

# LM-79-08 Test Report

For

## Beyond LED Technology

1939 Parker Court, Stone Mountain, GA 30087

### LED LINEAR HIGHBAY

Model Name(s):

BLT-LHBC(90/105/130)W-50KLV-S

Representative (Tested) Model:

X-LHBC(90/105/130)W-(40/50)KLV

#### Model Difference:

1. Product is wattage tunable product, can be tunable from 90W, 105W and 130W;
2. Product is color tunable product, can be tunable from 4000K and 5000K;
3. X represents Sensor, can be blank for without Sensor or S for with Sensor;
4. Y represents Emergency, can be blank for without Emergency or E for with Emergency;
5. All is the same construction, except Function and Model design.

Prepared by:

*Alan Wang*

Engineer: Alan Wang

Date: 2022-03-29

Reviewed by:

*Vincent Yuan*

Technical Lead: Vincent Yuan

Issue Date: 2022-03-30

Revised Date: N/A

- Note:
1. The results contained in this report pertain only to the tested samples.
  2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd
  3. This report d not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

**Laboratory: Dongguan New Testing Centre Co., Ltd**

Address: 3F, No. 1 the 1<sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China

Tel: 86-769-22212079

Website: <http://www.ntc-cert.com>

**Client Information:**

Applicant Name:	Beyond LED Technology
Brand Name:	Beyond LED Technology
Manufacturer Name:	Beyond LED Technology
Manufacturer Address:	1939 Parker Court, Stone Mountain, GA 30087

**Product Information:**

Model Number:	BLT-LHBC(90/105/130)W-50KLV-S
Product Type:	High Bay Luminaires for Commercial and Industrial Buildings
Rating Input:	120-347Vac, 50/60Hz, 90W/105W/130W
Declared CCT:	4000K/5000K
Declared Light Output:	20100 lm
LED Manufacturer:	Guangdong Elite Optoelectronic Technology Co., Ltd
LED Model:	SMD2835
LED Quantity:	224 pcs
LED Driver Manufacturer:	Shenzhen Ankom Technology Co., Ltd.
LED Driver Model:	AL-150NB-260DA

**Test Information:**

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2022-03-15
Quantity of Receipt Samples:	1 pc
Sample Number:	220315025-S1
Test Representation:	1. All CCTs conducted IS and Electrical test; 2. The lowest CCT conducted Gonio test.

**Laboratory Information:**

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1 <sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	<a href="mailto:Neil_zhong@ntc-cert.com">Neil_zhong@ntc-cert.com</a>

**Report Information:**

Test Report Form:	LM-79-08_TRF_V1.5
Issued Date of Test Report:	2022-03-30
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR22030383
Remark (If applicable):	N/A

<b>Test Specification:</b>	
Date of Test	2022-03-29
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. Fidelity Index</li> <li>8. Gamut Index</li> <li>9. Local Chroma Shift</li> <li>10. THD and PF</li> </ol>
Reference Standard	<p>IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</p> <p>ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products</p> <p>CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light Sources</p> <p>CIE 15-2004 Technical Report Colorimetry</p> <p>ANSI IES TM-30-18 IES Method for Evaluating Light Source Color Rendition</p> <p>ANSI C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements</p> <p>IES TM-15-11 Luminaire Classification System for Outdoor Luminaires</p> <p>Addendum A for IES TM-15-11 Backlight, Uplight, and Glare (BUG) Ratings</p>

<b>Test Methods:</b>
<p><b>1. Photometric and Electrical Measurements – Light Distribution Method:</b></p> <p>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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizontal intervals.</p>
<p><b>2. Photometric and Electrical Measurements – Integrating Sphere Method:</b></p> <p>Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at 25 °C± 1°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 require Voltage and Frequency. 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 1 nm intervals over the rage of 380 to 780 nm.</p>
<p><b>3. THD and PF Measurements:</b></p> <p>The sample was tested according to the ANSI C82.77, the sample was operated at requirement Voltage and Frequency, and was stabilized before measurement. The Total Harmonic Distortion was calculated from the Digital Power Meter.</p>

### Integrating Sphere Test Results:

#### Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.4	41.0	Face Down	90	10

#### Electrical Data:

CCT Setting	Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
4000K	120.0	60	1.0960	131.22	0.9977
5000K	120.0	60	1.1030	132.30	0.9982

#### Color Data:

CCT Setting	Test CCT (K)	R <sub>a</sub>	R <sub>9</sub>	R <sub>f</sub>	R <sub>g</sub>	R <sub>cs, h1</sub>	Chromaticity		
							(x, y)	(u', v')	Duv
4000K	4206	84.3	16	85	95	-11%	(0.3727, 0.3753)	(0.2206, 0.4998)	0.0017
5000K	5060	84.1	13	84	95	-12%	(0.3439, 0.3559)	(0.2090, 0.4866)	0.0026

#### Specify Color Rendering:

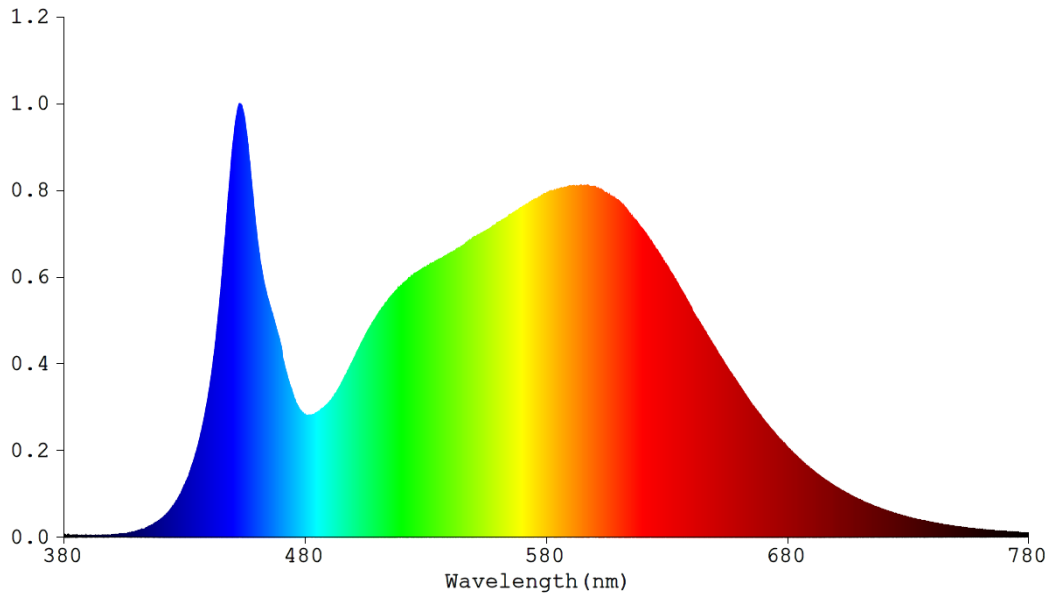
CCT Setting	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
4000K	83	90	95	83	82	86	88	68	16	76	81	60	85	97	77
5000K	82	90	94	83	83	85	87	68	13	75	82	63	84	97	77

