NVLAP LAB CODE 201011-0

LM-79-08 Test Report

Architectural Flood and Spot Luminaires

Model name(s): LF3-50W

Remark:The letter ”X” in the model name stand for CCT as bellow :3=3000K, 4=4000K, 5=5000K, 6=5700K; ”YY” stand for different mounting option as bellow YK=Yoke,KN=Knuckle,MA=Arm; ”ZZ” stand for housing color by use 2 digits to indicate all of color.

Representative (Tested) Model: LF3-50W

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: Jun.09,2015

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

NVLAP LAB CODE 201011-0

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co. Ltd
Date of Test Report	Jun.09,2015
Test Report No.	GZE150320-F
Laboratory Contact Name	Tommy Liang

Model Number	LF3-50W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	--	48.05	W
Input Current	--	0.4112	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9739	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	4906.5	lm
Initial Lumen Efficacy	--	102.12	lm/w
Correlated color temperature / CCT	3042	--	K
Color rendering index / CRI	83.3	--	
R9 Value	10	--	
Duv	0.0010	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	1811	cd
Beam angle (if applicable)		103.7	°
Zonal lumens in the 0 °-60 °zone		80.9	%
Zonal lumens in the 60 °-90 °zone		19	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0.1	%

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Laboratory Information:

Name of Test Laboratory	Standard-Tech Co. Ltd
Date of Test Report	Jun.09,2015
Test Report No.	GZE150320-F
Laboratory Contact Name	Tommy Liang

Model Number	LF3-50W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	47.83	--	W
Input Current	0.4081	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9766	--	
Off-State Power	0	--	W
Photometric Characteristics			
Total Initial Lumen Output	5053	--	lm
Initial Lumen Efficacy	105.64	--	lm/w
Correlated color temperature / CCT	5619	--	K
Color rendering index / CRI	84.3	--	
R9 Value	16	--	
Duv	0.0048	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	------	cd
Beam angle (if applicable)			°
Zonal lumens in the 0 °-60 °zone			%
Zonal lumens in the 60 °-90 °zone			%
Zonal lumens in the 90 °-120 °zone			%
Zonal lumens in the 120 °-180 °zone			%

Test Specifications:	
Date of Receipt	: Jun.05,2014
Date of Test	: Jun.07,2014
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution 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 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. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 ºC ±1 ºC. 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 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Model Number	LF3-50W
Luminaire Type	Architectural Flood and Spot Luminaires
Rated Voltage / Frequency	120~ 277Vac, 50/60Hz
Nominal Power	50W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 4000K, 5000K,5700K
LED Manufacturer	Philips Lumileds
LED Model	LUXEON 3030 2D
Sample Receipt Date	Jun.05,2015
Sample Number	GZE150320-F1(3000K),F2(5700K)
Photo	

2.1 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2015-06-07	**Test Ambient:**	25.2 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	120.1	60	0.4112	48.05	0.9739	19.23
-F1	277.0	60	0.1924	48.12	0.9031	17.63

Sphere-Spectroradiometer Method:

