

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond)

1939 Parker Court, Stone Mountain, GA 30087

High-Bay Luminaries (Commercial and Industrial)

Model name(s):

BLT-HB21-240WH1JT2A1-BH50

Remark: "a" can be any two letters to represent lamp colors; BH=Black, WH=White, or Customized;

"b" can be "10SP", "20SP" or blank for Surge-Protective Device provided or not;

"c" can be "M", "P" or blank for DC Motion Sensor, DC PIR sensor provided or not;

"d" can be any digits for CCT, 30=3000K,40=4000K,45=4500K,50=5000K,57=5700K.

Representative (Tested) Model:

BLT-HB21-240WH1JT2A1-BH50

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

Test & Report By:

Candy Chen

Engineer: Candy Chen

Date: 2022-12-09

Review By:

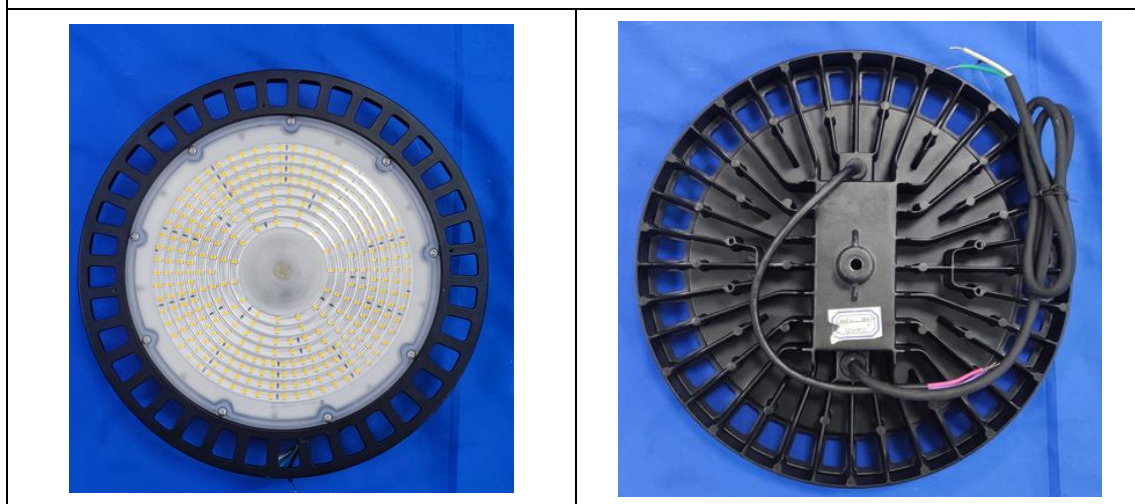
Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	BLT-HB21-240WH1JT2A1-BH50	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-Bay Luminaires (Commercial and Industrial)	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	240W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K, 5000K,5700K	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXEN-XXE-13H-9D1-00-0-0	
Sample Number	BLC2211019E-D1	
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	2022-11-28
Date of Test	2022-12-01
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2017 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	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 ° vertical intervals and 22.5 ° horizontal intervals. Goniophotometer far field detector $\text{fl}'=1.42\%$, Test distance: 14.14m

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.

Self-absorption:

AST-HB21-240WH1JT2A1-abc30:1.1975

AST-HB21-240WH1JT2A1-abc57:1.1976

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)

Test date	2022-12-01	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-HB21-240WH1JT2A1-BH50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC221101	120.0	60	2.019	241.12	0.995	6.74
9E-D1	277.0	60	0.897	239.64	0.965	9.91
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

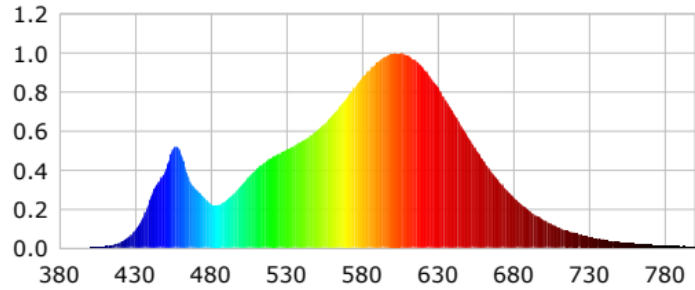
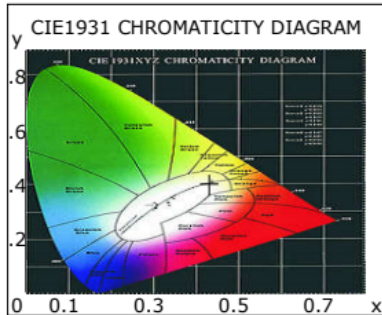
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	7
Frequency (Hz)	60	R2	92	R10	82
CCT (K)	3042	R3	95	R11	80
Duv	-0.0013	R4	80	R12	74
Chromaticity (x, y)	x=0.4321 y=0.3992	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2496 v'=0.5187	R6	91	R14	98
Color Rendering Index (CRI)	83	R7	81	R15	74
R9	7	R8	58	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11				

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)	33375.8	33101.5	>=10000(-10%)
Luminous Efficacy (lm/W)	138.42	138.13	Premium: >= 135(-3%)
Most worst Luminous/Highest	137.28		
Zonal lumens in the 20-50 °zone (%)	65.00	--	>=30(-10%)
Beam Angle (°)	88.4	--	--
Center Beam Candle Power (cd)	16869	--	--