#### Output Data:

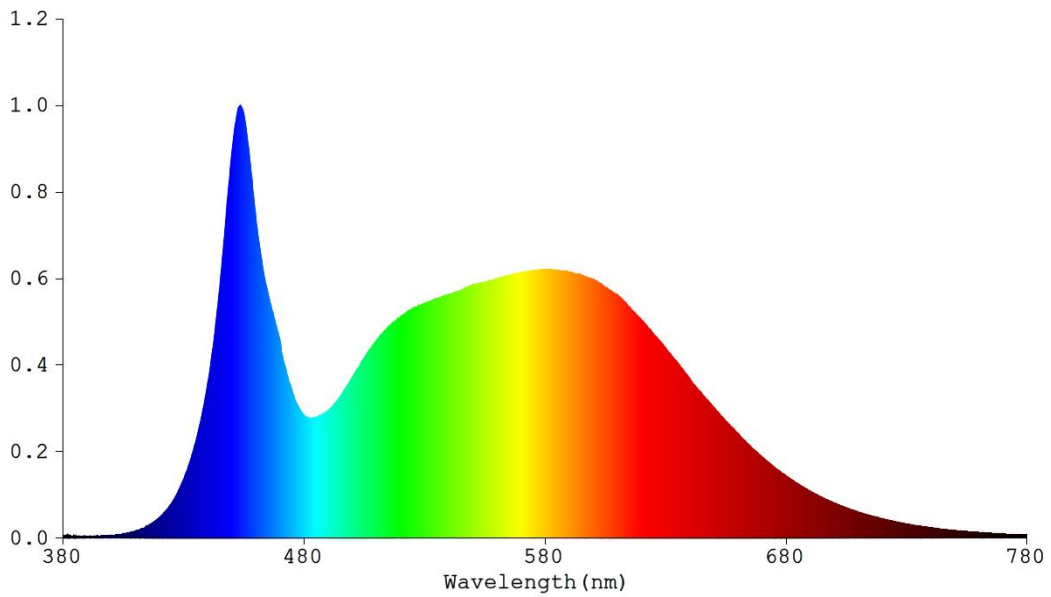
CCT Setting	Luminous (lm)	Efficacy (lm/W)
4000K	20339.7	155.00
5000K	20351.7	153.83

**Spectrum Diagram:**

**4000K**



**5000K**

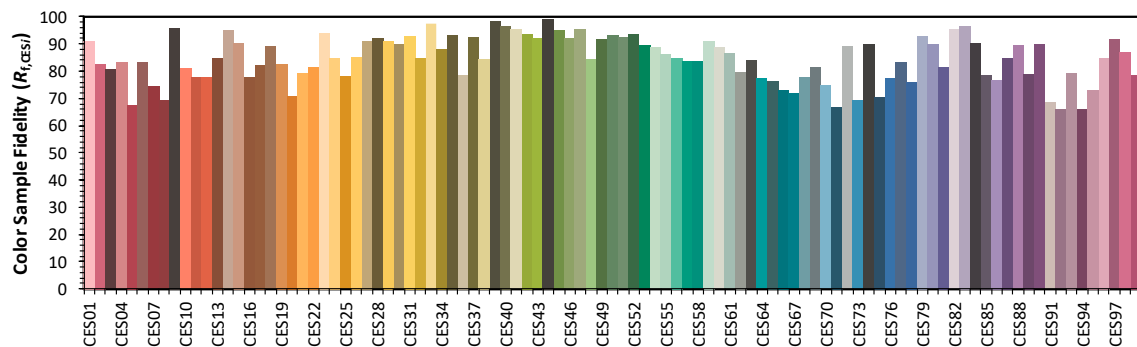
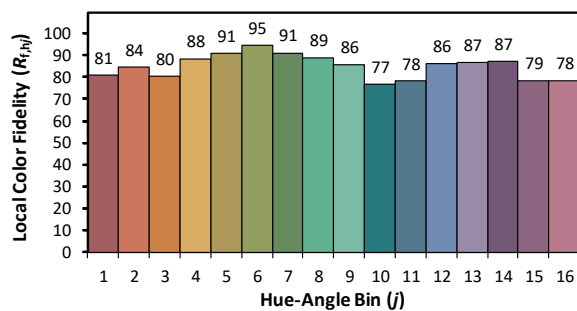
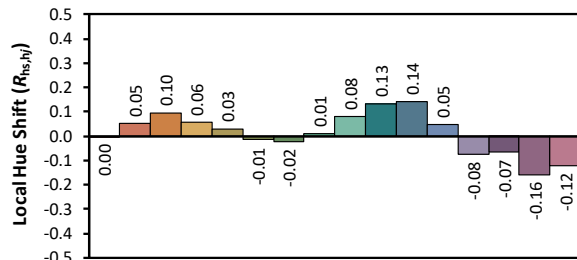
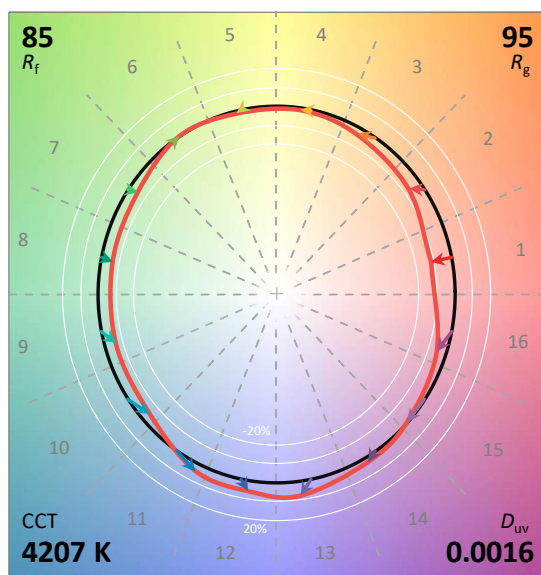
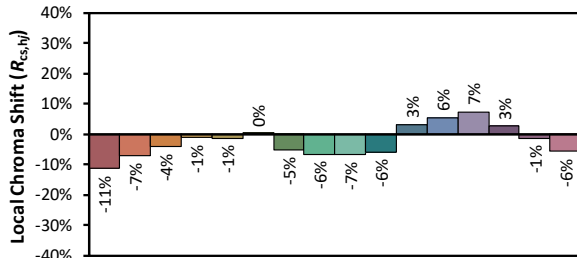
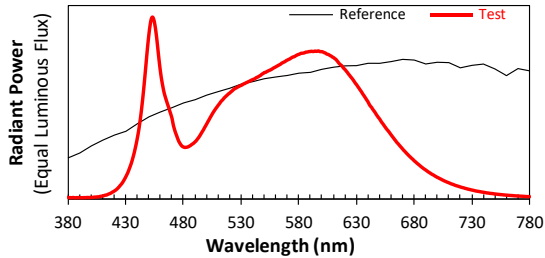


**IES TM-30-18 Color Rendition Result (4000K):**

**ANSI/IES TM-30-18 Color Rendition Report**

Source: 1 CIE F1  
Date: 2022/3/29

Manufacturer: Shenzhen XinShengYang Opto-  
Model: X-LHBC (90/105/130)W-(40/50)KLV



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3727  
 $y$  0.3751  
 $u'$  0.2206  
 $v'$  0.4997