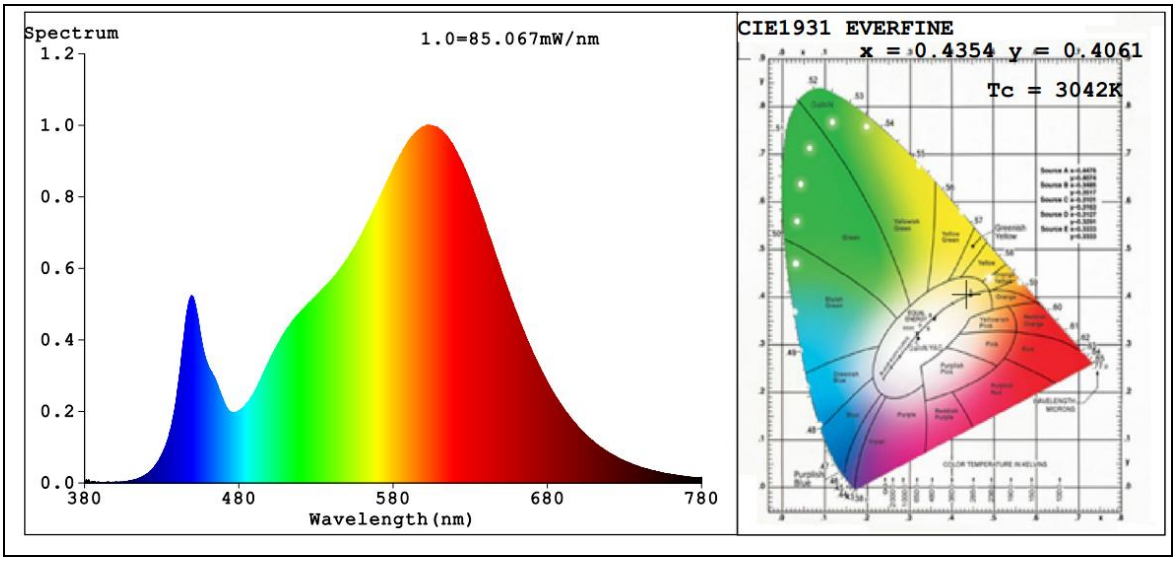
Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Color Rendering Index (CRI)	83.3
R9	10
CCT (K)	3042
Chromaticity (x, y)	x=0.4354 y=0.4061
Chromaticity (u', v')	u'=0.2487 v'=0.5220
Duv	0.0010

Special Color Rendering Indices			
R1	82	R9	10
R2	91	R10	79
R3	97	R11	81
R4	82	R12	72
R5	82	R13	84
R6	89	R14	99
R7	84	R15	74
R8	61	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Total Luminous (lm)	4906.5
Luminous Efficacy (lm/W)	102.12
Beam Angle °	103.7
Center Beam Candle Power (cd)	1811
S/MH(C0/180)	1.32
S/MH(C90/270)	1.06

