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

Fuel Pump Canopy Luminaires

Model name(s): CNL5-75

Representative (Tested) Model: CNL5-75(2700K)
CNL5-75(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.

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

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	CNL5-75(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	

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	--	69.02	W
Input Current	--	0.5852	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9828	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	7941.9	lm
Initial Lumen Efficacy	--	115.07	lm/w
Correlated color temperature / CCT	2725	--	K
Color rendering index / CRI	80.0	--	
R9 Value	0	--	
Duv	0.0010	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	---	3138	cd
Beam angle (if applicable)		102.0	°
Zonal lumens in the 0 °-60 °zone		79.5	%
Zonal lumens in the 60 °-90 °zone		19.7	%
Zonal lumens in the 90 °-120 °zone		0.5	%
Zonal lumens in the 120 °-180 °zone		0.3	%

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-G
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	CNL5-75(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	

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	70.05	--	W
Input Current	0.5880	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9927	--	
Off-State Power	0	--	W
Photometric Characteristics			
Total Initial Lumen Output	8134	--	lm
Initial Lumen Efficacy	116.12	--	lm/w
Correlated color temperature / CCT	5329	--	K
Color rendering index / CRI	85.6	--	
R9 Value	22	--	
Duv	-0.0029	--	
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			%

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:

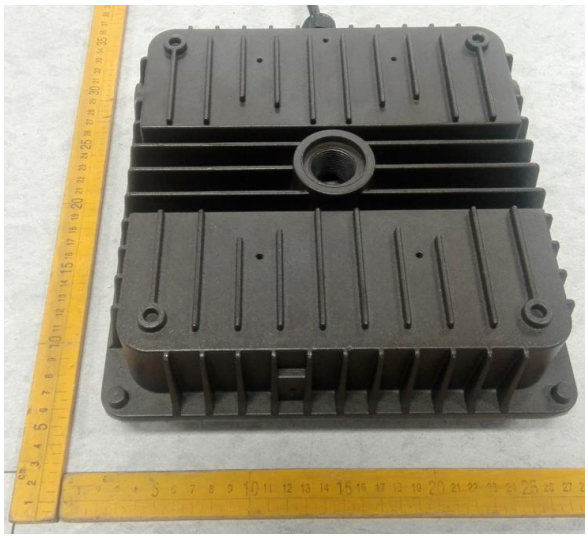
Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ±1 °C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before 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	CNL5-75
Luminaire Type	Fuel Pump Canopy Luminaires
Rated Voltage / Frequency	100 ~ 277 Vac, 50/60Hz
Nominal Power	75W
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-G1(2700K),G2(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 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CNL5-75(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203 NB-G1	120.0	60	0.5852	69.02	0.9828	9.56
	277.0	60	0.2655	66.79	0.9082	14.39

Color Data:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	80.0
R9	0
CCT (K)	2725
Chromaticity (x, y)	x=0.4595 y=0.4131
Chromaticity (u', v')	u'=0.2611 v'=0.5282
Duv	0.0010