CIE 13.3-1995  
(CRI)  
 $R_a$  84  
 $R_g$  16

**Spectrum Data (4000K):**

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0065	447	0.7126	514	0.5444	581	0.7969	648	0.4545	715	0.0737
381	0.0035	448	0.7846	515	0.5524	582	0.7996	649	0.4454	716	0.0713
382	0.0049	449	0.8510	516	0.5588	583	0.8000	650	0.4378	717	0.0696
383	0.0039	450	0.9096	517	0.5649	584	0.8011	651	0.4272	718	0.0676
384	0.0054	451	0.9575	518	0.5705	585	0.8028	652	0.4178	719	0.0655
385	0.0045	452	0.9894	519	0.5767	586	0.8059	653	0.4098	720	0.0634
386	0.0037	453	0.9993	520	0.5810	587	0.8063	654	0.4004	721	0.0615
387	0.0047	454	0.9877	521	0.5872	588	0.8079	655	0.3916	722	0.0597
388	0.0037	455	0.9597	522	0.5920	589	0.8093	656	0.3827	723	0.0582
389	0.0053	456	0.9163	523	0.5982	590	0.8094	657	0.3753	724	0.0560
390	0.0039	457	0.8635	524	0.6034	591	0.8109	658	0.3674	725	0.0546
391	0.0046	458	0.8029	525	0.6069	592	0.8095	659	0.3589	726	0.0526
392	0.0037	459	0.7456	526	0.6102	593	0.8098	660	0.3500	727	0.0510
393	0.0046	460	0.6938	527	0.6142	594	0.8119	661	0.3416	728	0.0497
394	0.0047	461	0.6514	528	0.6173	595	0.8102	662	0.3332	729	0.0479
395	0.0045	462	0.6163	529	0.6206	596	0.8113	663	0.3248	730	0.0465
396	0.0055	463	0.5848	530	0.6231	597	0.8126	664	0.3169	731	0.0452
397	0.0053	464	0.5614	531	0.6266	598	0.8094	665	0.3082	732	0.0436
398	0.0051	465	0.5406	532	0.6308	599	0.8086	666	0.3016	733	0.0421
399	0.0053	466	0.5205	533	0.6330	600	0.8087	667	0.2939	734	0.0406
400	0.0061	467	0.5017	534	0.6368	601	0.8063	668	0.2866	735	0.0397
401	0.0059	468	0.4809	535	0.6395	602	0.8029	669	0.2795	736	0.0387
402	0.0070	469	0.4615	536	0.6427	603	0.8010	670	0.2720	737	0.0376
403	0.0077	470	0.4391	537	0.6454	604	0.7958	671	0.2645	738	0.0363
404	0.0078	471	0.4064	538	0.6490	605	0.7941	672	0.2584	739	0.0351
405	0.0086	472	0.3822	539	0.6522	606	0.7915	673	0.2512	740	0.0342
406	0.0088	473	0.3619	540	0.6552	607	0.7871	674	0.2447	741	0.0330
407	0.0103	474	0.3450	541	0.6572	608	0.7843	675	0.2381	742	0.0320
408	0.0119	475	0.3274	542	0.6608	609	0.7792	676	0.2317	743	0.0306
409	0.0127	476	0.3123	543	0.6652	610	0.7761	677	0.2258	744	0.0301
410	0.0141	477	0.3017	544	0.6681	611	0.7707	678	0.2196	745	0.0290
411	0.0158	478	0.2924	545	0.6715	612	0.7663	679	0.2143	746	0.0280
412	0.0182	479	0.2865	546	0.6754	613	0.7589	680	0.2073	747	0.0275
413	0.0188	480	0.2833	547	0.6793	614	0.7510	681	0.2024	748	0.0268
414	0.0216	481	0.2810	548	0.6851	615	0.7427	682	0.1964	749	0.0258
415	0.0247	482	0.2818	549	0.6883	616	0.7368	683	0.1910	750	0.0248
416	0.0268	483	0.2826	550	0.6934	617	0.7318	684	0.1858	751	0.0242
417	0.0299	484	0.2848	551	0.6945	618	0.7240	685	0.1804	752	0.0234
418	0.0342	485	0.2883	552	0.6983	619	0.7159	686	0.1751	753	0.0226
419	0.0373	486	0.2920	553	0.7015	620	0.7100	687	0.1702	754	0.0221
420	0.0416	487	0.2973	554	0.7045	621	0.7019	688	0.1651	755	0.0213
421	0.0456	488	0.3012	555	0.7072	622	0.6943	689	0.1607	756	0.0209
422	0.0510	489	0.3063	556	0.7105	623	0.6854	690	0.1566	757	0.0201
423	0.0570	490	0.3124	557	0.7142	624	0.6777	691	0.1519	758	0.0193
424	0.0640	491	0.3188	558	0.7187	625	0.6693	692	0.1470	759	0.0188
425	0.0717	492	0.3275	559	0.7216	626	0.6619	693	0.1432	760	0.0183
426	0.0790	493	0.3353	560	0.7254	627	0.6532	694	0.1389	761	0.0179
427	0.0875	494	0.3451	561	0.7289	628	0.6440	695	0.1349	762	0.0172
428	0.0979	495	0.3555	562	0.7326	629	0.6342	696	0.1311	763	0.0168
429	0.1091	496	0.3664	563	0.7361	630	0.6268	697	0.1279	764	0.0162
430	0.1213	497	0.3763	564	0.7395	631	0.6169	698	0.1235	765	0.0160
431	0.1340	498	0.3880	565	0.7447	632	0.6082	699	0.1199	766	0.0152
432	0.1484	499	0.3994	566	0.7481	633	0.5985	700	0.1162	767	0.0147
433	0.1655	500	0.4103	567	0.7513	634	0.5898	701	0.1136	768	0.0143
434	0.1824	501	0.4224	568	0.7544	635	0.5793	702	0.1097	769	0.0138
435	0.2016	502	0.4332	569	0.7592	636	0.5699	703	0.1071	770	0.0135
436	0.2242	503	0.4450	570	0.7623	637	0.5606	704	0.1033	771	0.0132
437	0.2476	504	0.4559	571	0.7655	638	0.5506	705	0.1005	772	0.0127
438	0.2751	505	0.4669	572	0.7684	639	0.5408	706	0.0971	773	0.0126
439	0.3045	506	0.4774	573	0.7725	640	0.5312	707	0.0943	774	0.0121
440	0.3376	507	0.4867	574	0.7765	641	0.5183	708	0.0915	775	0.0116
441	0.3733	508	0.4964	575	0.7796	642	0.5088	709	0.0889	776	0.0113
442	0.4174	509	0.5045	576	0.7810	643	0.5016	710	0.0865	777	0.0107
443	0.4644	510	0.5135	577	0.7852	644	0.4915	711	0.0837	778	0.0105
444	0.5193	511	0.5214	578	0.7885	645	0.4829	712	0.0807	779	0.0102
445	0.5786	512	0.5305	579	0.7921	646	0.4742	713	0.0787	780	0.0102
446	0.6446	513	0.5383	580	0.7938	647	0.4637	714	0.0765	N/A	N/A

