



Report No.: BLC1803017E-A

LM-79-08 Test Report

For

Revolution Lighting Technologies, Inc.

(Brand Name:  Revolution Lighting)

2280 Ward Ave. Simi Valley, CA. 93065

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): 1130SE-35T

Remark: S represents Sensor Options, can be 1 = N/A, 2 = 7-Pin Photocell, 9 = 3-Pin Photocell
T represents CCT, can be 2 = 4000K, 4 = 5000K

Representative (Tested) Model: 1130SE-352
1130SE-354

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: April.09,2018

Review By:


Tommy Liang

Manager: Tommy Liang



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1.1 Product Information:

Organization Name	Revolution Lighting Technologies, Inc.	
Brand Name		
Model Number	1130SE-35T	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	93W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	BLC1803017E-E1(4000K),E2(5000K)	
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	April.04,2018
Date of Test	April.08,2018
Test item	<ol style="list-style-type: none">1. Total Luminous Flux2. Luminous Distribution Intensity3. Luminous Efficacy4. Correlated Color Temperature5. Color Rendering Index6. Chromaticity Coordinate7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none">1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources4. CIE 15-2004 Technical Report Colorimetry5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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.</p>
<p>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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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.</p>
<p>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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.</p>

**2.1 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction BL-QP-033)*

Test date	2018-4-8	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	1130SE-352		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180301	120.0	60	0.7744	92.47	0.9951	8.02
7E-E1	277.0	60	0.3558	91.72	0.9306	14.76
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

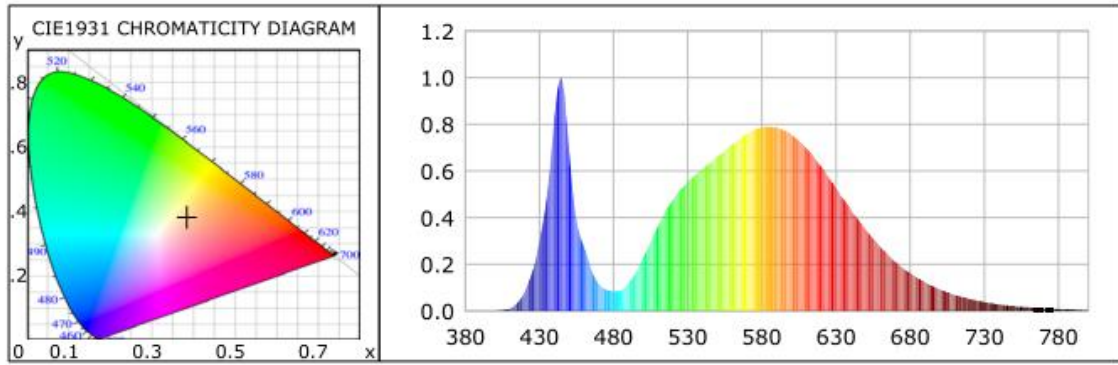
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	70	R9	0
Frequency (Hz)	60	R2	78	R10	48
CCT (K)	3907	R3	84	R11	69
Duv	-0.00039	R4	73	R12	45
Chromaticity (x, y)	x=0.3843 y=0.3783	R5	70	R13	71
Chromaticity (u', v')	u(u')=0.2270 v'(v')=0.5028	R6	69	R14	91
Color Rendering Index (CRI)	72.2	R7	80	R15	64
R9	0	R8	55	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	12919.3	12776.5	>=10000(-10%)
Luminous Efficacy (lm/W)	139.71	139.30	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	138.17		
Zonal lumens in the 0-90° zone (%)	99.7	--	>=100(-1)
Zonal lumens in the 80-90° zone (%)	0.3	--	<=10(+3)
Beam Angle (°)	118.5	--	--
Center Beam Candle Power (cd)	2597	--	--



