698	702	705	710	708	706	694	688	684	680	679	683	686
55	667	672	672	678	678	682	686	691	689	684	676	667	664	660	659	664	667
56	647	652	654	660	659	663	666	671	670	666	654	647	646	641	639	644	647
57	627	630	633	637	640	643	646	652	650	646	634	628	625	621	619	622	627
58	607	610	613	617	620	623	627	632	630	625	614	607	603	599	598	603	607
59	585	591	594	599	598	604	607	609	608	605	594	587	584	580	578	582	585
60	564	570	571	580	578	584	587	589	588	585	573	566	564	560	558	562	564
61	543	548	551	558	558	561	564	569	567	562	552	546	542	538	538	541	543

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62	521	527	530	539	538	541	544	548	546	542	532	526	521	517	517	520	521
63	502	505	511	517	515	520	524	526	525	520	512	503	501	495	497	498	502
64	479	485	490	497	495	499	503	506	504	500	491	482	481	476	474	476	479
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72	309	314	320	330	327	333	334	337	333	329	322	314	313	309	307	307	309
73	287	294	299	308	307	311	315	314	312	307	302	294	292	288	286	285	287
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75	247	252	259	268	267	271	273	272	269	267	260	255	252	248	245	245	247
76	227	232	239	246	247	251	253	253	249	246	239	235	232	228	225	225	227
77	208	213	218	229	226	231	233	232	229	227	220	213	212	208	205	204	208
78	187	193	199	208	207	210	213	212	209	205	201	194	192	188	186	185	187
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85	62	67	73	80	80	83	84	82	79	77	72	69	67	63	61	60	62
86	47	51	57	64	62	66	68	66	63	60	56	51	50	47	45	45	47
87	31	36	41	48	46	50	51	51	48	44	40	36	35	32	30	30	31
88	18	21	27	32	32	36	37	36	34	30	25	23	21	18	17	16	18
89	7	10	15	20	18	22	23	21	19	17	13	12	10	8	7	6	7
90	3	4	6	10	7	9	11	9	6	6	6	5	4	3	3	3	3
91	2	2	2	4	1	3	3	3	2	2	2	2	1	2	3	2	2
92	2	2	2	2	1	1	2	3	2	2	2	2	1	1	2	2	2
93	2	2	2	2	0	1	2	2	2	2	1	2	1	2	2	2	2

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95	2	2	2	2	1	1	2	2	2	2	1	2	1	2	2	2	2
96	2	2	2	2	0	1	2	2	2	2	2	2	1	2	2	2	2
97	3	2	2	2	0	1	2	2	2	2	1	2	1	1	2	2	3
98	2	2	2	2	0	2	2	2	2	1	1	2	1	2	2	2	2
99	2	2	2	2	0	1	2	2	2	2	2	2	1	1	2	2	2
100	2	2	2	2	0	1	2	2	2	1	1	2	1	1	2	2	2
101	2	1	1	2	0	1	1	2	2	2	1	2	1	2	2	2	2
102	2	2	2	1	0	1	2	2	2	1	1	2	1	0	2	2	2
103	2	2	2	2	0	1	2	2	2	2	1	2	1	1	2	2	2
104	2	2	2	2	0	1	2	2	2	1	1	2	1	2	2	2	2
105	2	2	2	1	0	1	1	2	2	1	1	2	1	1	2	2	2
106	2	2	2	2	0	1	2	2	2	2	1	2	1	2	2	2	2
107	2	2	2	2	0	0	2	2	2	1	1	2	1	2	2	2	2
108	2	2	1	2	0	0	1	2	1	1	1	2	1	2	2	2	2
109	2	2	2	2	0	1	2	2	1	2	1	2	1	1	2	2	2
110	2	2	2	2	0	1	2	2	2	1	1	2	0	1	2	2	2
111	2	2	1	2	0	1	2	2	2	1	1	1	1	1	2	2	2
112	2	1	2	2	0	1	2	2	2	1	2	1	0	1	2	2	2
113	2	2	1	2	0	1	2	2	2	2	1	2	1	1	1	2	2
114	2	2	2	2	0	1	1	1	2	1	1	2	1	1	2	2	2
115	2	1	2	2	0	1	1	2	2	2	1	2	1	1	2	2	2
116	2	1	2	2	0	0	2	2	2	2	2	2	0	1	2	2	2
117	2	1	2	2	0	0	2	2	2	2	2	2	0	1	2	1	2
118	3	1	2	2	0	1	1	2	2	2	1	2	1	1	2	2	3
119	2	2	2	1	0	1	1	2	2	1	1	2	1	1	2	2	2
120	2	1	2	2	0	0	2	2	2	1	1	2	1	1	2	2	2
121	2	1	2	2	0	1	2	2	2	1	1	2	0	1	2	2	2
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124	2	1	1	2	0	1	2	2	2	1	1	1	1	1	2	2	2
125	2	1	2	2	0	0	2	2	2	2	1	2	0	1	1	2	2

