

LM-79-08 Test Report

For

IKIO LED LIGHTING

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

High-Bay Luminaires (Commercial and Industrial)

Model name(s):

IK-UFHB-240W-35/40/50K-BL (150W)

Representative (Tested) Model:

IK-UFHB-240W-35/40/50K-BL (150W,35K) 35WD

IK-UFHB-240W-35/40/50K-BL (150W,40K) 40WD

IK-UFHB-240W-35/40/50K-BL (150W,50K) 50WD

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

Test & Report By:



Engineer: Candy Chen

Date: 2022-09-29

Review By:

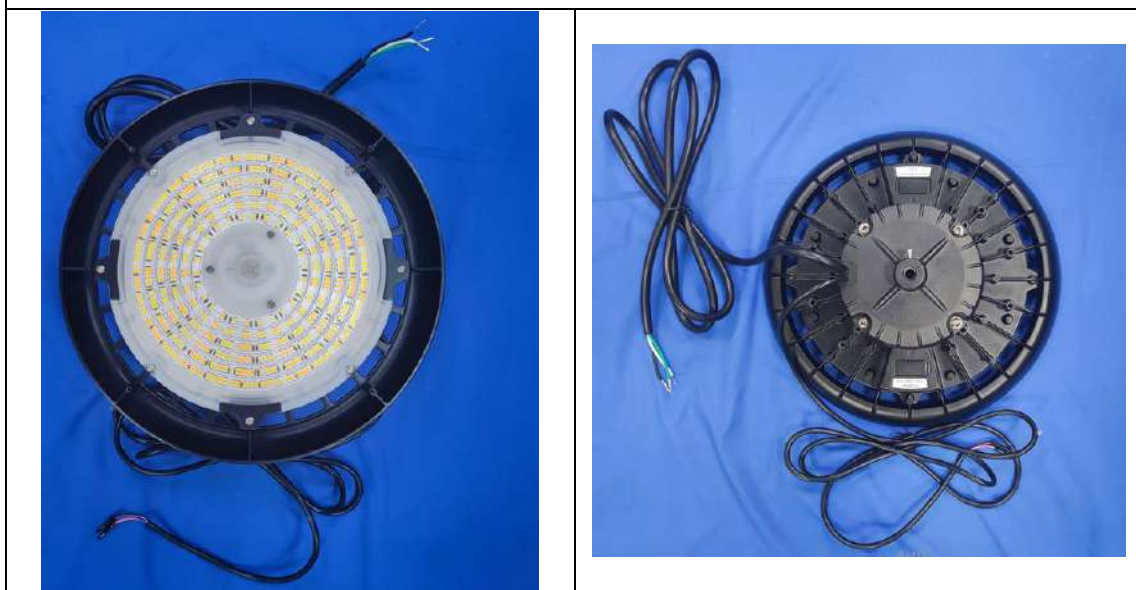


Manager: Jason Luo

1.1 Product Information:

Organization Name	IKIO LED LIGHTING	
Brand Name	IKIO	
Model Number	IK-UFHB-240W-35/40/50K-BL (150W)	
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	150W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K, 4500K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-XX80RA35000H1	
Sample Number	BLC2209005E-B1	
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	2022-09-25
Date of Test	2022-09-27
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Goniophotometer far field detector $f1'=1.42\%$, 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

Self-absorption:

AST-HB18B-150WL1B1T2A1-abc35WD:1.064

AST-HB18B-150WL1B1T2A1-abc40WD:1.065

AST-HB18B-150WL1B1T2A1-abc50WD:1.066

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)

Test date	2022-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-UFHB-240W-35/40/50K-BL (150W,35K) 35WD		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC220900	120.0	60	1.274	152.55	0.998	2.06
5E-B1	277.0	60	0.575	149.65	0.94	6.32
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

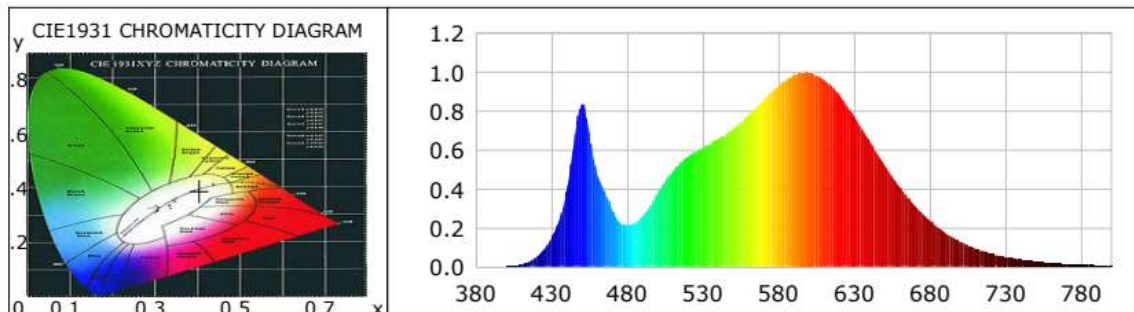
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	3
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	3499	R3	95	R11	79
Duv	-0.0007	R4	81	R12	65
Chromaticity (x, y)	x=0.4046 y=0.3888	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2361 v'=0.5104	R6	85	R14	98
Color Rendering Index (CRI)	82	R7	83	R15	73
R9	3	R8	60	--	--
Rf	83	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-13				

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)	20278.6	19990.4	>=10000(-10%)
Luminous Efficacy (lm/W)	132.93	133.58	Premium: >= 135(-3%)
Most worst Luminous/Highest	131.04		
Zonal lumens in the 20-50 °zone (%)	65.50	--	>=30(-10%)
Beam Angle (°)	89.1	--	--
Center Beam Candle Power (cd)	9809	--	--

