

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond)

1939 Parker Court, Stone Mountain, GA 30087

Direct Linear Ambient Luminaries

Stairwell and Passageway Luminaries

Model name(s): BLT-LA04A-80W8FTBTL1A1-
WH30/40/50/5765

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

b=can be "R"/ "M" or blank

for AC Motion PIR sensor provided or

DC Motion Microwave sensor provided or not;

c=can be "E" or blank for Emergency Driver provided or not;

d= can be any digits for CCT, 30-65K(3000~6500K);

f=Interconnection Connector, can be "S" for provided or blank for not provided.

Representative (Tested) Model:

AST-LA04A-80W8FTBTL1A1-abc30f

AST-LA04A-80W8FTBTL1A1-abc40f

AST-LA04A-80W8FTBTL1A1-abc50f

AST-LA04A-80W8FTBTL1A1-abc57f

AST-LA04A-80W8FTBTL1A1-abc65f

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

Test & Report By:



Engineer: Winny Wu

Date: 2024-11-12

Update:2024-11-20

Review By:



Manager: Jason Luo

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	BLT-LA04A-80W8FTBTL1A1-WH30/40/50/5765	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Direct Linear Ambient Luminaires Stairwell and Passageway Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K, 5000K,5700K,6500K (Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RA35002U1 L128-6580RA35002U1	
Sample Number	UTU2410035E-F1	
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	2024-11-03
Date of Test	2024-11-05
Test item	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	1. IES LM-79-2019 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. Use 2m diameter integrated sphere (94-98% coating reflectance) and 4π geometry.

Self-absorption:

AST-LA04A-80W8FTBTL1A1-abcd f:1.0595

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.

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

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Report Format Number BL-FM-SA-012

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2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-11-05	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AST-LA04A-80W8FTBTL1A1-abc30f	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU241003 5E-F1	120.0	60	0.701	83.63	0.994	7.06
	277.0	60	0.328	83.16	0.916	11.47
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

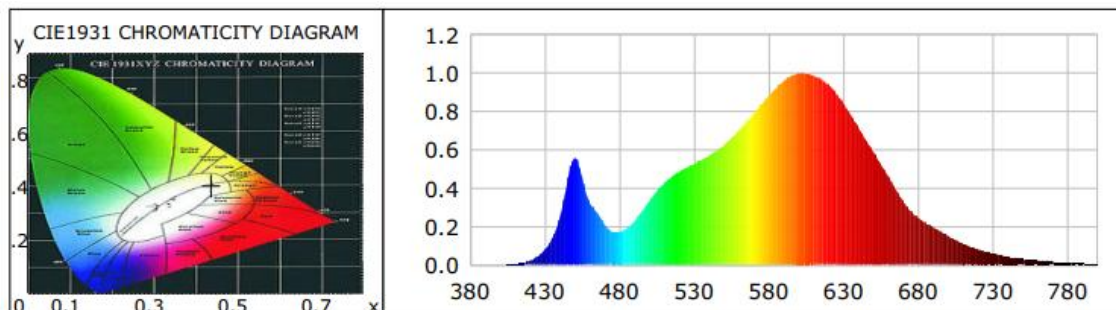
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	7
Frequency (Hz)	60	R2	90	R10	77
CCT (K)	3040	R3	97	R11	81
Duv	0.0012	R4	81	R12	69
Chromaticity (x, y)	x=0.4358 y=0.4067	R5	81	R13	82
Chromaticity (u', v')	u(u')=0.2487 v'=0.5222	R6	88	R14	99
Color Rendering Index (CRI)	83	R7	83	R15	73
R9	7	R8	59	--	--
Rf	85	--	--	--	--
Rg	96	--	--	--	--
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)	10459.6	10348.4	Category 1: ≥ 375 lm/ft(-10%) Category 2: ≥ 750 (-10%)
Luminous Efficacy (lm/W)	125.07	124.44	Category 1:Standard: ≥ 115 (-3%)
Most worst Luminous/Highest	123.74		Category 2:Premium: ≥ 120 (-3%)

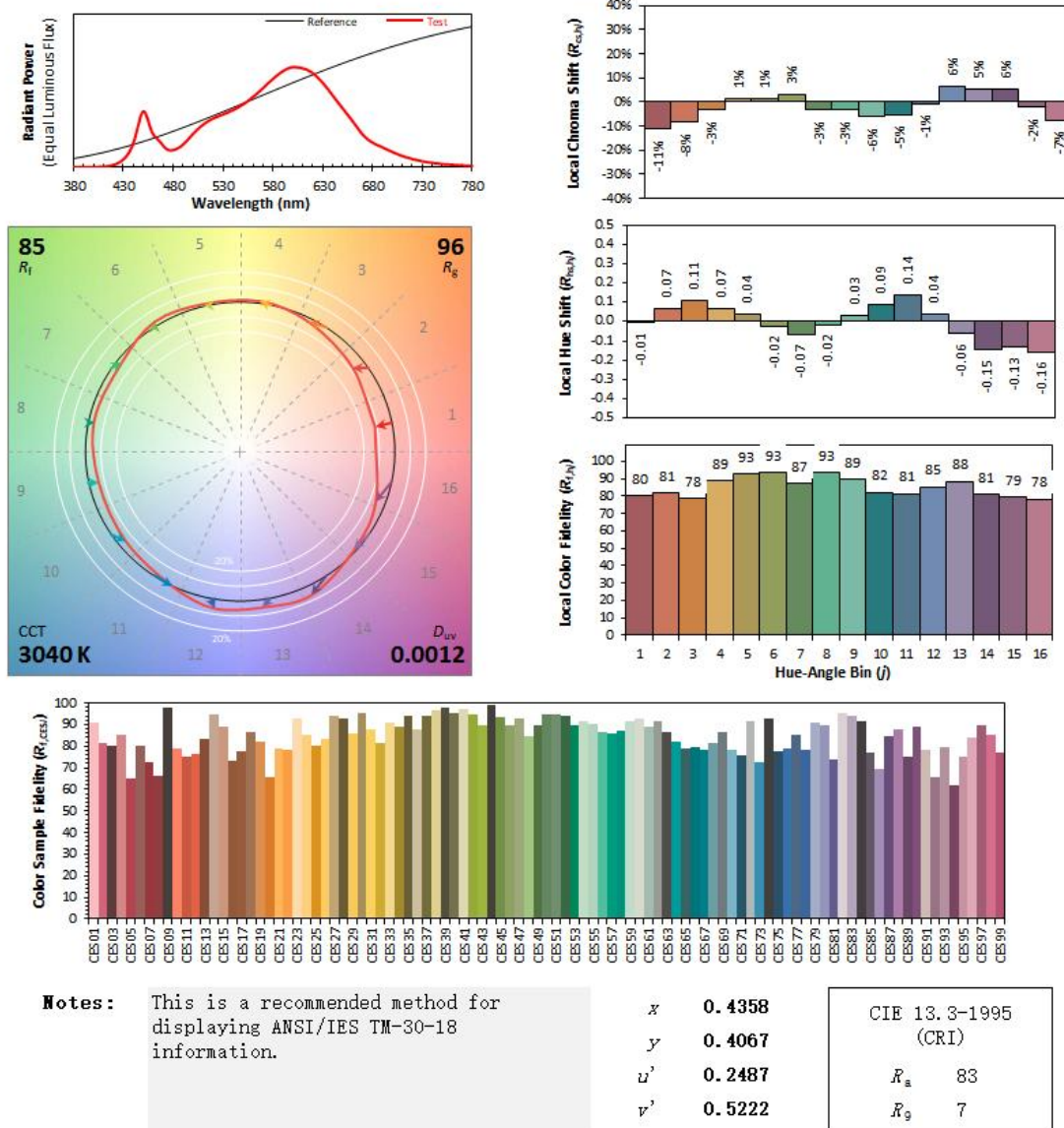
Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0172	535	0.5060	53.8940	690	0.3280	34.9400
385	0.0003	0.0330	540	0.5262	56.0508	695	0.2788	29.6995
390	0.0003	0.0316	545	0.5461	58.1628	700	0.2453	26.1267
395	0.0006	0.0637	550	0.5702	60.7294	705	0.2192	23.3459
400	0.0011	0.1161	555	0.5939	63.2580	710	0.1971	20.9913
405	0.0017	0.1767	560	0.6252	66.5924	715	0.1731	18.4344
410	0.0041	0.4389	565	0.6612	70.4314	720	0.1499	15.9661
415	0.0100	1.0626	570	0.7007	74.6378	725	0.1294	13.7851
420	0.0216	2.2960	575	0.7433	79.1705	730	0.1100	11.7174
425	0.0417	4.4413	580	0.7885	83.9835	735	0.0950	10.1163
430	0.0772	8.2276	585	0.8373	89.1820	740	0.0806	8.5868
435	0.1363	14.5133	590	0.8811	93.8445	745	0.0694	7.3922
440	0.2404	25.6108	595	0.9202	98.0192	750	0.0583	6.2070
445	0.4240	45.1577	600	0.9578	102.0231	755	0.0481	5.1187
450	0.5579	59.4222	605	0.9849	104.9015	760	0.0428	4.5576
455	0.4559	48.5588	610	0.9997	106.4832	765	0.0373	3.9733
460	0.3264	34.7712	615	0.9950	105.9814	770	0.0313	3.3288
465	0.2710	28.8613	620	0.9870	105.1261	775	0.0263	2.7974
470	0.2121	22.5921	625	0.9702	103.3367	780	0.0232	2.4680
475	0.1715	18.2710	630	0.9400	100.1255	785	0.0188	2.0036
480	0.1704	18.1470	635	0.8946	95.2833	790	0.0172	1.8295
485	0.1902	20.2642	640	0.8415	89.6315	795	0.0140	1.4930
490	0.2264	24.1190	645	0.7823	83.3234	800	0.0108	1.1452
495	0.2769	29.4960	650	0.7151	76.1703			
500	0.3327	35.4333	655	0.6501	69.2430			
505	0.3822	40.7068	660	0.5861	62.4274			
510	0.4247	45.2377	665	0.5238	55.7879			
515	0.4584	48.8265	670	0.4584	48.8216			
520	0.4842	51.5691	675	0.3905	41.5902			
525	0.5060	53.8940	680	0.3280	34.9400			
530	0.5262	56.0508	685	0.2788	29.6995			

