

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-150S-EX39-8CCT-BYP

Test & Report By:



Engineer: Winny Wu

Date:2023-04-26

Review By:

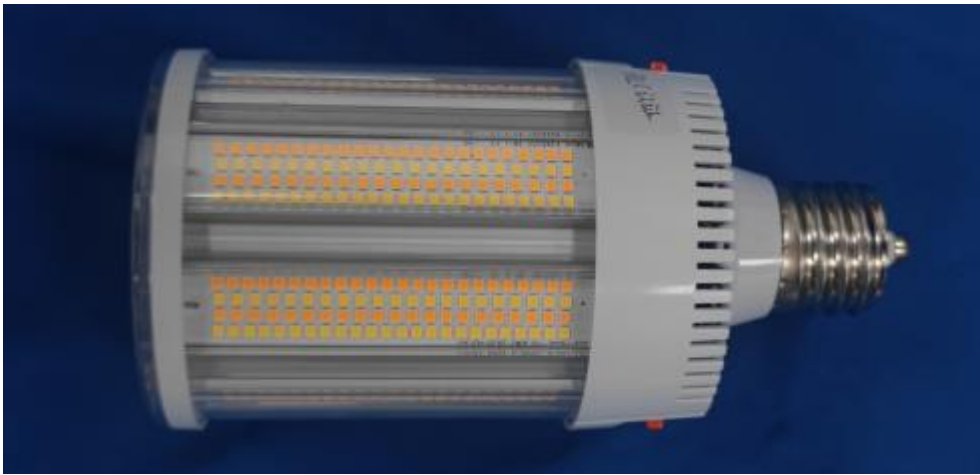


Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB LIGHTING INC	
Brand Name	RAB LIGHTING	
Model Number	HIDFA-150S-EX39-8CCT-BYP	
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	120-277Vac, 50/60 Hz	
Nominal Power	150W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-XX80RC35003P1	
Sample Number	UTC2304041E-B1-3	
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	2023-04-23
Date of Test	2023-04-25
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 ° vertical intervals and 22.5 ° horizontal intervals. Goniophotometer far field detector $f1' = 1.42\%$, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

Self-absorption:

AST-CLW16-150WBCDA1-ad30K:1.102

AST-CLW16-150WBCDA1-ad40K:1.102

AST-CLW16-150WBCDA1-ad40K:1.102

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-04-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-150S-EX39-8CCT-BYP @150W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404 1E-B1	120.0	60	1.341	159.95	0.994	10.28
	277.0	60	0.575	152.59	0.958	8.51
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

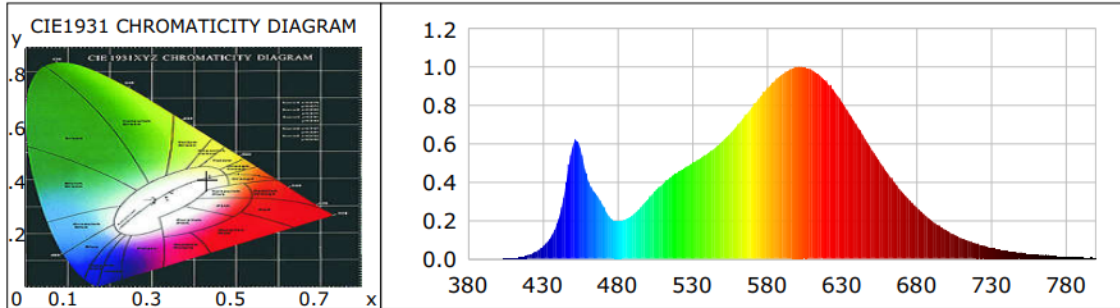
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	4
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3027	R3	96	R11	77
Duv	0.0013	R4	79	R12	69
Chromaticity (x, y)	x=0.4331 y=0.3994	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2501 v'(v')=0.5190	R6	89	R14	98
Color Rendering Index (CRI)	82	R7	81	R15	73
R9	4	R8	57	--	--
Rf	83	--	--	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	19342.8	18664.8	$\geq 10000(-10\%)$
Luminous Efficacy (lm/W)	120.93	122.32	Standard: $\geq 120(-3\%)$
Most worst Luminous/Highest	116.69		
Zonal lumens in the 20-50° (%)	61.50	--	$\geq 30(-10\%)$
Beam Angle (°)	108.7	--	--
Center Beam Candle Power (cd)	5713	--	--

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	0.1582	535	0.4751	225.3585	690	0.3509	166.4378
385	0.0005	0.2355	540	0.4973	235.9225	695	0.3064	145.3499
390	0.0005	0.2216	545	0.5220	247.6290	700	0.2657	126.0303
395	0.0003	0.1482	550	0.5485	260.2063	705	0.2315	109.8016
400	0.0006	0.2999	555	0.5764	273.4462	710	0.1995	94.6384
405	0.0016	0.7387	560	0.6123	290.4425	715	0.1723	81.7316
410	0.0041	1.9348	565	0.6496	308.1448	720	0.1475	69.9886
415	0.0096	4.5569	570	0.6944	329.4169	725	0.1265	60.0161
420	0.0189	8.9432	575	0.7410	351.5026	730	0.1083	51.3777
425	0.0356	16.8706	580	0.7887	374.1448	735	0.0926	43.9208
430	0.0623	29.5746	585	0.8393	398.1461	740	0.0790	37.4990
435	0.1076	51.0348	590	0.8876	421.0579	745	0.0673	31.9296
440	0.1893	89.7765	595	0.9267	439.6207	750	0.0578	27.4313
445	0.3597	170.6118	600	0.9610	455.8685	755	0.0486	23.0337
450	0.5823	276.2064	605	0.9858	467.6248	760	0.0412	19.5517
455	0.5819	276.0471	610	0.9988	473.7909	765	0.0355	16.8280
460	0.4183	198.4447	615	0.9959	472.4488	770	0.0316	14.9770
465	0.3439	163.1306	620	0.9857	467.6034	775	0.0257	12.1790
470	0.2816	133.6078	625	0.9594	455.1129	780	0.0226	10.7332
475	0.2156	102.2620	630	0.9199	436.3640	785	0.0187	8.8532
480	0.1955	92.7643	635	0.8728	414.0595	790	0.0163	7.7374
485	0.2049	97.2017	640	0.8175	387.7927	795	0.0134	6.3787
490	0.2267	107.5226	645	0.7585	359.8156	800	0.0109	5.1576
495	0.2629	124.7198	650	0.6956	329.9905			
500	0.3074	145.8258	655	0.6318	299.6955			
505	0.3507	166.3624	660	0.5693	270.0487			
510	0.3884	184.2362	665	0.5102	242.0202			
515	0.4220	200.1834	670	0.4518	214.3178			
520	0.4489	212.9581	675	0.3991	189.3351			
525	0.4751	225.3585	680	0.3509	166.4378			
530	0.4973	235.9225	685	0.3064	145.3499			

TM30

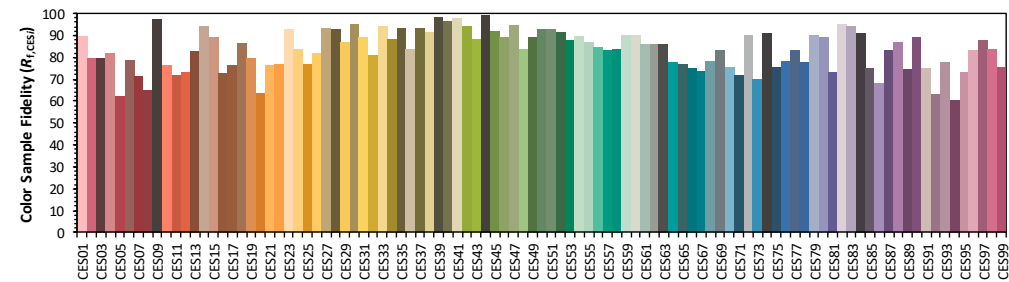
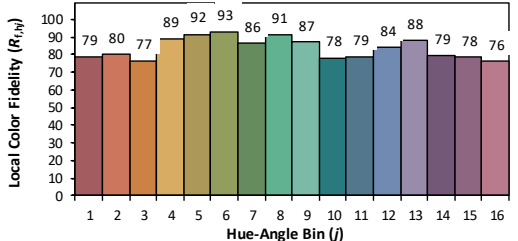
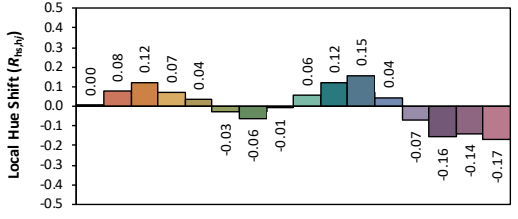
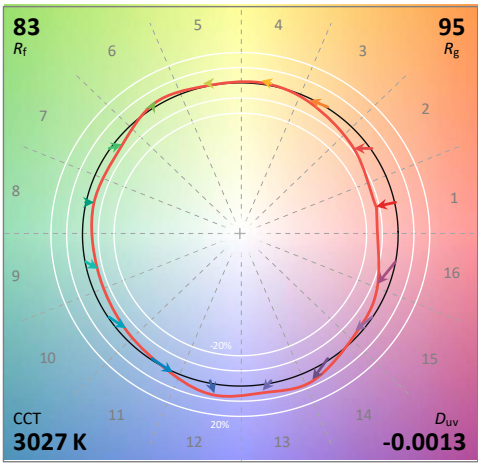
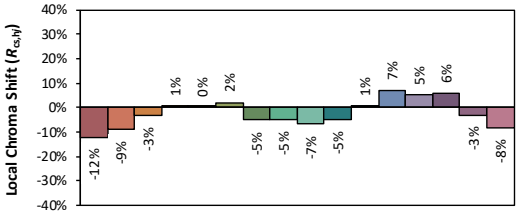
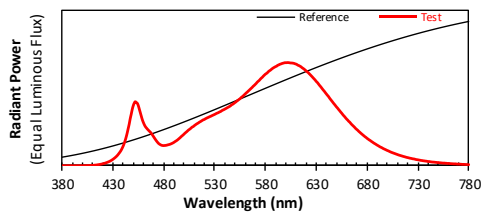
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2023/4/25