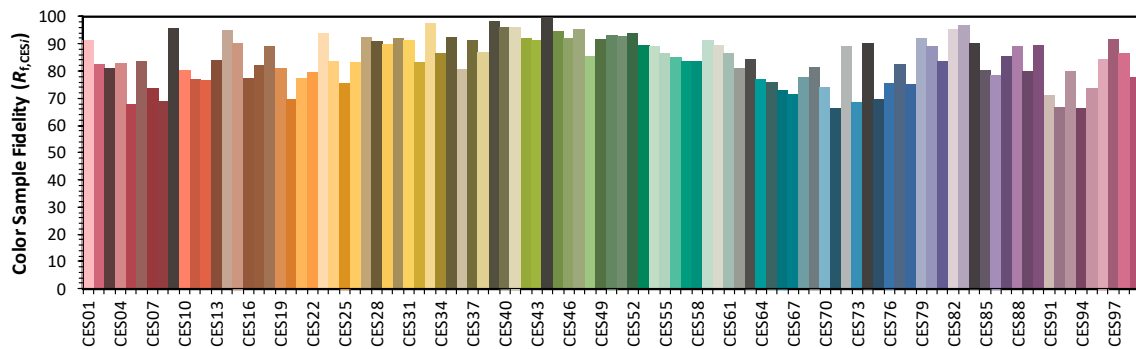
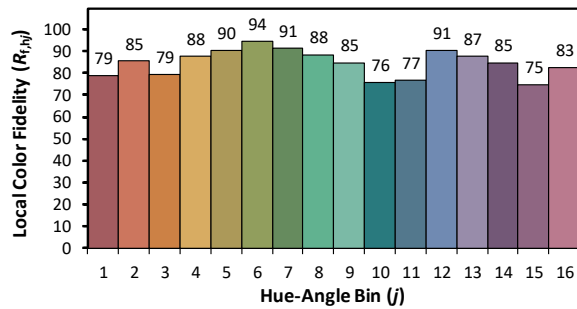
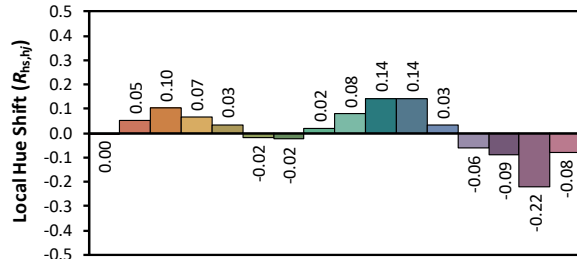
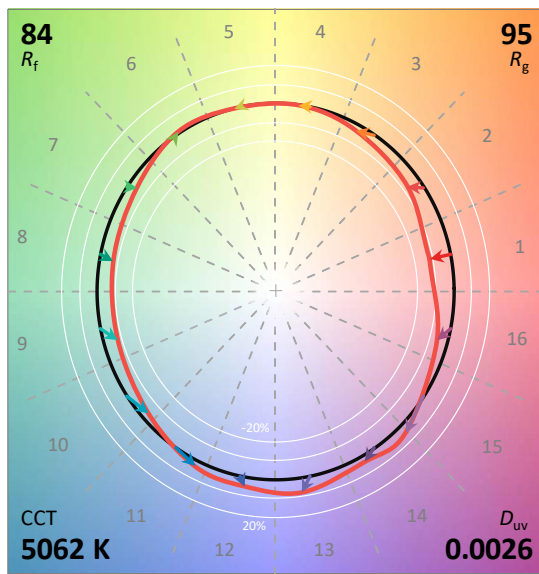
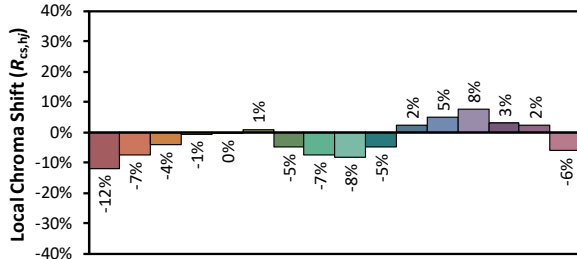
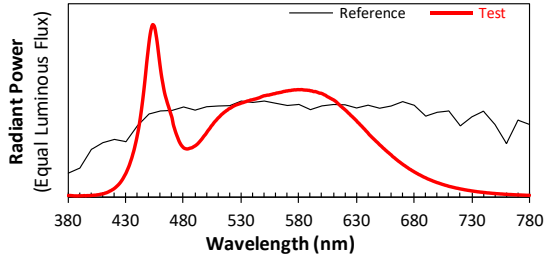


**IES TM-30-18 Color Rendition Result (5000K):**

**ANSI/IES TM-30-18 Color Rendition Report**

Source: 1 CIE F1  
Date: 2022/3/29

Manufacturer: Shenzhen XinShengYang Opto-  
Model: X-LHBC (90/105/130)W-(40/50)KLV



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3438  
 $y$  0.3557  
 $u'$  0.2090  
 $v'$  0.4865