TM30

ANSI/IES TM-30-18 Color Rendition Report



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

Zonal Lumen Tabulation

Remark: The goniophotometer results of AST-LA04A-40W4FTBTB1A1-abc30f were represented by AST-LA04A-80W8FTBTL1A1-abc30f, by same section construction and size, just different in length.

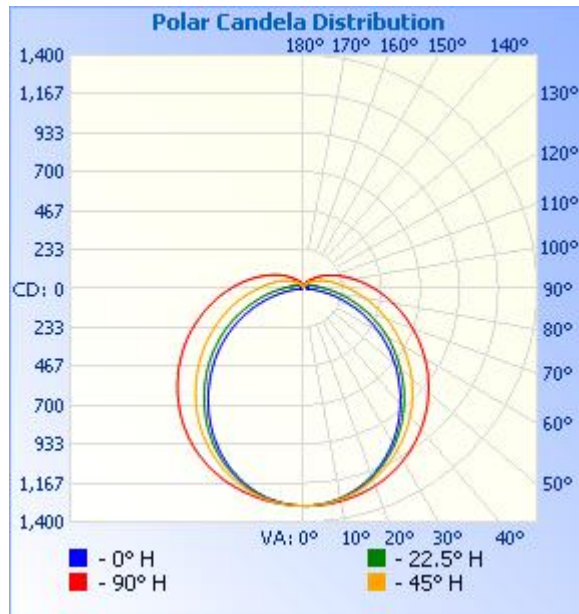
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	1,021.2	19.9%	19.9%
0-40	1,686.5	32.9%	32.9%
0-60	3,082.7	60.1%	60.1%
60-90	1,394.5	27.2%	27.2%
70-100	1,032.5	20.1%	20.1%
90-120	504.0	9.8%	9.8%
0-90	4,477.2	87.3%	87.3%
90-180	653.6	12.7%	12.7%
0-180	5,130.8	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	123.4	2.4%	90-100	233.1	4.5%
10-20	355.0	6.9%	100-110	162.5	3.2%
20-30	542.8	10.6%	110-120	108.4	2.1%
30-40	665.2	13.0%	120-130	67.9	1.3%
40-50	711.7	13.9%	130-140	40.8	0.8%
50-60	684.5	13.3%	140-150	23.6	0.5%
60-70	595.1	11.6%	150-160	11.9	0.2%
70-80	466.7	9.1%	160-170	4.5	0.1%
80-90	332.7	6.5%	170-180	0.9	0%

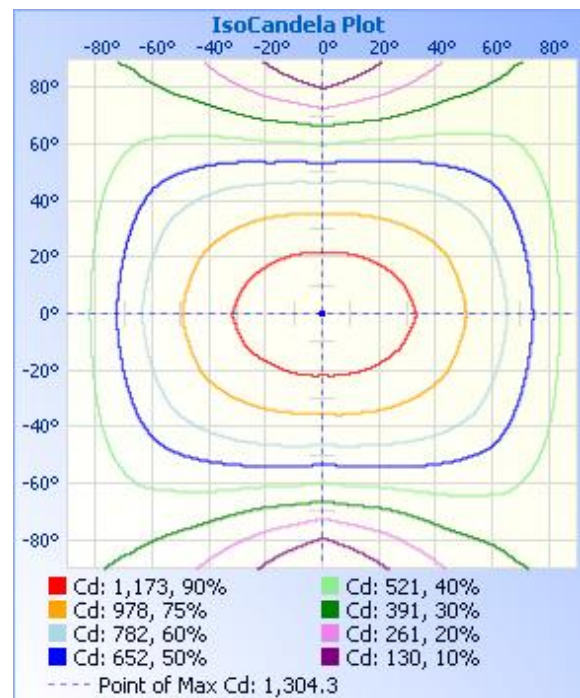
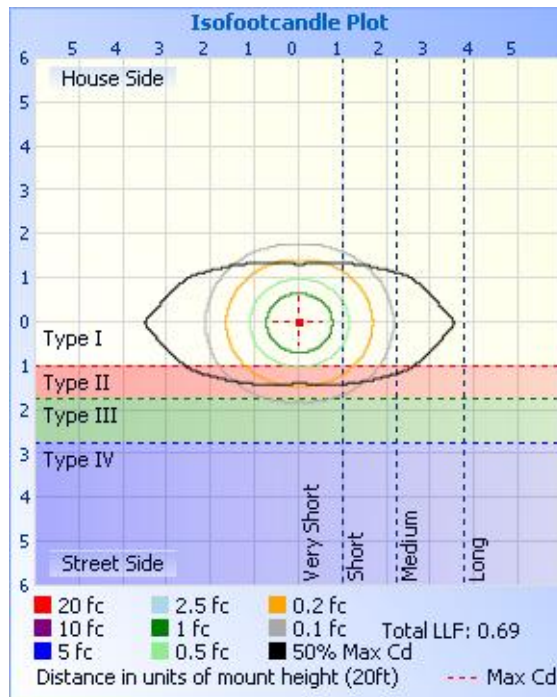
Photometric Data



Illuminance at a Distance

Center Beam fc	Beam Width
4.51 fc	45.3 ft 115.6 ft
1.13 fc	90.6 ft 231.2 ft
0.50 fc	136.0 ft 346.8 ft
0.28 fc	181.3 ft 462.4 ft
0.18 fc	226.6 ft 578.0 ft
0.13 fc	271.9 ft 693.6 ft