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.3554	535	0.5902	341.6252	690	0.3136	181.4874
385	0.0004	0.2254	540	0.6103	353.2646	695	0.2730	158.0109
390	0.0005	0.3038	545	0.6324	366.0354	700	0.2359	136.5633
395	0.0006	0.3519	550	0.6564	379.9246	705	0.2027	117.3422
400	0.0016	0.9521	555	0.6774	392.0766	710	0.1754	101.5211
405	0.0046	2.6542	560	0.7087	410.1690	715	0.1515	87.6882
410	0.0113	6.5658	565	0.7396	428.0523	720	0.1280	74.1129
415	0.0250	14.4793	570	0.7780	450.2826	725	0.1091	63.1189
420	0.0491	28.4212	575	0.8162	472.4241	730	0.0943	54.5949
425	0.0872	50.4843	580	0.8551	494.9468	735	0.0805	46.5826
430	0.1472	85.1938	585	0.8974	519.3985	740	0.0689	39.8856
435	0.2366	136.9130	590	0.9331	540.0552	745	0.0579	33.5101
440	0.3854	223.0898	595	0.9596	555.4360	750	0.0492	28.4923
445	0.6417	371.4252	600	0.9851	570.1926	755	0.0423	24.4619
450	0.8374	484.6673	605	0.9958	576.3427	760	0.0364	21.0735
455	0.6975	403.6951	610	0.9980	577.6404	765	0.0311	17.9909
460	0.4844	280.3920	615	0.9838	569.3954	770	0.0265	15.3286
465	0.3914	226.5621	620	0.9626	557.1180	775	0.0230	13.3148
470	0.2990	173.0534	625	0.9291	537.7303	780	0.0191	11.0710
475	0.2305	133.3849	630	0.8840	511.6435	785	0.0165	9.5448
480	0.2122	122.8008	635	0.8301	480.4545	790	0.0143	8.2672
485	0.2238	129.5269	640	0.7715	446.5583	795	0.0114	6.6222
490	0.2564	148.4276	645	0.7110	411.5462	800	0.0100	5.8074
495	0.3110	179.9767	650	0.6472	374.6160			
500	0.3747	216.8901	655	0.5826	337.1784			
505	0.4336	250.9528	660	0.5225	302.3928			
510	0.4892	283.1454	665	0.4641	268.5963			
515	0.5311	307.4193	670	0.4086	236.5214			
520	0.5621	325.3544	675	0.3595	208.0962			
525	0.5902	341.6252	680	0.3136	181.4874			
530	0.6103	353.2646	685	0.2730	158.0109			

TM30

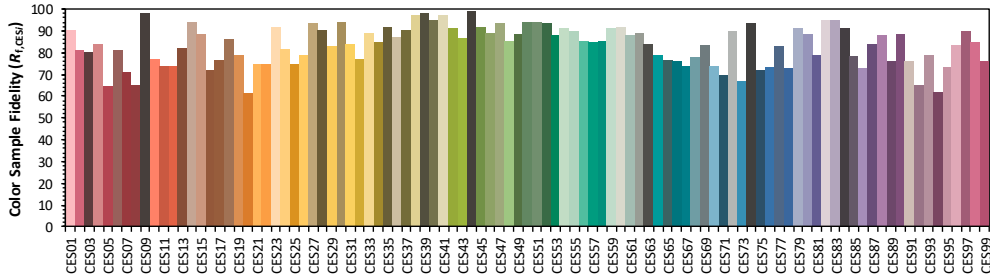
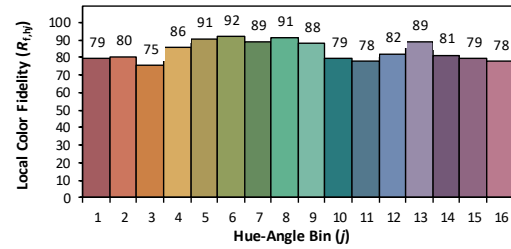
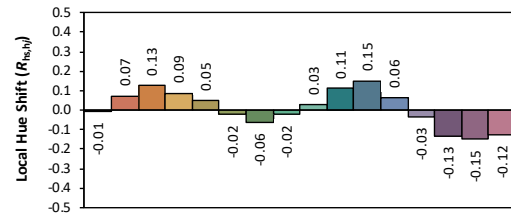
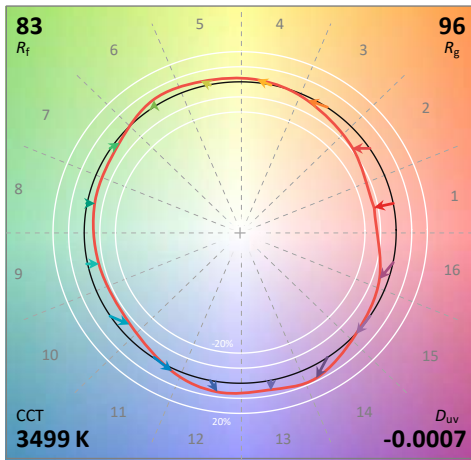
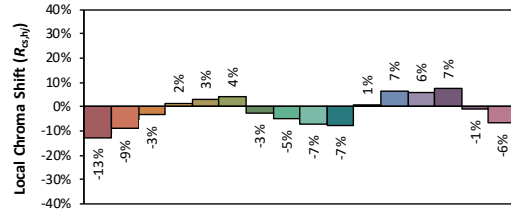
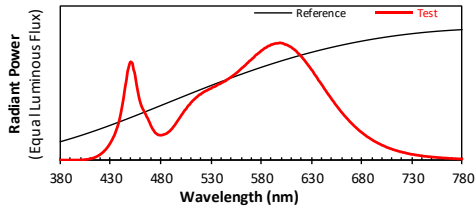
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2022/9/27