Spectral Power Distribution & Chromaticity Diagram



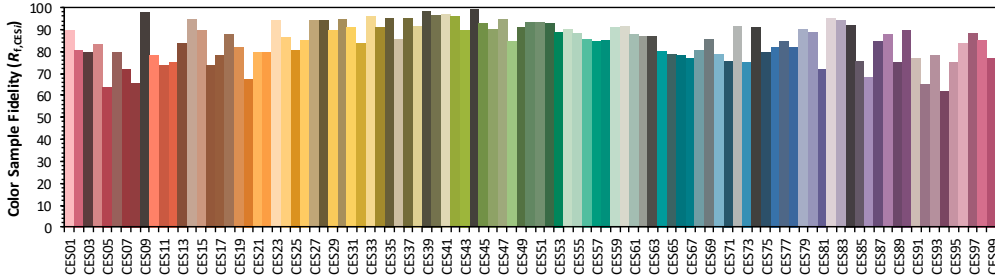
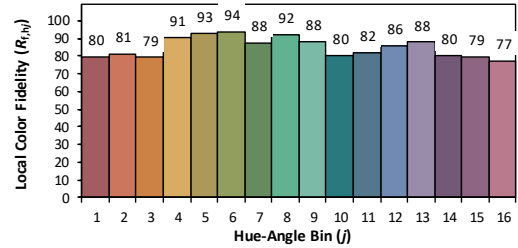
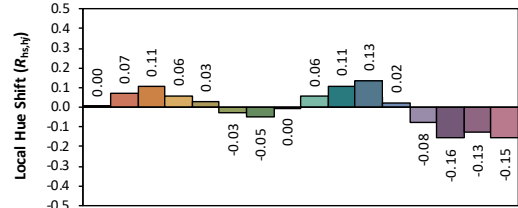
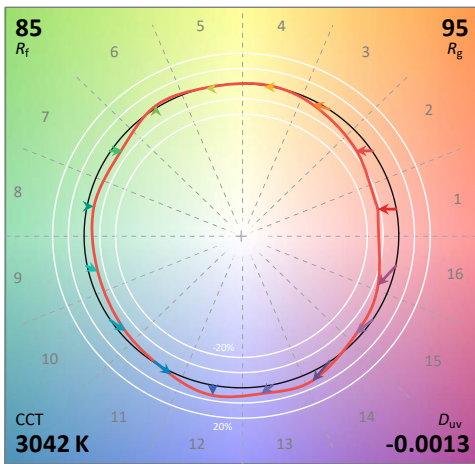
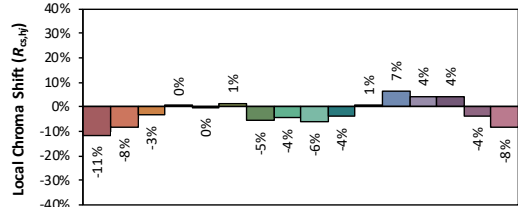
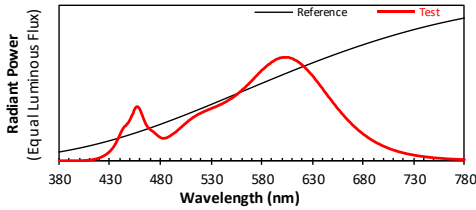
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.3052	535	0.4830	331.6778	690	0.3430	235.5630
385	0.0004	0.2613	540	0.5030	345.4502	695	0.2985	205.0008
390	0.0002	0.1260	545	0.5239	359.7418	700	0.2581	177.2700
395	0.0007	0.4951	550	0.5466	375.3941	705	0.2238	153.6581
400	0.0011	0.7773	555	0.5708	391.9542	710	0.1920	131.8175
405	0.0027	1.8620	560	0.6018	413.2428	715	0.1657	113.7587
410	0.0064	4.3829	565	0.6357	436.5152	720	0.1416	97.2677
415	0.0140	9.6312	570	0.6769	464.8670	725	0.1209	83.0083
420	0.0280	19.2147	575	0.7231	496.5789	730	0.1037	71.1875
425	0.0512	35.1607	580	0.7704	529.0326	735	0.0877	60.1948
430	0.0894	61.3589	585	0.8218	564.3361	740	0.0752	51.6678
435	0.1519	104.3305	590	0.8742	600.3320	745	0.0644	44.1991
440	0.2496	171.4391	595	0.9157	628.8272	750	0.0541	37.1602
445	0.3333	228.8648	600	0.9538	655.0099	755	0.0470	32.2846
450	0.3955	271.5778	605	0.9821	674.4418	760	0.0402	27.6161
455	0.5039	346.0602	610	0.9969	684.5857	765	0.0346	23.7923
460	0.4927	338.3624	615	0.9983	685.5312	770	0.0280	19.2192
465	0.3700	254.1094	620	0.9885	678.8415	775	0.0253	17.4036
470	0.3009	206.6429	625	0.9644	662.2832	780	0.0212	14.5393
475	0.2636	180.9970	630	0.9248	635.1077	785	0.0171	11.7356
480	0.2245	154.1499	635	0.8775	602.5988	790	0.0151	10.3454
485	0.2192	150.5296	640	0.8236	565.5615	795	0.0135	9.2623
490	0.2422	166.3017	645	0.7615	522.9211	800	0.0105	7.1870
495	0.2764	189.8246	650	0.6984	479.5759			
500	0.3197	219.5783	655	0.6295	432.3105			
505	0.3619	248.5112	660	0.5669	389.3053			
510	0.4023	276.3015	665	0.5044	346.3969			
515	0.4345	298.4115	670	0.4476	307.3596			
520	0.4601	315.9731	675	0.3929	269.7828			
525	0.4830	331.6778	680	0.3430	235.5630			
530	0.5030	345.4502	685	0.2985	205.0008			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-XXE-13H-9D1-00-0-0
Date: 2022/12/1