Model: AHIDFA-80S-EX39-8CCT-BYP @150W 3000K



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

x 0.4331
 y 0.3994
 u' 0.2501
 v' 0.5190

CIE 13.3-1995 (CRI)
 R_a 82
 R_9 4

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

Zonal Lumen Tabulation

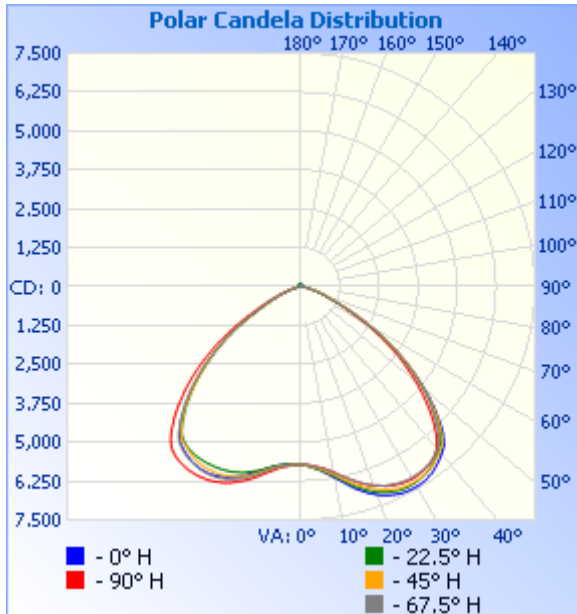
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	5,609.9	29%	29%
0-40	9,901.8	51.2%	51.2%
0-60	17,383.5	89.9%	89.9%
60-90	1,783.4	9.2%	9.2%
70-100	483.4	2.5%	2.5%
90-120	59.6	0.3%	0.3%
0-90	19,166.9	99.1%	99.1%
90-180	173.7	0.9%	0.9%
0-180	19,340.6	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	562.5	2.9%	90-100	18.6	0.1%
10-20	1,835.4	9.5%	100-110	19.7	0.1%
20-30	3,212.0	16.6%	110-120	21.3	0.1%
30-40	4,291.9	22.2%	120-130	28.1	0.1%
40-50	4,389.0	22.7%	130-140	26.8	0.1%
50-60	3,092.6	16.0%	140-150	25.4	0.1%
60-70	1,318.6	6.8%	150-160	19.9	0.1%
70-80	393.8	2.0%	160-170	10.5	0.1%
80-90	71.1	0.4%	170-180	3.5	0%

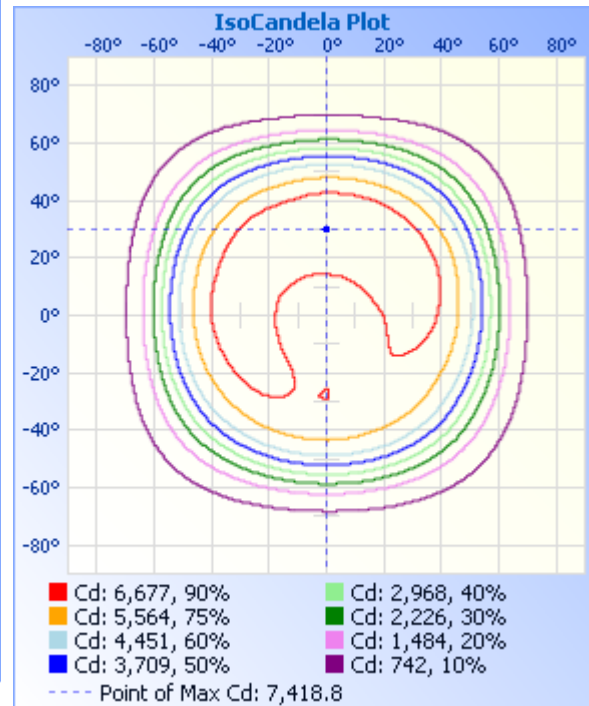
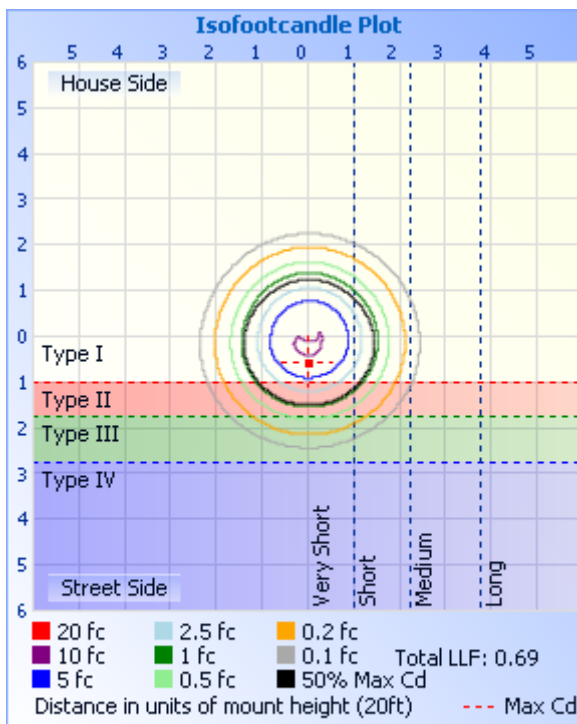
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	19.77 fc	46.5 ft	39.2 ft
34.0ft	4.94 fc	93.1 ft	78.4 ft
51.0ft	2.20 fc	139.6 ft	117.6 ft
68.0ft	1.24 fc	186.2 ft	156.9 ft
85.0ft	0.79 fc	232.7 ft	196.1 ft
102.0ft	0.55 fc	279.2 ft	235.3 ft

■ Vert. Spread: 107.7°
■ Horiz. Spread: 98.1°



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	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713	5713
1	5743	5737	5731	5722	5716	5706	5688	5695	5700	5700	5710	5708	5726	5734	5731	5748	5743
2	5764	5760	5759	5732	5726	5716	5695	5701	5704	5701	5714	5708	5736	5746	5756	5774	5764
3	5804	5793	5792	5760	5749	5732	5707	5711	5711	5710	5725	5727	5753	5777	5783	5805	5804
4	5843	5828	5816	5786	5776	5765	5726	5725	5715	5722	5744	5752	5778	5809	5817	5840	5843
5	5888	5874	5857	5821	5806	5786	5756	5748	5736	5736	5764	5772	5802	5847	5857	5883	5888
6	5934	5925	5897	5851	5844	5820	5777	5773	5759	5758	5781	5807	5836	5888	5906	5941	5934
7	6010	5981	5952	5899	5883	5861	5817	5802	5779	5785	5817	5845	5875	5938	5965	6008	6010
8	6076	6044	6014	5952	5930	5904	5863	5833	5814	5825	5857	5887	5933	5998	6034	6073	6076
9	6148	6112	6073	6009	5989	5959	5915	5881	5856	5862	5902	5937	5993	6061	6107	6150	6148
10	6235	6187	6138	6075	6049	6025	5976	5931	5907	5906	5956	5994	6053	6130	6192	6229	6235
11	6322	6272	6231	6137	6136	6099	6045	5990	5968	5956	6008	6049	6114	6209	6296	6318	6322
12	6415	6358	6313	6223	6220	6175	6122	6057	6026	6007	6077	6123	6195	6295	6389	6418	6415
13	6515	6448	6386	6288	6293	6260	6207	6115	6091	6063	6137	6194	6267	6382	6483	6511	6515
14	6617	6549	6474	6377	6374	6350	6284	6183	6151	6107	6213	6260	6340	6480	6580	6607	6617
15	6719	6648	6558	6442	6446	6415	6364	6245	6220	6152	6265	6324	6408	6560	6668	6701	6719
16	6800	6704	6636	6524	6528	6503	6426	6301	6286	6195	6315	6384	6472	6653	6760	6790	6800
17	6887	6803	6715	6594	6605	6577	6484	6358	6361	6243	6372	6444	6530	6730	6852	6865	6887
18	6969	6881	6789	6668	6670	6639	6558	6425	6424	6281	6419	6492	6584	6810	6929	6946	6969
19	7041	6952	6842	6736	6737	6704	6618	6473	6475	6302	6461	6549	6644	6887	7007	7031	7041
20	7116	7019	6924	6796	6795	6754	6666	6503	6520	6336	6488	6584	6706	6964	7081	7097	7116
21	7179	7077	6984	6829	6851	6797	6716	6539	6567	6359	6513	6625	6751	7034	7143	7158	7179
22	7226	7130	7038	6892	6904	6832	6752	6576	6598	6379	6539	6653	6789	7103	7194	7208	7226
23	7276	7173	7095	6942	6959	6864	6788	6598	6629	6388	6563	6687	6818	7155	7247	7249	7276
24	7317	7204	7137	6969	7005	6887	6820	6610	6657	6402	6576	6701	6854	7194	7288	7292	7317
25	7354	7242	7177	7001	7041	6901	6847	6624	6676	6408	6575	6710	6876	7250	7322	7331	7354
26	7383	7275	7205	7032	7068	6905	6853	6632	6693	6421	6576	6717	6900	7283	7348	7363	7383
27	7397	7288	7223	7058	7099	6926	6866	6644	6695	6414	6576	6716	6903	7312	7359	7387	7397

28	7410	7301	7234	7070	7113	6932	6872	6641	6693	6425	6570	6708	6914	7322	7367	7404	7410
29	7418	7289	7249	7083	7127	6923	6860	6639	6685	6416	6558	6695	6921	7329	7364	7402	7418
30	7419	7290	7257	7083	7133	6910	6844	6621	6666	6413	6539	6683	6919	7328	7361	7402	7419
31	7412	7273	7244	7077	7127	6876	6821	6610	6644	6403	6517	6658	6914	7326	7349	7393	7412
32	7399	7251	7245	7074	7122	6875	6801	6594	6614	6395	6485	6641	6904	7315	7333	7387	7399
33	7388	7230	7235	7067	7104	6855	6775	6573	6575	6376	6445	6609	6883	7298	7313	7368	7388
34	7338	7205	7206	7050	7086	6829	6732	6546	6537	6352	6409	6568	6857	7272	7288	7344	7338
35	7318	7168	7175	7040	7059	6799	6689	6508	6489	6318	6349	6518	6833	7237	7244	7306	7318
36	7263	7124	7137	7013	7025	6768	6632	6468	6438	6282	6312	6474	6796	7194	7205	7266	7263
37	7204	7066	7091	6967	6980	6716	6581	6407	6380	6229	6264	6406	6747	7142	7158	7207	7204
38	7150	7006	7020	6916	6926	6660	6484	6338	6314	6175	6210	6340	6690	7076	7097	7140	7150
39	7080	6934	6973	6861	6859	6555	6368	6215	6196	6077	6103	6240	6613	7004	7037	7072	7080
40	7007	6854	6914	6797	6757	6413	6209	6050	6066	5951	5989	6101	6500	6928	6970	7005	7007
41	6934	6782	6841	6732	6636	6260	6029	5896	5916	5812	5847	5942	6366	6768	6884	6928	6934
42	6852	6698	6771	6597	6495	6097	5866	5744	5743	5632	5686	5779	6213	6622	6753	6838	6852
43	6701	6582	6637	6449	6325	5926	5689	5559	5550	5476	5515	5597	6022	6462	6604	6697	6701
44	6560	6409	6476	6292	6138	5757	5470	5384	5365	5301	5319	5415	5857	6272	6423	6512	6560
45	6359	6216	6281	6095	5946	5549	5266	5201	5167	5095	5127	5226	5665	6076	6220	6313	6359
46	6142	6027	6077	5916	5737	5353	5057	5001	4963	4915	4925	5034	5463	5885	6026	6125	6142
47	5925	5795	5869	5735	5520	5157	4849	4796	4738	4727	4717	4836	5231	5684	5825	5923	5925
48	5703	5589	5632	5537	5298	4948	4630	4554	4525	4519	4510	4623	5031	5452	5614	5707	5703
49	5470	5373	5414	5330	5079	4732	4412	4344	4314	4308	4273	4406	4819	5228	5391	5482	5470
50	5232	5136	5185	5107	4857	4482	4188	4129	4102	4073	4074	4186	4593	4994	5162	5241	5232
51	4966	4895	4953	4876	4631	4254	3961	3904	3885	3862	3861	3975	4367	4754	4905	4957	4966
52	4730	4653	4713	4616	4380	4026	3751	3682	3649	3649	3656	3730	4126	4510	4666	4719	4730
53	4479	4394	4475	4387	4151	3792	3516	3415	3421	3429	3434	3505	3888	4263	4431	4469	4479
54	4229	4151	4229	4142	3925	3556	3260	3187	3204	3200	3190	3274	3642	3988	4186	4224	4229
55	3969	3895	3954	3895	3678	3296	3035	2969	2985	2953	2965	3046	3410	3753	3916	3949	3969
56	3682	3645	3703	3621	3416	3062	2817	2748	2728	2727	2752	2796	3170	3509	3658	3682	3682
57	3425	3393	3443	3372	3169	2841	2578	2489	2501	2503	2512	2582	2907	3248	3406	3422	3425
58	3173	3104	3192	3122	2915	2596	2325	2246	2281	2281	2308	2362	2671	2970	3151	3168	3173

