



Report No.: STD160203NB-F

LM-79-08 Test Report

For

CEA GROUP INTERNATIONAL CO.,LTD

(Brand Name:CEA EAEC)

Sanjiali Industrial Zone Zhucheng Road Panshi North baixiang Yueqing Zhejiang China

Fuel Pump Canopy Luminaires

Model name(s): CNL5-50

Representative (Tested) Model: CNL5-50(2700K)
CNL5-50(5700K)

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: Jun.01,2016

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.

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-H/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

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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.01,2016
Test Report No.	STD160203NB-F
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	CNL5-50(2700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	

	Integrating Sphere	Goniophotometer
Electrical Measurements:	Output	Output

Input Wattage	--	48.13	W
Input Current	--	0.4102	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9778	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	5057.6	lm
Initial Lumen Efficacy	--	105.08	lm/w
Correlated color temperature / CCT	2719	--	K
Color rendering index / CRI	80.0	--	
R9 Value	0	--	
Duv	0.0009	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	---	1912	cd
Beam angle (if applicable)		102.2	°
Zonal lumens in the 0 °-60 °zone		79.8	%
Zonal lumens in the 60 °-90 °zone		19.5	%
Zonal lumens in the 90 °-120 °zone		0.4	%
Zonal lumens in the 120 °-180 °zone		0.3	%

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Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	CNL5-50(5700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	

	Integrating Sphere	Goniophotometer	
Electrical Measurements:	Output	Output	
Input Wattage	48.63	--	W
Input Current	0.4143	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9782	--	
Off-State Power	0	--	W
Photometric Characteristics			
Total Initial Lumen Output	5186	--	lm
Initial Lumen Efficacy	106.64	--	lm/w
Correlated color temperature / CCT	5339	--	K
Color rendering index / CRI	85.7	--	
R9 Value	22	--	
Duv	-0.0030	--	
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			%

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Date of Receipt	:May.25,2016
Date of Test	: May.27,2016
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:

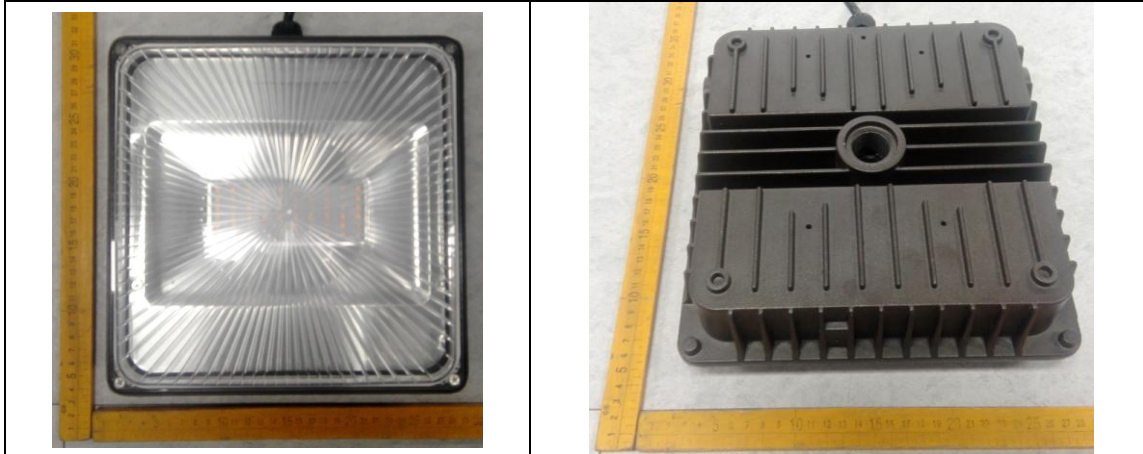
Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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:

Brand Name	CEA EAEC
Model Number	CNL5-50
Luminaire Type	Fuel Pump Canopy Luminaires
Rated Voltage / Frequency	100 ~ 277 Vac, 50/60Hz
Nominal Power	30W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K
LED Manufacturer	Guangdong LcLed Lighting Co.,LTD.
LED Model	SMD LED
Sample Receipt Date	May.25,2016
Sample Number	STD160203NB-F1(2700K),F2(5700K)

Photo


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

Test date	2016-05-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CNL5-50(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.4102	48.13	0.9778	8.83
NB-F1	277.0	60	0.1852	46.30	0.9043	14.96

