

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-200S-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:

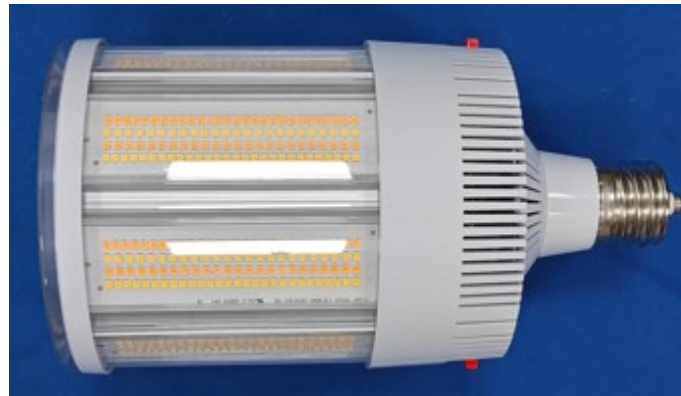
Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB LIGHTING INC	
Brand Name	RAB LIGHTING	
Model Number	HIDFA-200S-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	200W	
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-I1	
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	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 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 $f\theta = 1.42\%$, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 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-CLW16-200WXYZH1-ad30K:1.149

AST-CLW16-200WXYZH1-ad40K:1.149

AST-CLW16-200WXYZH1-ad40K:1.149

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 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-200S-EX39-8CCT-BYP/480V @200W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303	277.0	60	0.732	198.39	0.979	15.30
3E-II	480.0	60	0.454	203.70	0.934	15.58
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

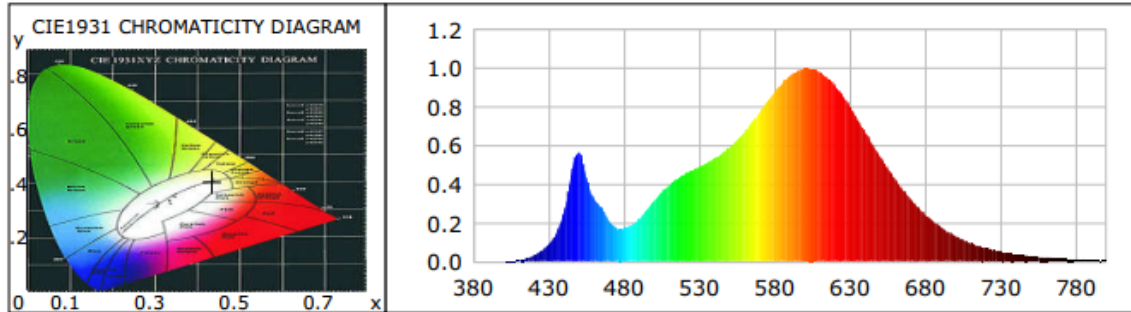
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	79	R9	-2
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3000	R3	96	R11	79
Duv	-0.0009	R4	79	R12	71
Chromaticity (x, y)	x=0.4356 y=0.4013	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2509 v'=0.5201	R6	88	R14	98
Color Rendering Index (CRI)	81	R7	80	R15	71
R9	-1	R8	55	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

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)	23827.5	24373.7	>=10000(-10%)
Luminous Efficacy (lm/W)	120.10	119.65	Standard: >= 120(-3%)
Most worst Luminous/Highest	116.97		
Zonal lumens in the 20-50° (%)	35.60		>=30%(-10%)
Beam Angle (°)	151.8	--	--
Center Beam Candle Power (cd)	2092	--	--

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	0.1311	535	0.4712	293.3304	690	0.3233	201.2487
385	0.0002	0.1184	540	0.4904	305.2928	695	0.2805	174.6396
390	0.0002	0.1484	545	0.5101	317.5309	700	0.2420	150.6357
395	0.0005	0.3278	550	0.5338	332.3154	705	0.2086	129.8433
400	0.0011	0.6890	555	0.5582	347.4743	710	0.1799	111.9737
405	0.0031	1.9303	560	0.5907	367.7351	715	0.1540	95.8652
410	0.0072	4.4836	565	0.6274	390.5917	720	0.1312	81.6686
415	0.0158	9.8264	570	0.6706	417.4925	725	0.1122	69.8345
420	0.0302	18.8222	575	0.7187	447.3925	730	0.0950	59.1197
425	0.0535	33.3358	580	0.7720	480.6172	735	0.0815	50.7255
430	0.0893	55.6068	585	0.8259	514.1757	740	0.0692	43.1036
435	0.1463	91.0513	590	0.8779	546.5330	745	0.0585	36.4437
440	0.2537	157.9164	595	0.9211	573.4000	750	0.0497	30.9374
445	0.4465	277.9387	600	0.9580	596.3560	755	0.0421	26.2266
450	0.5646	351.5079	605	0.9856	613.5380	760	0.0363	22.5986
455	0.4416	274.8788	610	0.9982	621.4150	765	0.0318	19.8033
460	0.3268	203.4314	615	0.9955	619.7542	770	0.0259	16.1267
465	0.2785	173.3811	620	0.9803	610.2941	775	0.0229	14.2442
470	0.2140	133.2399	625	0.9498	591.2824	780	0.0194	12.0518
475	0.1738	108.2053	630	0.9090	565.8923	785	0.0163	10.1696
480	0.1731	107.7812	635	0.8577	533.9381	790	0.0136	8.4966
485	0.1894	117.8801	640	0.7986	497.1424	795	0.0126	7.8184
490	0.2203	137.1655	645	0.7380	459.4024	800	0.0097	6.0650
495	0.2656	165.3314	650	0.6705	417.3854			
500	0.3142	195.5934	655	0.6048	376.4776			
505	0.3583	223.0560	660	0.5416	337.1561			
510	0.3951	245.9813	665	0.4803	298.9853			
515	0.4259	265.1276	670	0.4231	263.3860			
520	0.4500	280.1454	675	0.3712	231.0994			
525	0.4712	293.3304	680	0.3233	201.2487			
530	0.4904	305.2928	685	0.2805	174.6396			

TM30

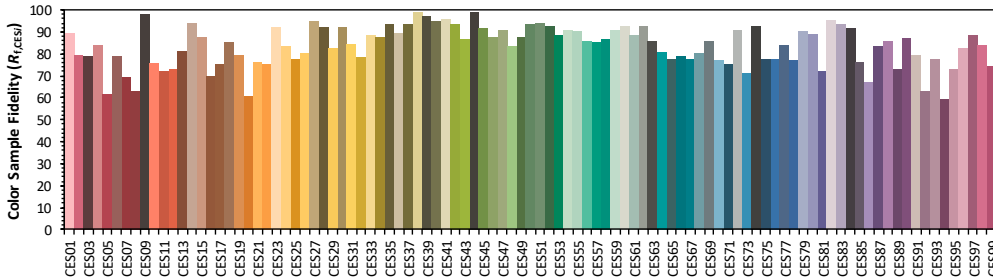
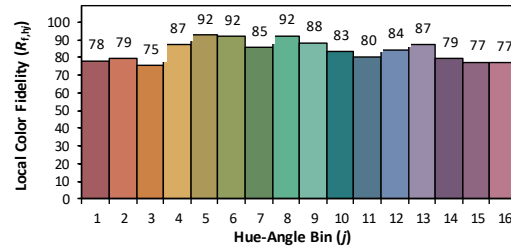
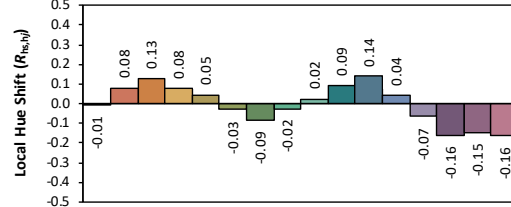
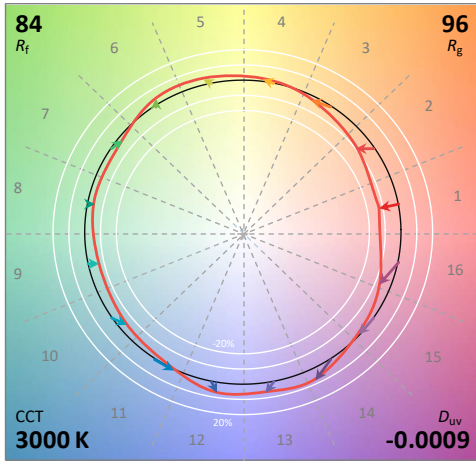
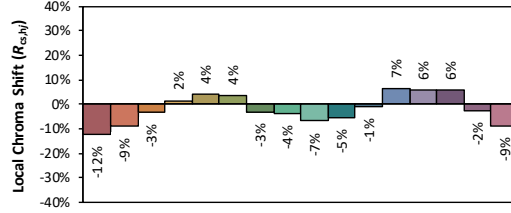
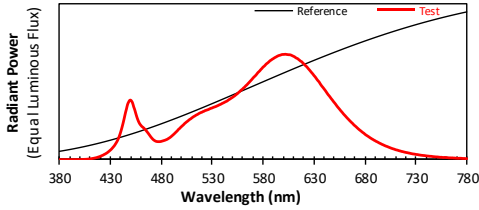
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2023/3/30

Model: HIDFA-200S-EX39-8CCT-BYP/480V @200W 3000K



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

x 0.4356
 y 0.4013
 u' 0.2509
 v' 0.5201

CIE 13.3-1995 (CRI)
 R_a 81
 R_g -1

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

Zonal Lumen Tabulation

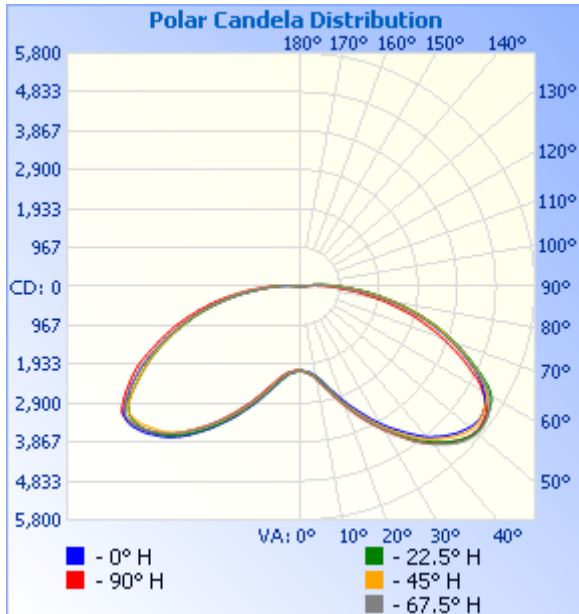
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	2,568.4	10.8%	10.8%
0-40	5,366.3	22.5%	22.5%
0-60	14,280.7	59.9%	59.9%
60-90	9,021.8	37.9%	37.9%
70-100	5,072.6	21.3%	21.3%
90-120	483.1	2%	2%
0-90	23,302.5	97.8%	97.8%
90-180	524.9	2.2%	2.2%
0-180	23,827.4	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	208.5	0.9%	90-100	430.3	1.8%
10-20	747.7	3.1%	100-110	37.9	0.2%
20-30	1,612.2	6.8%	110-120	14.9	0.1%
30-40	2,797.8	11.7%	120-130	12.6	0.1%
40-50	4,067.9	17.1%	130-140	9.9	0%
50-60	4,846.5	20.3%	140-150	7.9	0%
60-70	4,379.5	18.4%	150-160	6.3	0%
70-80	3,092.5	13.0%	160-170	4.0	0%
80-90	1,549.8	6.5%	170-180	1.2	0%

