



Report No.: BLC1803017E-H

## 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): 1130SF-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: 1130SF-352  
1130SF-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

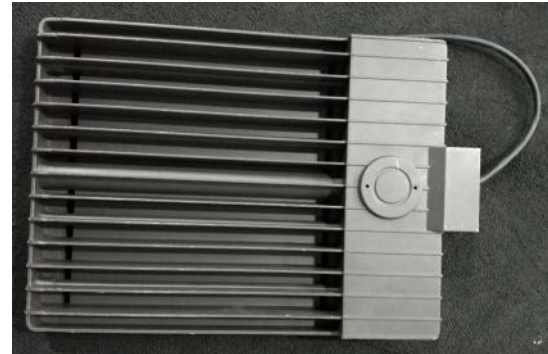
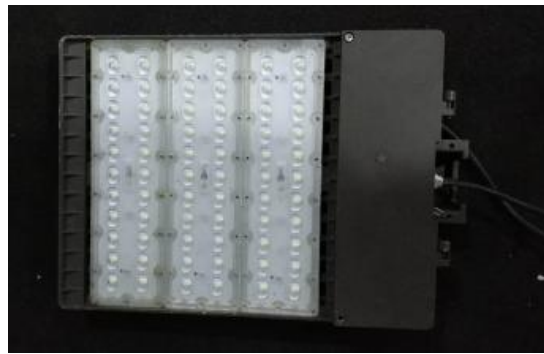


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### 1.1 Product Information:

Organization Name	Revolution Lighting Technologies, Inc.	
Brand Name		
Model Number	1130SF-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	166W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	BLC1803017E-H1(4000K),H2(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"> <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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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.

**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.

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

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

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180301	120.0	60	1.3604	162.27	0.994	4.77
7E-H1	277.0	60	0.6174	160.05	0.9359	13.53
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

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

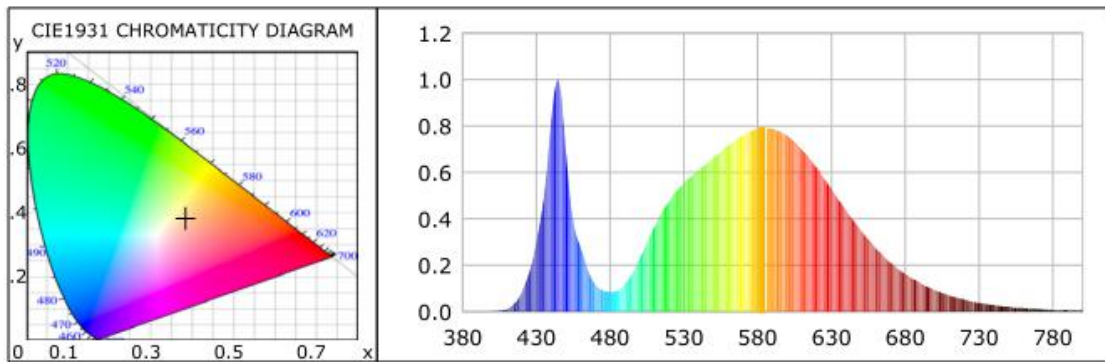
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	70	R9	0
Frequency (Hz)	60	R2	78	R10	48
CCT (K)	3908	R3	84	R11	69
Duv	-0.00037	R4	73	R12	45
Chromaticity (x, y)	x=0.3843 y=0.3783	R5	70	R13	71
Chromaticity (u', v')	u(u')=0.2270 v'(v')=0.5029	R6	69	R14	91
Color Rendering Index (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)	22825.7	22613.7	>=10000(-10%)
Luminous Efficacy (lm/W)	140.66	141.29	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	139.36		
Zonal lumens in the 0-90° zone (%)	99.7	--	>=100(-1)
Zonal lumens in the 80-90° zone (%)	0.3	--	<=10(+3)
Beam Angle (°)	124.1	--	--
Center Beam Candle Power (cd)	4698	--	--



