LM-79-08 Test Report

For

RAB Lighting Inc.

(Brand Name:RAB Lighting)

408 W 14th St, New York, NY 10014 United States
Xiao Xiang,15921313292,Gary.Xiao@rablighting.com

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): AL22-300[blank, SF, WM, UNV][blank, W]/480[blank, /PIR,/MVS, /LCBS, /LCBS/MVS]

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

Test & Report By:

Winny Wu

Engineer: Winny Wu

Date: 2024-03-26

Review By:

Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB Lighting Inc.	
Brand Name	RAB Lighting	
Model Number	AL22-300[blank, SF, WM, UNV][blank, W]/480[blank, /PIR,/MVS, /LCBS, /LCBS/MVS]	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	
Rated Voltage / Frequency	277-480Vac, 50/60 Hz	
Nominal Power	300W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K, 5000K (Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-2880RC35005A1 L128-5780RC35005A1	
Sample Number	UTU2503014E-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	2024-03-10
Date of Test	2024-03-12
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° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 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 25º C ± 1º 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-S-GE12-300WBT3/T4/T5DH1-abcdWfg:1.2434

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 25º C ± 1º 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	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-300/480 (Setting at 3000K T3)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	277.0	60	1.090	301.36	0.998	2.52
4E-D1	480.0	60	0.630	300.13	0.993	8.79
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

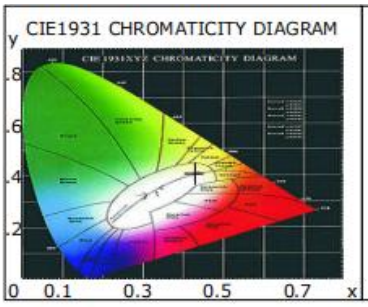
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3182
Duv	0.0032
Chromaticity (x, y)	x=0.4287 y=0.4089
Chromaticity (u', v')	u'=0.2433 v'=0.522
Color Rendering Index (CRI)	83
R9	8
Rf	86
Rg	96
Rcs,h1(%)	-11

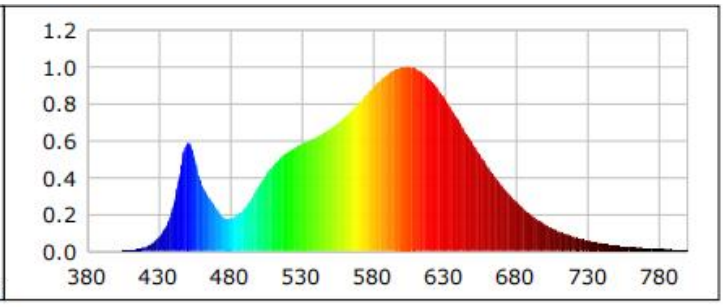
Special Color Rendering Indices			
R1	81	R9	8
R2	89	R10	76
R3	97	R11	82
R4	83	R12	65
R5	81	R13	83
R6	87	R14	98
R7	86	R15	73
R8	62	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	43721.5	43704.3	>=10000(-10%)
Luminous Efficacy (lm/W)	145.08	145.62	Premium: >= 120(-3%)
Most worst Luminous/Highest	145.02		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	3.0	--	<=10(+3)
Beam Angle (°)	117.8	--	--
Center Beam Candle Power (cd)	9489	--	--

Spectral Power Distribution & Chromaticity Diagram

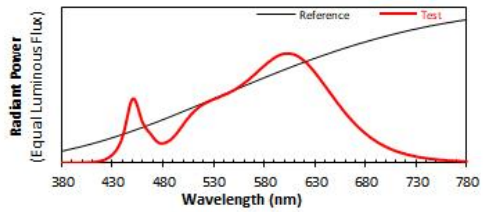


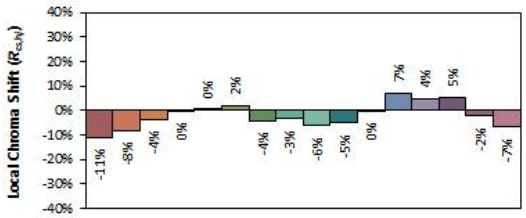


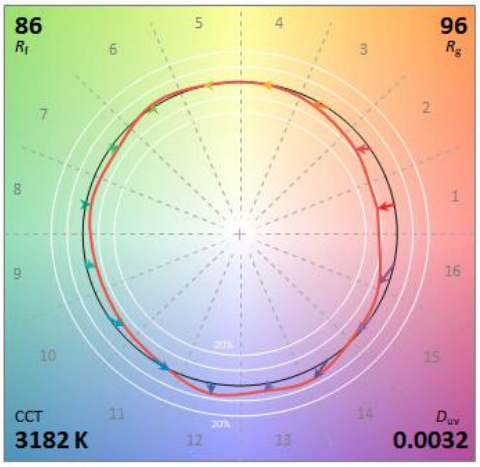
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.1143	535	0.5597	452.1968	690	0.3540	285.9844
385	0.0002	0.1621	540	0.5802	468.7413	695	0.3087	249.3749
390	0.0004	0.3058	545	0.5994	484.2258	700	0.2676	216.2164
395	0.0006	0.4823	550	0.6194	500.4221	705	0.2315	187.0052
400	0.0007	0.5693	555	0.6406	517.4908	710	0.2002	161.6995
405	0.0020	1.5967	560	0.6659	537.9692	715	0.1708	138.0196
410	0.0045	3.6225	565	0.6938	560.5219	720	0.1472	118.9046
415	0.0102	8.2411	570	0.7280	588.1307	725	0.1259	101.7158
420	0.0205	16.5518	575	0.7642	617.3764	730	0.1071	86.5043
425	0.0397	32.1060	580	0.8040	649.5066	735	0.0912	73.6785
430	0.0738	59.6110	585	0.8464	683.8279	740	0.0785	63.3997
435	0.1327	107.2076	590	0.8887	717.9651	745	0.0670	54.1277
440	0.2379	192.2076	595	0.9260	748.1265	750	0.0568	45.9216
445	0.4320	349.0390	600	0.9615	776.7446	755	0.0482	38.9285
450	0.5853	472.8147	605	0.9837	794.6998	760	0.0410	33.1479
455	0.5106	412.5223	610	0.9985	806.6489	765	0.0342	27.6242
460	0.3657	295.4037	615	0.9996	807.5529	770	0.0296	23.8823
465	0.2935	237.1419	620	0.9894	799.3227	775	0.0253	20.4583
470	0.2351	189.9726	625	0.9646	779.3097	780	0.0219	17.6969
475	0.1867	150.7933	630	0.9287	750.2506	785	0.0184	14.8250
480	0.1771	143.0450	635	0.8825	712.9855	790	0.0164	13.2211
485	0.1956	157.9933	640	0.8273	668.3954	795	0.0127	10.2694
490	0.2313	186.8243	645	0.7682	620.6452	800	0.0114	9.2167
495	0.2870	231.8246	650	0.7040	568.7498			
500	0.3520	284.3807	655	0.6403	517.3131			
505	0.4105	331.5973	660	0.5773	466.3835			
510	0.4633	374.2721	665	0.5154	416.4124			
515	0.5054	408.3021	670	0.4575	369.5668			
520	0.5356	432.6932	675	0.4037	326.1194			
525	0.5597	452.1968	680	0.3540	285.9844			
530	0.5802	468.7413	685	0.3087	249.3749			

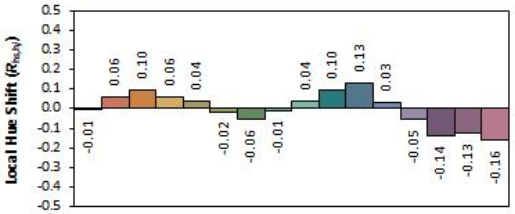
TM30

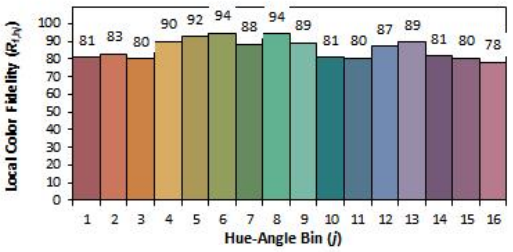
ANSI/IES TM-30-18 Color Rendition Report

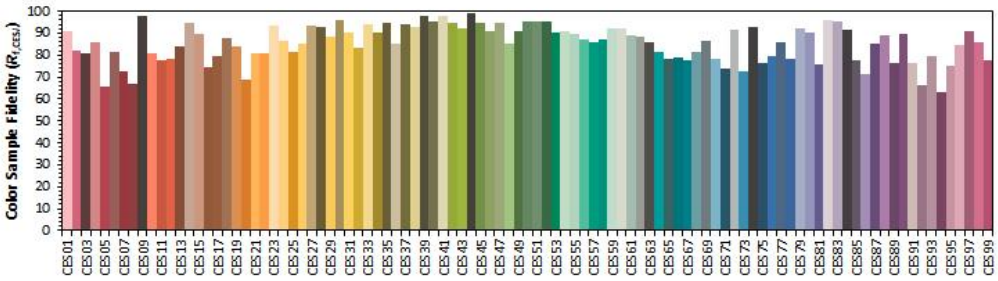












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4287
y	0.4089
u'	0.2433
v'	0.5220

CIE 13.3-1995 (CRI)

R_a	83
R_9	8

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

Zonal Lumen Tabulation

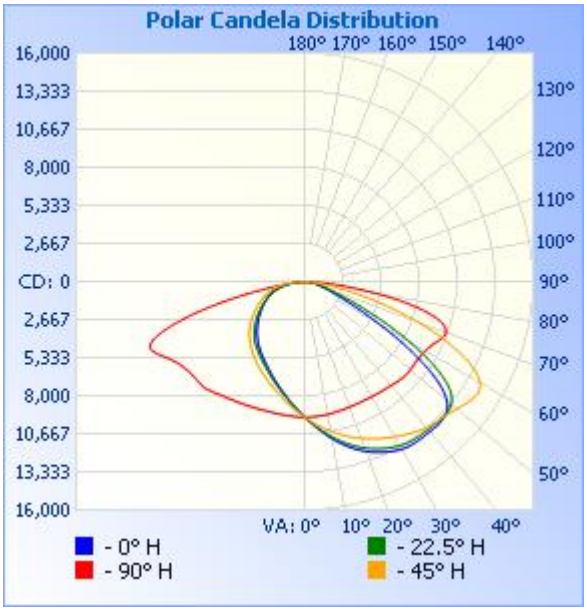
Zonal Lumen Summary

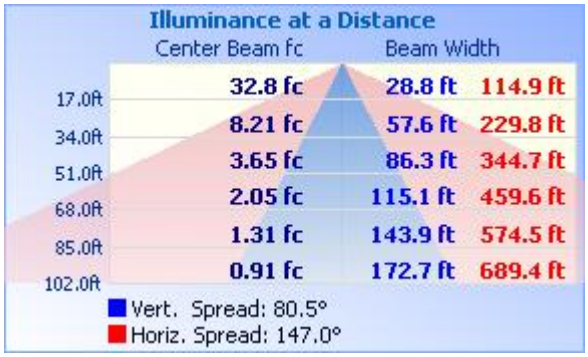
Zone	Lumens	% Lamp	% Luminaire
0-30	8,080.6	18.5%	18.5%
0-40	14,185.0	32.4%	32.4%
0-60	29,794.7	68.1%	68.1%
60-90	13,924.8	31.8%	31.9%
70-100	6,564.9	15%	15%
90-120	0	0%	0%
0-90	43,719.5	100%	100%
90-180	0	0%	0%
0-180	43,719.5	100%	100%