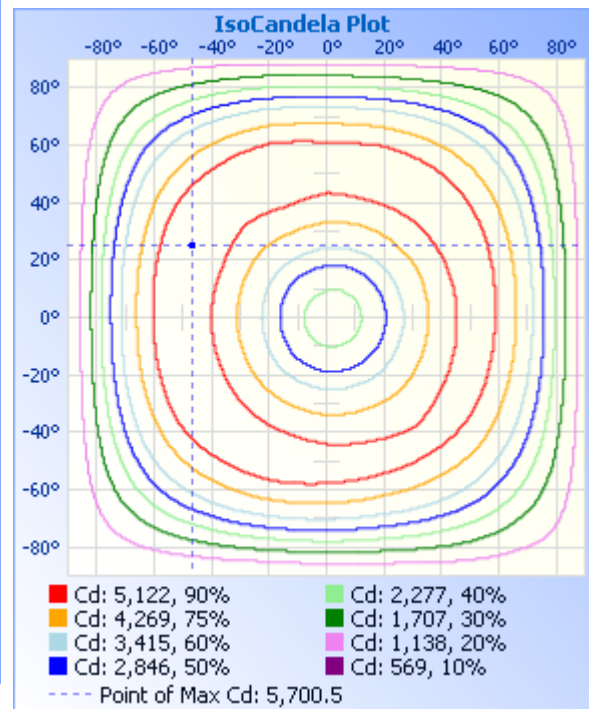
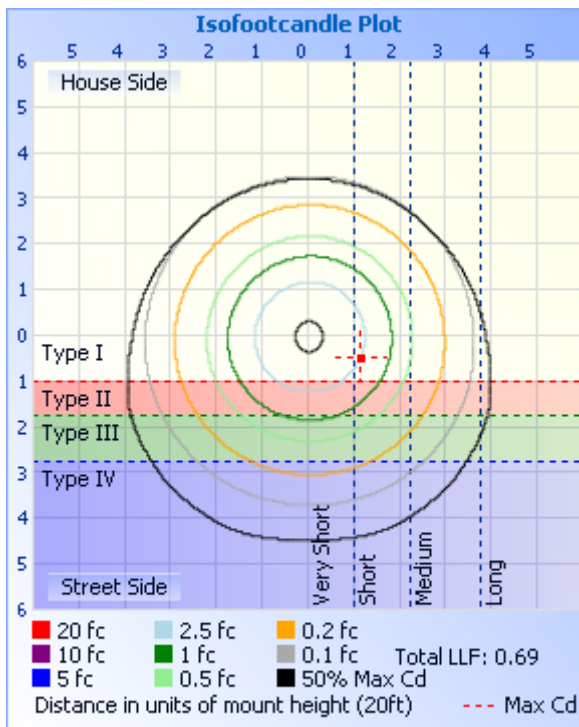
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	7.24 fc	86.7 ft	122.5 ft
34.0ft	1.81 fc	173.4 ft	244.9 ft
51.0ft	0.80 fc	260.2 ft	367.4 ft
68.0ft	0.45 fc	346.9 ft	489.8 ft
85.0ft	0.29 fc	433.6 ft	612.3 ft
102.0ft	0.20 fc	520.3 ft	734.8 ft

■ Vert. Spread: 137.2°
■ Horiz. Spread: 149.0°



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	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092	2092
1	2089	2097	2105	2107	2104	2100	2101	2097	2096	2098	2089	2079	2083	2079	2084	2075	2089
2	2096	2106	2117	2122	2118	2109	2112	2107	2106	2101	2088	2085	2068	2070	2080	2084	2096
3	2111	2133	2132	2137	2129	2124	2118	2116	2117	2110	2100	2094	2078	2074	2088	2094	2111
4	2126	2136	2141	2146	2146	2138	2138	2130	2125	2120	2112	2101	2089	2085	2105	2115	2126
5	2134	2151	2158	2167	2174	2161	2153	2137	2135	2135	2118	2114	2103	2106	2117	2119	2134
6	2151	2175	2184	2194	2199	2188	2188	2163	2154	2147	2128	2128	2120	2112	2130	2138	2151
7	2177	2204	2213	2228	2226	2222	2214	2189	2175	2166	2147	2141	2131	2124	2146	2155	2177
8	2208	2238	2250	2270	2270	2266	2250	2223	2200	2190	2171	2160	2149	2143	2163	2177	2208
9	2244	2276	2293	2314	2314	2313	2291	2263	2235	2225	2200	2185	2170	2165	2194	2209	2244
10	2288	2317	2337	2366	2362	2368	2341	2309	2278	2263	2236	2218	2199	2200	2224	2253	2288
11	2327	2373	2387	2415	2434	2430	2391	2365	2330	2301	2275	2258	2232	2238	2263	2282	2327
12	2378	2437	2458	2481	2489	2495	2458	2426	2379	2351	2322	2302	2272	2281	2307	2335	2378
13	2448	2493	2517	2543	2562	2564	2527	2491	2441	2415	2380	2357	2323	2329	2354	2392	2448
14	2514	2559	2582	2622	2633	2648	2592	2561	2506	2482	2436	2415	2375	2379	2414	2455	2514
15	2579	2640	2668	2701	2707	2719	2672	2636	2571	2548	2508	2475	2435	2444	2471	2523	2579
16	2658	2717	2739	2771	2790	2811	2743	2707	2644	2620	2575	2540	2504	2507	2543	2594	2658
17	2732	2792	2816	2854	2886	2894	2826	2797	2733	2693	2647	2622	2569	2585	2625	2658	2732
18	2815	2880	2897	2937	2967	2969	2917	2878	2802	2775	2734	2692	2646	2662	2702	2741	2815
19	2901	2972	3000	3029	3059	3060	3004	2964	2887	2858	2809	2769	2726	2741	2781	2820	2901
20	2994	3070	3088	3128	3147	3154	3089	3060	2983	2940	2891	2855	2809	2821	2869	2909	2994
21	3077	3159	3171	3220	3228	3248	3182	3143	3060	3035	2979	2936	2900	2908	2955	3002	3077
22	3171	3250	3252	3311	3331	3339	3276	3226	3155	3116	3067	3039	2990	3003	3049	3086	3171
23	3254	3354	3344	3410	3433	3439	3370	3334	3246	3203	3149	3125	3088	3095	3141	3179	3254
24	3344	3456	3448	3507	3526	3526	3464	3433	3339	3305	3249	3206	3177	3186	3219	3275	3344
25	3436	3550	3537	3596	3617	3618	3561	3527	3436	3408	3341	3301	3261	3281	3323	3362	3436
26	3528	3647	3636	3691	3716	3733	3654	3618	3537	3496	3432	3408	3361	3380	3423	3457	3528
27	3633	3744	3724	3799	3812	3835	3755	3731	3632	3591	3528	3504	3461	3477	3517	3548	3633
28	3735	3836	3822	3909	3914	3934	3860	3829	3724	3685	3619	3592	3557	3555	3603	3648	3735
29	3825	3939	3934	4001	4013	4032	3967	3931	3815	3786	3719	3686	3653	3664	3702	3743	3825

30	3922	4051	4031	4100	4115	4129	4070	4032	3918	3888	3807	3783	3757	3762	3808	3854	3922
31	4026	4146	4122	4196	4208	4241	4172	4126	4018	3999	3903	3880	3856	3856	3909	3953	4026
32	4123	4242	4219	4295	4319	4339	4268	4222	4125	4085	3998	3989	3961	3967	4015	4053	4123
33	4217	4341	4310	4403	4415	4443	4369	4327	4223	4179	4094	4085	4056	4066	4109	4147	4217
34	4304	4442	4400	4509	4519	4542	4470	4426	4316	4276	4192	4179	4156	4158	4204	4242	4304
35	4401	4555	4500	4616	4622	4646	4594	4532	4411	4373	4286	4277	4256	4249	4310	4341	4401
36	4498	4659	4594	4727	4730	4756	4700	4628	4508	4478	4373	4374	4354	4358	4405	4460	4498
37	4595	4768	4700	4827	4826	4849	4790	4730	4616	4569	4452	4476	4455	4470	4518	4562	4595
38	4691	4859	4787	4923	4917	4936	4880	4825	4705	4659	4551	4572	4548	4576	4618	4662	4691
39	4788	4949	4875	5023	4998	5020	4963	4912	4794	4744	4640	4669	4656	4678	4718	4764	4788
40	4879	5040	4953	5107	5082	5102	5041	4988	4873	4823	4724	4755	4747	4769	4816	4857	4879
41	4949	5119	5022	5191	5158	5184	5119	5068	4954	4907	4803	4837	4834	4857	4898	4940	4949
42	5012	5202	5094	5275	5237	5269	5191	5139	5023	4975	4872	4909	4918	4936	4988	5020	5012
43	5086	5277	5159	5354	5300	5341	5256	5212	5085	5030	4937	4986	4989	5012	5054	5119	5086
44	5151	5350	5223	5415	5360	5412	5326	5274	5144	5084	4990	5049	5062	5089	5127	5198	5151
45	5207	5416	5285	5491	5426	5468	5385	5329	5197	5141	5036	5106	5126	5163	5196	5277	5207
46	5267	5484	5336	5547	5483	5528	5436	5386	5260	5183	5078	5163	5180	5234	5265	5352	5267
47	5320	5537	5397	5595	5529	5578	5484	5436	5307	5223	5128	5228	5235	5289	5329	5418	5320
48	5361	5586	5444	5629	5576	5618	5516	5478	5349	5265	5171	5276	5286	5355	5382	5473	5361
49	5405	5618	5478	5666	5613	5644	5556	5515	5385	5296	5217	5322	5325	5400	5426	5518	5405
50	5444	5649	5513	5690	5632	5662	5579	5545	5423	5311	5246	5362	5359	5444	5473	5564	5444
51	5474	5666	5538	5700	5643	5664	5586	5568	5449	5325	5270	5390	5395	5481	5514	5595	5474
52	5495	5664	5546	5699	5638	5656	5579	5576	5459	5328	5288	5408	5418	5510	5551	5619	5495
53	5512	5663	5537	5681	5623	5647	5565	5567	5452	5321	5298	5413	5442	5519	5575	5627	5512
54	5507	5646	5522	5665	5605	5632	5534	5531	5436	5285	5292	5383	5447	5515	5570	5620	5507
55	5495	5632	5504	5642	5583	5579	5455	5484	5359	5230	5254	5338	5433	5495	5565	5597	5495
56	5471	5604	5466	5610	5549	5529	5364	5389	5270	5167	5160	5273	5355	5456	5534	5568	5471
57	5438	5574	5438	5577	5475	5449	5261	5290	5157	5063	5041	5177	5261	5390	5486	5535	5438
58	5381	5536	5407	5507	5398	5367	5173	5175	5048	4943	4941	5082	5172	5302	5403	5459	5381
59	5319	5511	5376	5448	5309	5272	5107	5062	4958	4800	4829	4959	5075	5208	5293	5395	5319
60	5234	5447	5308	5390	5199	5158	4993	4966	4835	4680	4682	4840	4951	5091	5206	5310	5234
61	5156	5368	5229	5283	5104	5033	4854	4847	4709	4556	4564	4700	4855	4976	5101	5210	5156

