LM-79-08 Test Report

For

RAB LIGHTING INC

(Brand Name: RAB LIGHTING)

408 W 14th St New York, NY 10014 United States

Replacement Lamps for High Bay Luminaires (UL Type B)

Model name(s): HIDFA-270S-EX39-8CCT-BYP/480V

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

Test & Report By:

Odin Wang

Engineer: Odin Wang

Date:2023-04-04

Review By:

Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB LIGHTING INC	
Brand Name	RAB LIGHTING	
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for High Bay Luminaires (UL Type B)	
Rated Voltage / Frequency	277-480Vac, 50/60 Hz	
Nominal Power	270W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RC35003P1 L128-5080RC35003P1	
Sample Number	UTC2303033E-J1	
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	2023-03-25
Date of Test	2023-03-30
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-79-2008 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 277 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 277 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
Self-absorption:
AST-CLW16-270WXYZH1-ad30K:1.171
AST-CLW16-270WXYZH1-ad40K:1.171
AST-CLW16-270WXYZH1-ad40K:1.171

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 277 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	2023-03-30	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V	@270W 3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303 3E-J1	277.0	60	1.000	268.10	0.968	19.01
	480.0	60	0.628	270.74	0.898	18.88
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

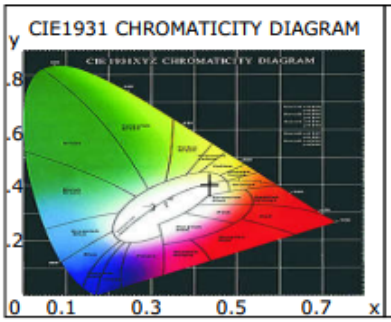
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3001
Duv	-0.0009
Chromaticity (x, y)	x=0.4356 y=0.4014
Chromaticity (u', v')	u(u')=0.2508 v'=0.5201
Color Rendering Index (CRI)	81
R9	-2
Rf	83
Rg	96
Rcs,h1(%)	-12

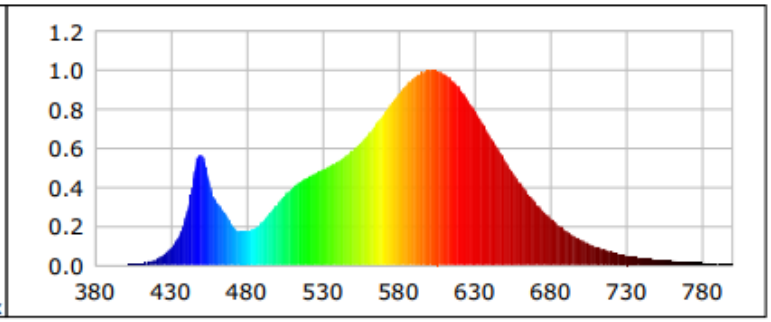
Special Color Rendering Indices			
R1	79	R9	-2
R2	90	R10	77
R3	96	R11	78
R4	79	R12	71
R5	80	R13	81
R6	88	R14	98
R7	80	R15	71
R8	55	--	--
--	--	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	32056.9	32211.3	>=10000(-10%)
Luminous Efficacy (lm/W)	119.57	118.98	Standard: >= 120(-3%)
Most worst Luminous/Highest	118.40		
Zonal lumens in the 20-50° (%)	30.50		>=30%(-10%)
Beam Angle (°)	160.5	--	--
Center Beam Candle Power (cd)	1786	--	--

Spectral Power Distribution & Chromaticity Diagram



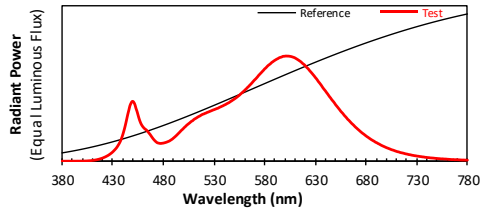


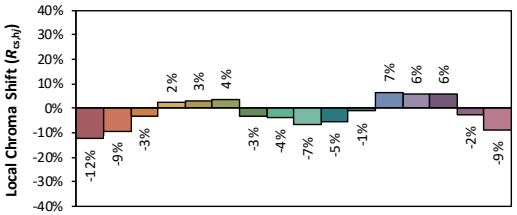
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.4282	535	0.4700	402.6653	690	0.3204	274.4400
385	0.0001	0.1190	540	0.4897	419.5530	695	0.2778	237.9666
390	0.0004	0.3391	545	0.5100	436.9372	700	0.2403	205.8471
395	0.0007	0.5715	550	0.5333	456.8503	705	0.2063	176.7000
400	0.0010	0.8393	555	0.5583	478.2667	710	0.1777	152.2315
405	0.0028	2.3631	560	0.5905	505.8352	715	0.1517	129.9314
410	0.0074	6.3255	565	0.6271	537.2162	720	0.1293	110.7685
415	0.0158	13.5402	570	0.6715	575.2339	725	0.1099	94.1485
420	0.0297	25.4349	575	0.7201	616.9264	730	0.0937	80.2290
425	0.0525	44.9562	580	0.7727	661.9601	735	0.0801	68.6135
430	0.0878	75.2303	585	0.8257	707.3523	740	0.0684	58.6264
435	0.1448	124.0611	590	0.8782	752.3184	745	0.0577	49.4623
440	0.2532	216.8796	595	0.9215	789.4019	750	0.0490	41.9673
445	0.4491	384.7756	600	0.9591	821.6475	755	0.0421	36.0828
450	0.5684	486.9200	605	0.9859	844.6291	760	0.0357	30.6167
455	0.4400	376.9347	610	0.9985	855.3814	765	0.0305	26.1341
460	0.3252	278.5954	615	0.9969	854.0083	770	0.0260	22.2358
465	0.2777	237.8823	620	0.9812	840.6174	775	0.0225	19.2778
470	0.2125	182.0563	625	0.9501	813.9077	780	0.0189	16.2148
475	0.1727	147.9661	630	0.9079	777.7486	785	0.0150	12.8876
480	0.1721	147.4228	635	0.8537	731.3799	790	0.0140	11.9663
485	0.1882	161.2025	640	0.7954	681.4415	795	0.0112	9.5613
490	0.2199	188.3947	645	0.7326	627.5774	800	0.0101	8.6914
495	0.2653	227.2578	650	0.6669	571.3506			
500	0.3134	268.4692	655	0.6014	515.2075			
505	0.3572	305.9999	660	0.5364	459.5318			
510	0.3955	338.8254	665	0.4756	407.4069			
515	0.4253	364.3534	670	0.4209	360.5778			
520	0.4495	385.0886	675	0.3679	315.2050			
525	0.4700	402.6653	680	0.3204	274.4400			
530	0.4897	419.5530	685	0.2778	237.9666			

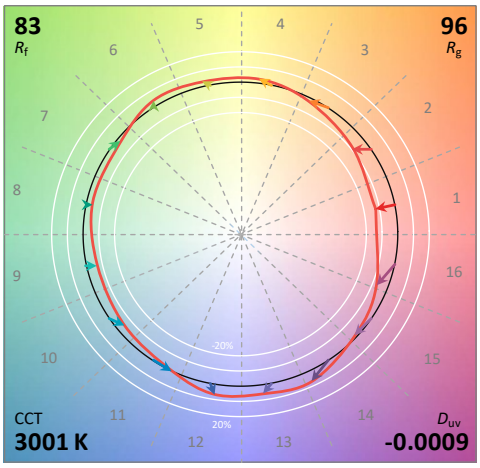
TM30

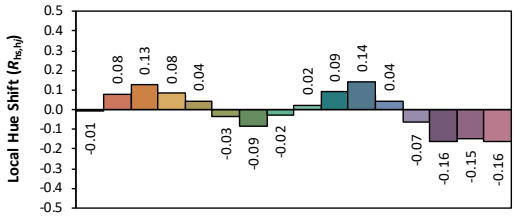
ANSI/IES TM-30-18 Color Rendition Report

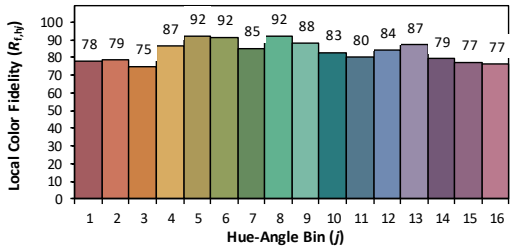
Source:	L128-3080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2023/3/30	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @270W 3000K

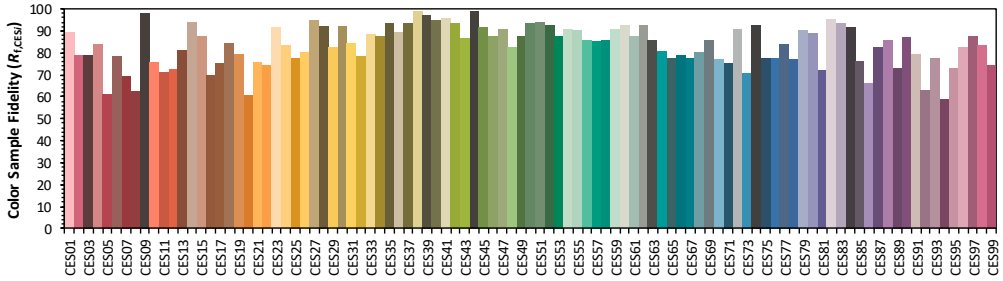












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4356
y	0.4014
u'	0.2509
v'	0.5201

CIE 13.3-1995 (CRI)

R_a	81
R_9	-2

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

Zonal Lumen Tabulation

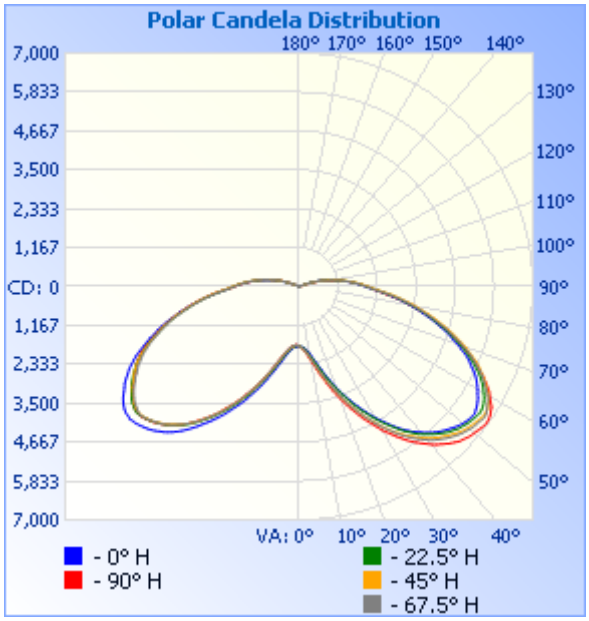
Zonal Lumen Summary

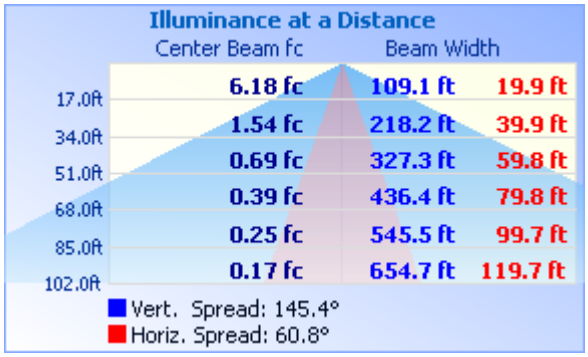
Zone	Lumens	% Lamp	% Luminaire
0-30	2,715.3	8.5%	8.5%
0-40	5,957.1	18.6%	18.6%
0-60	16,450.7	51.3%	51.3%
60-90	12,916.5	40.3%	40.3%
70-100	9,044.0	28.2%	28.2%
90-120	2,615.7	8.2%	8.2%
0-90	29,367.2	91.6%	91.6%
90-180	2,690.7	8.4%	8.4%
0-180	32,057.9	100%	100%

