NVLAP LAB CODE 201011-0

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

Low-Bay Luminaires for Commercial and Industrial buildings

Model name(s): CNL1-100

Representative (Tested) Model: CNL1-100(2700K)
CNL1-100(5700K)

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

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date:Dec.24,2015

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	Dec.24,2015
Test Report No.	STD150803NB-J
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	CNL1-100(2700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Low-Bay Luminaires for Commercial and Industrial buildings	
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	--	96.86	W
Input Current	--	0.8210	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9831	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	7753.0	lm
Initial Lumen Efficacy	--	80.04	lm/w
Correlated color temperature / CCT	2744		K
Color rendering index / CRI	81.6		
R9 Value	5		
Duv	-0.0042		
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	1724	cd
Beam angle (if applicable)		132.5	°
Zonal lumens in the 0 °-60 °zone		68.1	%
Zonal lumens in the 60 °-90 °zone		24.5	%
Zonal lumens in the 90 °-120 °zone		5.1	%
Zonal lumens in the 120 °-180 °zone		2.3	%

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Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Dec.24,2015
Test Report No.	STD150803NB-J
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	CNL1-100(5700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Low-Bay Luminaires for Commercial and Industrial buildings	
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	96.75	--	W
Input Current	0.8194	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9840	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	8140	--	lm
Initial Lumen Efficacy	84.12	--	lm/w
Correlated color temperature / CCT	5673	--	K
Color rendering index / CRI	87.9	--	
R9 Value	32	--	
Duv	0.0000	--	
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	: Oct.18,2015
Date of Test	: Oct.20,2015
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:

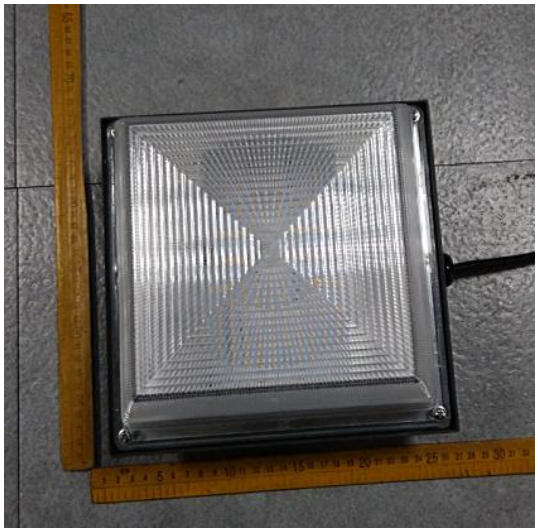
Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ±1 °C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 °vertical intervals and 22.5 °horizontal intervals.

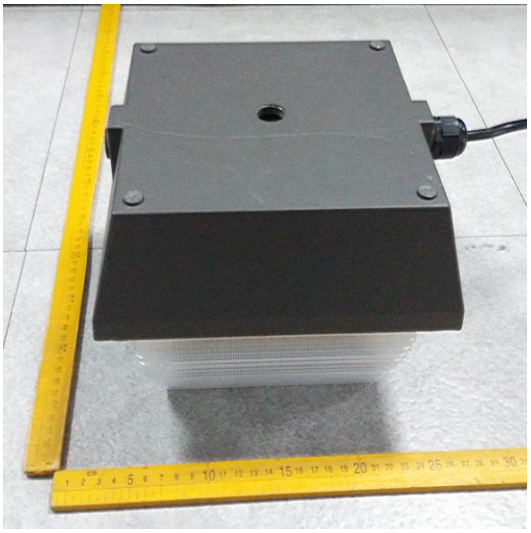
2. Photometric and Electrical Measurements – Integrating Sphere Method:

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:

Brand Name	CEA/EAEC
Model Number	CNL1-100
Luminaire Type	Low-Bay Luminaires for Commercial and Industrial buildings
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K
LED Manufacturer	Chuang Te LED
LED Model	CT-5730
Sample Receipt Date	Oct.18,2015
Sample Number	STD150803NB-J1(2700K),J2(5700K)
Photo	





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

Test date	2015-10-20	**Test Ambient:**	25.2 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CNL1-100(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803	120.0	60	0.9831	96.86	0.9831	11.12
NB-J1	277.0	60	0.3704	92.96	0.9061	14.30