Color Data:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	80.0
R9	0
CCT (K)	2719
Chromaticity (x, y)	x=0.4599 y=0.4131
Chromaticity (u', v')	u'=0.2614 v'=0.5283
Duv	0.0009

Special Color Rendering Indices			
R1	78	R9	0
R2	90	R10	78
R3	95	R11	75
R4	78	R12	70
R5	79	R13	80
R6	88	R14	98
R7	80	R15	69
R8	52	--	--

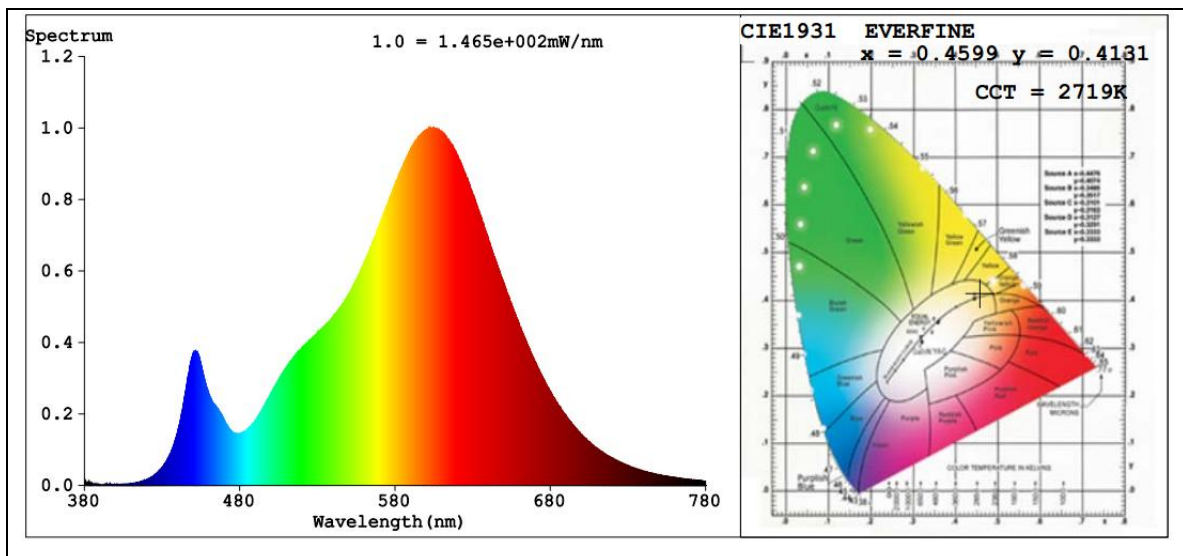
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	5057.6
Luminous Efficacy (lm/W)	105.08
Beam Angle °	102.2
Center Beam Candle Power (cd)	1912

Goniophotometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4921.6
Luminous Efficacy (lm/W)	106.07

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,454.1	28.8%
0-40	2,334.2	46.2%
0-60	4,034.0	79.8%
60-90	985.7	19.5%
70-100	409.3	8.1%
90-120	21.5	0.4%
0-90	5,019.7	99.3%
90-180	37.3	0.7%
0-180	5,057.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	182.0	3.6%	90-100	6.5	0.1%
10-20	512.7	10.1%	100-110	7.0	0.1%
20-30	759.4	15.0%	110-120	8.1	0.2%
30-40	880.1	17.4%	120-130	8.5	0.2%
40-50	890.5	17.6%	130-140	3.8	0.1%
50-60	809.3	16.0%	140-150	1.5	0%
60-70	582.8	11.5%	150-160	1.0	0%
70-80	316.6	6.3%	160-170	0.7	0%
80-90	86.3	1.7%	170-180	0.3	0%

