



Report No.: BLC2005038E-P

## LM-79-08 Test Report

For

# DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD

(Brand Name: )

Cunwei Sanhui Ind. Area, HengLi Town, Dongguan, Guangdong, China

## Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): TLSTF100PXSAZZ-3030-a-F

Remark: X represents the CCT as below: 3=3000K, 4=4000K, 5=5000K, 6=5700K. ZZ=Housing Colors (use 2 letters to indicate all of color). a represents photocontroller, can be blank or PC=Photocell provided. 3030 represents for 3030 LEDs. F represents for Fahold Driver.

Representative (Tested) Model:  
TLSTF100P3SAZZ-3030-a-F  
TLSTF100P6SAZZ-3030-a-F

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

Test & Report By:

*Grace Li*

Engineer: Grace Li

Date: June 19, 2020

Review By:

*Jason Luo*

Manager: Jason Luo



Report No.: BLC2005038E-P

### 1.1 Product Information:

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name		
Model Number	TLSTF100PXSAAZZ-3030-a-F	
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	
Distribution Type	TYPE III	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	100W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K, 4000K, 5000K, 5700K	
Dimmable or Not	Yes	
Dimming type	Continuous Dimming	
LED Manufacturer	Lumileds	
LED Model	L130-3070003000X21 L130-5770003000X21	
Color Maintenance of LM80 report	0.0032	(DLC Pass Criteria: $\leq 0.007$ )
Sample Number	BLC2005038E-P1(3000K),P2(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	June 14, 2020
Date of Test	June 15, 2020
Test item	<ol style="list-style-type: none"><li>1. Total Luminous Flux</li><li>2. Luminous Distribution Intensity</li><li>3. Luminous Efficacy</li><li>4. Correlated Color Temperature</li><li>5. Color Rendering Index</li><li>6. Chromaticity Coordinate</li><li>7. Electrical Parameters</li></ol>
Reference Standard	<ol style="list-style-type: none"><li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li><li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li><li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li><li>4. CIE 15-2004 Technical Report Colorimetry</li><li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li><li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li></ol>
Reference Work Instruction	BL-QP-033

## 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  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  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 BL-QP-033)*

<b>Test date</b>	2020-06-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	TLSTF100P3SAZZ-3030-a-F		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200503	120.0	60	0.8352	99.92	0.997	5.99
8E-P1	277.0	60	0.3627	96.16	0.957	14.84
<b>DLC Pass Criteria</b>					$\geq 0.9(-3\%)$	$\leq 20(+5)$

**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

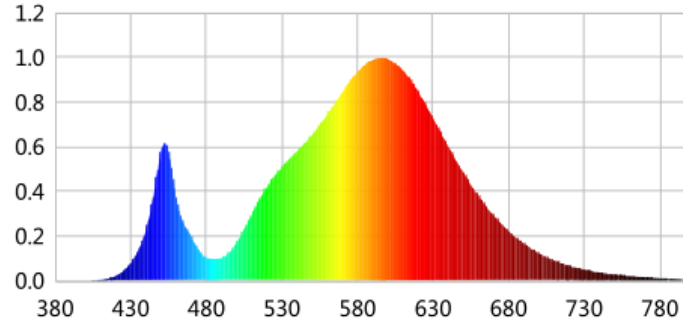
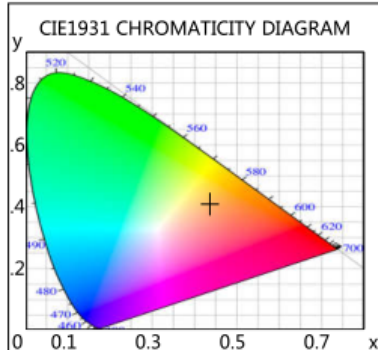
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	69	R9	0
Frequency (Hz)	60	R2	82	R10	58
CCT (K)	3028	R3	93	R11	63
Duv	0.00136	R4	69	R12	45
Chromaticity (x, y)	x=0.4369 y=0.4075	R5	68	R13	71
Chromaticity (u', v')	u(u')=0.2491 v'=0.5227	R6	75	R14	96
Color Rendering Index (CRI)	72.6	R7	79	R15	62
R9	0	R8	46	--	--
Rf	75	--	--	--	--
Rg	94	--	--	--	--

**Photometric Measurement – Goniophotometer Method:**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	12367.5	12029.8	$\geq 10000(-10\%)$
Luminous Efficacy (lm/W)	123.77	125.10	Premium: $\geq 120(-3\%)$
Most worst Luminous/Highest	120.39		
Zonal lumens in the 0-90 ° zone (%)	100	--	$\geq 100(-1)$
Zonal lumens in the 80-90 ° zone (%)	1.4	--	$\leq 10(+3)$
Beam Angle (°)	135.6	--	--
Center Beam Candle Power (cd)	2463	--	--



