



Report No.: STD160711NB-BB

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

Outdoor Full-Cutoff Wall-mounted Area Luminaires

Model name(s): LWP5-100

Representative (Tested) Model: LWP5-100(2700K)
LWP5-100(5700K)

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

Test & Report By:

Jack Luo

Engineer: Jack Luo

Date: Sept.08,2016

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-A/2

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1.1 Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	LWP5-100	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Full-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	100W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K, 5700K	
LED Manufacturer	Zhongshan Dongguan Star Photoelectric Techology Co.,Ltd	
LED Model	5730	
Sample Number	STD160711NB-BB1(2700K),BB2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo


1.2 Test Specifications:

Date of Receipt	Aug.20,2016
Date of Test	Aug.25,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP5-100(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160711	120.0	60	0.8357	99.46	0.9918	11.59
NB-BB1	277.0	60	0.4085	99.45	0.8788	15.26
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

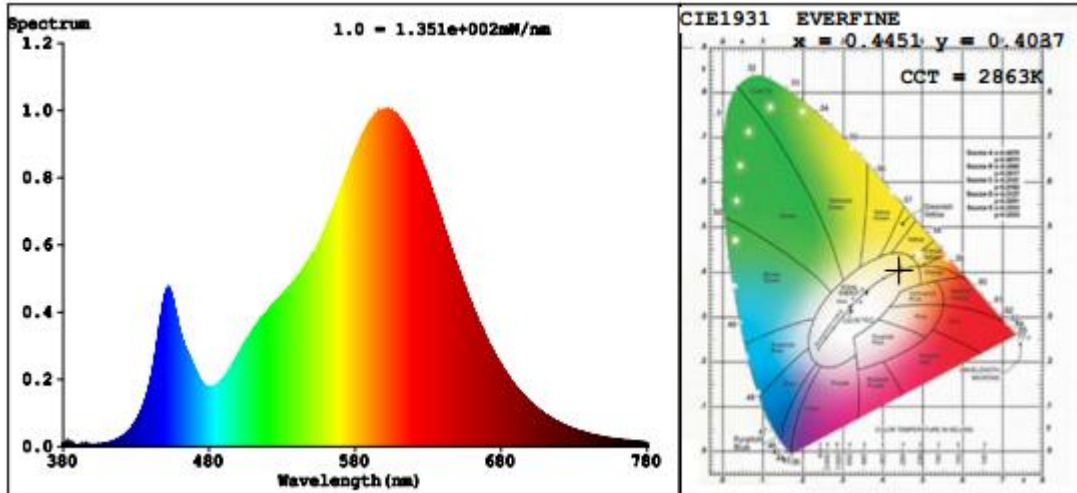
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	0
Frequency (Hz)	60	R2	91	R10	81
CCT (K)	2694	R3	94	R11	76
Duv	-0.0017	R4	77	R12	74
Chromaticity (x, y)	x=0.4574 y=0.4055	R5	79	R13	82
Chromaticity (u', v')	u'=0.2632 v'=0.5250	R6	90	R14	97
Color Rendering Index (CRI)	80.0	R7	79	R15	70
R9	0	R8	52	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	10424	10145	>=10000(-10%)	
Luminous Efficacy (lm/W)	104.81	102.01	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Zonal lumens in the 0-90 °zone (%)	99.9	--	>= 100(-3)	
Zonal lumens in the 80-90 °zone (%)	1.0	--	<=10(+3)	
Beam Angle (°)	104.7	--	--	
Center Beam Candle Power (cd)	4069	--	--	