Manufacturer: ASmart LIGHT CO., LTD
Model: AST-HB21-240WH1JT2A1-abc30



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

x 0.4322
 y 0.3992
 u' 0.2496
 v' 0.5187

CIE 13.3-1995
(CRI)
 R_a 83
 R_g 7

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Zonal Lumen Tabulation

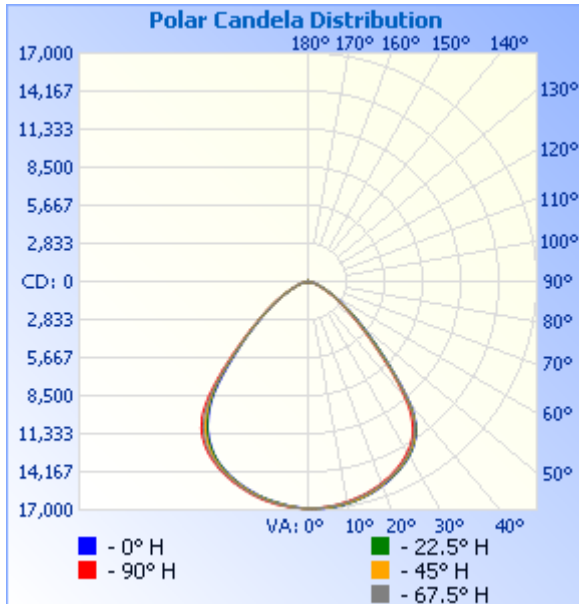
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	13,327.0	39.9%	39.9%
0-40	21,705.6	65%	65%
0-60	31,156.2	93.3%	93.4%
60-90	2,107.1	6.3%	6.3%
70-100	649.0	1.9%	1.9%
90-120	24.4	0.1%	0.1%
0-90	33,263.3	99.7%	99.7%
90-180	107.5	0.3%	0.3%
0-180	33,370.8	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,599.1	4.8%	90-100	7.7	0%
10-20	4,619.6	13.8%	100-110	7.0	0%
20-30	7,108.3	21.3%	110-120	9.7	0%
30-40	8,378.6	25.1%	120-130	12.7	0%
40-50	6,213.7	18.6%	130-140	16.7	0.1%
50-60	3,236.9	9.7%	140-150	19.1	0.1%
60-70	1,465.8	4.4%	150-160	17.6	0.1%
70-80	547.8	1.6%	160-170	12.5	0%
80-90	93.5	0.3%	170-180	4.5	0%

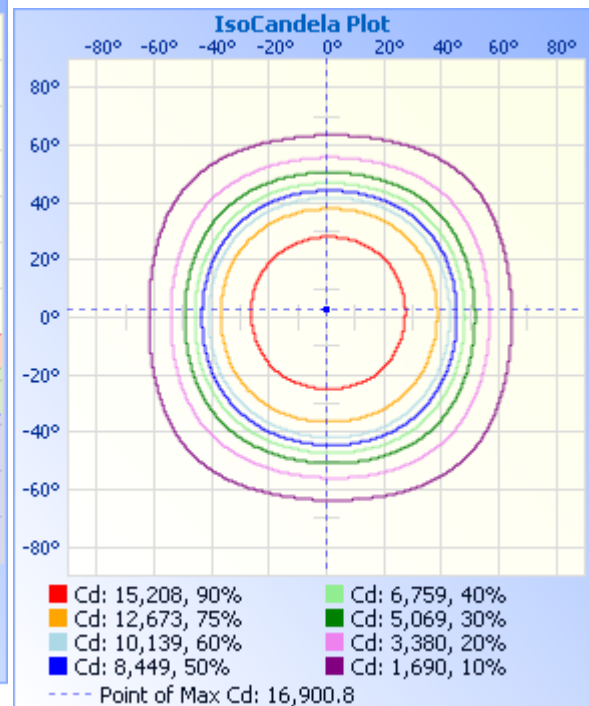
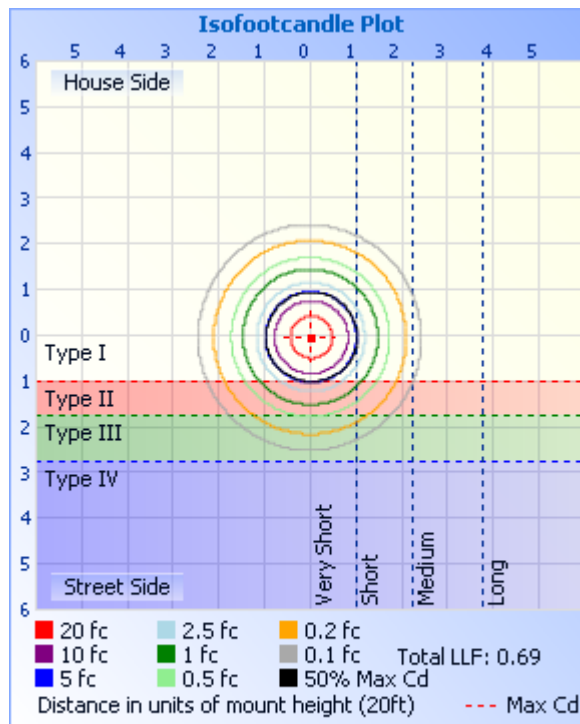
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	58.4 fc	33.1 ft	33.2 ft
34.0ft	14.6 fc	66.1 ft	66.4 ft
51.0ft	6.49 fc	99.2 ft	99.6 ft
68.0ft	3.65 fc	132.3 ft	132.8 ft
85.0ft	2.33 fc	165.4 ft	166.0 ft
102.0ft	1.62 fc	198.4 ft	199.2 ft