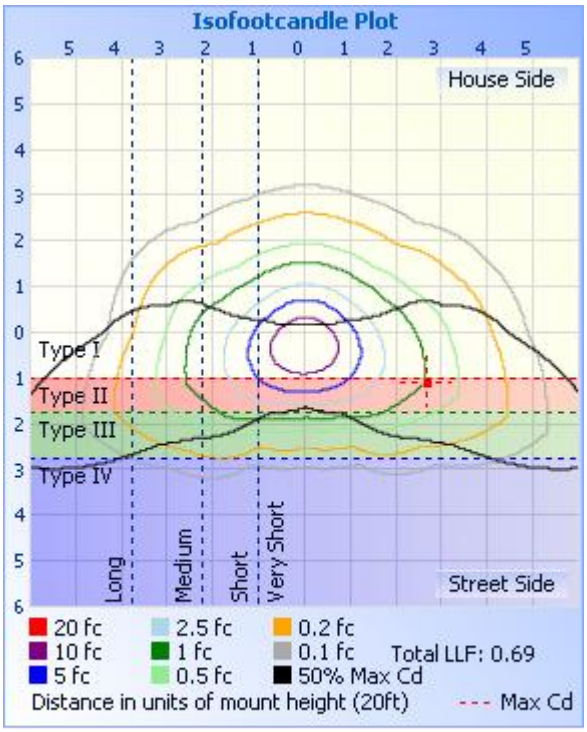
Lumens Per Zone

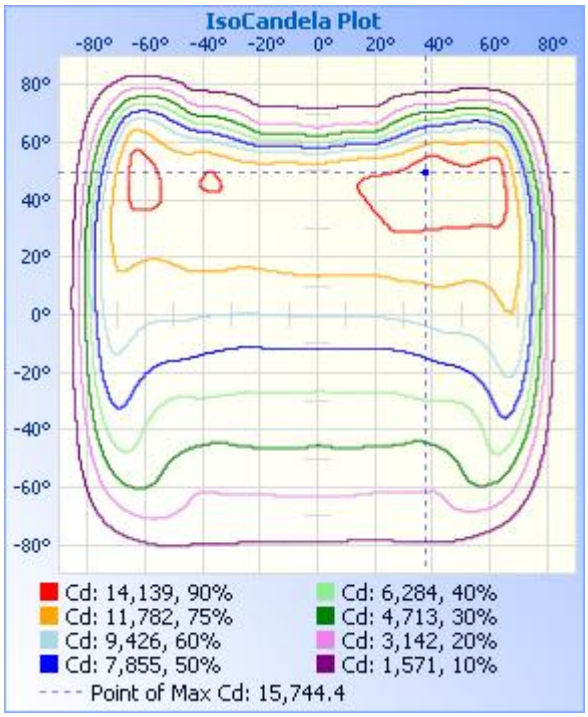
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	907.4	2.1%	90-100	0	0%
10-20	2,710.2	6.2%	100-110	0	0%
20-30	4,463.1	10.2%	110-120	0	0%
30-40	6,104.3	14.0%	120-130	0	0%
40-50	7,498.1	17.2%	130-140	0	0%
50-60	8,111.6	18.6%	140-150	0	0%
60-70	7,359.9	16.8%	150-160	0	0%
70-80	5,272.7	12.1%	160-170	0	0%
80-90	1,292.2	3.0%	170-180	0	0%

Photometric Data









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	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489	9489
1	9652	9638	9604	9550	9489	9429	9377	9341	9327	9342	9376	9426	9487	9550	9603	9641	9652
2	9812	9793	9719	9612	9488	9368	9265	9197	9167	9195	9263	9362	9485	9610	9716	9788	9812
3	9978	9943	9834	9670	9486	9306	9153	9054	9013	9048	9151	9298	9481	9667	9831	9940	9978
4	10143	10097	9953	9730	9483	9244	9044	8916	8860	8907	9034	9233	9477	9726	9946	10098	10143
5	10312	10256	10067	9790	9476	9181	8936	8777	8714	8770	8925	9168	9472	9786	10062	10257	10312
6	10484	10414	10183	9847	9472	9118	8829	8643	8575	8631	8814	9103	9466	9848	10181	10414	10484
7	10658	10567	10298	9903	9464	9053	8723	8511	8434	8497	8705	9039	9460	9906	10299	10567	10658
8	10833	10726	10413	9957	9455	8990	8618	8382	8295	8367	8599	8972	9453	9966	10418	10727	10833
9	11005	10885	10526	10014	9446	8921	8513	8255	8158	8240	8493	8906	9448	10026	10538	10887	11005
10	11178	11037	10641	10066	9434	8856	8408	8130	8024	8111	8384	8839	9443	10089	10658	11048	11178
11	11345	11188	10752	10121	9423	8792	8305	8007	7896	7987	8280	8777	9439	10155	10776	11202	11345
12	11508	11337	10863	10173	9409	8726	8203	7887	7770	7867	8177	8712	9437	10218	10897	11355	11508
13	11668	11486	10971	10227	9398	8659	8104	7770	7650	7747	8078	8650	9436	10286	11017	11507	11668
14	11823	11633	11079	10281	9386	8594	8007	7652	7528	7630	7980	8588	9436	10354	11138	11660	11823
15	11973	11774	11186	10336	9374	8530	7909	7540	7408	7518	7885	8530	9439	10426	11260	11810	11973
16	12120	11907	11293	10388	9362	8466	7813	7431	7292	7409	7788	8473	9443	10500	11381	11952	12120
17	12260	12039	11392	10443	9350	8403	7718	7322	7179	7300	7695	8415	9448	10574	11503	12087	12260
18	12394	12165	11494	10497	9341	8338	7624	7215	7072	7195	7604	8359	9456	10656	11624	12223	12394
19	12526	12287	11594	10554	9332	8276	7534	7112	6967	7093	7516	8305	9467	10737	11749	12355	12526
20	12649	12406	11689	10611	9324	8219	7444	7012	6861	6992	7431	8253	9478	10826	11868	12480	12649
21	12770	12512	11782	10671	9318	8156	7357	6911	6755	6894	7346	8201	9491	10912	11988	12600	12770
22	12883	12615	11873	10730	9312	8098	7270	6814	6656	6799	7263	8149	9504	11001	12108	12716	12883
23	12985	12715	11963	10793	9310	8040	7185	6720	6559	6706	7180	8099	9521	11090	12231	12828	12985
24	13083	12810	12049	10857	9307	7982	7102	6628	6467	6617	7101	8049	9539	11187	12349	12936	13083
25	13174	12899	12136	10923	9307	7928	7022	6538	6378	6531	7024	8001	9560	11285	12469	13044	13174
26	13260	12983	12219	10990	9309	7874	6942	6455	6290	6447	6946	7953	9579	11386	12588	13147	13260
27	13345	13062	12301	11059	9311	7820	6863	6371	6203	6366	6868	7905	9603	11485	12706	13241	13345
28	13424	13134	12384	11128	9316	7767	6786	6291	6119	6288	6793	7858	9626	11584	12828	13336	13424

29	13497	13204	12466	11200	9321	7714	6708	6213	6041	6214	6717	7810	9649	11686	12948	13431	13497
30	13559	13271	12547	11278	9329	7662	6632	6139	5963	6139	6640	7761	9674	11792	13068	13522	13559
31	13607	13332	12628	11351	9336	7610	6555	6066	5884	6068	6564	7715	9701	11899	13194	13608	13607
32	13642	13384	12714	11430	9345	7560	6480	5998	5806	5998	6489	7669	9729	12008	13323	13690	13642
33	13664	13416	12797	11509	9357	7509	6407	5928	5728	5928	6415	7622	9760	12122	13456	13759	13664
34	13676	13444	12885	11587	9367	7458	6335	5860	5650	5860	6341	7577	9791	12237	13584	13817	13676
35	13679	13459	12969	11670	9380	7409	6259	5793	5571	5792	6263	7533	9827	12353	13720	13861	13679
36	13679	13468	13048	11755	9394	7358	6183	5724	5490	5722	6184	7487	9866	12476	13856	13899	13679
37	13677	13472	13124	11848	9409	7307	6106	5655	5411	5650	6106	7446	9911	12608	13985	13931	13677
38	13675	13475	13193	11945	9426	7258	6031	5584	5327	5578	6028	7405	9959	12749	14102	13957	13675
39	13676	13478	13259	12046	9445	7207	5954	5512	5241	5502	5951	7366	10013	12894	14210	13980	13676
40	13678	13483	13319	12151	9468	7159	5875	5438	5155	5428	5868	7329	10068	13044	14304	14004	13678
41	13682	13489	13370	12261	9493	7112	5793	5363	5069	5349	5787	7295	10120	13188	14387	14031	13682
42	13691	13497	13421	12376	9520	7065	5714	5283	4983	5265	5707	7255	10168	13321	14456	14065	13691
43	13694	13512	13464	12487	9551	7019	5632	5198	4897	5177	5628	7211	10204	13432	14517	14101	13694
44	13689	13527	13508	12595	9584	6973	5549	5113	4805	5089	5546	7161	10223	13516	14571	14145	13689
45	13667	13542	13551	12689	9613	6923	5466	5021	4711	4993	5463	7103	10230	13576	14622	14190	13667
46	13623	13553	13602	12764	9634	6869	5385	4928	4621	4897	5381	7035	10227	13623	14678	14232	13623
47	13546	13551	13658	12823	9649	6808	5302	4831	4534	4800	5295	6963	10223	13656	14734	14268	13546
48	13433	13532	13719	12863	9654	6740	5215	4731	4444	4697	5202	6884	10219	13689	14800	14286	13433
49	13264	13484	13794	12898	9651	6671	5126	4633	4349	4597	5106	6807	10219	13725	14877	14280	13264
50	13020	13402	13875	12931	9641	6595	5035	4531	4256	4498	5009	6729	10229	13763	14966	14242	13020
51	12686	13274	13966	12962	9631	6516	4943	4427	4165	4393	4910	6654	10243	13804	15064	14152	12686
52	12266	13082	14060	13000	9620	6440	4846	4324	4077	4290	4810	6582	10265	13847	15172	13995	12266
53	11755	12809	14159	13044	9612	6364	4744	4223	3987	4192	4702	6516	10298	13897	15285	13756	11755
54	11145	12451	14253	13098	9609	6288	4640	4119	3896	4088	4599	6448	10342	13951	15404	13412	11145
55	10442	11993	14337	13157	9613	6213	4538	4016	3809	3983	4497	6387	10394	14010	15519	12973	10442
56	9682	11454	14402	13226	9620	6144	4438	3914	3722	3881	4396	6331	10460	14076	15620	12433	9682
57	8870	10830	14433	13304	9635	6074	4335	3812	3636	3780	4291	6279	10539	14147	15699	11796	8870
58	8031	10142	14419	13394	9661	6009	4229	3710	3550	3675	4186	6234	10634	14226	15744	11080	8031
59	7193	9402	14344	13496	9695	5946	4125	3607	3465	3572	4082	6196	10743	14315	15738	10287	7193