Model: IK-UFHB-240W-35/40/50K-BL (150W, 35K) 35WD



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

x 0.4046
 y 0.3888
 u' 0.2361
 v' 0.5104

CIE 13.3-1995
(CRI)
 R_a 82
 R_9 3

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

Zonal Lumen Tabulation

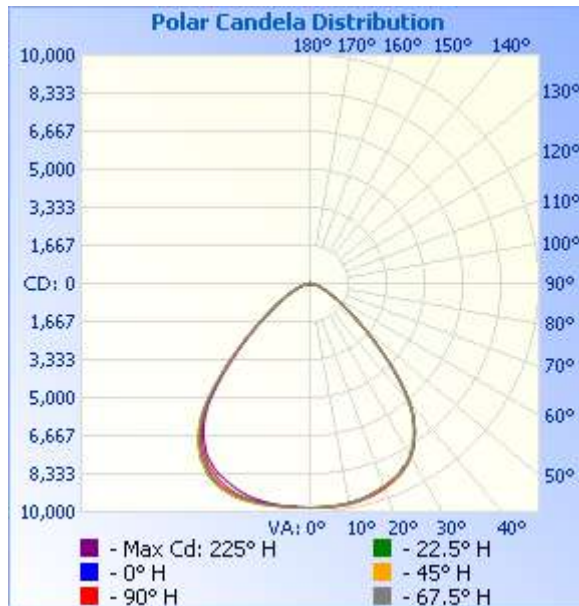
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	8,009.3	39.5%	39.5%
0-40	13,068.1	64.4%	64.5%
0-60	18,900.2	93.2%	93.2%
60-90	1,287.4	6.3%	6.3%
70-100	410.3	2%	2%
90-120	25.0	0.1%	0.1%
0-90	20,187.6	99.6%	99.6%
90-180	88.1	0.4%	0.4%
0-180	20,275.7	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	936.5	4.6%	90-100	8.2	0%
10-20	2,759.1	13.6%	100-110	7.9	0%
20-30	4,313.7	21.3%	110-120	9.0	0%
30-40	5,058.8	25.0%	120-130	10.8	0.1%
40-50	3,893.2	19.2%	130-140	13.1	0.1%
50-60	1,938.9	9.6%	140-150	14.5	0.1%
60-70	885.2	4.4%	150-160	12.8	0.1%
70-80	344.8	1.7%	160-170	8.7	0%
80-90	57.3	0.3%	170-180	3.1	0%

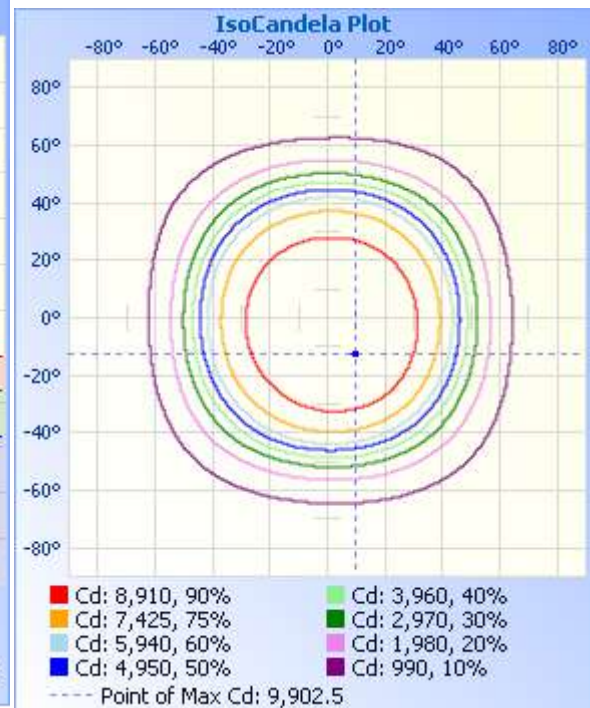
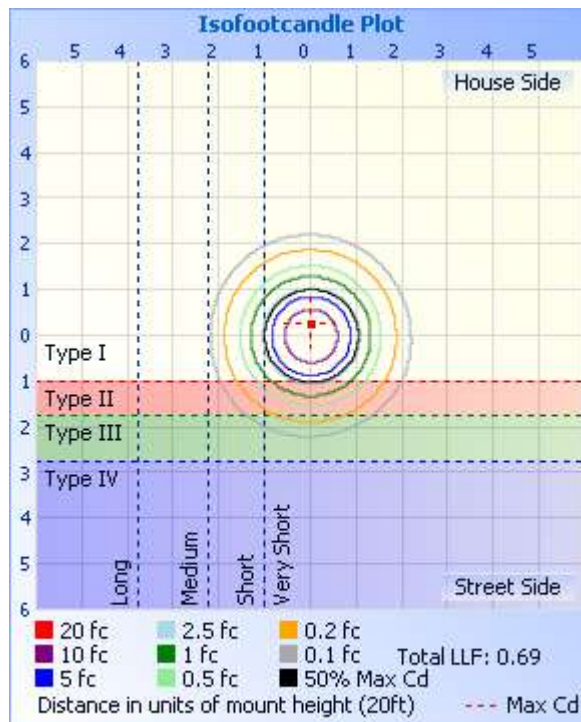
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	33.9 fc	33.5 ft	32.7 ft
34.0ft	8.49 fc	66.9 ft	65.4 ft
51.0ft	3.77 fc	100.4 ft	98.0 ft
68.0ft	2.12 fc	133.9 ft	130.7 ft
85.0ft	1.36 fc	167.3 ft	163.4 ft
102.0ft	0.94 fc	200.8 ft	196.1 ft

■ Vert. Spread: 89.1°
■ Horiz. Spread: 87.7°



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	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809	9809
1	9807	9805	9809	9797	9825	9822	9808	9808	9808	9815	9816	9814	9813	9821	9800	9808	9807
2	9805	9804	9809	9803	9823	9819	9800	9816	9812	9812	9818	9805	9816	9808	9796	9808	9805
3	9808	9806	9797	9797	9813	9816	9806	9816	9811	9822	9829	9818	9824	9820	9801	9809	9808
4	9802	9802	9804	9797	9818	9822	9811	9821	9815	9823	9830	9827	9812	9808	9787	9809	9802
5	9795	9801	9794	9797	9824	9829	9813	9818	9822	9826	9831	9814	9817	9808	9796	9811	9795
6	9792	9793	9796	9779	9817	9822	9817	9815	9824	9826	9844	9824	9822	9810	9800	9809	9792
7	9786	9791	9784	9773	9821	9824	9812	9815	9834	9833	9853	9828	9824	9816	9799	9804	9786
8	9778	9781	9790	9766	9817	9817	9808	9822	9833	9832	9853	9826	9825	9813	9793	9798	9778
9	9766	9768	9786	9761	9812	9819	9811	9821	9837	9839	9863	9846	9829	9806	9791	9791	9766
10	9753	9754	9767	9755	9798	9813	9805	9820	9844	9842	9871	9855	9828	9802	9778	9783	9753
11	9736	9740	9755	9741	9782	9806	9813	9827	9842	9864	9875	9854	9826	9803	9772	9766	9736
12	9721	9725	9732	9720	9781	9790	9798	9822	9848	9871	9888	9853	9820	9796	9760	9757	9721
13	9697	9704	9719	9711	9752	9784	9796	9829	9856	9887	9901	9864	9825	9789	9745	9729	9697
14	9672	9671	9693	9679	9741	9762	9777	9832	9868	9893	9898	9857	9822	9789	9726	9700	9672
15	9645	9637	9653	9657	9711	9756	9767	9825	9873	9897	9902	9857	9820	9774	9708	9681	9645