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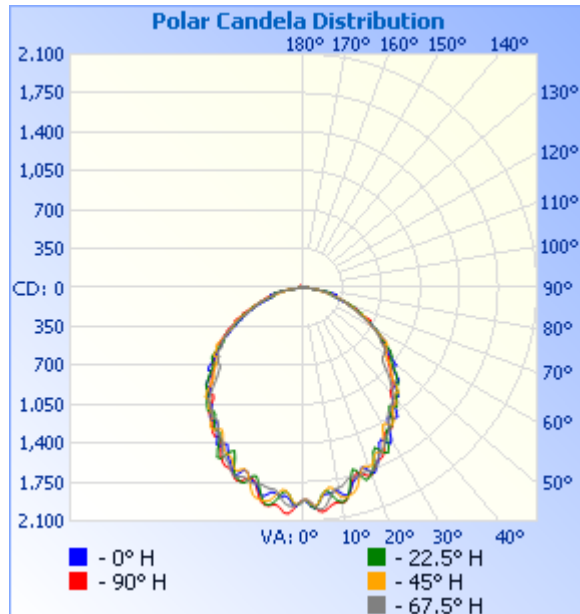
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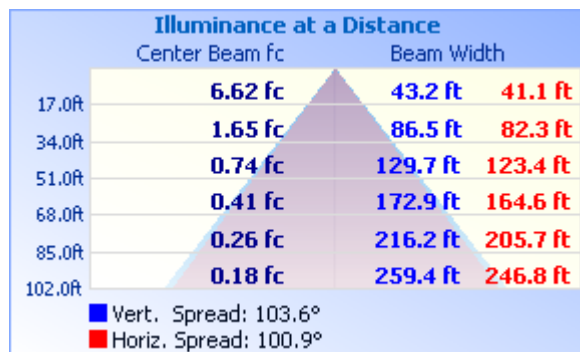
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Photometric Data



Illuminance Plots



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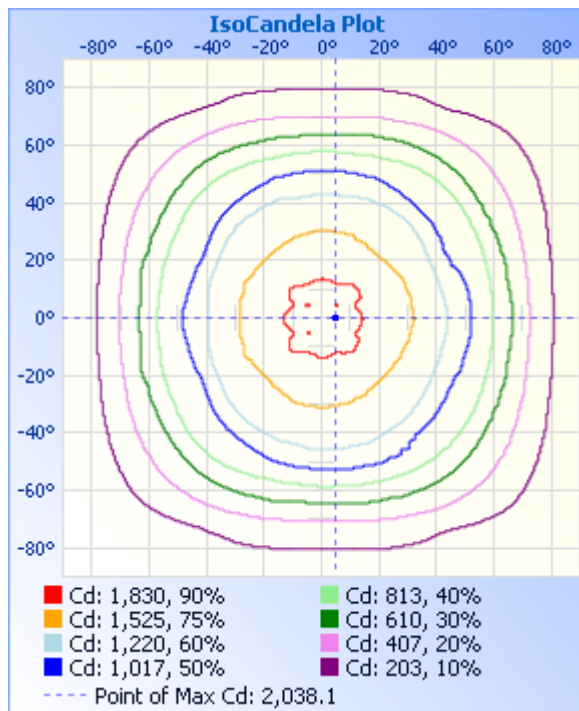
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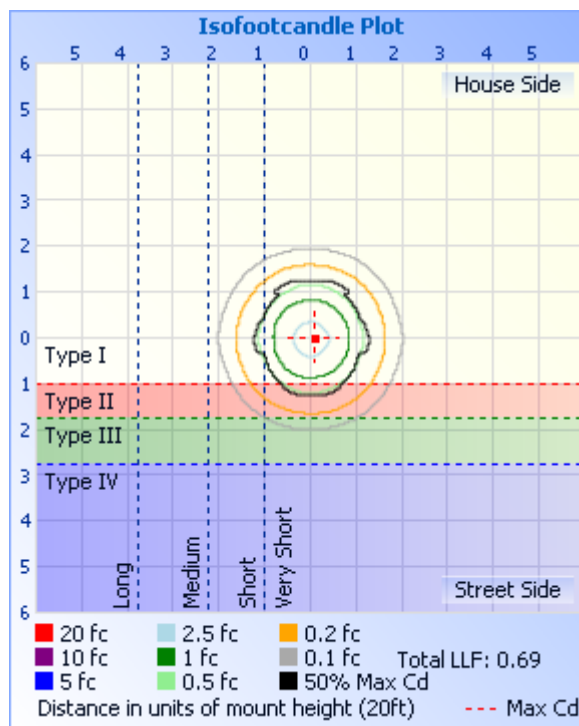
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ISOCANDELA DIAGRAM