62	5073	5246	5123	5150	4982	4873	4712	4699	4602	4429	4435	4580	4740	4894	4989	5121	5073
63	4947	5106	4999	4998	4806	4711	4558	4561	4466	4311	4297	4475	4630	4780	4902	5001	4947
64	4831	4966	4873	4857	4665	4563	4406	4388	4318	4181	4200	4340	4516	4643	4784	4866	4831
65	4684	4797	4723	4703	4513	4409	4256	4235	4159	4048	4069	4204	4376	4516	4627	4728	4684
66	4540	4659	4576	4543	4363	4254	4101	4066	4005	3911	3939	4039	4216	4357	4478	4569	4540
67	4413	4517	4438	4400	4204	4100	3958	3916	3865	3765	3783	3890	4058	4217	4318	4414	4413
68	4254	4361	4296	4245	4031	3922	3787	3762	3691	3612	3633	3751	3908	4058	4176	4265	4254
69	4120	4218	4145	4087	3890	3774	3651	3591	3569	3479	3514	3594	3780	3918	4033	4104	4120
70	3980	4056	4004	3936	3714	3610	3480	3460	3416	3347	3369	3450	3632	3760	3859	3978	3980
71	3827	3910	3864	3779	3581	3455	3322	3291	3262	3192	3243	3302	3477	3623	3730	3818	3827
72	3694	3769	3723	3633	3400	3282	3166	3156	3128	3063	3091	3173	3354	3466	3570	3658	3694
73	3520	3606	3553	3477	3230	3143	3006	2995	2956	2905	2963	3016	3203	3320	3437	3510	3520
74	3395	3460	3389	3300	3088	2968	2874	2841	2826	2785	2831	2878	3052	3171	3272	3360	3395
75	3209	3278	3238	3141	2931	2800	2687	2686	2678	2633	2695	2725	2907	3007	3121	3184	3209
76	3080	3119	3065	2969	2766	2623	2536	2527	2534	2495	2552	2610	2740	2871	2961	3037	3080
77	2906	2965	2918	2816	2575	2458	2358	2379	2372	2350	2416	2451	2613	2700	2812	2884	2906
78	2739	2780	2734	2619	2413	2300	2208	2190	2217	2198	2271	2301	2442	2554	2646	2709	2739
79	2588	2635	2583	2469	2239	2124	2041	2039	2047	2054	2113	2155	2309	2389	2486	2549	2588
80	2414	2458	2409	2307	2096	1967	1896	1887	1923	1916	1974	2007	2163	2260	2331	2396	2414
81	2264	2296	2222	2124	1922	1821	1736	1738	1761	1773	1839	1853	2012	2089	2169	2236	2264
82	2090	2133	2093	1983	1771	1668	1604	1598	1625	1635	1707	1719	1869	1933	2018	2066	2090
83	1951	1982	1920	1823	1618	1529	1439	1430	1480	1495	1573	1579	1698	1782	1856	1917	1951
84	1791	1823	1761	1668	1467	1360	1301	1304	1344	1364	1417	1439	1574	1660	1708	1761	1791
85	1655	1695	1611	1525	1314	1206	1136	1130	1187	1201	1282	1310	1430	1496	1574	1628	1655
86	1502	1543	1479	1354	1149	1073	1017	1026	1057	1083	1150	1166	1303	1381	1408	1471	1502
87	1354	1382	1309	1222	1017	951	886	889	929	944	1006	1045	1159	1206	1284	1344	1354
88	1198	1244	1172	1073	917	862	814	818	851	863	898	901	1004	1090	1134	1183	1198
89	1057	1090	1040	964	836	767	721	722	754	762	805	817	905	952	1001	1054	1057
90	957	1008	941	872	724	684	643	647	675	693	729	728	799	853	892	933	957
91	862	893	859	771	641	596	553	553	583	600	640	647	716	769	816	858	862
92	777	811	734	687	560	515	474	482	507	523	551	564	640	692	717	763	777
93	672	721	667	586	469	432	388	398	426	444	480	508	547	600	639	675	672

94	575	610	570	510	389	350	325	334	344	369	397	409	471	513	543	586	575
95	506	531	481	404	310	265	234	253	257	292	330	347	380	435	477	501	506
96	410	450	384	332	217	191	177	173	195	223	223	255	321	355	385	417	410
97	341	346	309	244	160	103	99	109	122	139	173	195	233	296	316	337	341
98	250	274	219	173	91	83	82	84	94	95	103	120	183	205	230	259	250
99	190	178	149	105	74	62	67	74	73	85	89	95	89	128	185	181	190
100	111	110	96	74	65	62	57	54	65	69	76	83	73	92	99	109	111
101	87	81	77	75	49	44	41	50	54	46	66	61	71	71	82	90	87
102	67	71	76	60	29	37	37	35	42	42	46	59	46	63	73	71	67
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116	20	17	21	13	9	9	12	12	18	16	22	21	10	15	21	24	20
117	23	19	23	20	0	16	10	12	18	20	18	19	12	12	16	28	23
118	22	21	9	28	11	10	16	16	16	14	20	18	0	17	10	18	22
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120	18	19	18	23	0	10	16	0	9	16	19	18	10	15	19	21	18
121	23	17	23	20	0	0	15	13	21	11	20	25	12	14	16	19	23
122	19	15	20	18	10	0	14	13	14	12	17	14	11	16	17	22	19
123	14	9	21	16	9	0	16	15	17	12	22	13	11	16	19	22	14
124	11	0	23	19	10	9	0	0	19	13	19	19	10	12	20	16	11
125	18	12	19	20	9	0	10	16	18	10	15	22	13	9	20	20	18

126	10	19	18	20	0	12	13	14	18	11	18	19	10	14	19	24	10
127	16	19	18	15	0	0	0	18	21	18	16	23	0	11	17	17	16
128	15	13	19	21	10	13	10	15	18	13	13	12	0	11	12	20	15
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134	0	16	17	15	0	0	9	14	12	19	15	22	10	14	15	18	0
135	12	20	15	11	0	0	15	10	17	14	16	20	9	12	12	21	12
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142	16	19	15	14	0	0	0	16	17	13	13	17	0	15	15	15	16
143	18	17	16	10	0	9	0	9	15	18	14	17	0	11	17	20	18
144	17	17	17	16	10	0	0	17	17	12	16	17	0	8	18	21	17
145	0	21	14	12	0	0	10	11	14	16	16	21	0	11	9	25	0
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152	21	20	17	15	0	9	13	18	13	15	17	16	0	11	16	17	21
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158	18	19	19	16	0	9	13	11	16	20	16	16	0	14	0	21	18
159	21	20	16	16	10	9	15	21	21	14	18	17	9	12	17	18	21
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164	22	22	16	14	11	0	9	19	17	19	19	18	0	13	17	22	22
165	21	18	17	17	11	0	11	11	19	17	18	17	0	12	17	20	21
166	20	20	23	17	0	11	14	11	16	15	19	21	0	14	20	19	20
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178	16	12	17	15	0	0	0	12	18	12	11	15	0	0	12	14	16
179	17	14	12	18	0	0	0	11	15	14	14	19	0	9	13	11	17
180	11	18	19	14	0	9	12	12	13	11	18	19	9	12	12	13	11

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-200S-EX39-8CCT-BYP/480V @200W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303	277.0	60	0.704	190.63	0.978	15.21
3E-II	480.0	60	0.437	195.85	0.933	15.52
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

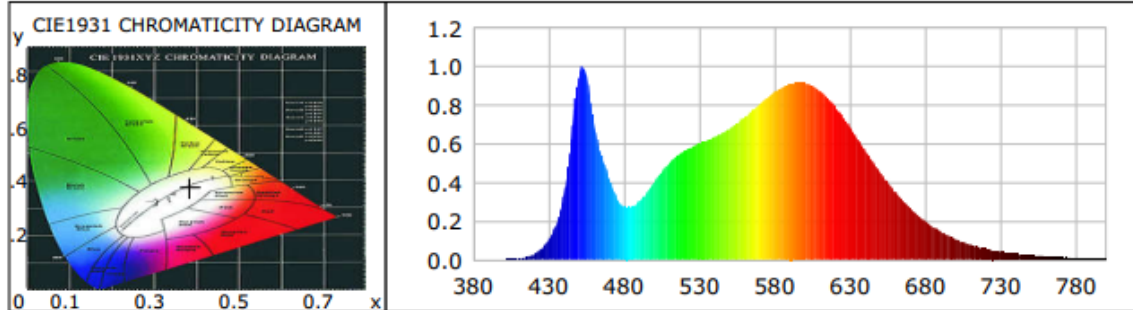
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3881	R3	96	R11	81
Duv	-0.0024	R4	82	R12	64
Chromaticity (x, y)	x=0.3840 y=0.3739	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2286 v'(v')=0.5009	R6	88	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	76
R9	9	R8	63	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

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)	25981.0	26672.8	>= 1000(-10%)
Luminous Efficacy (lm/W)	136.29	136.19	Standard: >= 105(-3%)
Most worst Luminous/Highest	132.66		

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	0.3630	535	0.5840	375.0027	690	0.2663	171.0314
385	0.0003	0.1718	540	0.6005	385.5833	695	0.2297	147.5186
390	0.0002	0.1444	545	0.6183	397.0458	700	0.1996	128.1816
395	0.0009	0.5490	550	0.6362	408.5443	705	0.1712	109.9097
400	0.0010	0.6422	555	0.6542	420.1090	710	0.1482	95.1588
405	0.0022	1.4308	560	0.6783	435.5413	715	0.1258	80.8126
410	0.0060	3.8289	565	0.7059	453.2807	720	0.1065	68.3956
415	0.0142	9.1369	570	0.7365	472.9573	725	0.0912	58.5421
420	0.0288	18.4716	575	0.7694	494.0972	730	0.0777	49.9131
425	0.0563	36.1543	580	0.8048	516.7984	735	0.0662	42.4889
430	0.1030	66.1722	585	0.8386	538.5240	740	0.0572	36.7070
435	0.1828	117.3525	590	0.8682	557.5003	745	0.0480	30.8493
440	0.3320	213.2131	595	0.8918	572.6925	750	0.0405	26.0104
445	0.6253	401.5567	600	0.9109	584.9634	755	0.0344	22.1084
450	0.9512	610.8382	605	0.9170	588.8510	760	0.0296	18.9912
455	0.9564	614.1761	610	0.9159	588.1708	765	0.0255	16.3871
460	0.7119	457.1768	615	0.8998	577.7924	770	0.0221	14.1819
465	0.5391	346.2041	620	0.8734	560.8698	775	0.0186	11.9479
470	0.4247	272.7138	625	0.8360	536.8104	780	0.0150	9.6114
475	0.3230	207.4154	630	0.7918	508.4845	785	0.0135	8.6429
480	0.2734	175.5757	635	0.7380	473.8937	790	0.0118	7.5695
485	0.2754	176.8427	640	0.6833	438.7738	795	0.0088	5.6810
490	0.3013	193.4938	645	0.6243	400.9212	800	0.0088	5.6447
495	0.3457	221.9666	650	0.5644	362.4599			
500	0.4019	258.0740	655	0.5071	325.6514			
505	0.4538	291.3867	660	0.4516	289.9818			
510	0.5007	321.4990	665	0.3992	256.3313			
515	0.5364	344.4330	670	0.3496	224.4802			
520	0.5638	362.0115	675	0.3060	196.4904			
525	0.5840	375.0027	680	0.2663	171.0314			
530	0.6005	385.5833	685	0.2297	147.5186			