CIE 13.3-1995  
(CRI)  
 $R_a$  84  
 $R_g$  13



**Spectrum Data (5000K):**

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0058	447	0.7106	514	0.4822	581	0.6208	648	0.3150	715	0.0520
381	0.0066	448	0.7780	515	0.4886	582	0.6214	649	0.3083	716	0.0502
382	0.0063	449	0.8373	516	0.4930	583	0.6209	650	0.3011	717	0.0489
383	0.0056	450	0.8948	517	0.4987	584	0.6193	651	0.2954	718	0.0479
384	0.0051	451	0.9433	518	0.5025	585	0.6189	652	0.2893	719	0.0461
385	0.0042	452	0.9766	519	0.5087	586	0.6183	653	0.2823	720	0.0448
386	0.0041	453	0.9974	520	0.5120	587	0.6183	654	0.2770	721	0.0435
387	0.0041	454	0.9952	521	0.5155	588	0.6169	655	0.2703	722	0.0423
388	0.0036	455	0.9799	522	0.5201	589	0.6171	656	0.2647	723	0.0409
389	0.0050	456	0.9430	523	0.5243	590	0.6141	657	0.2585	724	0.0395
390	0.0041	457	0.8995	524	0.5277	591	0.6142	658	0.2535	725	0.0385
391	0.0047	458	0.8455	525	0.5309	592	0.6116	659	0.2472	726	0.0372
392	0.0047	459	0.7907	526	0.5335	593	0.6095	660	0.2422	727	0.0361
393	0.0051	460	0.7387	527	0.5357	594	0.6103	661	0.2349	728	0.0353
394	0.0060	461	0.6933	528	0.5381	595	0.6083	662	0.2293	729	0.0340
395	0.0043	462	0.6560	529	0.5403	596	0.6060	663	0.2245	730	0.0330
396	0.0057	463	0.6184	530	0.5431	597	0.6033	664	0.2183	731	0.0320
397	0.0058	464	0.5884	531	0.5450	598	0.6007	665	0.2132	732	0.0310
398	0.0058	465	0.5653	532	0.5469	599	0.6004	666	0.2075	733	0.0300
399	0.0061	466	0.5415	533	0.5496	600	0.5982	667	0.2027	734	0.0292
400	0.0068	467	0.5214	534	0.5514	601	0.5950	668	0.1978	735	0.0279
401	0.0074	468	0.4993	535	0.5544	602	0.5910	669	0.1925	736	0.0275
402	0.0079	469	0.4775	536	0.5560	603	0.5887	670	0.1876	737	0.0265
403	0.0085	470	0.4561	537	0.5574	604	0.5834	671	0.1828	738	0.0258
404	0.0087	471	0.4203	538	0.5608	605	0.5792	672	0.1786	739	0.0253
405	0.0103	472	0.3974	539	0.5614	606	0.5763	673	0.1735	740	0.0243
406	0.0108	473	0.3754	540	0.5630	607	0.5720	674	0.1693	741	0.0237
407	0.0121	474	0.3569	541	0.5651	608	0.5687	675	0.1644	742	0.0230
408	0.0139	475	0.3400	542	0.5666	609	0.5649	676	0.1598	743	0.0218
409	0.0149	476	0.3227	543	0.5683	610	0.5617	677	0.1564	744	0.0214
410	0.0165	477	0.3095	544	0.5707	611	0.5571	678	0.1515	745	0.0210
411	0.0178	478	0.2985	545	0.5726	612	0.5524	679	0.1480	746	0.0202
412	0.0206	479	0.2906	546	0.5750	613	0.5461	680	0.1435	747	0.0196
413	0.0222	480	0.2835	547	0.5783	614	0.5395	681	0.1400	748	0.0189
414	0.0251	481	0.2798	548	0.5811	615	0.5336	682	0.1359	749	0.0185
415	0.0281	482	0.2778	549	0.5838	616	0.5269	683	0.1325	750	0.0180
416	0.0321	483	0.2767	550	0.5858	617	0.5217	684	0.1283	751	0.0172
417	0.0350	484	0.2775	551	0.5865	618	0.5153	685	0.1256	752	0.0169
418	0.0392	485	0.2798	552	0.5884	619	0.5103	686	0.1217	753	0.0164
419	0.0431	486	0.2819	553	0.5894	620	0.5042	687	0.1183	754	0.0159
420	0.0480	487	0.2834	554	0.5896	621	0.4985	688	0.1146	755	0.0153
421	0.0534	488	0.2868	555	0.5918	622	0.4918	689	0.1117	756	0.0151
422	0.0597	489	0.2912	556	0.5932	623	0.4849	690	0.1088	757	0.0145
423	0.0659	490	0.2948	557	0.5949	624	0.4792	691	0.1052	758	0.0140
424	0.0730	491	0.2999	558	0.5970	625	0.4715	692	0.1021	759	0.0137
425	0.0810	492	0.3054	559	0.5975	626	0.4662	693	0.0997	760	0.0134
426	0.0903	493	0.3124	560	0.6000	627	0.4594	694	0.0966	761	0.0129
427	0.1002	494	0.3200	561	0.6018	628	0.4533	695	0.0942	762	0.0124
428	0.1118	495	0.3279	562	0.6024	629	0.4465	696	0.0911	763	0.0122
429	0.1241	496	0.3360	563	0.6041	630	0.4399	697	0.0885	764	0.0121
430	0.1362	497	0.3454	564	0.6050	631	0.4315	698	0.0860	765	0.0115
431	0.1515	498	0.3541	565	0.6065	632	0.4262	699	0.0835	766	0.0111
432	0.1670	499	0.3618	566	0.6087	633	0.4182	700	0.0810	767	0.0107
433	0.1839	500	0.3717	567	0.6107	634	0.4119	701	0.0792	768	0.0105
434	0.2043	501	0.3818	568	0.6113	635	0.4050	702	0.0767	769	0.0100
435	0.2237	502	0.3904	569	0.6134	636	0.3975	703	0.0745	770	0.0098
436	0.2476	503	0.3988	570	0.6134	637	0.3911	704	0.0721	771	0.0095
437	0.2708	504	0.4096	571	0.6153	638	0.3830	705	0.0701	772	0.0094
438	0.2995	505	0.4168	572	0.6158	639	0.3763	706	0.0681	773	0.0092
439	0.3284	506	0.4263	573	0.6163	640	0.3688	707	0.0658	774	0.0088
440	0.3617	507	0.4348	574	0.6183	641	0.3600	708	0.0643	775	0.0085
441	0.3963	508	0.4415	575	0.6186	642	0.3536	709	0.0622	776	0.0083
442	0.4378	509	0.4494	576	0.6201	643	0.3467	710	0.0599	777	0.0079
443	0.4832	510	0.4570	577	0.6196	644	0.3403	711	0.0583	778	0.0077
444	0.5337	511	0.4629	578	0.6204	645	0.3339	712	0.0569	779	0.0076
445	0.5878	512	0.4701	579	0.6212	646	0.3275	713	0.0552	780	0.0077
446	0.6471	513	0.4772	580	0.6210	647	0.3207	714	0.0536	N/A	N/A

**Goniophotometer Test Results:**

**Test Condition:**

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.0	43.1	Face Down	90	25

**Electrical Data:**

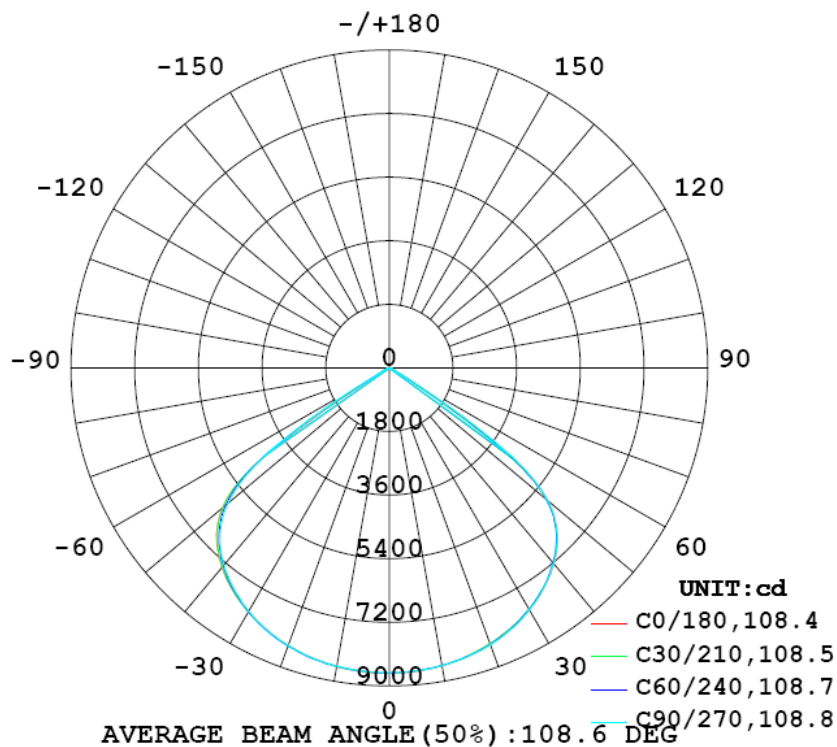
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	1.0960	131.22	0.9977

**Goniophotometer Data:**

Parameter	Results	
Total Luminous (lm)	20339.7	
Luminous Efficacy (lm/W)	155.00	
Zonal Lumens Distribution (20-50°)	67.5%	
Beam Angle (°)		
UGR	Viewed Crosswise	Viewed Endwise
	19.7	20.9