■ Vert. Spread: 88.4°
■ Horiz. Spread: 88.6°



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	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869	16869
1	16881	16878	16883	16875	16867	16860	16855	16851	16849	16866	16855	16865	16868	16874	16882	16861	16881
2	16895	16879	16892	16866	16863	16847	16837	16832	16832	16844	16844	16853	16857	16876	16881	16865	16895
3	16901	16881	16875	16857	16848	16834	16818	16808	16796	16820	16821	16838	16859	16871	16880	16867	16901
4	16892	16878	16875	16846	16836	16808	16795	16763	16769	16784	16799	16820	16837	16857	16878	16862	16892
5	16893	16865	16856	16815	16812	16778	16772	16728	16729	16756	16772	16798	16820	16844	16868	16853	16893
6	16878	16869	16846	16801	16785	16749	16742	16692	16691	16717	16734	16768	16794	16811	16840	16843	16878
7	16856	16843	16805	16776	16758	16716	16701	16660	16656	16658	16697	16733	16764	16785	16824	16840	16856
8	16833	16823	16787	16743	16711	16677	16661	16613	16605	16623	16654	16684	16739	16756	16803	16816	16833
9	16807	16788	16758	16710	16666	16637	16606	16559	16560	16569	16615	16643	16690	16724	16763	16793	16807
10	16757	16760	16725	16671	16630	16580	16549	16502	16507	16517	16572	16592	16646	16678	16732	16762	16757
11	16722	16728	16687	16625	16578	16531	16495	16444	16455	16469	16509	16546	16604	16636	16695	16732	16722
12	16677	16677	16641	16572	16529	16458	16419	16381	16391	16405	16448	16489	16555	16591	16645	16691	16677
13	16642	16630	16601	16510	16471	16402	16355	16330	16331	16348	16389	16429	16483	16548	16596	16627	16642
14	16581	16571	16541	16453	16413	16330	16295	16255	16235	16287	16326	16359	16426	16489	16549	16577	16581
15	16525	16512	16490	16405	16352	16262	16222	16174	16163	16218	16245	16305	16355	16422	16497	16523	16525
16	16465	16443	16421	16346	16278	16188	16150	16093	16088	16138	16182	16226	16288	16356	16431	16460	16465

17	16411	16381	16352	16257	16203	16103	16068	16019	16013	16060	16082	16145	16201	16286	16366	16394	16411
18	16331	16284	16268	16192	16129	16034	15983	15926	15928	15956	15995	16062	16121	16210	16301	16318	16331
19	16248	16198	16179	16111	16043	15934	15899	15842	15839	15868	15904	15981	16040	16127	16227	16239	16248
20	16167	16106	16090	16024	15951	15843	15810	15727	15744	15773	15819	15889	15953	16051	16138	16157	16167
21	16079	16017	15987	15933	15849	15738	15702	15634	15646	15671	15724	15785	15870	15960	16049	16061	16079
22	15979	15930	15883	15843	15756	15644	15603	15525	15540	15569	15630	15696	15771	15875	15953	15963	15979
23	15881	15833	15786	15738	15651	15537	15480	15411	15424	15459	15520	15594	15674	15758	15856	15872	15881
24	15778	15736	15690	15628	15541	15423	15367	15291	15304	15322	15407	15491	15566	15654	15736	15770	15778
25	15660	15621	15576	15516	15408	15297	15243	15177	15165	15198	15292	15377	15464	15545	15626	15660	15660
26	15545	15509	15463	15395	15297	15182	15115	15045	15037	15066	15146	15241	15344	15435	15519	15545	15545
27	15417	15390	15331	15274	15171	15039	14952	14899	14887	14917	15007	15103	15203	15311	15393	15420	15417
28	15302	15253	15200	15135	15029	14908	14804	14734	14729	14756	14856	14967	15073	15201	15272	15297	15302
29	15144	15115	15054	14984	14868	14741	14634	14559	14546	14562	14686	14815	14925	15053	15147	15164	15144
30	14993	14952	14904	14830	14704	14571	14460	14369	14321	14371	14505	14658	14777	14883	14989	15013	14993
31	14825	14788	14727	14662	14524	14374	14258	14156	14105	14164	14312	14476	14611	14731	14830	14852	14825
32	14646	14599	14543	14448	14333	14171	14048	13908	13873	13943	14081	14284	14436	14558	14657	14676	14646
33	14420	14374	14339	14232	14103	13939	13797	13650	13611	13696	13845	14057	14237	14363	14455	14478	14420
34	14199	14146	14106	13988	13853	13692	13531	13379	13337	13428	13590	13817	14011	14158	14265	14255	14199
35	13944	13882	13840	13729	13573	13369	13223	13069	13027	13102	13304	13539	13767	13919	14015	14016	13944

Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01
 Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
 Guangzhou, People' s Republic of China engineer@etk-utest.com

36	13650	13570	13511	13425	13202	13032	12875	12713	12659	12763	12981	13248	13497	13636	13753	13744	13650
37	13259	13205	13142	13079	12807	12646	12479	12253	12286	12414	12589	12862	13147	13336	13438	13367	13259
38	12837	12759	12692	12649	12349	12189	11953	11798	11879	12032	12197	12468	12811	12978	13036	13020	12837
39	12327	12225	12138	12052	11788	11570	11395	11306	11435	11552	11751	11990	12369	12559	12608	12540	12327
40	11668	11564	11450	11415	11102	10975	10802	10782	10935	11076	11262	11436	11801	12003	12083	11907	11668
41	10927	10756	10728	10721	10403	10329	10154	10184	10324	10553	10717	10858	11216	11407	11442	11238	10927
42	10218	10034	9932	9908	9669	9611	9458	9524	9708	9954	10116	10177	10536	10755	10692	10497	10218
43	9429	9360	9189	9169	8955	8924	8722	8818	9065	9317	9409	9520	9852	10052	9946	9667	9429
44	8741	8682	8475	8428	8175	8170	8073	8178	8361	8607	8771	8859	9138	9346	9200	8896	8741
45	8076	8023	7776	7685	7519	7542	7467	7572	7773	7973	8129	8138	8420	8625	8453	8225	8076
46	7459	7386	7140	7038	6913	6935	6890	6943	7213	7370	7521	7525	7765	7968	7780	7524	7459
47	6899	6831	6589	6500	6367	6383	6353	6427	6699	6837	6903	6946	7182	7299	7175	6957	6899
48	6395	6263	6041	5999	5851	5871	5803	5937	6198	6328	6384	6413	6634	6722	6570	6423	6395
49	5882	5788	5591	5486	5336	5356	5348	5486	5717	5800	5904	5936	6108	6191	6046	5927	5882
50	5447	5353	5165	5097	4922	4935	4942	5054	5254	5373	5462	5461	5607	5676	5567	5471	5447
51	5068	4934	4753	4693	4529	4554	4554	4665	4849	4964	5050	5048	5160	5218	5136	5065	5068
52	4670	4568	4394	4289	4158	4200	4178	4316	4492	4596	4646	4684	4729	4786	4757	4660	4670
53	4329	4225	4060	3961	3825	3866	3856	3983	4143	4229	4301	4348	4386	4425	4420	4310	4329
54	3991	3879	3754	3650	3500	3542	3565	3680	3830	3923	3976	4027	4069	4103	4072	3989	3991

Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People' s Republic of China engineer@etk-utest.com

Report Format Number BL-FM-SA-012

55	3699	3581	3435	3385	3221	3259	3298	3364	3509	3641	3686	3711	3769	3779	3757	3705	3699
56	3406	3297	3175	3122	2974	2992	3029	3106	3247	3379	3378	3428	3476	3494	3470	3404	3406
57	3118	3033	2939	2869	2734	2755	2795	2854	2992	3085	3126	3164	3204	3208	3209	3148	3118
58	2891	2787	2695	2649	2503	2525	2566	2629	2751	2827	2875	2917	2955	2954	2962	2914	2891
59	2674	2541	2482	2432	2276	2325	2372	2418	2516	2602	2626	2673	2714	2715	2682	2693	2674
60	2426	2331	2287	2226	2084	2126	2179	2214	2298	2381	2399	2437	2485	2480	2451	2474	2426
61	2220	2128	2066	2049	1912	1937	1972	2007	2101	2176	2185	2206	2262	2261	2245	2264	2220
62	2020	1936	1883	1849	1722	1746	1791	1822	1913	1968	1986	2012	2055	2056	2045	2038	2020
63	1815	1754	1714	1671	1550	1576	1628	1646	1705	1780	1805	1828	1872	1876	1857	1856	1815
64	1630	1581	1556	1516	1399	1416	1474	1484	1541	1602	1635	1638	1692	1695	1671	1688	1630
65	1497	1440	1395	1365	1264	1283	1319	1335	1403	1453	1454	1484	1533	1543	1513	1517	1497
66	1369	1310	1268	1230	1143	1153	1192	1205	1279	1315	1306	1337	1397	1398	1376	1379	1369
67	1238	1188	1152	1116	1030	1038	1081	1092	1154	1186	1186	1215	1265	1257	1247	1259	1238
68	1130	1069	1042	1004	926	933	977	994	1042	1082	1080	1086	1125	1124	1133	1150	1130
69	1010	966	934	913	838	843	883	889	944	977	980	987	1026	1021	1023	1047	1010
70	912	873	845	815	758	759	788	807	858	885	882	899	938	928	927	939	912
71	824	780	765	744	676	688	710	731	770	794	800	811	841	840	832	845	824
72	733	703	685	668	605	617	646	655	688	712	720	734	758	758	756	766	733
73	669	632	615	591	545	551	581	587	620	643	650	662	684	671	680	692	669

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74	599	563	554	537	487	490	516	528	567	578	582	594	612	611	612	627	599
75	532	501	485	475	430	435	459	471	504	524	523	535	550	543	546	557	532
76	463	444	436	418	381	386	404	422	447	468	471	477	486	485	484	497	463
77	415	383	372	364	330	337	354	363	394	412	415	416	429	432	427	431	415
78	356	330	320	312	285	290	301	313	341	354	359	364	380	374	369	376	356
79	306	279	274	270	240	241	252	267	288	301	309	317	327	329	318	318	306
80	256	239	223	218	197	203	212	229	240	257	267	271	278	278	268	273	256
81	205	188	181	176	158	163	170	182	199	214	220	219	234	233	222	223	205
82	161	145	143	138	124	134	140	148	158	169	176	178	188	190	189	183	161
83	125	111	103	105	99	102	105	115	128	133	145	140	152	150	147	137	125
84	90	73	75	76	56	70	81	73	92	103	110	108	113	110	111	100	90
85	61	42	52	60	44	49	52	59	65	68	75	80	88	77	78	72	61
86	35	33	36	42	36	34	35	39	42	51	51	52	43	58	52	48	35
87	21	21	27	19	21	23	26	21	25	33	31	35	29	26	29	27	21
88	17	13	16	15	8	12	9	15	14	19	15	22	17	12	17	17	17
89	10	10	14	12	8	9	12	10	10	13	14	15	9	10	10	14	10
90	13	11	16	13	8	11	8	0	13	14	11	12	0	10	11	0	13
91	8	11	12	12	8	8	10	0	8	13	8	12	8	8	11	13	8
92	13	14	10	11	0	0	0	0	11	10	0	13	0	9	12	11	13

93	8	7	10	8	0	0	7	10	10	10	9	8	0	8	14	13	8
94	13	10	9	12	9	10	0	7	10	10	9	12	0	9	9	12	13
95	13	12	12	0	0	0	8	0	10	10	0	0	0	11	0	15	13
96	13	11	12	10	8	0	0	0	9	9	0	0	0	7	8	12	13
97	9	8	9	11	0	8	7	0	10	10	0	10	0	0	11	10	9
98	11	0	9	12	0	0	8	0	7	11	9	0	0	9	0	12	11
99	13	12	12	11	0	9	0	0	0	12	0	9	0	0	9	10	13
100	0	11	12	12	7	0	8	0	9	11	0	8	0	0	7	12	0
101	15	0	13	12	0	0	0	0	9	8	9	0	7	0	8	12	15
102	11	8	8	11	0	8	11	8	8	0	8	9	0	8	0	12	11
103	13	11	12	14	0	8	0	0	9	11	0	9	0	11	7	9	13
104	16	0	11	11	8	0	9	0	8	10	0	11	10	9	8	12	16
105	13	0	12	12	8	8	0	11	0	12	0	13	0	0	0	9	13
106	11	7	11	0	9	0	0	0	8	0	9	8	0	11	0	15	11
107	9	7	10	11	7	8	11	0	10	12	9	0	0	9	0	14	9
108	12	8	10	0	0	0	9	7	0	9	7	11	0	11	0	15	12
109	12	9	10	11	0	9	0	0	7	0	8	10	0	0	11	10	12
110	15	10	12	12	8	9	7	10	11	7	7	9	0	8	0	15	15
111	11	11	12	9	10	0	0	10	11	13	8	8	9	10	10	12	11