Spectral Power Distribution & Chromaticity Diagram

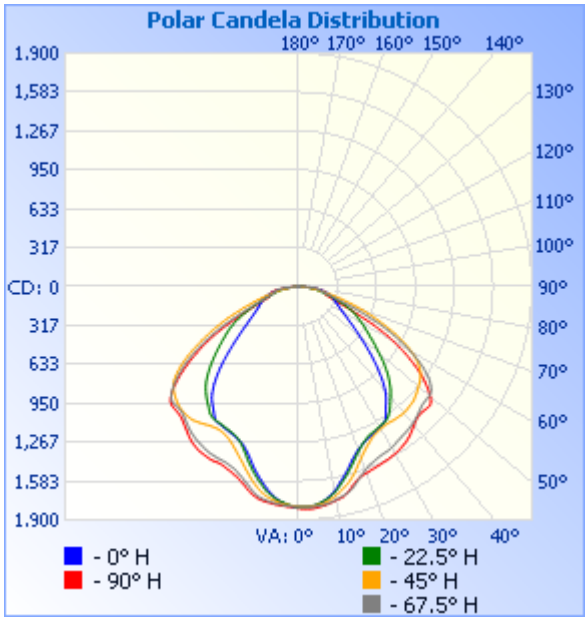


Zonal Lumen Tabulation

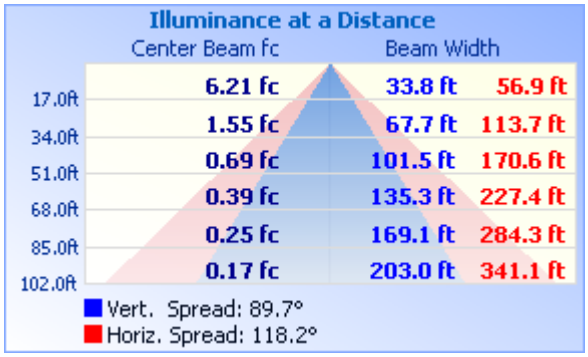
Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Luminaire
0-30	1,278.6	26.1%	26.1%
0-40	2,135.3	43.5%	43.5%
0-60	3,967.5	80.9%	80.9%
60-90	931.6	19%	19%
70-100	367.7	7.5%	7.5%
90-120	2.1	0%	0%
0-90	4,899.2	99.9%	99.9%
90-180	6.8	0.1%	0.1%
0-180	4,905.9	100%	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	167.6	3.4%	90-100	1.2	0%
10-20	450.2	9.2%	100-110	0.2	0%
20-30	660.7	13.5%	110-120	0.7	0%
30-40	856.7	17.5%	120-130	0.9	0%
40-50	951.1	19.4%	130-140	1.1	0%
50-60	881.2	18.0%	140-150	1.0	0%
60-70	565.2	11.5%	150-160	0.9	0%
70-80	267.1	5.4%	160-170	0.6	0%
80-90	99.4	2.0%	170-180	0.2	0%