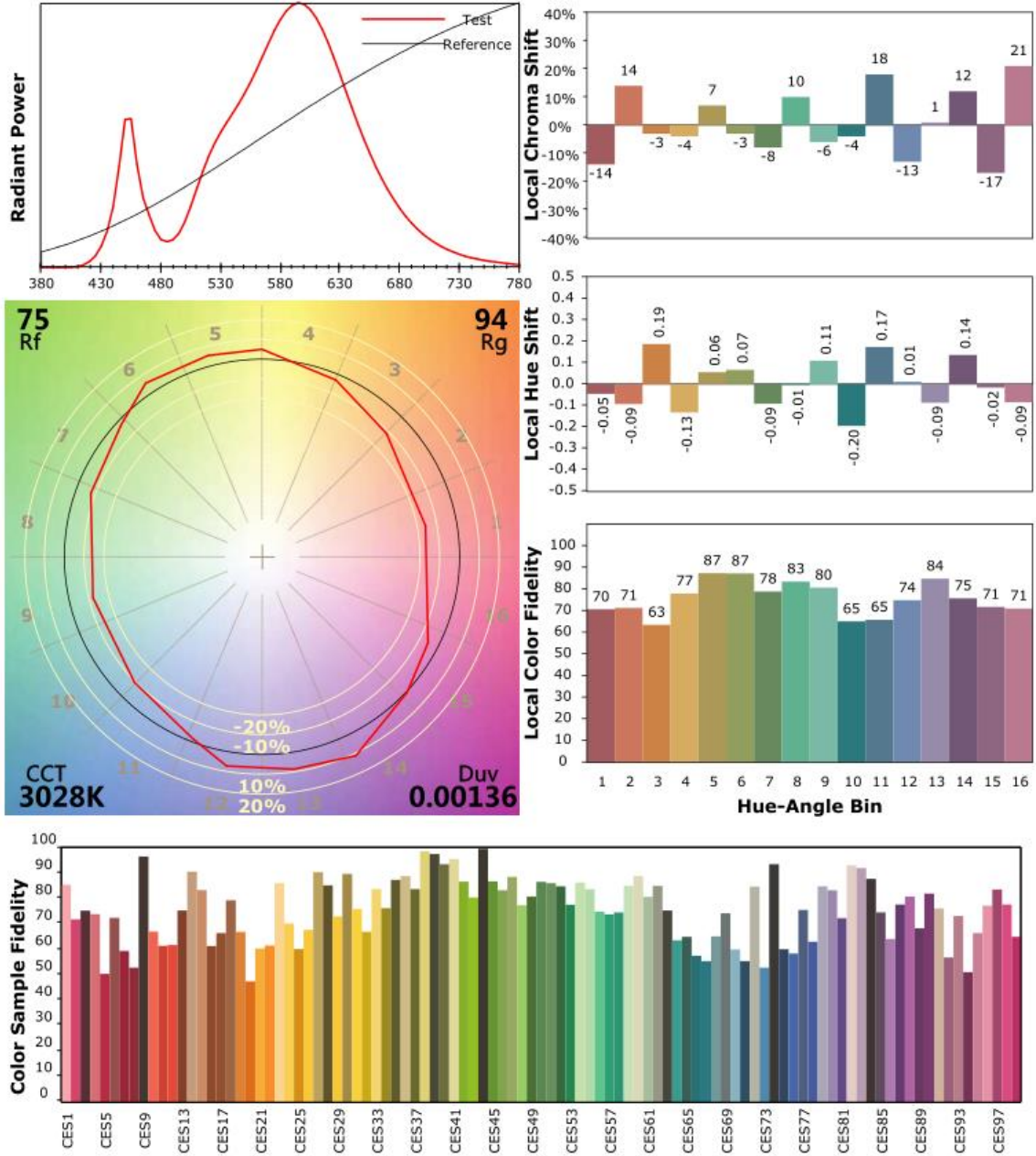
### Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0240	525	0.4704	124.2789	670	0.2940	77.6791
385	0.0002	0.0417	530	0.5096	134.6295	675	0.2572	67.9407
390	0.0009	0.2302	535	0.5460	144.2576	680	0.2241	59.1954
395	0.0001	0.0360	540	0.5807	153.4102	685	0.1931	51.0121
400	0.0003	0.0918	545	0.6157	162.6564	690	0.1680	44.3920
405	0.0013	0.3322	550	0.6555	173.1767	695	0.1443	38.1218
410	0.0037	0.9706	555	0.6983	184.4717	700	0.1242	32.8241
415	0.0093	2.4560	560	0.7452	196.8695	705	0.1074	28.3745
420	0.0209	5.5206	565	0.7950	210.0205	710	0.0923	24.3907
425	0.0427	11.2768	570	0.8440	222.9630	715	0.0790	20.8583
430	0.0783	20.6860	575	0.8944	236.2906	720	0.0686	18.1229
435	0.1357	35.8609	580	0.9363	247.3683	725	0.0585	15.4513
440	0.2245	59.3087	585	0.9680	255.7453	730	0.0505	13.3296
445	0.3780	99.8541	590	0.9916	261.9728	735	0.0431	11.3867
450	0.5759	152.1492	595	1.0000	264.1875	740	0.0371	9.8088
455	0.5816	153.6483	600	0.9942	262.6552	745	0.0321	8.4845
460	0.3791	100.1414	605	0.9758	257.7829	750	0.0276	7.2919
465	0.2600	68.7009	610	0.9429	249.1083	755	0.0249	6.5811
470	0.1998	52.7774	615	0.9018	238.2314	760	0.0211	5.5681
475	0.1378	36.4149	620	0.8499	224.5270	765	0.0177	4.6836
480	0.1037	27.4037	625	0.7905	208.8399	770	0.0150	3.9618
485	0.0971	25.6482	630	0.7292	192.6374	775	0.0129	3.4067
490	0.1027	27.1385	635	0.6659	175.9261	780	0.0109	2.8817
495	0.1261	33.3138	640	0.6035	159.4422	785	0.0098	2.5886
500	0.1707	45.1076	645	0.5415	143.0465	790	0.0091	2.3928
505	0.2302	60.8061	650	0.4848	128.0667	795	0.0061	1.6127
510	0.2973	78.5348	655	0.4307	113.7757	800	0.0051	1.3414
515	0.3624	95.7417	660	0.3805	100.5318			
520	0.4206	111.1188	665	0.3355	88.6347			