**Luminous Intensity Distribution Diagram:**

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

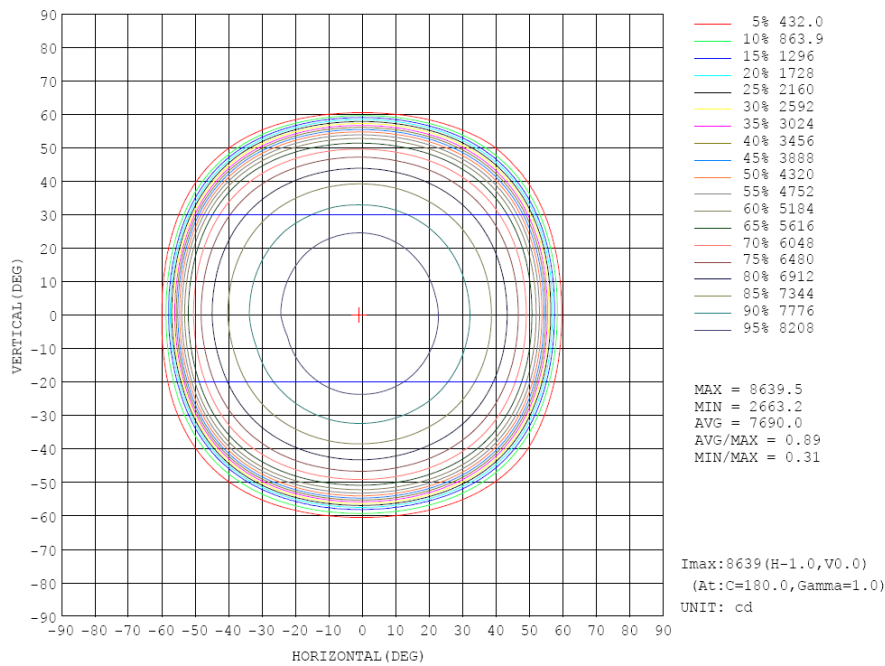


### Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	φ zone	φ total	lum, lamp
10	8562	8550	8552	8553	8581	8575	8567	8545	0- 10	820.0	820.0	4.03, 4.03
20	8307	8306	8340	8326	8365	8371	8364	8316	10- 20	2395	3215	15.8, 15.8
30	7895	7893	7913	7922	7976	7975	7950	7905	20- 30	3765	6980	34.3, 34.3
40	7233	7204	7222	7270	7366	7332	7276	7236	30- 40	4779	11759	57.8, 57.8
50	5809	5819	5848	5988	6168	6105	5950	5889	40- 50	5184	16943	83.3, 83.3
60	307.2	491.8	610.3	534.7	418.9	518.3	558.5	471.4	50- 60	3078	20021	98.4, 98.4
70	112.9	113.5	116.5	118.2	118.3	124.9	125.1	122.8	60- 70	193.9	20215	99.4, 99.4
80	38.80	43.06	42.73	45.69	42.05	50.07	46.11	48.20	70- 80	84.01	20299	99.8, 99.8
90	0.2133	0.1754	0.1628	0.1714	0.5105	0.5091	0.4564	0.3560	80- 90	20.70	20319	99.9, 99.9
100	0.3087	0.3192	0.3254	0.3043	0.6127	0.6153	0.6528	0.6646	90-100	0.3036	20320	99.9, 99.9
110	0.8408	0.8774	0.8744	0.8318	1.730	1.741	1.799	1.833	100-110	0.9182	20320	99.9, 99.9
120	1.704	1.729	1.815	1.757	3.074	3.204	3.320	3.274	110-120	1.849	20322	99.9, 99.9
130	2.927	2.834	3.025	2.868	4.703	4.928	5.242	4.877	120-130	2.823	20325	99.9, 99.9
140	4.619	4.417	4.327	4.422	6.312	6.811	6.896	6.584	130-140	3.669	20329	99.9, 99.9
150	5.889	5.685	5.763	5.710	8.206	8.652	8.557	8.417	140-150	3.972	20333	100, 100
160	7.097	6.644	6.210	6.946	9.880	10.01	9.491	9.480	150-160	3.565	20336	100, 100
170	8.072	8.064	7.340	7.792	10.12	10.27	9.670	9.453	160-170	2.440	20339	100, 100
180	9.463	9.604	8.915	9.148	9.515	9.681	9.082	8.921	170-180	0.8627	20340	100, 100
DEG	LUMINOUS INTENSITY: cd										UNIT: lm	

### Isocandela Diagram:



### Uncorrected UGR Table:

#### UGR Table - Uncorrected

Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	9.5	11.0	9.9	11.3	11.6	10.8	12.2	11.1	12.5	12.8
	3H	9.5	10.7	9.9	11.1	11.4	10.7	11.9	11.1	12.3	12.6
	4H	9.4	10.6	9.9	11.0	11.3	10.6	11.8	11.0	12.2	12.5
	6H	9.4	10.5	9.8	10.8	11.2	10.6	11.7	11.0	12.0	12.4
	8H	9.4	10.4	9.8	10.8	11.2	10.5	11.6	11.0	12.0	12.4
	12H	9.3	10.3	9.8	10.7	11.1	10.5	11.5	10.9	11.9	12.3
4H	2H	9.4	10.5	9.8	10.9	11.3	10.6	11.8	11.0	12.1	12.5
	3H	9.4	10.3	9.8	10.7	11.1	10.5	11.5	11.0	11.9	12.3
	4H	9.3	10.2	9.8	10.6	11.0	10.5	11.3	10.9	11.7	12.2
	6H	9.3	10.0	9.8	10.5	10.9	10.4	11.2	10.9	11.6	12.1
	8H	9.2	9.9	9.7	10.4	10.8	10.4	11.1	10.9	11.5	12.0
	12H	9.2	9.8	9.7	10.3	10.8	10.4	11.0	10.9	11.4	11.9
8H	4H	9.2	9.9	9.7	10.3	10.8	10.4	11.1	10.8	11.5	12.0
	6H	9.2	9.7	9.7	10.2	10.7	10.3	10.9	10.8	11.4	11.8
	8H	9.1	9.6	9.7	10.2	10.6	10.3	10.8	10.8	11.3	11.8
	12H	9.1	9.6	9.6	10.1	10.6	10.2	10.7	10.7	11.2	11.7
12H	4H	9.2	9.8	9.7	10.3	10.7	10.3	10.9	10.8	11.4	11.9
	6H	9.1	9.6	9.7	10.1	10.6	10.3	10.8	10.8	11.2	11.8
	8H	9.1	9.6	9.6	10.0	10.6	10.2	10.7	10.7	11.2	11.7