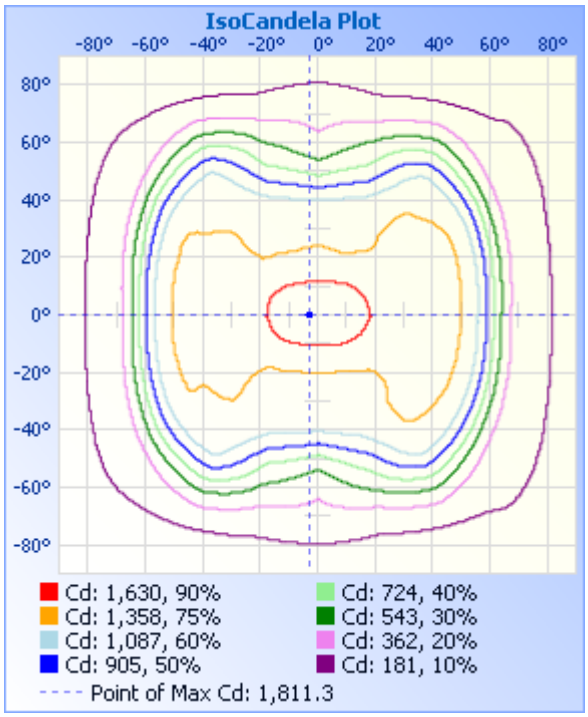
Photometric Data



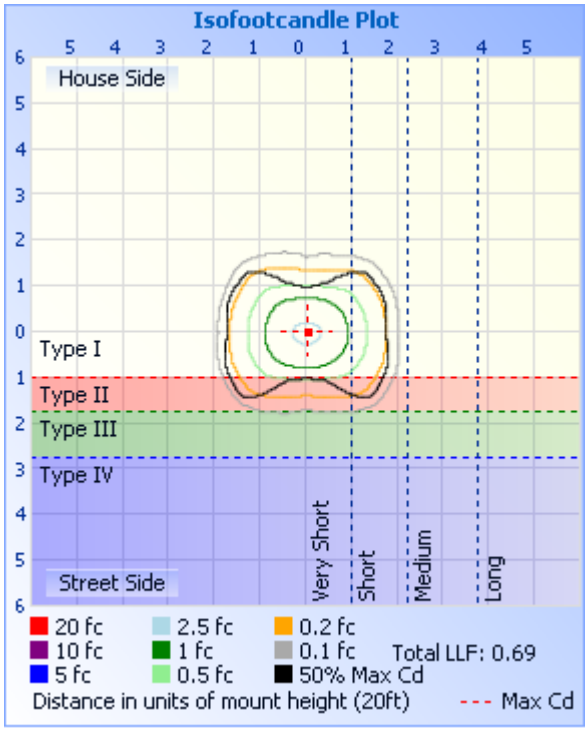
Illuminance Plots



ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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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	1796	1794	1790	1790	1804	1803	1798	1798	1796	1794	1790	1790	1804	1803	1798	1798	1796
1	1796	1793	1791	1792	1809	1804	1794	1794	1792	1789	1787	1790	1800	1800	1798	1798	1796
2	1797	1792	1793	1793	1811	1804	1790	1785	1786	1782	1783	1789	1795	1798	1796	1795	1797
3	1793	1791	1792	1794	1811	1800	1783	1778	1775	1772	1779	1786	1792	1797	1793	1792	1793
4	1786	1785	1788	1795	1809	1795	1773	1766	1765	1762	1775	1784	1789	1794	1791	1785	1786
5	1777	1778	1784	1793	1804	1788	1763	1749	1753	1752	1767	1779	1787	1791	1784	1778	1777
6	1768	1765	1780	1790	1797	1778	1753	1728	1735	1740	1758	1775	1783	1787	1780	1767	1768
7	1752	1753	1771	1786	1791	1771	1742	1712	1711	1722	1748	1770	1778	1782	1772	1753	1752
8	1731	1739	1759	1779	1783	1763	1729	1690	1689	1704	1736	1764	1774	1774	1761	1742	1731
9	1713	1718	1746	1771	1775	1756	1714	1669	1662	1681	1721	1757	1769	1766	1750	1723	1713
10	1689	1698	1729	1760	1765	1750	1695	1643	1634	1657	1703	1748	1764	1758	1739	1701	1689
11	1659	1674	1711	1750	1757	1740	1674	1618	1604	1627	1683	1736	1754	1749	1725	1679	1659
12	1626	1645	1692	1740	1748	1730	1653	1592	1576	1601	1660	1720	1741	1738	1709	1654	1626
13	1600	1618	1672	1729	1729	1717	1629	1564	1545	1573	1635	1698	1724	1724	1690	1625	1600
14	1569	1593	1653	1716	1708	1697	1606	1535	1513	1543	1608	1674	1704	1704	1666	1593	1569
15	1542	1562	1629	1699	1684	1671	1580	1505	1478	1512	1579	1652	1683	1681	1640	1564	1542
16	1510	1534	1603	1675	1661	1644	1552	1476	1446	1481	1550	1631	1662	1658	1610	1535	1510
17	1480	1505	1575	1652	1641	1621	1523	1444	1417	1448	1522	1612	1644	1637	1579	1503	1480
18	1457	1478	1543	1628	1627	1600	1495	1416	1393	1417	1495	1594	1629	1618	1546	1472	1457
19	1434	1449	1512	1606	1618	1582	1466	1389	1370	1390	1472	1579	1616	1604	1519	1443	1434
20	1414	1425	1486	1587	1614	1569	1441	1366	1354	1365	1449	1568	1606	1592	1494	1418	1414
21	1399	1404	1461	1571	1608	1558	1417	1346	1343	1344	1427	1560	1597	1581	1472	1396	1399
22	1385	1385	1438	1560	1603	1546	1395	1333	1333	1329	1407	1552	1588	1573	1450	1378	1385
23	1372	1370	1417	1551	1600	1537	1376	1323	1325	1317	1388	1547	1580	1565	1431	1359	1372
24	1362	1355	1399	1542	1595	1530	1360	1313	1317	1310	1372	1545	1576	1562	1414	1344	1362
25	1354	1344	1382	1535	1591	1527	1346	1307	1312	1304	1359	1544	1576	1559	1400	1336	1354
26	1347	1337	1367	1528	1587	1526	1335	1301	1305	1299	1349	1541	1578	1557	1389	1330	1347
27	1339	1331	1355	1525	1585	1524	1327	1298	1301	1294	1340	1539	1579	1559	1380	1324	1339
28	1332	1326	1348	1523	1581	1519	1320	1295	1297	1290	1335	1535	1574	1555	1374	1321	1332
29	1327	1320	1340	1519	1575	1513	1318	1290	1291	1286	1332	1530	1571	1550	1368	1319	1327