Spectral Power Distribution & Chromaticity Diagram

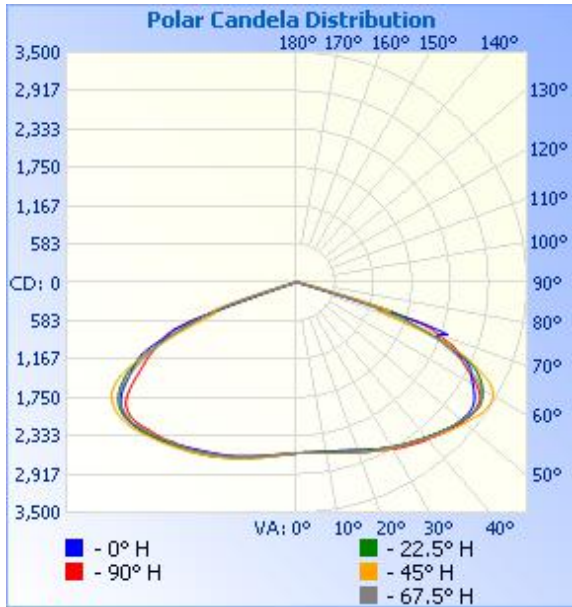


Zonal Lumen Tabulation

Zonal Lumen Summary				Lumens Per Zone					
Zone	Lumens	% Lamp	% Luminaire	Zone	Lumens	% Total	Zone	Lumens	% Total
0-30	2,348.4	18.2%	18.2%	0-10	250.8	1.9%	90-100	7.8	0.1%
0-40	4,251.2	32.9%	32.9%	10-20	771.6	6.0%	100-110	6.0	0%
0-60	9,691.5	75%	75%	20-30	1,326.0	10.3%	110-120	6.1	0%
60-90	3,188.7	24.7%	24.7%	30-40	1,902.7	14.7%	120-130	5.5	0%
70-100	650.8	5%	5%	40-50	2,487.7	19.3%	130-140	4.4	0%
90-120	19.9	0.2%	0.2%	50-60	2,952.6	22.9%	140-150	3.5	0%
0-90	12,880.2	99.7%	99.7%	60-70	2,545.7	19.7%	150-160	2.6	0%
90-180	38.1	0.3%	0.3%	70-80	610.7	4.7%	160-170	1.6	0%
0-180	12,918.2	100%	100%	80-90	32.3	0.3%	170-180	0.5	0%



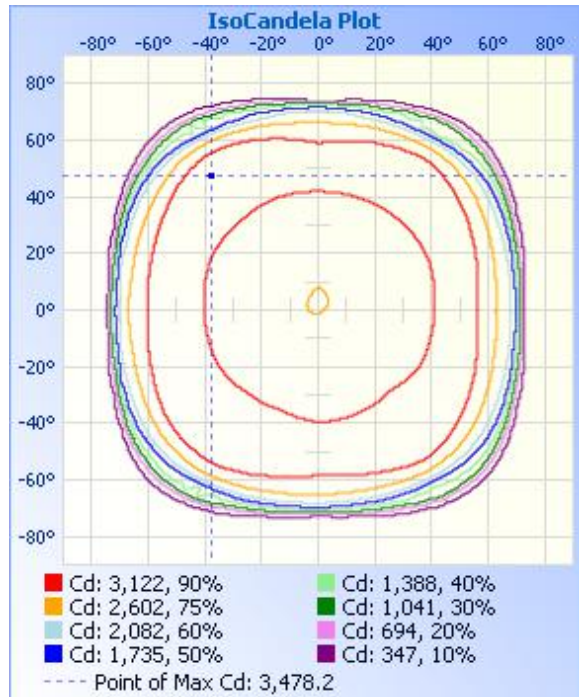
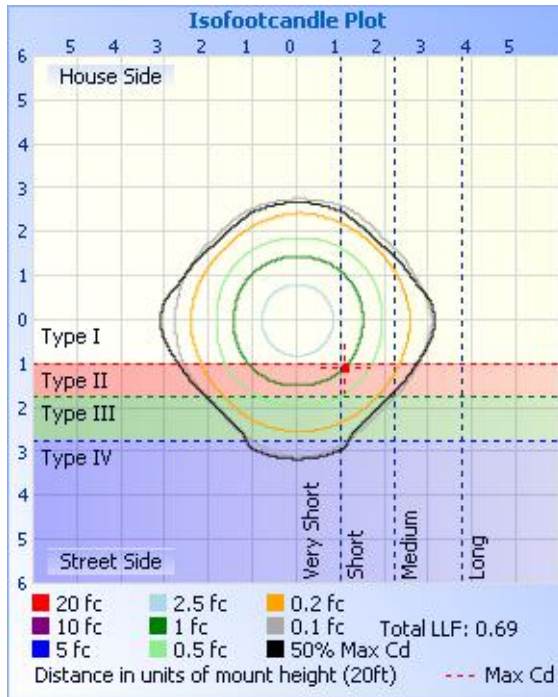
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	8.99 fc	68.6 ft	57.1 ft
34.0ft	2.25 fc	137.2 ft	114.3 ft
51.0ft	1.00 fc	205.8 ft	171.4 ft
68.0ft	0.56 fc	274.4 ft	228.6 ft
85.0ft	0.36 fc	343.0 ft	285.7 ft
102.0ft	0.25 fc	411.6 ft	342.9 ft