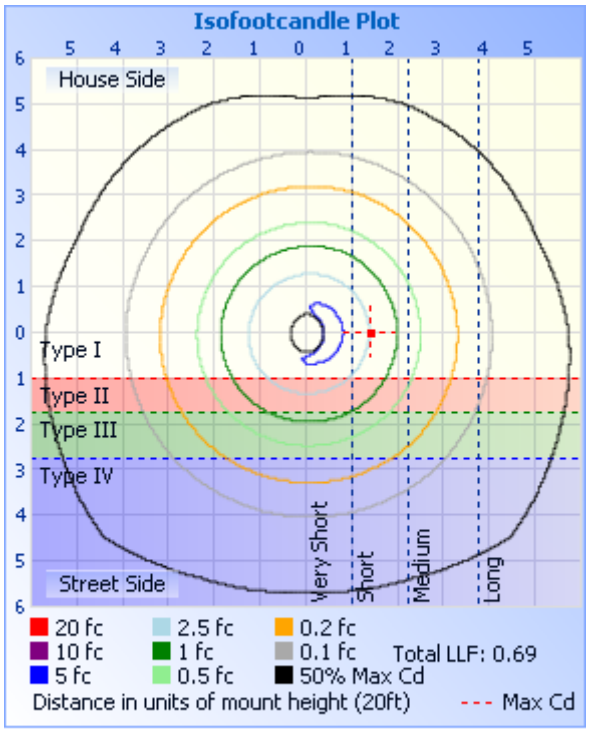
Lumens Per Zone

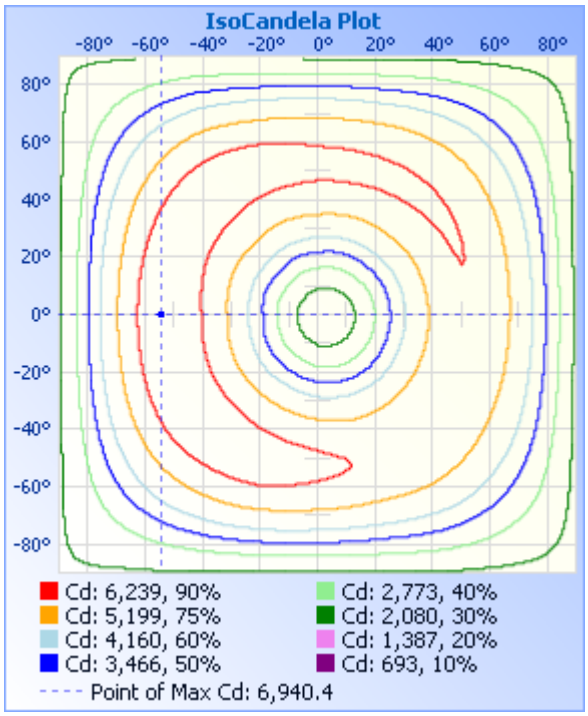
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	184.7	0.6%	90-100	1,710.2	5.3%
10-20	745.6	2.3%	100-110	781.1	2.4%
20-30	1,785.0	5.6%	110-120	124.4	0.4%
30-40	3,241.9	10.1%	120-130	25.5	0.1%
40-50	4,749.7	14.8%	130-140	17.5	0.1%
50-60	5,743.8	17.9%	140-150	13.8	0%
60-70	5,582.7	17.4%	150-160	10.2	0%
70-80	4,440.7	13.9%	160-170	6.2	0%
80-90	2,893.1	9.0%	170-180	1.9	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	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786	1786
1	1793	1799	1804	1807	1803	1797	1797	1793	1781	1767	1768	1766	1766	1767	1777	1790	1793
2	1801	1809	1823	1821	1824	1814	1812	1808	1790	1771	1767	1748	1752	1759	1783	1798	1801
3	1817	1825	1840	1847	1856	1838	1830	1823	1798	1782	1765	1749	1740	1762	1785	1809	1817
4	1833	1856	1883	1885	1892	1872	1857	1833	1814	1792	1779	1769	1761	1777	1806	1819	1833
5	1863	1887	1915	1926	1942	1924	1892	1870	1825	1805	1792	1785	1783	1798	1814	1838	1863
6	1895	1932	1971	1973	1997	1983	1939	1913	1853	1819	1806	1797	1799	1815	1832	1863	1895
7	1936	1980	2035	2032	2072	2034	1995	1955	1898	1855	1833	1819	1810	1835	1862	1906	1936
8	1985	2037	2103	2096	2155	2108	2055	2018	1931	1893	1859	1841	1836	1862	1897	1947	1985
9	2049	2108	2176	2176	2232	2188	2134	2080	1982	1940	1898	1880	1872	1898	1935	2003	2049
10	2124	2178	2265	2263	2326	2269	2210	2162	2043	1990	1948	1921	1917	1941	1989	2057	2124
11	2204	2250	2354	2357	2420	2371	2309	2241	2117	2057	1996	1978	1970	1990	2054	2124	2204
12	2289	2356	2449	2457	2526	2471	2405	2328	2186	2122	2063	2039	2030	2053	2128	2211	2289
13	2382	2438	2568	2552	2647	2571	2492	2420	2290	2200	2128	2101	2097	2123	2211	2298	2382
14	2487	2540	2677	2668	2772	2690	2611	2535	2374	2282	2216	2191	2183	2207	2304	2392	2487
15	2588	2654	2801	2789	2892	2810	2719	2626	2463	2371	2308	2281	2269	2303	2401	2479	2588
16	2700	2764	2925	2901	3010	2917	2835	2748	2571	2468	2398	2371	2365	2389	2497	2601	2700
17	2830	2878	3043	3034	3141	3059	2980	2864	2689	2577	2521	2478	2484	2503	2611	2706	2830
18	2952	2999	3169	3165	3288	3191	3100	2980	2797	2698	2619	2590	2583	2616	2725	2811	2952
19	3072	3129	3292	3295	3420	3327	3237	3104	2930	2803	2731	2697	2701	2717	2840	2936	3072
20	3202	3252	3439	3431	3562	3456	3364	3243	3052	2922	2866	2835	2818	2860	2990	3049	3202
21	3330	3382	3575	3570	3706	3594	3494	3375	3184	3047	2974	2958	2948	2982	3117	3170	3330
22	3469	3510	3703	3716	3841	3730	3631	3507	3307	3169	3108	3081	3075	3105	3241	3311	3469
23	3597	3641	3836	3844	3978	3882	3781	3647	3439	3296	3238	3211	3200	3228	3371	3434	3597
24	3723	3789	3974	3990	4107	4027	3915	3784	3567	3433	3359	3349	3336	3373	3508	3565	3723
25	3858	3919	4119	4123	4260	4160	4053	3921	3709	3570	3494	3472	3458	3492	3650	3709	3858
26	3988	4059	4254	4263	4400	4300	4188	4070	3845	3689	3630	3618	3587	3626	3789	3849	3988
27	4124	4187	4393	4404	4536	4450	4344	4208	3976	3818	3765	3755	3735	3762	3921	3986	4124
28	4257	4313	4529	4528	4672	4587	4491	4358	4104	3956	3893	3889	3873	3905	4058	4127	4257
29	4399	4456	4658	4681	4809	4723	4641	4493	4240	4092	4019	4020	4000	4039	4197	4258	4399