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	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912	1912
1	1930	1922	1913	1909	1912	1917	1926	1938	1941	1942	1938	1932	1928	1931	1932	1932	1930
2	1972	1965	1948	1936	1938	1942	1950	1966	1966	1958	1949	1957	1967	1971	1962	1967	1972
3	1986	1987	1970	1976	1982	1964	1940	1950	1949	1927	1920	1970	2011	1999	1963	1963	1986
4	1942	1941	1940	2000	2015	1963	1891	1897	1900	1866	1868	1966	2038	2005	1920	1906	1942
5	1887	1874	1884	1996	2023	1940	1837	1852	1880	1836	1831	1947	2033	1987	1871	1850	1887
6	1868	1837	1839	1967	2008	1898	1805	1855	1887	1858	1829	1910	1997	1949	1830	1833	1868
7	1866	1850	1813	1913	1981	1851	1820	1898	1884	1908	1858	1867	1971	1902	1818	1863	1866
8	1859	1895	1816	1859	1961	1829	1867	1949	1865	1956	1898	1836	1972	1862	1845	1920	1859
9	1850	1938	1862	1830	1956	1830	1918	1975	1861	1980	1936	1832	1986	1846	1895	1968	1850
10	1866	1960	1909	1828	1965	1825	1941	1974	1888	1979	1950	1830	1988	1842	1932	1978	1866
11	1902	1957	1924	1818	1961	1811	1930	1942	1912	1947	1953	1821	1968	1831	1939	1956	1902
12	1912	1926	1922	1792	1927	1793	1911	1875	1893	1878	1944	1810	1928	1808	1937	1913	1912
13	1873	1849	1909	1767	1874	1777	1909	1797	1841	1805	1936	1810	1861	1799	1939	1848	1873
14	1815	1755	1894	1758	1806	1772	1904	1726	1808	1750	1911	1815	1801	1807	1932	1767	1815
15	1788	1694	1862	1769	1758	1779	1861	1723	1797	1752	1853	1819	1779	1810	1895	1705	1788
16	1766	1709	1804	1775	1735	1778	1788	1782	1773	1802	1781	1807	1779	1803	1835	1730	1766
17	1732	1775	1743	1762	1740	1759	1729	1835	1734	1837	1732	1788	1802	1785	1780	1809	1732
18	1699	1819	1706	1746	1768	1738	1700	1838	1721	1835	1715	1789	1830	1763	1758	1847	1699
19	1717	1809	1699	1744	1791	1746	1697	1815	1760	1822	1732	1802	1837	1769	1759	1818	1717
20	1767	1783	1713	1757	1790	1764	1711	1792	1802	1804	1753	1803	1822	1791	1757	1794	1767
21	1786	1754	1711	1760	1764	1768	1703	1739	1785	1748	1743	1789	1785	1796	1741	1771	1786
22	1749	1684	1675	1745	1724	1745	1663	1652	1733	1650	1702	1760	1757	1778	1708	1703	1749
23	1704	1604	1635	1701	1698	1700	1628	1602	1697	1593	1662	1720	1754	1736	1682	1621	1704
24	1666	1575	1622	1657	1690	1667	1620	1625	1669	1615	1649	1698	1749	1708	1672	1594	1666
25	1613	1608	1636	1637	1680	1658	1622	1663	1614	1669	1645	1683	1726	1710	1670	1633	1613
26	1551	1653	1634	1624	1652	1647	1605	1681	1569	1711	1630	1658	1691	1699	1648	1672	1551
27	1534	1668	1595	1600	1605	1609	1565	1670	1576	1711	1591	1612	1638	1663	1606	1685	1534
28	1573	1628	1538	1556	1543	1557	1514	1618	1616	1647	1550	1564	1583	1618	1561	1648	1573
29	1605	1548	1473	1526	1501	1526	1465	1549	1611	1560	1500	1537	1549	1593	1511	1568	1605