30	1321	1316	1335	1512	1570	1507	1315	1284	1289	1283	1333	1524	1567	1546	1369	1315	1321
31	1316	1310	1331	1507	1565	1501	1317	1277	1288	1282	1335	1518	1563	1543	1371	1310	1316
32	1308	1307	1328	1499	1558	1496	1319	1274	1278	1281	1340	1511	1557	1541	1375	1303	1308
33	1294	1301	1329	1491	1551	1489	1322	1271	1259	1278	1345	1503	1549	1537	1379	1297	1294
34	1269	1293	1330	1485	1542	1481	1326	1261	1234	1271	1353	1495	1540	1532	1383	1286	1269
35	1238	1278	1332	1478	1533	1474	1330	1244	1211	1258	1361	1486	1528	1527	1388	1274	1238
36	1209	1258	1333	1473	1522	1467	1333	1222	1193	1239	1369	1477	1514	1520	1393	1256	1209
37	1183	1236	1335	1467	1509	1459	1337	1199	1172	1219	1377	1467	1498	1513	1398	1232	1183
38	1156	1210	1336	1462	1494	1449	1341	1180	1149	1202	1383	1455	1483	1505	1402	1209	1156
39	1128	1187	1338	1455	1479	1437	1344	1162	1119	1186	1387	1441	1469	1496	1404	1188	1128
40	1094	1165	1337	1449	1464	1424	1345	1142	1085	1168	1389	1428	1455	1484	1401	1165	1094
41	1056	1141	1336	1443	1451	1412	1342	1119	1048	1150	1389	1415	1441	1470	1398	1144	1056
42	1015	1117	1331	1433	1441	1398	1341	1098	1007	1130	1386	1404	1430	1456	1394	1121	1015
43	971	1091	1326	1423	1434	1385	1337	1073	964	1109	1385	1395	1424	1444	1389	1093	971
44	928	1062	1323	1412	1432	1375	1330	1044	920	1085	1382	1390	1421	1434	1381	1064	928
45	884	1033	1319	1403	1433	1368	1319	1012	874	1058	1377	1388	1418	1424	1370	1036	884
46	841	1001	1311	1394	1437	1364	1308	980	827	1029	1369	1390	1417	1418	1355	1004	841
47	797	968	1301	1389	1440	1364	1295	945	779	999	1359	1392	1413	1414	1340	972	797
48	756	935	1292	1387	1440	1368	1285	911	736	968	1350	1389	1402	1414	1326	940	756
49	717	901	1282	1387	1427	1371	1275	874	696	935	1339	1376	1381	1411	1312	906	717
50	679	866	1272	1387	1402	1370	1265	839	656	903	1326	1353	1349	1401	1299	873	679
51	642	833	1262	1382	1368	1360	1254	805	619	871	1312	1320	1311	1380	1287	839	642
52	609	801	1252	1369	1329	1342	1239	771	585	841	1294	1284	1267	1349	1273	808	609
53	578	770	1241	1348	1288	1316	1223	738	553	811	1270	1243	1219	1315	1255	779	578
54	549	742	1228	1323	1244	1286	1205	707	525	781	1238	1198	1164	1273	1234	752	549
55	521	713	1211	1292	1194	1250	1182	678	500	753	1202	1151	1108	1229	1208	725	521
56	496	687	1190	1251	1138	1208	1155	650	477	726	1159	1101	1052	1177	1175	700	496
57	473	663	1165	1209	1080	1157	1119	624	456	700	1113	1048	993	1122	1138	677	473
58	452	640	1136	1162	1021	1105	1080	601	437	675	1064	990	934	1068	1096	655	452
59	433	617	1103	1108	960	1051	1037	577	420	647	1010	931	869	1013	1051	633	433
60	415	596	1064	1053	896	996	989	553	404	618	957	866	802	955	1001	611	415
61	399	575	1021	993	829	941	937	529	391	587	902	800	729	894	951	586	399