■ Vert. Spread: 106.2°
■ Horiz. Spread: 147.2°



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	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304	1304
1	1303	1304	1304	1302	1302	1304	1303	1303	1302	1304	1303	1303	1303	1304	1304	1304	1303
2	1302	1303	1303	1302	1302	1303	1302	1303	1302	1303	1303	1303	1300	1304	1303	1303	1302
3	1302	1302	1301	1301	1303	1302	1301	1301	1301	1302	1301	1302	1300	1303	1302	1302	1302
4	1299	1301	1299	1300	1303	1301	1299	1299	1298	1300	1301	1300	1297	1301	1301	1301	1299
5	1297	1298	1298	1299	1301	1300	1297	1297	1295	1297	1298	1300	1296	1301	1298	1298	1297
6	1294	1296	1296	1298	1301	1298	1295	1294	1292	1293	1295	1298	1295	1300	1297	1295	1294
7	1290	1292	1293	1295	1299	1297	1291	1290	1287	1291	1293	1295	1296	1297	1294	1292	1290
8	1286	1288	1290	1293	1298	1294	1288	1287	1283	1286	1290	1294	1294	1294	1292	1289	1286
9	1281	1284	1286	1290	1295	1291	1285	1282	1278	1282	1287	1290	1291	1292	1288	1284	1281
10	1276	1278	1282	1288	1294	1289	1279	1277	1273	1277	1282	1289	1291	1289	1284	1280	1276
11	1271	1273	1278	1283	1291	1285	1275	1272	1267	1271	1278	1284	1288	1287	1280	1275	1271
12	1264	1268	1274	1281	1288	1281	1270	1265	1260	1265	1273	1282	1285	1282	1275	1269	1264
13	1257	1261	1267	1277	1284	1277	1265	1259	1253	1259	1269	1277	1282	1280	1270	1263	1257
14	1250	1254	1262	1272	1283	1273	1259	1252	1245	1252	1262	1272	1279	1275	1264	1256	1250
15	1242	1248	1256	1268	1279	1268	1253	1246	1236	1244	1256	1267	1275	1270	1259	1249	1242
16	1234	1239	1249	1263	1275	1264	1246	1236	1228	1238	1250	1264	1271	1266	1253	1242	1234
17	1225	1232	1242	1258	1271	1259	1239	1229	1219	1227	1242	1258	1268	1261	1245	1233	1225
18	1215	1223	1236	1252	1267	1254	1232	1220	1209	1218	1235	1253	1263	1255	1238	1225	1215
19	1206	1214	1229	1247	1262	1248	1224	1210	1198	1209	1227	1248	1259	1250	1231	1215	1206
20	1195	1204	1221	1240	1257	1241	1215	1200	1188	1200	1219	1242	1255	1244	1223	1206	1195
21	1185	1194	1211	1234	1252	1234	1207	1189	1176	1190	1212	1236	1250	1238	1214	1196	1185
22	1174	1183	1202	1228	1247	1228	1198	1180	1166	1178	1203	1229	1246	1231	1206	1186	1174
23	1161	1172	1194	1220	1240	1221	1189	1168	1154	1168	1193	1222	1241	1225	1197	1174	1161
24	1149	1161	1184	1213	1234	1213	1179	1156	1140	1156	1185	1216	1234	1218	1188	1163	1149
25	1137	1149	1175	1206	1227	1207	1169	1143	1128	1145	1175	1208	1228	1211	1178	1151	1137
26	1123	1136	1165	1197	1222	1199	1160	1131	1114	1132	1163	1200	1222	1203	1168	1139	1123
27	1110	1125	1154	1190	1214	1190	1149	1119	1101	1120	1153	1192	1216	1195	1158	1126	1110
28	1096	1111	1143	1181	1207	1181	1138	1106	1087	1107	1143	1184	1209	1187	1147	1113	1096

29	1082	1099	1132	1173	1199	1173	1127	1092	1071	1093	1132	1176	1203	1179	1136	1100	1082
30	1068	1086	1120	1164	1191	1164	1116	1076	1056	1080	1120	1167	1194	1169	1124	1085	1068
31	1053	1073	1109	1155	1183	1155	1104	1063	1042	1066	1108	1157	1187	1161	1113	1071	1053
32	1037	1058	1097	1145	1175	1146	1091	1048	1027	1051	1096	1148	1179	1152	1100	1057	1037
33	1021	1043	1086	1136	1166	1135	1079	1034	1010	1036	1084	1138	1171	1142	1088	1043	1021
34	1005	1029	1073	1125	1158	1125	1067	1017	995	1021	1072	1129	1163	1132	1076	1027	1005
35	990	1014	1061	1115	1147	1115	1054	1000	977	1006	1059	1119	1154	1122	1063	1013	990
36	972	999	1048	1104	1138	1104	1041	986	960	990	1046	1107	1143	1112	1050	998	972
37	955	984	1035	1094	1128	1094	1026	969	944	974	1031	1096	1134	1102	1037	983	955
38	938	966	1022	1081	1118	1081	1012	953	925	958	1018	1086	1125	1090	1023	967	938
39	920	950	1009	1071	1106	1070	999	938	908	941	1004	1075	1114	1079	1010	951	920
40	904	934	995	1060	1097	1059	985	920	890	925	991	1062	1103	1067	995	935	904
41	883	917	981	1049	1086	1047	970	903	874	908	976	1051	1093	1055	981	919	883
42	870	901	967	1035	1075	1034	956	886	855	891	961	1038	1083	1044	967	903	870
43	850	880	953	1023	1063	1021	940	874	837	876	946	1026	1070	1032	953	887	850
44	831	868	939	1011	1052	1008	925	855	818	858	931	1013	1060	1018	938	873	831
45	812	850	923	998	1039	996	910	839	800	841	917	1000	1048	1006	922	854	812
46	793	832	908	984	1028	983	894	823	781	823	901	987	1036	993	906	836	793
47	775	814	891	973	1016	968	877	807	762	805	884	974	1023	980	891	820	775
48	757	795	875	958	1003	954	860	790	744	787	872	961	1012	968	874	804	757
49	739	778	864	945	989	941	848	774	724	770	855	948	999	955	858	786	739
50	720	760	847	932	977	928	830	755	705	754	840	934	987	941	845	770	720
51	699	742	831	917	964	913	814	739	687	736	825	920	974	926	828	752	699
52	680	724	815	904	952	898	798	722	668	717	808	907	961	911	813	734	680
53	661	706	799	887	938	883	782	704	647	700	793	892	947	898	798	718	661
54	642	687	782	879	922	869	766	686	628	682	777	881	934	884	781	699	642
55	620	669	766	862	913	857	750	667	609	664	762	865	919	869	766	681	620
56	601	652	750	847	898	841	734	649	590	645	746	852	911	856	750	664	601
57	581	635	734	833	884	826	718	630	568	627	730	838	895	843	734	644	581
58	562	618	717	817	868	811	702	611	548	609	715	823	882	827	719	627	562
59	542	600	702	803	855	796	688	591	529	591	700	808	867	813	704	608	542

60	523	582	686	789	841	781	672	571	509	572	684	793	853	798	689	591	523
61	501	562	669	773	827	766	656	553	489	553	668	780	839	784	672	570	501
62	482	545	654	758	811	751	641	532	467	536	652	766	826	768	657	552	482
63	461	526	638	743	797	736	626	514	448	519	636	751	812	755	641	533	461
64	440	507	621	729	783	722	612	495	428	500	622	736	797	739	625	515	440
65	420	489	606	713	769	708	595	477	407	481	606	722	783	725	610	495	420
66	401	471	591	699	755	691	580	458	387	463	590	708	769	710	595	477	401
67	381	453	576	684	741	677	566	441	365	445	575	694	755	695	580	459	381
68	361	435	560	668	725	663	550	422	345	428	559	679	740	681	565	440	361
69	339	417	545	654	711	647	535	405	326	409	545	665	726	665	550	421	339
70	320	399	530	638	696	633	520	388	306	392	530	651	712	650	535	404	320
71	299	382	516	623	681	619	505	372	285	375	516	637	697	636	521	386	299
72	280	365	500	609	667	604	490	354	264	358	502	621	683	622	507	369	280
73	260	349	486	594	653	590	474	339	245	341	486	606	669	608	493	353	260
74	242	332	472	579	639	575	460	323	226	324	473	592	656	593	478	336	242
75	221	315	457	565	623	561	446	307	205	308	459	579	640	578	463	320	221
76	202	300	443	551	610	547	432	292	187	293	446	563	626	562	449	305	202
77	183	285	429	537	596	534	418	277	169	278	433	548	612	548	434	290	183
78	166	271	416	525	582	519	404	263	151	263	418	534	599	535	421	276	166
79	148	256	402	510	568	505	391	249	132	249	405	520	585	521	407	261	148
80	131	241	388	498	553	492	379	234	116	236	392	506	571	508	394	248	131
81	113	228	375	484	540	477	366	222	101	223	379	490	556	493	380	234	113
82	98	215	362	472	527	464	353	209	85	211	366	476	543	480	366	220	98
83	83	202	349	460	514	451	342	197	71	199	353	463	530	467	353	207	83
84	70	191	338	448	500	438	330	184	57	187	341	450	516	454	342	195	70
85	58	180	326	437	487	425	318	173	45	176	328	436	504	441	330	184	58
86	48	168	315	425	474	413	305	162	36	165	315	423	491	429	319	173	48
87	38	159	305	412	462	399	294	153	27	154	303	411	477	417	307	161	38
88	31	150	294	399	449	388	284	143	21	145	292	400	464	405	296	152	31
89	27	141	284	389	437	377	273	135	17	136	282	388	451	393	286	144	27
90	24	133	275	378	425	366	262	127	16	128	272	377	440	381	275	136	24