TM30

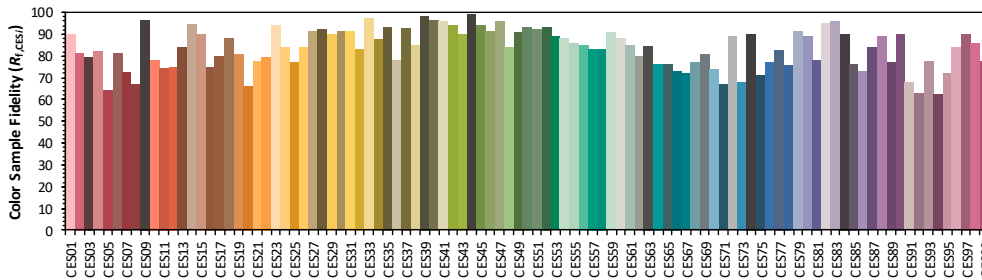
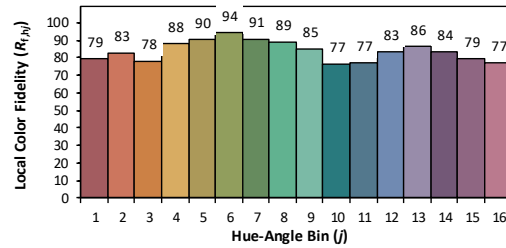
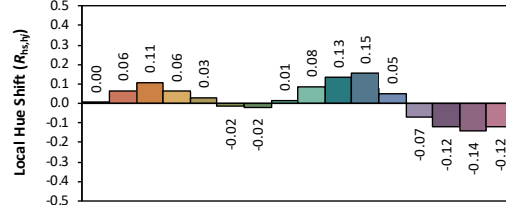
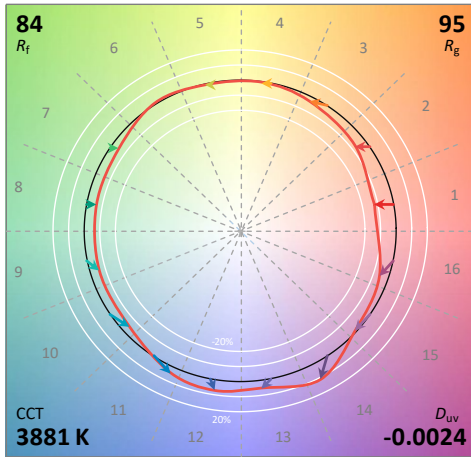
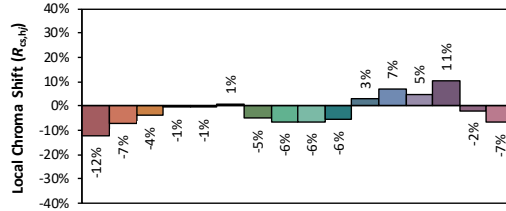
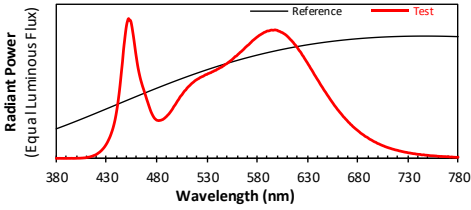
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1
L128-5080RC35003P1

Date: 203-03-30

Manufacturer: RAB LIGHTING INC

Model: HIDFA-200S-EX39-8CCT-BYP/480V @200W 4000K



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

x 0.3840
 y 0.3739
 u' 0.2286
 v' 0.5009

CIE 13.3-1995 (CRI)	
R_a	84
R_9	9

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-200S-EX39-8CCT-BYP/480V @200W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230303	277.0	60	0.733	198.47	0.978	15.36
3E-II	480.0	60	0.455	203.87	0.934	15.72
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

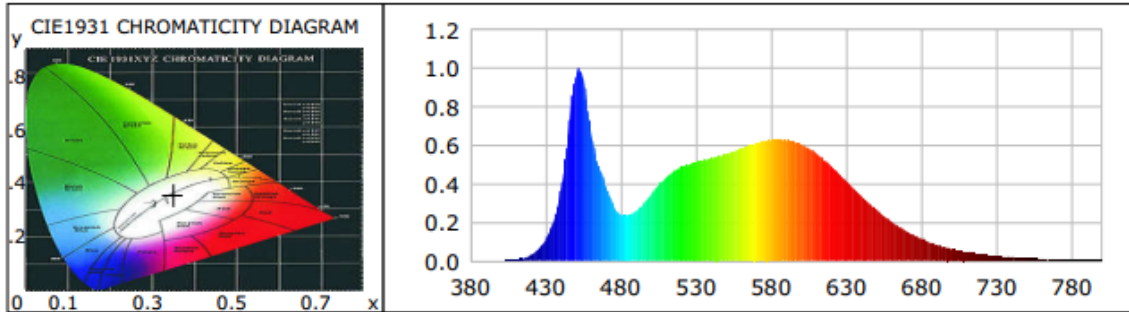
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	80	R9	1
Frequency (Hz)	60	R2	89	R10	72
CCT (K)	4930	R3	94	R11	79
Duv	0.0009	R4	80	R12	55
Chromaticity (x, y)	x=0.3473 y=0.3552	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2115 v'(v')=0.4867	R6	83	R14	97
Color Rendering Index (CRI)	82	R7	86	R15	74
R9	1	R8	64	--	--
Rf	82	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-14	--	--	--	--

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)	25608.6	26066.8	>=10000(-10%)
Luminous Efficacy (lm/W)	129.03	127.86	Standard: >= 120(-3%)
Most worst Luminous/Highest	125.61		

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	0.3902	535	0.4994	428.6238	690	0.1540	132.1863
385	0.0005	0.4498	540	0.5118	439.2264	695	0.1336	114.6754
390	0.0005	0.4260	545	0.5221	448.0870	700	0.1153	98.9483
395	0.0006	0.5324	550	0.5326	457.1192	705	0.0980	84.0783
400	0.0006	0.5299	555	0.5429	465.9318	710	0.0847	72.7118
405	0.0022	1.8534	560	0.5551	476.4496	715	0.0732	62.8028
410	0.0057	4.8922	565	0.5685	487.8877	720	0.0612	52.5261
415	0.0140	11.9860	570	0.5825	499.9319	725	0.0523	44.8890
420	0.0303	26.0141	575	0.5972	512.5257	730	0.0449	38.5545
425	0.0605	51.9032	580	0.6102	523.7312	735	0.0388	33.3064
430	0.1119	96.0645	585	0.6208	532.8227	740	0.0321	27.5426
435	0.2005	172.0880	590	0.6277	538.7275	745	0.0272	23.3355
440	0.3657	313.9054	595	0.6286	539.4915	750	0.0240	20.6270
445	0.6616	567.8123	600	0.6276	538.6284	755	0.0195	16.7528
450	0.9588	822.9073	605	0.6182	530.5506	760	0.0172	14.7770
455	0.9429	809.2322	610	0.6044	518.7404	765	0.0144	12.3780
460	0.6764	580.5129	615	0.5836	500.8464	770	0.0127	10.8898
465	0.4992	428.4143	620	0.5568	477.9154	775	0.0110	9.4202
470	0.3908	335.3904	625	0.5247	450.3415	780	0.0089	7.6513
475	0.2906	249.3788	630	0.4897	420.2604	785	0.0080	6.8892
480	0.2407	206.5719	635	0.4517	387.6702	790	0.0061	5.2174
485	0.2383	204.5276	640	0.4127	354.1788	795	0.0061	5.2312
490	0.2592	222.4232	645	0.3758	322.4922	800	0.0045	3.8876
495	0.2963	254.2975	650	0.3370	289.2022			
500	0.3456	296.6154	655	0.3005	257.8620			
505	0.3930	337.2791	660	0.2653	227.6706			
510	0.4320	370.7668	665	0.2327	199.6799			
515	0.4624	396.8363	670	0.2043	175.3808			
520	0.4854	416.5666	675	0.1783	152.9977			
525	0.4994	428.6238	680	0.1540	132.1863			
530	0.5118	439.2264	685	0.1336	114.6754			

TM-30

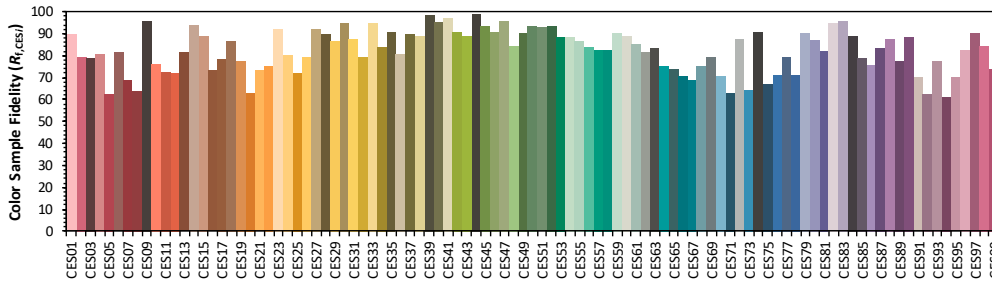
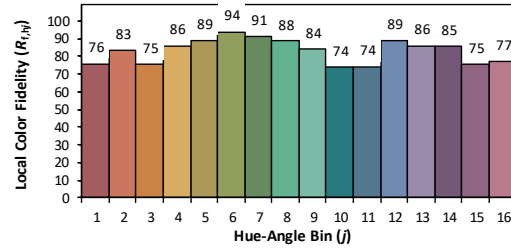
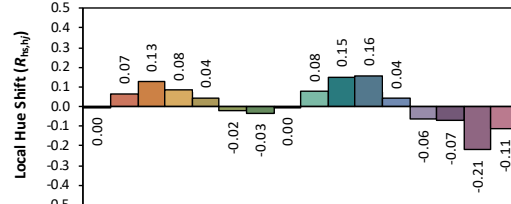
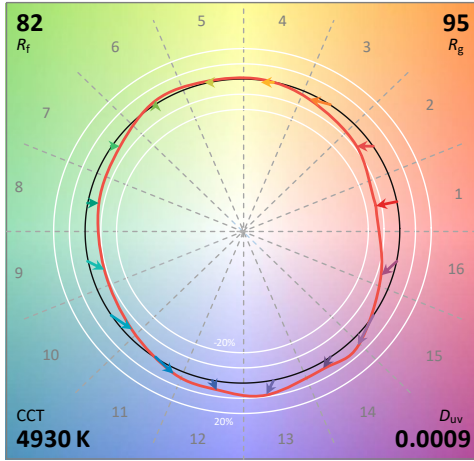
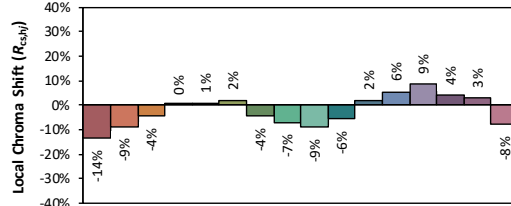
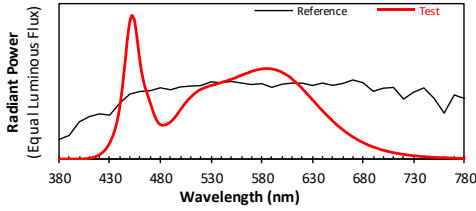
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2023/3/30