30	4524	4578	4795	4808	4971	4859	4784	4629	4389	4228	4148	4157	4128	4181	4339	4388	4524
31	4653	4715	4921	4940	5091	4990	4923	4773	4517	4355	4285	4306	4258	4317	4472	4511	4653
32	4780	4842	5051	5070	5225	5124	5047	4906	4651	4476	4426	4433	4398	4466	4606	4643	4780
33	4912	4967	5190	5200	5357	5277	5195	5038	4783	4610	4555	4566	4544	4593	4746	4791	4912
34	5053	5095	5292	5334	5488	5407	5328	5163	4908	4729	4683	4682	4669	4724	4866	4910	5053
35	5169	5228	5414	5459	5622	5551	5460	5291	5037	4848	4806	4806	4787	4849	4998	5034	5169
36	5292	5349	5524	5573	5746	5654	5588	5419	5178	4966	4928	4938	4916	4977	5140	5171	5292
37	5404	5458	5621	5692	5850	5760	5712	5562	5309	5089	5056	5060	5039	5103	5273	5297	5404
38	5518	5573	5727	5795	5960	5883	5837	5665	5433	5207	5169	5168	5159	5232	5395	5418	5518
39	5608	5688	5832	5897	6066	5996	5952	5778	5558	5312	5277	5274	5281	5371	5510	5535	5608
40	5705	5783	5923	5998	6177	6097	6050	5876	5671	5417	5385	5393	5387	5478	5610	5641	5705
41	5803	5867	6012	6091	6274	6198	6147	5985	5782	5503	5476	5478	5499	5582	5711	5736	5803
42	5889	5958	6099	6177	6360	6294	6232	6069	5878	5593	5562	5583	5591	5698	5813	5827	5889
43	5969	6038	6177	6249	6439	6382	6323	6165	5958	5674	5664	5668	5673	5784	5893	5909	5969
44	6040	6112	6242	6322	6527	6460	6407	6239	6029	5753	5728	5744	5755	5863	5971	5992	6040
45	6109	6188	6318	6390	6599	6534	6483	6325	6109	5818	5797	5821	5830	5938	6050	6075	6109
46	6167	6266	6378	6451	6675	6600	6568	6398	6174	5879	5861	5874	5894	5998	6111	6151	6167
47	6228	6315	6444	6509	6717	6672	6637	6461	6236	5942	5929	5935	5958	6058	6172	6205	6228
48	6288	6376	6497	6566	6763	6723	6704	6523	6284	5997	5983	5987	6007	6115	6232	6273	6288
49	6343	6423	6552	6606	6815	6764	6752	6577	6331	6046	6024	6041	6056	6171	6278	6331	6343
50	6386	6456	6590	6653	6833	6809	6808	6649	6379	6090	6072	6078	6110	6218	6328	6383	6386
51	6422	6499	6621	6695	6868	6856	6839	6680	6403	6127	6102	6120	6140	6272	6365	6423	6422
52	6456	6527	6653	6720	6900	6882	6881	6725	6436	6158	6110	6110	6141	6303	6410	6454	6456
53	6475	6557	6688	6743	6932	6922	6869	6743	6423	6151	6099	6077	6142	6310	6408	6483	6475
54	6493	6584	6718	6773	6940	6904	6863	6730	6424	6115	6077	6045	6106	6285	6380	6460	6493
55	6454	6603	6745	6791	6933	6862	6818	6689	6388	6094	6045	6019	6064	6244	6341	6418	6454
56	6415	6592	6739	6764	6898	6819	6749	6626	6339	6054	5995	5960	6010	6194	6309	6386	6415
57	6366	6568	6726	6710	6847	6769	6684	6567	6282	5990	5936	5900	5975	6129	6239	6314	6366
58	6306	6522	6674	6652	6796	6699	6596	6524	6212	5920	5878	5833	5896	6050	6170	6241	6306
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67	5487	5606	5764	5699	5708	5619	5540	5539	5300	5117	5120	5045	5149	5228	5344	5411	5487
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69	5187	5307	5445	5413	5358	5305	5244	5218	5004	4860	4858	4798	4908	4995	5081	5123	5187
70	5050	5141	5308	5228	5211	5118	5080	5066	4853	4728	4723	4660	4784	4825	4962	5010	5050
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90	2004	2043	2094	2047	2028	2001	2008	1993	1979	1986	2018	1966	1949	1939	2004	1986	2004
91	1912	1950	1988	1940	1951	1902	1919	1898	1902	1905	1927	1871	1863	1863	1907	1895	1912
92	1825	1859	1891	1840	1846	1818	1838	1821	1817	1815	1847	1806	1780	1774	1832	1809	1825
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106	662	630	617	597	550	555	582	633	670	699	717	717	700	698	694	681	662
107	578	557	533	500	459	478	515	541	572	620	640	650	644	629	621	609	578
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168	35	24	27	24	10	13	17	21	29	28	18	28	15	15	17	26	35
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179	24	23	24	24	15	10	13	19	20	26	16	24	12	0	15	23	24
180	22	22	17	18	11	0	13	18	21	22	22	17	0	13	18	21	22

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-03-30	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @270W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303 3E-J1	277.0	60	0.963	258.10	0.968	19.14
	480.0	60	0.604	260.18	0.897	18.97
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3895
Duv	-0.0027
Chromaticity (x, y)	x=0.3832 y=0.3727
Chromaticity (u', v')	u(u')=0.2285 v'=0.5002
Color Rendering Index (CRI)	83
R9	8
Rf	83
Rg	95
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	82	R9	8
R2	92	R10	80
R3	95	R11	80
R4	81	R12	64
R5	83	R13	85
R6	88	R14	98
R7	83	R15	76
R8	62	--	--
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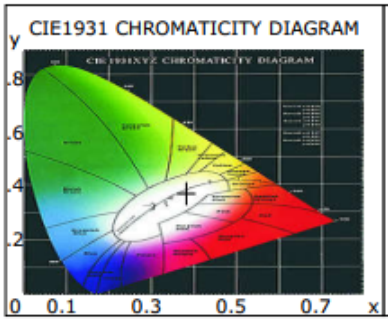
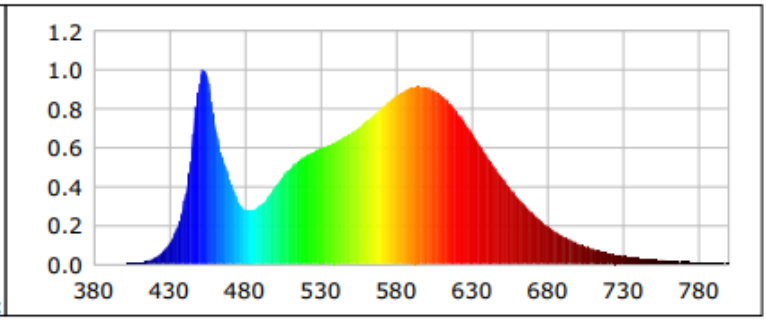
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	35163.5	35368.9	>= 1000(-10%)
Luminous Efficacy (lm/W)	136.24	135.94	Standard: >= 105(-3%)
Most worst Luminous/Highest	135.15		

Spectral Power Distribution & Chromaticity Diagram



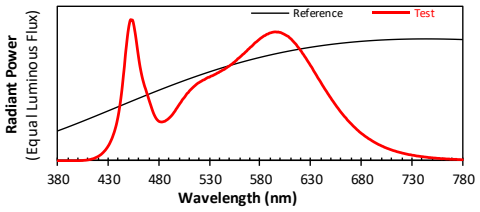


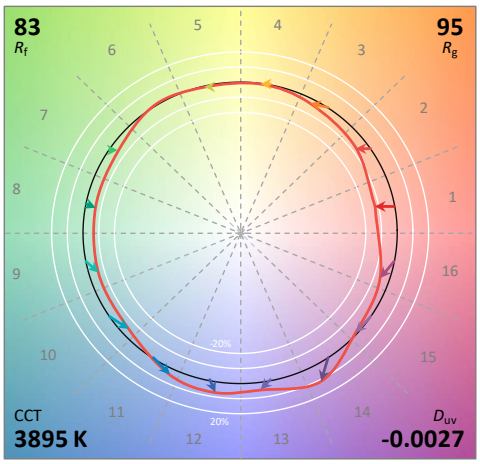
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0007	0.5813	535	0.5753	501.8924	690	0.2629	229.3612
385	0.0006	0.5606	540	0.5929	517.2209	695	0.2271	198.0968
390	0.0009	0.8085	545	0.6110	533.0332	700	0.1954	170.4656
395	0.0003	0.2523	550	0.6310	550.4428	705	0.1688	147.2724
400	0.0009	0.7508	555	0.6497	566.8373	710	0.1454	126.8434
405	0.0027	2.3175	560	0.6743	588.2631	715	0.1241	108.2242
410	0.0067	5.8662	565	0.7016	612.0695	720	0.1062	92.6730
415	0.0149	12.9726	570	0.7346	640.8502	725	0.0904	78.8478
420	0.0312	27.2370	575	0.7665	668.7244	730	0.0773	67.4550
425	0.0590	51.4560	580	0.8019	699.5384	735	0.0657	57.3074
430	0.1054	91.9516	585	0.8363	729.6032	740	0.0562	49.0615
435	0.1845	160.9864	590	0.8654	755.0116	745	0.0477	41.6131
440	0.3250	283.5270	595	0.8883	774.9735	750	0.0403	35.1990
445	0.6046	527.4838	600	0.9066	790.8857	755	0.0341	29.7603
450	0.9354	816.0617	605	0.9139	797.3018	760	0.0297	25.9487
455	0.9718	847.7631	610	0.9103	794.1218	765	0.0256	22.3304
460	0.7333	639.7551	615	0.8928	778.8890	770	0.0218	19.0215
465	0.5529	482.3389	620	0.8677	756.9973	775	0.0181	15.7930
470	0.4386	382.6763	625	0.8304	724.4048	780	0.0147	12.8515
475	0.3332	290.6822	630	0.7833	683.3474	785	0.0133	11.6443
480	0.2804	244.5864	635	0.7315	638.1932	790	0.0113	9.8301
485	0.2789	243.3521	640	0.6743	588.2782	795	0.0092	8.0512
490	0.3021	263.5413	645	0.6155	536.9518	800	0.0079	6.8779
495	0.3436	299.7809	650	0.5573	486.1662			
500	0.3972	346.5303	655	0.4993	435.5899			
505	0.4472	390.1695	660	0.4452	388.4220			
510	0.4932	430.2944	665	0.3930	342.8595			
515	0.5286	461.1358	670	0.3445	300.5279			
520	0.5558	484.8538	675	0.3031	264.3960			
525	0.5753	501.8924	680	0.2629	229.3612			
530	0.5929	517.2209	685	0.2271	198.0968			

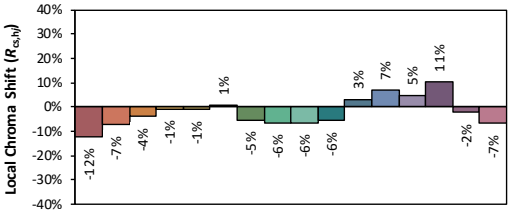
TM30

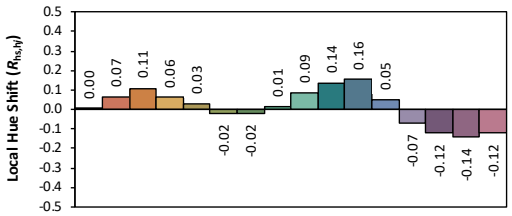
ANSI/IES TM-30-18 Color Rendition Report

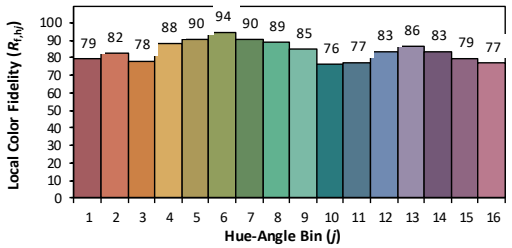
Source:	L128-3080RC35003P1 L128-5080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	203-03-30	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @270W 4000K

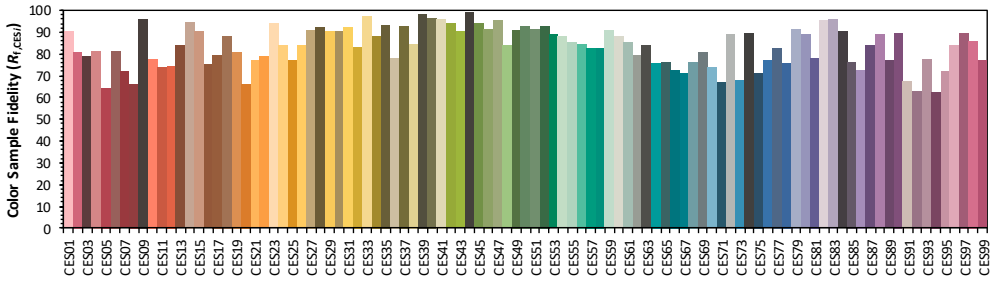












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3832
y	0.3727
u'	0.2286
v'	0.5002

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.