91	24	125	266	367	413	354	253	120	16	121	263	366	427	371	265	128	24
92	24	119	257	357	400	345	245	114	16	114	255	357	415	360	256	121	24
93	24	112	247	345	389	335	238	108	16	109	246	347	403	350	247	114	24
94	24	107	239	336	378	326	229	102	16	103	239	336	391	338	237	108	24
95	24	102	231	326	367	316	223	98	16	98	231	327	380	327	229	103	24
96	24	97	223	316	357	307	216	93	16	93	224	318	369	318	222	98	24
97	24	93	215	307	345	299	208	89	15	89	216	309	358	308	214	94	24
98	24	88	208	298	335	291	201	84	15	85	208	300	347	299	207	90	24
99	24	84	201	289	325	282	194	81	15	81	201	292	336	290	200	85	24
100	24	80	194	280	315	274	188	77	15	78	194	283	326	281	193	81	24
101	23	77	188	271	305	267	182	74	15	74	188	275	316	272	186	78	23
102	24	74	181	264	296	259	175	70	15	72	181	267	306	264	180	75	24
103	23	71	176	255	286	250	169	67	15	68	175	259	296	256	174	72	23
104	23	68	169	247	277	242	164	65	15	66	168	250	286	248	169	69	23
105	22	65	163	239	268	235	157	63	15	63	163	242	277	241	162	67	22
106	22	63	158	232	260	227	151	60	15	60	157	235	268	232	156	64	22
107	23	61	153	224	252	220	146	58	15	59	152	227	259	225	150	62	23
108	22	59	147	217	243	213	141	56	15	57	146	219	250	219	145	60	22
109	22	57	142	210	235	206	136	54	14	55	142	212	243	211	140	58	22
110	22	55	137	203	227	199	130	53	14	53	136	205	235	205	135	57	22
111	21	54	132	196	219	192	126	51	14	51	132	197	226	198	130	55	21
112	21	52	128	190	212	186	122	49	14	50	127	191	218	191	125	53	21
113	20	50	123	183	205	180	118	48	14	48	122	184	210	185	121	51	20
114	20	48	119	177	198	173	114	46	14	47	118	178	204	178	117	50	20
115	20	47	115	171	191	168	110	44	13	44	114	172	197	172	113	48	20
116	20	45	110	165	185	162	106	42	13	43	109	166	190	166	109	46	20
117	20	44	107	159	179	156	102	41	13	41	104	161	182	160	105	45	20
118	19	42	100	154	172	151	96	39	12	40	98	155	176	154	98	43	19
119	19	41	95	149	166	146	91	39	13	39	94	150	170	150	93	42	19
120	18	40	90	144	161	141	86	38	13	38	89	145	164	144	88	41	18
121	19	39	87	139	155	136	83	37	13	38	85	140	158	140	84	40	19

122	18	38	84	135	150	131	80	37	12	37	82	136	153	135	81	39	18
123	18	37	80	130	145	127	77	36	12	36	79	131	147	130	78	38	18
124	17	37	78	124	140	121	74	35	12	36	76	125	141	124	76	37	17
125	16	36	76	118	135	114	71	34	12	35	73	117	137	118	73	36	16
126	16	35	72	112	128	109	70	33	12	34	70	112	131	112	71	36	16
127	16	34	70	108	121	105	67	32	12	33	68	107	124	107	68	35	16
128	16	34	67	103	117	101	65	32	12	32	66	102	118	102	66	34	16
129	15	33	65	99	112	97	63	31	12	32	64	98	113	97	64	33	15
130	15	32	63	95	108	93	61	31	12	31	62	94	108	94	62	32	15
131	15	32	62	92	104	90	59	29	11	30	60	90	103	90	60	32	15
132	15	31	60	88	100	86	58	29	11	29	58	87	99	86	58	30	15
133	14	30	58	85	95	82	56	28	11	29	57	84	95	83	56	30	14
134	14	29	56	82	91	80	54	28	11	28	55	81	91	80	54	29	14
135	13	28	54	78	87	76	53	27	11	28	53	78	86	77	53	29	13
136	13	27	53	75	84	73	51	27	11	28	51	75	83	74	51	28	13
137	13	27	51	73	81	70	49	26	11	27	50	73	81	71	49	27	13
138	12	26	50	70	78	68	48	26	11	26	48	70	77	69	47	27	12
139	12	26	48	67	74	65	46	25	11	26	47	68	75	67	46	26	12
140	12	25	47	65	72	63	45	24	11	26	45	65	72	64	44	25	12
141	12	25	45	62	69	61	43	24	11	24	44	63	69	62	43	25	12
142	12	24	44	60	66	58	42	23	11	23	43	60	66	59	42	24	12
143	11	24	44	58	64	56	41	22	11	23	41	58	64	57	40	23	11
144	11	23	42	56	62	54	40	22	11	23	40	56	61	54	39	22	11
145	11	23	41	54	59	52	38	21	10	21	38	54	58	53	37	21	11
146	11	22	40	52	57	50	37	21	10	21	38	52	57	51	36	20	11
147	10	22	39	50	55	48	36	20	10	20	37	50	54	49	35	19	10
148	11	22	38	48	52	47	35	19	10	19	35	48	52	46	34	18	11
149	10	21	37	46	50	45	33	19	10	18	33	45	50	44	32	18	10
150	10	21	36	44	48	43	32	19	10	18	32	43	48	42	30	17	10
151	10	21	34	42	47	41	31	18	10	17	30	42	46	40	29	16	10
152	10	20	34	41	45	40	30	18	10	16	30	40	44	39	28	15	10

153	10	20	32	39	42	38	29	17	10	16	28	39	43	37	26	14	10
154	10	19	31	37	41	37	28	17	9	15	27	37	41	35	24	13	10
155	10	19	30	36	40	35	26	16	9	15	25	35	39	33	23	13	10
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157	10	18	28	33	37	32	24	15	10	13	23	33	36	30	20	12	10
158	10	17	27	31	34	30	23	14	9	13	22	31	34	28	19	11	10
159	10	17	26	29	33	29	22	14	8	13	20	29	32	27	18	10	10
160	10	16	25	28	31	27	21	13	8	13	19	28	31	25	17	10	10
161	10	16	24	26	29	26	20	13	8	12	18	26	29	23	16	10	10
162	9	16	23	25	27	25	19	13	8	11	18	24	28	21	15	10	9
163	9	15	22	24	26	23	18	12	8	11	17	23	26	20	14	9	9
164	9	15	21	23	24	22	17	11	8	11	16	22	25	18	13	9	9
165	9	14	19	21	23	20	16	11	8	10	15	21	23	17	12	8	9
166	8	14	18	20	21	19	15	10	8	10	14	18	22	15	11	8	8
167	8	13	17	18	19	18	14	10	8	10	14	17	21	14	10	7	8
168	8	12	16	17	18	16	13	10	8	10	13	16	19	13	10	7	8
169	8	12	15	16	16	15	12	9	9	10	12	15	17	13	10	7	8
170	8	11	14	15	16	14	12	10	8	9	12	14	16	11	9	8	8
171	8	10	13	14	15	13	11	9	8	9	11	12	14	11	9	8	8
172	8	10	12	12	13	12	10	8	8	9	11	11	13	10	9	8	8
173	8	10	11	12	12	11	10	8	8	9	10	11	11	10	8	8	8
174	8	9	10	10	11	10	9	8	8	8	10	10	10	9	8	8	8
175	8	8	9	9	10	9	9	8	8	8	9	9	8	8	8	8	8
176	7	8	9	8	9	8	8	8	8	8	9	9	7	8	8	8	7
177	8	8	8	8	8	7	7	8	8	8	9	9	7	8	7	8	8
178	8	8	7	8	7	7	8	8	8	8	8	8	7	8	7	8	8
179	8	8	8	8	6	8	8	8	8	8	9	8	7	8	8	9	8
180	8	9	8	8	6	8	8	8	8	8	9	8	8	8	8	8	8

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-11-05	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AST-LA04A-80W8FTBTL1A1-abc40f	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU241003 5E-F1	120.0	60	0.680	80.99	0.993	7.11
	277.0	60	0.319	80.77	0.915	11.34
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