59	2923	2850	2918	2881	2665	2348	2073	2022	2062	2039	2044	2134	2433	2715	2889	2922	2923
60	2664	2601	2663	2616	2403	2101	1867	1789	1812	1807	1814	1905	2189	2472	2617	2669	2664
61	2383	2355	2416	2339	2141	1858	1685	1600	1595	1590	1624	1682	1951	2216	2336	2384	2383
62	2130	2119	2175	2112	1901	1686	1500	1430	1428	1428	1434	1500	1721	1969	2108	2124	2130
63	1904	1859	1951	1888	1702	1525	1363	1290	1287	1266	1282	1359	1547	1725	1879	1888	1904
64	1673	1650	1702	1654	1523	1372	1229	1155	1160	1148	1162	1225	1394	1545	1635	1646	1673
65	1441	1449	1471	1465	1368	1223	1104	1043	1035	1035	1050	1099	1263	1401	1439	1442	1441
66	1244	1235	1296	1323	1218	1097	981	927	923	922	937	974	1135	1264	1292	1253	1244
67	1091	1098	1138	1174	1091	976	871	816	822	825	839	873	1015	1135	1151	1102	1091
68	958	957	1013	1041	973	862	757	719	728	731	735	784	909	1003	1029	984	958
69	868	860	907	934	854	759	670	631	629	638	648	685	798	892	931	885	868
70	787	781	819	824	758	670	589	553	553	563	570	605	706	794	809	796	787
71	660	660	699	728	666	591	514	471	485	490	494	528	609	701	721	676	660
72	584	577	615	640	583	517	444	410	421	418	431	461	541	618	630	602	584
73	504	504	540	561	504	445	385	356	359	357	378	405	473	535	554	523	504
74	433	433	466	493	436	388	338	305	311	311	330	348	412	469	481	453	433
75	381	385	404	421	383	341	289	264	265	277	280	302	360	402	419	391	381
76	329	331	355	371	325	295	248	223	226	242	237	259	305	355	363	341	329
77	285	283	309	318	286	254	215	193	200	200	205	229	269	302	313	286	285
78	237	243	263	275	240	215	183	161	163	176	185	189	221	265	266	246	237
79	199	208	225	236	205	181	156	136	143	144	148	162	193	220	228	210	199
80	176	175	194	197	173	154	124	114	118	124	131	133	165	188	197	186	176
81	149	154	163	167	138	121	108	98	92	96	105	119	132	158	162	155	149
82	127	130	136	142	115	98	85	82	78	77	78	93	108	130	135	124	127
83	109	111	113	114	91	79	70	68	67	70	63	79	87	107	109	108	109
84	86	86	93	97	78	66	57	43	48	46	53	62	70	79	91	78	86
85	71	70	73	71	61	43	37	33	37	40	42	44	56	61	74	60	71
86	56	57	60	42	35	31	30	24	21	27	24	29	41	50	53	57	56
87	48	45	35	34	28	22	23	21	19	19	20	20	29	35	38	45	48
88	37	31	25	24	14	12	19	19	17	17	18	15	14	21	23	28	37
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119	27	37	19	24	18	25	24	55	17	61	24	16	16	23	17	36	27
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121	25	39	20	20	19	23	24	70	18	70	21	21	17	16	16	35	25
122	28	43	20	19	18	23	23	62	21	84	21	22	19	24	19	46	28
123	37	52	21	26	21	23	23	56	22	80	21	23	21	27	24	51	37
124	32	48	22	19	15	22	21	59	25	66	22	20	14	17	19	47	32
125	42	39	12	23	17	25	22	69	22	82	23	22	20	17	23	57	42
126	33	54	24	25	22	19	26	68	11	87	26	20	25	23	23	51	33
127	24	48	27	17	22	27	21	69	18	78	20	26	19	20	21	45	24
128	21	53	21	23	18	24	26	76	19	81	24	24	25	23	24	57	21
129	23	51	24	20	23	25	19	56	22	83	19	24	20	24	22	60	23
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131	21	66	19	26	19	22	21	76	19	78	28	27	26	22	28	64	21
132	24	48	22	18	23	20	24	70	23	91	22	22	29	20	24	48	24
133	26	56	19	24	20	23	25	75	23	84	25	24	26	26	24	42	26
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135	30	56	22	21	20	24	24	70	29	90	27	26	26	30	22	45	30
136	21	56	26	19	21	24	23	79	28	81	21	21	23	22	23	57	21
137	26	56	19	24	23	28	27	67	27	86	31	23	24	23	23	57	26
138	22	49	21	22	24	28	27	79	24	81	31	24	19	29	17	55	22
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142	25	41	31	28	26	25	28	79	30	83	33	33	29	32	30	68	25
143	30	63	33	22	16	30	30	74	25	79	32	29	32	23	30	43	30
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145	34	71	26	30	18	25	32	66	32	84	33	36	31	30	34	54	34
146	47	65	29	25	22	31	26	78	33	90	34	35	26	30	30	70	47
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148	43	62	27	19	30	29	37	51	51	93	40	32	29	27	39	65	43
149	54	63	42	28	27	32	34	48	45	88	40	29	20	30	35	72	54
150	55	63	40	31	28	31	37	47	57	90	38	29	34	29	33	73	55
151	48	46	41	29	28	29	39	47	57	88	42	33	29	34	34	80	48

152	57	59	33	26	32	14	38	28	64	86	29	35	36	36	44	66	57
153	58	58	32	31	31	31	32	48	69	73	43	20	30	34	41	78	58
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161	42	38	33	39	30	36	37	37	38	42	37	37	32	37	37	40	42
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164	38	38	38	36	33	35	39	38	33	36	34	34	37	41	37	36	38
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167	41	42	36	35	34	37	41	38	33	34	39	37	37	39	37	40	41
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169	38	26	34	34	35	35	34	38	39	36	40	42	36	36	40	34	38
170	43	40	30	44	32	39	43	34	37	35	40	43	30	40	39	40	43
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172	41	27	34	36	33	42	38	39	42	43	44	31	35	38	33	38	41
173	38	31	33	34	37	25	33	40	42	38	37	43	36	38	39	40	38
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179	33	36	26	34	30	30	39	35	29	37	34	40	32	34	32	35	33
180	33	32	34	36	31	36	29	33	32	34	32	34	36	29	32	32	33

BUG

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	2885.5	14.9	14.9
FM (30-60)	6315.0	32.6	32.6
FH (60-80)	973.2	5.0	5.0
FVH (80-90)	42.5	0.2	0.2
BL (0-30)	2724.0	14.1	14.1
BM (30-60)	5461.1	28.2	28.2
BH (60-80)	739.2	3.8	3.8
BVH (80-90)	28.6	0.1	0.1
UL (90-100)	18.6	0.1	0.1
UH (100-180)	155.2	0.8	0.8
Total	19342.9	99.8	100.0
BUG Rating	B4-U3-G1		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-04-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-150S-EX39-8CCT-BYP @150W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404	120.0	60	1.305	155.65	0.994	10.27
1E-B2	277.0	60	0.559	148.42	0.959	8.38
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

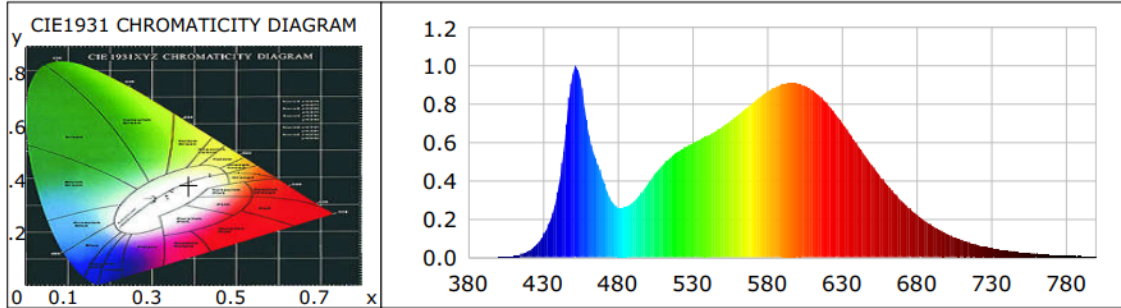
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	13
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3807	R3	95	R11	80
Duv	-0.0031	R4	82	R12	65
Chromaticity (x, y)	x=0.3868 y=0.3740	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2304v'=0.5013	R6	87	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	77
R9	13	R8	64	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	21241.1	20504.7	>= 10000(-10%)
Luminous Efficacy (lm/W)	136.47	138.15	Standard: >= 120(-3%)
Most worst Luminous/Highest	131.74		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0671	535	0.5746	282.8589	690	0.2923	143.8872
385	0.0005	0.2314	540	0.5943	292.5355	695	0.2557	125.8419
390	0.0005	0.2585	545	0.6154	302.9094	700	0.2227	109.6311
395	0.0005	0.2351	550	0.6349	312.5039	705	0.1921	94.5777
400	0.0015	0.7207	555	0.6568	323.3052	710	0.1666	82.0251
405	0.0027	1.3057	560	0.6821	335.7751	715	0.1446	71.1751
410	0.0068	3.3235	565	0.7088	348.8837	720	0.1234	60.7373
415	0.0149	7.3483	570	0.7411	364.8068	725	0.1062	52.2989
420	0.0308	15.1610	575	0.7728	380.3810	730	0.0911	44.8253
425	0.0608	29.9216	580	0.8030	395.2579	735	0.0776	38.1960
430	0.1106	54.4228	585	0.8349	410.9712	740	0.0664	32.6979
435	0.1936	95.2930	590	0.8647	425.6607	745	0.0559	27.5202
440	0.3405	167.6078	595	0.8868	436.5221	750	0.0482	23.7450
445	0.6313	310.7431	600	0.9042	445.1037	755	0.0405	19.9561
450	0.9576	471.3900	605	0.9119	448.8777	760	0.0357	17.5575
455	0.9341	459.8030	610	0.9094	447.6284	765	0.0304	14.9510
460	0.6748	332.1521	615	0.8971	441.5729	770	0.0258	12.6850
465	0.5204	256.1665	620	0.8744	430.3919	775	0.0223	10.9894
470	0.4088	201.2376	625	0.8440	415.4614	780	0.0183	9.0290
475	0.3057	150.4956	630	0.8017	394.6146	785	0.0157	7.7169
480	0.2620	128.9518	635	0.7556	371.9531	790	0.0139	6.8646
485	0.2632	129.5590	640	0.7015	345.2952	795	0.0119	5.8517
490	0.2853	140.4210	645	0.6471	318.5262	800	0.0092	4.5397
495	0.3277	161.3190	650	0.5917	291.2414			
500	0.3815	187.7777	655	0.5342	262.9622			
505	0.4339	213.5927	660	0.4806	236.5788			
510	0.4818	237.1412	665	0.4292	211.2675			
515	0.5190	255.4634	670	0.3789	186.5148			
520	0.5495	270.4897	675	0.3336	164.2298			
525	0.5746	282.8589	680	0.2923	143.8872			
530	0.5943	292.5355	685	0.2557	125.8419			