Spectral Power Distribution & Chromaticity Diagram

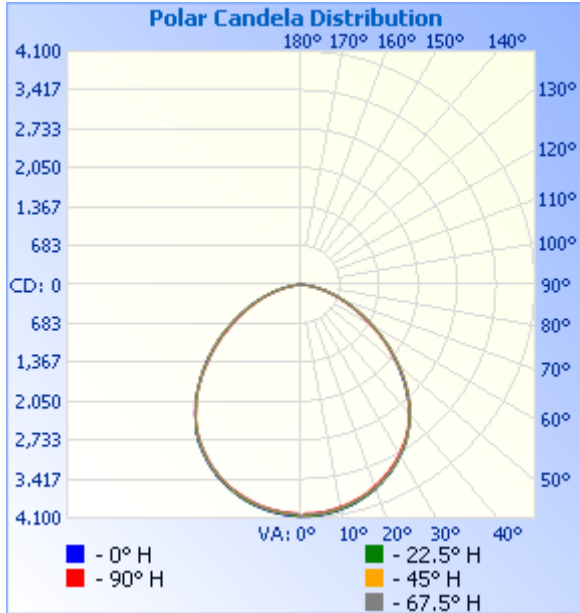


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,130.9	30%
0-40	5,119.6	49.1%
0-60	8,719.4	83.7%
60-90	1,693.6	16.2%
70-100	621.5	6%
90-120	4.3	0%
0-90	10,413.0	99.9%
90-180	10.1	0.1%
0-180	10,423.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	380.3	3.6%	90-100	2.0	0%
10-20	1,091.7	10.5%	100-110	1.2	0%
20-30	1,659.0	15.9%	110-120	1.1	0%
30-40	1,988.7	19.1%	120-130	1.2	0%
40-50	1,976.3	19.0%	130-140	1.3	0%
50-60	1,623.5	15.6%	140-150	1.3	0%
60-70	1,074.1	10.3%	150-160	1.1	0%
70-80	519.3	5.0%	160-170	0.7	0%
80-90	100.2	1.0%	170-180	0.3	0%

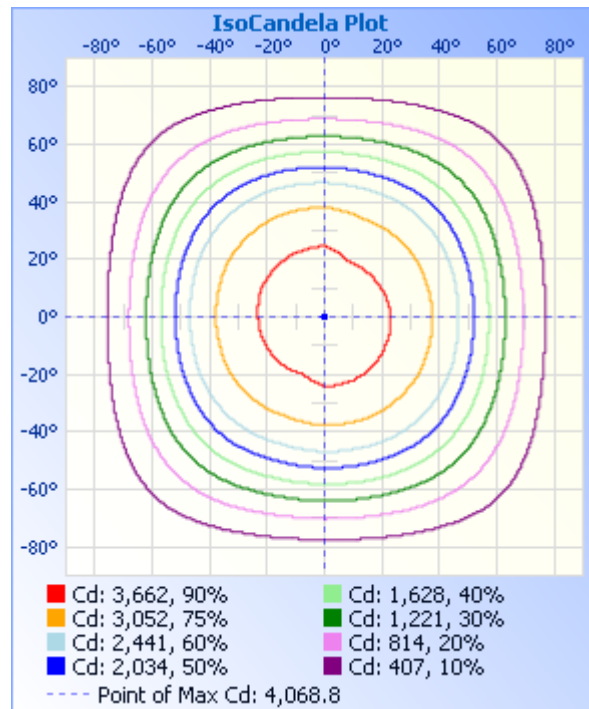
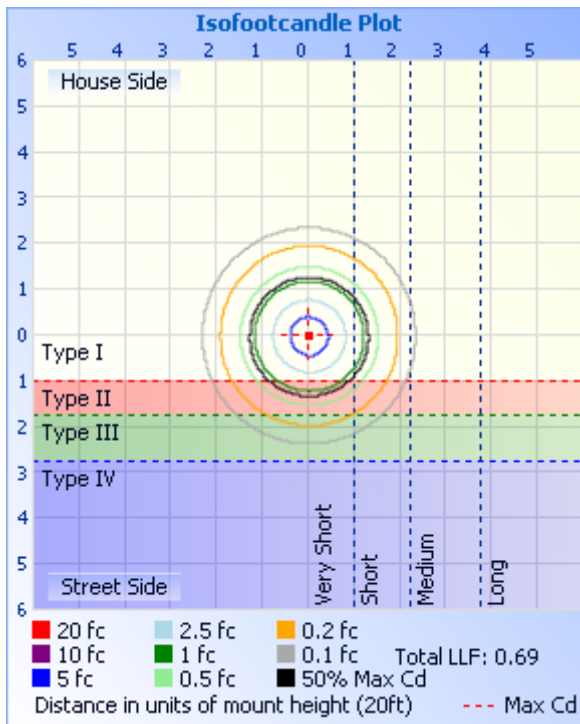
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	14.08 fc	44.1 ft	43.5 ft
34.0ft	3.52 fc	88.1 ft	87.0 ft
51.0ft	1.56 fc	132.2 ft	130.5 ft
68.0ft	0.88 fc	176.3 ft	174.0 ft
85.0ft	0.56 fc	220.3 ft	217.4 ft
102.0ft	0.39 fc	264.4 ft	260.9 ft