60	6380	8622	14196	13608	9737	5888	4021	3505	3381	3470	3981	6168	10871	14414	15663	9445	6380
61	5627	7828	13960	13739	9791	5835	3917	3403	3297	3369	3877	6150	11013	14522	15512	8565	5627
62	4931	7027	13641	13888	9857	5784	3810	3300	3214	3265	3772	6139	11173	14646	15273	7667	4931
63	4310	6257	13228	14055	9933	5741	3704	3198	3126	3163	3671	6142	11339	14778	14938	6802	4310
64	3767	5523	12740	14244	10020	5702	3601	3098	3042	3065	3570	6161	11507	14922	14518	5983	3767
65	3308	4846	12178	14457	10118	5668	3498	2998	2958	2963	3469	6194	11652	15078	14015	5229	3308
66	2923	4227	11568	14688	10223	5646	3394	2898	2874	2865	3366	6236	11753	15245	13436	4538	2923
67	2599	3680	10921	14938	10332	5631	3291	2799	2789	2765	3267	6286	11762	15415	12798	3928	2599
68	2325	3214	10230	15195	10430	5623	3190	2699	2705	2664	3172	6339	11641	15574	12062	3394	2325
69	2089	2818	9503	15436	10500	5622	3087	2600	2624	2561	3074	6376	11362	15690	11270	2948	2089
70	1891	2482	8758	15610	10521	5623	2984	2500	2543	2461	2980	6368	10917	15744	10404	2570	1891
71	1719	2238	7990	15691	10474	5616	2886	2398	2457	2358	2891	6283	10323	15702	9508	2256	1719
72	1567	1995	7214	15657	10349	5596	2791	2299	2370	2256	2802	6105	9595	15540	8582	2014	1567
73	1431	1751	6453	15534	10131	5544	2697	2198	2279	2157	2712	5840	8789	15238	7682	1772	1431
74	1309	1572	5710	15335	9817	5440	2605	2100	2178	2055	2622	5490	7913	14782	6772	1579	1309
75	1197	1413	4996	15073	9398	5283	2508	2001	2051	1953	2529	5092	6981	14145	5888	1407	1197
76	1092	1270	4307	14725	8841	5079	2410	1899	1923	1851	2429	4664	6025	13288	4992	1257	1092
77	994	1144	3670	14220	8159	4826	2302	1797	1780	1748	2315	4206	5055	12219	4125	1125	994
78	901	1030	3091	13504	7412	4520	2181	1696	1627	1645	2185	3746	4135	10856	3324	1007	901
79	818	923	2579	12557	6607	4164	2049	1594	1462	1540	2046	3265	3274	9249	2617	899	818
80	734	824	2141	11325	5737	3762	1917	1491	1283	1423	1907	2748	2553	7550	2043	799	734
81	653	733	1770	9880	4855	3326	1784	1381	1103	1291	1747	2242	1959	5979	1586	708	653
82	575	649	1451	8296	4038	2862	1648	1250	926	1153	1562	1782	1478	4583	1223	624	575
83	501	570	1189	6692	3269	2406	1504	1092	761	998	1336	1364	1083	3373	927	545	501
84	428	496	962	5114	2623	1956	1344	932	591	810	1094	988	821	2421	712	466	428
85	358	422	785	3695	1977	1489	1154	776	426	621	809	679	560	1472	499	387	358
86	290	352	608	2791	1333	1063	908	621	288	433	550	371	300	841	338	312	290
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180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone		Lumens	%Lamp	%Lum
FL	(0-30)	4817.4	11.0	11.0
FM	(30-60)	14763.5	33.8	33.8
FH	(60-80)	8336.0	19.1	19.1
FVH	(80-90)	758.8	1.7	1.7
BL	(0-30)	3263.0	7.5	7.5
BM	(30-60)	6954.2	15.9	15.9
BH	(60-80)	4295.4	9.8	9.8
BVH	(80-90)	533.2	1.2	1.2
UL	(90-100)	0.0	0.0	0.0
UH	(100-180)	0.0	0.0	0.0
Total		43721.5	100.0	100.0
BUG Rating		**B4-U0-G5**		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-300/480 (Setting at 3000K T4)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	277.0	60	1.035	285.96	0.997	2.64
4E-D1	480.0	60	0.621	285.87	0.959	8.82
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

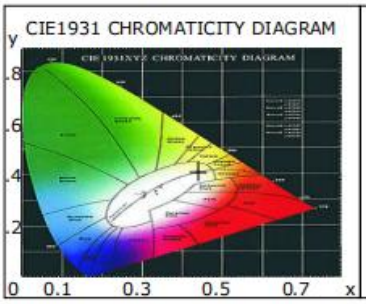
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3034
Duv	0.0040
Chromaticity (x, y)	x=0.4403 y=0.4154
Chromaticity (u', v')	u'=0.2479 v'=0.5262
Color Rendering Index (CRI)	83
R9	7
Rf	86
Rg	94
Rcs,h1(%)	-11

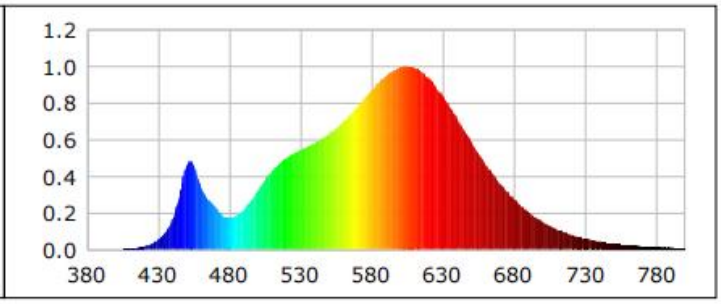
Special Color Rendering Indices			
R1	81	R9	7
R2	90	R10	77
R3	98	R11	81
R4	82	R12	66
R5	81	R13	83
R6	88	R14	99
R7	85	R15	73
R8	60	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	45527.5	45577.5	>=10000(-10%)
Luminous Efficacy (lm/W)	159.21	159.43	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	159.21		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	4.1	--	<=10(+3)
Beam Angle (°)	141.3	--	--
Center Beam Candle Power (cd)	9757	--	--

Spectral Power Distribution & Chromaticity Diagram

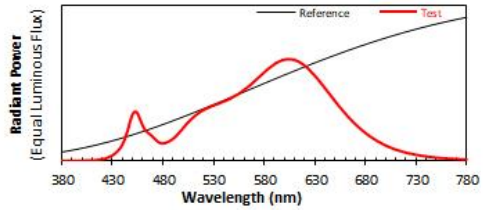


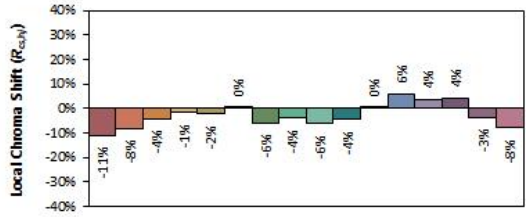


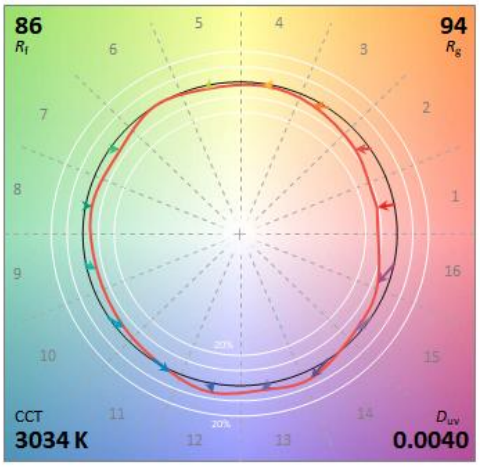
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.2029	535	0.5234	441.2003	690	0.3601	303.5249
385	0.0002	0.2034	540	0.5438	458.4416	695	0.3148	265.3578
390	0.0004	0.3279	545	0.5627	474.3235	700	0.2727	229.9173
395	0.0005	0.4233	550	0.5839	492.1925	705	0.2365	199.3701
400	0.0009	0.7616	555	0.6045	509.5822	710	0.2046	172.4348
405	0.0014	1.1948	560	0.6320	532.7322	715	0.1758	148.1535
410	0.0034	2.8764	565	0.6609	557.1346	720	0.1508	127.1000
415	0.0078	6.5801	570	0.6976	588.0309	725	0.1283	108.1417
420	0.0155	13.0955	575	0.7363	620.6388	730	0.1091	91.9789
425	0.0291	24.5298	580	0.7785	656.2192	735	0.0946	79.7805
430	0.0531	44.7423	585	0.8250	695.4227	740	0.0805	67.8387
435	0.0939	79.1776	590	0.8695	732.9634	745	0.0693	58.3800
440	0.1619	136.4700	595	0.9131	769.6775	750	0.0588	49.5942
445	0.2962	249.7141	600	0.9504	801.1341	755	0.0501	42.2675
450	0.4592	387.1129	605	0.9777	824.1304	760	0.0429	36.1774
455	0.4618	389.2758	610	0.9945	838.3108	765	0.0366	30.8923
460	0.3443	290.2313	615	0.9984	841.6399	770	0.0312	26.2739
465	0.2765	233.0363	620	0.9945	838.3291	775	0.0271	22.8544
470	0.2332	196.5789	625	0.9694	817.1560	780	0.0228	19.2049
475	0.1872	157.8164	630	0.9370	789.8214	785	0.0192	16.1716
480	0.1712	144.3398	635	0.8911	751.2006	790	0.0161	13.5672
485	0.1859	156.6893	640	0.8366	705.2346	795	0.0148	12.4543
490	0.2176	183.4374	645	0.7777	655.5787	800	0.0125	10.5359
495	0.2648	223.2019	650	0.7133	601.2880			
500	0.3235	272.6761	655	0.6497	547.6563			
505	0.3797	320.0705	660	0.5869	494.7283			
510	0.4289	361.5546	665	0.5244	442.0865			
515	0.4681	394.5537	670	0.4654	392.3523			
520	0.4987	420.3476	675	0.4104	345.9153			
525	0.5234	441.2003	680	0.3601	303.5249			
530	0.5438	458.4416	685	0.3148	265.3578			

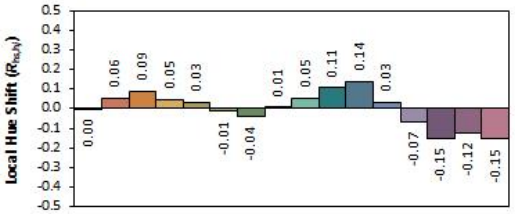
TM30

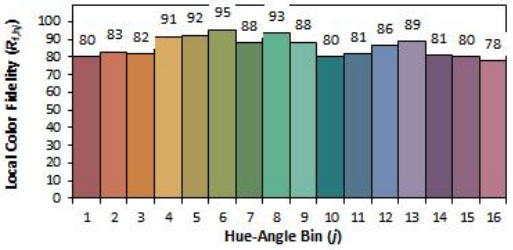
ANSI/IES TM-30-18 Color Rendition Report

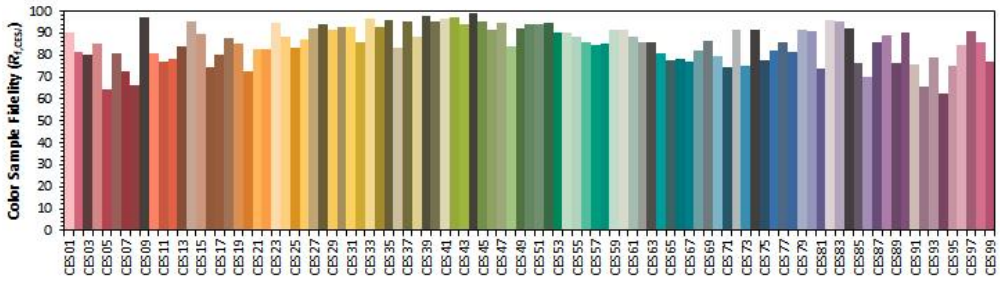












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4403
y	0.4154
u'	0.2479
v'	0.5262

CIE 13.3-1995 (CRI)

