



Report No.:
BLC1806013E-B-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): FPBL24-40W-XX

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

This is a multiple list report, the original report No. is BLC1806013E-B.

Representative (Tested) Model: FPBL24-40W-30,
FPBL24-40W-50

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: June 15, 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	FPBL24-40W-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	40W		
Rated Initial Lamp Lumen	--		
Declared CCT	3000K,3500K,4000K,4500K,5000K		
LED Manufacturer	EBRIGHT SHENZHEN OPTO-ELECTRONIC CO.,LTD		
LED Model	ETRC-3030WB-MASD		
Sample Number	BLC1806013E-B1(3000K),B2(5000K)		
Luminaire Aperture (for downlights)	--	in. mm mm s	
Luminaire Length	--		
Luminaires Width	--		
Number of Units (modular products)	N/A		
Photo			
			



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1.2 Test Specifications:

Date of Receipt	June 12, 2018
Date of Test	June 15, 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	2018-06-15	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FPBL24-40W-30		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180601	120.0	60	0.3348	39.75	0.9893	9.21
3E-B1	277.0	60	0.1576	39.63	0.908	11.45
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	0
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	2917	R3	95	R11	82
Duv	-0.00033	R4	82	R12	75
Chromaticity (x, y)	x=0.4425 y=0.4051	R5	84	R13	86
Chromaticity (u', v')	u(u')=0.2537 v'=0.5226	R6	93	R14	98
Color Rendering Index (CRI)	83.8	R7	81	R15	75
R9	0	R8	60	--	--

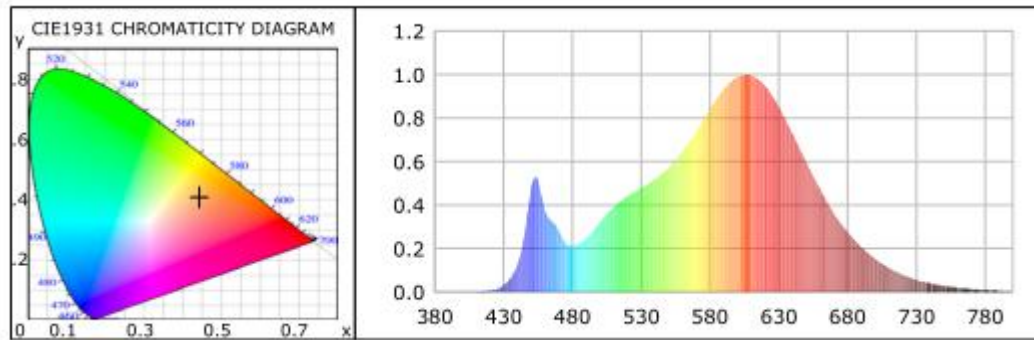
Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	4994.19	4986.25	≥2000 (-10%)
Luminous Efficacy (lm/W)	125.64	125.82	Premium: >= 125(-3%)
Most worst Luminous/Highest Watts	125.44		
Zonal lumens in the 0-60° zone (%)	78	--	>=75(-3)
Beam Angle (°)	113.8	--	--
Center Beam Candle Power (cd)	1713	--	--



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Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	1,334.3	26.7%	26.7%
0-40	2,191.2	43.9%	43.9%
0-60	3,897.4	78%	78%
60-90	1,077.2	21.6%	21.6%
70-100	461.1	9.2%	9.2%
90-120	10.6	0.2%	0.2%
0-90	4,974.5	99.6%	99.6%
90-180	19.2	0.4%	0.4%
0-180	4,993.7	100%	100%