### Spectral Power Distribution & Chromaticity Diagram

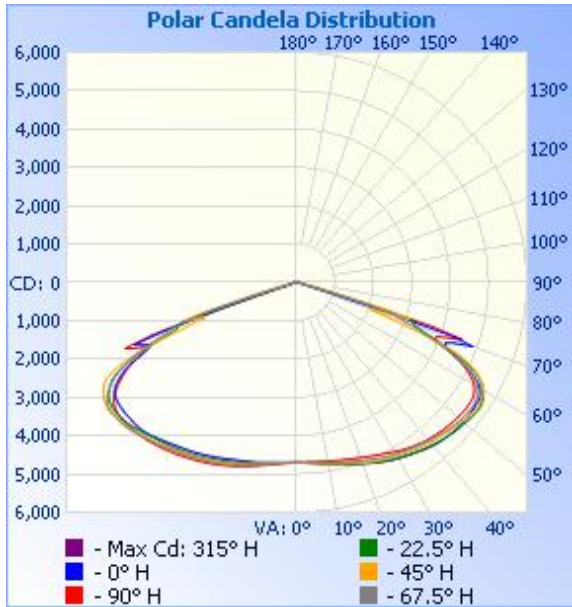


### Zonal Lumen Tabulation

Zonal Lumen Summary				Lumens Per Zone					
Zone	Lumens	% Lamp	% Luminaire	Zone	Lumens	% Total	Zone	Lumens	% Total
0-30	4,212.6	18.5%	18.5%	0-10	453.1	2.0%	90-100	14.2	0.1%
0-40	7,577.2	33.2%	33.2%	10-20	1,388.5	6.1%	100-110	10.5	0%
0-60	17,035.5	74.6%	74.6%	20-30	2,371.1	10.4%	110-120	10.7	0%
60-90	5,721.7	25.1%	25.1%	30-40	3,364.5	14.7%	120-130	9.6	0%
70-100	1,190.2	5.2%	5.2%	40-50	4,330.1	19.0%	130-140	7.5	0%
90-120	35.4	0.2%	0.2%	50-60	5,128.2	22.5%	140-150	6.1	0%
0-90	22,757.2	99.7%	99.7%	60-70	4,545.8	19.9%	150-160	4.5	0%
90-180	66.8	0.3%	0.3%	70-80	1,112.9	4.9%	160-170	2.7	0%
0-180	22,824.0	100%	100%	80-90	63.1	0.3%	170-180	0.9	0%



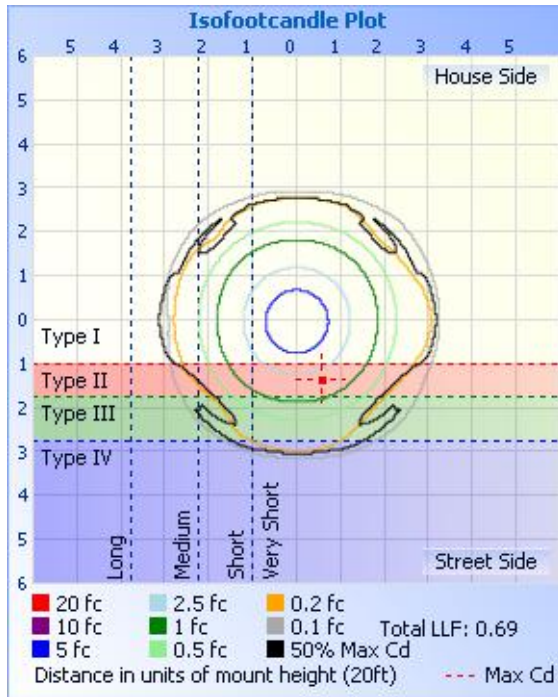
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	16.3 fc	70.5 ft	64.1 ft
34.0ft	4.06 fc	141.0 ft	128.2 ft
51.0ft	1.81 fc	211.6 ft	192.3 ft
68.0ft	1.02 fc	282.1 ft	256.5 ft
85.0ft	0.65 fc	352.6 ft	320.6 ft
102.0ft	0.45 fc	423.1 ft	384.7 ft