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-03-30	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @270W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303 3E-J1	277.0	60	1.001	268.40	0.968	19.20
	480.0	60	0.628	270.81	0.898	18.87
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	4974
Duv	0.0004
Chromaticity (x, y)	x=0.3459 y=0.3531
Chromaticity (u', v')	u(u')=0.2114 v'=0.4855
Color Rendering Index (CRI)	82
R9	1
Rf	82
Rg	95
Rcs,h1(%)	-14

Special Color Rendering Indices			
R1	80	R9	1
R2	89	R10	73
R3	94	R11	78
R4	80	R12	56
R5	80	R13	83
R6	84	R14	97
R7	85	R15	75
R8	64	--	--
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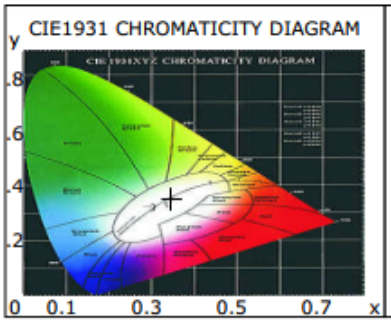
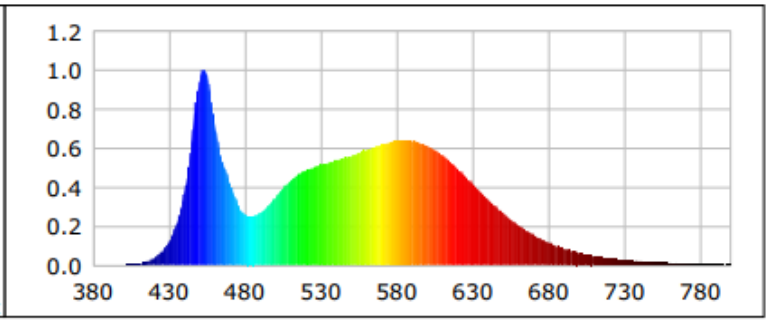
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	34290.8	34414.5	>=10000(-10%)
Luminous Efficacy (lm/W)	127.76	127.08	Standard: >= 120(-3%)
Most worst Luminous/Highest	126.62		

Spectral Power Distribution & Chromaticity Diagram



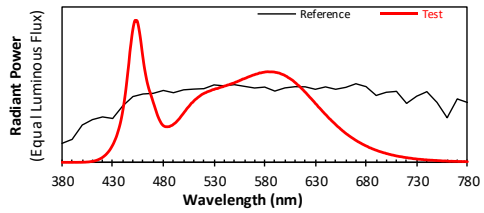


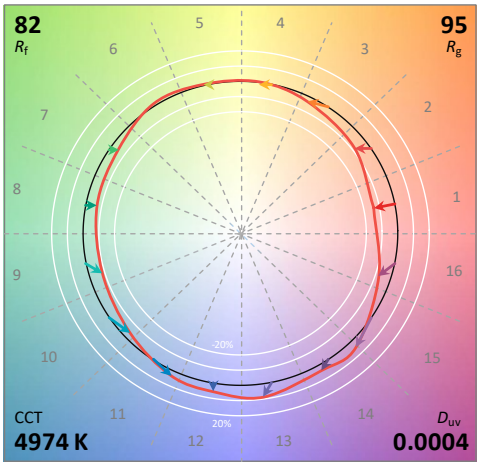
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.6541	535	0.5011	571.0549	690	0.1550	176.6539
385	0.0004	0.5055	540	0.5138	585.5341	695	0.1348	153.5909
390	0.0003	0.2900	545	0.5255	598.9065	700	0.1161	132.2755
395	0.0006	0.6783	550	0.5376	612.6449	705	0.1002	114.2438
400	0.0010	1.1736	555	0.5476	624.0308	710	0.0857	97.6803
405	0.0029	3.3516	560	0.5604	638.6819	715	0.0734	83.6354
410	0.0072	8.2091	565	0.5749	655.1082	720	0.0621	70.7192
415	0.0170	19.3164	570	0.5901	672.5068	725	0.0531	60.5157
420	0.0353	40.2349	575	0.6052	689.6368	730	0.0453	51.5727
425	0.0680	77.4952	580	0.6176	703.8605	735	0.0395	45.0125
430	0.1219	138.8838	585	0.6309	718.9465	740	0.0333	37.9212
435	0.2111	240.6130	590	0.6362	725.0206	745	0.0288	32.8276
440	0.3644	415.2352	595	0.6377	726.7202	750	0.0237	27.0323
445	0.6380	727.1016	600	0.6356	724.2901	755	0.0203	23.0963
450	0.9401	1071.3343	605	0.6274	714.9587	760	0.0177	20.1292
455	0.9753	1111.4780	610	0.6117	697.1428	765	0.0156	17.8161
460	0.7317	833.7952	615	0.5901	672.4736	770	0.0128	14.5345
465	0.5375	612.5711	620	0.5627	641.2540	775	0.0104	11.8703
470	0.4240	483.1376	625	0.5309	605.0033	780	0.0091	10.4124
475	0.3183	362.7308	630	0.4948	563.8482	785	0.0081	9.1878
480	0.2587	294.8627	635	0.4554	518.9353	790	0.0076	8.6897
485	0.2519	287.0600	640	0.4151	473.0288	795	0.0056	6.3732
490	0.2688	306.3212	645	0.3766	429.1959	800	0.0049	5.5416
495	0.3021	344.3192	650	0.3379	385.0891			
500	0.3474	395.9367	655	0.3018	343.9175			
505	0.3926	447.3501	660	0.2666	303.7894			
510	0.4323	492.6649	665	0.2339	266.5426			
515	0.4622	526.7479	670	0.2046	233.1305			
520	0.4857	553.5096	675	0.1787	203.6493			
525	0.5011	571.0549	680	0.1550	176.6539			
530	0.5138	585.5341	685	0.1348	153.5909			

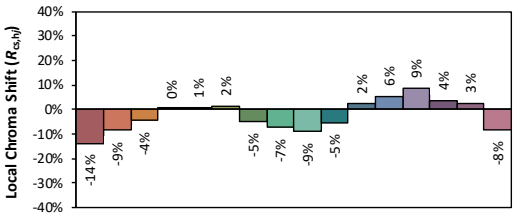
TM-30

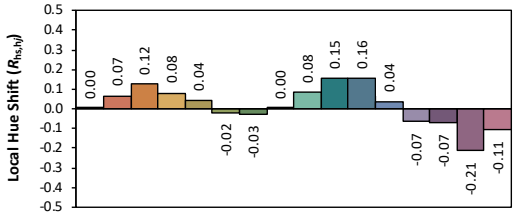
ANSI/IES TM-30-18 Color Rendition Report

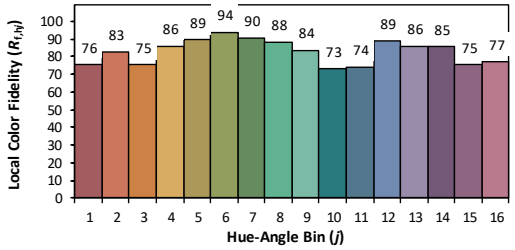
Source:	L128-5080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2023/3/30	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @270W 5000K

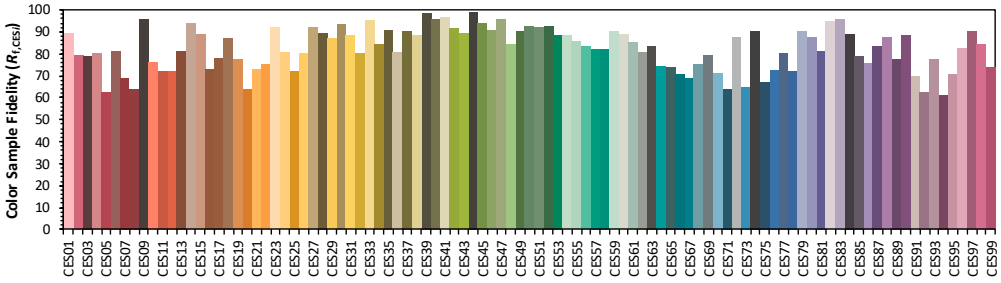












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3459
y	0.3531
u'	0.2114
v'	0.4855

CIE 13.3-1995 (CRI)

R_a	82
R_9	1

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

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBWD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	**Test Ambient:**	25.3 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @200W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.767	203.67	0.967	17.6
	480.0	60	0.493	207.91	0.883	18.4
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	2996
Duv	-0.00118
Chromaticity (x, y)	x=0.4355 y=0.4006
Chromaticity (u', v')	u(u')=0.2511 v'=0.5198
Color Rendering Index (CRI)	83.2
R9	10
Rf	84
Rg	94
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	83	R9	10
R2	94	R10	85
R3	94	R11	80
R4	80	R12	72
R5	83	R13	86
R6	93	R14	98
R7	80	R15	75
R8	59	--	--
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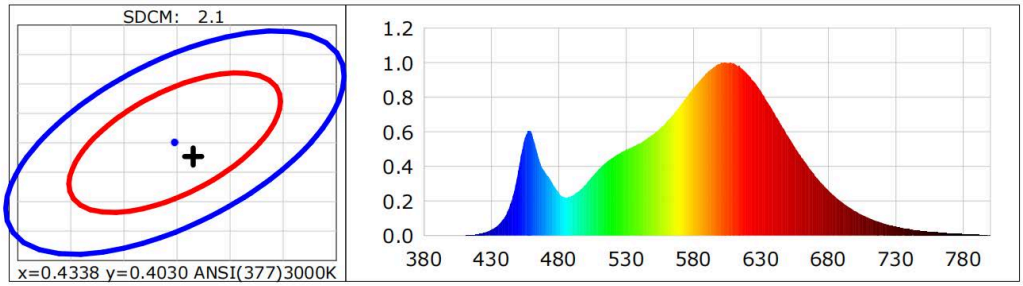
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	33038.9	32354.1	>=10000(-10%)
Luminous Efficacy (lm/W)	162.22	161.77	Standard: >= 120(-3%)
Most worst Luminous/Highest	158.16		
Zonal lumens in the 20-50º (%)	12.8	--	>=30(-10%)
Beam Angle (º)	170.9	--	--
Center Beam Candle Power (cd)	10401	--	--