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

16	9614	9604	9623	9626	9685	9718	9746	9809	9868	9893	9902	9840	9811	9759	9688	9654	9614
17	9574	9565	9583	9598	9655	9687	9722	9799	9870	9897	9896	9841	9789	9720	9653	9616	9574
18	9539	9522	9550	9555	9610	9661	9682	9783	9857	9891	9882	9824	9771	9702	9616	9572	9539
19	9496	9478	9493	9511	9578	9623	9672	9769	9837	9884	9864	9808	9742	9664	9569	9531	9496
20	9446	9436	9449	9457	9543	9571	9625	9737	9814	9866	9843	9786	9717	9627	9525	9485	9446
21	9392	9385	9409	9414	9480	9527	9579	9707	9790	9842	9827	9758	9674	9575	9481	9442	9392
22	9349	9336	9340	9363	9427	9476	9536	9670	9758	9815	9793	9718	9627	9521	9431	9388	9349
23	9301	9283	9297	9311	9372	9417	9480	9619	9729	9781	9769	9677	9577	9468	9377	9338	9301
24	9242	9228	9242	9255	9313	9353	9422	9565	9691	9750	9733	9613	9516	9410	9317	9285	9242
25	9173	9165	9178	9200	9252	9278	9338	9497	9639	9701	9685	9558	9450	9341	9269	9228	9173
26	9099	9090	9086	9131	9181	9213	9284	9421	9565	9634	9622	9484	9367	9276	9207	9166	9099
27	8987	9022	9053	9040	9088	9138	9201	9340	9476	9571	9545	9420	9290	9213	9131	9085	8987
28	8972	8949	8976	8985	9000	9054	9107	9261	9400	9495	9466	9317	9208	9134	9062	8986	8972
29	8852	8833	8860	8875	8899	8950	9012	9168	9292	9375	9351	9221	9121	9044	8954	8924	8852
30	8744	8724	8731	8767	8775	8831	8870	9047	9177	9249	9238	9098	9018	8933	8863	8815	8744
31	8605	8572	8602	8618	8668	8710	8803	8927	9052	9128	9108	9042	8899	8828	8768	8673	8605
32	8467	8429	8450	8472	8495	8564	8669	8797	8956	9024	9029	8883	8772	8697	8615	8542	8467
33	8315	8263	8286	8314	8337	8403	8501	8638	8784	8854	8859	8716	8628	8540	8460	8386	8315
34	8142	8095	8126	8134	8157	8235	8330	8469	8612	8698	8693	8558	8457	8369	8297	8211	8142

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35	7973	7914	7942	7957	7968	8048	8144	8288	8412	8515	8528	8388	8264	8179	8131	8043	7973
36	7756	7721	7745	7739	7773	7832	7942	8060	8221	8305	8335	8188	8076	7998	7940	7835	7756
37	7538	7505	7532	7519	7527	7619	7734	7858	7983	8068	8089	7954	7872	7800	7722	7636	7538
38	7328	7262	7283	7312	7286	7395	7479	7632	7770	7838	7867	7720	7630	7583	7499	7413	7328
39	7025	6975	6984	7024	6997	7131	7220	7378	7490	7580	7592	7459	7419	7325	7223	7157	7025
40	6741	6659	6640	6727	6688	6799	6913	7090	7211	7284	7290	7159	7137	7032	6958	6858	6741
41	6425	6318	6323	6366	6320	6442	6566	6727	6850	6940	6939	6822	6814	6692	6610	6522	6425
42	6055	5983	5980	6011	5934	6013	6183	6350	6471	6555	6550	6451	6416	6336	6215	6162	6055
43	5703	5598	5595	5649	5523	5642	5742	5964	6023	6110	6116	6038	6024	5919	5832	5782	5703
44	5332	5231	5226	5261	5166	5282	5349	5553	5630	5697	5703	5649	5609	5527	5448	5401	5332
45	4933	4859	4853	4882	4812	4885	4986	5118	5232	5300	5320	5263	5207	5143	5061	4992	4933
46	4535	4496	4477	4515	4446	4527	4620	4732	4842	4863	4902	4848	4846	4775	4669	4627	4535
47	4173	4157	4120	4152	4058	4168	4268	4349	4436	4496	4546	4488	4490	4429	4316	4252	4173
48	3809	3824	3782	3769	3723	3837	3891	3983	4075	4130	4183	4137	4122	4066	3984	3861	3809
49	3497	3472	3427	3440	3408	3521	3568	3648	3722	3802	3851	3810	3789	3744	3658	3524	3497
50	3192	3184	3153	3120	3122	3200	3259	3301	3408	3469	3511	3499	3466	3433	3339	3211	3192
51	2909	2874	2867	2845	2853	2926	2981	2996	3081	3177	3209	3167	3160	3142	3054	2930	2909
52	2657	2626	2599	2606	2584	2691	2724	2735	2810	2910	2920	2892	2889	2875	2776	2683	2657
53	2434	2406	2384	2390	2348	2465	2482	2501	2560	2660	2654	2641	2658	2629	2541	2455	2434

Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01

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54	2208	2207	2182	2174	2146	2258	2281	2299	2340	2434	2428	2432	2432	2399	2320	2233	2208
55	2028	2025	1978	1987	1962	2061	2097	2091	2136	2210	2207	2226	2239	2210	2119	2044	2028
56	1846	1845	1826	1828	1775	1888	1925	1926	1944	2025	2035	2055	2054	2027	1940	1875	1846
57	1686	1695	1663	1684	1626	1728	1766	1772	1787	1861	1871	1895	1896	1860	1780	1721	1686
58	1546	1557	1529	1551	1490	1582	1612	1628	1645	1705	1723	1746	1740	1702	1625	1589	1546
59	1408	1429	1407	1423	1360	1431	1482	1485	1512	1570	1588	1612	1588	1557	1492	1457	1408
60	1287	1309	1290	1314	1248	1303	1353	1360	1387	1440	1463	1477	1445	1427	1372	1341	1287
61	1180	1180	1189	1199	1140	1186	1229	1247	1271	1322	1330	1346	1307	1292	1262	1233	1180
62	1077	1079	1078	1108	1043	1079	1113	1144	1169	1220	1227	1231	1193	1184	1163	1138	1077
63	987	978	990	1020	960	971	1013	1041	1078	1127	1130	1129	1080	1077	1075	1041	987
64	895	884	902	935	880	883	926	953	994	1027	1023	1020	978	974	990	952	895
65	819	802	826	865	810	800	840	870	908	941	941	925	883	893	912	887	819
66	747	728	751	793	734	726	764	796	830	862	859	841	802	815	842	807	747
67	680	656	684	723	675	660	688	728	762	786	786	761	729	742	773	742	680
68	612	597	621	659	616	595	627	655	700	718	717	691	661	678	700	671	612
69	563	541	570	601	561	538	569	597	631	651	644	622	604	616	641	608	563
70	503	486	512	538	509	491	516	549	580	588	586	556	537	556	589	558	503
71	462	444	466	490	457	441	462	493	517	530	532	505	491	507	529	501	462
72	415	394	420	436	416	396	418	439	469	474	475	453	443	456	473	454	415

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73	384	358	387	389	377	357	380	402	418	421	423	403	402	416	427	408	384
74	340	327	347	351	338	320	338	363	380	377	382	368	364	373	386	369	340
75	301	287	313	310	297	290	299	319	333	334	338	328	324	338	341	325	301
76	270	256	275	274	267	254	267	279	298	294	301	291	286	295	306	289	270
77	237	224	243	238	235	220	232	242	259	256	265	253	253	265	269	258	237
78	212	199	213	213	203	191	201	212	220	220	227	216	222	229	235	226	212
79	180	167	185	176	173	161	165	184	188	185	188	185	186	197	207	193	180
80	156	147	156	150	146	135	137	151	160	157	158	156	159	167	176	165	156
81	127	119	129	121	114	109	114	113	128	132	130	125	130	139	145	137	127
82	103	91	104	100	98	85	87	92	103	100	105	95	107	112	122	112	103
83	79	73	79	78	74	67	62	68	75	83	81	77	84	84	96	87	79
84	56	47	56	59	55	38	49	36	54	42	52	56	66	65	71	63	56
85	42	34	36	35	35	25	23	20	32	32	33	29	50	47	44	40	42
86	24	19	18	23	20	15	13	16	20	16	15	15	31	29	28	29	24
87	15	8	14	13	12	0	10	11	15	10	11	10	17	19	15	12	15
88	13	9	10	13	15	8	12	10	15	8	14	0	13	14	10	11	13
89	10	0	7	11	14	0	9	10	9	7	11	10	7	9	11	12	10
90	11	7	10	10	11	0	8	0	12	0	10	8	12	11	10	8	11
91	9	7	10	9	13	0	8	0	11	0	11	0	8	10	9	12	9

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

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112	10	8	11	12	9	7	7	9	15	0	10	10	11	10	15	13	10
113	11	0	14	11	15	7	10	0	12	0	12	0	11	9	10	9	11
114	12	0	10	13	15	0	11	10	14	7	8	10	8	7	10	8	12
115	11	8	16	0	13	0	10	10	10	0	10	0	10	9	10	10	11
116	11	11	13	12	9	12	12	0	15	0	13	11	12	11	15	0	11
117	11	9	13	13	12	7	11	0	14	11	13	0	11	7	14	8	11
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119	13	8	14	12	15	8	11	12	15	0	12	12	10	11	11	9	13
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121	14	8	12	8	15	10	11	10	16	0	11	8	16	12	14	13	14
122	11	0	15	12	16	0	14	9	10	7	12	9	12	12	11	13	11
123	12	10	13	14	15	10	16	11	15	0	9	11	14	12	14	9	12
124	14	12	17	13	19	10	11	11	13	8	13	12	15	11	14	10	14
125	15	11	16	14	15	11	14	13	16	8	12	13	9	9	9	13	15
126	0	15	11	14	18	15	13	13	15	10	12	12	13	14	14	9	0
127	12	13	13	14	19	10	13	9	15	10	10	12	13	8	10	14	12
128	12	13	19	15	18	13	15	12	13	10	14	16	15	14	11	11	12
129	11	13	19	11	18	12	11	13	16	0	13	15	13	10	14	14	11

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132	12	9	15	16	22	9	14	16	17	13	14	13	19	14	17	15	12
133	20	13	19	15	22	13	19	16	18	13	15	16	15	13	13	14	20
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145	22	22	28	24	25	21	25	22	17	20	25	16	22	21	27	28	22
146	24	23	25	26	28	23	24	24	24	21	24	21	22	24	24	23	24
147	22	18	27	27	28	24	26	26	21	16	28	23	26	24	23	27	22
148	26	26	29	27	27	24	24	26	19	20	21	26	25	29	25	17	26

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149	28	26	29	22	28	26	24	27	26	22	28	27	30	25	28	26	28
150	20	22	24	26	30	21	27	25	24	24	32	25	28	25	29	23	20
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152	24	29	31	26	32	26	29	29	20	23	35	27	29	27	30	29	24
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156	29	29	28	27	32	25	28	27	25	24	26	28	31	23	27	30	29
157	29	13	25	31	36	26	32	28	26	27	31	27	25	34	22	28	29
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165	28	32	33	25	30	32	32	29	32	28	27	33	32	26	36	33	28
166	34	19	31	33	40	28	36	31	20	22	33	30	30	33	33	29	34
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168	28	32	35	35	39	31	32	28	34	28	37	38	31	26	30	23	28
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170	32	35	32	18	32	34	31	36	33	31	36	28	28	29	35	37	32
171	37	28	41	34	30	32	37	35	36	34	33	22	34	32	36	35	37
172	31	32	32	30	33	33	39	32	37	31	34	28	33	34	34	28	31
173	33	35	30	31	34	30	35	36	35	26	36	32	32	36	32	30	33
174	35	31	37	32	39	34	35	37	36	34	30	25	37	33	31	32	35
175	36	30	34	33	40	34	29	32	37	27	40	30	36	30	35	28	36
176	24	24	32	30	37	33	34	38	34	26	36	35	35	31	34	30	24
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178	34	28	28	29	38	31	33	31	37	29	34	33	28	34	32	34	34
179	32	29	32	30	38	34	35	32	36	26	36	32	33	24	27	34	32
180	29	26	33	37	40	32	30	28	37	30	37	31	33	27	34	34	29