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	--	--

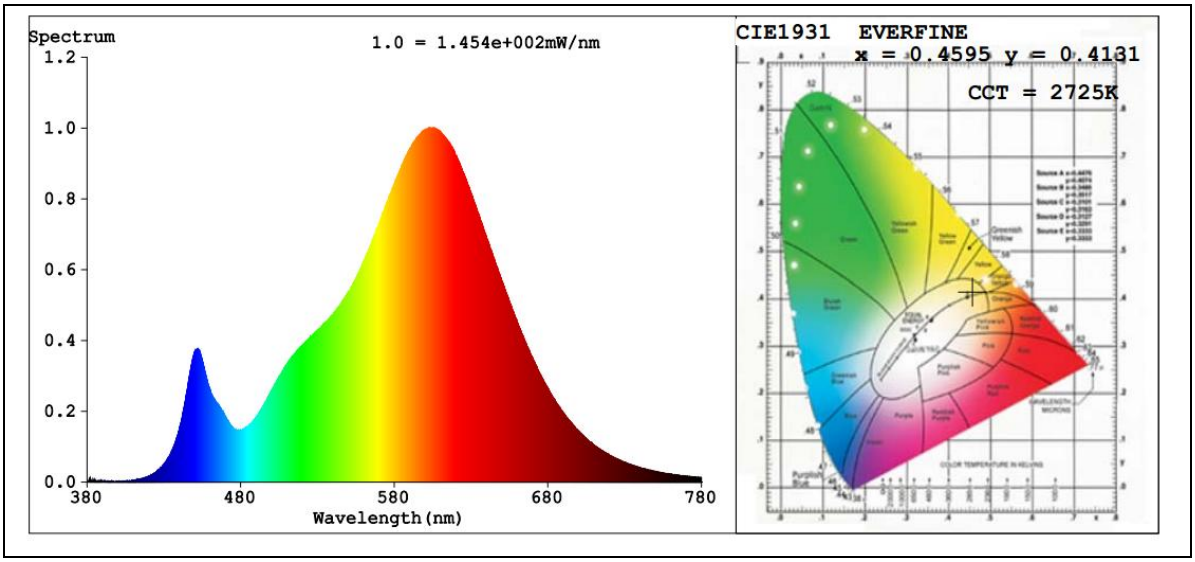
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	7941.9
Luminous Efficacy (lm/W)	115.07
Beam Angle °	102.0
Center Beam Candle Power (cd)	3138

Goniophotometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	7684.6
Luminous Efficacy (lm/W)	115.06

Spectral Power Distribution & Chromaticity Diagram

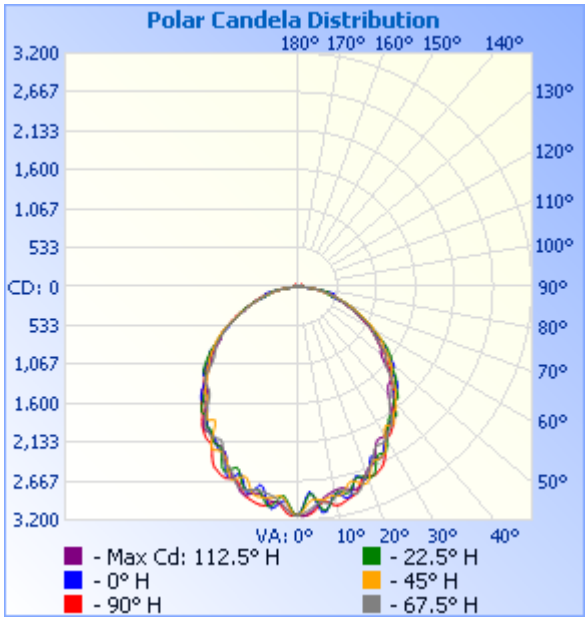


Zonal Lumen Tabulation

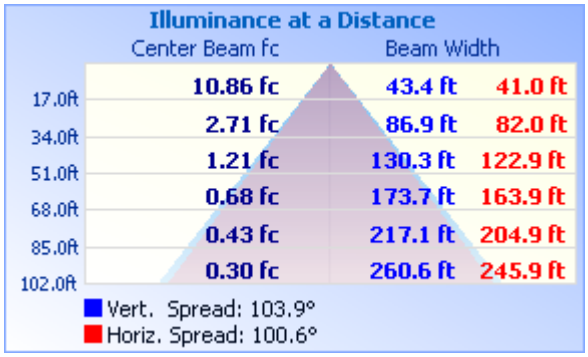
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,269.7	28.6%
0-40	3,652.6	46%
0-60	6,311.3	79.5%
60-90	1,567.1	19.7%
70-100	667.4	8.4%
90-120	36.7	0.5%
0-90	7,878.4	99.2%
90-180	62.7	0.8%
0-180	7,941.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	283.6	3.6%	90-100	9.8	0.1%
10-20	802.2	10.1%	100-110	11.5	0.1%
20-30	1,183.9	14.9%	110-120	15.4	0.2%
30-40	1,383.0	17.4%	120-130	13.7	0.2%
40-50	1,405.7	17.7%	130-140	5.8	0.1%
50-60	1,253.0	15.8%	140-150	2.7	0%
60-70	909.4	11.5%	150-160	1.9	0%
70-80	514.1	6.5%	160-170	1.3	0%
80-90	143.6	1.8%	170-180	0.5	0%