Spectral Power Distribution & Chromaticity Diagram

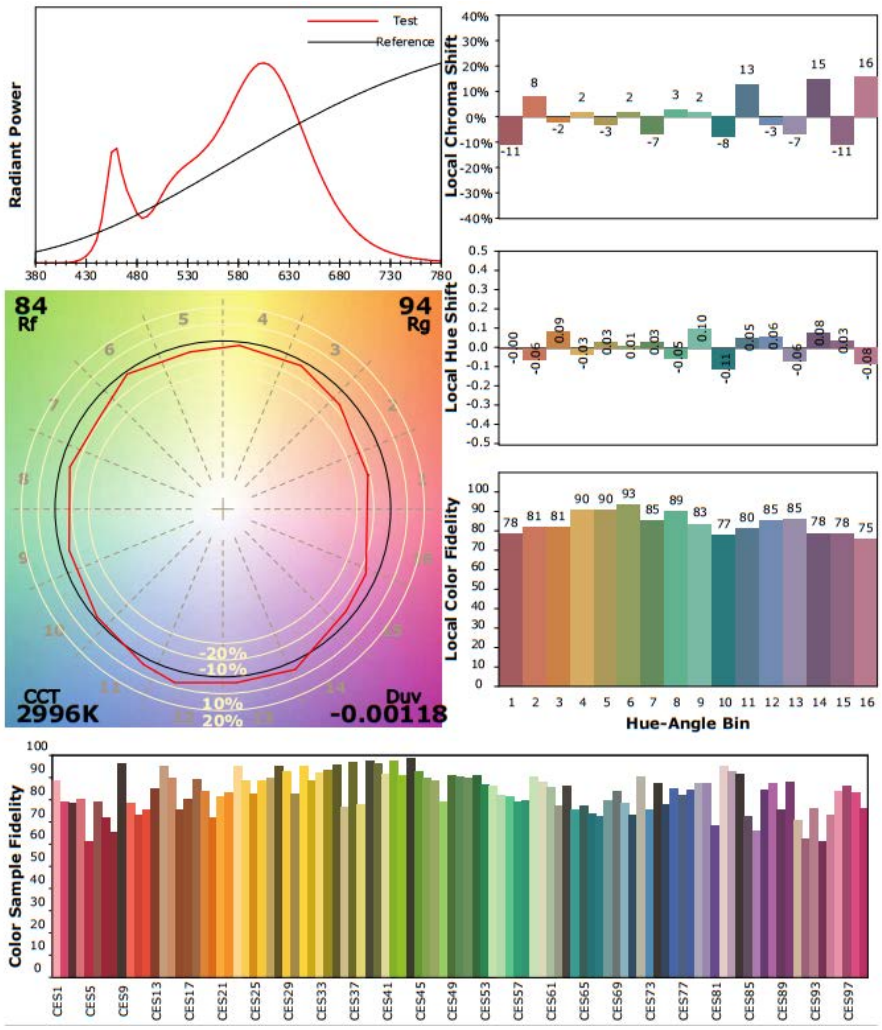


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0177	525	0.4745	318.6013	670	0.3454	231.9416
385	0.0003	0.2004	530	0.4961	333.1497	675	0.3015	202.4515
390	0.0000	0.0051	535	0.5144	345.3902	680	0.2612	175.4027
395	0.0000	0.0099	540	0.5333	358.1261	685	0.2250	151.0834
400	0.0001	0.0995	545	0.5592	375.4913	690	0.1929	129.5447
405	0.0001	0.0869	550	0.5853	393.0004	695	0.1651	110.8967
410	0.0014	0.9407	555	0.6204	416.5795	700	0.1411	94.7211
415	0.0040	2.6879	560	0.6597	442.9895	705	0.1194	80.1766
420	0.0089	5.9680	565	0.7014	470.9609	710	0.1020	68.4737
425	0.0180	12.1124	570	0.7501	503.6683	715	0.0860	57.7157
430	0.0347	23.2892	575	0.8028	539.0491	720	0.0731	49.1026
435	0.0618	41.4723	580	0.8535	573.1170	725	0.0619	41.5686
440	0.1104	74.1023	585	0.9005	604.6530	730	0.0525	35.2820
445	0.2025	135.9776	590	0.9431	633.2818	735	0.0450	30.2387
450	0.3791	254.5346	595	0.9745	654.3983	740	0.0374	25.0832
455	0.5691	382.1654	600	0.9983	670.3290	745	0.0312	20.9256
460	0.5908	396.7122	605	0.9965	669.1244	750	0.0265	17.7938
465	0.4460	299.4678	610	0.9936	667.2250	755	0.0228	15.2999
470	0.3635	244.1145	615	0.9697	651.1320	760	0.0186	12.5080
475	0.3054	205.0896	620	0.9331	626.5897	765	0.0172	11.5383
480	0.2458	165.0646	625	0.8889	596.9152	770	0.0142	9.5073
485	0.2197	147.5402	630	0.8339	559.9297	775	0.0119	7.9958
490	0.2325	156.0999	635	0.7698	516.9286	780	0.0097	6.5353
495	0.2576	172.9686	640	0.7065	474.4377	785	0.0082	5.4786
500	0.2958	198.6466	645	0.6385	428.7594	790	0.0073	4.9219
505	0.3420	229.6622	650	0.5755	386.4543	795	0.0059	3.9648
510	0.3869	259.7718	655	0.5113	343.3412	800	0.0039	2.5985
515	0.4218	283.2503	660	0.4524	303.7827			
520	0.4507	302.6496	665	0.3980	267.2721			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-3080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/09/20	**Model:**	HIDFA-270S-EX39-8CCTBYP/480V @200W 3000K



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

x	0.4355
y	0.4006
u'	0.2511
v'	0.5198

(CRI)

R_a	83.2
R_9	10

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	**Test Ambient:**	25.2 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	HIDFA-270S-EX39-8CCT-BYP /480V @200W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.746	198.14	0.967	17.8
	480.0	60	0.472	105.61	0.873	18.9
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3717
Duv	-0.00277
Chromaticity (x, y)	x=0.3914 y=0.3773
Chromaticity (u', v')	u(u')=0.2321 v'=0.5034
Color Rendering Index (CRI)	85.4
R9	19
Rf	85
Rg	95
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	85	R9	19
R2	93	R10	83
R3	96	R11	83
R4	83	R12	68
R5	85	R13	87
R6	90	R14	99
R7	84	R15	79
R8	66	--	--
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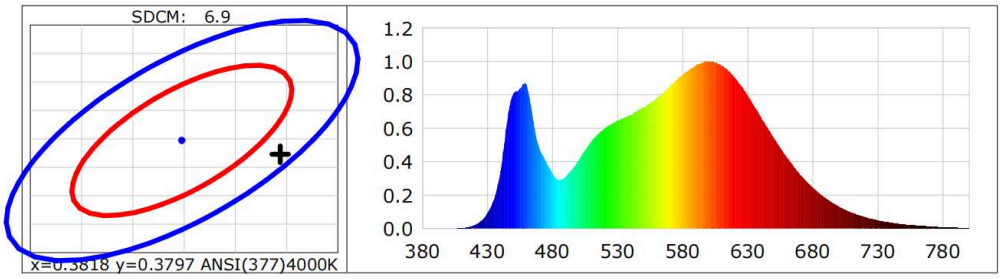
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	35334.1	35262.8	>= 10000(-10%)
Luminous Efficacy (lm/W)	178.33	176.59	Standard: >= 120(-3%)
Most worst Luminous/Highest	172.93		