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		24.7	26.1	25.1	26.4	26.7	24.7	26.0	25.0	26.3	26.6
	3H	25.4	26.6	25.8	26.9	27.3	25.3	26.5	25.7	26.9	27.2
	4H	25.6	26.7	26.0	27.0	27.4	25.5	26.6	25.9	27.0	27.4
	6H	25.6	26.7	26.1	27.1	27.5	25.6	26.6	26.0	27.0	27.4
	8H	25.6	26.6	26.1	27.0	27.4	25.6	26.6	26.0	26.9	27.4
	12H	25.6	26.6	26.1	27.0	27.4	25.6	26.5	26.0	26.9	27.3
4H 2H		25.0	26.1	25.4	26.4	26.8	24.9	26.0	25.3	26.4	26.7
	3H	25.8	26.7	26.2	27.1	27.5	25.7	26.6	26.1	27.0	27.4
	4H	26.0	26.9	26.5	27.3	27.7	25.9	26.8	26.4	27.2	27.6
	6H	26.2	26.9	26.7	27.4	27.8	26.1	26.8	26.5	27.2	27.7
	8H	26.2	26.9	26.7	27.3	27.8	26.1	26.8	26.6	27.2	27.7
	12H	26.2	26.8	26.7	27.3	27.7	26.1	26.7	26.5	27.1	27.6
8H 4H		26.1	26.8	26.6	27.2	27.7	26.0	26.6	26.5	27.1	27.6
	6H	26.3	26.8	26.8	27.3	27.8	26.2	26.7	26.7	27.2	27.7
	8H	26.3	26.8	26.9	27.3	27.8	26.2	26.7	26.7	27.2	27.7
	12H	26.3	26.8	26.8	27.3	27.8	26.2	26.6	26.7	27.1	27.7
12H 4H		26.1	26.7	26.5	27.1	27.6	25.9	26.5	26.4	27.0	27.5
	6H	26.3	26.8	26.8	27.2	27.8	26.1	26.6	26.7	27.1	27.6
	8H	26.3	26.8	26.8	27.3	27.8	26.2	26.6	26.7	27.1	27.7

Maximum UGR = 27.8

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-UFHB-240W-35/40/50K-BL (150W,40K) 40WD		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC220900	120.0	60	1.227	146.93	0.998	2.06
5E-B2	277.0	60	0.553	144.08	0.94	6.41
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

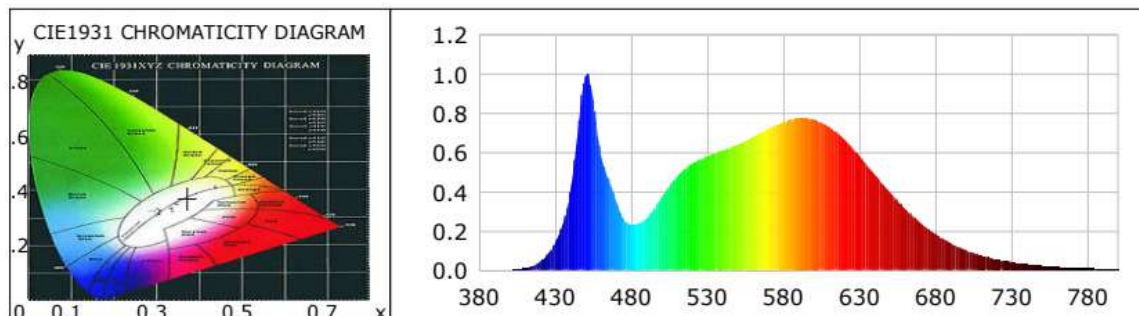
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	12
Frequency (Hz)	60	R2	89	R10	74
CCT (K)	4206	R3	94	R11	81
Duv	-0.0008	R4	83	R12	61
Chromaticity (x, y)	x=0.3713 y=0.3692	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2221 v'=0.4969	R6	85	R14	97
Color Rendering Index (CRI)	83	R7	86	R15	77
R9	12	R8	67	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-12				

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)	22086.7	21793.3	>=10000(-10%)
Luminous Efficacy (lm/W)	150.32	151.26	Premium: >= 135(-3%)
Most worst Luminous/Highest Watts	148.32		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.3510	535	0.5632	411.9929	690	0.2412	176.4498
385	0.0005	0.3449	540	0.5780	422.8270	695	0.2111	154.4282
390	0.0004	0.3174	545	0.5931	433.9006	700	0.1831	133.9588
395	0.0004	0.2850	550	0.6103	446.4812	705	0.1593	116.5736
400	0.0017	1.2177	555	0.6229	455.7133	710	0.1391	101.7834
405	0.0035	2.5258	560	0.6399	468.1170	715	0.1183	86.5180
410	0.0087	6.3855	565	0.6586	481.8445	720	0.1015	74.2763
415	0.0208	15.2052	570	0.6801	497.5092	725	0.0878	64.2088
420	0.0415	30.3719	575	0.7010	512.8014	730	0.0753	55.0520
425	0.0783	57.2695	580	0.7193	526.2114	735	0.0642	46.9669
430	0.1375	100.6031	585	0.7411	542.1951	740	0.0547	40.0106
435	0.2337	170.9662	590	0.7561	553.1442	745	0.0469	34.3225
440	0.3977	290.9699	595	0.7647	559.4552	750	0.0392	28.7102
445	0.7034	514.5566	600	0.7737	566.0072	755	0.0342	25.0327
450	0.9914	725.2827	605	0.7752	567.0981	760	0.0291	21.2623
455	0.8768	641.4586	610	0.7690	562.6123	765	0.0247	18.0815
460	0.5953	435.4943	615	0.7526	550.6024	770	0.0222	16.2148
465	0.4678	342.2406	620	0.7320	535.5234	775	0.0182	13.2894
470	0.3561	260.5143	625	0.7043	515.2790	780	0.0155	11.3336
475	0.2629	192.3608	630	0.6667	487.7600	785	0.0130	9.4879
480	0.2321	169.8046	635	0.6256	457.6633	790	0.0122	8.8957
485	0.2385	174.4642	640	0.5826	426.1841	795	0.0101	7.3743
490	0.2638	192.9958	645	0.5361	392.1890	800	0.0077	5.6021
495	0.3133	229.1867	650	0.4891	357.7945			
500	0.3723	272.3384	655	0.4405	322.2756			
505	0.4267	312.1728	660	0.3965	290.0687			
510	0.4767	348.7562	665	0.3539	258.9231			
515	0.5140	376.0087	670	0.3128	228.8532			
520	0.5406	395.4847	675	0.2765	202.2709			
525	0.5632	411.9929	680	0.2412	176.4498			
530	0.5780	422.8270	685	0.2111	154.4282			