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30	1578	1490	1425	1516	1488	1517	1440	1513	1554	1511	1475	1527	1545	1575	1461	1514	1578
31	1505	1476	1425	1501	1494	1495	1436	1511	1499	1503	1482	1506	1555	1531	1450	1519	1505
32	1431	1480	1457	1457	1490	1445	1450	1506	1457	1503	1506	1456	1541	1464	1468	1528	1431
33	1393	1471	1468	1392	1470	1393	1460	1481	1436	1482	1516	1422	1502	1417	1491	1493	1393
34	1400	1421	1448	1360	1423	1368	1449	1426	1444	1434	1503	1420	1457	1400	1482	1424	1400
35	1434	1344	1409	1356	1378	1361	1402	1373	1459	1388	1453	1424	1442	1390	1431	1354	1434
36	1437	1315	1359	1336	1355	1343	1359	1361	1435	1376	1407	1405	1433	1361	1383	1341	1437
37	1381	1343	1339	1315	1339	1311	1350	1378	1384	1398	1386	1377	1411	1341	1368	1367	1381
38	1307	1363	1340	1299	1311	1284	1347	1371	1343	1400	1384	1355	1362	1334	1362	1381	1307
39	1273	1334	1319	1284	1254	1272	1308	1345	1331	1377	1350	1342	1294	1315	1335	1364	1273
40	1290	1300	1271	1262	1215	1256	1270	1324	1335	1352	1320	1325	1264	1284	1312	1345	1290
41	1297	1283	1259	1216	1206	1211	1271	1312	1318	1327	1324	1282	1276	1237	1314	1329	1297
42	1258	1266	1270	1172	1206	1170	1271	1284	1269	1292	1319	1229	1274	1193	1300	1289	1258
43	1199	1226	1231	1143	1190	1133	1227	1247	1234	1266	1269	1175	1242	1167	1249	1244	1199
44	1178	1216	1164	1104	1149	1092	1165	1222	1234	1260	1194	1121	1191	1133	1201	1217	1178
45	1202	1201	1121	1056	1113	1052	1126	1205	1243	1238	1146	1091	1170	1098	1181	1195	1202
46	1192	1162	1099	1012	1083	1014	1106	1182	1197	1197	1129	1050	1154	1056	1163	1171	1192
47	1123	1141	1079	974	1066	988	1082	1150	1132	1164	1111	1028	1117	1016	1133	1147	1123
48	1071	1099	1054	957	1036	962	1061	1110	1114	1125	1079	1024	1074	993	1081	1125	1071
49	1070	1056	1012	943	1004	962	1013	1075	1132	1079	1046	1020	1067	991	1016	1097	1070
50	1087	1032	964	944	996	957	962	1053	1116	1060	1008	1008	1071	986	973	1070	1087
51	1036	1012	939	936	986	936	939	1027	1054	1052	996	978	1037	992	960	1031	1036
52	973	1009	942	928	953	928	943	1009	999	1046	1007	978	1005	1000	962	1004	973
53	969	985	942	923	917	926	944	988	991	1032	1011	970	986	978	952	980	969
54	943	960	914	882	903	904	925	973	949	987	980	917	957	939	932	969	943
55	878	915	894	848	873	863	910	931	894	925	952	898	912	924	939	939	878
56	874	859	910	835	849	849	923	871	887	871	951	888	918	903	961	889	874
57	872	821	877	815	835	827	901	825	876	853	925	861	899	860	934	846	872
58	814	821	818	783	800	785	847	804	805	841	848	833	863	839	875	816	814
59	779	784	777	756	776	780	787	786	774	810	797	816	829	800	836	802	779
60	758	753	734	723	743	737	738	754	750	763	764	773	790	770	779	778	758
61	698	705	688	704	691	706	684	700	687	723	730	751	782	720	708	729	698

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62	691	676	663	657	661	649	662	672	685	695	705	714	725	681	686	695	691
63	634	641	650	615	631	619	652	641	624	653	696	677	675	651	656	652	634
64	613	612	620	572	674	576	621	624	613	637	667	639	689	609	645	640	613
65	572	576	583	538	583	545	591	587	564	595	619	575	659	547	606	613	572
66	547	579	538	538	535	538	544	580	557	594	573	567	589	557	570	607	547
67	516	528	504	477	538	474	513	521	507	534	542	525	588	511	546	541	516
68	484	475	479	441	509	454	481	484	478	491	510	483	532	477	506	505	484
69	447	483	443	433	445	445	447	491	450	501	482	464	490	480	476	501	447
70	414	443	416	421	437	415	424	431	419	451	460	449	472	448	456	447	414
71	373	408	393	388	394	403	404	395	382	413	437	427	430	419	421	424	373
72	329	369	370	375	367	368	373	361	334	382	402	416	408	380	391	375	329
73	304	316	340	332	343	329	347	313	300	334	370	363	383	348	360	322	304
74	284	280	314	298	308	298	317	283	288	290	339	337	361	320	327	293	284
75	274	252	283	272	293	276	288	257	281	274	314	313	340	310	301	265	274
76	289	235	259	256	268	263	248	241	293	253	274	296	321	285	257	245	289
77	302	237	224	229	242	239	212	241	307	256	239	281	295	265	220	249	302
78	300	244	186	207	212	212	182	256	301	266	204	254	253	241	195	263	300
79	268	246	160	185	191	186	162	243	268	266	178	223	232	209	172	256	268
80	208	218	150	164	173	167	152	215	212	239	168	199	218	192	162	230	208
81	149	167	143	148	153	148	153	174	158	189	165	179	187	174	157	177	149
82	104	122	132	130	123	126	138	127	113	138	161	153	146	149	151	127	104
83	72	84	110	105	96	99	109	82	67	87	129	121	112	117	126	87	72
84	55	59	84	79	70	76	79	55	55	58	90	87	82	85	89	59	55
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87	45	44	41	43	40	42	39	43	45	44	41	41	38	42	40	43	45
88	41	40	36	35	32	34	34	39	41	40	36	36	33	35	35	39	41
89	36	35	32	27	25	26	30	34	36	35	31	27	24	27	31	35	36
90	30	30	27	23	21	22	25	27	30	29	27	23	21	23	26	28	30
91	18	15	21	19	18	18	17	6	15	14	21	19	18	18	20	10	18
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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