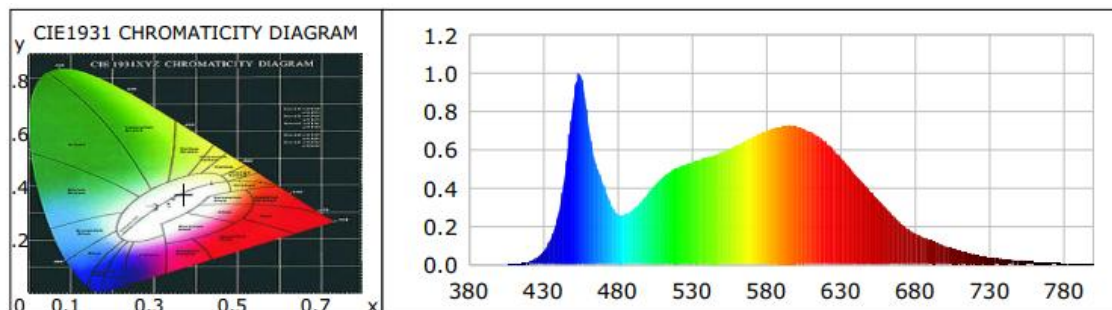
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	85	R9	20
Frequency (Hz)	60	R2	93	R10	82
CCT (K)	4231	R3	96	R11	83
Duv	-0.0011	R4	83	R12	62
Chromaticity (x, y)	x=0.3702 y=0.3678	R5	85	R13	87
Chromaticity (u', v')	u(u')=0.2219 v'=0.4960	R6	89	R14	98
Color Rendering Index (CRI)	86	R7	86	R15	80
R9	20	R8	68	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11				

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)	11200.1	11143.8	Category 1: ≥ 375 lm/ft(-10%) Category 2: ≥ 750 (-10%)
Luminous Efficacy (lm/W)	138.29	137.97	Category 1:Standard: ≥ 115 (-3%)
Most worst Luminous/Highest Watts	137.59		Category 2:Premium: ≥ 120 (-3%)

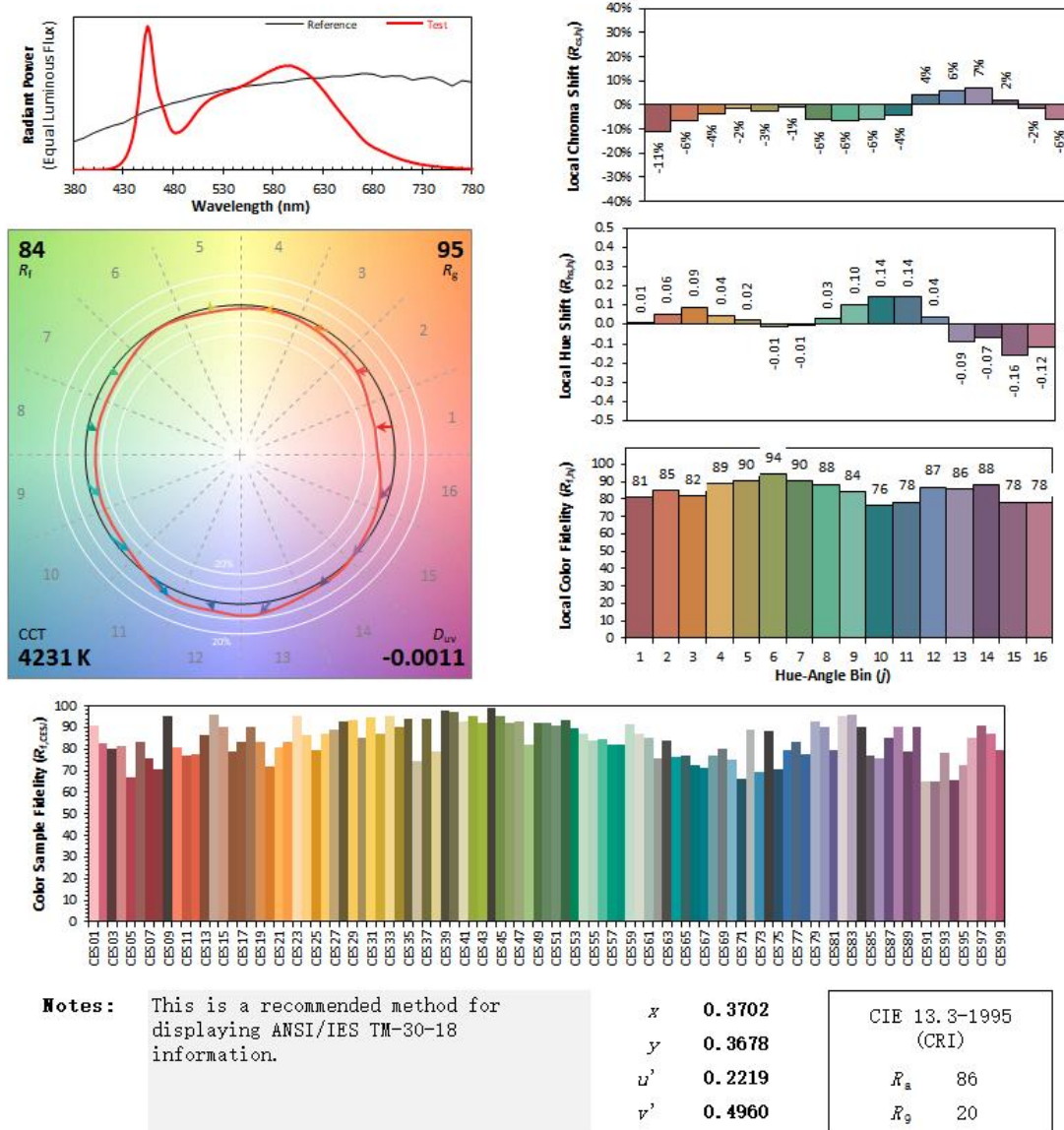
Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0067	535	0.5206	48.5857	690	0.2161	20.1730
385	0.0008	0.0722	540	0.5340	49.8377	695	0.1858	17.3374
390	0.0009	0.0844	545	0.5462	50.9787	700	0.1623	15.1432
395	0.0007	0.0623	550	0.5602	52.2856	705	0.1445	13.4851
400	0.0006	0.0597	555	0.5712	53.3073	710	0.1284	11.9872
405	0.0014	0.1268	560	0.5873	54.8155	715	0.1128	10.5267
410	0.0027	0.2563	565	0.6058	56.5384	720	0.0966	9.0142
415	0.0068	0.6304	570	0.6239	58.2285	725	0.0831	7.7524
420	0.0150	1.4022	575	0.6425	59.9648	730	0.0712	6.6439
425	0.0315	2.9438	580	0.6615	61.7435	735	0.0612	5.7099
430	0.0656	6.1204	585	0.6821	63.6617	740	0.0524	4.8922
435	0.1308	12.2089	590	0.6988	65.2228	745	0.0452	4.2162
440	0.2523	23.5497	595	0.7113	66.3854	750	0.0382	3.5628
445	0.4840	45.1756	600	0.7231	67.4887	755	0.0316	2.9517
450	0.8304	77.5075	605	0.7250	67.6631	760	0.0280	2.6146
455	0.9922	92.6042	610	0.7243	67.5998	765	0.0261	2.4379
460	0.7613	71.0521	615	0.7093	66.1984	770	0.0202	1.8839
465	0.5366	50.0843	620	0.6916	64.5477	775	0.0168	1.5720
470	0.4279	39.9359	625	0.6697	62.5055	780	0.0158	1.4705
475	0.3253	30.3629	630	0.6394	59.6757	785	0.0121	1.1262
480	0.2648	24.7185	635	0.6017	56.1580	790	0.0104	0.9712
485	0.2615	24.4017	640	0.5586	52.1395	795	0.0088	0.8254
490	0.2830	26.4118	645	0.5146	48.0328	800	0.0081	0.7521
495	0.3191	29.7793	650	0.4691	43.7831			
500	0.3664	34.2001	655	0.4243	39.5983			
505	0.4124	38.4867	660	0.3804	35.5019			
510	0.4519	42.1764	665	0.3393	31.6719			
515	0.4817	44.9543	670	0.2984	27.8528			
520	0.5031	46.9548	675	0.2552	23.8201			
525	0.5206	48.5857	680	0.2161	20.1730			
530	0.5340	49.8377	685	0.1858	17.3374			

TM30

ANSI/IES TM-30-18 Color Rendition Report



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	2024-11-05	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AST-LA04A-80W8FTBTL1A1-abc50f	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU241003 5E-F1	120.0	60	0.674	80.42	0.994	7.04
	277.0	60	0.315	79.77	0.914	11.42
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