TM30

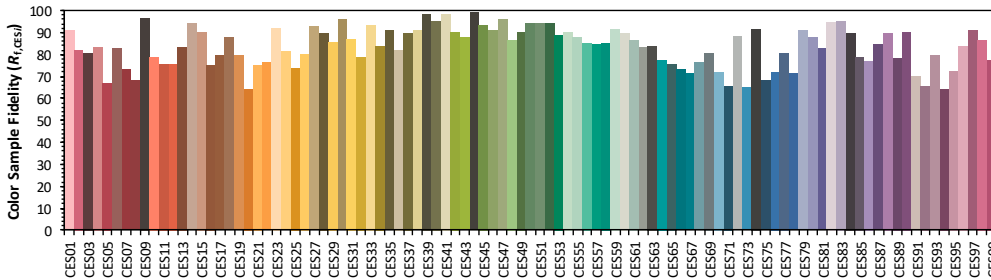
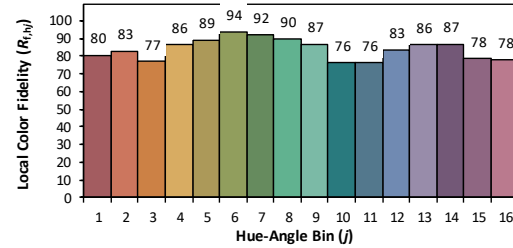
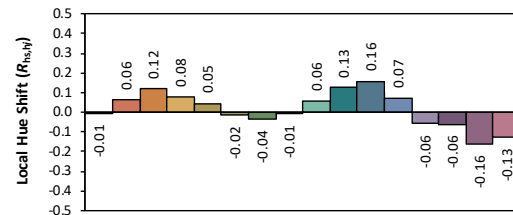
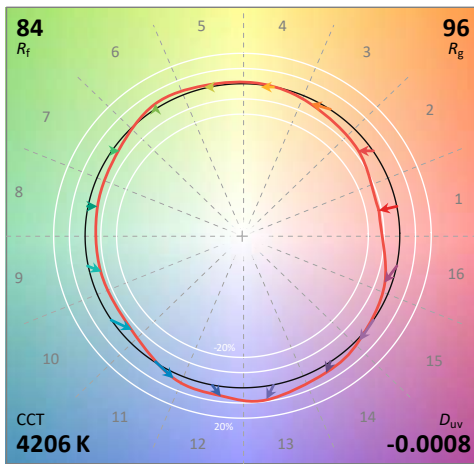
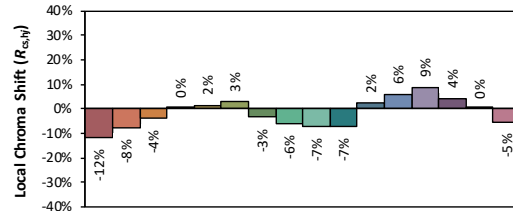
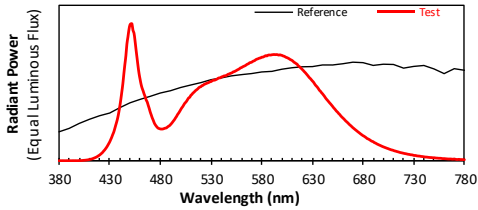
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2022/9/27

Model: IK-UFHB-240W-35/40/50K-BL(150W, 40K) 40WD



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

x 0.3713
 y 0.3692
 u' 0.2221
 v' 0.4969

CIE 13.3-1995
(CRI)
 R_a 83
 R_g 12

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

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-UFHB-240W-35/40/50K-BL (150W,50K) 50WD		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC220900	120.0	60	1.274	152.54	0.998	2.01
5E-B2	277.0	60	0.575	149.77	0.941	6.35
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

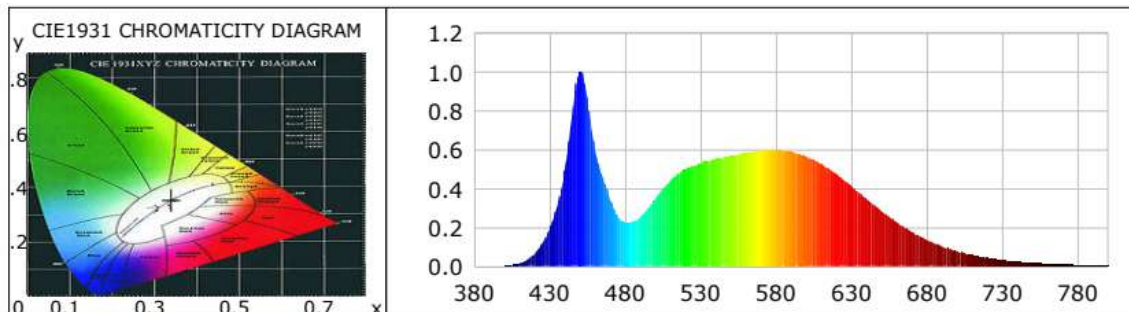
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	11
Frequency (Hz)	60	R2	87	R10	68
CCT (K)	5194	R3	90	R11	82
Duv	0.0011	R4	83	R12	62
Chromaticity (x, y)	x=0.3400 y=0.3496	R5	82	R13	83
Chromaticity (u', v')	u(u')=0.2087 v'=0.4829	R6	82	R14	95
Color Rendering Index (CRI)	83	R7	87	R15	77
R9	11	R8	69	--	--
Rf	83	--	--	--	--
Rg	97	--	--	--	--
Rcs,h1(%)	-12				

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)	20352.1	20032.5	>=10000(-10%)
Luminous Efficacy (lm/W)	133.42	133.76	Premium: >= 135(-3%)
Most worst Luminous/Highest Watts	131.33		