**TM30**





### Zonal Lumen Tabulation

#### Zonal Lumen Summary

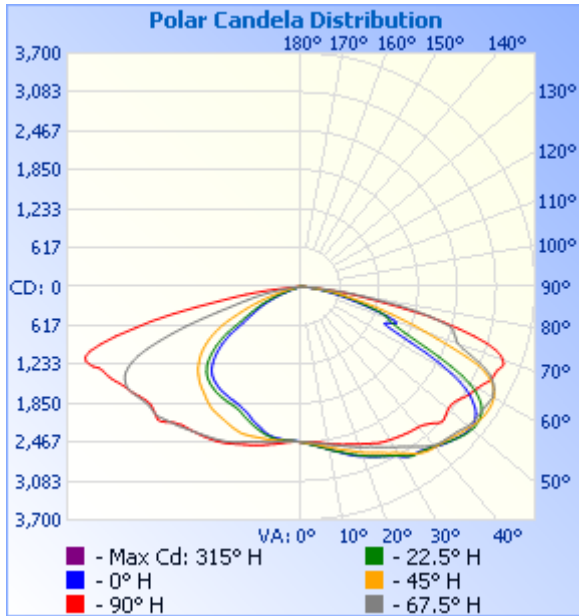
Zone	Lumens	% Lamp	% Luminaire
0-30	2,214.5	17.9%	17.9%
0-40	3,977.8	32.2%	32.2%
0-60	8,746.6	70.7%	70.7%
60-90	3,620.1	29.3%	29.3%
70-100	1,400.2	11.3%	11.3%
90-120	0	0%	0%
0-90	12,366.8	100%	100%
90-180	0	0%	0%
0-180	12,366.8	100%	100%

#### Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	238.5	1.9%	90-100	0	0%
10-20	732.9	5.9%	100-110	0	0%
20-30	1,243.0	10.1%	110-120	0	0%
30-40	1,763.3	14.3%	120-130	0	0%
40-50	2,242.8	18.1%	130-140	0	0%
50-60	2,526.0	20.4%	140-150	0	0%
60-70	2,219.9	18.0%	150-160	0	0%
70-80	1,221.3	9.9%	160-170	0	0%
80-90	178.9	1.4%	170-180	0	0%