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112	13	11	9	14	9	7	9	10	13	14	9	9	0	9	10	13	13
113	11	10	10	11	7	8	8	0	9	8	8	8	0	8	12	14	11
114	12	11	13	12	9	8	8	0	11	12	12	13	8	11	11	11	12
115	15	11	14	12	12	9	7	0	13	10	9	12	9	8	9	9	15
116	14	9	15	15	0	0	0	8	12	15	10	9	0	8	12	0	14
117	12	11	11	13	8	0	10	0	12	12	8	13	8	10	8	14	12
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122	16	11	13	11	10	9	12	10	12	17	16	15	11	11	13	16	16
123	15	13	17	16	16	13	13	10	13	14	14	15	11	8	16	15	15
124	13	16	12	16	16	11	12	11	14	16	9	12	10	12	14	13	13
125	14	14	14	13	11	15	13	13	14	19	17	15	13	11	13	19	14
126	16	17	18	18	13	17	16	13	13	17	17	13	12	14	12	18	16
127	17	14	13	15	14	11	17	13	19	17	16	16	14	19	13	11	17
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129	22	20	18	16	16	14	15	14	16	19	19	13	16	12	15	17	22
130	19	17	19	22	14	18	16	17	19	16	18	18	20	13	18	14	19

131	21	20	18	21	14	16	23	15	22	22	23	18	16	19	18	19	21
132	16	16	19	22	21	22	22	13	21	22	22	16	15	23	14	15	16
133	23	14	21	20	19	18	23	21	21	24	17	21	21	19	18	24	23
134	22	20	22	23	22	20	22	21	24	24	21	22	22	17	20	24	22
135	23	19	21	25	19	20	19	16	21	23	18	28	12	21	21	25	23
136	21	22	23	25	25	21	18	22	25	25	25	27	21	19	23	24	21
137	23	19	26	25	26	18	25	24	18	27	22	24	19	22	23	25	23
138	30	28	26	32	27	23	21	19	20	27	26	26	17	25	17	24	30
139	28	27	25	24	24	21	24	26	28	30	22	25	25	23	28	22	28
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141	31	28	16	32	29	22	28	29	31	29	28	29	25	26	29	24	31
142	20	27	28	26	29	23	25	26	30	27	28	27	22	30	23	30	20
143	31	32	26	30	26	26	31	32	33	36	29	32	28	29	31	30	31
144	33	33	31	29	32	30	30	28	33	35	31	34	28	30	28	34	33
145	35	32	35	34	29	24	30	25	32	36	33	32	29	31	29	35	35
146	25	33	30	32	29	30	25	28	35	28	33	29	26	26	31	27	25
147	30	30	29	34	34	29	33	33	37	20	32	36	32	35	33	36	30
148	38	36	31	28	31	31	38	36	34	35	37	29	32	34	33	35	38
149	38	35	34	32	33	33	37	27	21	38	36	30	35	32	38	39	38

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150	41	28	35	40	33	32	39	36	42	36	37	36	35	34	29	37	41
151	33	36	40	37	36	37	38	35	35	33	39	40	36	34	32	22	33
152	41	36	40	42	39	37	37	34	47	42	34	25	35	38	36	46	41
153	39	43	37	35	40	33	39	34	36	43	42	18	35	36	41	33	39
154	43	37	42	43	40	38	37	42	39	40	32	40	32	41	41	32	43
155	35	37	35	33	37	44	30	36	41	33	34	42	37	33	38	41	35
156	41	39	36	44	36	40	42	34	36	43	39	40	39	38	43	36	41
157	34	44	41	49	41	36	41	40	43	42	38	42	38	36	31	40	34
158	37	39	38	43	38	37	41	43	42	44	37	40	40	42	41	38	37
159	35	33	29	36	41	41	41	39	44	42	40	43	36	43	44	43	35
160	47	42	42	37	35	34	43	41	38	43	46	36	42	38	42	43	47
161	45	49	45	40	43	40	42	45	48	46	50	42	42	41	41	27	45
162	36	47	45	47	46	42	45	47	50	46	50	44	43	41	44	43	36
163	45	43	43	46	43	41	49	44	44	28	47	47	37	44	48	47	45
164	45	42	49	46	43	39	49	47	40	44	48	45	34	45	43	42	45
165	50	35	48	40	43	41	47	44	50	40	47	49	34	43	44	43	50
166	37	50	48	52	42	37	39	48	44	47	50	53	37	45	43	36	37
167	51	46	34	47	45	39	49	51	47	42	49	53	39	40	42	47	51
168	50	51	50	46	41	45	48	47	41	53	41	49	43	46	40	49	50

169	48	49	50	51	44	48	46	45	51	52	53	51	47	38	38	38	48
170	40	43	42	49	39	42	51	45	51	55	53	51	43	42	47	49	40
171	45	45	47	47	51	49	53	40	51	46	54	45	46	44	48	47	45
172	51	49	47	45	49	48	47	50	52	52	50	56	45	42	45	43	51
173	46	52	48	49	50	49	42	50	52	51	55	48	46	46	36	47	46
174	49	43	45	46	52	48	51	50	50	52	55	55	40	48	40	50	49
175	44	46	40	49	46	46	49	49	52	44	45	50	45	44	39	51	44
176	40	47	49	51	47	46	38	44	40	49	44	50	46	45	40	33	40
177	50	50	45	48	44	41	43	43	37	45	47	50	45	43	46	49	50
178	41	43	50	49	48	49	45	44	47	55	44	49	47	44	47	32	41
179	38	46	43	40	47	40	40	47	50	52	48	51	39	46	46	48	38
180	48	45	41	45	48	46	50	43	43	49	45	41	46	49	43	43	48