Spectral Power Distribution & Chromaticity Diagram

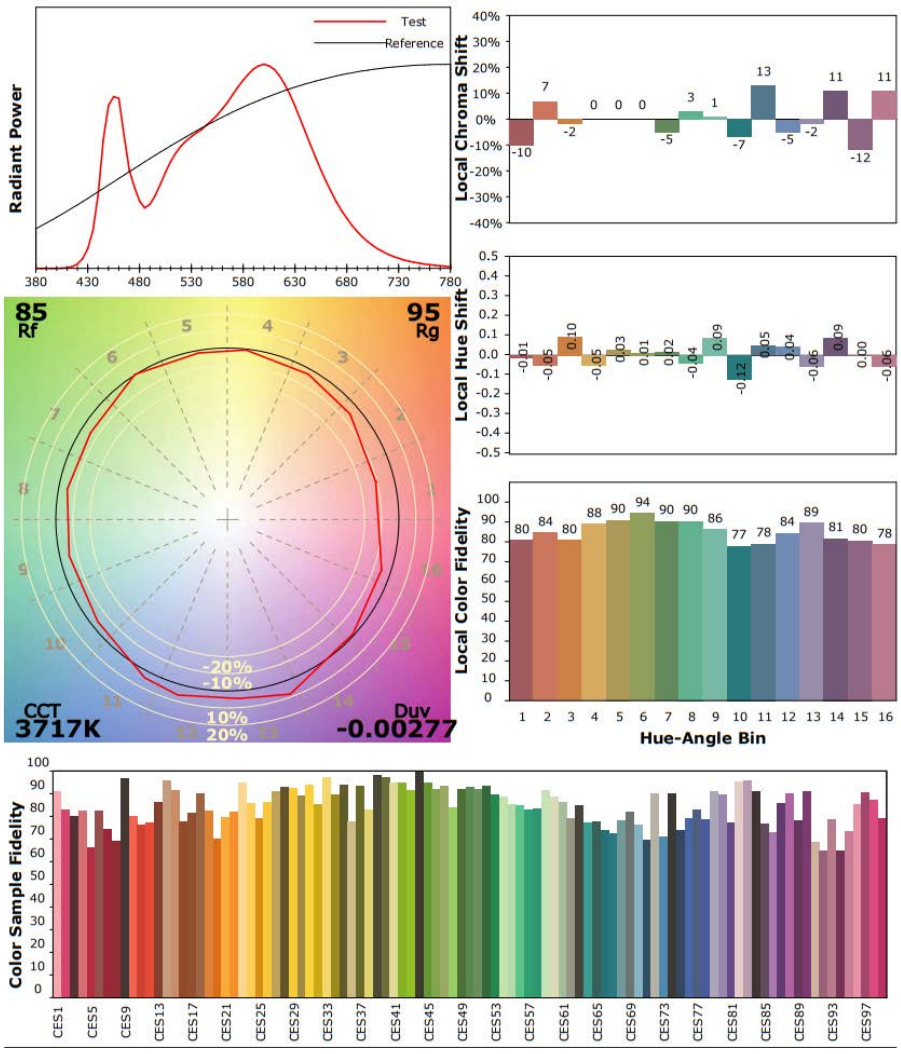


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.1070	525	0.6238	394.6093	670	0.3230	204.3286
385	0.0003	0.2118	530	0.6454	408.2789	675	0.2819	178.2922
390	0.0000	0.0179	535	0.6634	419.6454	680	0.2443	154.5051
395	0.0006	0.3898	540	0.6784	429.1616	685	0.2100	132.8569
400	0.0006	0.4100	545	0.7030	444.6629	690	0.1814	114.7722
405	0.0013	0.8361	550	0.7243	458.1582	695	0.1545	97.7023
410	0.0035	2.2271	555	0.7520	475.7169	700	0.1317	83.2828
415	0.0089	5.6220	560	0.7826	495.0591	705	0.1120	70.8672
420	0.0214	13.5478	565	0.8126	513.9965	710	0.0959	60.6743
425	0.0463	29.2679	570	0.8489	537.0054	715	0.0813	51.4540
430	0.0953	60.2592	575	0.8870	561.0811	720	0.0686	43.4072
435	0.1784	112.8247	580	0.9199	581.8673	725	0.0586	37.0543
440	0.3481	220.1753	585	0.9499	600.8731	730	0.0502	31.7453
445	0.6377	403.4055	590	0.9762	617.4937	735	0.0421	26.6493
450	0.8116	513.3665	595	0.9922	627.6338	740	0.0351	22.1977
455	0.8395	531.0566	600	1.0000	632.5668	745	0.0298	18.8464
460	0.8608	544.5314	605	0.9888	625.4900	750	0.0248	15.6679
465	0.6461	408.6738	610	0.9749	616.6931	755	0.0217	13.7088
470	0.4756	300.8610	615	0.9424	596.1165	760	0.0178	11.2741
475	0.3973	251.3056	620	0.9008	569.8121	765	0.0154	9.7269
480	0.3268	206.7216	625	0.8534	539.8185	770	0.0130	8.2010
485	0.2902	183.5570	630	0.7954	503.1210	775	0.0103	6.5439
490	0.3114	196.9526	635	0.7313	462.5696	780	0.0086	5.4569
495	0.3546	224.2993	640	0.6693	423.3788	785	0.0073	4.6068
500	0.4083	258.2959	645	0.6039	382.0286	790	0.0061	3.8457
505	0.4689	296.5975	650	0.5412	342.3182	795	0.0057	3.5860
510	0.5231	330.8917	655	0.4799	303.5439	800	0.0043	2.7245
515	0.5664	358.2702	660	0.4254	269.1098			
520	0.5990	378.9067	665	0.3727	235.7810			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-4080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/09/20	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @135W 4000K



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

x	0.3914
y	0.3773
u'	0.2321
v'	0.5034

(CRI)

R_a	85.4
R_9	19

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	2024-09-20	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @200W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404 1E-A3	277.0	60	0.764	202.91	0.967	17.6
	480.0	60	0.494	207.93	0.883	18.4
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	4950
Duv	0.00084
Chromaticity (x, y)	x=0.3467 y=0.3546
Chromaticity (u', v')	u(u')=0.2114 v'=0.4864
Color Rendering Index (CRI)	82.7
R9	8
Rf	83
Rg	95
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	81	R9	8
R2	88	R10	70
R3	92	R11	81
R4	82	R12	57
R5	81	R13	83
R6	83	R14	96
R7	87	R15	76
R8	68	--	--
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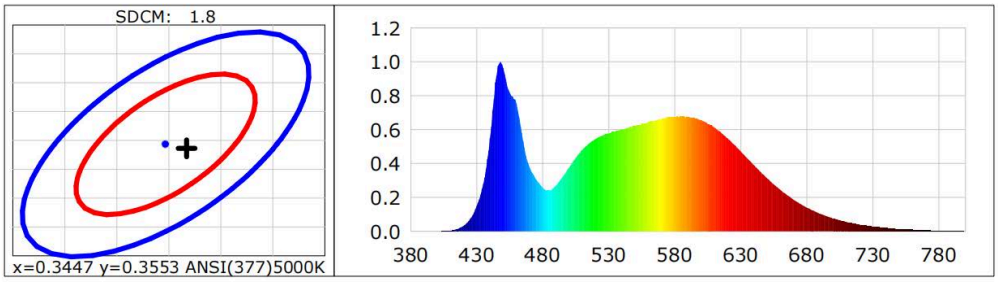
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	35183.1	34564.2	>= 10000(-10%)
Luminous Efficacy (lm/W)	173.40	172.83	Standard: >= 120(-3%)
Most worst Luminous/Highest	171.59		

Spectral Power Distribution & Chromaticity Diagram

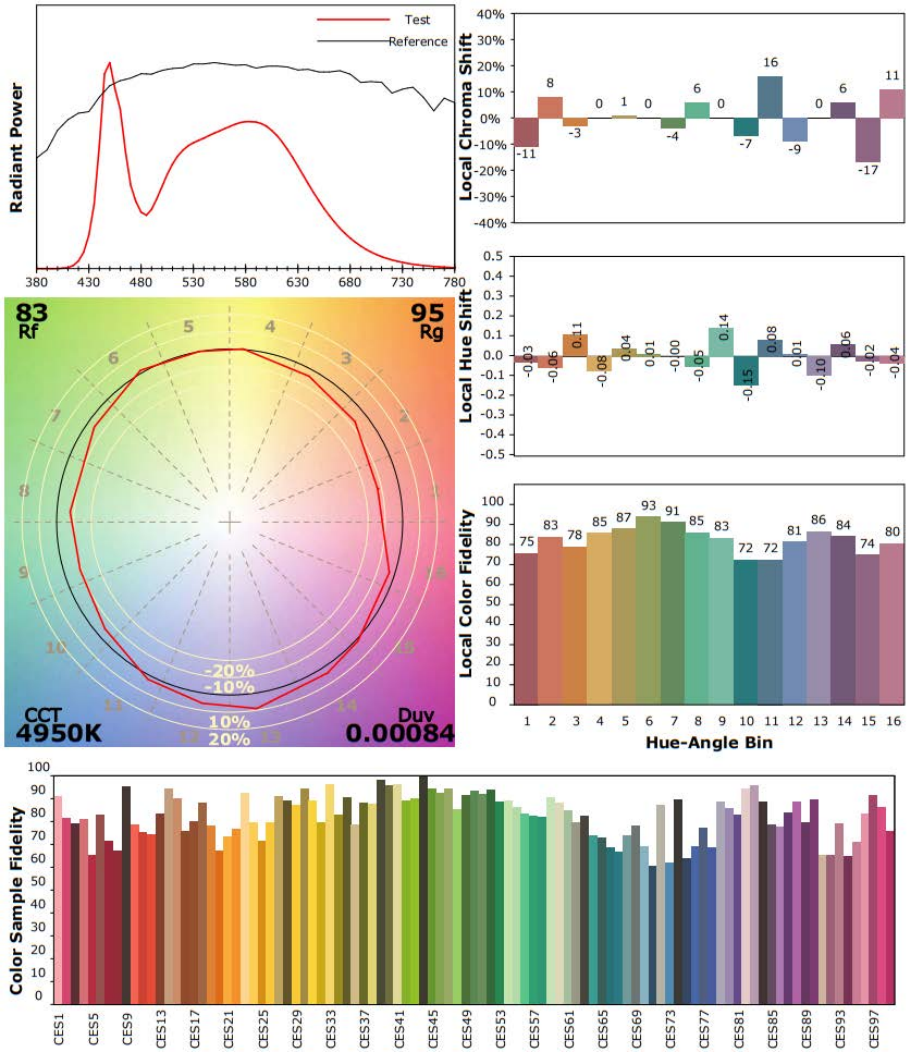


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.4068	525	0.5638	470.3352	670	0.1859	155.0905
385	0.0001	0.1018	530	0.5796	483.4828	675	0.1619	135.0549
390	0.0005	0.4193	535	0.5908	492.8027	680	0.1401	116.8389
395	0.0006	0.5042	540	0.5995	500.0754	685	0.1220	101.7850
400	0.0007	0.5986	545	0.6117	510.2426	690	0.1045	87.1409
405	0.0021	1.7708	550	0.6221	518.8926	695	0.0895	74.6687
410	0.0050	4.1670	555	0.6343	529.0851	700	0.0761	63.4724
415	0.0144	12.0493	560	0.6451	538.1194	705	0.0654	54.5942
420	0.0336	28.0043	565	0.6529	544.5999	710	0.0561	46.8080
425	0.0739	61.6111	570	0.6631	553.1020	715	0.0480	40.0354
430	0.1529	127.5404	575	0.6714	560.0151	720	0.0409	34.1022
435	0.2840	236.8855	580	0.6746	562.7538	725	0.0346	28.8921
440	0.5509	459.5497	585	0.6762	564.0302	730	0.0293	24.4438
445	0.9221	769.1828	590	0.6741	562.3280	735	0.0246	20.4840
450	0.9641	804.2126	595	0.6671	556.4329	740	0.0208	17.3357
455	0.8168	681.3460	600	0.6563	547.4792	745	0.0172	14.3888
460	0.7547	629.5148	605	0.6332	528.2009	750	0.0146	12.1870
465	0.5330	444.6325	610	0.6123	510.7414	755	0.0119	9.9039
470	0.3766	314.1689	615	0.5827	486.0693	760	0.0100	8.3768
475	0.3062	255.3979	620	0.5485	457.5513	765	0.0086	7.1553
480	0.2569	214.2932	625	0.5117	426.8396	770	0.0072	6.0138
485	0.2409	200.9859	630	0.4709	392.8027	775	0.0056	4.6581
490	0.2715	226.4890	635	0.4304	359.0302	780	0.0046	3.8405
495	0.3206	267.4138	640	0.3913	326.3645	785	0.0045	3.7431
500	0.3765	314.0409	645	0.3498	291.8207	790	0.0030	2.4988
505	0.4328	361.0274	650	0.3128	260.9362	795	0.0028	2.3269
510	0.4816	401.7604	655	0.2764	230.5376	800	0.0014	1.1786
515	0.5185	432.5458	660	0.2451	204.4539			
520	0.5451	454.7232	665	0.2140	178.5096			

TM-30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-5080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/11/29	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @200W 5000K



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

x	0.3467
y	0.3546
u'	0.2114
v'	0.4864

(CRI)

R_a	82.7
R_9	8

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

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	**Test Ambient:**	25.3 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @135W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.528	137.61	0.947	20.3
	480.0	60	0.417	143.11	0.712	26.9
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	2981
Duv	-0.00123
Chromaticity (x, y)	x=0.4365 y=0.4009
Chromaticity (u', v')	u(u')=0.2517 v'=0.5201
Color Rendering Index (CRI)	83.4
R9	11
Rf	84
Rg	93
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	83	R9	11
R2	94	R10	86
R3	94	R11	80
R4	80	R12	72
R5	84	R13	86
R6	93	R14	98
R7	80	R15	75
R8	59	--	--
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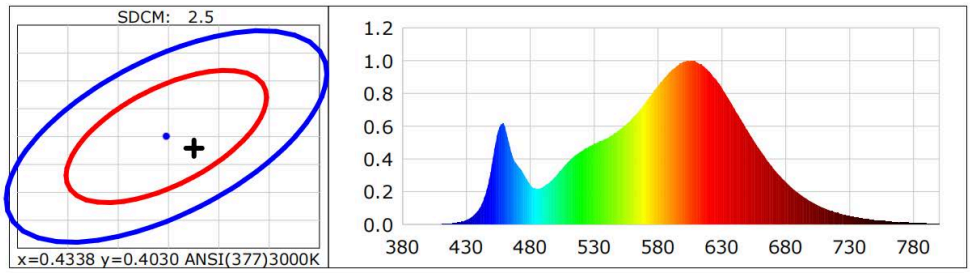
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	23160.6	22623.7	>=10000(-10%)
Luminous Efficacy (lm/W)	168.31	167.58	Standard: >= 120(-3%)
Most worst Luminous/Highest	166.28		
Zonal lumens in the 20-50º (%)	10.8	--	>=30(-10%)
Beam Angle (º)	171.1	--	--
Center Beam Candle Power (cd)	732.3	--	--