R_a	83
R_9	7

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

Zonal Lumen Tabulation

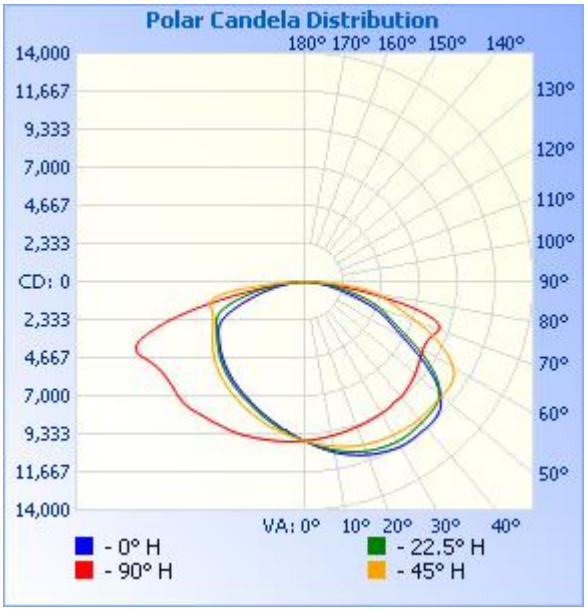
Zonal Lumen Summary

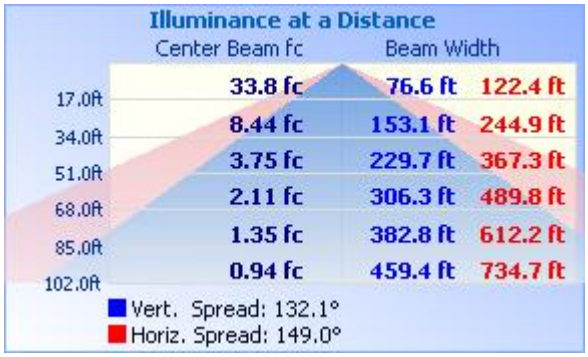
Zone	Lumens	% Lamp	% Luminaire
0-30	8,227.8	18.1%	18.1%
0-40	14,324.0	31.5%	31.5%
0-60	29,637.8	65.1%	65.1%
60-90	15,888.1	34.9%	34.9%
70-100	8,140.1	17.9%	17.9%
90-120	0	0%	0%
0-90	45,525.9	100%	100%
90-180	0	0%	0%
0-180	45,525.9	100%	100%

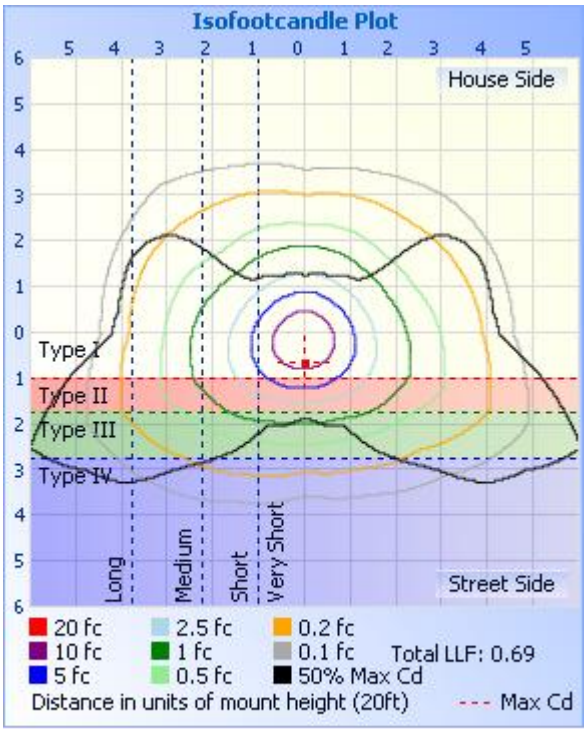
Lumens Per Zone

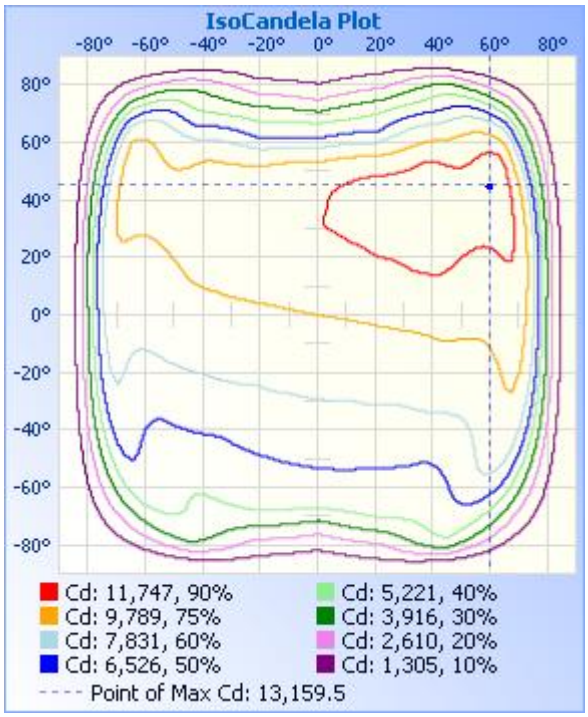
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	932.4	2.0%	90-100	0	0%
10-20	2,773.5	6.1%	100-110	0	0%
20-30	4,521.9	9.9%	110-120	0	0%
30-40	6,096.3	13.4%	120-130	0	0%
40-50	7,367.0	16.2%	130-140	0	0%
50-60	7,946.7	17.5%	140-150	0	0%
60-70	7,748.0	17.0%	150-160	0	0%
70-80	6,281.5	13.8%	160-170	0	0%
80-90	1,858.6	4.1%	170-180	0	0%

Photometric Data









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	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757	9757
1	9839	9827	9804	9775	9741	9713	9682	9675	9675	9682	9707	9739	9773	9803	9828	9846	9839
2	9924	9899	9850	9791	9725	9667	9615	9597	9595	9617	9660	9721	9790	9849	9901	9931	9924
3	10018	9971	9899	9809	9709	9618	9547	9517	9517	9547	9613	9703	9806	9899	9971	10016	10018
4	10105	10050	9948	9824	9694	9573	9478	9437	9427	9479	9566	9686	9821	9947	10049	10102	10105
5	10188	10122	9996	9840	9678	9526	9411	9355	9348	9411	9519	9668	9836	9995	10114	10189	10188
6	10274	10193	10052	9858	9663	9481	9343	9266	9266	9343	9471	9646	9850	10042	10195	10274	10274
7	10367	10260	10097	9875	9646	9437	9264	9173	9167	9273	9421	9628	9867	10089	10268	10367	10367
8	10446	10333	10149	9891	9629	9386	9197	9173	9167	9171	9373	9609	9884	10138	10342	10451	10446
9	10531	10407	10197	9909	9613	9338	9198	9075	9077	9171	9325	9588	9897	10187	10417	10537	10531
10	10619	10474	10242	9924	9597	9291	9102	8999	8992	9105	9272	9569	9907	10233	10491	10624	10619
11	10696	10547	10288	9941	9583	9223	9034	8928	8919	9032	9190	9545	9923	10287	10566	10705	10696
12	10769	10615	10336	9959	9567	9223	8969	8856	8848	8966	9189	9526	9941	10333	10642	10782	10769
13	10845	10673	10376	9973	9550	9223	8904	8781	8782	8900	9188	9504	9959	10384	10712	10865	10845
14	10917	10733	10421	9987	9534	9153	8847	8715	8714	8831	9107	9482	9976	10436	10785	10942	10917
15	10985	10796	10458	10002	9518	9110	8785	8648	8647	8766	9052	9458	9994	10484	10859	11018	10985
16	11050	10853	10500	10017	9503	9062	8730	8577	8578	8704	9001	9433	10011	10538	10928	11082	11050
17	11113	10907	10535	10028	9488	9020	8674	8506	8512	8639	8954	9411	10028	10591	10998	11158	11113
18	11173	10964	10566	10043	9474	8976	8615	8444	8445	8577	8902	9391	10045	10644	11066	11219	11173
19	11228	11008	10600	10060	9463	8937	8554	8383	8383	8514	8851	9370	10063	10706	11130	11275	11228
20	11285	11051	10635	10078	9454	8892	8496	8322	8311	8452	8802	9348	10087	10756	11202	11338	11285
21	11343	11094	10664	10095	9448	8853	8439	8262	8248	8391	8755	9326	10112	10812	11264	11396	11343
22	11392	11131	10692	10110	9440	8819	8383	8205	8188	8335	8706	9302	10135	10874	11338	11450	11392
23	11437	11169	10720	10123	9432	8781	8327	8147	8128	8273	8655	9278	10150	10934	11398	11503	11437
24	11476	11197	10744	10138	9419	8739	8270	8084	8070	8216	8604	9251	10166	10998	11467	11550	11476
25	11517	11226	10768	10153	9408	8701	8211	8028	8020	8155	8558	9225	10174	11052	11534	11602	11517
26	11555	11248	10787	10169	9396	8659	8157	7973	7963	8104	8510	9190	10183	11112	11600	11656	11555
27	11593	11269	10807	10187	9386	8622	8101	7922	7915	8050	8462	9161	10196	11173	11663	11704	11593
28	11626	11294	10820	10199	9374	8582	8049	7865	7862	8003	8412	9161	10203	11228	11731	11748	11626

29	11665	11313	10838	10213	9364	8544	7993	7813	7809	7953	8362	9161	10209	11293	11797	11791	11665
30	11692	11327	10859	10228	9354	8497	7934	7766	7764	7902	8315	9147	10217	11361	11864	11837	11692
31	11710	11338	10875	10242	9346	8449	7882	7719	7716	7853	8267	9096	10232	11422	11928	11883	11710
32	11718	11338	10896	10252	9336	8409	7831	7675	7664	7803	8221	9057	10247	11483	11997	11925	11718
33	11723	11339	10909	10265	9322	8364	7776	7624	7620	7756	8174	9026	10261	11549	12065	11952	11723
34	11713	11329	10926	10278	9298	8321	7729	7579	7573	7712	8127	8999	10271	11613	12133	11982	11713
35	11702	11314	10939	10293	9265	8276	7663	7531	7528	7668	8072	8965	10286	11681	12206	11997	11702
36	11688	11294	10950	10303	9212	8223	7603	7486	7476	7616	8020	8935	10304	11750	12281	12015	11688
37	11676	11276	10960	10322	9211	8177	7543	7438	7416	7570	7969	8908	10325	11828	12343	12022	11676
38	11668	11257	10962	10335	9211	8129	7488	7382	7361	7522	7909	8880	10350	11903	12402	12030	11668
39	11672	11239	10959	10348	9211	8082	7426	7328	7311	7474	7862	8859	10384	11984	12436	12037	11672
40	11667	11225	10957	10364	9211	8036	7354	7271	7254	7421	7814	8837	10410	12062	12474	12034	11667
41	11664	11204	10949	10386	9184	7983	7289	7216	7199	7374	7761	8815	10441	12140	12504	12038	11664
42	11648	11187	10943	10404	9148	7924	7231	7162	7150	7312	7708	8793	10464	12217	12528	12039	11648
43	11619	11173	10939	10424	9116	7872	7169	7099	7099	7263	7659	8763	10484	12280	12542	12049	11619
44	11585	11152	10937	10434	9084	7816	7096	7040	7043	7210	7604	8727	10496	12325	12558	12051	11585
45	11537	11125	10933	10435	9052	7756	7029	6977	6990	7145	7554	8691	10502	12347	12567	12052	11537
46	11468	11090	10933	10423	9014	7691	6963	6913	6934	7085	7498	8641	10494	12351	12584	12042	11468
47	11384	11046	10933	10406	8965	7624	6893	6842	6874	7025	7444	8590	10475	12340	12593	12019	11384
48	11255	10974	10934	10389	8922	7550	6814	6768	6817	6963	7380	8526	10454	12323	12603	11989	11255
49	11084	10896	10943	10366	8876	7476	6741	6701	6762	6902	7312	8464	10419	12318	12610	11936	11084
50	10874	10789	10954	10345	8831	7400	6661	6632	6702	6835	7240	8407	10382	12308	12627	11853	10874
51	10628	10647	10962	10324	8778	7327	6584	6562	6640	6774	7170	8356	10357	12291	12644	11730	10628
52	10345	10466	10971	10301	8729	7252	6504	6489	6579	6712	7098	8296	10340	12282	12657	11561	10345
53	10027	10245	10974	10286	8675	7179	6424	6413	6516	6650	7018	8246	10327	12277	12666	11355	10027
54	9632	9988	10969	10277	8632	7107	6335	6342	6458	6587	6941	8200	10315	12279	12676	11114	9632
55	9217	9665	10955	10277	8584	7031	6255	6276	6403	6517	6870	8161	10318	12287	12669	10814	9217
56	8834	9334	10917	10277	8532	6962	6176	6203	6334	6458	6796	8121	10323	12296	12659	10461	8834
57	8404	9000	10865	10284	8485	6891	6098	6139	6275	6393	6719	8089	10341	12310	12625	10061	8404
58	7940	8617	10784	10293	8444	6823	6020	6072	6214	6330	6645	8070	10362	12328	12576	9646	7940
59	7534	8195	10661	10308	8406	6752	5939	6009	6157	6274	6578	8060	10405	12346	12489	9183	7534