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	81.6
R9	5
CCT (K)	2744
Chromaticity (x, y)	x=0.4494 y=0.3971
Chromaticity (u', v')	u'=0.2618 v'=0.5205
Duv	-0.0042

Special Color Rendering Indices			
R1	82	R9	5
R2	95	R10	90
R3	89	R11	77
R4	78	R12	80
R5	83	R13	86
R6	94	R14	95
R7	77	R15	74
R8	54	--	--

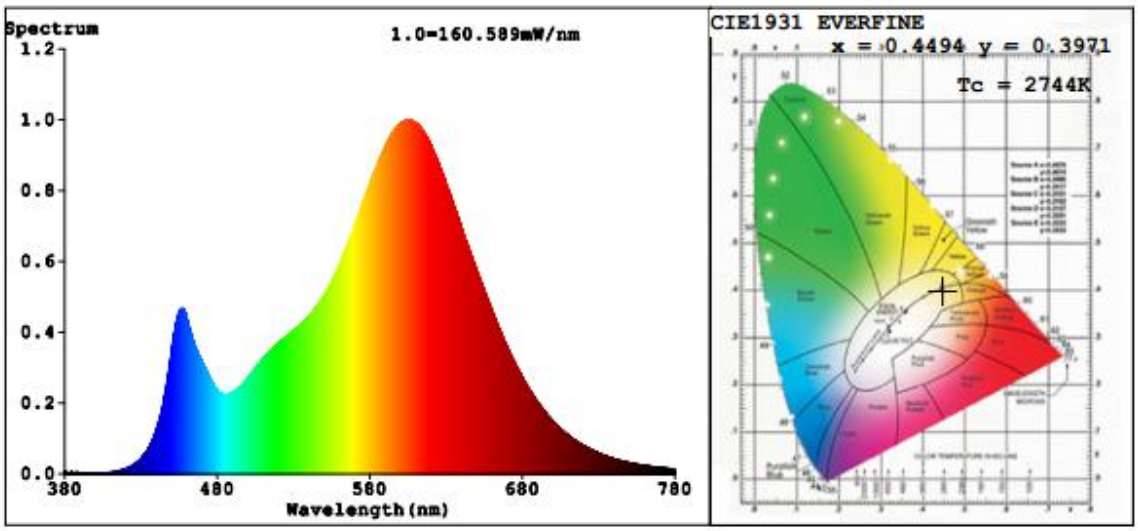
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	7753.0
Luminous Efficacy (lm/W)	80.04
Beam Angle °	132.5
Center Beam Candle Power (cd)	1724

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	7245.5
Luminous Efficacy (lm/W)	77.94