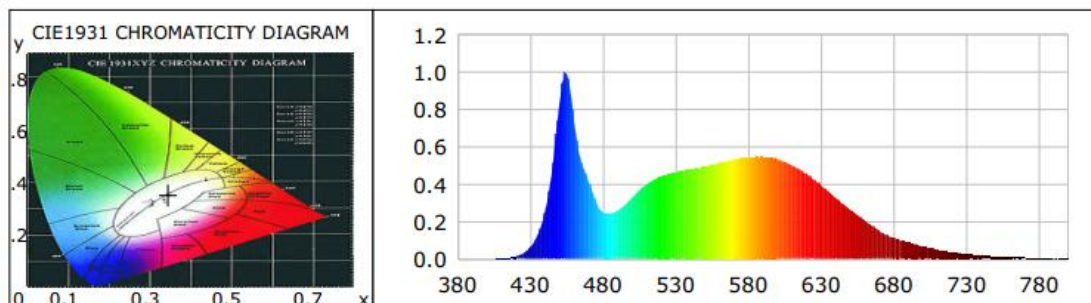
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	17
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	5014	R3	95	R11	83
Duv	0.0009	R4	83	R12	62
Chromaticity (x, y)	x=0.3449 y=0.3531	R5	84	R13	87
Chromaticity (u', v')	u(u')=0.2107 v'=0.4854	R6	87	R14	98
Color Rendering Index (CRI)	85	R7	86	R15	80
R9	17	R8	69	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
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)	11329.6	11230.0	Category 1: ≥ 375 lm/ft(-10%) Category 2: ≥ 750 (-10%)
Luminous Efficacy (lm/W)	140.88	140.78	Category 1:Standard: ≥ 115 (-3%)
Most worst Luminous/Highest Watts	139.64		Category 2:Premium: ≥ 120 (-3%)

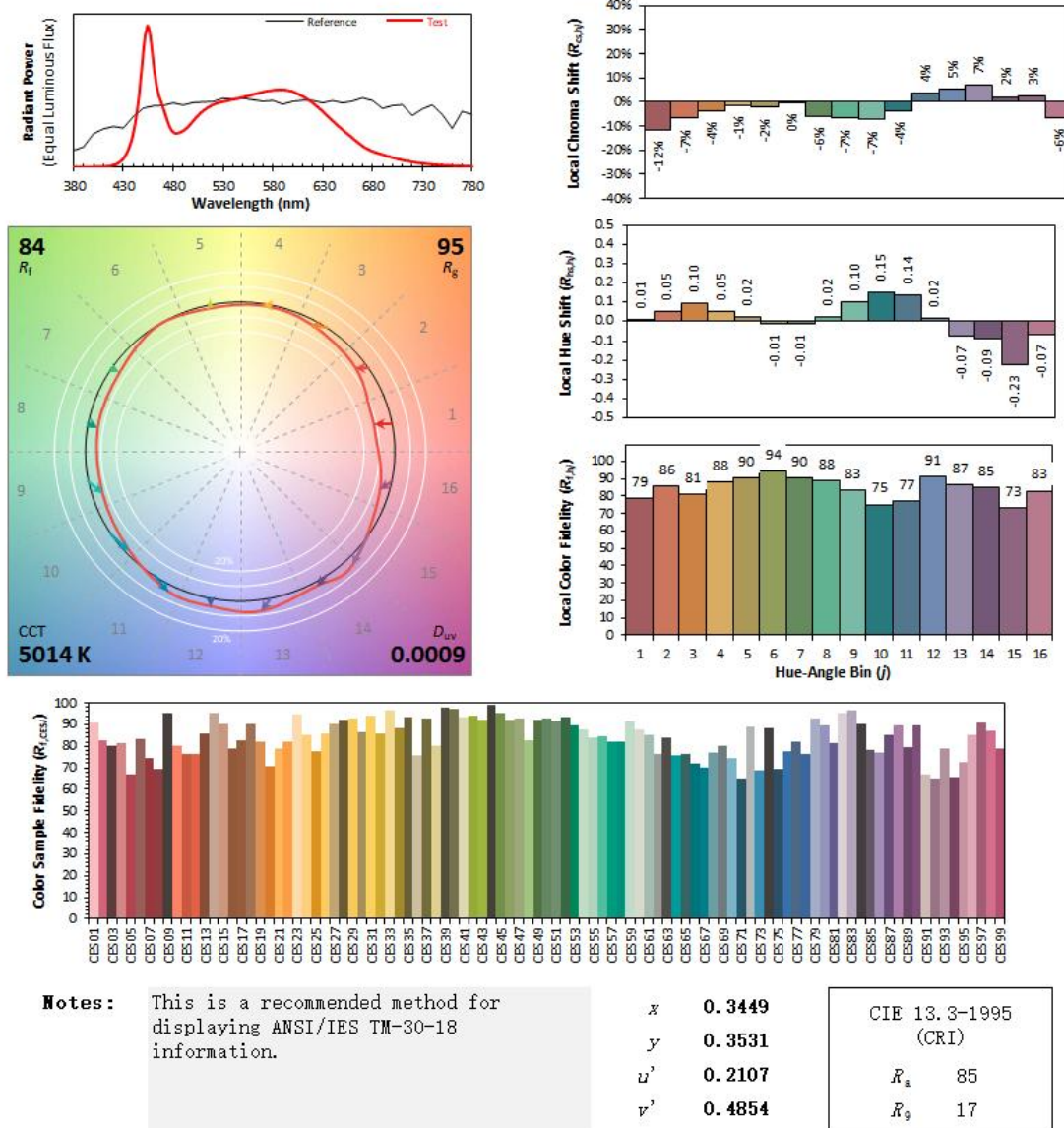
Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0106	535	0.4548	52.7464	690	0.1493	17.3194
385	0.0008	0.0881	540	0.4628	53.6741	695	0.1277	14.8096
390	0.0007	0.0846	545	0.4709	54.6068	700	0.1122	13.0112
395	0.0003	0.0406	550	0.4793	55.5886	705	0.0996	11.5501
400	0.0010	0.1206	555	0.4845	56.1862	710	0.0891	10.3329
405	0.0013	0.1485	560	0.4944	57.3375	715	0.0772	8.9492
410	0.0026	0.3027	565	0.5047	58.5280	720	0.0668	7.7413
415	0.0057	0.6555	570	0.5143	59.6416	725	0.0569	6.5970
420	0.0131	1.5183	575	0.5231	60.6613	730	0.0496	5.7484
425	0.0290	3.3635	580	0.5311	61.5881	735	0.0420	4.8740
430	0.0609	7.0608	585	0.5395	62.5659	740	0.0367	4.2518
435	0.1248	14.4759	590	0.5445	63.1465	745	0.0305	3.5366
440	0.2441	28.3104	595	0.5465	63.3745	750	0.0266	3.0835
445	0.4673	54.1925	600	0.5486	63.6232	755	0.0223	2.5815
450	0.8207	95.1810	605	0.5429	62.9646	760	0.0201	2.3278
455	0.9917	115.0077	610	0.5348	62.0147	765	0.0181	2.0977
460	0.7490	86.8612	615	0.5185	60.1274	770	0.0145	1.6793
465	0.5212	60.4404	620	0.5010	58.0984	775	0.0128	1.4851
470	0.4162	48.2716	625	0.4804	55.7096	780	0.0109	1.2686
475	0.3122	36.2008	630	0.4554	52.8103	785	0.0078	0.9048
480	0.2487	28.8412	635	0.4251	49.3027	790	0.0085	0.9874
485	0.2411	27.9636	640	0.3952	45.8326	795	0.0071	0.8229
490	0.2568	29.7776	645	0.3606	41.8242	800	0.0050	0.5793
495	0.2861	33.1795	650	0.3272	37.9495			
500	0.3268	37.9031	655	0.2946	34.1604			
505	0.3651	42.3411	660	0.2637	30.5775			
510	0.3986	46.2237	665	0.2345	27.2000			
515	0.4231	49.0646	670	0.2061	23.8983			
520	0.4412	51.1651	675	0.1759	20.3983			
525	0.4548	52.7464	680	0.1493	17.3194			
530	0.4628	53.6741	685	0.1277	14.8096			

TM30

ANSI/IES TM-30-18 Color Rendition Report



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

2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-11-05	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AST-LA04A-80W8FTBTL1A1-abc57f	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU241003 5E-F1	120.0	60	0.681	81.21	0.994	6.89
	277.0	60	0.318	80.57	0.914	11.42
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