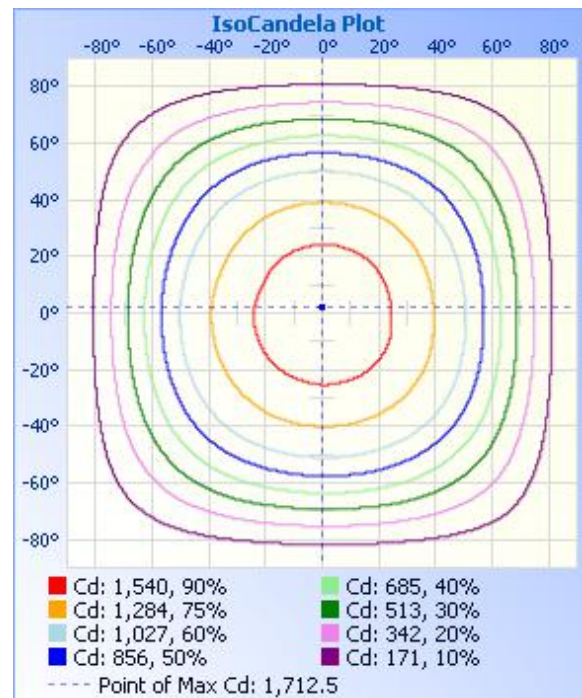
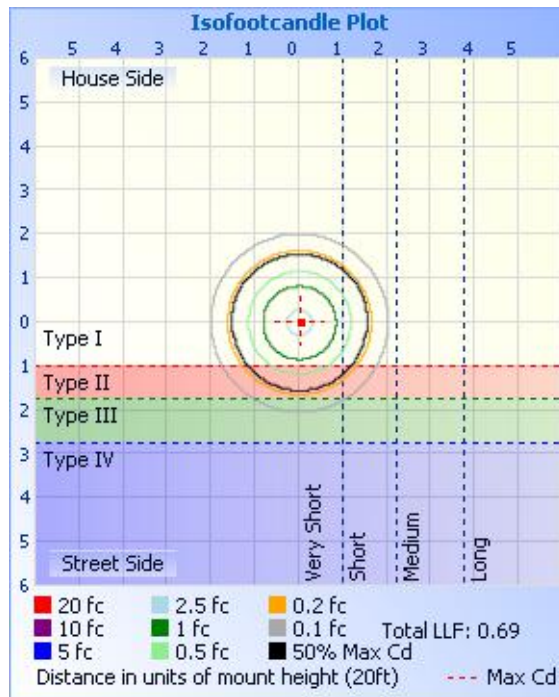
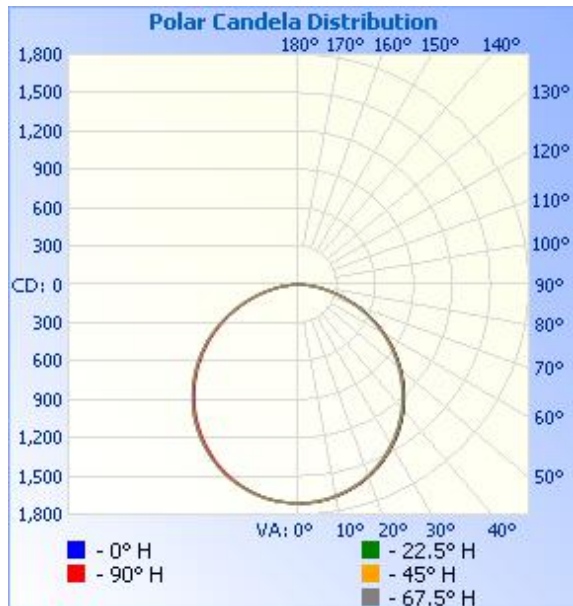
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	162.0	3.2%	90-100	4.6	0.1%
10-20	465.0	9.3%	100-110	3.2	0.1%
20-30	707.2	14.2%	110-120	2.7	0.1%
30-40	857.0	17.2%	120-130	2.4	0%
40-50	894.0	17.9%	130-140	2.0	0%
50-60	812.1	16.3%	140-150	1.7	0%
60-70	620.6	12.4%	150-160	1.3	0%
70-80	356.0	7.1%	160-170	0.8	0%
80-90	100.5	2.0%	170-180	0.3	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	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711
1	1713	1711	1711	1710	1711	1711	1712	1712	1711	1711	1711	1711	1711	1711	1712	1711	1713
2	1712	1710	1710	1709	1710	1710	1710	1711	1710	1711	1711	1708	1710	1709	1711	1710	1712
3	1711	1708	1708	1707	1712	1708	1708	1709	1709	1710	1712	1708	1708	1708	1710	1709	1711
4	1708	1708	1708	1702	1710	1707	1707	1705	1707	1708	1710	1706	1707	1707	1708	1707	1708
5	1706	1706	1706	1699	1708	1702	1704	1703	1705	1707	1709	1703	1705	1704	1703	1705	1706
6	1703	1702	1702	1695	1705	1699	1700	1700	1705	1703	1705	1702	1701	1700	1700	1702	1703
7	1699	1698	1698	1691	1698	1695	1695	1696	1701	1701	1702	1699	1697	1696	1696	1697	1699
8	1695	1694	1694	1687	1694	1691	1692	1692	1697	1696	1698	1694	1693	1690	1692	1694	1695
9	1690	1686	1688	1681	1689	1689	1688	1689	1692	1692	1693	1690	1687	1685	1687	1687	1690
10	1685	1684	1680	1675	1685	1683	1682	1684	1683	1687	1688	1685	1682	1679	1682	1682	1685
11	1678	1674	1674	1669	1679	1677	1676	1678	1678	1681	1683	1680	1675	1673	1676	1676	1678
12	1672	1667	1667	1664	1673	1672	1671	1672	1672	1675	1677	1673	1667	1667	1672	1670	1672
13	1663	1660	1660	1656	1667	1664	1664	1665	1665	1666	1667	1667	1660	1660	1664	1663	1663
14	1656	1653	1652	1648	1658	1656	1656	1657	1657	1657	1663	1660	1653	1654	1657	1657	1656
15	1648	1644	1644	1639	1651	1645	1648	1646	1650	1650	1652	1652	1644	1646	1649	1650	1648
16	1639	1636	1635	1630	1642	1636	1639	1638	1641	1642	1644	1644	1635	1637	1640	1639	1639
17	1632	1626	1626	1620	1633	1626	1630	1628	1632	1633	1635	1635	1623	1628	1631	1629	1632
18	1622	1618	1616	1611	1624	1617	1616	1618	1623	1623	1625	1622	1613	1619	1618	1620	1622
19	1610	1608	1604	1599	1613	1606	1606	1608	1613	1615	1617	1612	1603	1608	1608	1611	1610
20	1600	1596	1594	1588	1602	1595	1596	1597	1602	1604	1607	1602	1591	1596	1596	1600	1600
21	1588	1586	1581	1573	1592	1584	1584	1586	1592	1593	1595	1591	1579	1584	1586	1589	1588
22	1576	1573	1569	1564	1579	1572	1572	1574	1579	1581	1583	1579	1567	1568	1573	1574	1576
23	1564	1561	1556	1548	1567	1560	1559	1562	1566	1569	1571	1567	1554	1556	1560	1562	1564
24	1551	1548	1543	1535	1554	1546	1548	1549	1554	1553	1558	1556	1541	1543	1547	1550	1551
25	1539	1532	1529	1521	1538	1533	1534	1536	1541	1540	1542	1543	1529	1530	1533	1537	1539
26	1526	1518	1515	1507	1524	1519	1520	1522	1523	1527	1528	1530	1515	1515	1519	1521	1526
27	1507	1504	1500	1493	1510	1505	1506	1507	1509	1512	1513	1516	1496	1500	1504	1507	1507
28	1493	1489	1484	1476	1494	1490	1491	1491	1494	1497	1498	1498	1481	1484	1489	1491	1493
29	1476	1473	1468	1460	1479	1474	1473	1477	1478	1480	1483	1482	1465	1469	1474	1476	1476

Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
Building No3 3rd floor, room 303, No 2-10 south Jinlong avenue, Sand Lake community, Biling
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31	1444	1441	1435	1427	1449	1438	1441	1441	1447	1449	1450	1451	1433	1437	1440	1443	1444
32	1426	1422	1415	1409	1431	1421	1424	1424	1431	1432	1433	1434	1416	1419	1424	1427	1426
33	1409	1404	1398	1391	1414	1404	1407	1407	1413	1415	1416	1417	1398	1401	1406	1409	1409
34	1390	1385	1380	1373	1396	1385	1386	1389	1396	1397	1398	1398	1379	1383	1388	1391	1390
35	1373	1368	1361	1356	1374	1368	1367	1371	1377	1379	1379	1380	1360	1364	1369	1372	1373
36	1355	1351	1343	1334	1356	1350	1349	1353	1359	1360	1360	1362	1342	1345	1351	1352	1355
37	1336	1329	1323	1315	1337	1331	1330	1334	1337	1341	1342	1343	1324	1324	1328	1331	1336
38	1316	1312	1304	1295	1317	1312	1310	1314	1317	1321	1322	1323	1303	1303	1310	1312	1316
39	1296	1292	1283	1277	1297	1291	1290	1294	1297	1301	1302	1304	1283	1285	1290	1291	1296
40	1274	1270	1262	1256	1275	1271	1270	1273	1276	1277	1282	1283	1262	1263	1268	1272	1274
41	1253	1248	1242	1232	1254	1250	1249	1252	1254	1255	1257	1263	1243	1240	1246	1250	1253
42	1230	1225	1218	1212	1233	1225	1228	1228	1231	1234	1236	1243	1220	1221	1224	1225	1230
43	1208	1204	1196	1188	1212	1204	1203	1206	1210	1213	1215	1217	1196	1199	1203	1206	1208
44	1185	1181	1174	1166	1189	1181	1181	1182	1188	1192	1193	1195	1175	1176	1181	1185	1185
45	1164	1158	1151	1143	1167	1158	1158	1160	1166	1169	1170	1173	1152	1151	1158	1161	1164
46	1140	1133	1126	1119	1144	1135	1135	1136	1141	1146	1147	1151	1128	1128	1134	1136	1140
47	1115	1110	1104	1095	1120	1111	1112	1112	1117	1122	1124	1127	1104	1106	1110	1111	1115
48	1092	1088	1081	1072	1096	1088	1087	1089	1094	1095	1101	1103	1078	1080	1084	1088	1092
49	1068	1062	1056	1045	1069	1064	1063	1065	1070	1072	1073	1080	1056	1057	1062	1061	1068
50	1043	1037	1031	1024	1045	1039	1039	1040	1046	1048	1049	1056	1033	1031	1035	1038	1043
51	1017	1013	1005	997	1020	1014	1015	1016	1017	1023	1025	1031	1007	1008	1011	1014	1017
52	990	986	979	971	995	989	987	990	992	998	1000	1003	981	981	984	987	990
53	966	959	953	943	970	963	962	965	966	971	975	977	954	953	958	960	966
54	938	932	925	918	944	934	936	935	941	945	947	952	928	929	933	936	938
55	912	907	900	893	918	908	910	909	914	919	921	926	900	903	905	908	912
56	884	883	872	866	892	881	880	883	887	893	895	896	874	875	879	881	884
57	858	853	846	836	864	854	857	855	860	866	868	870	848	848	852	854	858
58	828	826	820	810	834	827	826	828	834	838	839	843	820	820	824	826	828
59	800	798	789	783	806	800	798	800	806	810	811	815	789	793	796	798	800
60	772	770	763	754	779	771	771	773	775	783	784	788	762	763	769	771	772
61	746	742	735	725	752	743	742	744	747	751	757	759	733	734	739	741	746