TM30

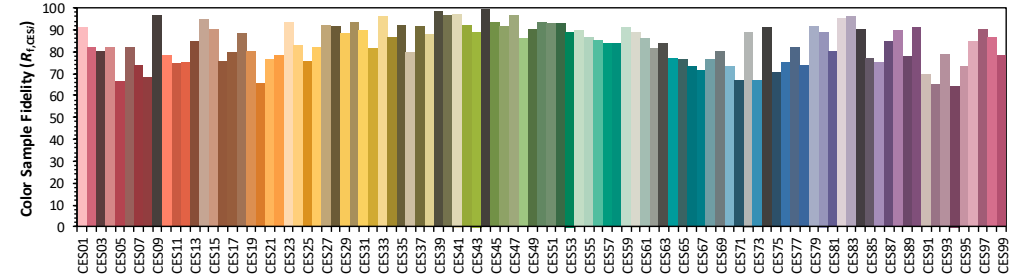
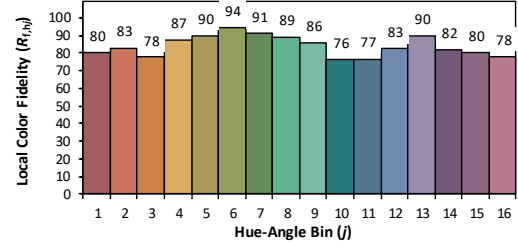
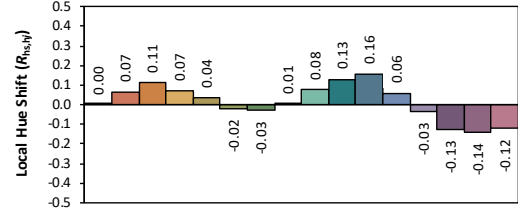
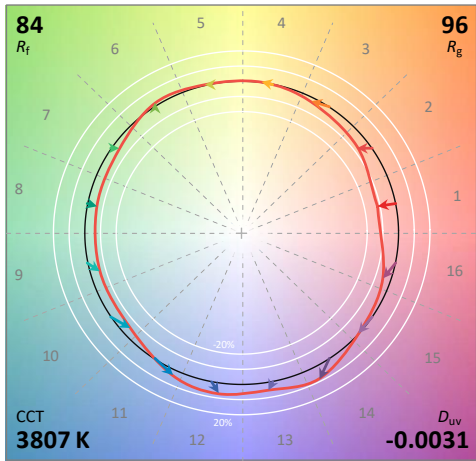
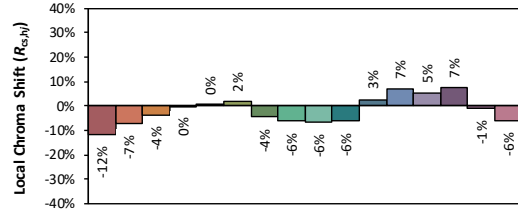
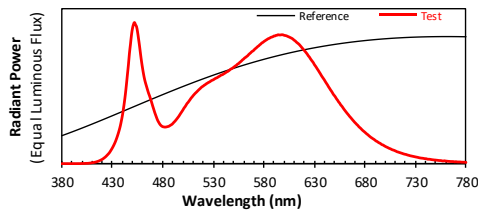
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2023/4/25

Model: HIDFA-150S-EX39-8CCT-BYP @150W 4000K



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

x 0.3868
 y 0.3740
 u' 0.2305
 v' 0.5013

CIE 13.3-1995 (CRI)
 R_a 84
 R_9 13

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	2023-04-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HIDFA-150S-EX39-8CCT-BYP @150W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230404	120.0	60	1.339	159.59	0.993	10.19
1E-B3	277.0	60	0.574	152.41	0.958	8.44
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

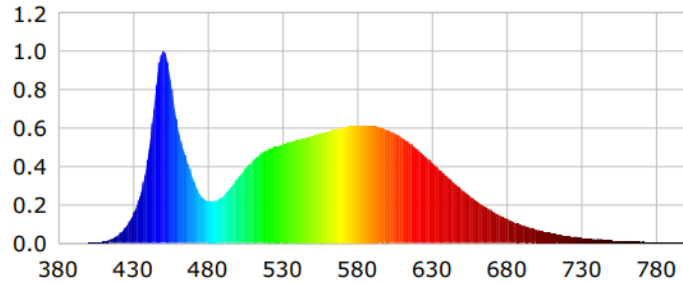
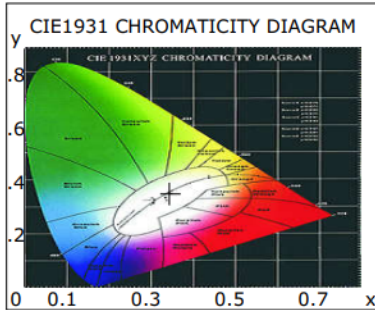
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15 TB:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	6
Frequency (Hz)	60	R2	87	R10	69
CCT (K)	4952	R3	92	R11	80
Duv	0.0003	R4	81	R12	56
Chromaticity (x, y)	x=0.3465 y=0.3533	R5	81	R13	82
Chromaticity (u', v')	u(u')=0.2117v'=0.4857	R6	82	R14	96
Color Rendering Index (CRI)	82	R7	87	R15	76
R9	6	R8	67	--	--
Rf	82	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-13	--	--	--	--

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

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	21287.5	20515.8	>= 10000(-10%)
Luminous Efficacy (lm/W)	133.39	134.61	Standard: >= 120(-3%)
Most worst Luminous/Highest	128.55		

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	0.2106	535	0.5031	330.1806	690	0.1673	109.8060
385	0.0007	0.4723	540	0.5151	338.0871	695	0.1448	95.0318
390	0.0007	0.4726	545	0.5271	345.9392	700	0.1265	83.0454
395	0.0007	0.4604	550	0.5371	352.5130	705	0.1090	71.5202
400	0.0017	1.1230	555	0.5476	359.3835	710	0.0943	61.8905
405	0.0033	2.1938	560	0.5593	367.0808	715	0.0812	53.3241
410	0.0082	5.3795	565	0.5697	373.9288	720	0.0692	45.4255
415	0.0192	12.6320	570	0.5815	381.6823	725	0.0597	39.1570
420	0.0404	26.5116	575	0.5926	388.9485	730	0.0514	33.7522
425	0.0795	52.2060	580	0.6014	394.7078	735	0.0434	28.5073
430	0.1446	94.9268	585	0.6088	399.6058	740	0.0374	24.5222
435	0.2519	165.3237	590	0.6162	404.4248	745	0.0313	20.5354
440	0.4422	290.2464	595	0.6145	403.3384	750	0.0275	18.0234
445	0.7718	506.5453	600	0.6107	400.8575	755	0.0233	15.2737
450	1.0000	656.3474	605	0.6037	396.2186	760	0.0197	12.9519
455	0.8546	560.9107	610	0.5898	387.0919	765	0.0164	10.7848
460	0.6040	396.4465	615	0.5711	374.8656	770	0.0145	9.5393
465	0.4565	299.5911	620	0.5468	358.8731	775	0.0124	8.1128
470	0.3381	221.9123	625	0.5203	341.4680	780	0.0103	6.7550
475	0.2509	164.6810	630	0.4884	320.5702	785	0.0091	5.9936
480	0.2188	143.6234	635	0.4552	298.7581	790	0.0069	4.5300
485	0.2200	144.4023	640	0.4182	274.5045	795	0.0074	4.8548
490	0.2418	158.7208	645	0.3820	250.7256	800	0.0049	3.2404
495	0.2853	187.2477	650	0.3462	227.1980			
500	0.3366	220.9107	655	0.3115	204.4372			
505	0.3852	252.8557	660	0.2774	182.0679			
510	0.4276	280.6669	665	0.2469	162.0456			
515	0.4607	302.4078	670	0.2179	143.0470			
520	0.4837	317.4914	675	0.1910	125.3825			
525	0.5031	330.1806	680	0.1673	109.8060			
530	0.5151	338.0871	685	0.1448	95.0318			