60	7145	7806	10504	10325	8370	6671	5859	5941	6097	6210	6507	8056	10458	12373	12372	8753	7145
61	6791	7427	10315	10352	8343	6600	5780	5883	6022	6156	6439	8063	10528	12414	12224	8314	6791
62	6463	7058	10091	10386	8329	6520	5700	5822	5952	6103	6370	8081	10616	12459	12007	7831	6463
63	6159	6711	9835	10426	8333	6441	5629	5772	5866	6050	6309	8118	10706	12526	11785	7428	6159
64	5911	6362	9527	10479	8352	6379	5556	5721	5754	6008	6247	8170	10824	12597	11496	7058	5911
65	5691	6083	9202	10551	8376	6328	5489	5667	5594	5965	6189	8228	10946	12669	11200	6728	5691
66	5471	5835	8918	10644	8421	6289	5422	5597	5399	5916	6135	8307	11069	12747	10843	6434	5471
67	5231	5617	8573	10749	8488	6272	5351	5524	5171	5859	6081	8380	11151	12843	10479	6164	5231
68	4936	5425	8185	10864	8577	6266	5268	5422	4879	5789	6046	8458	11162	12962	10106	5967	4936
69	4640	5227	7825	10980	8663	6269	5191	5290	4591	5682	6009	8534	11068	13055	9668	5791	4640
70	4316	5017	7446	11115	8733	6292	5131	5095	4286	5540	5982	8575	10853	13138	9209	5610	4316
71	3949	4796	7080	11229	8756	6320	5073	4876	3986	5361	5964	8539	10490	**13160**	8796	5429	3949
72	3618	4541	6691	11312	8692	6359	5040	4620	3682	5112	5953	8414	9950	13088	8352	5219	3618
73	3295	4262	6352	11348	8481	6373	5023	4339	3367	4848	5952	8180	9300	12909	7976	4965	3295
74	2987	3964	6048	11309	8163	6349	5014	4016	3093	4559	5955	7811	8652	12589	7612	4677	2987
75	2670	3635	5772	11163	7720	6265	5004	3719	2835	4246	5958	7385	7808	12140	7217	4329	2670
76	2396	3331	5486	10896	7119	6100	4975	3413	2580	3923	5948	6879	6975	11418	6879	3989	2396
77	2142	3025	5246	10479	6409	5825	4922	3110	2335	3571	5918	6288	5985	10546	6541	3646	2142
78	1903	2722	5013	9879	5550	5451	4844	2809	2072	3259	5866	5571	5090	9529	6223	3306	1903
79	1681	2425	4799	9120	4762	4943	4731	2495	1844	2961	5768	4909	4222	8454	5934	2941	1681
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83	900	1365	3548	4563	2102	2675	3439	1526	976	1847	4220	2381	1720	3915	4313	1751	900
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87	311	571	1190	1038	364	515	709	558	262	736	799	506	430	894	1288	737	311
88	202	361	548	495	133	154	182	248	118	357	281	222	243	453	697	508	202
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128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	4517.0	9.9	9.9
FM (30-60)	12662.8	27.8	27.8
FH (60-80)	7970.6	17.5	17.5
FVH (80-90)	1025.6	2.3	2.3
BL (0-30)	3710.6	8.2	8.2
BM (30-60)	8750.8	19.2	19.2
BH (60-80)	6057.4	13.3	13.3
BVH (80-90)	832.7	1.8	1.8
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	45527.5	100.0	100.0
BUG Rating	**B5-U0-G5**		

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-300/480 (Setting at 3000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301 4E-D1	277.0	60	1.084	299.65	0.998	1.34
	480.0	60	0.647	298.64	0.962	7.14
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

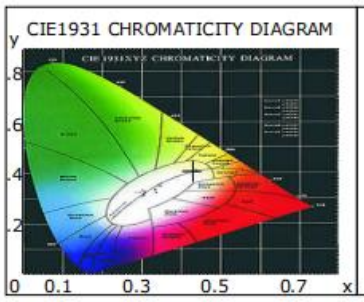
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3186
Duv	0.0030
Chromaticity (x, y)	x=0.4282 y=0.4083
Chromaticity (u', v')	u'=0.2432 v'=0.5218
Color Rendering Index (CRI)	83
R9	8
Rf	85
Rg	96
Rcs,h1(%)	-11

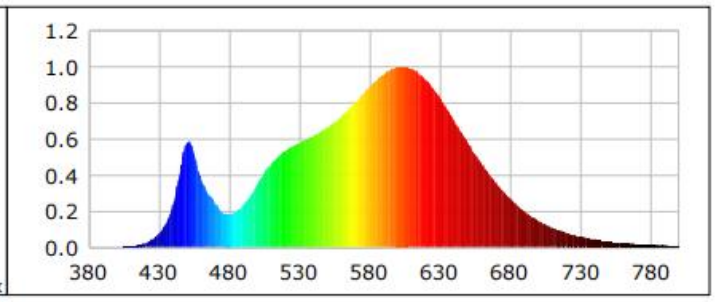
Special Color Rendering Indices			
R1	81	R9	8
R2	89	R10	76
R3	97	R11	82
R4	82	R12	65
R5	81	R13	83
R6	87	R14	98
R7	85	R15	73
R8	62	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	43288.2	42956.2	>=10000(-10%)
Luminous Efficacy (lm/W)	144.46	143.84	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	143.35		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	5.4	--	<=10(+3)
Beam Angle (°)	150.9	--	--
Center Beam Candle Power (cd)	8919	--	--

Spectral Power Distribution & Chromaticity Diagram

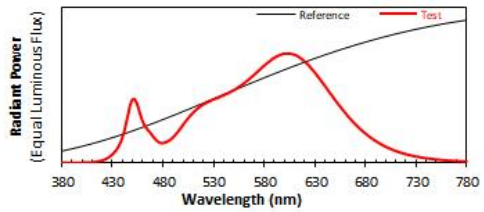


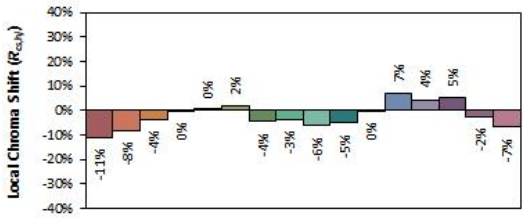


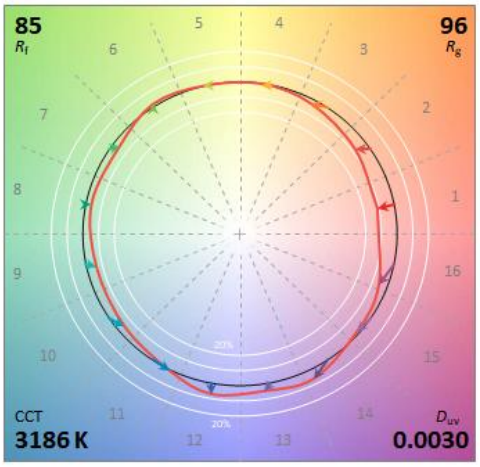
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.2119	535	0.5586	447.7310	690	0.3530	282.9334
385	0.0006	0.4724	540	0.5790	464.1227	695	0.3072	246.2508
390	0.0003	0.2771	545	0.5983	479.5793	700	0.2680	214.8268
395	0.0003	0.2182	550	0.6183	495.5880	705	0.2314	185.4425
400	0.0011	0.8959	555	0.6393	512.4459	710	0.2005	160.7329
405	0.0017	1.3721	560	0.6645	532.6389	715	0.1711	137.1689
410	0.0048	3.8302	565	0.6936	555.9786	720	0.1470	117.8577
415	0.0106	8.4902	570	0.7273	582.9803	725	0.1263	101.2517
420	0.0214	17.1665	575	0.7646	612.8384	730	0.1079	86.4854
425	0.0413	33.0922	580	0.8043	644.7053	735	0.0923	73.9774
430	0.0756	60.5747	585	0.8463	678.3834	740	0.0789	63.2613
435	0.1338	107.2834	590	0.8876	711.4538	745	0.0677	54.2790
440	0.2349	188.2553	595	0.9262	742.3544	750	0.0578	46.3061
445	0.4214	337.7917	600	0.9602	769.6352	755	0.0489	39.1925
450	0.5805	465.3128	605	0.9835	788.2987	760	0.0417	33.4140
455	0.5210	417.6396	610	0.9980	799.9168	765	0.0356	28.5692
460	0.3774	302.5243	615	0.9984	800.2772	770	0.0300	24.0307
465	0.3004	240.7505	620	0.9875	791.5092	775	0.0260	20.8025
470	0.2425	194.3553	625	0.9625	771.4596	780	0.0223	17.8537
475	0.1931	154.8161	630	0.9265	742.6217	785	0.0186	14.8863
480	0.1801	144.3253	635	0.8813	706.4014	790	0.0154	12.3474
485	0.1975	158.3416	640	0.8254	661.5750	795	0.0129	10.3349
490	0.2326	186.4361	645	0.7664	614.3421	800	0.0112	9.0123
495	0.2862	229.4362	650	0.7025	563.0704			
500	0.3499	280.4870	655	0.6378	511.2384			
505	0.4085	327.4413	660	0.5745	460.4754			
510	0.4613	369.7795	665	0.5131	411.2391			
515	0.5024	402.7234	670	0.4567	366.0898			
520	0.5342	428.2148	675	0.4025	322.5914			
525	0.5586	447.7310	680	0.3530	282.9334			
530	0.5790	464.1227	685	0.3072	246.2508			

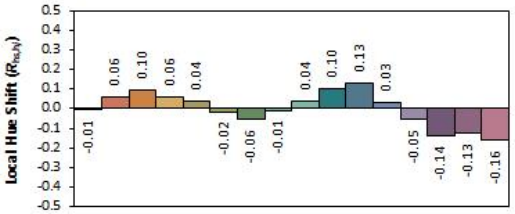
TM30

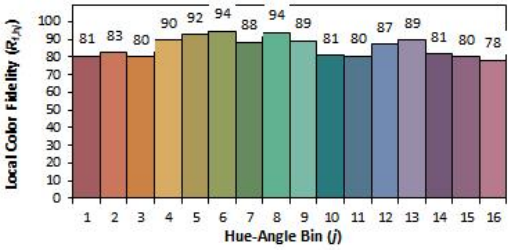
ANSI/IES TM-30-18 Color Rendition Report