Spectral Power Distribution & Chromaticity Diagram

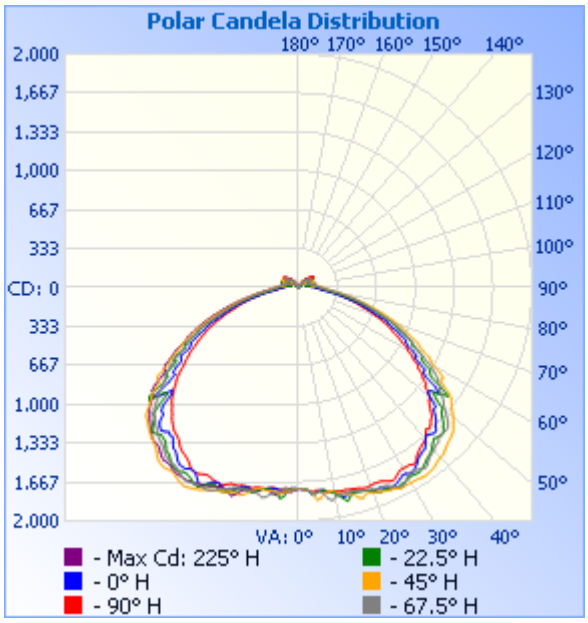


Zonal Lumen Tabulation

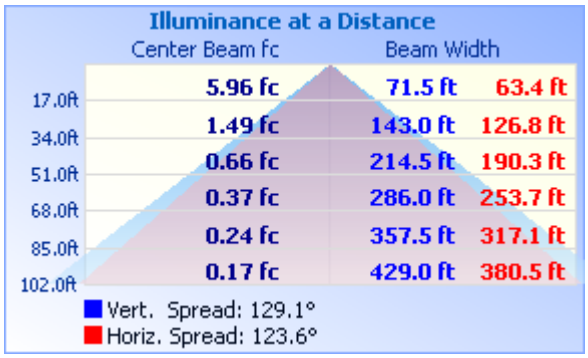
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,544.3	19.9%
0-40	2,698.0	34.8%
0-60	5,280.3	68.1%
60-90	1,899.6	24.5%
70-100	1,051.6	13.6%
90-120	395.1	5.1%
0-90	7,179.9	92.6%
90-180	574.2	7.4%
0-180	7,754.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	168.0	2.2%	90-100	152.3	2%
10-20	513.2	6.6%	100-110	125.4	1.6%
20-30	863.1	11.1%	110-120	117.3	1.5%
30-40	1,153.7	14.9%	120-130	97.8	1.3%
40-50	1,316.2	17.0%	130-140	52.4	0.7%
50-60	1,266.2	16.3%	140-150	21.7	0.3%
60-70	1,000.3	12.9%	150-160	6.0	0.1%
70-80	613.9	7.9%	160-170	0.9	0%
80-90	285.3	3.7%	170-180	0.3	0%