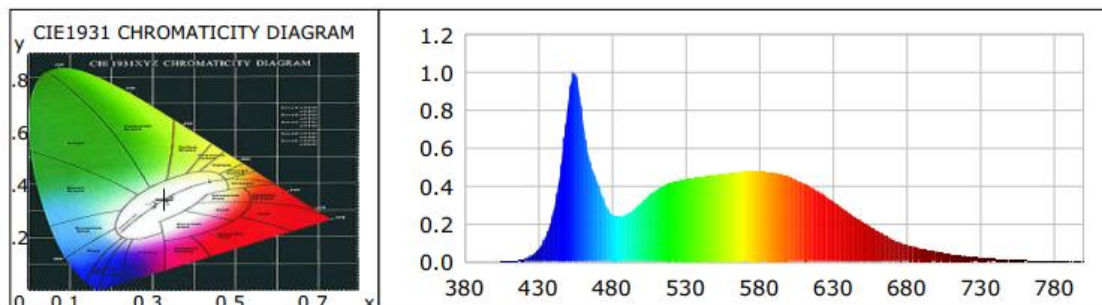
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	14
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	5671	R3	94	R11	82
Duv	0.0029	R4	82	R12	58
Chromaticity (x, y)	x=0.3286 y=0.3434	R5	83	R13	86
Chromaticity (u', v')	u(u')=0.2033 v'=0.4781	R6	86	R14	97
Color Rendering Index (CRI)	85	R7	87	R15	79
R9	14	R8	69	--	--
Rf	83	--	--	--	--
Rg	93	--	--	--	--
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)	11201.3	11121.9	Category 1: ≥ 375 lm/ft(-10%) Category 2: ≥ 750 (-10%)
Luminous Efficacy (lm/W)	137.93	138.04	Category 1: Standard: ≥ 115 (-3%)
Most worst Luminous/Highest Watts	136.95		Category 2: Premium: ≥ 120 (-3%)

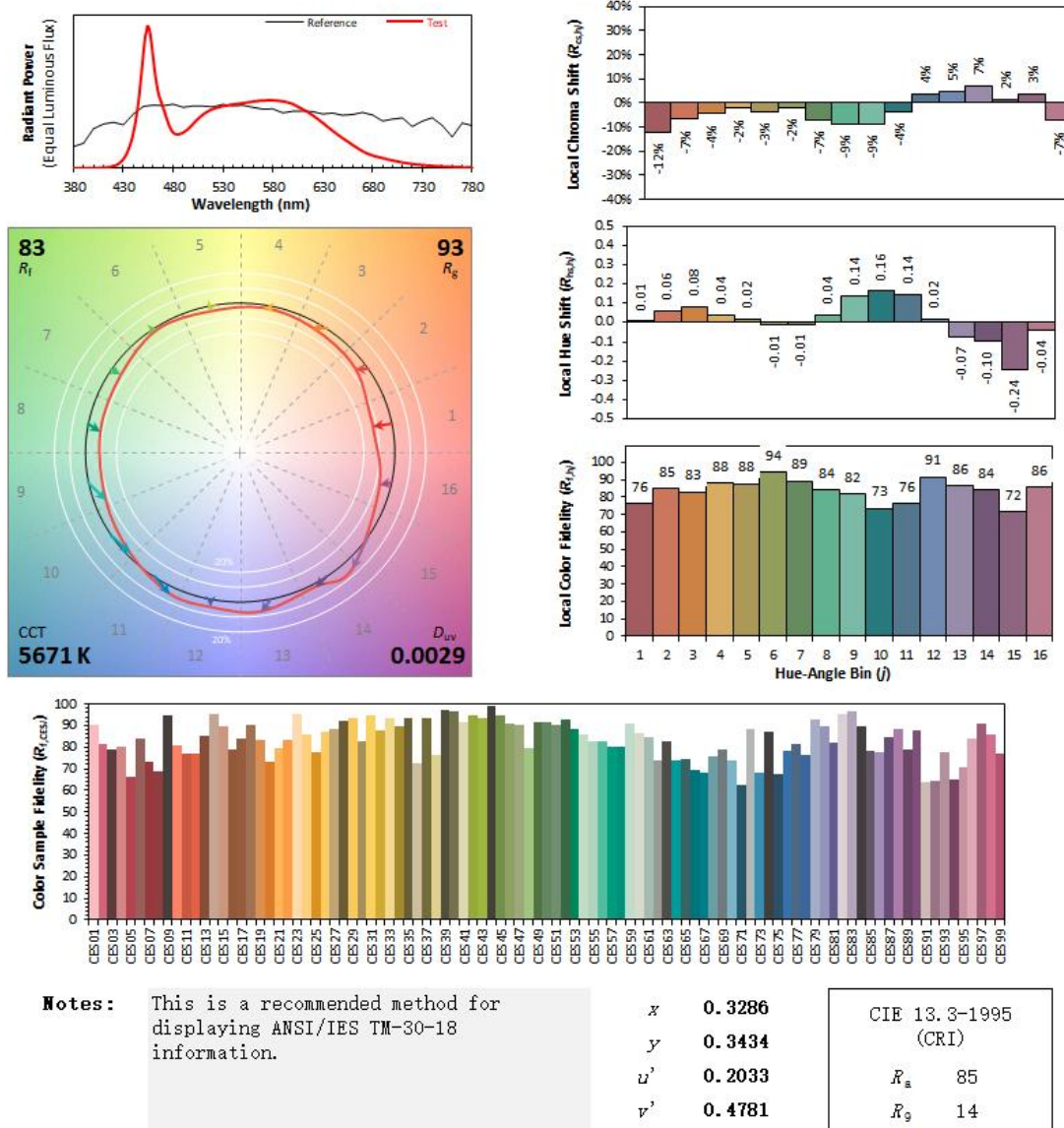
Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0146	535	0.4279	53.9993	690	0.1200	15.1475
385	0.0007	0.0892	540	0.4356	54.9656	695	0.1017	12.8308
390	0.0003	0.0426	545	0.4417	55.7403	700	0.0893	11.2664
395	0.0007	0.0865	550	0.4488	56.6310	705	0.0784	9.8929
400	0.0009	0.1080	555	0.4514	56.9684	710	0.0698	8.8129
405	0.0016	0.1998	560	0.4582	57.8219	715	0.0617	7.7833
410	0.0024	0.3092	565	0.4634	58.4855	720	0.0537	6.7764
415	0.0056	0.7124	570	0.4682	59.0878	725	0.0462	5.8300
420	0.0136	1.7155	575	0.4729	59.6739	730	0.0397	5.0102
425	0.0298	3.7616	580	0.4759	60.0571	735	0.0337	4.2582
430	0.0635	8.0111	585	0.4781	60.3371	740	0.0293	3.6975
435	0.1293	16.3179	590	0.4779	60.3078	745	0.0250	3.1557
440	0.2493	31.4546	595	0.4750	59.9465	750	0.0209	2.6415
445	0.4666	58.8787	600	0.4715	59.5016	755	0.0167	2.1099
450	0.8095	102.1585	605	0.4628	58.4025	760	0.0166	2.0926
455	0.9973	125.8519	610	0.4513	56.9472	765	0.0140	1.7678
460	0.7687	97.0048	615	0.4326	54.5988	770	0.0120	1.5143
465	0.5324	67.1892	620	0.4142	52.2755	775	0.0099	1.2527
470	0.4221	53.2617	625	0.3945	49.7882	780	0.0083	1.0482
475	0.3175	40.0641	630	0.3714	46.8727	785	0.0066	0.8311
480	0.2500	31.5469	635	0.3465	43.7244	790	0.0067	0.8506
485	0.2380	30.0360	640	0.3188	40.2288	795	0.0050	0.6331
490	0.2506	31.6292	645	0.2908	36.6919	800	0.0030	0.3758
495	0.2764	34.8853	650	0.2623	33.1062			
500	0.3118	39.3524	655	0.2361	29.7894			
505	0.3476	43.8720	660	0.2105	26.5695			
510	0.3775	47.6428	665	0.1874	23.6497			
515	0.3999	50.4660	670	0.1635	20.6320			
520	0.4157	52.4637	675	0.1410	17.7889			
525	0.4279	53.9993	680	0.1200	15.1475			
530	0.4356	54.9656	685	0.1017	12.8308			

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ANSI/IES TM-30-18 Color Rendition Report



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2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-11-05	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AST-LA04A-80W8FTBTL1A1-abc65f	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU241003 5E-F1	120.0	60	0.697	83.19	0.994	7.1
	277.0	60	0.325	82.5	0.917	11.36
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