Model: HIDFA-200S-EX39-8CCT-BYP/480V @200W 5000K



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

x 0.3473
 y 0.3552
 u' 0.2115
 v' 0.4867

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
Goniophotometric 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 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP/480V @150W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.562	151.39	0.945	19.1
	480.0	60	0.365	154.58	0.901	16.5
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

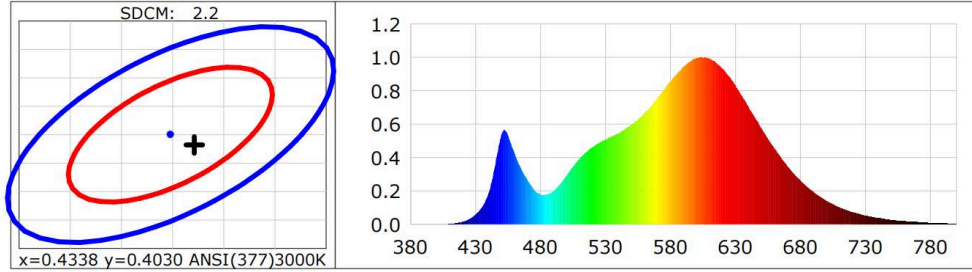
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	2990	R3	96	R11	81
Duv	-0.00105	R4	81	R12	70
Chromaticity (x, y)	x=0.4361 y=0.4012	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2513 v'=0.5201	R6	90	R14	99
Color Rendering Index (CRI)	82.8	R7	82	R15	74
R9	8	R8	59	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	24269.6	23711.6	>=10000(-10%)
Luminous Efficacy (lm/W)	160.31	158.21	Standard: >= 120(-3%)
Most worst Luminous/Highest	157.93		
Zonal lumens in the 20-50° (%)	12.8	--	>=30(-10%)
Beam Angle (°)	162.2	--	--
Center Beam Candle Power (cd)	683.0	--	--

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	0.1034	525	0.4871	231.4474	670	0.3470	164.8952
385	0.0004	0.2000	530	0.5074	241.1045	675	0.3026	143.8021
390	0.0000	0.0013	535	0.5274	250.6137	680	0.2625	124.7629
395	0.0007	0.3430	540	0.5451	259.0324	685	0.2266	107.6731
400	0.0003	0.1657	545	0.5711	271.3780	690	0.1959	93.0698
405	0.0012	0.5811	550	0.5969	283.6425	695	0.1667	79.2027
410	0.0026	1.2320	555	0.6285	298.6616	700	0.1417	67.3149
415	0.0073	3.4598	560	0.6668	316.8860	705	0.1213	57.6577
420	0.0156	7.4291	565	0.7066	335.7863	710	0.1028	48.8653
425	0.0323	15.3416	570	0.7557	359.1041	715	0.0872	41.4248
430	0.0608	28.8984	575	0.8073	383.6186	720	0.0741	35.2182
435	0.1047	49.7749	580	0.8548	406.2080	725	0.0624	29.6599
440	0.1873	88.9939	585	0.9022	428.7488	730	0.0538	25.5615
445	0.3517	167.1236	590	0.9432	448.1909	735	0.0450	21.3797
450	0.5404	256.8068	595	0.9751	463.3806	740	0.0381	18.1239
455	0.5310	252.3415	600	0.9967	473.6307	745	0.0318	15.1169
460	0.4265	202.6879	605	0.9964	473.5092	750	0.0268	12.7522
465	0.3324	157.9461	610	0.9921	471.4540	755	0.0225	10.6828
470	0.2645	125.7082	615	0.9676	459.8027	760	0.0187	8.9062
475	0.2061	97.9438	620	0.9329	443.2918	765	0.0166	7.8672
480	0.1792	85.1363	625	0.8872	421.6035	770	0.0145	6.9105
485	0.1783	84.7061	630	0.8312	395.0057	775	0.0109	5.1853
490	0.2005	95.2800	635	0.7691	365.4919	780	0.0097	4.6119
495	0.2402	114.1401	640	0.7056	335.3202	785	0.0077	3.6552
500	0.2916	138.5701	645	0.6388	303.5419	790	0.0071	3.3565
505	0.3456	164.2249	650	0.5753	273.3940	795	0.0048	2.3042
510	0.3929	186.7215	655	0.5118	243.2055	800	0.0043	2.0398
515	0.4323	205.4222	660	0.4547	216.0824			
520	0.4630	220.0032	665	0.3989	189.5516			

TM30

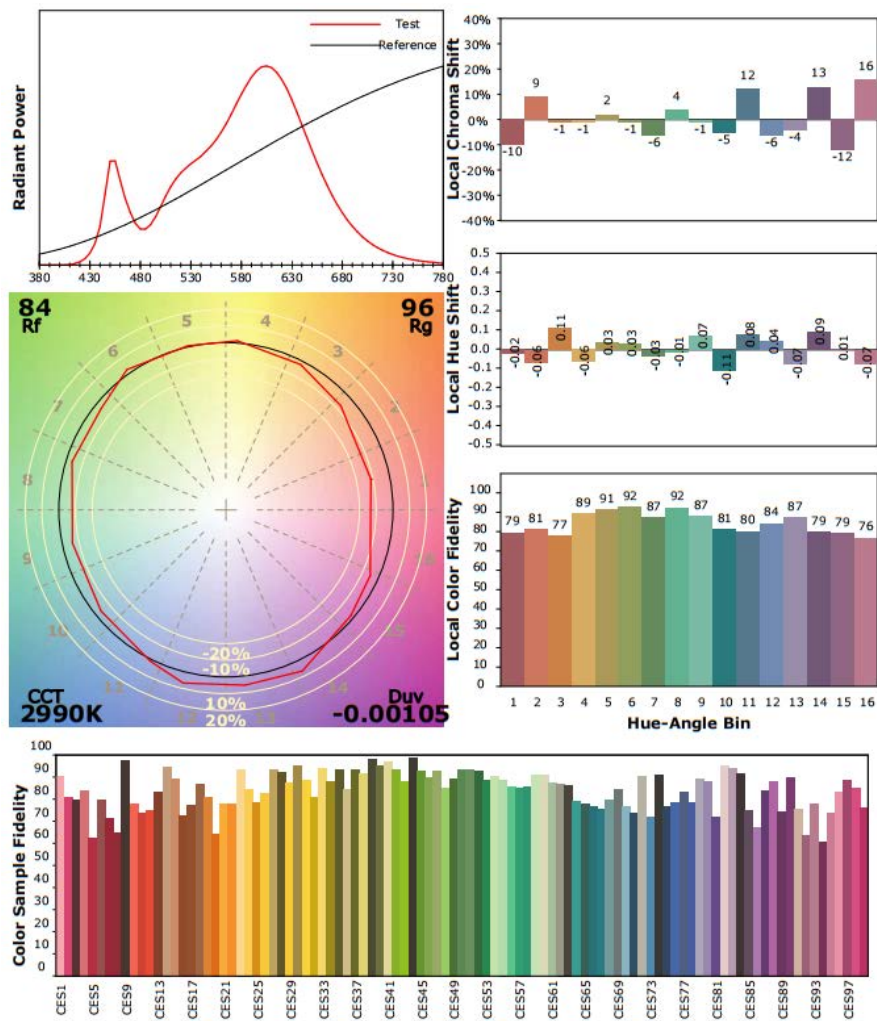
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-200S-EX39-8CCTBYP/480V @150W 3000K



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

x 0.4361
 y 0.4012
 u' 0.2513
 v' 0.5201

(CRI)	
R_a	82.8
R_g	8

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP /480V @150W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.547	147.25	0.975	19.5
	480.0	60	0.348	152.64	0.775	16.8
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

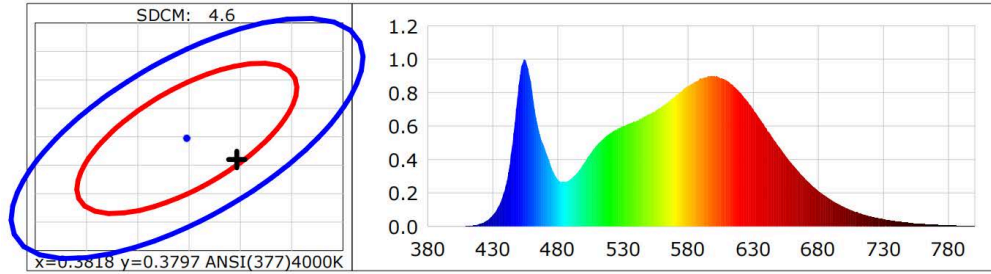
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	84	R9	16
Frequency (Hz)	60	R2	93	R10	82
CCT (K)	3828	R3	96	R11	82
Duv	-0.00211	R4	83	R12	64
Chromaticity (x, y)	x=0.3867 y=0.3760	R5	84	R13	87
Chromaticity (u', v')	u(u')=0.2295 v'=0.5022	R6	89	R14	98
Color Rendering Index (CRI)	84.8	R7	84	R15	79
R9	16	R8	66	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	25544.7	25883.5	>= 10000(-10%)
Luminous Efficacy (lm/W)	173.47	172.55	Standard: >= 120(-3%)
Most worst Luminous/Highest	172.31		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0010	0.4760	525	0.5793	284.4581	670	0.2824	138.6947
385	0.0002	0.0931	530	0.5981	293.7117	675	0.2467	121.1285
390	0.0002	0.1048	535	0.6147	301.8588	680	0.2124	104.2863
395	0.0006	0.2815	540	0.6293	309.0240	685	0.1847	90.6991
400	0.0004	0.1866	545	0.6504	319.3936	690	0.1578	77.5099
405	0.0008	0.3806	550	0.6694	328.7323	695	0.1353	66.4456
410	0.0028	1.3694	555	0.6939	340.7420	700	0.1153	56.6147
415	0.0066	3.2388	560	0.7212	354.1458	705	0.0980	48.1413
420	0.0157	7.7135	565	0.7480	367.3182	710	0.0841	41.2880
425	0.0334	16.4126	570	0.7778	381.9274	715	0.0708	34.7712
430	0.0682	33.4786	575	0.8099	397.7095	720	0.0604	29.6694
435	0.1292	63.4488	580	0.8380	411.5021	725	0.0513	25.1720
440	0.2464	120.9826	585	0.8634	423.9615	730	0.0436	21.4256
445	0.4879	239.5714	590	0.8837	433.9708	735	0.0369	18.1121
450	0.8514	418.0884	595	0.8955	439.7553	740	0.0306	15.0045
455	0.9946	488.3876	600	0.9009	442.3829	745	0.0257	12.6338
460	0.8188	402.0854	605	0.8865	435.3229	750	0.0224	10.9837
465	0.5809	285.2734	610	0.8710	427.6974	755	0.0177	8.7160
470	0.4628	227.2578	615	0.8382	411.6319	760	0.0149	7.3088
475	0.3529	173.2772	620	0.8006	393.1228	765	0.0135	6.6200
480	0.2801	137.5539	625	0.7538	370.1862	770	0.0113	5.5531
485	0.2648	130.0412	630	0.7008	344.1354	775	0.0091	4.4759
490	0.2843	139.6194	635	0.6452	316.8435	780	0.0069	3.4037
495	0.3223	158.2829	640	0.5873	288.3930	785	0.0066	3.2570
500	0.3774	185.3221	645	0.5288	259.6518	790	0.0052	2.5718
505	0.4358	213.9837	650	0.4746	233.0682	795	0.0047	2.3294
510	0.4868	239.0492	655	0.4194	205.9718	800	0.0037	1.8323
515	0.5258	258.1865	660	0.3711	182.2154			
520	0.5561	273.0642	665	0.3266	160.3919			