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62	717	713	705	700	722	716	714	713	720	724	725	731	705	709	711	714	717
63	689	683	676	668	693	687	686	684	691	695	697	703	677	678	682	685	689
64	658	654	647	637	664	655	657	656	663	666	669	674	646	651	653	656	658
65	630	624	617	609	635	626	628	627	631	637	639	646	616	621	623	628	630
66	600	597	588	581	606	597	600	599	603	608	611	613	588	593	596	598	600
67	573	567	560	551	575	568	567	570	574	578	582	584	557	562	567	570	573
68	542	540	533	522	547	537	539	538	543	549	552	556	528	534	539	541	542
69	511	510	498	492	517	508	510	510	514	520	522	527	499	503	511	512	511
70	482	479	469	462	489	480	480	481	486	489	494	497	470	474	481	481	482
71	454	448	440	430	455	450	450	452	456	458	464	467	441	444	449	452	454
72	426	419	412	402	426	419	421	421	428	430	433	438	410	418	420	424	426
73	395	392	384	376	397	391	393	393	396	402	405	409	383	387	392	395	395
74	368	364	354	345	369	364	363	365	369	371	377	379	355	360	364	368	368
75	339	334	326	318	341	335	335	337	340	343	348	350	327	329	335	338	339
76	309	306	298	290	311	308	308	311	313	316	321	323	299	302	306	309	309
77	281	278	271	264	283	278	280	280	286	289	291	295	269	275	278	281	281
78	255	251	244	237	257	252	254	254	257	262	264	268	243	248	251	257	255
79	230	224	218	213	230	225	226	228	231	233	238	240	216	223	227	229	230
80	203	200	194	186	204	199	201	202	207	208	211	215	192	197	202	205	203
81	179	174	167	162	179	174	176	177	180	183	186	190	167	171	177	178	179
82	154	151	144	138	155	151	154	154	159	159	162	166	143	148	153	154	154
83	132	127	122	116	133	129	131	131	133	137	139	141	120	124	129	131	132
84	110	108	100	96	111	107	107	109	111	112	117	119	99	104	109	108	110
85	88	86	81	76	89	88	87	86	90	91	94	98	79	83	88	87	88
86	67	65	61	56	70	67	68	67	70	72	74	78	59	63	67	69	67
87	50	46	43	39	52	49	50	49	50	53	55	58	42	44	47	49	50
88	30	29	26	24	34	33	32	32	34	36	39	41	26	28	31	32	30
89	16	15	15	14	20	19	18	17	19	20	22	27	14	15	18	14	16
90	7	7	8	8	10	10	10	8	8	9	12	15	7	7	9	6	7
91	6	5	3	5	5	5	6	4	6	5	6	8	4	4	5	5	6
92	4	5	4	5	4	4	6	5	5	5	4	5	3	2	5	4	4
93	5	5	5	5	3	4	5	4	5	5	4	5	1	4	5	4	5