Spectral Power Distribution & Chromaticity Diagram

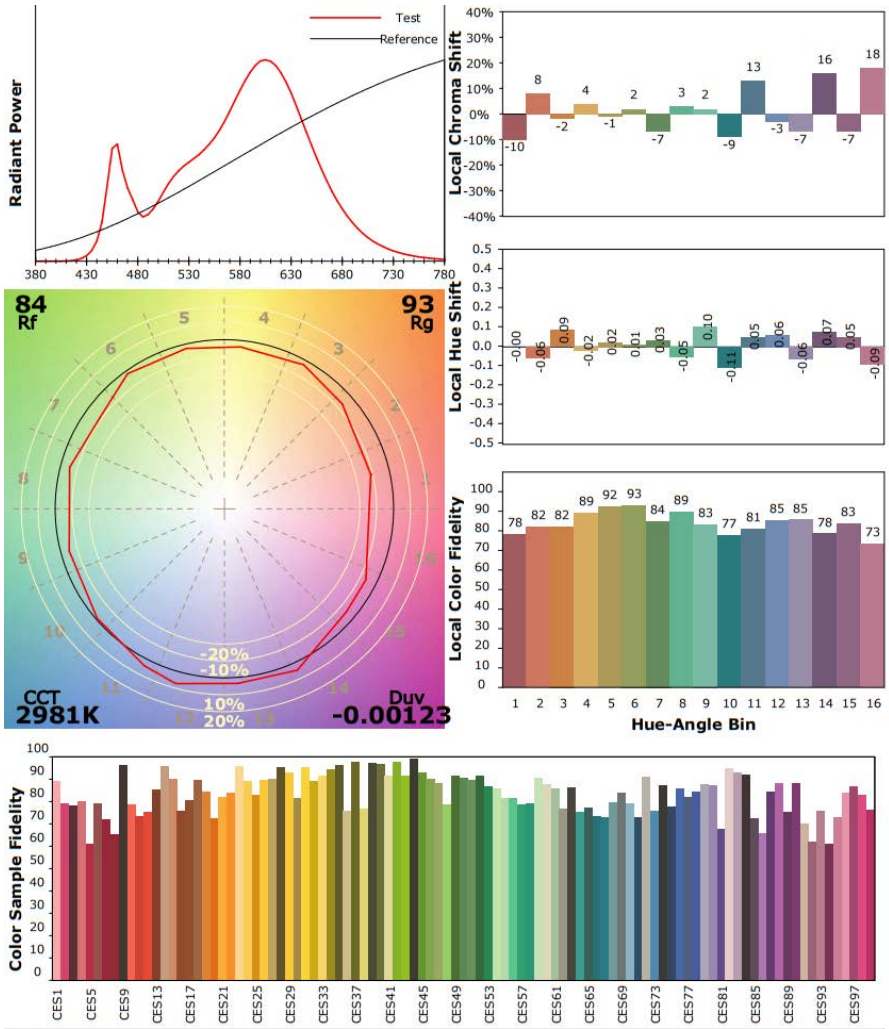


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0180	525	0.4708	226.7243	670	0.3434	165.3972
385	0.0002	0.0812	530	0.4909	236.4224	675	0.2997	144.3439
390	0.0000	0.0000	535	0.5088	245.0449	680	0.2585	124.4870
395	0.0004	0.2053	540	0.5271	253.8655	685	0.2221	106.9686
400	0.0003	0.1662	545	0.5517	265.6960	690	0.1909	91.9321
405	0.0004	0.1709	550	0.5784	278.5461	695	0.1630	78.5227
410	0.0014	0.6708	555	0.6123	294.8583	700	0.1388	66.8680
415	0.0032	1.5176	560	0.6507	313.3826	705	0.1173	56.4931
420	0.0061	2.9388	565	0.6928	333.6417	710	0.1003	48.3167
425	0.0140	6.7477	570	0.7420	357.3333	715	0.0850	40.9175
430	0.0278	13.3766	575	0.7949	382.8095	720	0.0711	34.2600
435	0.0521	25.0944	580	0.8446	406.7492	725	0.0601	28.9661
440	0.0968	46.6170	585	0.8945	430.7804	730	0.0513	24.6875
445	0.1861	89.6055	590	0.9368	451.1650	735	0.0426	20.5147
450	0.3692	177.8000	595	0.9698	467.0331	740	0.0362	17.4261
455	0.5761	277.4395	600	0.9960	479.6616	745	0.0310	14.9263
460	0.6009	289.4032	605	0.9945	478.9307	750	0.0254	12.2218
465	0.4414	212.5965	610	0.9923	477.8965	755	0.0209	10.0743
470	0.3618	174.2597	615	0.9683	466.3099	760	0.0181	8.6996
475	0.3046	146.7155	620	0.9340	449.8132	765	0.0158	7.5857
480	0.2417	116.3843	625	0.8900	428.6385	770	0.0133	6.3930
485	0.2167	104.3489	630	0.8336	401.4606	775	0.0106	5.1124
490	0.2300	110.7571	635	0.7710	371.2835	780	0.0087	4.2134
495	0.2570	123.7574	640	0.7056	339.7923	785	0.0070	3.3843
500	0.2946	141.8562	645	0.6393	307.9027	790	0.0067	3.2462
505	0.3413	164.3772	650	0.5749	276.8571	795	0.0055	2.6298
510	0.3845	185.1560	655	0.5100	245.6307	800	0.0050	2.4047
515	0.4203	202.4313	660	0.4519	217.6169			
520	0.4479	215.6977	665	0.3942	189.8274			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-3080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/09/20	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @135W 3000K



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

x	0.4365
y	0.4009
u'	0.2517
v'	0.5201

(CRI)

R_a	83.4
R_9	11

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	**Test Ambient:**	25.2 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	HIDFA-270S-EX39-8CCT-BYP /480V @135W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.517	134.27	0.943	20.6
	480.0	60	0.405	140.01	0.703	27.1
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3717
Duv	-0.00277
Chromaticity (x, y)	x=0.3938 y=0.3786
Chromaticity (u', v')	u(u')=0.2321 v'=0.5034
Color Rendering Index (CRI)	85.4
R9	19
Rf	85
Rg	95
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	85	R9	19
R2	93	R10	83
R3	96	R11	83
R4	83	R12	68
R5	85	R13	87
R6	90	R14	99
R7	84	R15	79
R8	66	--	--
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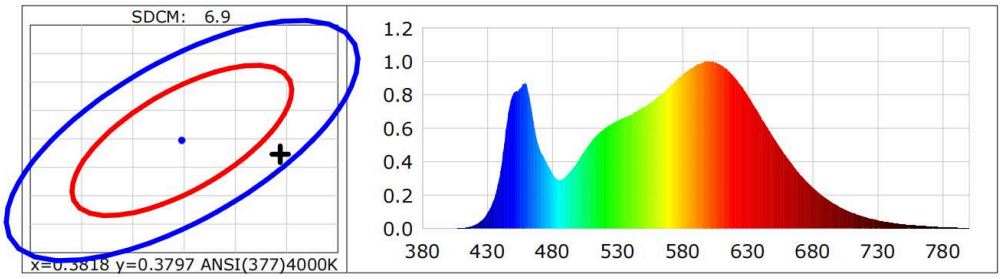
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	35334.1	35262.8	>= 10000(-10%)
Luminous Efficacy (lm/W)	178.33	176.59	Standard: >= 120(-3%)
Most worst Luminous/Highest	172.93		