Maximum UGR = 12.8

### Corrected UGR Table:

#### UGR Table - Corrected

Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	20.0	21.5	20.4	21.8	22.1	21.3	22.7	21.6	23.0	23.3
	3H	20.0	21.2	20.4	21.6	21.9	21.2	22.4	21.6	22.8	23.1
	4H	19.9	21.1	20.4	21.5	21.8	21.1	22.3	21.5	22.7	23.0
	6H	19.9	21.0	20.3	21.3	21.7	21.1	22.2	21.5	22.5	22.9
	8H	19.9	20.9	20.3	21.3	21.7	21.0	22.1	21.5	22.5	22.9
	12H	19.8	20.8	20.3	21.2	21.6	21.0	22.0	21.4	22.4	22.8
4H	2H	19.9	21.0	20.3	21.4	21.8	21.1	22.3	21.5	22.6	23.0
	3H	19.9	20.8	20.3	21.2	21.6	21.0	22.0	21.5	22.4	22.8
	4H	19.8	20.7	20.3	21.1	21.5	21.0	21.8	21.4	22.2	22.7
	6H	19.8	20.5	20.3	21.0	21.4	20.9	21.7	21.4	22.1	22.6
	8H	19.7	20.4	20.2	20.9	21.3	20.9	21.6	21.4	22.0	22.5
	12H	19.7	20.3	20.2	20.8	21.3	20.9	21.5	21.4	21.9	22.4
8H	4H	19.7	20.4	20.2	20.8	21.3	20.9	21.6	21.3	22.0	22.5
	6H	19.7	20.2	20.2	20.7	21.2	20.8	21.4	21.3	21.9	22.3
	8H	19.6	20.1	20.2	20.7	21.1	20.8	21.3	21.3	21.8	22.3
	12H	19.6	20.1	20.1	20.6	21.1	20.7	21.2	21.2	21.7	22.2
12H	4H	19.7	20.3	20.2	20.8	21.2	20.8	21.4	21.3	21.9	22.4
	6H	19.6	20.1	20.2	20.6	21.1	20.8	21.3	21.3	21.7	22.3
	8H	19.6	20.1	20.1	20.5	21.1	20.7	21.2	21.2	21.7	22.2

Maximum UGR = 23.3

### Luminous Distribution Intensity Data:

Table--1 UNIT: cd

C (DEG) y (DEG)	C (DEG)																		
	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	8638	8635	8632	8631	8627	8625	8618	8617	8615	8614	8614	8612	8638	8635	8632	8631	8627	8625	8618
5	8610	8614	8610	8608	8607	8600	8601	8598	8601	8601	8599	8597	8635	8621	8623	8618	8614	8611	8609
10	8562	8550	8549	8550	8549	8556	8552	8552	8555	8553	8546	8548	8581	8578	8582	8575	8572	8574	8567
15	8451	8445	8451	8455	8459	8468	8470	8475	8469	8462	8458	8452	8492	8486	8490	8492	8497	8496	8487
20	8307	8302	8306	8306	8330	8333	8340	8338	8336	8326	8322	8321	8365	8357	8358	8371	8379	8369	8364
25	8120	8113	8124	8129	8140	8144	8158	8161	8155	8150	8150	8149	8188	8185	8189	8201	8201	8194	8188
30	7895	7889	7891	7893	7897	7905	7913	7925	7923	7922	7926	7934	7976	7972	7976	7975	7969	7967	7950
35	7609	7598	7592	7590	7591	7595	7595	7612	7625	7639	7647	7660	7708	7703	7700	7690	7672	7661	7646
40	7233	7228	7221	7204	7203	7203	7222	7237	7252	7270	7291	7315	7366	7363	7352	7332	7307	7292	7276
45	6711	6708	6698	6683	6678	6685	6705	6728	6745	6781	6813	6849	6906	6907	6886	6847	6817	6795	6776
50	5809	5813	5816	5819	5816	5823	5848	5884	5933	5988	6041	6085	6168	6170	6144	6105	6045	5999	5950
55	3301	3267	3291	3359	3468	3581	3680	3755	3786	3802	3837	3874	4094	4147	4189	4223	4236	4218	4170
60	307	301	468	492	535	580	610	615	580	535	517	527	419	446	474	518	549	564	558
65	168	166	164	163	164	167	169	171	172	169	166	168	176	177	178	180	181	183	184
70	113	113	114	114	113	114	117	117	118	118	116	116	118	120	123	125	125	124	125
75	70.8	72.0	75.6	75.5	75.0	75.4	76.0	77.8	79.0	79.0	78.6	75.6	75.8	79.1	83.3	83.4	83.1	81.5	80.9
80	38.8	41.3	44.4	43.1	44.0	43.6	42.7	45.0	46.5	45.7	46.4	43.4	42.0	46.2	50.5	50.1	50.5	48.1	46.1
85	16.4	16.9	16.4	14.2	13.7	13.4	12.5	14.3	15.5	15.8	17.9	17.9	18.5	20.2	21.1	19.4	19.9	18.6	17.2
90	0.21	0.18	0.17	0.18	0.18	0.16	0.16	0.16	0.17	0.17	0.19	0.20	0.51	0.57	0.49	0.51	0.51	0.48	0.46
95	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.17	0.28	0.28	0.28	0.29	0.29	0.29	0.29
100	0.31	0.31	0.31	0.32	0.32	0.32	0.33	0.32	0.32	0.30	0.30	0.29	0.61	0.60	0.61	0.62	0.63	0.64	0.65
105	0.53	0.53	0.53	0.54	0.54	0.54	0.54	0.53	0.52	0.51	0.50	0.49	1.16	1.15	1.15	1.16	1.18	1.19	1.21
110	0.84	0.85	0.85	0.88	0.89	0.88	0.87	0.86	0.85	0.83	0.81	0.78	1.73	1.72	1.73	1.74	1.76	1.78	1.80
115	1.17	1.19	1.23	1.26	1.31	1.34	1.34	1.33	1.30	1.27	1.22	1.16	2.27	2.31	2.37	2.43	2.49	2.52	2.54
120	1.70	1.60	1.69	1.73	1.73	1.79	1.82	1.81	1.79	1.76	1.70	1.64	3.07	3.09	3.16	3.20	3.20	3.26	3.32
125	2.27	2.20	2.18	2.30	2.37	2.31	2.34	2.33	2.33	2.28	2.21	2.13	3.85	3.89	3.93	4.06	4.11	4.11	4.12
130	2.93	2.86	2.79	2.83	3.10	2.95	3.03	3.02	2.97	2.87	2.87	2.77	4.70	4.76	4.80	4.93	5.09	5.20	5.24
135	3.76	3.73	3.66	3.51	3.81	3.68	3.78	3.78	3.65	3.60	3.63	3.62	5.56	5.64	5.76	5.85	6.00	6.19	6.24
140	4.62	4.64	4.47	4.42	4.33	4.41	4.33	4.36	4.35	4.42	4.31	4.44	6.31	6.45	6.57	6.81	6.85	6.96	6.90
145	5.33	5.46	5.19	5.01	5.28	5.28	5.11	5.18	5.18	5.07	5.01	5.12	7.29	7.47	7.56	7.80	7.82	7.82	7.71
150	5.89	6.02	5.88	5.69	5.72	5.81	5.76	5.80	5.70	5.71	5.56	5.63	8.21	8.35	8.31	8.65	8.64	8.78	8.56
155	6.47	6.66	6.73	6.12	6.20	6.32	6.11	6.28	6.32	6.32	6.52	6.16	8.98	8.97	9.32	9.34	9.28	9.39	9.03
160	7.10	7.20	7.17	6.64	6.53	6.57	6.21	6.72	6.74	6.95	6.94	6.88	9.88	9.82	9.87	10.0	9.80	9.82	9.49
165	7.48	7.72	7.71	7.36	7.16	7.05	6.79	7.24	7.45	7.54	7.37	7.41	10.0	10.0	10.0	10.2	10.3	10.1	9.72
170	8.07	8.25	8.26	8.06	7.62	7.59	7.34	7.66	7.77	7.79	7.80	7.94	10.1	10.1	10.2	10.3	10.2	10.2	9.67
175	8.99	9.15	9.08	8.97	8.49	8.22	7.89	8.16	8.47	8.58	8.65	8.82	10.1	10.1	10.2	10.2	10.1	9.91	9.51
180	9.46	9.60	9.64	9.60	9.42	9.09	8.92	8.87	9.05	9.15	9.15	9.24	9.52	9.51	9.66	9.68	9.60	9.34	9.08