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96	4	4	4	4	2	3	5	4	4	4	4	4	2	3	5	4	4
97	5	4	3	4	2	2	5	4	4	4	4	3	3	3	4	4	5
98	4	3	3	3	2	3	4	4	3	4	3	4	2	3	4	3	4
99	4	3	4	4	2	3	4	4	4	3	3	4	2	3	4	3	4
100	4	3	3	4	2	3	4	4	4	4	3	3	3	3	4	3	4
101	4	4	4	4	2	2	4	4	4	3	3	3	3	3	4	3	4
102	3	3	4	3	2	2	4	3	4	3	3	4	2	3	4	3	3
103	4	3	3	3	2	3	4	4	3	3	3	4	1	3	4	3	4
104	3	3	3	3	2	2	5	4	4	3	3	4	2	2	3	3	3
105	4	3	3	3	2	2	4	3	4	3	3	4	2	2	3	3	4
106	3	3	3	3	1	2	4	4	4	3	2	3	2	3	3	3	3
107	4	4	3	3	2	2	4	4	4	3	3	3	2	2	4	3	4
108	4	3	2	3	2	2	4	3	4	3	3	3	2	2	3	3	4
109	3	3	3	3	2	2	4	3	4	3	3	4	2	2	4	3	3
110	4	3	3	3	2	2	4	3	4	3	4	4	2	2	4	3	4
111	3	3	3	2	2	1	4	4	4	4	3	4	2	2	3	3	3
112	3	3	3	3	2	2	3	4	4	2	2	3	2	2	3	2	3
113	3	3	2	2	1	2	4	4	4	3	3	4	2	2	3	3	3
114	4	3	2	3	2	1	4	4	3	4	3	3	2	2	3	3	4
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126	3	2	3	3	1	3	4	3	3	3	3	3	1	2	3	2	3
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158	4	3	3	2	1	2	4	3	4	3	3	3	2	2	3	3	4
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180	4	2	3	3	1	3	3	3	2	3	3	3	2	3	3	3	4



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

Test date	2018-6-15	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FPBL24-40W-50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180601	120.0	60	0.3384	40.21	0.9903	11.63
3E-B2	277.0	60	0.1573	39.89	0.9154	16.76
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	0
Frequency (Hz)	60	R2	90	R10	74
CCT (K)	4949	R3	94	R11	81
Duv	0.00306	R4	82	R12	55
Chromaticity (x, y)	x=0.3472 y=0.3595	R5	82	R13	85
Chromaticity (u', v')	u(u')=0.2098 v'=0.4888	R6	85	R14	97
Color Rendering Index (CRI)	84	R7	88	R15	77
R9	0	R8	69	--	--

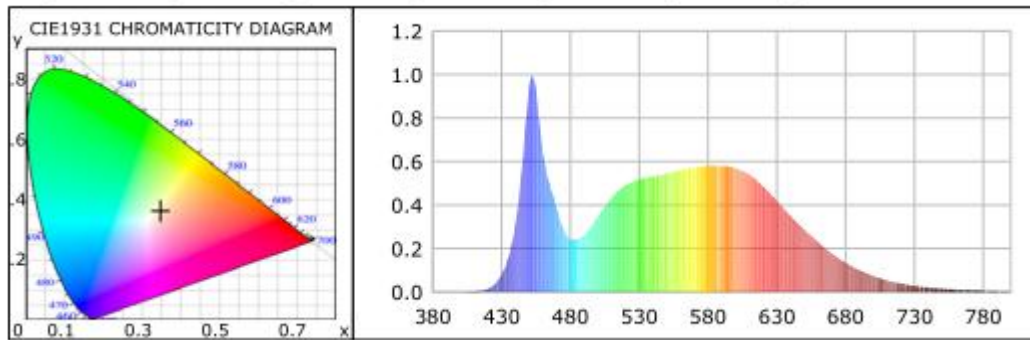
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	5200.76	5174.93	>=2000(-10%)
Luminous Efficacy (lm/W)	129.34	129.73	Premium: >= 125(-3%)
Most worst Luminous/Highest Watts	128.7		



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Spectral Power Distribution & Chromaticity Diagram



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

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
FPBL24-40W-30	4994.19	39.75	125.64
FPBL24-40W-35	5035.50	39.98	125.95
FPBL24-40W-40	5076.82	39.98	126.98
FPBL24-40W-45	5118.13	39.98	128.02
FPBL24-40W-50	5200.76	40.21	129.34



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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 *****