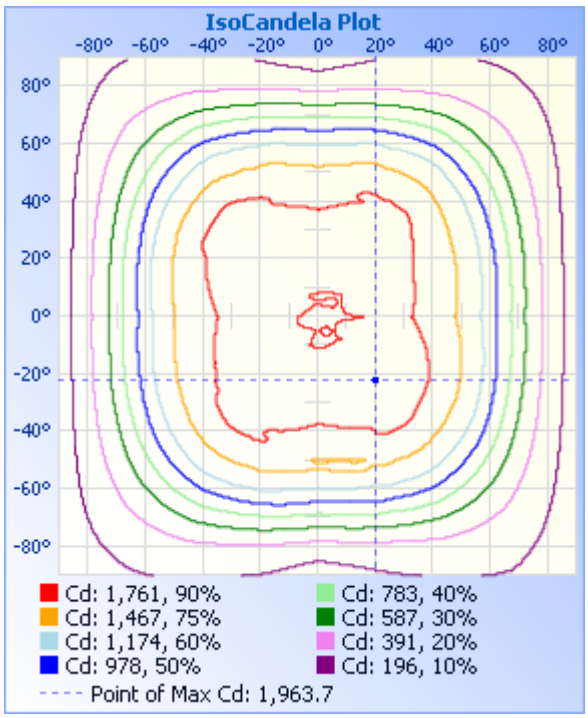
Photometric Data



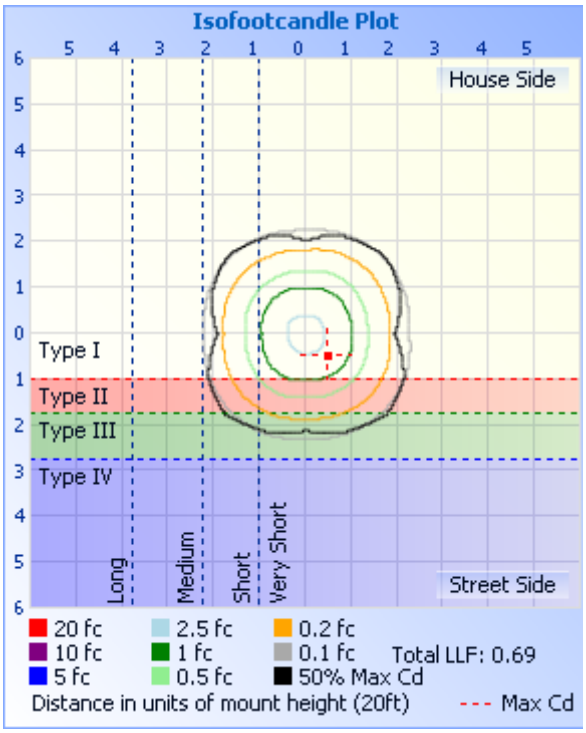
Illuminance Plots



ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724
1	1727	1725	1726	1728	1724	1725	1725	1723	1719	1720	1726	1733	1738	1737	1732	1727	1727
2	1732	1730	1733	1735	1731	1730	1724	1719	1718	1723	1734	1744	1742	1745	1750	1736	1732
3	1749	1744	1742	1744	1741	1734	1725	1724	1732	1741	1751	1725	1723	1729	1752	1766	1749
4	1782	1778	1768	1763	1755	1746	1745	1746	1761	1790	1753	1724	1724	1727	1748	1829	1782
5	1763	1765	1825	1761	1741	1735	1766	1778	1753	1814	1773	1733	1734	1735	1766	1800	1763
6	1747	1748	1815	1757	1746	1732	1775	1776	1733	1774	1773	1752	1736	1753	1789	1754	1747
7	1748	1748	1778	1779	1756	1744	1794	1773	1735	1757	1753	1777	1725	1742	1778	1743	1748
8	1758	1757	1761	1824	1770	1768	1784	1768	1736	1748	1759	1791	1733	1745	1764	1744	1758
9	1764	1771	1761	1848	1760	1767	1781	1765	1742	1745	1762	1817	1744	1766	1748	1753	1764
10	1774	1793	1771	1821	1768	1767	1783	1761	1750	1749	1756	1824	1745	1805	1747	1762	1774
11	1793	1815	1793	1809	1777	1781	1776	1760	1767	1764	1755	1801	1746	1820	1758	1775	1793
12	1833	1846	1804	1804	1780	1806	1772	1774	1788	1789	1765	1792	1749	1815	1772	1805	1833
13	1829	1878	1815	1803	1776	1810	1778	1795	1785	1801	1780	1790	1762	1813	1781	1856	1829
14	1809	1839	1819	1797	1783	1824	1784	1819	1764	1788	1813	1786	1763	1813	1785	1848	1809
15	1808	1816	1838	1802	1784	1834	1794	1818	1769	1779	1834	1794	1760	1800	1793	1823	1808
16	1813	1819	1874	1809	1790	1847	1806	1809	1781	1791	1849	1793	1762	1786	1817	1806	1813
17	1818	1826	1886	1821	1794	1840	1821	1816	1800	1810	1841	1794	1775	1782	1849	1808	1818
18	1828	1831	1861	1826	1806	1824	1837	1828	1812	1832	1839	1803	1775	1789	1874	1814	1828
19	1840	1838	1857	1835	1810	1820	1867	1840	1828	1850	1851	1817	1777	1789	1856	1827	1840
20	1861	1847	1868	1841	1803	1818	1879	1845	1834	1862	1862	1835	1794	1792	1846	1844	1861
21	1859	1878	1876	1848	1798	1808	1875	1856	1831	1867	1869	1846	1813	1808	1831	1852	1859
22	1850	1887	1884	1849	1800	1804	1865	1870	1811	1854	1876	1865	1815	1824	1838	1872	1850
23	1862	1879	1893	1851	1803	1807	1865	1871	1808	1836	1885	1888	1807	1832	1850	1876	1862
24	1876	1893	1900	1857	1813	1815	1861	1868	1824	1841	1897	1899	1802	1828	1863	1884	1876
25	1892	1903	1904	1877	1831	1824	1859	1866	1855	1867	1910	1903	1791	1818	1870	1890	1892
26	1882	1913	1913	1895	1839	1839	1862	1884	1885	1897	1926	1898	1786	1813	1879	1900	1882
27	1869	1906	1932	1914	1827	1845	1871	1913	1889	1913	1938	1896	1793	1814	1888	1905	1869
28	1855	1899	1927	1921	1807	1836	1884	1927	1852	1906	1946	1901	1807	1816	1899	1894	1855
29	1837	1897	1928	1894	1790	1818	1902	1928	1821	1886	1956	1908	1813	1825	1900	1880	1837