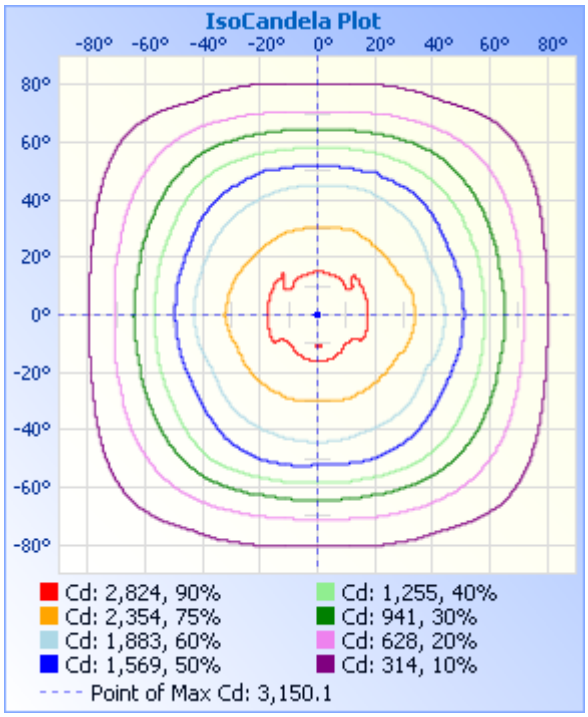
Photometric Data



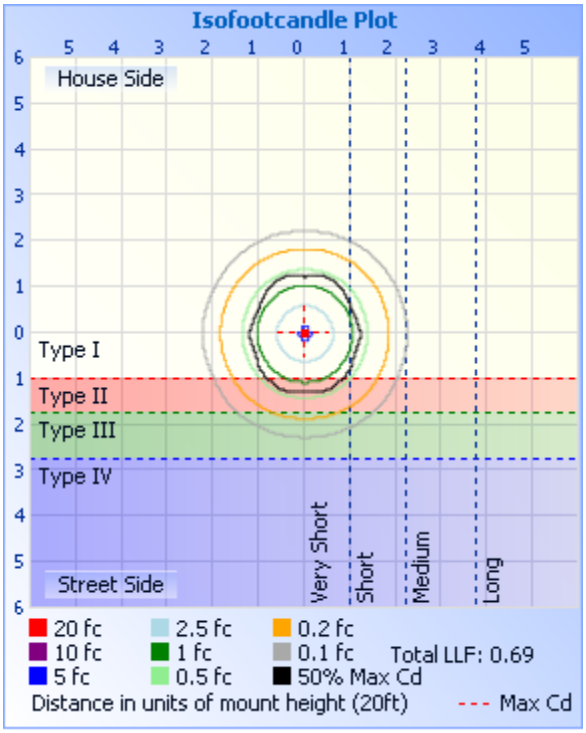
Illuminance Plots



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	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138	3138
1	3042	3051	3083	3117	3139	3150	3148	3136	3131	3126	3133	3142	3143	3116	3081	3050	3042
2	2898	2926	3005	3087	3136	3134	3105	3071	3054	3044	3067	3114	3139	3092	3009	2926	2898
3	2813	2844	2948	3054	3121	3093	3033	2998	2976	2945	2980	3065	3108	3054	2952	2849	2813
4	2867	2865	2923	3020	3087	3046	2958	2940	2939	2878	2911	3007	3050	3008	2931	2873	2867
5	3005	2969	2928	2988	3036	2996	2911	2948	2975	2892	2879	2960	2993	2975	2945	2960	3005
6	3110	3063	2943	2969	2982	2946	2911	3002	3032	2963	2893	2920	2965	2970	2965	3029	3110
7	3111	3090	2938	2983	2962	2906	2937	3060	3066	3033	2921	2896	2979	2969	2957	3048	3111
8	3024	3039	2920	2998	2988	2881	2948	3073	3020	3039	2931	2879	3018	2961	2936	3016	3024
9	2933	2957	2905	2970	3026	2858	2941	3013	2905	2978	2933	2865	3039	2931	2929	2953	2933
10	2878	2884	2912	2921	3045	2839	2937	2920	2795	2904	2931	2850	3037	2904	2944	2894	2878
11	2893	2854	2922	2878	3040	2828	2931	2851	2768	2846	2931	2844	3026	2889	2946	2866	2893
12	2941	2880	2904	2855	3016	2824	2924	2841	2832	2841	2920	2848	3008	2892	2909	2885	2941
13	2976	2909	2853	2867	2993	2839	2897	2873	2898	2862	2880	2860	2989	2913	2845	2899	2976
14	2956	2897	2793	2909	2971	2865	2826	2890	2918	2879	2803	2872	2970	2944	2789	2882	2956
15	2861	2840	2762	2941	2955	2876	2744	2875	2860	2867	2726	2880	2933	2946	2777	2836	2861
16	2755	2771	2773	2944	2917	2887	2707	2823	2767	2813	2704	2880	2877	2912	2796	2783	2755
17	2711	2734	2813	2905	2850	2879	2729	2742	2699	2729	2733	2860	2816	2856	2836	2748	2711
18	2749	2740	2849	2841	2787	2839	2777	2659	2703	2649	2781	2811	2775	2807	2867	2731	2749
19	2793	2760	2855	2780	2750	2780	2806	2617	2753	2620	2805	2745	2771	2768	2848	2739	2793
20	2785	2778	2817	2728	2755	2713	2784	2641	2793	2656	2772	2687	2794	2720	2783	2756	2785
21	2709	2792	2736	2682	2781	2669	2718	2689	2762	2701	2696	2651	2810	2668	2686	2784	2709
22	2599	2778	2645	2630	2784	2655	2634	2722	2659	2725	2610	2647	2800	2617	2607	2784	2599
23	2532	2704	2597	2577	2768	2635	2566	2694	2539	2684	2548	2627	2778	2562	2580	2723	2532
24	2553	2614	2601	2524	2745	2578	2529	2607	2484	2599	2520	2557	2755	2507	2591	2631	2553
25	2603	2553	2606	2463	2718	2489	2516	2505	2488	2502	2500	2460	2731	2454	2605	2570	2603
26	2608	2549	2597	2428	2672	2411	2508	2441	2488	2446	2495	2383	2685	2429	2617	2561	2608
27	2553	2565	2580	2431	2612	2368	2515	2426	2458	2436	2514	2353	2611	2432	2623	2577	2553
28	2486	2554	2535	2434	2526	2356	2523	2428	2412	2441	2528	2360	2528	2437	2590	2568	2486
29	2431	2496	2454	2434	2454	2364	2496	2402	2371	2418	2478	2373	2472	2424	2511	2506	2431