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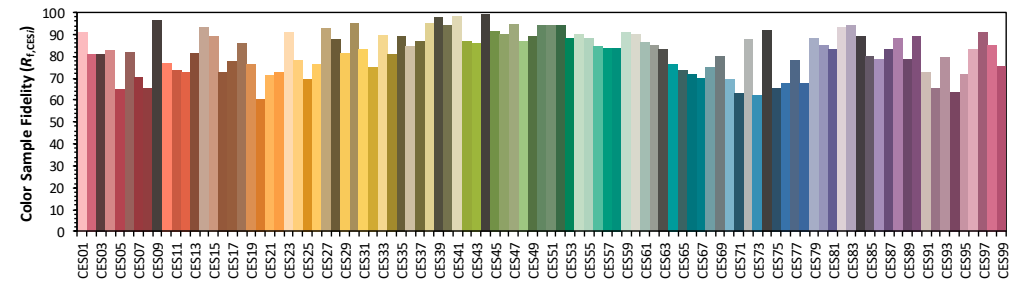
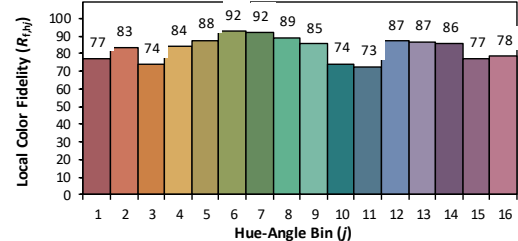
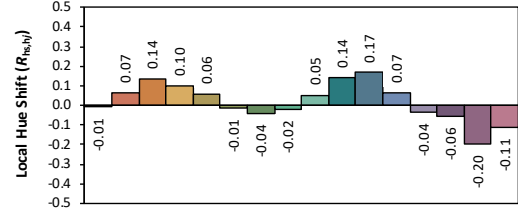
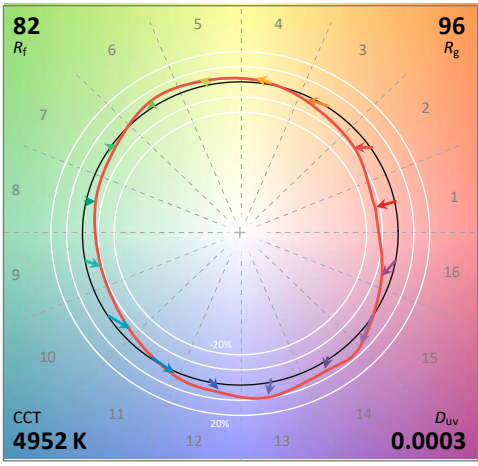
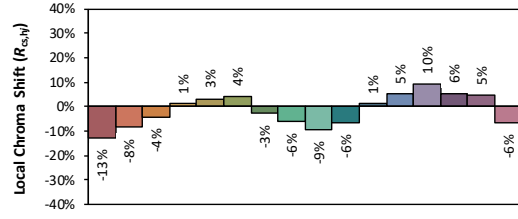
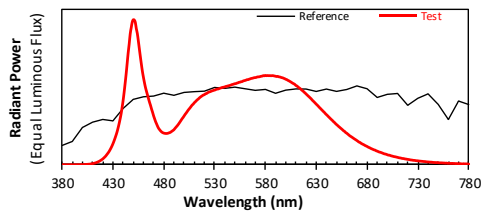
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2023/4/25

Model: HIDFA-150S-EX39-8CCT-BYP @150W 5000K



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

x	0.3465	CIE 13.3-1995 (CRI) R_a 82 R_9 6
y	0.3533	
u'	0.2117	
v'	0.4857	

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-150S-EX39-8CCT-BYP @115W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.985	116.78	0.993	9.01
	277.0	60	0.419	111.72	0.970	9.62
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

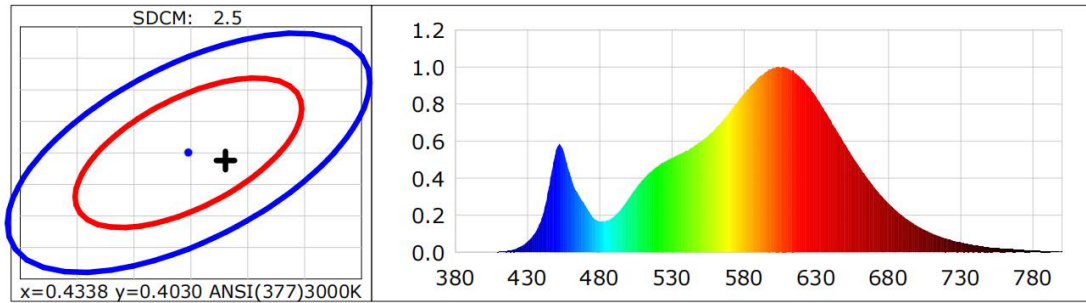
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	8
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	2979	R3	97	R11	81
Duv	-0.00094	R4	81	R12	70
Chromaticity (x, y)	x=0.4370 y=0.4018	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2516 v'=0.5205	R6	89	R14	99
Color Rendering Index (CRI)	82.8	R7	82	R15	74
R9	8	R8	59	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	18646.5	17790.7	$\geq 10000(-10\%)$
Luminous Efficacy (lm/W)	159.41	159.24	Standard: $\geq 120(-3\%)$
Most worst Luminous/Highest	155.9		
Zonal lumens in the 20-50° (%)	12.8	--	$\geq 30(-10\%)$
Beam Angle (°)	170	--	--
Center Beam Candle Power (cd)	776	--	--

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	0.0952	525	0.4886	193.6578	670	0.3505	138.9086
385	0.0002	0.0971	530	0.5093	201.8826	675	0.3059	121.2524
390	0.0002	0.0760	535	0.5279	209.2568	680	0.2637	104.5420
395	0.0005	0.1913	540	0.5452	216.1132	685	0.2272	90.0383
400	0.0002	0.0800	545	0.5715	226.5452	690	0.1953	77.3934
405	0.0011	0.4296	550	0.5976	236.8517	695	0.1666	66.0447
410	0.0029	1.1330	555	0.6306	249.9476	700	0.1415	56.0795
415	0.0065	2.5759	560	0.6681	264.8212	705	0.1207	47.8455
420	0.0148	5.8562	565	0.7090	281.0311	710	0.1027	40.7105
425	0.0309	12.2619	570	0.7561	299.6985	715	0.0867	34.3773
430	0.0592	23.4681	575	0.8080	320.2747	720	0.0740	29.3490
435	0.1042	41.3023	580	0.8558	339.2260	725	0.0623	24.6902
440	0.1892	75.0014	585	0.9027	357.7937	730	0.0533	21.1081
445	0.3597	142.5885	590	0.9438	374.0847	735	0.0445	17.6357
450	0.5585	221.3576	595	0.9733	385.7702	740	0.0369	14.6086
455	0.5418	214.7637	600	0.9977	395.4390	745	0.0318	12.5905
460	0.4061	160.9654	605	0.9967	395.0471	750	0.0269	10.6602
465	0.3121	123.6918	610	0.9936	393.8315	755	0.0214	8.5003
470	0.2521	99.9078	615	0.9695	384.2640	760	0.0190	7.5201
475	0.1911	75.7556	620	0.9364	371.1766	765	0.0162	6.4211
480	0.1667	66.0878	625	0.8926	353.8122	770	0.0133	5.2677
485	0.1701	67.4163	630	0.8383	332.2709	775	0.0104	4.1072
490	0.1945	77.0886	635	0.7768	307.8915	780	0.0092	3.6645
495	0.2357	93.4239	640	0.7121	282.2441	785	0.0082	3.2513
500	0.2897	114.8138	645	0.6448	255.5721	790	0.0060	2.3913
505	0.3447	136.6354	650	0.5812	230.3844	795	0.0060	2.3893
510	0.3928	155.6832	655	0.5161	204.5809	800	0.0048	1.9147
515	0.4331	171.6547	660	0.4590	181.9241			
520	0.4639	183.8800	665	0.4030	159.7389			

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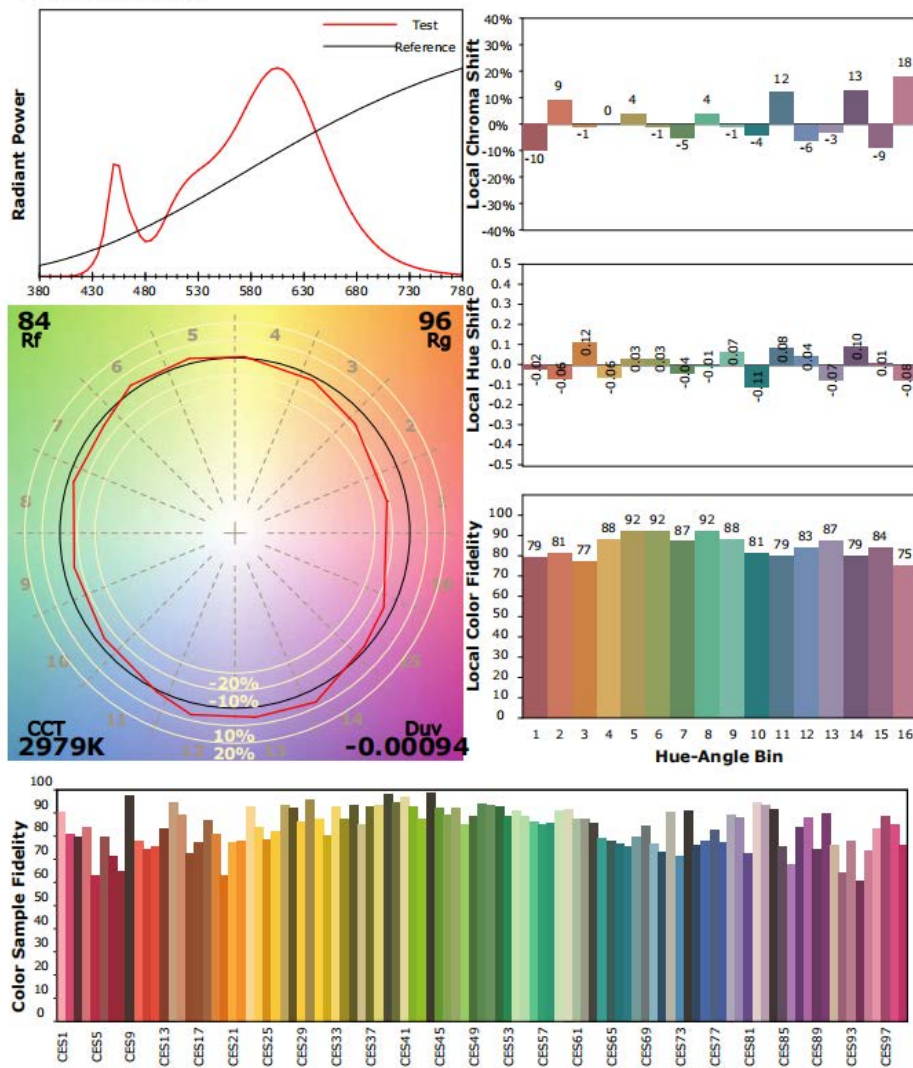
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-150S-EX39-8CCTBYP
@115W 3000K



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

x 0.4370
 y 0.4018
 u' 0.3470
 v' 0.5205

(CRI)	
R_a	82.8
R_9	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-150S-EX39-8CCT-BYP @115W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.958	113.60	0.992	9.23
	277.0	60	0.408	108.83	0.971	9.42
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