TM30

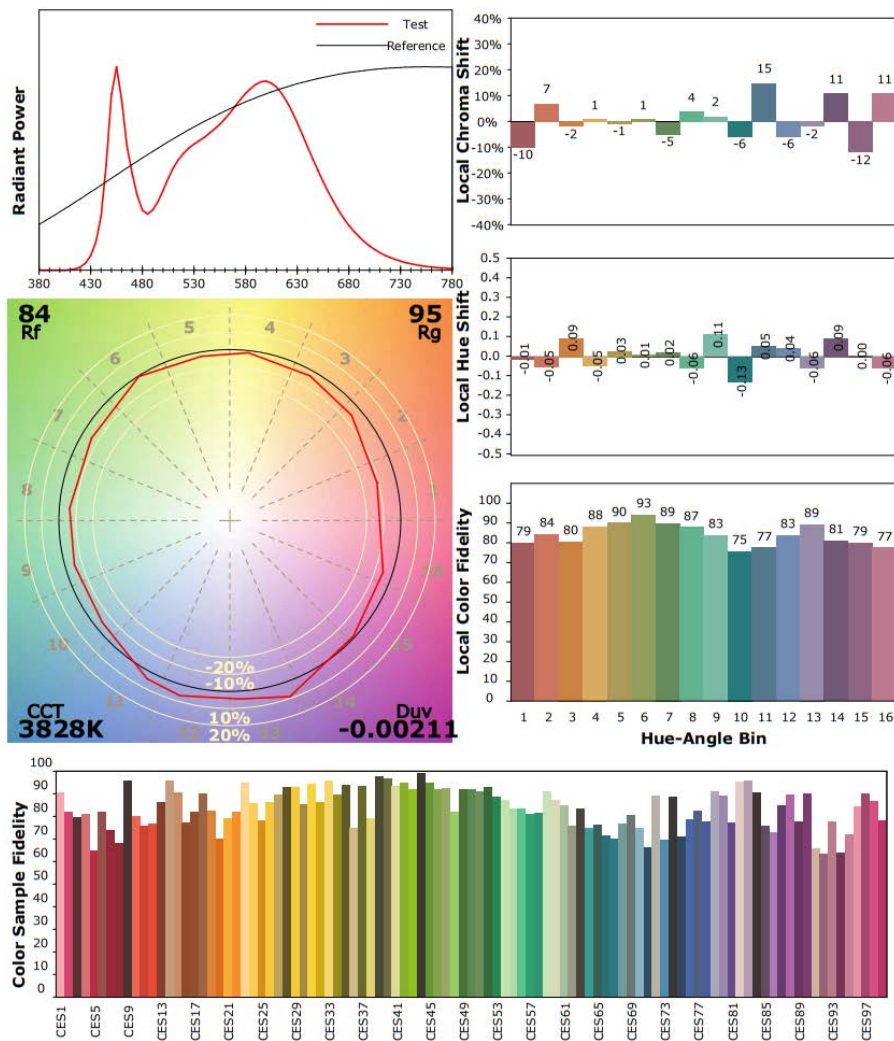
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-4080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-200S-EX39-8CCT-BYP/480V @150W 4000K



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

x 0.3867
 y 0.3760
 u' 0.2295
 v' 0.5022

(CRI)
 R_a 84.8
 R_g 16

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP/480V @150W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404	277.0	60	0.562	151.32	0.975	19.2
1E-A3	480.0	60	0.365	154.21	0.911	16.5
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

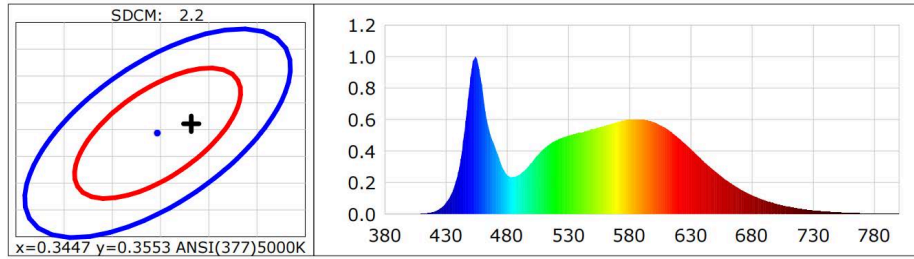
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	81	R9	7
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	4905	R3	94	R11	79
Duv	0.00149	R4	80	R12	54
Chromaticity (x, y)	x=0.3482 y=0.3571	R5	81	R13	84
Chromaticity (u', v')	u(u')=0.2114 v'(v')=0.4878	R6	85	R14	97
Color Rendering Index (CRI)	82.9	R7	86	R15	76
R9	7	R8	66	--	--
Rf	82	--	--	--	--
Rg	93	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	25360.3	24.977.1	>= 10000(-10%)
Luminous Efficacy (lm/W)	167.59	165.34	Standard: >= 120(-3%)
Most worst Luminous/Highest	164.25		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.2457	525	0.4848	322.1179	670	0.1591	105.7466
385	0.0002	0.1067	530	0.4982	331.0158	675	0.1384	91.9310
390	0.0003	0.1861	535	0.5084	337.7903	680	0.1196	79.4643
395	0.0006	0.3730	540	0.5160	342.8297	685	0.1027	68.2176
400	0.0005	0.3363	545	0.5288	351.3644	690	0.0884	58.7671
405	0.0007	0.4716	550	0.5388	358.0101	695	0.0760	50.5188
410	0.0022	1.4862	555	0.5509	366.0243	700	0.0643	42.7099
415	0.0061	4.0699	560	0.5621	373.4654	705	0.0542	36.0388
420	0.0148	9.8183	565	0.5722	380.2106	710	0.0457	30.3464
425	0.0347	23.0483	570	0.5835	387.6845	715	0.0392	26.0545
430	0.0732	48.6473	575	0.5924	393.6530	720	0.0333	22.1153
435	0.1401	93.0655	580	0.5980	397.3666	725	0.0272	18.1031
440	0.2691	178.7894	585	0.6004	398.9481	730	0.0227	15.0653
445	0.5223	347.0227	590	0.6000	398.6869	735	0.0192	12.7773
450	0.8737	580.5493	595	0.5936	394.4399	740	0.0155	10.3284
455	0.9884	656.7625	600	0.5835	387.7072	745	0.0141	9.3737
460	0.7718	512.7898	605	0.5635	374.3892	750	0.0115	7.6102
465	0.5351	355.5789	610	0.5428	360.6863	755	0.0097	6.4319
470	0.4251	282.4909	615	0.5134	341.1382	760	0.0083	5.5157
475	0.3158	209.8072	620	0.4819	320.1771	765	0.0070	4.6285
480	0.2479	164.7444	625	0.4491	298.4196	770	0.0063	4.1954
485	0.2351	156.2075	630	0.4136	274.7917	775	0.0053	3.5291
490	0.2510	166.7902	635	0.3752	249.3030	780	0.0035	2.3154
495	0.2829	187.9753	640	0.3383	224.7601	785	0.0030	1.9741
500	0.3276	217.6941	645	0.3031	201.3870	790	0.0031	2.0331
505	0.3754	249.4208	650	0.2699	179.3304	795	0.0020	1.3019
510	0.4150	275.7441	655	0.2388	158.6718	800	0.0018	1.1738
515	0.4459	296.2583	660	0.2104	139.7775			
520	0.4687	311.4333	665	0.1835	121.8935			

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ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

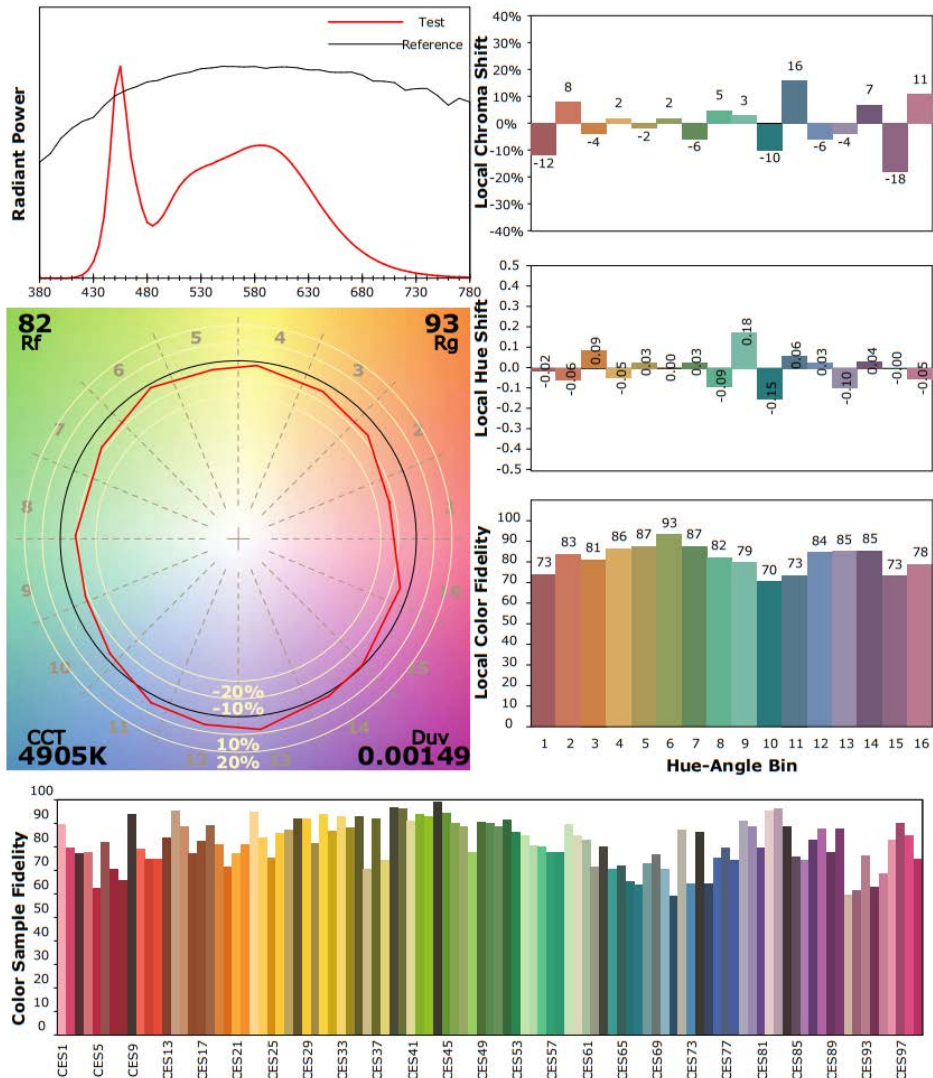
Manufacturer: RAB LIGHTING INC

Date: 2024/11/29

Model:

HIDFA-200S-EX39-8CCT-BYP/480V

@150W 5000K



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

x 0.3482
 y 0.3571
 u' 0.2114
 v' 0.4878

(CRI)	
R_a	82.9
R_g	7

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP/480V @100W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.389	102.45	0.953	21.0
	480.0	60	0.301	106.81	0.785	31.6
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

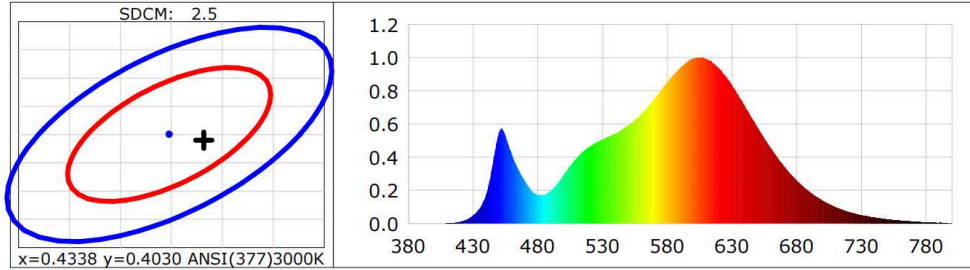
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	2979	R3	96	R11	81
Duv	-0.00087	R4	81	R12	70
Chromaticity (x, y)	x=0.4372 y=0.4020	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2516 v'=0.5206	R6	90	R14	99
Color Rendering Index (CRI)	83.1	R7	82	R15	74
R9	8	R8	59	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	17220.4	16589.1	$\geq 10000(-10\%)$
Luminous Efficacy (lm/W)	168.08	165.89	Standard: $\geq 120(-3\%)$
Most worst Luminous/Highest	161.80		
Zonal lumens in the 20-50° (%)	12.6	--	$\geq 30(-10\%)$
Beam Angle (°)	162.7	--	--
Center Beam Candle Power (cd)	457.1	--	--

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	0.0585	525	0.4888	172.6991	670	0.3474	122.7435
385	0.0001	0.0477	530	0.5071	179.1639	675	0.3021	106.7222
390	0.0001	0.0357	535	0.5248	185.4306	680	0.2616	92.4308
395	0.0006	0.2126	540	0.5420	191.4844	685	0.2244	79.2977
400	0.0002	0.0627	545	0.5681	200.7135	690	0.1938	68.4894
405	0.0006	0.2178	550	0.5927	209.4034	695	0.1643	58.0493
410	0.0016	0.5651	555	0.6263	221.2674	700	0.1404	49.5995
415	0.0048	1.7064	560	0.6635	234.4270	705	0.1185	41.8597
420	0.0119	4.2084	565	0.7049	249.0442	710	0.1003	35.4438
425	0.0254	8.9811	570	0.7509	265.3123	715	0.0855	30.2200
430	0.0513	18.1375	575	0.8020	283.3754	720	0.0723	25.5504
435	0.0934	33.0080	580	0.8499	300.3016	725	0.0604	21.3489
440	0.1762	62.2601	585	0.8985	317.4745	730	0.0518	18.3126
445	0.3541	125.1275	590	0.9400	332.1137	735	0.0442	15.6248
450	0.5524	195.1573	595	0.9727	343.6831	740	0.0369	13.0372
455	0.5299	187.2256	600	0.9962	351.9848	745	0.0313	11.0637
460	0.4173	147.4300	605	0.9973	352.3569	750	0.0256	9.0489
465	0.3242	114.5550	610	0.9935	351.0334	755	0.0218	7.6985
470	0.2570	90.8089	615	0.9700	342.7283	760	0.0189	6.6779
475	0.1999	70.6246	620	0.9350	330.3528	765	0.0163	5.7768
480	0.1741	61.5124	625	0.8910	314.8134	770	0.0136	4.7912
485	0.1741	61.5044	630	0.8367	295.6174	775	0.0102	3.6094
490	0.1983	70.0688	635	0.7741	273.5124	780	0.0089	3.1524
495	0.2398	84.7123	640	0.7104	250.9938	785	0.0075	2.6330
500	0.2929	103.5010	645	0.6425	226.9949	790	0.0059	2.0822
505	0.3476	122.8282	650	0.5783	204.3175	795	0.0049	1.7430
510	0.3956	139.7632	655	0.5142	181.6888	800	0.0042	1.4751
515	0.4342	153.4130	660	0.4556	160.9799			
520	0.4634	163.7364	665	0.3987	140.8597			

TM30

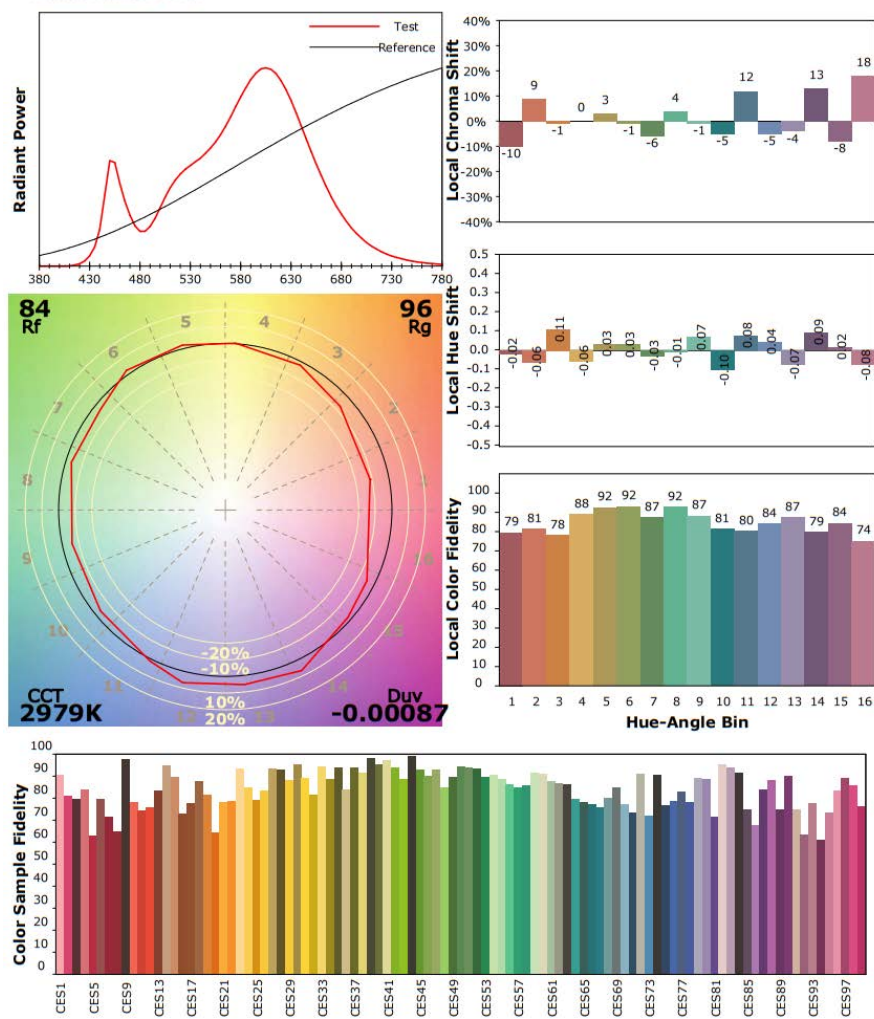
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-200S-EX39-8CCTBYP/480V
@100W 3000K



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

x 0.4372
 y 0.4020
 u' 0.2516
 v' 0.5206

(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 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP /480V @100W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	277.0	60	0.382	100.38	0.951	21.3
	480.0	60	0.231	106.12	0.782	32.2
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

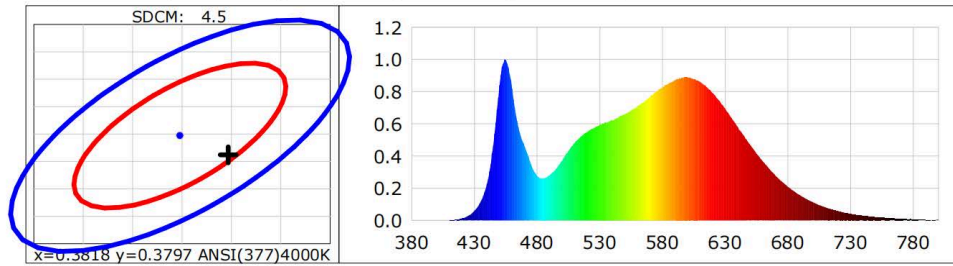
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	84	R9	17
Frequency (Hz)	60	R2	93	R10	82
CCT (K)	3828	R3	96	R11	82
Duv	-0.00204	R4	83	R12	63
Chromaticity (x, y)	x=0.3867 y=0.3767	R5	84	R13	87
Chromaticity (u', v')	u(u')=0.2295 v'=0.5023	R6	89	R14	99
Color Rendering Index (CRI)	84.9	R7	84	R15	79
R9	17	R8	66	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	18095.0	178046.5	>= 10000(-10%)
Luminous Efficacy (lm/W)	180.27	178.24	Standard: >= 120(-3%)
Most worst Luminous/Highest	173.23		

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	0.1025	525	0.5729	206.8386	670	0.2786	100.5660
385	0.0005	0.1720	530	0.5915	213.5615	675	0.2430	87.7131
390	0.0000	0.0170	535	0.6069	219.1197	680	0.2097	75.7180
395	0.0006	0.1991	540	0.6202	223.9243	685	0.1804	65.1156
400	0.0002	0.0865	545	0.6414	231.5565	690	0.1550	55.9464
405	0.0007	0.2504	550	0.6603	238.3908	695	0.1320	47.6433
410	0.0020	0.7195	555	0.6845	247.1138	700	0.1130	40.7992
415	0.0053	1.9098	560	0.7096	256.1941	705	0.0955	34.4778
420	0.0132	4.7525	565	0.7359	265.6903	710	0.0816	29.4655
425	0.0288	10.4022	570	0.7668	276.8379	715	0.0689	24.8843
430	0.0604	21.7960	575	0.7988	288.3696	720	0.0592	21.3835
435	0.1177	42.5099	580	0.8260	298.2249	725	0.0496	17.9049
440	0.2292	82.7495	585	0.8516	307.4517	730	0.0423	15.2707
445	0.4690	169.3317	590	0.8715	314.6296	735	0.0353	12.7405
450	0.8414	303.7823	595	0.8836	319.0144	740	0.0297	10.7237
455	0.9971	359.9732	600	0.8881	320.6343	745	0.0254	9.1592
460	0.8204	296.1683	605	0.8761	316.2939	750	0.0211	7.6183
465	0.5785	208.8355	610	0.8602	310.5525	755	0.0173	6.2564
470	0.4615	166.6096	615	0.8292	299.3672	760	0.0151	5.4641
475	0.3500	126.3769	620	0.7909	285.5240	765	0.0133	4.8196
480	0.2776	100.2031	625	0.7457	269.2254	770	0.0111	3.9994
485	0.2618	94.5050	630	0.6934	250.3340	775	0.0085	3.0802
490	0.2817	101.6942	635	0.6376	230.1912	780	0.0066	2.3994
495	0.3202	115.5834	640	0.5805	209.5681	785	0.0053	1.9211
500	0.3728	134.5837	645	0.5239	189.1431	790	0.0047	1.6888
505	0.4313	155.7012	650	0.4692	169.3932	795	0.0044	1.5968
510	0.4825	174.1892	655	0.4150	149.8362	800	0.0033	1.2045
515	0.5212	188.1581	660	0.3662	132.2191			
520	0.5501	198.5859	665	0.3214	116.0381			