Table--2 UNIT: cd

C (DEG) y (DEG)	C (DEG)																						
	285	300	315	330	345																		
0	8617	8615	8614	8614	8612																		
5	8599	8600	8595	8595	8596																		
10	8561	8555	8545	8541	8538																		
15	8477	8464	8453	8438	8425																		
20	8351	8340	8316	8304	8295																		
25	8174	8148	8129	8122	8107																		
30	7941	7917	7905	7893	7886																		
35	7632	7621	7609	7603	7602																		
40	7261	7239	7236	7229	7227																		
45	6747	6729	6718	6717	6715																		
50	5919	5904	5889	5866	5853																		
55	4103	3962	3818	3672	3555																		
60	558	522	471	416	366																		
65	182	177	173	170	170																		
70	124	124	123	120	118																		
75	81.9	82.5	82.3	80.0	75.8																		
80	48.1	49.7	48.2	48.0	44.0																		
85	18.1	18.9	18.4	19.6	18.8																		
90	0.42	0.39	0.36	0.31	0.30																		
95	0.30	0.30	0.30	0.29	0.29																		
100	0.66	0.66	0.66	0.66	0.67																		
105	1.22	1.23	1.24	1.25	1.25																		
110	1.81	1.83	1.83	1.84	1.85																		
115	2.55	2.55	2.52	2.46	2.41																		
120	3.31	3.28	3.27	3.19	3.15																		
125	4.09	4.07	4.00	3.88	3.89																		
130	5.20	5.11	4.88	4.75	4.76																		
135	6.16	5.84	5.68	5.68	5.69																		
140	6.76	6.61	6.58	6.54	6.56																		
145	7.42	7.58	7.50	7.41	7.58																		
150	8.51	8.38	8.42	8.35	8.39																		
155	9.13	9.08	9.00	9.40	9.22																		
160	9.34	9.61	9.48	9.98	9.87																		
165	9.49	9.79	9.80	10.1	10.1																		
170	9.62	9.64	9.45	9.85	10.0																		
175	9.18	9.48	9.33	9.79	9.89																		
180	8.98	8.80	8.92	9.08	9.14																		

**THD and PF Measurement Test Results:**

**Electrical Measurement:**

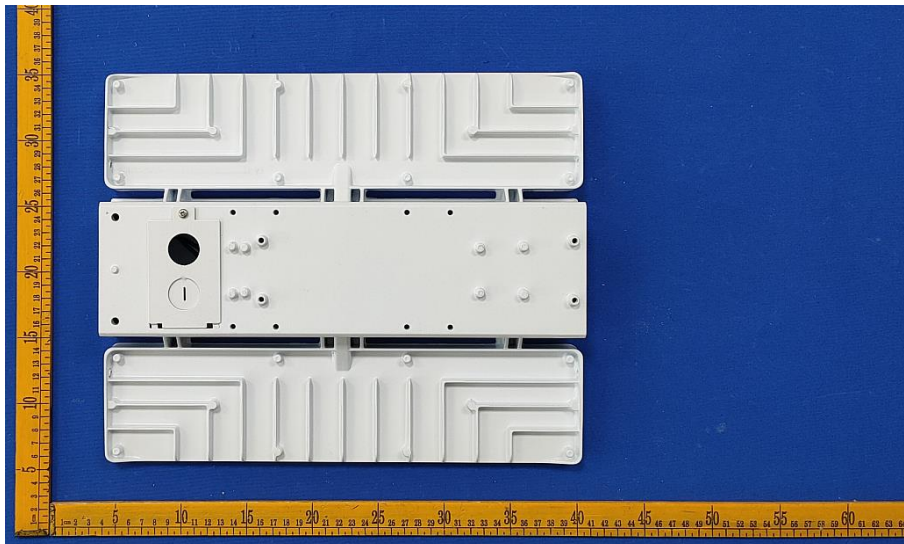
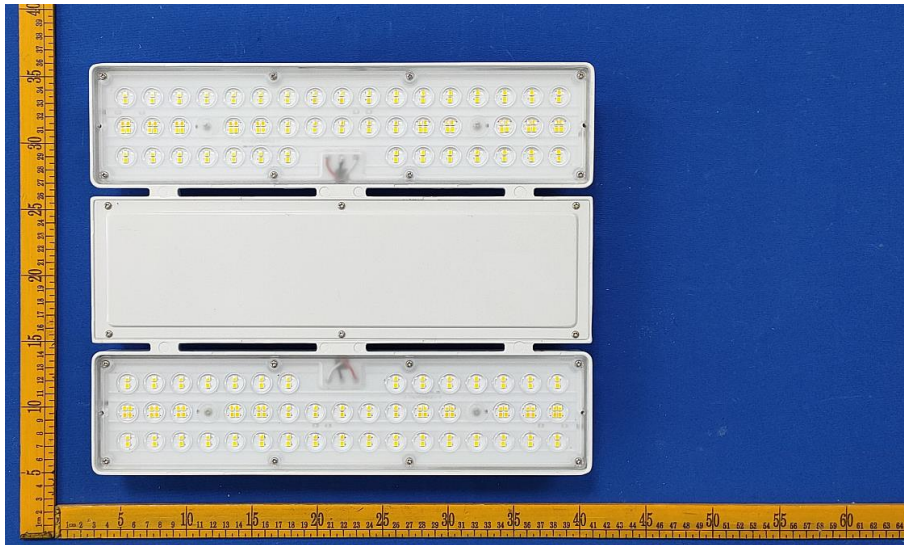
CCT Setting	Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	iTHD(%)
4000K	120.0	60	1.0960	131.22	0.9977	3.55
	277.0	60	0.4802	127.28	0.9568	10.79
	347.0	60	0.4045	126.68	0.9025	14.83
5000K	120.0	60	1.1030	132.30	0.9982	3.57
	277.0	60	0.4816	127.66	0.9570	10.80
	347.0	60	0.4064	127.27	0.9025	15.02

**Annex:**

ANSI CCT Quadrangle (omit any outside product range)/Worst-Case Value	Actual CCT (K)	Power Consumption (W)	Lumen Output (lm)	Efficacy (lm/W)	Input Control Signal Applied
4000K	4206	131.22	20339.7	155.00	Set Switch 0% to 4000K
5000K	5060	132.30	20351.7	153.83	Set Switch 100% to 5000K
Lowest Efficacy	153.83 lm/W (@5000K)				
Maximum Power	132.30 W				



**Photo of Sample:**





**Equipment List:**

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2021-11-10	2022-11-09
NTC-F01-006	2.0 meter Integrating Sphere	2021-11-10	2022-11-09
NTC-F01-012	Standard Lamp	2021-11-10	2022-11-09
NTC-F01-013	Standard Lamp	2021-11-10	2022-11-09
NTC-F01-031	Digital Power Meter	2021-08-22	2022-08-21
NTC-F01-020	Temperature & Humidity Meter	2021-11-15	2022-11-14

\*\*\*\*\***End of Report**\*\*\*\*\*