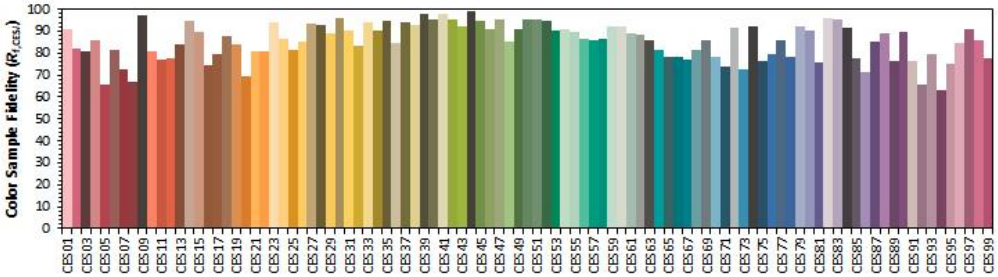












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4282
y	0.4083
u'	0.2432
v'	0.5218

CIE 13.3-1995 (CRI)

R_a	83
R_9	8

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

Zonal Lumen Tabulation

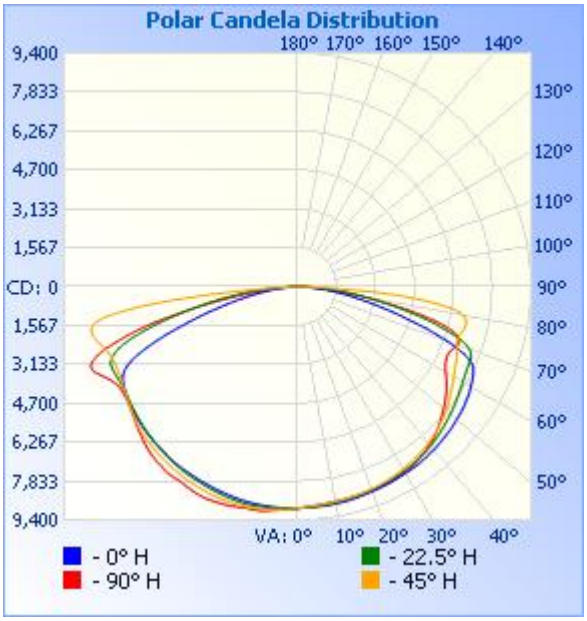
Zonal Lumen Summary

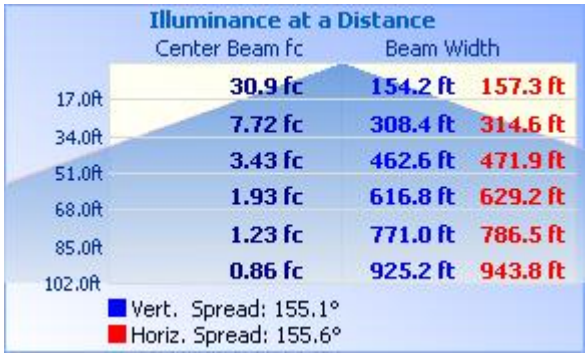
Zone	Lumens	% Lamp	% Luminaire
0-30	7,461.5	17.2%	17.2%
0-40	12,899.9	29.8%	29.8%
0-60	26,550.4	61.3%	61.3%
60-90	16,737.0	38.7%	38.7%
70-100	9,106.3	21%	21%
90-120	0	0%	0%
0-90	43,287.3	100%	100%
90-180	0	0%	0%
0-180	43,287.3	100%	100%

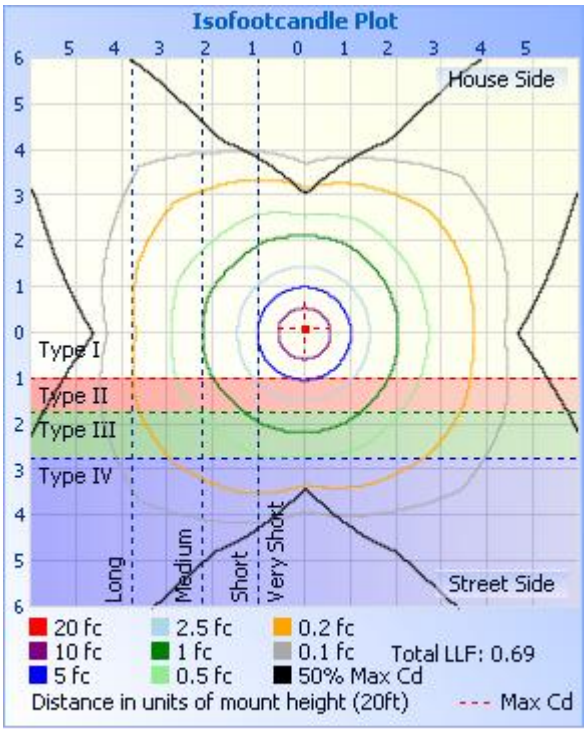
Lumens Per Zone

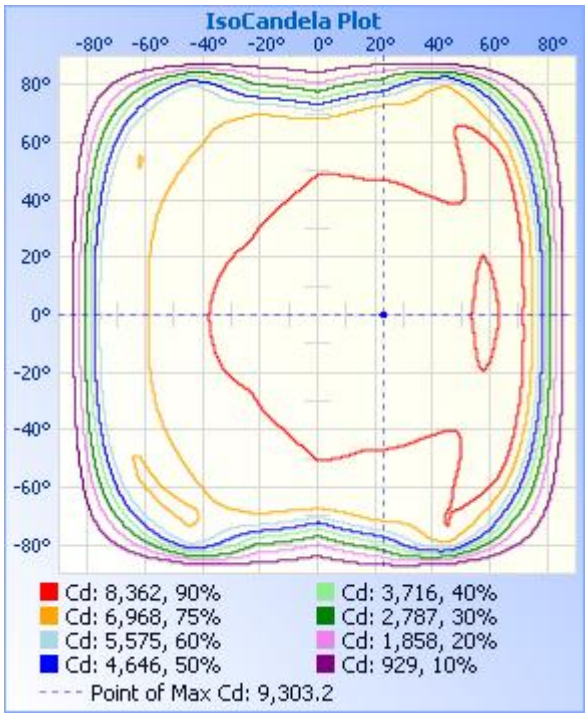
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	851.7	2.0%	90-100	0	0%
10-20	2,525.1	5.8%	100-110	0	0%
20-30	4,084.6	9.4%	110-120	0	0%
30-40	5,438.4	12.6%	120-130	0	0%
40-50	6,485.4	15.0%	130-140	0	0%
50-60	7,165.1	16.6%	140-150	0	0%
60-70	7,630.7	17.6%	150-160	0	0%
70-80	6,776.4	15.7%	160-170	0	0%
80-90	2,329.9	5.4%	170-180	0	0%

Photometric Data









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	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919	8919
1	8915	8911	8899	8899	8899	8900	8907	8912	8920	8929	8936	8940	8940	8935	8932	8924	8915
2	8910	8901	8884	8881	8882	8886	8899	8907	8922	8939	8953	8961	8962	8952	8944	8930	8910
3	8909	8891	8867	8859	8864	8871	8886	8901	8925	8947	8973	8982	8984	8971	8956	8935	8909
4	8902	8880	8852	8840	8849	8856	8875	8894	8928	8957	8988	9007	9007	8991	8969	8938	8902
5	8898	8868	8839	8823	8833	8841	8862	8887	8927	8965	9003	9029	9030	9008	8981	8940	8898
6	8892	8858	8826	8809	8822	8829	8848	8881	8928	8972	9018	9048	9056	9029	8990	8942	8892
7	8888	8847	8814	8796	8809	8817	8836	8870	8926	8980	9035	9069	9080	9047	9002	8943	8888
8	8882	8836	8803	8782	8795	8805	8826	8862	8924	8986	9048	9095	9111	9068	9013	8942	8882
9	8878	8826	8793	8770	8787	8795	8814	8855	8924	8989	9062	9116	9153	9088	9023	8941	8878
10	8872	8816	8784	8763	8779	8784	8800	8848	8918	8992	9075	9136	9152	9109	9032	8940	8872
11	8865	8806	8774	8755	8771	8776	8790	8838	8913	8994	9086	9159	9152	9124	9040	8937	8865
12	8858	8794	8766	8747	8765	8768	8778	8829	8908	8994	9093	9177	9152	9162	9046	8937	8858
13	8852	8785	8755	8742	8759	8760	8769	8820	8900	8992	9098	9207	9152	9176	9054	8934	8852
14	8841	8771	8747	8733	8751	8754	8759	8807	8892	8986	9099	9228	9153	9176	9058	8929	8841
15	8833	8760	8735	8725	8744	8748	8749	8795	8882	8976	9102	9229	9190	9176	9061	8921	8833
16	8822	8748	8727	8720	8740	8743	8739	8785	8871	8968	9100	9229	9211	9176	9063	8915	8822
17	8806	8741	8717	8710	8735	8734	8727	8772	8858	8958	9100	9229	9229	9176	9062	8906	8806
18	8795	8730	8703	8703	8730	8727	8712	8757	8845	8946	9099	9229	9243	9176	9055	8896	8795
19	8781	8719	8691	8695	8726	8718	8696	8743	8832	8931	9091	9229	9256	9175	9050	8884	8781
20	8777	8708	8677	8689	8726	8711	8686	8729	8817	8918	9085	9229	9267	9175	9044	8870	8777
21	8770	8696	8662	8684	8724	8704	8668	8717	8805	8904	9077	9229	9279	9175	9037	8859	8770
22	8760	8682	8648	8673	8721	8701	8649	8701	8793	8887	9066	9229	9289	9175	9031	8842	8760
23	8748	8667	8631	8662	8717	8691	8628	8686	8777	8872	9052	9229	9293	9175	9019	8827	8748
24	8738	8653	8614	8649	8710	8678	8608	8669	8763	8854	9039	9229	9287	9175	9009	8813	8738
25	8731	8637	8593	8633	8700	8663	8588	8654	8754	8838	9031	9229	9277	9175	9000	8798	8731
26	8722	8621	8574	8619	8688	8651	8567	8637	8743	8824	9019	9229	9265	9175	8990	8786	8722
27	8709	8607	8550	8603	8674	8635	8545	8620	8734	8805	9001	9229	9251	9175	8975	8773	8709
28	8698	8596	8526	8583	8654	8619	8520	8605	8719	8793	8984	9229	9233	9175	8962	8759	8698