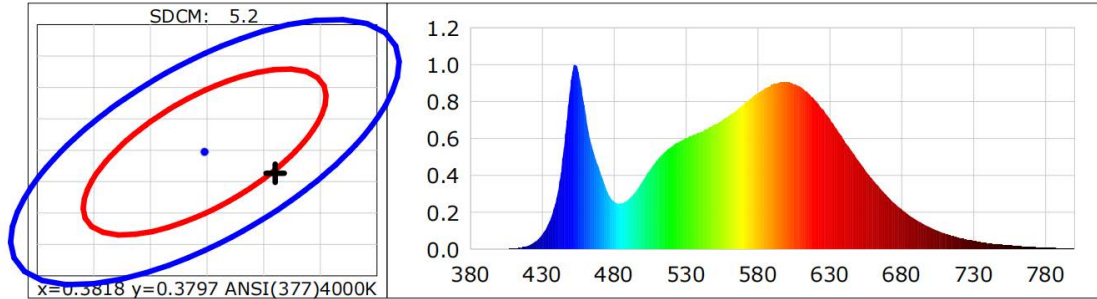
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	15
Frequency (Hz)	60	R2	92	R10	78
CCT (K)	3795	R3	96	R11	82
Duv	-0.00234	R4	83	R12	63
Chromaticity (x, y)	x=0.3880 y=0.3763	R5	84	R13	86
Chromaticity (u', v')	u(u')=0.2303 v'=0.5025	R6	88	R14	98
Color Rendering Index (CRI)	84.3	R7	85	R15	78
R9	15	R8	65	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	19815.9	18695.5	>= 10000(-10%)
Luminous Efficacy (lm/W)	174.44	171.79	Standard: >= 120(-3%)
Most worst Luminous/Highest	169.32		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0726	525	0.5815	235.1531	670	0.2860	115.6535
385	0.0001	0.0585	530	0.6015	243.2289	675	0.2485	100.5082
390	0.0003	0.1366	535	0.6185	250.1345	680	0.2157	87.2316
395	0.0004	0.1650	540	0.6341	256.4107	685	0.1844	74.5525
400	0.0003	0.1378	545	0.6536	264.3158	690	0.1600	64.7150
405	0.0008	0.3170	550	0.6749	272.9153	695	0.1364	55.1407
410	0.0037	1.4805	555	0.6994	282.8148	700	0.1169	47.2588
415	0.0084	3.3827	560	0.7252	293.2797	705	0.0993	40.1687
420	0.0190	7.6958	565	0.7533	304.6362	710	0.0852	34.4475
425	0.0417	16.8438	570	0.7848	317.3843	715	0.0721	29.1541
430	0.0817	33.0242	575	0.8169	330.3415	720	0.0612	24.7382
435	0.1520	61.4861	580	0.8441	341.3630	725	0.0523	21.1358
440	0.2821	114.0984	585	0.8715	352.4503	730	0.0444	17.9519
445	0.5506	222.6713	590	0.8915	360.5274	735	0.0375	15.1781
450	0.9193	371.7417	595	0.9033	365.3070	740	0.0310	12.5210
455	0.9628	389.3704	600	0.9077	367.0832	745	0.0258	10.4419
460	0.7353	297.3459	605	0.8926	360.9787	750	0.0229	9.2538
465	0.5380	217.5800	610	0.8777	354.9367	755	0.0185	7.4636
470	0.4236	171.2894	615	0.8449	341.6770	760	0.0163	6.5797
475	0.3133	126.6780	620	0.8054	325.7001	765	0.0137	5.5384
480	0.2567	103.8255	625	0.7590	306.9191	770	0.0125	5.0553
485	0.2481	100.3342	630	0.7054	285.2542	775	0.0095	3.8454
490	0.2711	109.6408	635	0.6484	262.2028	780	0.0075	3.0171
495	0.3125	126.3821	640	0.5900	238.5957	785	0.0070	2.8484
500	0.3717	150.2982	645	0.5321	215.1595	790	0.0054	2.1916
505	0.4312	174.3865	650	0.4770	192.8998	795	0.0041	1.6707
510	0.4841	195.7615	655	0.4226	170.8935	800	0.0033	1.3350
515	0.5255	212.5045	660	0.3740	151.2463			

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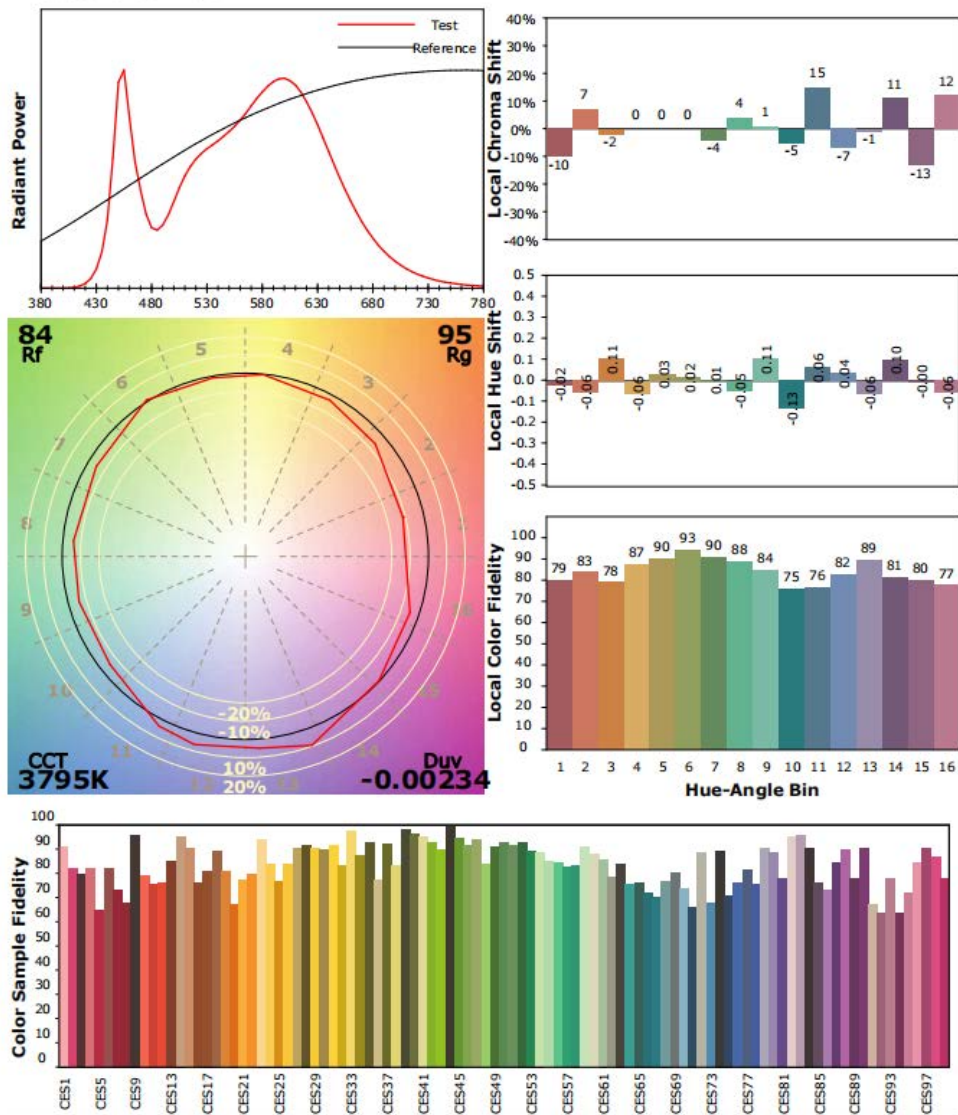
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-4080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-150S-EX39-8CCT-BYP
@115W 4000K



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

x 0.3880
 y 0.3763
 u' 0.2303
 v' 0.5025

(CRI)
 R_a 84.3
 R_g 15

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-150S-EX39-8CCT-BYP @115W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.981	116.41	0.992	8.81
	277.0	60	0.418	111.39	0.970	9.19
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

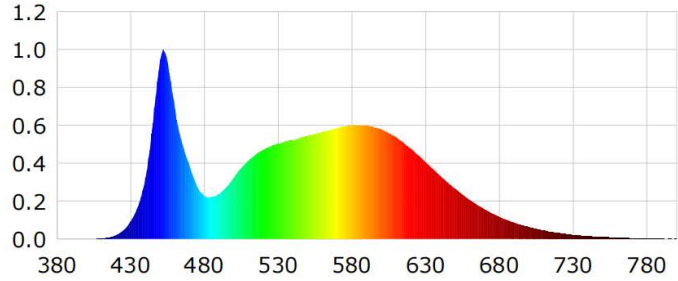
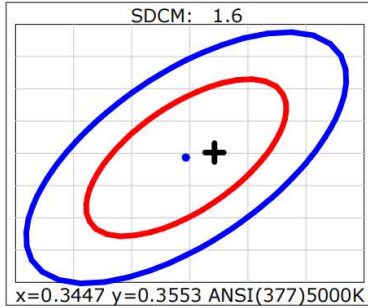
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	4
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	4941	R3	93	R11	78
Duv	0.00144	R4	80	R12	53
Chromaticity (x, y)	x=0.3471 y=0.3561	R5	80	R13	83
Chromaticity (u', v')	u(u')=0.2110 v'(v')=0.4871	R6	83	R14	96
Color Rendering Index (CRI)	82.1	R7	86	R15	75
R9	4	R8	65	--	--
Rf	83	--	--	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	19783.2	18523.6	>= 10000(-10%)
Luminous Efficacy (lm/W)	169.95	166.29	Standard: >= 120(-3%)
Most worst Luminous/Highest	165.79		

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	0.1245	525	0.4893	268.0319	670	0.1565	85.7443
385	0.0000	0.0237	530	0.5034	275.7516	675	0.1356	74.2979
390	0.0001	0.0563	535	0.5140	281.5991	680	0.1169	64.0127
395	0.0006	0.3534	540	0.5218	285.8302	685	0.1011	55.3752
400	0.0004	0.1966	545	0.5347	292.8908	690	0.0867	47.4804
405	0.0010	0.5528	550	0.5447	298.4025	695	0.0748	40.9902
410	0.0033	1.8330	555	0.5556	304.3563	700	0.0634	34.7293
415	0.0091	4.9661	560	0.5670	310.6141	705	0.0540	29.5778
420	0.0212	11.6236	565	0.5753	315.1288	710	0.0450	24.6624
425	0.0467	25.6085	570	0.5856	320.7728	715	0.0382	20.9285
430	0.0956	52.3749	575	0.5939	325.3607	720	0.0323	17.6708
435	0.1754	96.1103	580	0.5992	328.2468	725	0.0272	14.8745
440	0.3250	178.0631	585	0.6000	328.6620	730	0.0226	12.3858
445	0.6135	336.0921	590	0.5981	327.6641	735	0.0193	10.5840
450	0.9484	519.5409	595	0.5903	323.3660	740	0.0156	8.5591
455	0.9305	509.7142	600	0.5797	317.5782	745	0.0137	7.4902
460	0.6877	376.7040	605	0.5576	305.4821	750	0.0116	6.3769
465	0.4985	273.0845	610	0.5368	294.0843	755	0.0093	5.0679
470	0.3836	210.1369	615	0.5077	278.0968	760	0.0072	3.9586
475	0.2775	152.0400	620	0.4766	261.0829	765	0.0078	4.2898
480	0.2283	125.0459	625	0.4419	242.0950	770	0.0061	3.3342
485	0.2216	121.4139	630	0.4051	221.9094	775	0.0045	2.4735
490	0.2392	131.0579	635	0.3693	202.2921	780	0.0037	2.0317
495	0.2757	151.0154	640	0.3329	182.3578	785	0.0019	1.0614
500	0.3244	177.7007	645	0.2974	162.9343	790	0.0024	1.3277
505	0.3746	205.1851	650	0.2655	145.4571	795	0.0026	1.4098
510	0.4156	227.6459	655	0.2335	127.9353	800	0.0014	0.7817
515	0.4479	245.3537	660	0.2056	112.6182			
520	0.4712	258.1160	665	0.1795	98.3223			