■ Vert. Spread: 104.7°
■ Horiz. Spread: 104.0°



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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	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069	4069
1	4069	4058	4043	4033	4021	3988	3968	3943	4066	4056	4038	4028	4015	3986	3969	3944	4069
2	4068	4057	4041	4033	4022	3988	3967	3944	4062	4050	4033	4027	4015	3983	3965	3943	4068
3	4067	4058	4040	4031	4021	3985	3967	3940	4059	4047	4030	4023	4010	3981	3962	3938	4067
4	4064	4055	4040	4029	4017	3982	3962	3936	4054	4041	4024	4016	4005	3976	3958	3932	4064
5	4059	4050	4036	4027	4013	3976	3956	3931	4045	4033	4016	4009	3999	3970	3954	3927	4059
6	4051	4043	4029	4019	4006	3970	3949	3924	4036	4026	4009	4004	3994	3964	3946	3920	4051
7	4043	4037	4018	4010	3999	3958	3943	3915	4028	4015	4003	3993	3984	3958	3937	3913	4043
8	4036	4028	4010	3998	3985	3950	3934	3904	4015	4006	3991	3983	3975	3947	3931	3902	4036
9	4026	4019	3998	3990	3976	3939	3920	3893	4004	3993	3980	3972	3960	3935	3921	3894	4026
10	4013	4005	3987	3980	3962	3927	3908	3884	3988	3981	3964	3960	3949	3919	3905	3879	4013
11	3997	3992	3970	3964	3951	3912	3894	3868	3974	3962	3951	3943	3935	3908	3893	3872	3997
12	3983	3977	3956	3949	3936	3898	3881	3853	3957	3949	3937	3927	3916	3893	3875	3858	3983
13	3970	3964	3938	3933	3922	3882	3862	3834	3941	3934	3917	3905	3900	3872	3861	3841	3970
14	3949	3944	3924	3920	3903	3867	3845	3819	3919	3915	3899	3890	3879	3856	3840	3826	3949
15	3926	3925	3903	3900	3888	3847	3826	3799	3899	3892	3876	3867	3862	3833	3821	3803	3926
16	3908	3904	3884	3882	3867	3829	3810	3779	3880	3874	3857	3846	3836	3814	3802	3784	3908
17	3885	3886	3861	3859	3846	3806	3792	3754	3855	3848	3835	3820	3815	3788	3777	3760	3885
18	3865	3860	3843	3841	3820	3787	3767	3734	3832	3826	3813	3799	3789	3771	3756	3740	3865
19	3843	3838	3817	3816	3791	3765	3745	3707	3802	3802	3783	3776	3773	3744	3728	3717	3843
20	3813	3814	3792	3792	3765	3736	3718	3685	3778	3772	3759	3747	3742	3722	3703	3694	3813
21	3784	3783	3763	3762	3740	3712	3694	3660	3747	3746	3727	3720	3718	3689	3674	3664	3784
22	3758	3757	3739	3738	3708	3682	3662	3628	3719	3712	3698	3687	3685	3663	3648	3639	3758
23	3725	3722	3707	3706	3683	3657	3636	3596	3689	3683	3663	3660	3655	3629	3613	3607	3725
24	3695	3687	3680	3677	3650	3622	3600	3570	3662	3643	3636	3622	3618	3603	3584	3578	3695
25	3666	3659	3643	3642	3622	3586	3571	3538	3623	3615	3605	3591	3586	3564	3557	3550	3666
26	3628	3631	3613	3613	3583	3558	3534	3501	3589	3582	3563	3559	3556	3532	3526	3513	3628
27	3586	3593	3583	3576	3552	3527	3501	3469	3547	3539	3532	3517	3514	3500	3487	3480	3586
28	3551	3558	3540	3543	3520	3486	3460	3428	3511	3504	3488	3483	3477	3458	3454	3438	3551
29	3506	3515	3506	3499	3479	3451	3428	3394	3465	3459	3451	3436	3433	3420	3411	3404	3506