62	386	554	975	934	756	879	883	504	378	554	847	733	653	826	898	562	386
63	373	533	925	874	678	815	829	478	368	521	792	661	582	759	845	537	373
64	362	511	872	810	601	752	776	452	358	488	738	592	513	688	792	511	362
65	352	488	818	744	529	683	722	426	350	454	685	526	454	618	740	484	352
66	342	463	763	675	465	614	667	401	342	420	631	466	401	549	687	455	342
67	332	438	708	603	409	547	615	376	334	389	577	415	357	486	636	426	332
68	324	412	654	535	362	482	565	352	327	358	525	370	323	430	586	397	324
69	316	385	602	474	325	427	516	330	320	329	475	332	296	381	538	367	316
70	308	358	550	418	297	380	469	308	312	304	429	301	274	340	489	340	308
71	300	331	499	368	275	339	425	287	303	280	387	277	257	307	440	312	300
72	292	305	449	326	257	304	382	268	293	259	349	258	244	282	396	288	292
73	283	281	402	294	242	277	343	251	283	240	315	240	235	262	354	265	283
74	275	258	358	269	232	256	308	234	271	223	283	226	228	244	316	244	275
75	266	237	319	249	225	237	275	218	258	207	254	214	225	228	283	224	266
76	257	218	283	231	222	221	246	203	243	192	228	204	224	215	251	206	257
77	246	201	251	216	221	207	219	190	228	178	204	197	225	204	223	190	246
78	236	184	221	202	219	194	194	176	211	165	181	192	223	196	198	175	236
79	223	169	196	191	214	184	171	164	193	152	160	190	216	190	176	160	223
80	208	155	173	183	205	176	151	151	171	139	139	186	203	187	155	147	208
81	190	141	152	178	190	171	132	137	148	125	120	178	187	183	135	133	190
82	169	127	132	174	174	166	114	122	125	111	102	165	166	173	117	119	169
83	148	112	114	165	154	158	98	106	101	95	86	149	144	160	99	104	148
84	122	97	97	154	132	145	83	88	76	77	70	133	120	146	83	90	122
85	95	81	81	142	109	130	68	68	55	59	54	115	96	131	67	74	95
86	71	65	66	128	86	115	52	50	43	43	41	97	72	114	51	58	71
87	53	50	50	112	63	98	40	38	36	37	29	80	49	97	38	44	53
88	45	39	37	96	41	83	29	34	31	31	17	47	28	80	28	37	45
89	41	34	27	82	21	55	18	26	20	17	8	18	11	43	17	33	41
90	29	28	16	51	8	24	8	6	1	0	0	4	5	16	8	21	29
91	3	7	7	22	5	5	0	0	0	0	0	0	3	3	0	0	3
92	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
105	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
106	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
107	6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6
108	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
109	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
110	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
111	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	8
112	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	8
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114	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	8
115	8	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	8
116	8	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	8
117	8	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	8
118	9	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	9
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121	9	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	9
122	9	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	9
123	9	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	9
124	9	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	9
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126	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	0
127	6	0	0	0	1	1	1	0	1	1	1	1	1	0	0	1	6
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130	7	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	7
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179	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	3
180	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

NVLAP LAB CODE 201011-0

BUG Rating: B2-U1-G1

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	645.62	13.2
FM - Front-Medium(30-60)	1351.7	27.5
FH - Front-High(60-80)	430.34	8.8
FVH - Front-Very High(80-90)	52.981	1.1
Total Forward Light	2484.5	50.6

BL - Back-Low(0-30)	633.01	12.9
BM - Back-Medium(30-60)	1337.8	27.3
BH - Back-High(60-80)	401.88	8.2
BVH - Back-Very High(80-90)	46.402	0.9
Total Back Light	2422	49.4

UL - Uplight-Low(90-100)	1.2013	0.0
UH - Uplight-High(100-180)	5.5608	0.1
Total Up Light	6.7621	0.1

BUG(Back,Up,Glare) Rating	B2-U1-G1

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	2480.6	3.8696	2484.5
Street Side	2419.1	2.8925	2422