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	0.0765	535	0.5171	406.1001	690	0.1774	139.3114
385	0.0003	0.2577	540	0.5296	415.9493	695	0.1550	121.7223
390	0.0003	0.1988	545	0.5405	424.4639	700	0.1361	106.8498
395	0.0005	0.4051	550	0.5519	433.4620	705	0.1178	92.5391
400	0.0021	1.6608	555	0.5586	438.7310	710	0.1025	80.4634
405	0.0057	4.4434	560	0.5668	445.1654	715	0.0903	70.9046
410	0.0148	11.6584	565	0.5748	451.4502	720	0.0776	60.9550
415	0.0335	26.3128	570	0.5836	458.3350	725	0.0671	52.6866
420	0.0641	50.3508	575	0.5902	463.5424	730	0.0574	45.0633
425	0.1141	89.5785	580	0.5927	465.5013	735	0.0493	38.7211
430	0.1913	150.2040	585	0.5982	469.7770	740	0.0428	33.5866
435	0.3080	241.8681	590	0.5986	470.1440	745	0.0370	29.0306
440	0.4909	385.4946	595	0.5932	465.8548	750	0.0315	24.7233
445	0.7801	612.6579	600	0.5890	462.5681	755	0.0259	20.3440
450	1.0000	785.3440	605	0.5785	454.3535	760	0.0234	18.3628
455	0.8701	683.2935	610	0.5666	444.9687	765	0.0198	15.5210
460	0.6064	476.1946	615	0.5490	431.1470	770	0.0168	13.1768
465	0.4640	364.4222	620	0.5265	413.4951	775	0.0144	11.3085
470	0.3474	272.8001	625	0.5027	394.8100	780	0.0123	9.6626
475	0.2614	205.2662	630	0.4745	372.6328	785	0.0106	8.3428
480	0.2271	178.3871	635	0.4452	349.6676	790	0.0089	6.9655
485	0.2301	180.7204	640	0.4127	324.1033	795	0.0084	6.5958
490	0.2526	198.3658	645	0.3798	298.2834	800	0.0052	4.0961
495	0.2967	232.9918	650	0.3466	272.2373			
500	0.3479	273.2009	655	0.3144	246.9279			
505	0.3964	311.3188	660	0.2837	222.7761			
510	0.4419	347.0441	665	0.2556	200.7270			
515	0.4744	372.5400	670	0.2256	177.1793			
520	0.4977	390.8350	675	0.2007	157.6284			
525	0.5171	406.1001	680	0.1774	139.3114			
530	0.5296	415.9493	685	0.1550	121.7223			

TM30

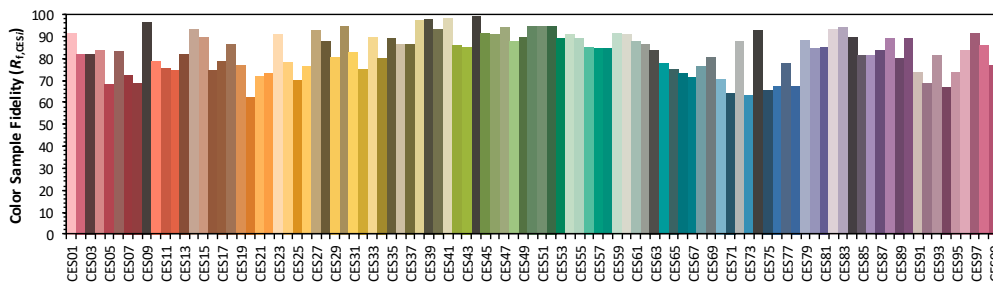
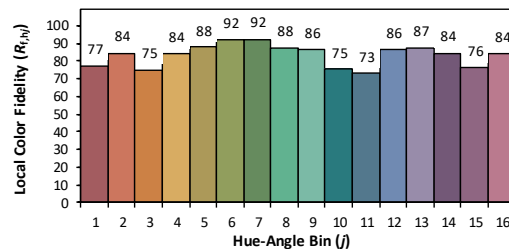
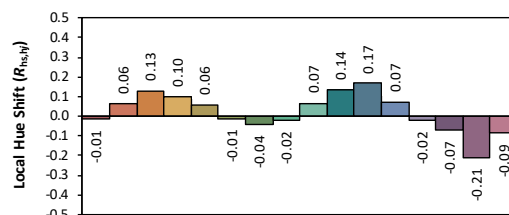
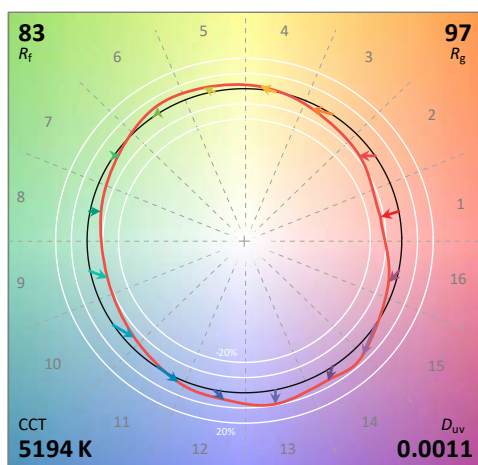
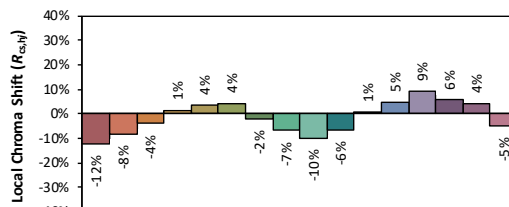
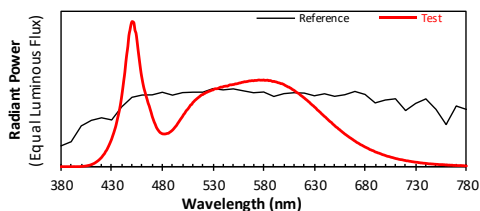
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1

Manufacturer: ASMA RT LIGHT CO., LTD

Date: 2022/9/27

Model: IK-UFHB-240W-35/40/50K-BL(150W, 50K) 50WD



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

x 0.3400
 y 0.3496
 u' 0.2087
 v' 0.4829

CIE 13.3-1995
(CRI)
 R_a 83
 R_g 11

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

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 *****