■ Vert. Spread: 127.3°
■ Horiz. Spread: 118.5°





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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	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2597
1	2594	2593	2594	2596	2596	2598	2600	2601	2602	2602	2602	2600	2600	2598	2596	2593	2594
2	2592	2592	2593	2596	2596	2600	2603	2606	2607	2609	2608	2606	2605	2599	2596	2592	2592
3	2592	2593	2594	2598	2598	2603	2609	2613	2613	2617	2616	2611	2609	2601	2597	2592	2592
4	2592	2594	2596	2600	2602	2607	2615	2620	2621	2626	2625	2618	2616	2605	2600	2593	2592
5	2593	2596	2599	2602	2607	2613	2623	2628	2629	2636	2634	2626	2623	2611	2603	2595	2593
6	2594	2598	2603	2606	2612	2620	2632	2638	2637	2648	2646	2635	2630	2618	2609	2599	2594
7	2595	2601	2607	2611	2618	2628	2641	2648	2646	2659	2657	2645	2639	2627	2615	2603	2595
8	2599	2606	2614	2617	2624	2636	2652	2660	2656	2671	2669	2655	2649	2636	2622	2609	2599
9	2602	2612	2621	2625	2630	2647	2663	2672	2668	2684	2681	2666	2662	2645	2630	2616	2602
10	2608	2620	2629	2633	2638	2659	2675	2684	2680	2696	2696	2678	2675	2654	2638	2623	2608
11	2615	2628	2637	2642	2646	2670	2688	2696	2693	2710	2709	2690	2688	2665	2648	2630	2615
12	2623	2636	2647	2651	2656	2679	2701	2710	2705	2722	2723	2702	2700	2678	2659	2638	2623
13	2631	2645	2658	2661	2666	2689	2716	2723	2717	2736	2738	2714	2713	2693	2669	2647	2631
14	2639	2654	2667	2673	2674	2700	2731	2737	2730	2750	2752	2728	2728	2706	2681	2658	2639
15	2648	2664	2678	2684	2683	2710	2745	2752	2742	2765	2767	2741	2743	2720	2693	2669	2648
16	2658	2675	2689	2696	2694	2723	2760	2767	2757	2780	2782	2757	2758	2734	2707	2682	2658
17	2670	2686	2703	2709	2707	2735	2775	2782	2771	2795	2796	2771	2772	2744	2720	2695	2670
18	2682	2698	2717	2722	2720	2747	2790	2799	2785	2810	2809	2786	2787	2757	2734	2708	2682
19	2696	2711	2731	2735	2735	2761	2805	2814	2798	2824	2824	2801	2802	2771	2749	2722	2696
20	2712	2725	2746	2750	2748	2776	2820	2830	2812	2840	2840	2815	2817	2784	2763	2738	2712
21	2729	2738	2760	2766	2762	2790	2834	2847	2827	2855	2857	2831	2830	2799	2779	2753	2729
22	2747	2752	2775	2779	2779	2806	2848	2864	2840	2870	2873	2847	2845	2816	2792	2767	2747
23	2764	2768	2789	2795	2795	2823	2863	2881	2851	2887	2888	2864	2861	2832	2807	2783	2764
24	2781	2785	2806	2809	2812	2840	2881	2899	2863	2904	2903	2878	2876	2848	2823	2798	2781
25	2800	2803	2821	2823	2828	2856	2896	2916	2877	2921	2920	2889	2888	2864	2836	2813	2800
26	2819	2819	2837	2835	2845	2875	2910	2933	2889	2939	2938	2904	2902	2879	2849	2831	2819
27	2837	2835	2854	2846	2862	2892	2925	2948	2902	2954	2955	2918	2919	2891	2867	2848	2837
28	2854	2852	2870	2860	2882	2908	2941	2965	2916	2969	2970	2934	2931	2904	2885	2865	2854
29	2874	2869	2888	2875	2901	2922	2961	2982	2932	2985	2986	2951	2945	2917	2901	2883	2874

Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
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31	2908	2908	2923	2915	2944	2952	2997	3015	2963	3013	3019	2985	2978	2944	2932	2921	2908
32	2924	2926	2939	2934	2967	2974	3015	3033	2981	3028	3036	3000	2995	2959	2945	2938	2924
33	2945	2945	2956	2954	2983	2994	3031	3051	2999	3041	3052	3014	3011	2974	2959	2956	2945
34	2965	2960	2972	2971	3000	3010	3051	3071	3016	3056	3070	3028	3027	2991	2972	2972	2965
35	2984	2975	2987	2991	3019	3025	3070	3087	3033	3071	3088	3042	3039	3008	2988	2987	2984
36	3002	2991	3007	3007	3036	3044	3088	3103	3055	3086	3106	3057	3050	3023	3004	3001	3002
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39	3056	3052	3067	3064	3095	3102	3145	3156	3119	3136	3159	3103	3097	3070	3061	3051	3056
40	3075	3073	3090	3084	3110	3122	3159	3174	3139	3153	3177	3122	3113	3086	3085	3073	3075
41	3096	3093	3117	3104	3126	3145	3177	3191	3159	3172	3197	3141	3129	3105	3106	3095	3096
42	3115	3116	3138	3124	3146	3169	3195	3207	3178	3190	3212	3158	3141	3122	3125	3124	3115
43	3136	3135	3161	3146	3169	3191	3215	3223	3198	3206	3228	3172	3154	3140	3150	3150	3136
44	3156	3157	3186	3162	3192	3212	3233	3238	3218	3224	3246	3189	3164	3156	3172	3172	3156
45	3175	3178	3213	3180	3209	3230	3253	3254	3236	3242	3268	3206	3174	3178	3193	3192	3175
46	3196	3201	3243	3199	3223	3249	3273	3269	3250	3260	3289	3225	3193	3198	3215	3210	3196
47	3218	3223	3266	3216	3241	3269	3292	3287	3263	3274	3307	3243	3209	3216	3233	3231	3218
48	3237	3246	3290	3235	3261	3291	3313	3304	3272	3287	3326	3259	3224	3232	3249	3247	3237
49	3249	3265	3310	3252	3285	3309	3330	3315	3283	3300	3341	3275	3233	3248	3265	3265	3249
50	3262	3283	3330	3268	3301	3328	3343	3327	3294	3309	3352	3283	3238	3264	3282	3284	3262
51	3271	3301	3349	3291	3312	3348	3360	3337	3296	3315	3362	3287	3244	3274	3299	3300	3271
52	3281	3319	3374	3311	3322	3362	3377	3340	3295	3318	3370	3287	3237	3280	3317	3317	3281
53	3288	3335	3404	3332	3332	3373	3392	3343	3290	3314	3373	3281	3222	3285	3334	3328	3288
54	3285	3349	3429	3343	3336	3385	3403	3340	3276	3305	3373	3277	3206	3286	3349	3336	3285
55	3274	3357	3451	3348	3337	3388	3410	3332	3260	3292	3369	3268	3169	3280	3357	3340	3274
56	3255	3359	3463	3346	3329	3384	3411	3314	3227	3265	3356	3255	3113	3266	3358	3332	3255
57	3226	3348	3474	3339	3319	3374	3406	3291	3180	3231	3339	3228	3040	3242	3353	3312	3226
58	3187	3330	3478	3323	3291	3354	3392	3253	3129	3190	3317	3180	2958	3199	3341	3283	3187
59	3142	3303	3472	3289	3243	3326	3366	3198	3054	3134	3279	3103	2872	3124	3312	3248	3142
60	3095	3266	3454	3242	3178	3280	3322	3135	2972	3068	3222	3002	2782	3030	3274	3204	3095
61	3049	3224	3414	3175	3101	3219	3245	3057	2902	2990	3138	2902	2697	2923	3220	3156	3049