■ Vert. Spread: 128.5°  
■ Horiz. Spread: 124.1°





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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	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698	4698
1	4699	4701	4701	4699	4693	4693	4694	4698	4700	4698	4700	4700	4703	4705	4705	4701	4699
2	4703	4707	4706	4702	4692	4691	4692	4700	4703	4701	4702	4705	4711	4714	4714	4709	4703
3	4709	4714	4713	4706	4693	4690	4690	4702	4707	4704	4706	4711	4721	4724	4725	4719	4709
4	4717	4724	4721	4712	4694	4691	4690	4703	4712	4710	4712	4719	4733	4736	4737	4732	4717
5	4725	4734	4730	4718	4697	4693	4692	4707	4716	4716	4720	4732	4746	4748	4752	4748	4725
6	4736	4746	4742	4725	4702	4697	4697	4711	4723	4726	4733	4744	4760	4765	4770	4762	4736
7	4748	4760	4755	4734	4709	4704	4703	4716	4731	4737	4745	4758	4777	4782	4788	4779	4748
8	4762	4775	4768	4744	4716	4713	4711	4726	4741	4753	4760	4774	4797	4801	4808	4797	4762
9	4779	4792	4782	4756	4724	4723	4719	4739	4752	4767	4776	4794	4818	4820	4829	4816	4779
10	4797	4808	4799	4771	4732	4732	4730	4751	4763	4784	4795	4815	4840	4840	4852	4836	4797
11	4815	4825	4815	4783	4741	4741	4741	4762	4778	4801	4815	4837	4863	4863	4875	4858	4815
12	4835	4845	4832	4797	4752	4753	4753	4777	4792	4819	4835	4860	4887	4888	4898	4884	4835
13	4859	4862	4851	4812	4764	4765	4766	4791	4807	4837	4856	4883	4910	4910	4926	4909	4859
14	4883	4881	4871	4829	4773	4780	4782	4805	4822	4854	4878	4908	4935	4935	4952	4935	4883
15	4905	4899	4893	4845	4783	4794	4799	4820	4835	4874	4900	4931	4961	4958	4977	4961	4905
16	4930	4921	4915	4861	4797	4811	4817	4837	4849	4893	4925	4958	4986	4984	5000	4988	4930
17	4956	4945	4938	4882	4812	4830	4836	4855	4866	4912	4948	4983	5011	5009	5024	5018	4956
18	4982	4968	4962	4901	4827	4850	4858	4879	4881	4933	4972	5007	5037	5033	5048	5046	4982
19	5006	4992	4986	4919	4843	4873	4879	4899	4895	4955	4995	5032	5065	5066	5076	5076	5006
20	5031	5015	5010	4941	4861	4892	4900	4923	4913	4978	5018	5055	5089	5094	5103	5105	5031
21	5056	5038	5035	4965	4881	4913	4920	4948	4935	5000	5041	5081	5116	5119	5128	5132	5056
22	5083	5066	5058	4988	4901	4933	4941	4971	4959	5022	5064	5106	5143	5142	5155	5161	5083
23	5111	5098	5079	5010	4922	4954	4961	4992	4983	5043	5086	5131	5168	5168	5182	5192	5111
24	5139	5129	5099	5034	4941	4974	4983	5013	5004	5064	5108	5155	5192	5193	5210	5225	5139
25	5164	5156	5120	5058	4967	4996	5003	5032	5023	5089	5128	5178	5219	5217	5238	5253	5164
26	5194	5185	5140	5082	4989	5017	5021	5055	5048	5115	5151	5199	5245	5246	5264	5277	5194
27	5223	5212	5162	5104	5010	5036	5040	5075	5073	5142	5175	5220	5270	5270	5295	5303	5223
28	5250	5239	5182	5125	5035	5060	5059	5098	5095	5166	5197	5242	5293	5295	5327	5332	5250
29	5273	5260	5200	5146	5062	5085	5076	5120	5118	5190	5218	5263	5314	5316	5355	5359	5273