Test Voltage:277V

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320 -F1	277.0	60	0.1924	48.12	0.9031	17.63

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4820.4
Luminous Efficacy (lm/W)	100.18
Beam Angle °	103.3
Center Beam Candle Power (cd)	1780
S/MH(C0/180)	1.32
S/MH(C90/270)	1.05

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2.2 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2015-06-07	**Test Ambient:**	25.2 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90

Electrical Measurement:

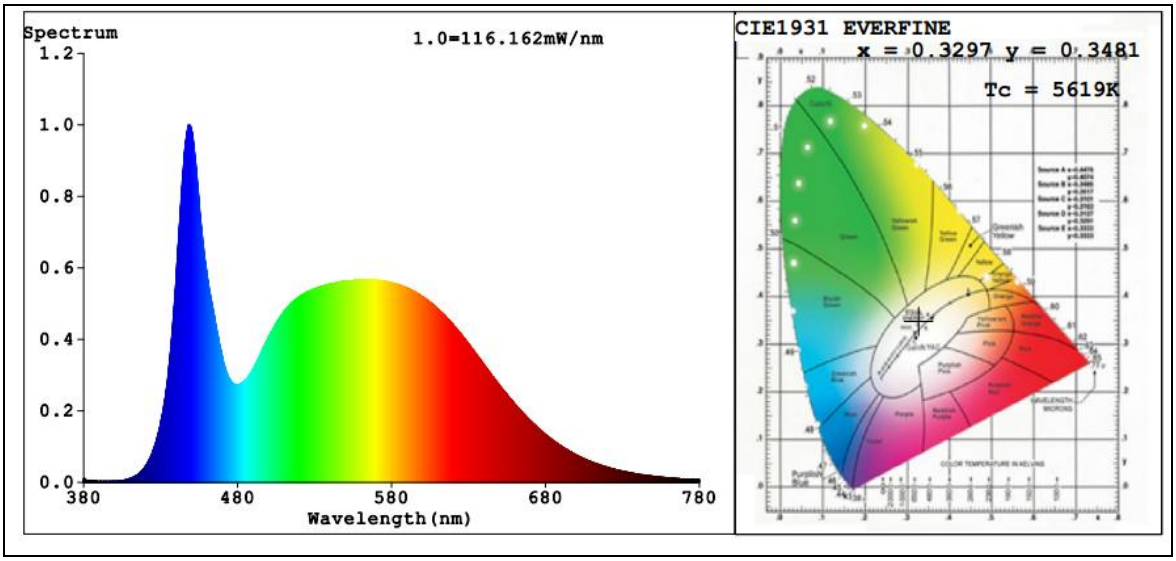
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	120.0	60	0.4081	47.83	0.9766	19.57
-F2	277.0	60	0.1914	47.91	0.9036	16.49

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.3
R9	16
CCT (K)	5619
Chromaticity (x, y)	x=0.3297 y=0.3481
Chromaticity (u', v')	u'=0.2023 v'=0.4807
Duv	0.0048
Total Luminous (lm)	5053
Luminous Efficacy (lm/W)	105.64

Special Color Rendering Indices			
R1	82	R9	16
R2	88	R10	71
R3	92	R11	84
R4	85	R12	64
R5	83	R13	84
R6	84	R14	96
R7	89	R15	78
R8	72	--	--

Spectral Power Distribution & Chromaticity Diagram



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2014-07-01	2015-06-30
ST-R-331	Spectral analysis system HAAS-2000	2014-07-01	2015-06-30
D204	Standard Lamp	2014-07-01	2015-06-30
PF2010	Power Meter for Integrating Sphere	2014-07-01	2015-06-30
EE-09	Goniophotometer system	2014-07-01	2015-06-30
D908S	Standard Lamp	2014-07-01	2015-06-30
PF210	Power Meter for Goniophotometer	2014-07-01	2015-06-30
ST-R-181A	Temperature Tester	2014-07-01	2015-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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