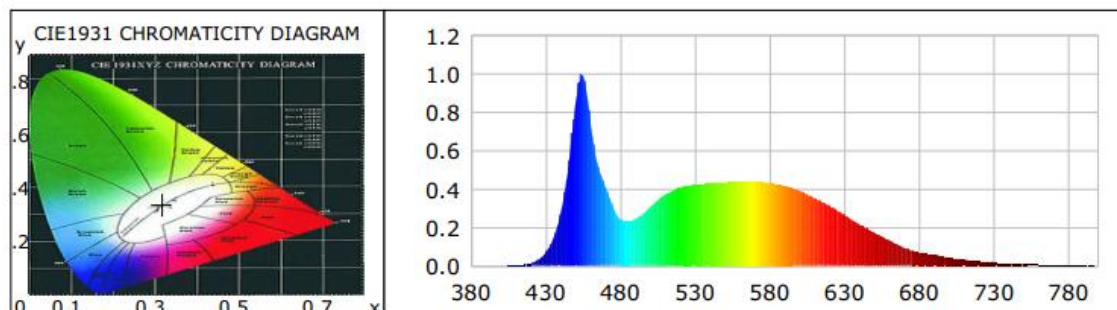
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	6344	R3	93	R11	80
Duv	0.0056	R4	80	R12	55
Chromaticity (x, y)	x=0.3149 y=0.3358	R5	81	R13	84
Chromaticity (u', v')	u(u')=0.1968 v'=0.4722	R6	85	R14	97
Color Rendering Index (CRI)	83	R7	87	R15	76
R9	6	R8	68	--	--
Rf	82	--	--	--	--
Rg	92	--	--	--	--
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)	11173.2	11025.3	Category 1: ≥ 375 lm/ft(-10%) Category 2: ≥ 750 (-10%)
Luminous Efficacy (lm/W)	134.31	133.64	Category 1: Standard: ≥ 115 (-3%)
Most worst Luminous/Highest Watts	132.53		Category 2: Premium: ≥ 120 (-3%)

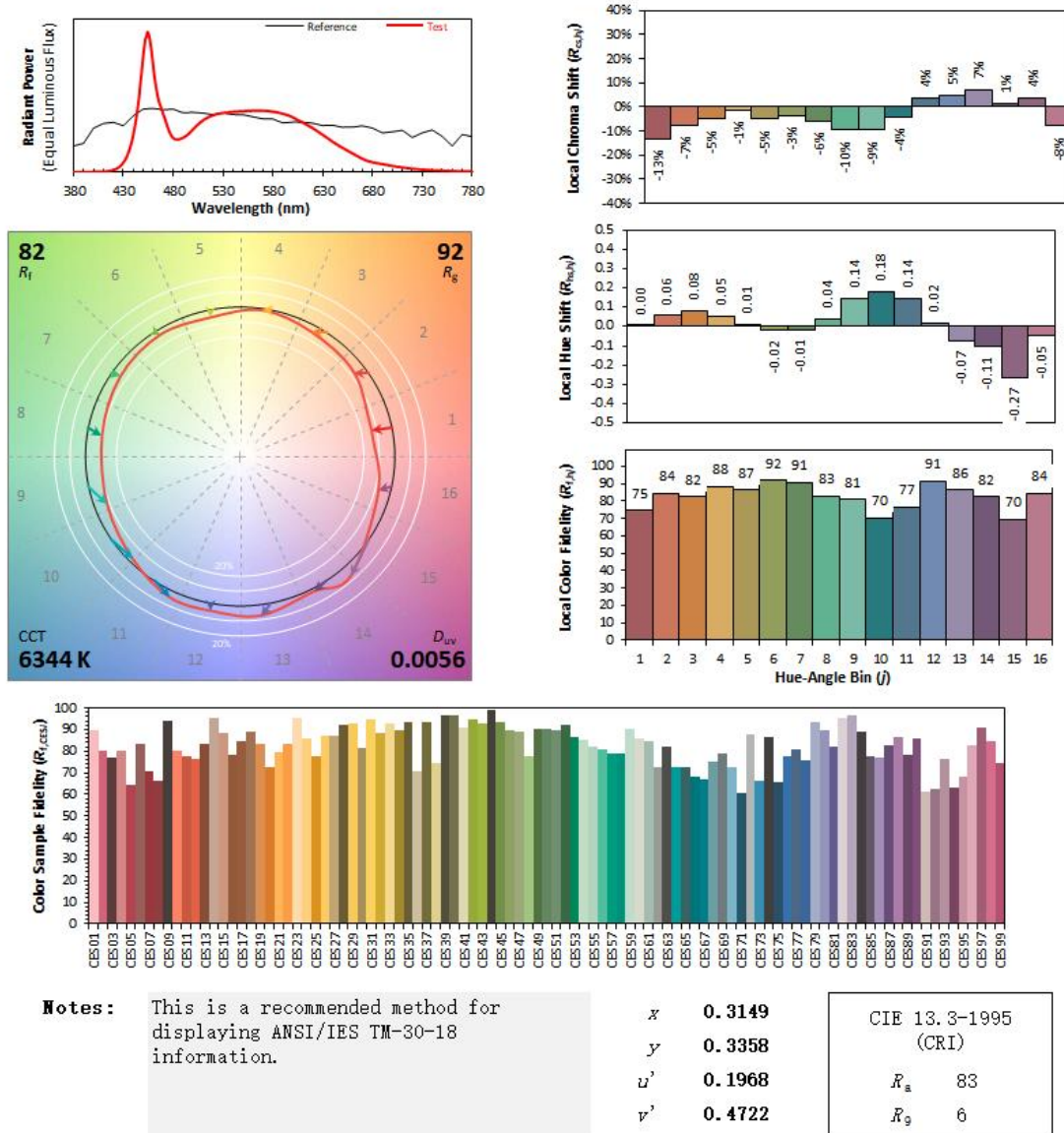
Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.1206	535	0.4162	80.9342	690	0.0942	18.3236
385	0.0004	0.0820	540	0.4214	81.9432	695	0.0794	15.4390
390	0.0005	0.1005	545	0.4254	82.7185	700	0.0692	13.4513
395	0.0006	0.1206	550	0.4313	83.8703	705	0.0625	12.1576
400	0.0008	0.1548	555	0.4316	83.9399	710	0.0572	11.1209
405	0.0015	0.2906	560	0.4337	84.3387	715	0.0503	9.7750
410	0.0027	0.5242	565	0.4379	85.1532	720	0.0429	8.3399
415	0.0062	1.2020	570	0.4393	85.4390	725	0.0375	7.2910
420	0.0141	2.7418	575	0.4395	85.4750	730	0.0319	6.2108
425	0.0319	6.2063	580	0.4377	85.1245	735	0.0274	5.3194
430	0.0679	13.1994	585	0.4360	84.7925	740	0.0235	4.5657
435	0.1394	27.1183	590	0.4327	84.1461	745	0.0203	3.9486
440	0.2691	52.3262	595	0.4253	82.6996	750	0.0176	3.4139
445	0.4998	97.1904	600	0.4177	81.2234	755	0.0147	2.8584
450	0.8415	163.6522	605	0.4059	78.9437	760	0.0139	2.7002
455	0.9901	192.5445	610	0.3902	75.8845	765	0.0117	2.2744
460	0.7512	146.0881	615	0.3710	72.1429	770	0.0097	1.8813
465	0.5220	101.5091	620	0.3536	68.7667	775	0.0082	1.5860
470	0.4124	80.2012	625	0.3347	65.0963	780	0.0074	1.4480
475	0.3086	60.0196	630	0.3141	61.0729	785	0.0053	1.0280
480	0.2431	47.2706	635	0.2899	56.3833	790	0.0053	1.0342
485	0.2328	45.2814	640	0.2666	51.8370	795	0.0051	0.9896
490	0.2452	47.6760	645	0.2413	46.9254	800	0.0027	0.5252
495	0.2702	52.5412	650	0.2160	42.0119			
500	0.3064	59.5845	655	0.1945	37.8176			
505	0.3407	66.2595	660	0.1725	33.5542			
510	0.3704	72.0217	665	0.1522	29.5916			
515	0.3907	75.9752	670	0.1331	25.8817			
520	0.4046	78.6822	675	0.1131	22.0008			
525	0.4162	80.9342	680	0.0942	18.3236			
530	0.4214	81.9432	685	0.0794	15.4390			

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3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2024-01-09
AC Power Source	CHP-500C	DYBWD010159	2024-01-08
Standard Lamp*	24V/150W	DYJYR040040	2024-01-17
Standard Lamp**	24V/100W	DYBWR030014	2024-01-17
Digital Power Meter	WT500	DYDWQ20010	2024-01-08
Integral Sphere (2M)	2M	DYJCE120067	2024-01-09
Digital Power Meter	WT500	DYDWQ200006	2024-01-08
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2024-01-09

* Reference standard lamp (150W incandescent directional lamp) calibrated by Guangzhou Institute of Measurement and Testing Technology.

** Reference standard lamp (100W incandescent omni-directional lamp) calibrated by Guangzhou Institute of Measurement and Testing Technology.

Expand Uncertainty:

Photometric Measurement (Sphere): 2.02%, k=2

Chromaticity Measurement(Sphere):24.8K, k=2

Photometric Measurement(Goniophotometer):2.88%, k=2

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