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62	3010	3173	3352	3090	3007	3143	3145	2979	2835	2901	3032	2798	2623	2826	3130	3097	3010
63	2976	3107	3257	2981	2915	3043	3020	2881	2767	2782	2879	2685	2551	2728	3021	3018	2976
64	2931	3034	3128	2862	2834	2923	2881	2770	2696	2654	2661	2543	2461	2604	2867	2919	2931
65	2854	2934	2994	2738	2761	2752	2719	2627	2602	2464	2434	2391	2371	2446	2672	2801	2854
66	2713	2804	2842	2598	2699	2586	2540	2442	2457	2283	2186	2229	2287	2258	2446	2669	2713
67	2549	2626	2636	2464	2650	2432	2306	2268	2254	2089	1912	2066	2190	2088	2205	2472	2549
68	2373	2396	2358	2332	2562	2280	1990	2062	2125	1852	1598	1893	2096	1939	1893	2266	2373
69	2274	2166	2002	2142	2403	2065	1605	1843	1990	1641	1360	1705	1966	1751	1526	2060	2274
70	2325	1929	1578	1921	2274	1767	1303	1651	1614	1476	1287	1478	1703	1508	1193	1821	2325
71	2430	1774	1308	1651	2186	1481	1354	1368	997	1227	1365	1264	1095	1292	1185	1636	2430
72	2054	1708	1394	1316	1927	1367	1463	915	448	810	1192	1028	458	1037	1396	1542	2054
73	1211	1539	1485	1051	1318	1067	1066	502	198	414	701	613	179	634	1235	1325	1211
74	405	1033	1068	632	579	670	609	259	111	235	412	352	109	373	733	767	405
75	155	510	648	368	225	390	366	161	82	153	262	226	78	235	442	400	155
76	103	301	401	235	125	261	243	119	68	113	181	163	64	167	281	243	103
77	87	200	272	166	86	187	172	92	59	87	129	121	56	125	196	165	87
78	77	142	193	123	71	137	128	74	51	69	97	97	50	100	142	117	77
79	69	107	141	101	61	109	92	58	45	57	76	80	45	82	110	93	69
80	61	84	109	81	54	88	75	49	39	48	63	68	40	68	86	72	61
81	54	66	85	66	47	73	62	41	33	39	52	57	35	58	69	58	54
82	47	54	68	56	41	62	50	33	28	33	42	48	31	48	57	49	47
83	39	45	57	47	37	48	41	28	24	27	35	40	28	40	46	40	39
84	32	37	43	39	32	38	31	23	19	23	27	33	24	33	37	33	32
85	26	32	34	33	27	30	24	17	14	17	22	28	21	27	28	27	26
86	22	25	27	26	24	24	19	12	11	13	16	22	16	22	23	21	22
87	17	20	21	21	21	19	13	11	10	12	12	18	12	16	17	17	17
88	13	14	17	16	16	13	12	11	9	11	11	14	8	12	13	13	13
89	11	12	12	12	11	11	11	10	10	9	10	11	8	9	12	11	11
90	9	11	11	11	9	9	10	10	8	9	10	10	6	9	10	10	9
91	9	11	10	9	7	8	9	8	8	10	9	8	7	8	9	9	9
92	7	10	10	10	7	7	9	8	8	8	8	10	6	7	8	8	7
93	8	9	9	8	6	7	8	8	8	9	8	9	5	7	9	7	8