29	8688	8578	8505	8563	8638	8603	8500	8590	8705	8776	8972	9229	9211	9175	8947	8743	8688
30	8677	8566	8483	8541	8620	8579	8477	8573	8694	8760	8956	9229	9184	9175	8934	8724	8677
31	8667	8548	8458	8517	8604	8559	8453	8560	8684	8747	8937	9229	9152	9175	8921	8708	8667
32	8659	8533	8434	8493	8591	8534	8430	8546	8677	8732	8921	9199	9152	9175	8901	8695	8659
33	8656	8515	8406	8467	8565	8507	8407	8530	8665	8711	8904	9177	9152	9150	8877	8683	8656
34	8647	8499	8380	8438	8535	8481	8382	8511	8657	8694	8887	9155	9152	9123	8858	8671	8647
35	8633	8476	8351	8405	8490	8450	8354	8490	8645	8674	8863	9133	9152	9103	8834	8657	8633
36	8613	8455	8325	8377	8446	8424	8321	8470	8629	8657	8841	9114	9120	9078	8819	8641	8613
37	8597	8427	8298	8345	8409	8389	8290	8446	8611	8637	8821	9095	9079	9063	8801	8624	8597
38	8580	8400	8269	8311	8372	8350	8258	8421	8586	8614	8794	9078	9056	9048	8783	8604	8580
39	8561	8375	8239	8273	8330	8317	8218	8393	8565	8589	8775	9064	9033	9032	8760	8584	8561
40	8550	8348	8204	8234	8280	8282	8185	8363	8542	8565	8760	9049	9004	9016	8743	8563	8550
41	8534	8319	8168	8193	8238	8239	8152	8332	8523	8543	8738	9028	8969	8996	8719	8545	8534
42	8511	8288	8128	8162	8188	8199	8119	8302	8516	8520	8714	9008	8928	8981	8698	8525	8511
43	8492	8258	8093	8121	8132	8152	8081	8279	8506	8499	8686	8976	8882	8955	8674	8504	8492
44	8476	8224	8059	8076	8071	8104	8043	8246	8484	8475	8668	8940	8832	8928	8657	8481	8476
45	8451	8186	8015	8033	8009	8058	8000	8212	8469	8452	8648	8907	8782	8898	8634	8458	8451
46	8438	8154	7978	7983	7940	8007	7959	8180	8454	8428	8621	8861	8727	8856	8610	8439	8438
47	8426	8121	7931	7921	7873	7948	7908	8148	8433	8404	8588	8819	8676	8816	8581	8416	8426
48	8397	8084	7890	7866	7810	7891	7860	8111	8411	8383	8557	8777	8629	8766	8559	8394	8397
49	8370	8051	7845	7811	7737	7825	7815	8081	8389	8353	8522	8734	8567	8733	8524	8375	8370
50	8348	8017	7791	7751	7668	7769	7756	8050	8373	8330	8478	8694	8513	8695	8484	8355	8348
51	8326	7985	7738	7694	7601	7705	7704	8014	8346	8308	8441	8660	8454	8654	8451	8336	8326
52	8308	7950	7686	7634	7529	7649	7652	7978	8315	8280	8400	8622	8409	8626	8404	8320	8308
53	8282	7912	7633	7576	7453	7588	7603	7948	8283	8256	8359	8589	8366	8589	8362	8294	8282
54	8261	7876	7577	7522	7387	7533	7547	7912	8258	8236	8317	8556	8325	8557	8322	8269	8261
55	8227	7846	7522	7464	7310	7475	7497	7880	8232	8215	8280	8529	8285	8532	8270	8242	8227
56	8193	7806	7473	7414	7232	7412	7438	7850	8203	8194	8238	8506	8258	8509	8230	8221	8193
57	8168	7772	7408	7351	7152	7350	7393	7822	8166	8172	8201	8490	8235	8489	8187	8206	8168
58	8140	7737	7361	7299	7066	7293	7346	7797	8140	8150	8163	8481	8219	8473	8144	8178	8140
59	8100	7709	7310	7244	6971	7229	7299	7769	8108	8140	8130	8481	8219	8463	8110	8157	8100

60	8058	7678	7259	7186	6878	7151	7251	7750	8070	8126	8099	8488	8226	8456	8070	8139	8058
61	8016	7653	7216	7120	6807	7075	7205	7733	8027	8119	8067	8501	8260	8467	8040	8132	8016
62	7973	7624	7170	7044	6738	6984	7166	7720	7971	8120	8046	8523	8311	8483	8003	8119	7973
63	7930	7603	7120	6972	6695	6912	7128	7714	7895	8126	8023	8567	8376	8514	7972	8114	7930
64	7877	7588	7086	6918	6664	6857	7088	7714	7772	8138	8002	8625	8472	8563	7953	8113	7877
65	7809	7574	7046	6866	6640	6814	7051	7704	7592	8155	7991	8692	8589	8623	7928	8126	7809
66	7696	7566	7010	6828	6642	6781	7018	7687	7328	8161	7982	8779	8721	8700	7914	8133	7696
67	7513	7557	6970	6811	6671	6771	6973	7651	6989	8158	7978	8877	8848	8801	7901	8165	7513
68	7234	7536	6923	6811	6724	6781	6919	7557	6550	8120	7990	9014	8931	8928	7901	8197	7234
69	6837	7475	6874	6822	6788	6801	6879	7400	6097	8012	8014	9154	8925	9078	7919	8219	6837
70	6411	7364	6829	6848	6850	6842	6858	7174	5621	7847	8043	9229	8791	9174	7945	8200	6411
71	5936	7177	6796	6888	6885	6900	6863	6880	5087	7606	8090	9261	8539	9279	7984	8106	5936
72	5443	6897	6787	6929	6851	6961	6891	6469	4609	7287	8145	9230	8174	9303	8029	7918	5443
73	4899	6514	6799	6969	6727	7019	6945	6052	4162	6899	8219	9081	7652	9183	8089	7647	4899
74	4438	6112	6830	6993	6513	7048	7013	5604	3743	6418	8303	8788	7131	9027	8169	7274	4438
75	3993	5683	6885	6978	6161	7017	7073	5143	3320	5938	8383	8390	6562	8697	8238	6807	3993
76	3535	5236	6919	6889	5707	6895	7113	4671	2952	5433	8452	7893	5917	8207	8301	6337	3535
77	3148	4722	6940	6727	5164	6688	7104	4154	2617	4942	8491	7289	5148	7647	8354	5756	3148
78	2785	4252	6938	6462	4574	6327	7055	3691	2306	4412	8492	6532	4449	6984	8387	5247	2785
79	2449	3788	6901	6068	3973	5735	6962	3259	2015	3961	8426	5804	3778	6277	8393	4681	2449
80	2140	3341	6807	5512	3369	5142	6795	2876	1724	3529	8242	5087	3173	5546	8329	4224	2140
81	1819	2882	6615	4942	2861	4556	6443	2489	1480	3118	7853	4309	2579	4762	8111	3725	1819
82	1553	2510	6274	4358	2381	3925	5894	2152	1234	2681	7131	3578	2098	4054	7632	3236	1553
83	1301	2166	5666	3676	1908	3277	5166	1831	1012	2310	6192	2869	1665	3341	6995	2788	1301
84	1049	1848	4957	3038	1430	2517	4262	1538	788	1973	4873	2179	1298	2587	6077	2394	1049
85	836	1504	4131	2378	1033	1875	3115	1259	598	1621	3436	1568	932	1927	4901	2017	836
86	633	1208	3135	1780	685	1290	2022	933	422	1267	2106	1064	679	1400	3443	1613	633
87	446	898	1937	1120	382	684	926	639	268	856	999	641	444	943	2108	1184	446
88	263	572	949	605	122	209	255	291	106	374	330	285	234	515	1114	813	263
89	112	269	339	153	28	36	30	31	30	34	58	62	75	199	403	377	112
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179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone		Lumens	%Lamp	%Lum
FL	(0-30)	3725.1	8.6	8.6
FM	(30-60)	9541.8	22.0	22.0
FH	(60-80)	7273.1	16.8	16.8
FVH	(80-90)	1268.7	2.9	2.9
BL	(0-30)	3736.2	8.6	8.6
BM	(30-60)	9550.3	22.1	22.1
BH	(60-80)	7132.2	16.5	16.5
BVH	(80-90)	1060.8	2.5	2.5
UL	(90-100)	0.0	0.0	0.0
UH	(100-180)	0.0	0.0	0.0
Total		43288.2	100.0	100.0
BUG Rating		**B5-U0-G5**		

2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-300/480 (Setting at 4000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	277.0	60	1.040	287.67	0.999	1.2
4E-D1	480.0	60	0.621	286.45	0.961	7.05
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3942
Duv	-0.0002
Chromaticity (x, y)	x=0.3829 y=0.3777
Chromaticity (u', v')	u'=0.2263 v'=0.5024
Color Rendering Index (CRI)	84
R9	15
Rf	85
Rg	97
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	83	R9	15
R2	89	R10	74
R3	94	R11	84
R4	84	R12	63
R5	83	R13	85
R6	85	R14	97
R7	87	R15	77
R8	67	--	--
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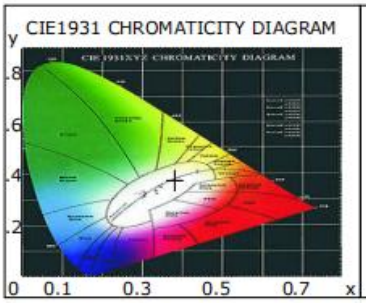
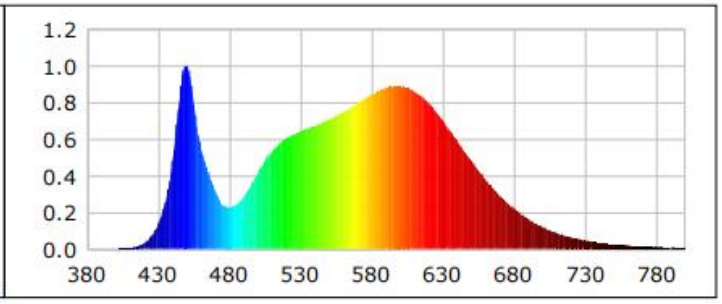
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	45638.8	45193.2	>=10000(-10%)
Luminous Efficacy (lm/W)	158.65	157.77	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	157.10		

Spectral Power Distribution & Chromaticity Diagram

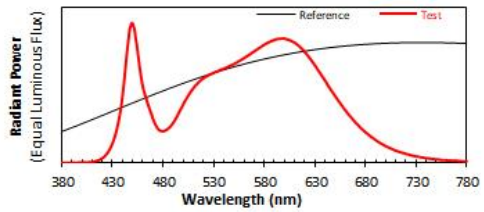


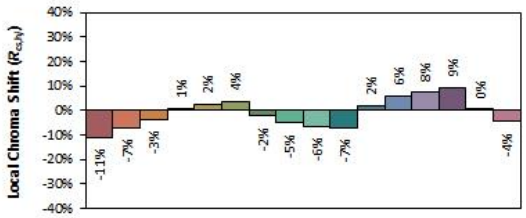


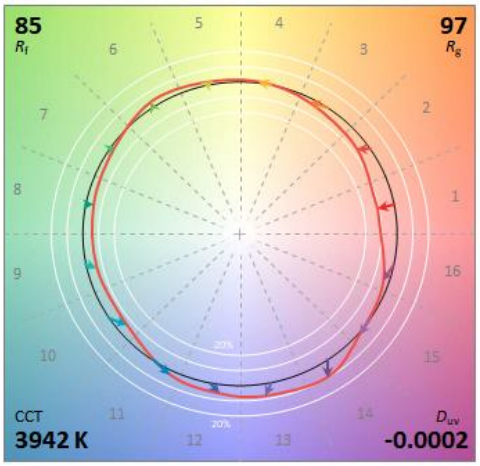
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0011	0.9605	535	0.6274	537.1836	690	0.2892	247.5572
385	0.0005	0.4345	540	0.6438	551.1530	695	0.2520	215.7372
390	0.0005	0.4069	545	0.6603	565.2734	700	0.2187	187.2449
395	0.0008	0.7256	550	0.6741	577.1713	705	0.1897	162.3879
400	0.0013	1.0858	555	0.6902	590.9244	710	0.1638	140.2546
405	0.0024	2.0970	560	0.7079	606.0779	715	0.1389	118.9416
410	0.0059	5.0277	565	0.7286	623.7918	720	0.1194	102.2312
415	0.0144	12.2964	570	0.7501	642.1771	725	0.1031	88.2866
420	0.0323	27.6117	575	0.7739	662.5569	730	0.0869	74.4217
425	0.0688	58.8884	580	0.7977	682.9374	735	0.0740	63.3670
430	0.1375	117.7065	585	0.8230	704.5775	740	0.0633	54.1883
435	0.2615	223.8925	590	0.8463	724.5864	745	0.0535	45.8329
440	0.4802	411.1574	595	0.8644	740.0575	750	0.0460	39.3694
445	0.8319	712.2216	600	0.8810	754.2636	755	0.0389	33.3384
450	0.9990	855.3197	605	0.8894	761.4965	760	0.0328	28.0818
455	0.7918	677.8640	610	0.8897	761.7373	765	0.0280	24.0089
460	0.5501	470.9266	615	0.8793	752.8337	770	0.0249	21.2869
465	0.4223	361.5903	620	0.8619	737.9037	775	0.0195	16.6949
470	0.3165	270.9370	625	0.8327	712.8958	780	0.0183	15.6912
475	0.2425	207.6266	630	0.7930	678.9044	785	0.0156	13.3503
480	0.2259	193.3744	635	0.7507	642.7263	790	0.0135	11.5663
485	0.2441	209.0006	640	0.6982	597.7240	795	0.0113	9.6887
490	0.2856	244.5375	645	0.6451	552.2790	800	0.0094	8.0272
495	0.3484	298.2951	650	0.5894	504.6138			
500	0.4189	358.6714	655	0.5319	455.3551			
505	0.4827	413.3044	660	0.4784	409.6079			
510	0.5357	458.6670	665	0.4270	365.5725			
515	0.5765	493.5949	670	0.3771	322.8152			
520	0.6052	518.1360	675	0.3329	285.0306			
525	0.6274	537.1836	680	0.2892	247.5572			
530	0.6438	551.1530	685	0.2520	215.7372			