IES LM-79 2008

Test date	2016-05-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CNL5-50(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.4143	48.63	0.9782	8.64
NB-F2	277.0	60	0.1867	46.78	0.9047	14.77

Sphere-Spectroradiometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	85.7
R9	22
CCT (K)	5339
Chromaticity (x, y)	x=0.3360 y=0.3384
Chromaticity (u', v')	u'=0.2104 v'=0.4767
Duv	-0.0030
Total Initial Lumen Output(lm)	5186
Initial Lumen Efficacy(lm/w)	106.64

Special Color Rendering Indices			
R1	85	R9	22
R2	90	R10	76
R3	92	R11	86
R4	86	R12	65
R5	86	R13	87
R6	85	R14	96
R7	88	R15	82
R8	72	--	--

Sphere-Spectroradiometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	5047
Initial Lumen Efficacy(lm/w)	107.89

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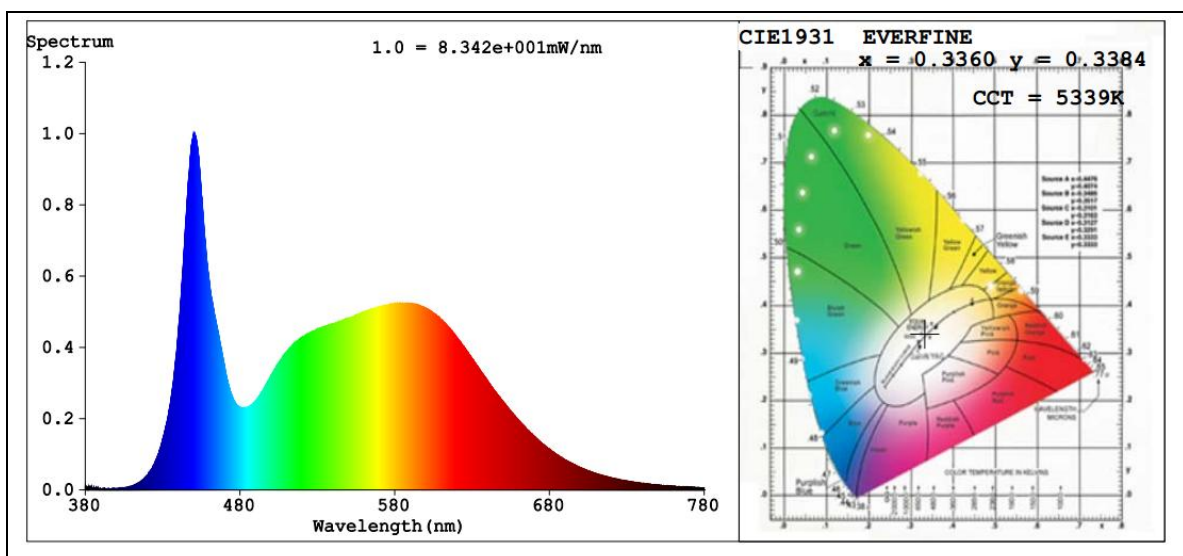
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Spectral Power Distribution & Chromaticity Diagram



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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