30	2384	2414	2366	2413	2411	2360	2399	2353	2342	2365	2358	2372	2452	2388	2403	2429	2384
31	2334	2344	2290	2375	2393	2329	2266	2322	2333	2317	2228	2360	2440	2352	2303	2388	2334
32	2291	2293	2251	2331	2376	2299	2173	2316	2323	2296	2162	2343	2418	2342	2254	2364	2291
33	2258	2257	2265	2311	2340	2283	2160	2308	2291	2297	2175	2325	2381	2349	2265	2304	2258
34	2239	2206	2293	2288	2308	2260	2182	2263	2243	2274	2212	2287	2347	2326	2284	2224	2239
35	2231	2171	2285	2228	2272	2215	2173	2205	2187	2215	2195	2230	2307	2267	2260	2182	2231
36	2224	2193	2219	2149	2224	2160	2117	2185	2127	2175	2131	2161	2247	2194	2199	2204	2224
37	2201	2222	2163	2072	2156	2107	2067	2197	2074	2177	2085	2089	2186	2122	2156	2211	2201
38	2161	2169	2151	2019	2104	2043	2042	2186	2039	2163	2055	2011	2146	2060	2138	2149	2161
39	2099	2074	2124	1985	2076	1968	1994	2129	2037	2111	2005	1939	2115	2012	2109	2069	2099
40	2030	2032	2068	1961	2044	1913	1946	2057	2050	2043	1958	1901	2075	1962	2060	2029	2030
41	1973	2047	2011	1926	2001	1871	1926	1978	2036	1979	1944	1871	2023	1913	2028	2019	1973
42	1946	2038	1975	1905	1951	1834	1918	1913	1999	1913	1919	1861	1977	1874	2008	2004	1946
43	1947	1983	1950	1895	1904	1817	1887	1888	1940	1873	1877	1851	1932	1857	1974	1991	1947
44	1942	1922	1900	1865	1846	1807	1838	1874	1865	1845	1828	1840	1870	1831	1914	1974	1942
45	1921	1881	1829	1813	1796	1796	1799	1830	1801	1805	1786	1824	1832	1802	1854	1939	1921
46	1868	1855	1781	1743	1757	1749	1762	1774	1779	1776	1738	1777	1792	1748	1796	1886	1868
47	1781	1822	1729	1668	1725	1681	1720	1742	1782	1758	1697	1707	1745	1698	1733	1835	1781
48	1699	1761	1711	1620	1675	1611	1682	1745	1761	1744	1670	1623	1704	1648	1692	1800	1699
49	1692	1705	1698	1588	1626	1543	1634	1730	1706	1724	1633	1564	1656	1587	1666	1737	1692
50	1711	1644	1652	1555	1568	1487	1598	1697	1636	1681	1603	1511	1593	1552	1627	1646	1711
51	1673	1609	1603	1539	1533	1456	1574	1652	1578	1629	1568	1484	1566	1535	1600	1580	1673
52	1584	1611	1565	1516	1500	1430	1551	1613	1546	1584	1531	1454	1532	1494	1573	1575	1584
53	1507	1581	1518	1450	1438	1422	1519	1576	1534	1534	1494	1424	1475	1437	1519	1576	1507
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56	1417	1431	1393	1294	1310	1293	1390	1354	1332	1348	1370	1324	1337	1290	1371	1434	1417
57	1327	1371	1351	1257	1268	1255	1340	1315	1288	1310	1332	1279	1299	1271	1323	1390	1327
58	1261	1307	1322	1219	1217	1210	1311	1285	1264	1271	1285	1228	1250	1257	1284	1323	1261
59	1234	1241	1265	1189	1174	1171	1264	1232	1199	1212	1235	1190	1216	1208	1230	1244	1234
60	1194	1192	1192	1157	1147	1125	1221	1182	1116	1162	1192	1142	1168	1166	1182	1195	1194