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94	8	9	9	9	5	7	8	7	8	8	8	8	5	7	8	7	8
95	7	8	7	7	5	7	7	7	6	8	7	8	3	6	8	7	7
96	7	8	7	8	6	6	7	7	7	7	8	8	5	5	7	6	7
97	7	7	7	7	5	6	7	8	7	7	7	7	3	6	7	5	7
98	4	7	7	7	5	4	7	7	5	7	7	7	4	5	5	6	4
99	6	7	7	6	4	6	6	6	6	7	6	7	3	5	6	6	6
100	6	6	6	6	4	6	7	6	6	7	7	8	4	4	6	5	6
101	5	6	6	6	5	6	7	6	6	7	7	7	3	4	6	6	5
102	4	6	6	5	3	6	7	5	6	7	7	7	3	4	6	5	4
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Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
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158	7	7	6	6	3	5	6	6	6	6	6	6	4	5	7	6	7
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179	5	6	5	5	2	5	4	5	5	6	5	6	4	5	6	5	5
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**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction BL-QP-033)*

Test date	2018-4-8	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	1130SE-354		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180301	120.0	60	0.7769	92.66	0.9939	8.33
7E-E2	277.0	60	0.3529	91.37	0.9347	14.5
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	72	R9	0
Frequency (Hz)	60	R2	78	R10	48
CCT (K)	4893	R3	83	R11	72
Duv	0.00107	R4	75	R12	44
Chromaticity (x, y)	x=0.3484 y=0.3564	R5	72	R13	72
Chromaticity (u', v')	u(u')=0.2118 v'(v')=0.4875	R6	70	R14	90
Color Rendering Index (CRI)	74	R7	82	R15	67
R9	0	R8	60	--	--

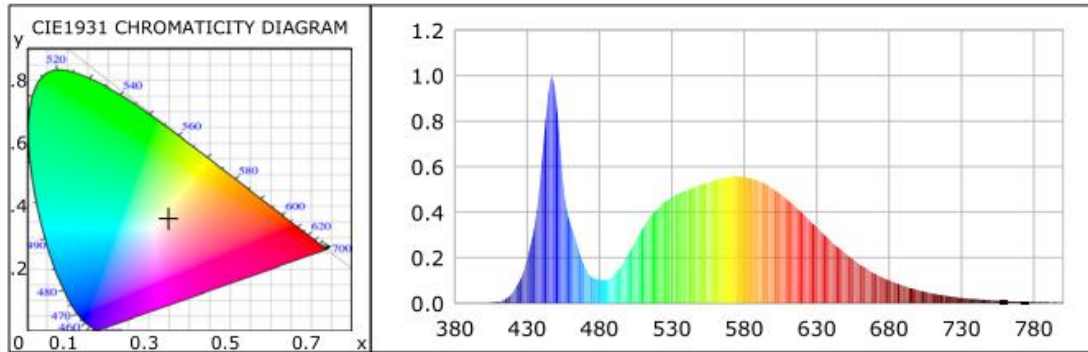
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	13265.21	13128.96	>=10000(-10%)
Luminous Efficacy (lm/W)	143.16	143.69	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	141.69		



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Spectral Power Distribution & Chromaticity Diagram





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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2019-01-15
AC Power Source	CHP-500C	N/A	2019-01-14
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2019-01-22
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Integral Sphere (2M)	2M	DYJCE120067	2019-01-15
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2019-01-15

Expand Uncertainty:
Photometric Measurement (Sphere): 2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.7%, k=2

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