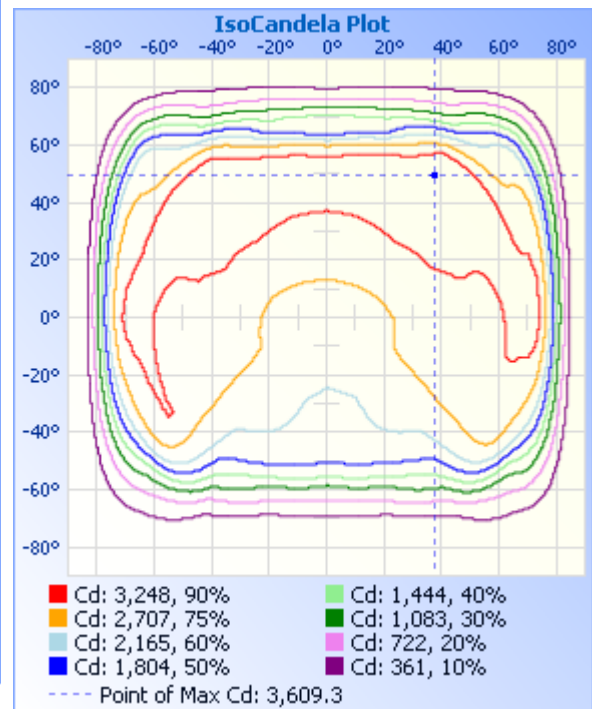
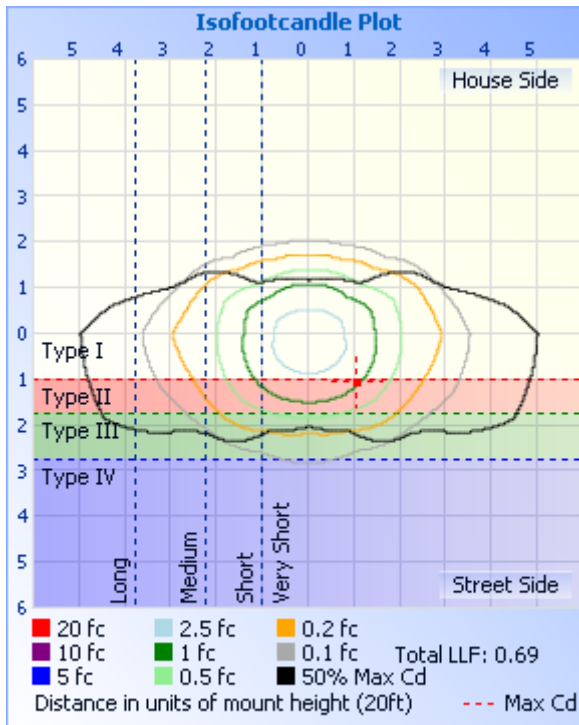
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	8.52 fc	53.7 ft	101.4 ft
34.0ft	2.13 fc	107.5 ft	202.9 ft
51.0ft	0.95 fc	161.2 ft	304.3 ft
68.0ft	0.53 fc	214.9 ft	405.7 ft
85.0ft	0.34 fc	268.7 ft	507.2 ft
102.0ft	0.24 fc	322.4 ft	608.6 ft

■ Vert. Spread: 115.4°  
■ Horiz. Spread: 142.9°







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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	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463	2463
1	2476	2475	2471	2464	2467	2457	2456	2459	2454	2457	2458	2459	2461	2468	2472	2472	2476
2	2485	2483	2480	2468	2469	2458	2452	2454	2448	2450	2455	2456	2460	2474	2481	2485	2485
3	2498	2501	2489	2472	2470	2455	2450	2448	2442	2449	2453	2455	2462	2479	2492	2498	2498
4	2513	2515	2499	2477	2474	2456	2452	2449	2436	2449	2455	2457	2469	2491	2505	2513	2513
5	2528	2528	2508	2488	2474	2458	2454	2450	2436	2452	2457	2462	2475	2501	2521	2529	2528
6	2544	2545	2519	2496	2481	2461	2455	2452	2438	2451	2459	2466	2487	2510	2533	2546	2544
7	2560	2561	2537	2507	2490	2469	2458	2452	2438	2446	2463	2473	2498	2523	2545	2568	2560
8	2578	2580	2554	2517	2502	2476	2461	2454	2434	2449	2466	2478	2512	2536	2564	2590	2578
9	2603	2602	2569	2528	2515	2485	2466	2455	2433	2450	2467	2488	2524	2547	2578	2604	2603
10	2622	2624	2585	2540	2527	2489	2469	2455	2426	2442	2472	2499	2534	2564	2596	2628	2622
11	2643	2647	2605	2554	2539	2499	2475	2448	2419	2435	2475	2510	2546	2577	2618	2649	2643
12	2669	2669	2624	2568	2550	2503	2483	2444	2409	2427	2480	2519	2561	2594	2635	2675	2669
13	2692	2686	2643	2583	2563	2516	2490	2437	2393	2416	2479	2529	2573	2608	2654	2696	2692
14	2716	2708	2663	2598	2576	2528	2496	2425	2374	2404	2480	2533	2587	2627	2679	2718	2716
15	2745	2732	2682	2615	2591	2541	2503	2416	2353	2387	2481	2543	2599	2645	2698	2740	2745
16	2773	2755	2702	2632	2599	2552	2508	2405	2325	2374	2486	2556	2612	2659	2720	2765	2773
17	2793	2778	2723	2652	2613	2564	2519	2392	2306	2357	2489	2568	2625	2683	2746	2788	2793
18	2821	2802	2745	2668	2626	2577	2523	2381	2288	2344	2494	2585	2638	2693	2771	2811	2821
19	2846	2828	2771	2688	2640	2598	2528	2364	2269	2325	2499	2600	2651	2713	2790	2837	2846
20	2864	2850	2793	2703	2655	2616	2532	2350	2248	2308	2502	2618	2663	2732	2815	2860	2864
21	2883	2873	2819	2722	2670	2637	2536	2331	2222	2287	2505	2635	2676	2753	2838	2882	2883
22	2905	2898	2839	2741	2686	2657	2537	2312	2198	2270	2508	2656	2691	2773	2858	2905	2905
23	2925	2919	2862	2760	2703	2674	2532	2291	2177	2254	2504	2676	2708	2794	2885	2924	2925
24	2947	2944	2884	2781	2719	2687	2526	2270	2158	2239	2495	2696	2726	2815	2906	2948	2947
25	2969	2968	2903	2806	2739	2705	2518	2248	2149	2214	2488	2712	2742	2836	2927	2971	2969
26	2993	2988	2931	2829	2759	2720	2507	2227	2134	2199	2478	2729	2756	2855	2954	2993	2993
27	3018	3011	2958	2855	2772	2731	2496	2210	2124	2187	2469	2741	2769	2883	2979	3018	3018
28	3042	3034	2986	2882	2786	2744	2484	2198	2114	2178	2458	2754	2781	2906	3007	3041	3042
29	3066	3063	3011	2906	2794	2757	2476	2193	2107	2171	2450	2765	2793	2930	3036	3067	3066

**Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01**  
**Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,**  
**Guangzhou, People' s Republic of China. info@bellingtest.com**

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Certificate#4810.01

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31	3146	3128	3078	2963	2815	2781	2453	2188	2099	2167	2433	2788	2812	2981	3102	3132	3146
32	3178	3166	3116	2991	2825	2789	2446	2186	2099	2163	2423	2801	2821	3008	3142	3166	3178
33	3194	3202	3152	3024	2835	2799	2434	2184	2093	2161	2417	2811	2830	3037	3176	3200	3194
34	3199	3216	3190	3060	2847	2810	2427	2182	2085	2159	2408	2823	2839	3067	3215	3223	3199
35	3211	3223	3227	3095	2853	2820	2417	2179	2084	2158	2403	2837	2845	3102	3246	3228	3211
36	3219	3232	3253	3134	2865	2832	2404	2177	2080	2155	2393	2850	2853	3138	3277	3241	3219
37	3236	3243	3279	3174	2874	2847	2393	2168	2075	2150	2382	2866	2862	3170	3308	3257	3236
38	3262	3262	3292	3214	2882	2863	2374	2167	2071	2147	2365	2881	2867	3206	3325	3267	3262
39	3283	3277	3304	3249	2890	2880	2354	2161	2064	2142	2345	2897	2878	3235	3336	3282	3283
40	3307	3298	3311	3279	2900	2895	2334	2151	2054	2134	2327	2915	2883	3263	3344	3304	3307
41	3333	3321	3321	3301	2917	2913	2314	2142	2045	2126	2308	2935	2899	3283	3356	3325	3333
42	3361	3348	3332	3317	2943	2929	2293	2132	2034	2117	2289	2951	2920	3300	3367	3349	3361
43	3381	3371	3346	3327	2975	2945	2271	2119	2022	2108	2270	2963	2948	3319	3378	3371	3381
44	3406	3400	3357	3338	3009	2964	2253	2106	2006	2094	2255	2983	2982	3330	3392	3394	3406
45	3422	3425	3378	3350	3057	2983	2231	2090	1989	2079	2238	3002	3034	3337	3406	3421	3422
46	3445	3453	3397	3363	3091	3002	2211	2071	1964	2063	2221	3020	3079	3343	3422	3446	3445
47	3463	3474	3418	3375	3088	3028	2189	2049	1935	2039	2201	3042	3096	3357	3446	3470	3463
48	3482	3496	3440	3396	3070	3048	2164	2025	1898	2012	2176	3059	3080	3369	3464	3487	3482
49	3493	3510	3456	3421	3050	3063	2141	1999	1854	1976	2149	3068	3063	3388	3484	3501	3493
50	3495	3523	3474	3441	3033	3071	2113	1971	1804	1944	2125	3062	3047	3401	3500	3515	3495
51	3491	3534	3496	3454	3023	3076	2087	1932	1747	1898	2100	3061	3032	3410	3520	3524	3491
52	3483	3529	3513	3461	3027	3084	2055	1878	1687	1843	2069	3062	3027	3409	3541	3527	3483
53	3454	3527	3526	3466	3040	3100	2019	1823	1616	1780	2028	3069	3034	3411	3550	3529	3454
54	3416	3511	3537	3468	3061	3119	1983	1755	1540	1711	1993	3077	3051	3411	3564	3520	3416
55	3365	3487	3549	3468	3092	3137	1942	1679	1451	1640	1954	3098	3073	3414	3581	3495	3365
56	3285	3447	3550	3474	3125	3161	1894	1586	1356	1557	1912	3116	3096	3417	3587	3467	3285
57	3199	3393	3551	3481	3154	3189	1845	1496	1196	1470	1862	3138	3127	3428	3601	3420	3199
58	3079	3313	3549	3486	3176	3216	1791	1400	1080	1375	1808	3157	3157	3440	3606	3353	3079
59	2928	3217	3538	3495	3194	3240	1733	1234	996	1219	1750	3175	3178	3452	3609	3269	2928
60	2748	3084	3520	3505	3222	3252	1668	1101	920	1102	1689	3184	3197	3471	3609	3162	2748
61	2509	2917	3493	3476	3249	3256	1597	998	853	1014	1620	3174	3227	3453	3598	3002	2509