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126	2	1	2	2	0	1	2	2	2	1	2	1	1	1	2	2	2
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128	2	1	2	2	0	1	2	2	2	2	2	2	1	2	1	2	2
129	2	2	2	2	0	1	2	2	2	2	1	2	1	1	2	2	2
130	2	2	2	2	0	1	2	2	2	2	1	2	0	1	2	2	2
131	2	2	2	2	0	1	2	2	2	2	2	2	1	1	2	2	2
132	2	1	2	2	0	1	2	2	2	2	2	2	1	1	2	2	2
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140	2	2	2	2	1	1	2	3	2	2	2	2	1	1	2	2	2
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155	3	2	2	2	1	1	2	3	3	2	2	2	1	2	3	3	3
156	2	1	3	2	1	2	2	2	3	2	2	2	1	2	3	2	2
157	3	2	2	3	1	2	2	3	3	2	2	2	1	1	2	2	3

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158	3	2	2	2	1	1	3	2	2	3	2	2	1	2	3	2	3
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168	3	2	2	2	1	2	2	3	2	2	2	2	1	2	3	3	3
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178	2	2	2	3	1	1	2	2	3	2	2	3	1	2	3	2	2
179	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2
180	2	2	2	2	1	2	2	3	2	1	2	3	1	2	2	2	2



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2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction BL-QP-033)

Test date	2018-10-19	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FPBL24-30W-50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC181001	120.0	60	0.2455	29.16	0.99	11.95
2E-U-A2	277.0	60	0.1155	29.18	0.912	11.02
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	12
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	4995	R3	95	R11	81
Duv	0.00335	R4	81	R12	56
Chromaticity (x, y)	x=0.3459 y=0.3590	R5	82	R13	85
Chromaticity (u', v')	u(u')=0.2091 v'=0.4884	R6	86	R14	98
Color Rendering Index (CRI)	84.2	R7	87	R15	77
R9	12	R8	68	--	--

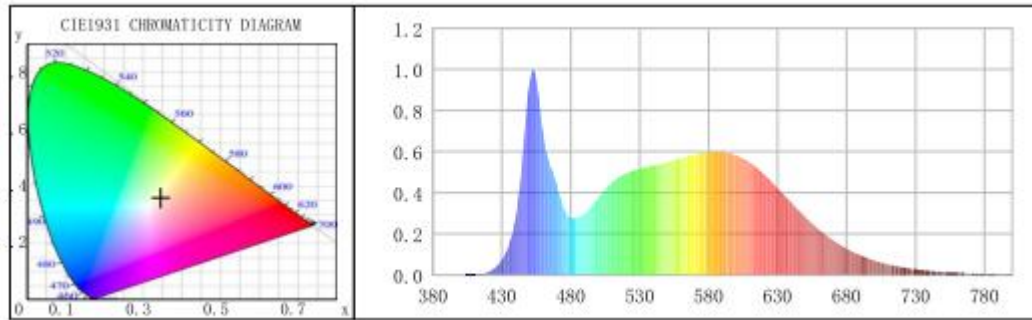
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3776.80	3747.88	>=2000(-10%)
Luminous Efficacy (lm/W)	129.52	128.44	Premium: >= 125(-3%)
Most worst Luminous/Highest Watts	128.44		



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Spectral Power Distribution & Chromaticity Diagram





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Calculated Efficacy Data for family models (3000K,3500K,4000K and 4500K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
FPBL24-30W-27	3719.2	29.3	126.94
FPBL24-30W-30	3728.80	29.23	127.57
FPBL24-30W-35	3738.40	29.23	127.90
FPBL24-30W-40	3748.00	29.23	128.22
FPBL24-30W-45	3757.60	29.23	128.55
FPBL24-30W-50	3776.80	29.16	129.52



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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2019-01-15
AC Power Source	CHP-500C	N/A	2019-01-14
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2019-01-22
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Integral Sphere (2M)	2M	DYJCE120067	2019-01-15
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2019-01-15
Expand Uncertainty: Photometric Measurement (Sphere): 2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.7%, k=2			

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