Spectral Power Distribution & Chromaticity Diagram

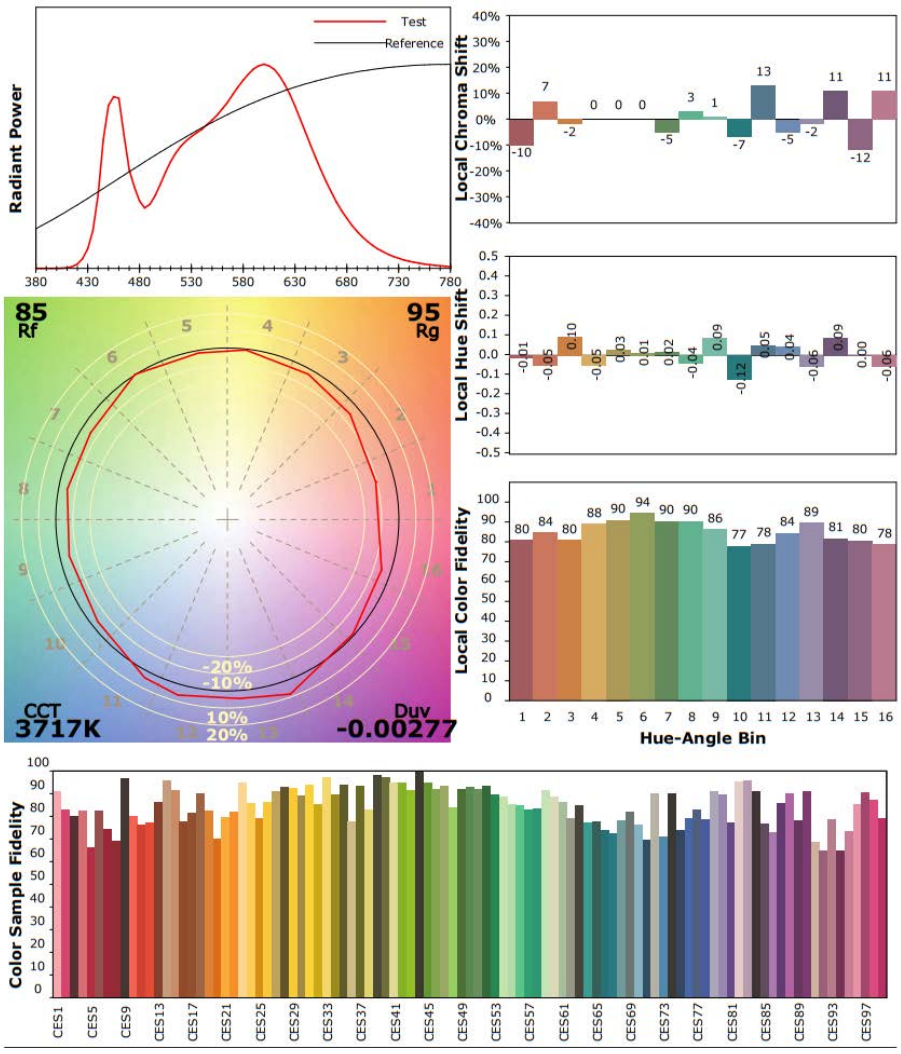


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.1070	525	0.6238	394.6093	670	0.3230	204.3286
385	0.0003	0.2118	530	0.6454	408.2789	675	0.2819	178.2922
390	0.0000	0.0179	535	0.6634	419.6454	680	0.2443	154.5051
395	0.0006	0.3898	540	0.6784	429.1616	685	0.2100	132.8569
400	0.0006	0.4100	545	0.7030	444.6629	690	0.1814	114.7722
405	0.0013	0.8361	550	0.7243	458.1582	695	0.1545	97.7023
410	0.0035	2.2271	555	0.7520	475.7169	700	0.1317	83.2828
415	0.0089	5.6220	560	0.7826	495.0591	705	0.1120	70.8672
420	0.0214	13.5478	565	0.8126	513.9965	710	0.0959	60.6743
425	0.0463	29.2679	570	0.8489	537.0054	715	0.0813	51.4540
430	0.0953	60.2592	575	0.8870	561.0811	720	0.0686	43.4072
435	0.1784	112.8247	580	0.9199	581.8673	725	0.0586	37.0543
440	0.3481	220.1753	585	0.9499	600.8731	730	0.0502	31.7453
445	0.6377	403.4055	590	0.9762	617.4937	735	0.0421	26.6493
450	0.8116	513.3665	595	0.9922	627.6338	740	0.0351	22.1977
455	0.8395	531.0566	600	1.0000	632.5668	745	0.0298	18.8464
460	0.8608	544.5314	605	0.9888	625.4900	750	0.0248	15.6679
465	0.6461	408.6738	610	0.9749	616.6931	755	0.0217	13.7088
470	0.4756	300.8610	615	0.9424	596.1165	760	0.0178	11.2741
475	0.3973	251.3056	620	0.9008	569.8121	765	0.0154	9.7269
480	0.3268	206.7216	625	0.8534	539.8185	770	0.0130	8.2010
485	0.2902	183.5570	630	0.7954	503.1210	775	0.0103	6.5439
490	0.3114	196.9526	635	0.7313	462.5696	780	0.0086	5.4569
495	0.3546	224.2993	640	0.6693	423.3788	785	0.0073	4.6068
500	0.4083	258.2959	645	0.6039	382.0286	790	0.0061	3.8457
505	0.4689	296.5975	650	0.5412	342.3182	795	0.0057	3.5860
510	0.5231	330.8917	655	0.4799	303.5439	800	0.0043	2.7245
515	0.5664	358.2702	660	0.4254	269.1098			
520	0.5990	378.9067	665	0.3727	235.7810			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-4080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/09/20	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @135W 4000K



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

x	0.3914
y	0.3773
u'	0.2321
v'	0.5034

(CRI)

R_a	85.4
R_9	19

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	2024-09-20	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-270S-EX39-8CCT-BYP/480V @135W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404 1E-A3	277.0	60	0.527	137.16	0.946	20.4
	480.0	60	0.426	142.69	0.713	27.1
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	4950
Duv	0.00084
Chromaticity (x, y)	x=0.3469 y=0.3549
Chromaticity (u', v')	u(u')=0.2114 v'=0.4865
Color Rendering Index (CRI)	82.9
R9	9
Rf	83
Rg	95
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	81	R9	9
R2	88	R10	71
R3	92	R11	81
R4	82	R12	57
R5	81	R13	83
R6	83	R14	96
R7	87	R15	76
R8	68	--	--
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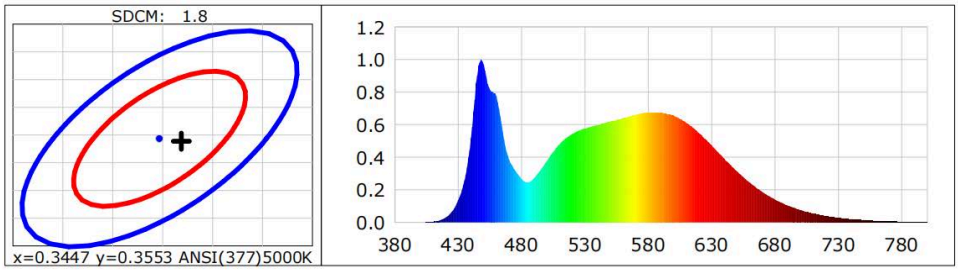
Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15 TB:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	277.0	480.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	24802.7	24.156.3	>= 10000(-10%)
Luminous Efficacy (lm/W)	180.63	177.95	Standard: >= 120(-3%)
Most worst Luminous/Highest	175.97		

Spectral Power Distribution & Chromaticity Diagram

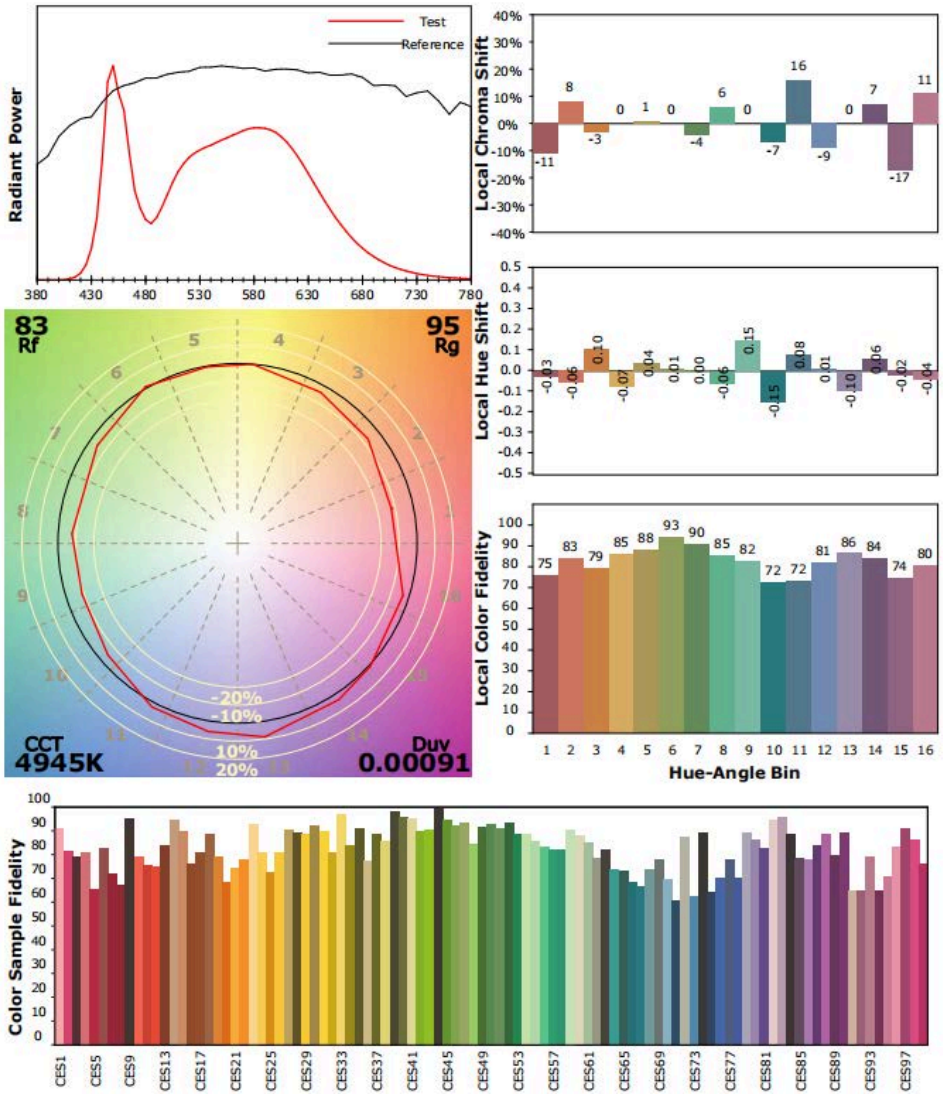


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.1885	525	0.5620	323.1643	670	0.1863	107.1198
385	0.0004	0.2197	530	0.5760	331.1728	675	0.1617	92.9886
390	0.0004	0.2192	535	0.5875	337.7819	680	0.1398	80.4086
395	0.0008	0.4622	540	0.5958	342.5903	685	0.1206	69.3690
400	0.0009	0.5127	545	0.6091	350.2291	690	0.1041	59.8315
405	0.0018	1.0522	550	0.6194	356.1557	695	0.0894	51.4129
410	0.0053	3.0744	555	0.6304	362.4706	700	0.0766	44.0539
415	0.0127	7.2796	560	0.6424	369.3954	705	0.0648	37.2636
420	0.0299	17.1669	565	0.6508	374.1949	710	0.0556	31.9744
425	0.0662	38.0701	570	0.6606	379.8262	715	0.0472	27.1370
430	0.1380	79.3443	575	0.6694	384.9165	720	0.0407	23.4156
435	0.2611	150.1424	580	0.6728	386.8302	725	0.0344	19.7736
440	0.5181	297.8802	585	0.6738	387.4489	730	0.0290	16.6514
445	0.9035	519.4784	590	0.6730	386.9672	735	0.0248	14.2534
450	0.9705	558.0466	595	0.6660	382.9147	740	0.0212	12.1673
455	0.8149	468.5321	600	0.6554	376.8260	745	0.0177	10.1902
460	0.7766	446.5633	605	0.6335	364.2827	750	0.0163	9.3446
465	0.5553	319.3095	610	0.6113	351.4712	755	0.0124	7.1159
470	0.3866	222.2891	615	0.5817	334.4937	760	0.0102	5.8688
475	0.3172	182.3933	620	0.5485	315.3988	765	0.0093	5.3408
480	0.2658	152.8520	625	0.5121	294.4764	770	0.0082	4.7282
485	0.2447	140.6907	630	0.4727	271.7777	775	0.0067	3.8716
490	0.2740	157.5351	635	0.4317	248.2302	780	0.0058	3.3120
495	0.3223	185.3307	640	0.3903	224.4121	785	0.0042	2.4281
500	0.3774	216.9999	645	0.3506	201.5867	790	0.0033	1.9168
505	0.4332	249.0994	650	0.3130	179.9982	795	0.0031	1.7699
510	0.4804	276.2461	655	0.2768	159.1470	800	0.0025	1.4284
515	0.5171	297.3478	660	0.2452	140.9859			
520	0.5438	312.6629	665	0.2141	123.1213			

TM-30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-5080RC35003P1	**Manufacturer:**	RAB LIGHTING INC
Date:	2024/11/29	**Model:**	HIDFA-270S-EX39-8CCT-BYP/480V @135W 5000K



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

x	0.3469
y	0.3549
u'	0.2114
v'	0.4865

(CRI)

R_a	82.9
R_9	9

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