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01  
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,  
Guangzhou, People' s Republic of China. info@bellingtest.com

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Certificate#4810.01

62	2240	2693	3451	3455	3281	3251	1515	916	791	925	1538	3159	3257	3446	3573	2806	2240
63	1940	2448	3396	3418	3320	3228	1437	849	723	859	1460	3130	3300	3432	3545	2566	1940
64	1707	2192	3321	3362	3348	3185	1355	782	675	785	1379	3087	3332	3410	3483	2288	1707
65	1537	1969	3214	3290	3362	3119	1258	716	613	720	1265	3017	3366	3372	3388	2054	1537
66	1445	1793	3077	3188	3365	3007	1120	650	533	662	1143	2922	3388	3279	3248	1871	1445
67	1461	1671	2841	3040	3381	2851	1017	581	471	586	1034	2798	3411	3171	3054	1716	1461
68	1556	1568	2573	2887	3416	2677	927	485	407	488	932	2628	3446	3025	2770	1604	1556
69	1613	1495	2311	2748	3433	2478	817	410	326	421	835	2406	3528	2856	2482	1530	1613
70	1581	1456	2090	2644	3395	2220	710	343	267	348	728	2166	3575	2722	2245	1497	1581
71	1448	1414	1904	2596	3340	1917	607	272	218	274	638	1920	3604	2639	2036	1457	1448
72	1293	1322	1690	2568	3233	1651	530	219	175	219	554	1651	3590	2593	1812	1381	1293
73	1127	1193	1496	2526	3078	1416	452	171	135	174	469	1378	3494	2555	1610	1256	1127
74	982	1067	1325	2508	2846	1213	372	136	103	138	389	1168	3298	2542	1409	1125	982
75	855	952	1171	2445	2591	1027	296	106	73	104	316	1009	3036	2511	1234	990	855
76	737	848	1006	2276	2322	887	245	78	39	76	253	875	2709	2371	1067	873	737
77	630	746	847	2088	2037	771	200	55	27	55	200	767	2432	2156	911	777	630
78	532	648	722	1857	1665	661	157	39	19	41	161	661	2066	1896	795	669	532
79	450	547	636	1600	1331	543	124	30	12	32	129	545	1688	1632	692	580	450
80	364	468	553	1280	1069	426	101	22	8	23	104	431	1318	1321	602	485	364
81	289	373	471	1027	870	338	80	15	4	12	83	335	1065	1069	506	394	289
82	227	291	375	826	682	251	61	8	4	9	65	245	871	864	407	311	227
83	168	223	286	618	464	166	45	6	4	7	49	159	633	649	316	230	168
84	114	152	201	376	293	103	32	6	3	7	36	98	411	417	222	158	114
85	71	95	143	241	113	59	21	5	4	6	25	59	188	266	155	106	71
86	35	48	74	62	35	31	13	3	1	5	15	33	45	101	83	52	35
87	23	25	32	34	27	23	8	4	3	5	11	23	32	35	36	27	23
88	20	21	24	25	20	15	5	3	3	4	8	16	23	27	26	23	20
89	17	16	16	17	7	6	3	3	3	4	6	9	14	21	21	19	17
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Report Format Number BL-FM-SA-012



Report No.: BLC2005038E-P

Certificate#4810.01

94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Report Format Number BL-FM-SA-012



Report No.: BLC2005038E-P

Certificate#4810.01

126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Report Format Number BL-FM-SA-012



Report No.: BLC2005038E-P

Certificate#4810.01

158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Report No.: BLC2005038E-P

**BUG**

**Lum. Classification System (LCS)**

<b><u>LCS Zone</u></b>	<b><u>Lumens</u></b>	<b><u>%Lamp</u></b>	<b><u>%Lum</u></b>
FL (0-30)	1173.9	9.5	9.5
FM (30-60)	3812.0	30.8	30.8
FH (60-80)	2199.5	17.8	17.8
FVH(80-90)	133.3	1.1	1.1
BL (0-30)	1040.5	8.4	8.4
BM (30-60)	2721.2	22.0	22.0
BH (60-80)	1241.5	10.0	10.0
BVH(80-90)	45.6	0.4	0.4
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	12367.5	100.0	100.0
<b>BUG Rating</b>	<b>B3-U0-G3</b>		