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30	3471	3470	3461	3464	3443	3408	3384	3349	3428	3422	3400	3398	3397	3373	3375	3362	3471
31	3433	3434	3415	3418	3397	3372	3346	3313	3389	3372	3361	3360	3350	3335	3329	3324	3433
32	3383	3393	3378	3381	3350	3324	3299	3265	3338	3331	3310	3311	3309	3286	3288	3275	3383
33	3342	3343	3329	3341	3313	3286	3262	3226	3297	3291	3269	3270	3268	3246	3240	3234	3342
34	3290	3302	3286	3288	3272	3234	3214	3172	3241	3235	3225	3215	3215	3194	3197	3194	3290
35	3246	3248	3245	3235	3220	3183	3171	3130	3194	3187	3167	3171	3172	3149	3151	3138	3246
36	3188	3192	3191	3192	3176	3139	3113	3086	3131	3126	3119	3112	3114	3104	3092	3091	3188
37	3138	3141	3143	3135	3120	3093	3065	3024	3079	3073	3052	3061	3065	3045	3043	3029	3138
38	3076	3091	3079	3085	3062	3042	3002	2958	3007	3002	2996	3009	3005	2992	2979	2979	3076
39	3024	3024	3025	3023	3013	2980	2948	2902	2946	2943	2924	2941	2956	2925	2924	2914	3024
40	2966	2967	2957	2971	2962	2926	2877	2831	2887	2867	2867	2884	2889	2870	2855	2859	2966
41	2890	2894	2899	2902	2899	2856	2821	2773	2810	2808	2794	2809	2830	2798	2800	2787	2890
42	2829	2833	2827	2843	2844	2783	2747	2701	2767	2748	2750	2766	2768	2755	2745	2748	2829
43	2746	2754	2767	2769	2771	2723	2674	2629	2691	2687	2674	2690	2702	2682	2689	2675	2746
44	2682	2693	2693	2710	2694	2648	2614	2569	2616	2610	2612	2627	2616	2622	2615	2615	2682
45	2602	2614	2631	2634	2629	2586	2537	2495	2555	2548	2535	2545	2547	2544	2555	2538	2602
46	2537	2550	2552	2570	2544	2506	2476	2434	2478	2470	2472	2462	2463	2480	2478	2475	2537
47	2457	2474	2488	2488	2474	2443	2399	2360	2416	2409	2394	2395	2396	2399	2400	2397	2457
48	2376	2392	2405	2421	2384	2361	2336	2298	2338	2331	2330	2312	2312	2318	2336	2333	2376
49	2295	2327	2337	2333	2310	2294	2258	2221	2275	2268	2249	2245	2228	2252	2256	2253	2295
50	2230	2245	2250	2260	2219	2209	2194	2160	2196	2190	2185	2161	2161	2169	2190	2173	2230
51	2147	2178	2163	2167	2146	2120	2131	2083	2131	2110	2105	2093	2077	2102	2108	2109	2147
52	2079	2095	2092	2094	2056	2049	2051	2021	2051	2047	2024	2009	2010	2020	2042	2027	2079
53	1992	2011	2002	2003	1985	1960	1970	1943	1970	1967	1959	1926	1926	1954	1959	1962	1992
54	1925	1943	1930	1930	1895	1889	1904	1880	1904	1903	1877	1859	1858	1870	1892	1880	1925
55	1840	1874	1841	1840	1824	1802	1821	1800	1824	1823	1812	1777	1774	1804	1809	1814	1840
56	1771	1786	1771	1767	1734	1734	1754	1735	1759	1759	1730	1711	1706	1720	1725	1731	1771
57	1685	1697	1683	1677	1662	1649	1672	1655	1677	1678	1666	1630	1621	1636	1659	1649	1685
58	1615	1627	1613	1605	1571	1581	1607	1591	1611	1613	1586	1565	1537	1569	1577	1583	1615
59	1530	1539	1526	1516	1500	1496	1524	1511	1531	1533	1508	1485	1470	1487	1512	1501	1530
60	1447	1468	1458	1428	1412	1428	1459	1432	1455	1452	1445	1405	1389	1421	1431	1436	1447
61	1382	1381	1374	1358	1328	1345	1379	1369	1394	1389	1367	1342	1325	1340	1367	1354	1382