UGR

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	26.1	27.4	26.4	27.7	28.0	25.3	26.7	25.7	27.0	27.3
3H	26.7	27.9	27.1	28.2	28.6	25.9	27.1	26.3	27.4	27.8
4H	26.9	28.0	27.3	28.3	28.7	26.0	27.1	26.4	27.5	27.9
6H	26.9	28.0	27.3	28.3	28.7	26.1	27.1	26.5	27.5	27.9
8H	26.9	27.9	27.3	28.3	28.7	26.1	27.0	26.5	27.4	27.8
12H	26.9	27.8	27.3	28.2	28.6	26.0	26.9	26.4	27.3	27.8
4H 2H	26.2	27.4	26.6	27.7	28.1	25.5	26.7	25.9	27.0	27.4
3H	27.0	27.9	27.4	28.3	28.7	26.3	27.2	26.7	27.6	28.0
4H	27.3	28.1	27.7	28.5	28.9	26.4	27.3	26.9	27.7	28.1
6H	27.4	28.1	27.8	28.5	29.0	26.5	27.2	27.0	27.7	28.2
8H	27.4	28.0	27.8	28.5	28.9	26.5	27.2	27.0	27.6	28.1
12H	27.4	27.9	27.8	28.4	28.9	26.5	27.1	27.0	27.6	28.0
8H 4H	27.3	27.9	27.7	28.4	28.8	26.5	27.1	26.9	27.6	28.0
6H	27.4	28.0	27.9	28.5	28.9	26.6	27.1	27.1	27.6	28.1
8H	27.4	27.9	28.0	28.4	28.9	26.6	27.1	27.1	27.6	28.1
12H	27.4	27.9	27.9	28.4	28.9	26.6	27.0	27.1	27.5	28.1
12H 4H	27.2	27.8	27.7	28.3	28.8	26.4	27.0	26.9	27.5	28.0
6H	27.4	27.9	27.9	28.3	28.9	26.6	27.0	27.1	27.5	28.1
8H	27.4	27.9	27.9	28.4	28.9	26.6	27.0	27.1	27.5	28.1

Maximum UGR = 29.0

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-01	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-HB21-240WH1JT2A1-BH50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC221101	120.0	60	2.013	240.33	0.995	7.02
9E-D2	277.0	60	0.897	239.17	0.963	10.52
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

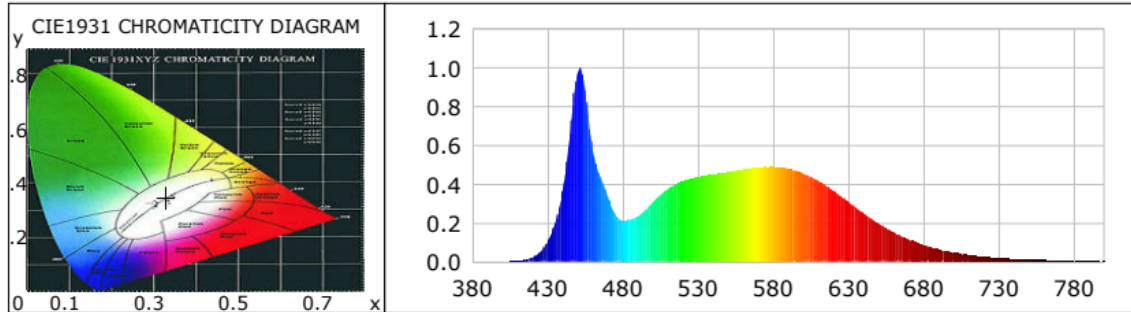
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	4
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	5662	R3	92	R11	82
Duv	0.0018	R4	82	R12	58
Chromaticity (x, y)	x=0.3288 y=0.3413	R5	82	R13	83
Chromaticity (u', v')	u(u')=0.2043 v'(v')=0.4771	R6	83	R14	96
Color Rendering Index (CRI)	83	R7	87	R15	76
R9	4	R8	67	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-13				

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)	35391.2	35062.7	>=10000(-10%)
Luminous Efficacy (lm/W)	147.26	146.60	Premium: >= 135(-3%)
Most worst Luminous/Highest Watts	145.89		