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

<b>Test date</b>	2020-06-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	TLSTF100P6SAZZ-3030-a-F		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200503	120.0	60	0.8407	100.68	0.998	5.83
8E-P2	277.0	60	0.3651	96.89	0.958	14.69
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	81	R10	51
CCT (K)	5682	R3	83	R11	68
Duv	0.00128	R4	73	R12	42
Chromaticity (x, y)	x=0.3284 y=0.3400	R5	72	R13	74
Chromaticity (u', v')	u(u')=0.2045 v'(v')=0.4764	R6	71	R14	90
Color Rendering Index (CRI)	74.9	R7	84	R15	69
R9	0	R8	61	--	--
Rf	74	--	--	--	--
Rg	92	--	--	--	--

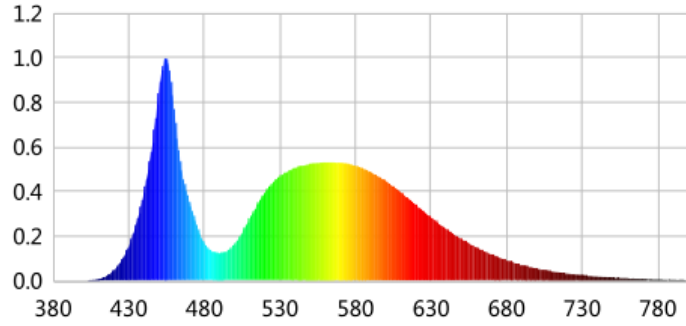
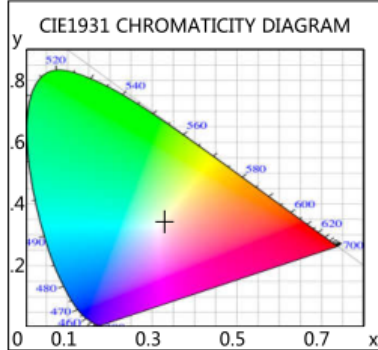
**Photometric Measurement – Sphere-Spectroradiometer Method:**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	13105.5	12747.7	>=10000(-10%)
Luminous Efficacy (lm/W)	130.17	131.57	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	126.62		