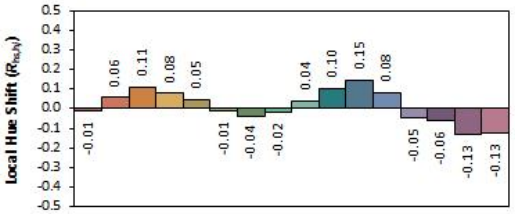
TM30

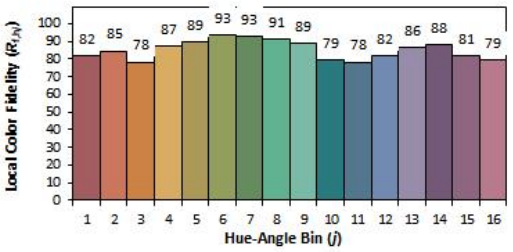
ANSI/IES TM-30-18 Color Rendition Report

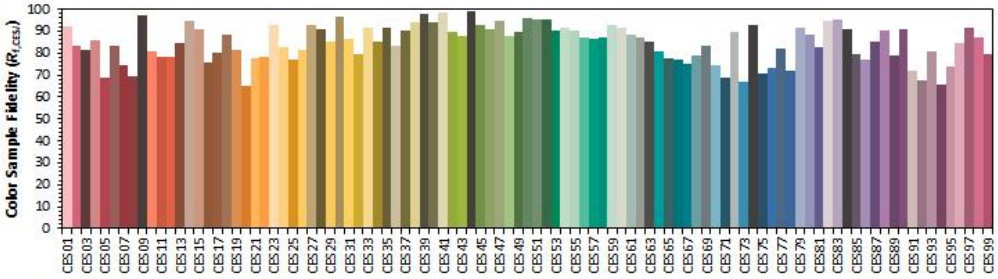












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3829
y	0.3777
u'	0.2263
v'	0.5024

CIE 13.3-1995 (CRI)

R_a	84
R_9	15

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

2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-300/480 (Setting at 5000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	277.0	60	1.070	296	0.999	1.3
4E-D1	480.0	60	0.639	294.88	0.961	7.21
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	4882
Duv	-0.0002
Chromaticity (x, y)	x=0.3485 y=0.354
Chromaticity (u', v')	u'=0.2128 v'=0.4863
Color Rendering Index (CRI)	83
R9	13
Rf	83
Rg	98
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	82	R9	13
R2	88	R10	70
R3	91	R11	83
R4	84	R12	58
R5	82	R13	84
R6	82	R14	95
R7	88	R15	78
R8	70	--	--
--	--	--	--
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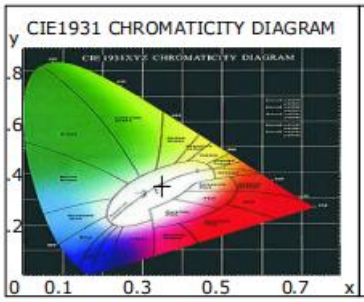
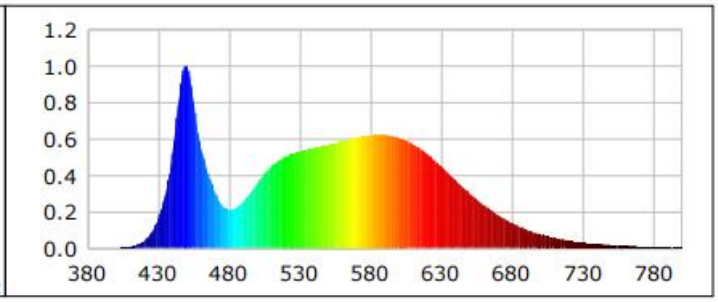
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	44995.0	44671.4	>=10000(-10%)
Luminous Efficacy (lm/W)	152.01	151.49	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	150.92		

Spectral Power Distribution & Chromaticity Diagram

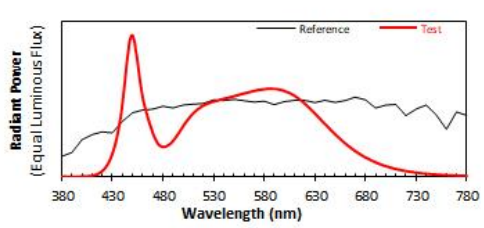


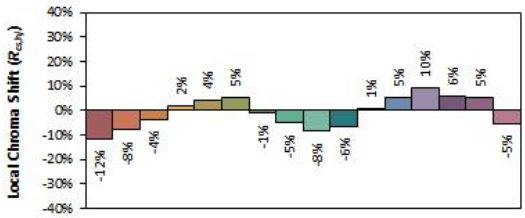


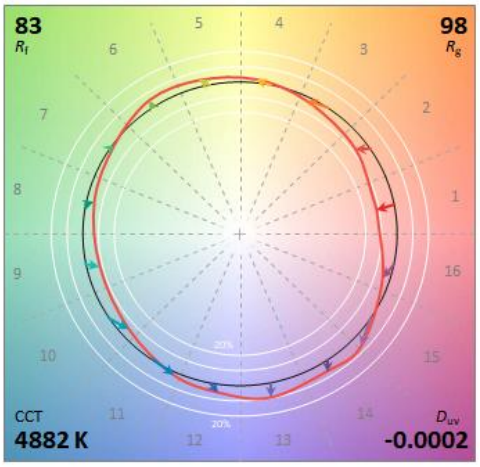
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.5129	535	0.5194	568.5632	690	0.1811	198.2397
385	0.0003	0.3683	540	0.5311	581.3915	695	0.1575	172.3761
390	0.0007	0.7962	545	0.5417	592.9558	700	0.1369	149.9136
395	0.0016	1.7086	550	0.5514	603.6667	705	0.1183	129.4885
400	0.0013	1.4696	555	0.5597	612.7081	710	0.1027	112.4570
405	0.0029	3.1936	560	0.5683	622.1438	715	0.0875	95.8262
410	0.0076	8.3704	565	0.5787	633.4828	720	0.0759	83.1149
415	0.0183	20.0198	570	0.5882	643.9419	725	0.0639	69.9958
420	0.0405	44.2872	575	0.5977	654.2699	730	0.0548	59.9649
425	0.0835	91.3847	580	0.6060	663.3458	735	0.0465	50.9068
430	0.1631	178.5132	585	0.6146	672.8175	740	0.0400	43.7493
435	0.2983	326.5795	590	0.6185	677.0359	745	0.0346	37.9153
440	0.5228	572.2945	595	0.6218	680.6965	750	0.0296	32.3604
445	0.8504	930.9427	600	0.6211	679.9119	755	0.0253	27.6416
450	0.9987	1093.2527	605	0.6154	673.7178	760	0.0208	22.7950
455	0.8013	877.1507	610	0.6058	663.2185	765	0.0182	19.9559
460	0.5582	611.0123	615	0.5928	648.9004	770	0.0157	17.1760
465	0.4178	457.4026	620	0.5720	626.1830	775	0.0119	12.9970
470	0.3074	336.5490	625	0.5467	598.4889	780	0.0113	12.3679
475	0.2329	254.9948	630	0.5168	565.7266	785	0.0104	11.3937
480	0.2108	230.7633	635	0.4834	529.1976	790	0.0076	8.2837
485	0.2219	242.9612	640	0.4474	489.8172	795	0.0067	7.3468
490	0.2542	278.2749	645	0.4109	449.7842	800	0.0062	6.8271
495	0.3037	332.4603	650	0.3733	408.7044			
500	0.3589	392.8575	655	0.3350	366.7719			
505	0.4073	445.8812	660	0.2998	328.1784			
510	0.4495	492.0368	665	0.2675	292.8227			
515	0.4801	525.5200	670	0.2359	258.1963			
520	0.5028	550.3826	675	0.2079	227.6328			
525	0.5194	568.5632	680	0.1811	198.2397			
530	0.5311	581.3915	685	0.1575	172.3761			

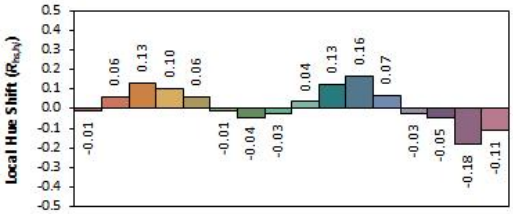
TM30

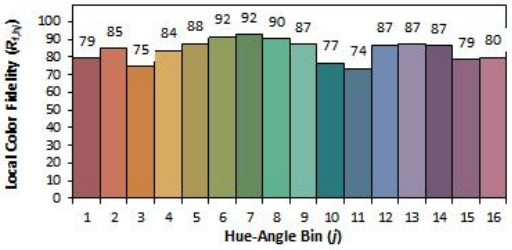
ANSI/IES TM-30-18 Color Rendition Report

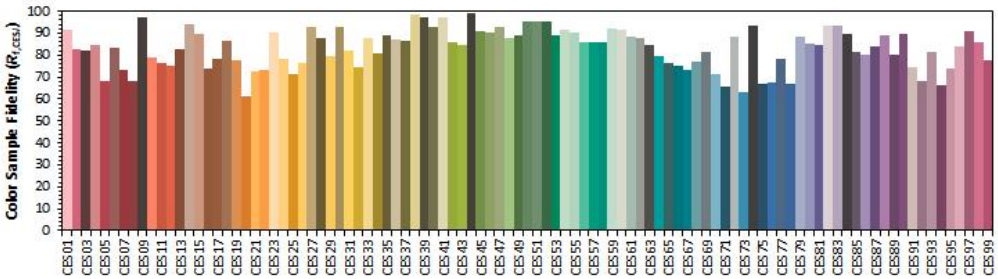












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3485
y	0.3540
u'	0.2128
v'	0.4863

CIE 13.3-1995 (CRI)

R_a	83
R_9	13

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3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2025-01-08
AC Power Source	CHP-500C	DYBWD010159	2025-01-02
Standard Lamp*	24V/150W	DYJYR040040	2025-01-14
Standard Lamp**	24V/100W	DYBWR030014	2025-01-14
Digital Power Meter	WT500	DYDWQ20010	2025-01-02
Integral Sphere (2M)	2M	DYJCE120067	2025-01-08
Digital Power Meter	WT500	DYDWQ200006	2025-01-02
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2025-01-08

* 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 ******