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30	5298	5289	5220	5166	5095	5109	5095	5142	5145	5211	5238	5284	5339	5339	5380	5388	5298
31	5318	5314	5241	5185	5128	5131	5114	5162	5169	5236	5263	5311	5364	5363	5406	5417	5318
32	5340	5337	5263	5203	5157	5150	5133	5184	5191	5258	5290	5337	5388	5391	5427	5442	5340
33	5367	5359	5286	5225	5182	5170	5155	5208	5210	5280	5317	5361	5413	5419	5446	5466	5367
34	5388	5383	5307	5245	5207	5194	5177	5234	5234	5302	5343	5386	5440	5448	5466	5485	5388
35	5413	5409	5329	5267	5233	5218	5198	5258	5256	5324	5371	5410	5467	5475	5485	5506	5413
36	5443	5432	5351	5288	5257	5238	5221	5283	5279	5351	5399	5436	5490	5502	5509	5526	5443
37	5471	5454	5370	5313	5278	5255	5243	5312	5307	5372	5427	5458	5512	5526	5533	5546	5471
38	5494	5477	5393	5333	5302	5275	5268	5339	5334	5392	5452	5486	5537	5552	5557	5567	5494
39	5521	5500	5414	5355	5326	5296	5289	5364	5361	5416	5475	5515	5559	5576	5587	5591	5521
40	5545	5524	5431	5375	5344	5322	5312	5391	5390	5439	5501	5544	5581	5600	5618	5625	5545
41	5566	5544	5450	5395	5360	5341	5337	5415	5422	5459	5534	5574	5608	5623	5654	5653	5566
42	5585	5568	5467	5416	5373	5364	5361	5443	5458	5485	5567	5601	5628	5649	5687	5682	5585
43	5598	5594	5486	5436	5388	5386	5386	5466	5489	5512	5595	5624	5660	5674	5721	5707	5598
44	5612	5611	5506	5461	5407	5411	5412	5491	5516	5542	5625	5648	5674	5695	5747	5723	5612
45	5625	5631	5531	5485	5422	5432	5439	5511	5543	5576	5655	5676	5682	5720	5778	5742	5625
46	5644	5649	5558	5509	5430	5450	5469	5528	5566	5608	5686	5710	5696	5745	5807	5761	5644
47	5654	5669	5582	5528	5443	5470	5500	5547	5582	5635	5720	5744	5712	5772	5834	5780	5654
48	5663	5686	5595	5551	5459	5492	5530	5571	5594	5669	5753	5776	5727	5802	5860	5797	5663
49	5665	5700	5613	5565	5471	5512	5556	5592	5601	5703	5786	5807	5743	5826	5887	5818	5665
50	5666	5717	5635	5578	5478	5523	5585	5619	5605	5725	5813	5833	5755	5843	5910	5841	5666
51	5675	5737	5657	5590	5491	5547	5610	5644	5608	5744	5840	5847	5772	5852	5930	5860	5675
52	5679	5751	5681	5598	5496	5568	5635	5664	5616	5765	5867	5857	5783	5865	5950	5872	5679
53	5679	5763	5705	5607	5504	5591	5659	5675	5619	5782	5882	5866	5780	5882	5964	5879	5679
54	5673	5772	5727	5613	5505	5611	5681	5686	5617	5795	5900	5874	5775	5885	5976	5885	5673
55	5662	5782	5737	5613	5503	5627	5699	5700	5618	5800	5915	5882	5755	5880	5984	5885	5662
56	5657	5781	5731	5603	5498	5632	5710	5711	5611	5798	5921	5885	5728	5868	5979	5876	5657
57	5657	5764	5714	5585	5486	5616	5710	5714	5602	5781	5913	5873	5680	5852	5958	5862	5657
58	5643	5736	5694	5564	5456	5591	5699	5700	5575	5764	5891	5833	5609	5807	5928	5836	5643
59	5595	5685	5659	5524	5410	5559	5676	5666	5533	5720	5857	5759	5502	5720	5877	5793	5595
60	5523	5628	5609	5457	5341	5511	5642	5613	5464	5649	5813	5656	5393	5609	5822	5722	5523
61	5417	5542	5540	5358	5245	5428	5580	5516	5338	5562	5761	5543	5250	5466	5738	5630	5417