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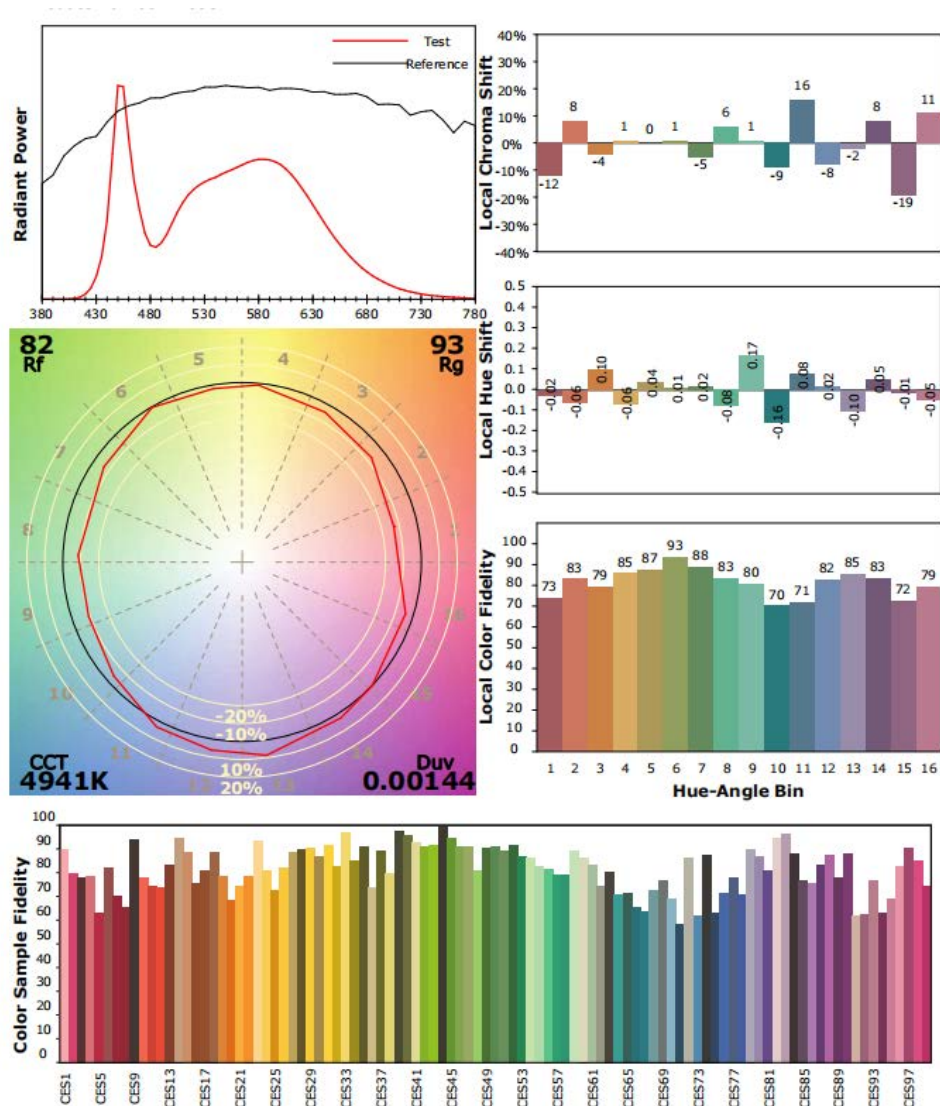
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/11/29

Model: HIDFA-150S-EX39-8CCT-BYP
@115W 5000K



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

x 0.3471
 y 0.3561
 u' 0.2110
 v' 0.4872

(CRI)	
R_a	82.1
R_g	4

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-150S-EX39-8CCT-BYP @80W 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.689	81.579	0.989	8.42
	277.0	60	0.292	77.895	0.970	9.68
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

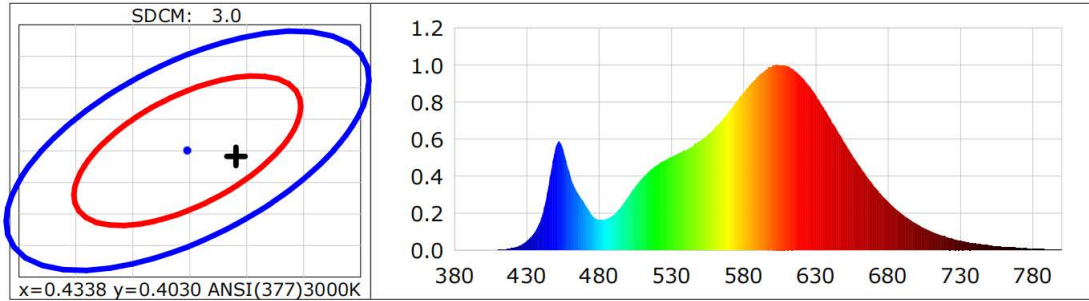
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	2965	R3	96	R11	81
Duv	-0.00095	R4	81	R12	70
Chromaticity (x, y)	x=0.4381 y=0.4021	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2522 v'=0.5208	R6	90	R14	99
Color Rendering Index (CRI)	82.8	R7	82	R15	74
R9	8	R8	59	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	13597.3	12853.0	$\geq 10000(-10\%)$
Luminous Efficacy (lm/W)	166.68	165.00	Standard: $\geq 120(-3\%)$
Most worst Luminous/Highest	164.12		
Zonal lumens in the 20-50° (%)	12.7	--	$\geq 30(-10\%)$
Beam Angle (°)	176	--	--
Center Beam Candle Power (cd)	564	--	--

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	0.1827	525	0.4835	143.5199	670	0.3472	103.0643
385	0.0004	0.1096	530	0.5049	149.8595	675	0.3024	89.7593
390	0.0002	0.0669	535	0.5237	155.4488	680	0.2616	77.6412
395	0.0007	0.2193	540	0.5401	160.3127	685	0.2247	66.6934
400	0.0001	0.0431	545	0.5657	167.9122	690	0.1932	57.3306
405	0.0004	0.1293	550	0.5911	175.4408	695	0.1658	49.2090
410	0.0019	0.5530	555	0.6247	185.4014	700	0.1411	41.8799
415	0.0048	1.4175	560	0.6632	196.8453	705	0.1191	35.3452
420	0.0122	3.6240	565	0.7032	208.7287	710	0.1009	29.9546
425	0.0263	7.8063	570	0.7508	222.8306	715	0.0859	25.4915
430	0.0517	15.3508	575	0.8021	238.0697	720	0.0731	21.6954
435	0.0941	27.9315	580	0.8522	252.9258	725	0.0612	18.1754
440	0.1771	52.5782	585	0.9000	267.1187	730	0.0521	15.4595
445	0.3496	103.7776	590	0.9408	279.2295	735	0.0435	12.8973
450	0.5590	165.9031	595	0.9739	289.0527	740	0.0365	10.8343
455	0.5444	161.5844	600	0.9969	295.8912	745	0.0302	8.9544
460	0.4040	119.9063	605	0.9973	295.9968	750	0.0255	7.5554
465	0.3100	91.9983	610	0.9942	295.0777	755	0.0214	6.3379
470	0.2510	74.5078	615	0.9693	287.6847	760	0.0171	5.0746
475	0.1896	56.2877	620	0.9361	277.8437	765	0.0162	4.8077
480	0.1643	48.7589	625	0.8902	264.2126	770	0.0137	4.0628
485	0.1685	50.0033	630	0.8366	248.2953	775	0.0100	2.9739
490	0.1924	57.1062	635	0.7743	229.8329	780	0.0087	2.5849
495	0.2339	69.4212	640	0.7085	210.2780	785	0.0061	1.8154
500	0.2878	85.4310	645	0.6422	190.6010	790	0.0051	1.5218
505	0.3435	101.9517	650	0.5786	171.7452	795	0.0055	1.6368
510	0.3912	116.0998	655	0.5137	152.4715	800	0.0038	1.1315
515	0.4301	127.6675	660	0.4554	135.1800			
520	0.4600	136.5272	665	0.3986	118.3030			

TM30

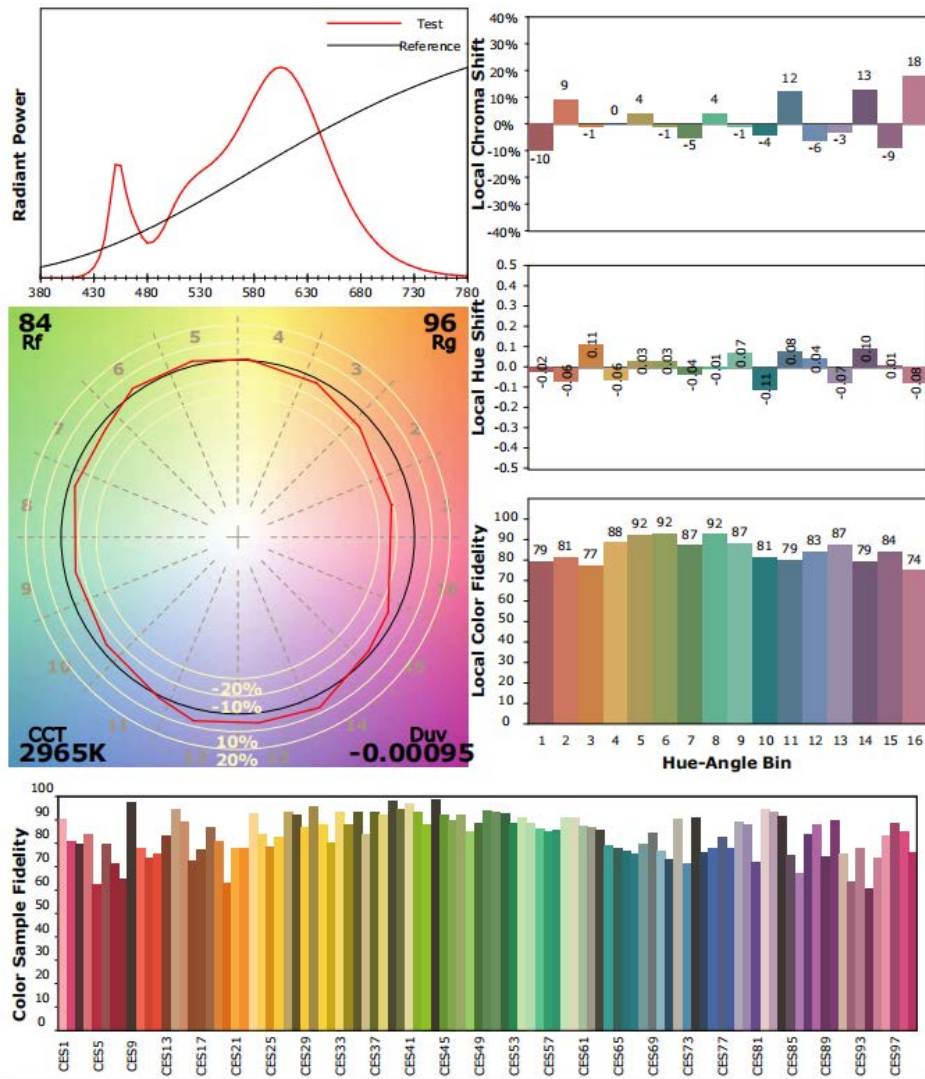
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-150S-EX39-8CCT-BYP
@80W 3000K