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62	1301	1313	1307	1272	1262	1280	1300	1292	1318	1311	1306	1263	1249	1275	1288	1291	1301
63	1237	1230	1225	1204	1182	1199	1238	1232	1259	1251	1230	1201	1190	1194	1210	1213	1237
64	1159	1166	1161	1121	1119	1136	1161	1158	1185	1177	1171	1126	1117	1116	1149	1152	1159
65	1097	1088	1083	1058	1042	1058	1100	1099	1128	1118	1097	1068	1060	1056	1073	1077	1097
66	1023	1028	1007	982	981	998	1025	1026	1057	1047	1040	997	991	984	1014	1004	1023
67	964	955	948	923	907	925	966	970	1000	977	968	941	922	928	941	947	964
68	893	899	877	853	850	855	894	901	931	922	898	874	868	860	883	878	893
69	838	831	821	799	781	800	837	846	863	855	843	808	802	806	813	824	838
70	770	779	754	734	728	733	767	780	810	802	776	756	751	740	759	758	770
71	718	715	701	683	665	681	713	728	744	737	723	692	688	677	693	707	718
72	655	653	638	622	616	618	648	664	692	687	660	644	639	627	629	645	655
73	606	604	588	574	557	569	597	603	629	625	610	584	579	568	580	585	606
74	547	546	529	517	500	510	536	555	580	576	550	538	533	522	522	538	547
75	489	500	483	462	456	464	489	496	520	517	492	482	478	467	477	482	489
76	445	445	428	419	404	410	432	451	473	460	447	438	424	424	422	439	445
77	391	403	385	367	363	367	378	396	417	416	393	386	382	372	381	386	391
78	350	351	334	328	314	317	336	354	362	362	351	335	332	333	331	346	350
79	300	311	286	280	277	270	287	303	321	321	302	297	294	286	293	298	300
80	262	264	249	244	232	233	249	264	271	272	264	251	248	241	248	261	262
81	217	228	205	201	198	190	205	218	233	234	219	216	214	208	206	217	217
82	183	185	172	168	157	158	172	184	188	190	184	174	173	168	174	176	183
83	144	145	134	130	118	120	133	144	147	149	145	136	135	138	137	146	144
84	107	116	99	92	88	90	104	107	116	118	109	107	106	104	109	111	107
85	81	83	74	66	56	58	72	81	82	84	82	72	71	70	79	85	81
86	53	60	44	38	35	32	42	52	57	60	53	48	41	47	51	57	53
87	33	35	25	20	15	16	24	31	30	33	31	24	23	23	31	33	33
88	13	14	8	6	4	4	7	11	14	13	12	8	7	10	12	17	13
89	3	4	3	2	2	2	3	3	4	5	4	4	4	4	4	5	3
90	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2
91	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2
92	2	2	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2
93	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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94	2	1	2	1	1	1	1	2	2	2	2	2	2	2	2	2
95	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
96	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
97	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
98	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
99	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1	1
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126	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
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158	3	2	2	2	2	2	2	2	2	3	2	2	2	3	2	2	2	3
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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP5-100(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160711	120.0	60	0.8440	100.6	0.9933	11.37
NB-BB2	277.0	60	0.4107	100.4	0.8825	15.78
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

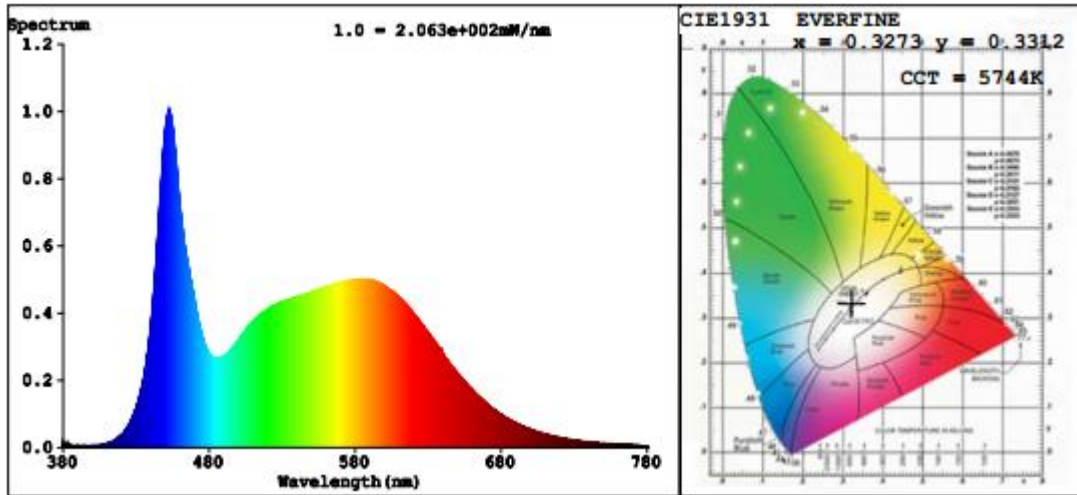
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	87	R9	25
Frequency (Hz)	60	R2	93	R10	81
CCT (K)	5744	R3	94	R11	85
Duv	-0.0028	R4	86	R12	65
Chromaticity (x, y)	x=0.3273 y=0.3312	R5	87	R13	89
Chromaticity (u', v')	u'=0.2072 v'=0.4716	R6	87	R14	97
Color Rendering Index (CRI)	86.7	R7	88	R15	84
R9	25	R8	73	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	10927	10647	>=10000(-10%)	
Luminous Efficacy (lm/W)	108.62	106.05	Standard: >= 100(-3%)	Premium: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******