30	1839	1881	1930	1866	1787	1811	1911	1888	1807	1869	**1964**	1915	1811	1836	1908	1879	1839
31	1857	1879	1931	1847	1792	1816	1908	1863	1811	1861	1957	1913	1798	1831	1908	1884	1857
32	1858	1885	1932	1852	1790	1820	1911	1859	1831	1861	1945	1899	1771	1817	1904	1890	1858
33	1836	1891	1940	1861	1804	1823	1917	1860	1829	1882	1932	1881	1751	1802	1905	1906	1836
34	1817	1880	1944	1871	1800	1845	1920	1868	1826	1879	1915	1863	1736	1785	1900	1897	1817
35	1786	1867	1940	1888	1763	1831	1910	1884	1809	1871	1913	1853	1727	1771	1890	1874	1786
36	1774	1848	1934	1878	1744	1800	1896	1881	1778	1859	1919	1850	1714	1763	1875	1851	1774
37	1761	1831	1930	1849	1724	1793	1897	1863	1752	1830	1925	1849	1694	1751	1873	1839	1761
38	1756	1819	1914	1832	1714	1773	1891	1842	1745	1807	1919	1841	1664	1731	1876	1832	1756
39	1729	1804	1902	1820	1702	1765	1881	1823	1712	1802	1908	1824	1648	1715	1864	1823	1729
40	1689	1782	1894	1805	1695	1757	1872	1805	1676	1771	1887	1799	1635	1702	1843	1803	1689
41	1675	1754	1890	1791	1658	1748	1863	1781	1677	1741	1858	1782	1626	1687	1819	1783	1675
42	1688	1737	1873	1788	1632	1708	1839	1751	1663	1734	1835	1771	1606	1675	1809	1760	1688
43	1705	1747	1858	1756	1643	1713	1821	1734	1685	1723	1819	1759	1585	1658	1808	1756	1705
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45	1659	1757	1833	1750	1602	1702	1818	1740	1682	1759	1791	1717	1532	1629	1782	1776	1659
46	1639	1722	1822	1758	1586	1685	1795	1771	1656	1744	1775	1701	1510	1608	1762	1772	1639
47	1599	1697	1810	1751	1547	1652	1777	1762	1586	1702	1758	1677	1481	1581	1737	1731	1599
48	1557	1655	1784	1723	1510	1623	1746	1717	1582	1659	1738	1660	1464	1554	1714	1681	1557
49	1556	1621	1756	1681	1479	1595	1715	1676	1541	1650	1722	1641	1437	1536	1690	1644	1556
50	1481	1611	1728	1639	1464	1564	1687	1645	1427	1563	1708	1616	1399	1513	1664	1615	1481
51	1423	1519	1699	1601	1430	1561	1662	1563	1393	1447	1669	1574	1375	1480	1646	1568	1423
52	1432	1465	1661	1575	1375	1506	1630	1469	1497	1457	1615	1530	1335	1453	1607	1492	1432
53	1507	1507	1638	1539	1367	1478	1585	1500	1559	1603	1580	1500	1312	1419	1568	1492	1507
54	1452	1581	1618	1494	1314	1462	1573	1578	1377	1580	1546	1451	1274	1390	1539	1550	1452
55	1326	1495	1568	1474	1291	1411	1580	1567	1293	1406	1500	1413	1235	1357	1533	1538	1326
56	1290	1371	1493	1443	1236	1364	1527	1430	1299	1350	1436	1378	1185	1317	1486	1426	1290
57	1290	1342	1449	1416	1217	1332	1416	1374	1250	1357	1441	1355	1161	1282	1398	1354	1290
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61	1123	1221	1296	1223	1061	1163	1290	1232	1071	1194	1255	1168	1006	1137	1259	1210	1123