TM30

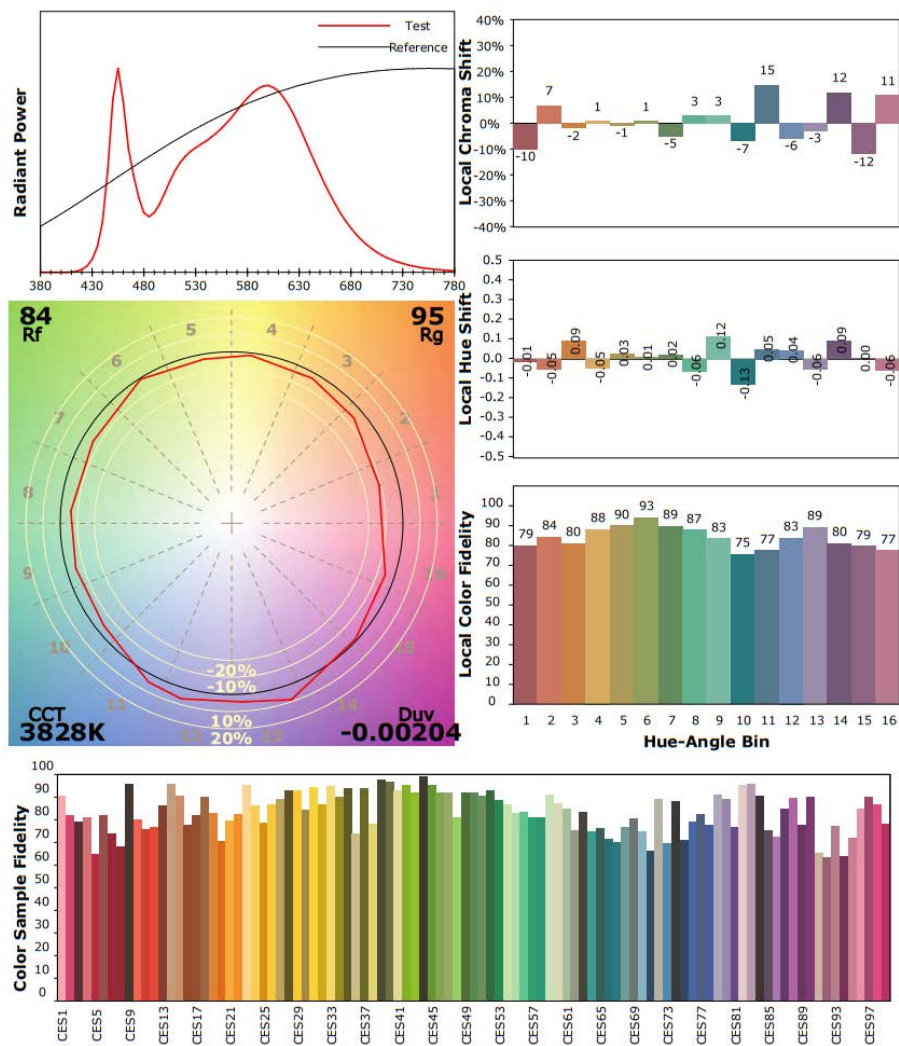
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-4080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-200S-EX39-8CCT-BYP/480V
@100W 4000K



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

x 0.3867
 y 0.3762
 u' 0.2295
 v' 0.5023

(CRI)
 R_a 84.9
 R_g 17

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-09-20	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-200S-EX39-8CCT-BYP/480V @100W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404	277.0	60	0.390	102.83	0.954	20.8
1E-A3	480.0	60	0.310	108.21	0.795	31.5
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

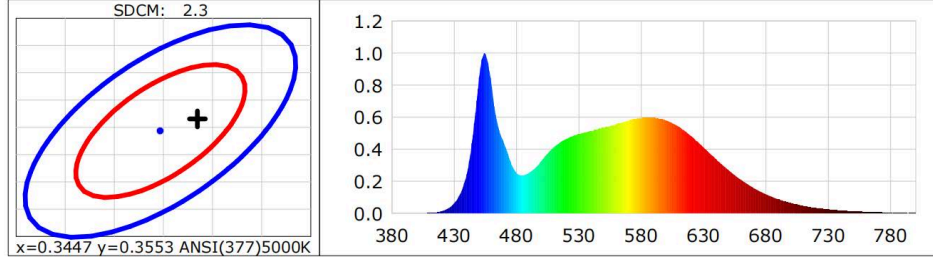
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	76
CCT (K)	4897	R3	95	R11	79
Duv	0.00162	R4	80	R12	54
Chromaticity (x, y)	x=0.3485 y=0.3575	R5	81	R13	84
Chromaticity (u', v')	u(u')=0.2114 v'(v')=0.4880	R6	85	R14	98
Color Rendering Index (CRI)	83.0	R7	86	R15	76
R9	8	R8	66	--	--
Rf	82	--	--	--	--
Rg	92	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

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)	18444.7	17758.5	>= 10000(-10%)
Luminous Efficacy (lm/W)	179.56	177.24	Standard: >= 120(-3%)
Most worst Luminous/Highest	171.37		

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	0.1076	525	0.4822	233.6454	670	0.1577	76.4324
385	0.0004	0.1826	530	0.4946	239.6544	675	0.1375	66.6367
390	0.0003	0.1229	535	0.5046	244.5297	680	0.1189	57.6150
395	0.0006	0.2845	540	0.5121	248.1321	685	0.1023	49.5793
400	0.0007	0.3177	545	0.5240	253.9311	690	0.0875	42.3883
405	0.0009	0.4222	550	0.5336	258.5860	695	0.0751	36.3966
410	0.0024	1.1623	555	0.5455	264.3282	700	0.0641	31.0742
415	0.0056	2.7260	560	0.5577	270.2610	705	0.0546	26.4499
420	0.0136	6.5749	565	0.5670	274.7262	710	0.0465	22.5547
425	0.0305	14.7633	570	0.5779	280.0355	715	0.0393	19.0463
430	0.0642	31.1118	575	0.5878	284.8412	720	0.0342	16.5905
435	0.1256	60.8810	580	0.5926	287.1783	725	0.0287	13.9001
440	0.2459	119.1755	585	0.5958	288.7039	730	0.0237	11.4839
445	0.4907	237.7713	590	0.5959	288.7463	735	0.0207	10.0368
450	0.8518	412.7746	595	0.5901	285.9223	740	0.0168	8.1181
455	0.9940	481.6442	600	0.5801	281.1156	745	0.0144	6.9672
460	0.7908	383.1783	605	0.5608	271.7451	750	0.0127	6.1521
465	0.5435	263.3624	610	0.5410	262.1476	755	0.0102	4.9565
470	0.4348	210.6913	615	0.5130	248.5603	760	0.0091	4.4229
475	0.3236	156.7843	620	0.4812	233.1516	765	0.0079	3.8423
480	0.2511	121.6627	625	0.4488	217.4548	770	0.0072	3.4764
485	0.2365	114.5780	630	0.4113	199.2842	775	0.0045	2.1958
490	0.2525	122.3756	635	0.3740	181.2274	780	0.0037	1.8139
495	0.2830	137.1218	640	0.3379	163.7259	785	0.0034	1.6674
500	0.3277	158.7801	645	0.3016	146.1501	790	0.0028	1.3533
505	0.3741	181.2719	650	0.2697	130.7044	795	0.0030	1.4618
510	0.4131	200.1685	655	0.2372	114.9468	800	0.0020	0.9776
515	0.4431	214.6978	660	0.2087	101.1444			
520	0.4647	225.1626	665	0.1819	88.1662			

TM-30

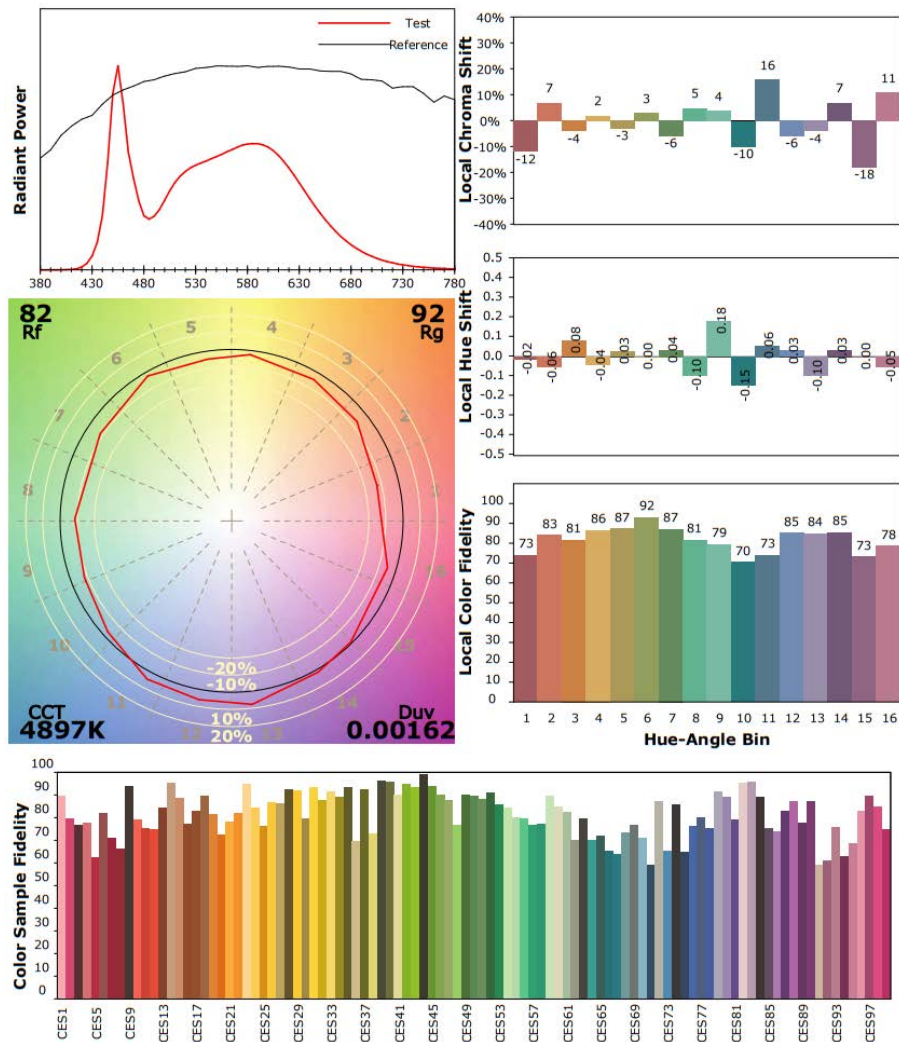
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/11/29

Model: HIDFA-200S-EX39-8CCT-BYP/480V
@100W 5000K



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

x 0.3485
 y 0.3575
 u' 0.2114
 v' 0.4880

(CRI)	
R_a	83.0
R_g	8