61	1115	1138	1161	1096	1076	1081	1138	1134	1086	1111	1127	1102	1110	1102	1161	1151	1115

62	1068	1101	1122	1061	1023	1044	1079	1067	1030	1054	1066	1059	1074	1050	1093	1094	1068
63	1045	1052	1057	1001	981	965	1034	1000	977	995	1008	992	1025	1000	1016	1045	1045
64	985	999	1001	934	928	917	974	934	930	929	954	943	931	954	990	1002	985
65	923	950	960	884	923	863	912	907	893	898	890	886	941	903	957	960	923
66	889	903	915	843	847	843	863	866	838	870	851	818	878	812	905	896	889
67	842	844	852	803	810	802	813	823	793	828	798	793	812	816	848	840	842
68	812	806	822	749	767	735	767	774	765	792	754	753	784	764	823	809	812
69	765	762	782	703	718	697	720	719	714	729	715	693	720	713	753	765	765
70	718	714	725	687	667	658	670	674	673	684	669	675	688	696	706	732	718
71	646	675	674	636	655	622	626	628	619	643	615	622	646	637	659	672	646
72	558	621	627	610	596	588	587	585	553	592	582	599	613	605	601	626	558
73	488	557	585	565	575	554	557	526	491	529	551	546	578	573	552	542	488
74	464	481	530	535	542	525	521	460	472	466	520	524	535	541	513	480	464
75	449	431	485	502	512	492	483	428	457	429	494	482	506	498	471	433	449
76	457	400	454	466	466	456	443	410	446	409	455	458	469	469	438	399	457
77	489	393	400	427	423	411	396	391	466	391	401	421	415	417	402	390	489
78	503	405	347	381	380	364	344	399	469	386	341	365	381	370	349	400	503
79	474	419	306	338	346	327	309	388	421	383	298	327	341	332	309	408	474
80	400	396	281	303	315	292	284	349	338	351	273	286	308	293	273	383	400
81	290	332	261	272	277	263	261	284	246	287	246	257	275	267	253	325	290
82	200	241	239	239	232	226	231	210	178	216	228	225	225	228	240	240	200
83	118	153	208	200	180	185	193	147	110	147	191	185	175	191	212	151	118
84	92	96	157	149	128	137	138	91	89	91	141	143	130	140	159	94	92
85	85	84	106	108	95	100	93	82	81	83	91	102	92	100	97	83	85
86	79	77	78	85	79	81	73	75	75	75	73	76	74	78	74	76	79
87	73	71	65	71	65	69	63	68	70	68	63	65	62	66	63	70	73
88	67	64	57	58	55	55	55	61	63	62	56	57	55	55	55	64	67
89	58	57	50	44	42	43	47	54	55	54	48	44	41	42	48	57	58
90	49	47	43	36	34	36	40	40	46	44	41	37	33	35	41	46	49
91	26	21	32	29	29	28	26	7	20	18	29	29	27	28	28	14	26
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94	1	1	0	0	0	0	0	5	2	1	1	1	1	1	0	4	1
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96	20	15	3	0	0	1	3	14	19	13	3	0	0	0	3	15	20
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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 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CNL5-75(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203 NB-G2	120.0	60	0.5880	70.05	0.9927	9.41
	277.0	60	0.2676	67.99	0.9173	14.24