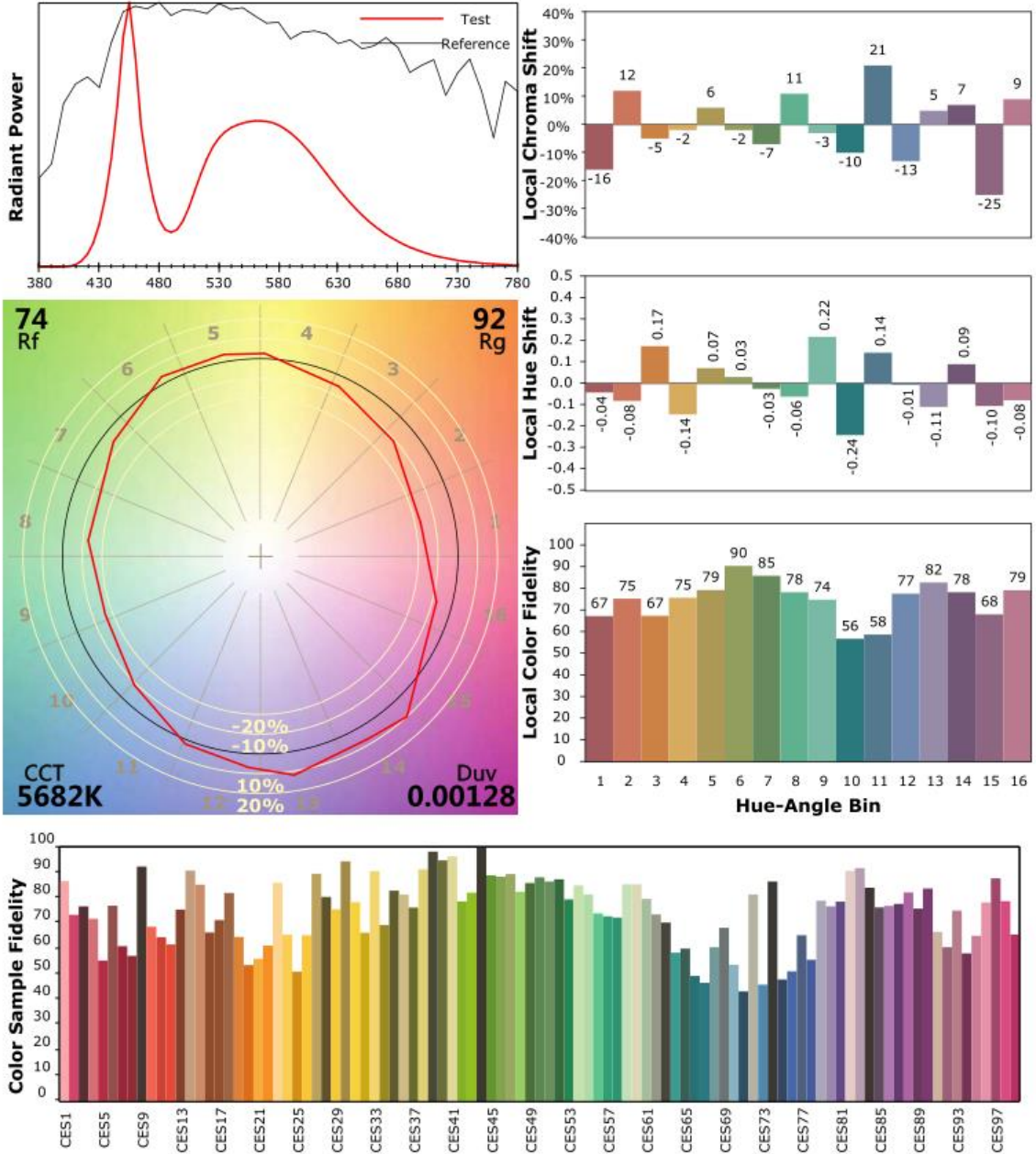
### Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0007	0.2428	525	0.4386	148.8800	670	0.1188	40.3237
385	0.0002	0.0542	530	0.4690	159.1969	675	0.1051	35.6839
390	0.0011	0.3641	535	0.4912	166.7388	680	0.0933	31.6628
395	0.0007	0.2526	540	0.5071	172.1540	685	0.0820	27.8380
400	0.0010	0.3438	545	0.5157	175.0690	690	0.0721	24.4775
405	0.0030	1.0280	550	0.5240	177.8750	695	0.0635	21.5495
410	0.0085	2.8801	555	0.5279	179.1895	700	0.0555	18.8248
415	0.0206	6.9787	560	0.5317	180.4935	705	0.0485	16.4804
420	0.0455	15.4412	565	0.5318	180.5355	710	0.0426	14.4447
425	0.0874	29.6618	570	0.5295	179.7619	715	0.0369	12.5227
430	0.1543	52.3916	575	0.5251	178.2399	720	0.0324	10.9862
435	0.2546	86.4442	580	0.5164	175.2945	725	0.0285	9.6899
440	0.3918	132.9965	585	0.5041	171.1110	730	0.0248	8.4206
445	0.5796	196.7432	590	0.4892	166.0637	735	0.0212	7.2106
450	0.8489	288.1597	595	0.4696	159.4250	740	0.0187	6.3431
455	0.9987	339.0145	600	0.4480	152.0692	745	0.0165	5.5842
460	0.7748	263.0086	605	0.4242	143.9913	750	0.0149	5.0745
465	0.4984	169.1761	610	0.3969	134.7477	755	0.0129	4.3858
470	0.3594	122.0141	615	0.3689	125.2240	760	0.0118	4.0205
475	0.2514	85.3404	620	0.3413	115.8740	765	0.0096	3.2501
480	0.1693	57.4598	625	0.3123	106.0170	770	0.0087	2.9621
485	0.1347	45.7204	630	0.2847	96.6358	775	0.0070	2.3843
490	0.1247	42.3455	635	0.2576	87.4471	780	0.0070	2.3800
495	0.1345	45.6488	640	0.2331	79.1190	785	0.0049	1.6694
500	0.1657	56.2599	645	0.2099	71.2670	790	0.0055	1.8512
505	0.2168	73.5945	650	0.1881	63.8623	795	0.0057	1.9245
510	0.2794	94.8482	655	0.1686	57.2342	800	0.0034	1.1673
515	0.3404	115.5578	660	0.1508	51.2005			
520	0.3943	133.8492	665	0.1338	45.4077			



**TM-30**





**Calculated Efficacy Data for family models (4000K and 5000K):**

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
TLSTF100P3SAZZ-3030-a-F	12367.5	99.92	123.77
TLSTF100P4SAZZ-3030-a-F	12552.0	100.30	125.14
TLSTF100P5SAZZ-3030-a-F	12736.5	100.30	126.98
TLSTF100P6SAZZ-3030-a-F	13105.5	100.68	130.17

\*1: This value is calculated and the calculation formula is as below:

$$12552.0 = ( 13105.5 - 12367.5 ) / 4 + 12367.5$$

$$12736.5 = ( 13105.5 - 12367.5 ) / 4 + 12552.0$$

\*2: This value is calculated and the calculation formula is as below:

$$100.30 = ( 100.68 + 99.92 ) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$125.14 = 12552.0 / 100.30$$

$$126.98 = 12736.5 / 100.30$$



Report No.: BLC2005038E-P

Certificate#4810.01

### 3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2021-01-13
AC Power Source	CHP-500C	N/A	2021-01-12
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2021-01-20
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Integral Sphere (2M)	2M	DYJCE120067	2021-01-13
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2021-01-13

Expand Uncertainty:  
Photometric Measurement (Sphere): 2.08%, k=2  
Chromaticity Measurement(Sphere):25.6K, k=2  
Photometric Measurement(Goniophotometer):2.645%, k=2

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