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62	5256	5423	5439	5228	5113	5308	5495	5398	5190	5448	5683	5419	5105	5305	5639	5478	5256
63	5078	5272	5311	5046	4963	5153	5382	5223	5011	5303	5566	5263	4941	5120	5497	5301	5078
64	4847	5046	5153	4820	4776	4969	5225	4991	4795	5064	5367	5041	4751	4893	5293	5059	4847
65	4589	4761	4932	4572	4548	4724	4992	4706	4461	4800	5054	4792	4503	4632	5010	4767	4589
66	4344	4429	4620	4255	4312	4437	4596	4359	4223	4452	4576	4519	4311	4329	4569	4444	4344
67	4209	4102	4102	3925	4065	4081	4040	4024	4128	4021	3929	4233	4296	4027	3942	4115	4209
68	4195	3786	3446	3623	3898	3747	3332	3725	4347	3604	3132	3914	4574	3729	3218	3853	4195
69	4413	3505	2617	3362	3916	3399	2593	3449	4518	3335	2572	3607	4783	3399	2461	3568	4413
70	4881	3285	2044	3049	4233	3083	2219	3290	3629	3278	2665	3407	4004	3081	2299	3371	4881
71	4360	3204	2310	2835	4562	2981	2724	2922	1972	2787	3112	3135	2111	2831	3041	3424	4360
72	2307	3194	3098	2600	3739	2877	2963	1877	823	1540	2572	2357	718	2066	3132	3042	2307
73	592	1988	2486	1761	1885	2087	2158	882	310	771	1606	1333	331	1106	1930	1644	592
74	268	998	1460	917	668	1220	1240	482	214	440	956	745	228	602	1047	744	268
75	212	518	850	544	301	705	746	311	176	298	586	456	174	397	657	456	212
76	181	323	521	356	208	440	491	228	152	222	382	319	145	287	422	293	181
77	162	230	356	259	165	313	333	181	132	174	251	236	127	219	291	215	162
78	145	180	260	203	143	240	234	150	116	144	186	191	113	179	218	169	145
79	129	149	204	166	126	198	172	126	102	122	154	163	101	152	172	142	129
80	115	128	159	139	112	167	145	108	90	102	129	141	89	133	141	120	115
81	102	109	131	120	99	145	123	89	77	85	109	120	78	114	114	105	102
82	88	94	108	103	88	121	103	74	66	71	90	101	68	99	94	91	88
83	74	81	89	87	77	97	81	62	56	63	71	84	60	83	79	77	74
84	62	69	73	73	67	79	62	52	46	50	58	68	52	69	66	65	62
85	53	58	60	63	58	63	50	41	34	37	48	58	45	59	54	53	53
86	42	46	49	51	50	52	41	30	25	29	36	46	36	46	42	43	42
87	34	37	37	41	41	41	29	24	19	22	27	36	27	34	32	34	34
88	26	27	28	29	32	32	22	20	17	19	22	28	19	24	24	25	26
89	19	22	22	20	23	22	18	18	17	18	19	21	16	19	20	20	19
90	18	19	18	18	17	17	17	17	16	17	18	18	14	16	18	19	18
91	17	19	17	16	14	15	16	16	15	17	16	17	14	15	16	17	17
92	15	16	15	14	14	14	14	15	14	16	16	16	13	15	15	15	15
93	14	15	15	14	13	14	14	15	13	15	15	15	12	13	15	15	14

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94	13	14	14	13	11	13	13	12	13	15	15	15	11	13	13	14	13
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**Laboratory: Shenzhen Belling Test Laboratory    A2LA Certificate# 4810.01**  
**Building No3 3rd floor, room 303, No 2-10 south Jinlong avenue, Sand Lake community, Biling street, Pingshan district, Shenzhen, Guangdong,CN. Website: <http://www.blst.com>**

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158	10	11	10	7	8	9	10	10	10	11	10	9	8	9	10	10	10
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180	7	10	8	8	5	8	7	9	9	10	8	8	8	8	8	8	7

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

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

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180301	120.0	60	1.3701	163.74	0.9959	4.57
7E-H2	277.0	60	0.6190	160.86	0.9382	12.99
<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	72	R9	0
Frequency (Hz)	60	R2	78	R10	48
CCT (K)	4894	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	--	--

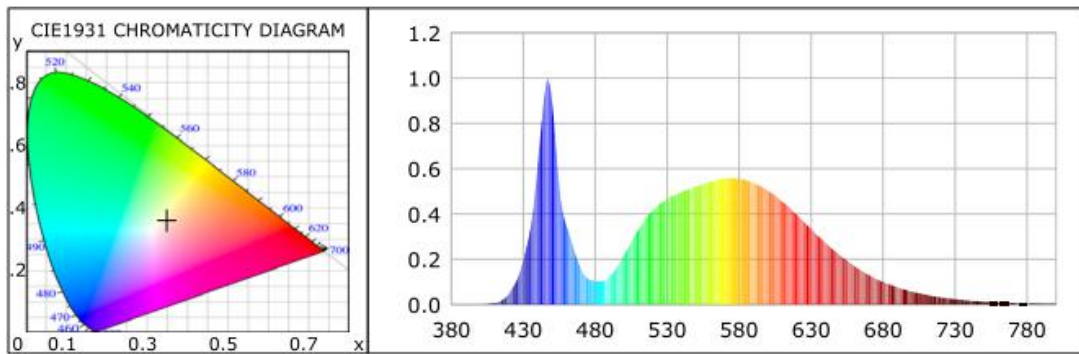
**Photometric Measurement – Sphere-Spectroradiometer Method:**

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	23385.35	23094.67	>=10000(-10%)
Luminous Efficacy (lm/W)	142.82	143.57	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	141.04		



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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 \*\*\*\*\*