Sphere-Spectroradiometer Method :

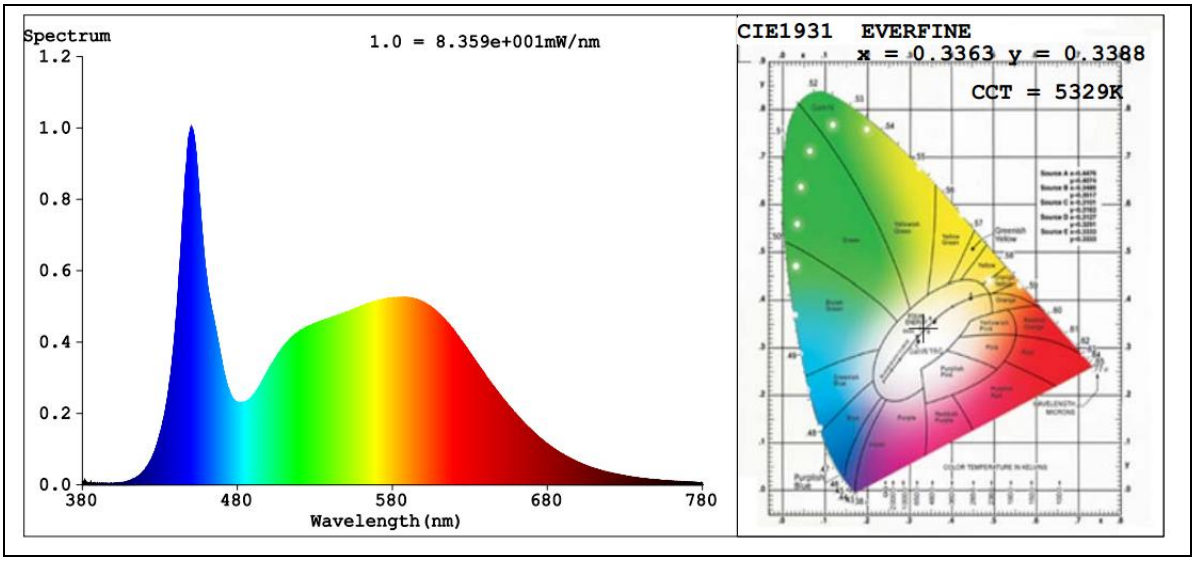
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	85.6
R9	22
CCT (K)	5329
Chromaticity (x, y)	x=0.3363 y=0.3388
Chromaticity (u', v')	u'=0.2104 v'=0.4770
Duv	-0.0029
Total Initial Lumen Output(lm)	8134
Initial Lumen Efficacy(lm/w)	116.12

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)	7871
Initial Lumen Efficacy(lm/w)	115.77

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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