Spectral Power Distribution & Chromaticity Diagram



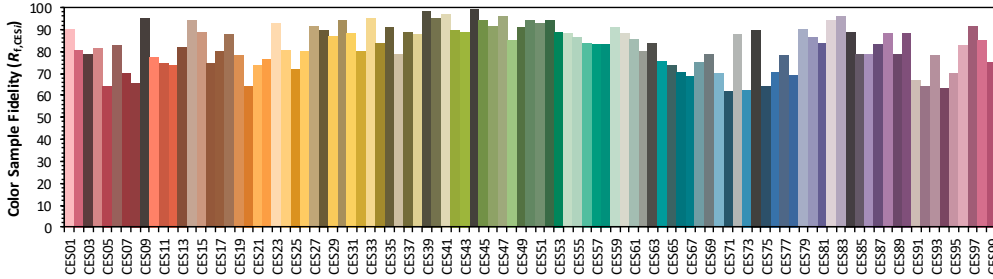
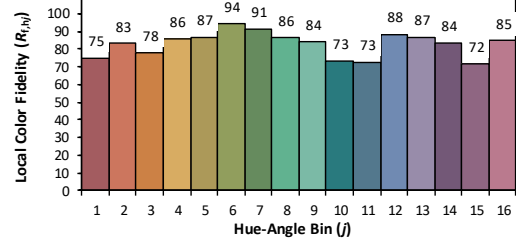
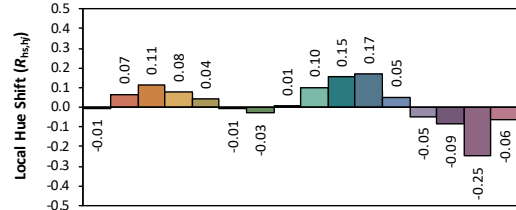
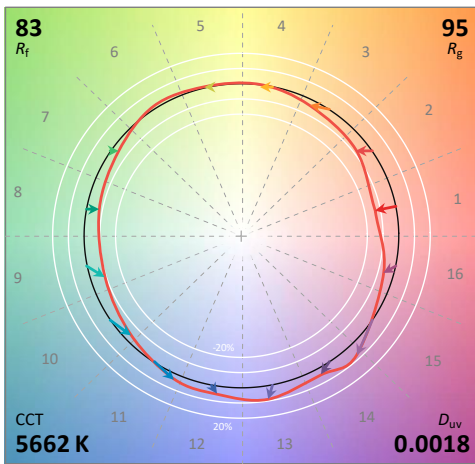
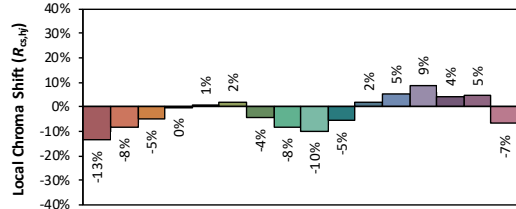
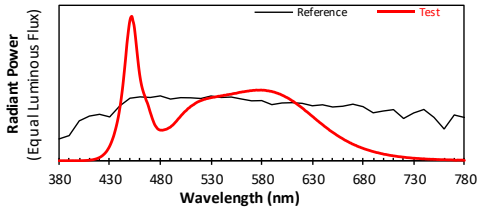
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.3202	535	0.4293	472.4953	690	0.1148	126.3762
385	0.0006	0.6907	540	0.4375	481.5697	695	0.0994	109.4194
390	0.0004	0.4890	545	0.4439	488.5891	700	0.0860	94.7029
395	0.0003	0.3590	550	0.4507	496.0599	705	0.0744	81.9267
400	0.0008	0.8702	555	0.4555	501.3099	710	0.0637	70.1640
405	0.0016	1.7202	560	0.4614	507.8864	715	0.0553	60.8320
410	0.0039	4.3086	565	0.4679	515.0033	720	0.0462	50.8265
415	0.0099	10.8974	570	0.4760	523.9095	725	0.0400	44.0715
420	0.0227	25.0194	575	0.4817	530.1923	730	0.0335	36.8745
425	0.0492	54.1905	580	0.4862	535.1304	735	0.0288	31.6606
430	0.1012	111.3834	585	0.4902	539.5752	740	0.0250	27.5400
435	0.1981	218.0189	590	0.4901	539.4861	745	0.0211	23.1710
440	0.3641	400.7995	595	0.4856	534.4350	750	0.0179	19.6505
445	0.6579	724.1098	600	0.4805	528.9072	755	0.0157	17.3181
450	0.9736	1071.6263	605	0.4694	516.6816	760	0.0136	14.9548
455	0.8866	975.8950	610	0.4552	501.0749	765	0.0111	12.2133
460	0.5791	637.3507	615	0.4384	482.5074	770	0.0095	10.4361
465	0.4424	486.9004	620	0.4157	457.5139	775	0.0080	8.8589
470	0.3371	370.9985	625	0.3918	431.2669	780	0.0075	8.2952
475	0.2437	268.2089	630	0.3658	402.6439	785	0.0065	7.1375
480	0.2123	233.7272	635	0.3377	371.6629	790	0.0047	5.1804
485	0.2171	238.9645	640	0.3080	338.9553	795	0.0046	5.0374
490	0.2339	257.4086	645	0.2781	306.0757	800	0.0027	3.0015
495	0.2681	295.0806	650	0.2505	275.7660			
500	0.3089	339.9462	655	0.2231	245.5645			
505	0.3453	380.1167	660	0.1974	217.2325			
510	0.3772	415.1555	665	0.1737	191.1647			
515	0.4002	440.4564	670	0.1524	167.6904			
520	0.4169	458.8711	675	0.1327	146.0795			
525	0.4293	472.4953	680	0.1148	126.3762			
530	0.4375	481.5697	685	0.0994	109.4194			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-XXE-13H-9D1-00-0-0
Date: 2022/12/1

Manufacturer: ASmart LIGHT CO., LTD
Model: AST-HB21-240WH1JT2A1-abc57



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

x 0.3288
 y 0.3413
 u' 0.2043
 v' 0.4771

CIE 13.3-1995 (CRI)
 R_a 83
 R_g 4

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Calculated Efficacy Data for family models:

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
BLT-HB21-240WH1JT2A1-BH50	33375.8	241.12	138.42
AST-HB21-240WH1JT2A1-abc35	33778.9	240.73	140.32
AST-HB21-240WH1JT2A1-abc40	34182.0	240.73	142.00
AST-HB21-240WH1JT2A1-abc45	34585.0	240.73	143.67
AST-HB21-240WH1JT2A1-abc50	34988.1	240.73	145.34
AST-HB21-240WH1JT2A1-abc57	35391.2	240.33	147.26

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

$$33778.9 = (35391.2 - 33375.8) / 5 + 33375.8$$

$$34182.0 = (35391.2 - 33375.8) / 5 + 33778.9$$

$$34585.0 = (35391.2 - 33375.8) / 5 + 34182.0$$

$$34988.1 = (35391.2 - 33375.8) / 5 + 34585.0$$

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

$$240.73 = (240.33 + 241.12) / 2$$

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

$$140.32 = 33778.9 / 240.73$$

$$142.00 = 34182.0 / 240.73$$

$$143.67 = 34585.0 / 240.73$$

$$145.34 = 34988.1 / 240.73$$

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2022-01-18
AC Power Source	CHP-500C	DYBWD010159	2022-01-25
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2022-01-25
Digital Power Meter	WT500	DYDWQ20010	2022-01-25
Integral Sphere (2M)	2M	DYJCE120067	2022-01-18
Digital Power Meter	WT500	DYDWQ200006	2022-01-25
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2022-01-18
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 *****