62	1055	1168	1267	1167	1011	1128	1240	1188	1047	1103	1194	1115	976	1092	1220	1186	1055
63	1031	1091	1198	1122	971	1086	1186	1113	1034	1094	1142	1074	935	1047	1174	1113	1031
64	1021	1083	1152	1086	936	1052	1129	1094	986	1074	1113	1041	900	1010	1114	1076	1021
65	964	1054	1127	1051	891	1007	1082	1069	935	1013	1067	1004	870	973	1072	1051	964
66	933	999	1077	1003	864	974	1051	1012	885	942	1013	965	825	939	1038	1004	933
67	874	954	1025	974	829	935	1013	947	845	933	977	917	786	893	991	967	874
68	833	905	987	937	787	888	948	922	818	875	935	872	743	855	945	905	833
69	812	866	946	884	746	848	918	873	748	843	878	819	702	810	901	865	812
70	758	841	896	837	700	801	875	830	706	759	835	774	667	763	860	832	758
71	704	774	853	790	667	759	824	758	661	736	781	730	621	721	814	775	704
72	661	731	799	749	625	713	773	722	624	671	735	682	578	674	759	726	661
73	614	678	753	703	576	661	730	679	590	645	681	642	548	630	712	677	614
74	576	641	702	652	547	628	678	640	559	601	640	608	520	599	666	637	576
75	538	595	656	619	516	593	640	604	507	568	606	563	480	562	624	594	538
76	496	555	611	583	478	549	601	556	461	512	565	526	447	521	583	551	496
77	452	510	571	538	448	519	562	511	426	477	523	490	416	488	538	508	452
78	414	470	527	505	421	486	526	473	383	436	482	456	385	452	495	469	414
79	371	429	487	470	388	449	486	431	346	395	442	422	354	417	458	428	371
80	335	388	449	432	358	413	445	396	319	364	410	394	331	387	421	389	335
81	304	356	411	397	332	384	410	363	285	330	381	364	302	360	388	356	304
82	273	323	378	367	303	348	377	327	249	294	348	330	271	326	359	326	273
83	241	288	347	333	273	316	342	294	226	269	317	303	246	294	327	295	241
84	216	261	314	303	248	291	314	271	208	249	293	279	225	270	297	270	216
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2.3 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2015-10-20	**Test Ambient:**	25.2 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CNL1-100(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803 NB-J2	120.0	60	0.8194	96.75	0.9840	11.22
	277.0	60	0.3726	93.46	0.9055	14.72

Sphere-Spectroradiometer Method:

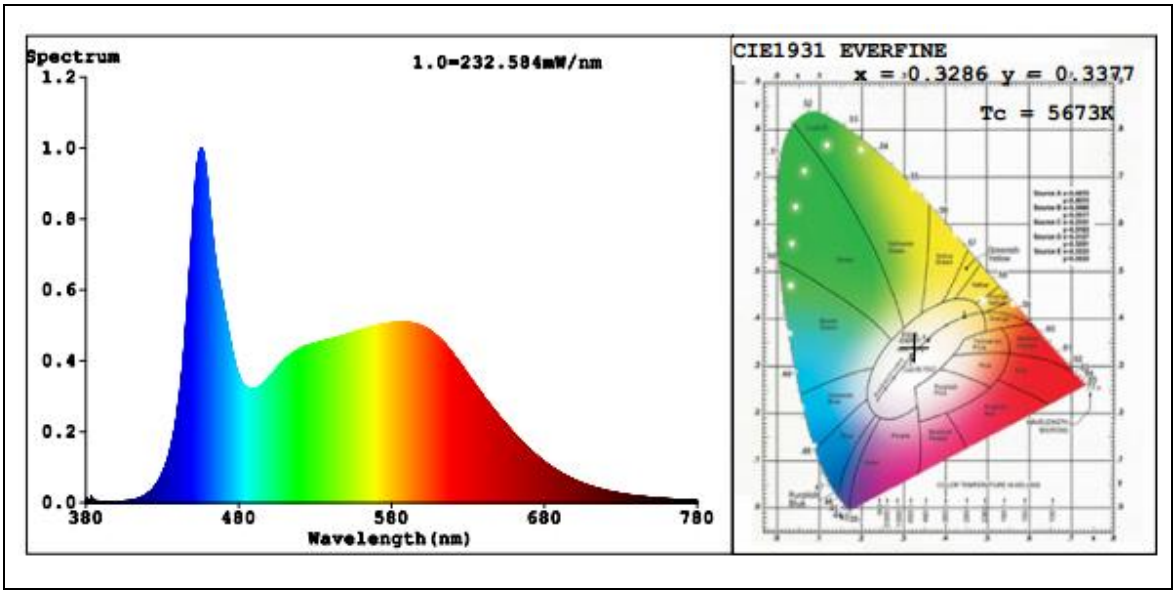
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	87.9
R9	32
CCT (K)	5673
Chromaticity (x, y)	x=0.3286 y=0.3377
Chromaticity (u', v')	u'=0.2055 v'=0.4753
Duv	0.0000
Total Initial Lumen Output(lm)	8140
Initial Lumen Efficacy(lm/w)	84.12

Special Color Rendering Indices			
R1	89	R9	32
R2	96	R10	90
R3	95	R11	85
R4	84	R12	66
R5	88	R13	92
R6	91	R14	98
R7	87	R15	85
R8	73	--	--

Sphere-Spectroradiometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	7712
Initial Lumen Efficacy(lm/w)	82.52

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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