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

x 0.4381
 y 0.4021
 u' 0.3522
 v' 0.5208

(CRI)	
R_a	82.8
R_9	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-150S-EX39-8CCT-BYP @85W 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.672	79.53	0.989	8.96
	277.0	60	0.285	78.15	0.969	9.65
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

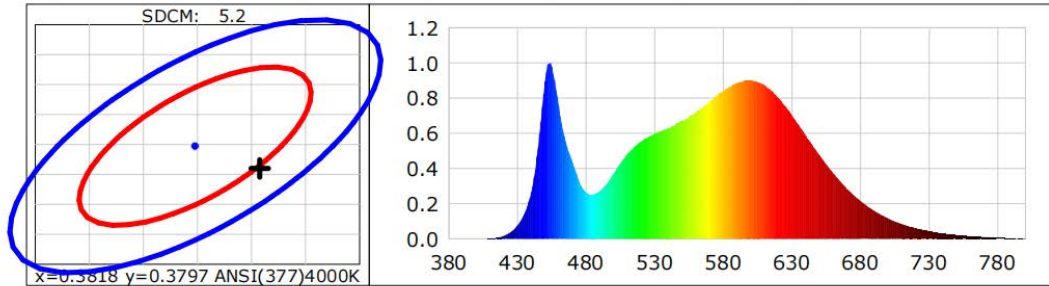
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	15
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	3799	R3	96	R11	82
Duv	-0.00234	R4	82	R12	63
Chromaticity (x, y)	x=0.3878 y=0.3760	R5	84	R13	86
Chromaticity (u', v')	u(u')=0.2303 v'(v')=0.5023	R6	88	R14	98
Color Rendering Index (CRI)	84.5	R7	84	R15	78
R9	15	R8	65	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	14269.8	13313.1	>= 10000(-10%)
Luminous Efficacy (lm/W)	179.41	174.83	Standard: >= 120(-3%)
Most worst Luminous/Highest	168.94		

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	0.0693	525	0.5772	170.1681	670	0.2836	83.6177
385	0.0003	0.1026	530	0.5963	175.7815	675	0.2472	72.8855
390	0.0001	0.0398	535	0.6132	180.7885	680	0.2145	63.2512
395	0.0006	0.1632	540	0.6288	185.3729	685	0.1842	54.3041
400	0.0003	0.0804	545	0.6504	191.7347	690	0.1592	46.9230
405	0.0012	0.3589	550	0.6697	197.4200	695	0.1360	40.0970
410	0.0032	0.9327	555	0.6952	204.9375	700	0.1160	34.1919
415	0.0076	2.2434	560	0.7218	212.8031	705	0.0992	29.2409
420	0.0178	5.2373	565	0.7480	220.5118	710	0.0842	24.8326
425	0.0384	11.3272	570	0.7802	230.0019	715	0.0723	21.3263
430	0.0779	22.9624	575	0.8129	239.6570	720	0.0610	17.9810
435	0.1436	42.3320	580	0.8407	247.8336	725	0.0515	15.1700
440	0.2659	78.3881	585	0.8664	255.4113	730	0.0435	12.8370
445	0.5216	153.7705	590	0.8859	261.1846	735	0.0368	10.8397
450	0.8958	264.0769	595	0.8987	264.9327	740	0.0308	9.0888
455	0.9775	288.1624	600	0.9031	266.2307	745	0.0255	7.5137
460	0.7576	223.3482	605	0.8884	261.9221	750	0.0225	6.6343
465	0.5531	163.0660	610	0.8725	257.2152	755	0.0177	5.2231
470	0.4368	128.7654	615	0.8400	247.6359	760	0.0160	4.7098
475	0.3245	95.6731	620	0.8013	236.2289	765	0.0145	4.2804
480	0.2637	77.7556	625	0.7550	222.5872	770	0.0118	3.4673
485	0.2529	74.5472	630	0.7014	206.7758	775	0.0087	2.5612
490	0.2730	80.4788	635	0.6463	190.5267	780	0.0072	2.1237
495	0.3128	92.2230	640	0.5881	173.3826	785	0.0060	1.7617
500	0.3692	108.8323	645	0.5299	156.2251	790	0.0042	1.2250
505	0.4298	126.7209	650	0.4757	140.2304	795	0.0044	1.3089
510	0.4814	141.9099	655	0.4220	124.4004	800	0.0037	1.0875
515	0.5217	153.7980	660	0.3730	109.9699			
520	0.5527	162.9407	665	0.3271	96.4185			

TM30

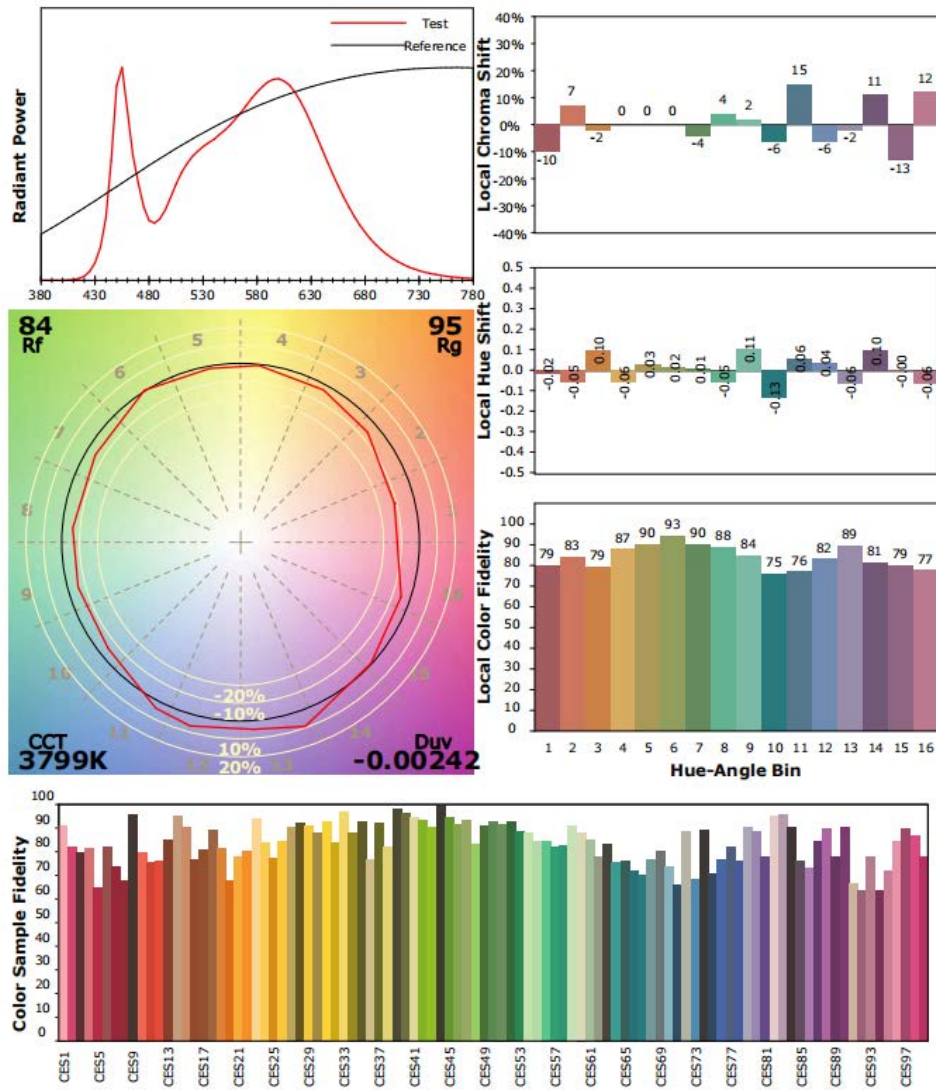
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-4080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/09/20

Model: HIDFA-150S-EX39-8CCT-BYP
@80W 4000K



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

x 0.3878
 y 0.3760
 u' 0.2303
 v' 0.5023

(CRI)
 R_a 84.5
 R_g 15

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-150S-EX39-8CCT-BYP @80W 5000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
	120.0	60	0.684	80.95	0.989	8.62
	277.0	60	0.190	77.49	0.970	9.72
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia

THD 400S A15 TB:

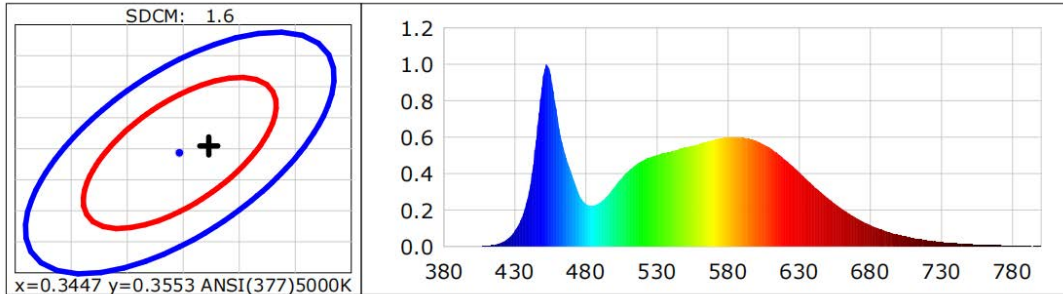
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	5
Frequency (Hz)	60	R2	89	R10	72
CCT (K)	4936	R3	94	R11	78
Duv	0.00154	R4	80	R12	53
Chromaticity (x, y)	x=0.3473 y=0.3564	R5	80	R13	83
Chromaticity (u', v')	u(u')=0.2110 v'(v')=0.4873	R6	83	R14	97
Color Rendering Index (CRI)	82.3	R7	86	R15	75
R9	5	R8	66	--	--
Rf	83	--	--	--	--
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)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	14359.8	13312.9	>= 10000(-10%)
Luminous Efficacy (lm/W)	177.39	171.80	Standard: >= 120(-3%)
Most worst Luminous/Highest	173.88		

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	0.1139	525	0.4889	195.8782	670	0.1572	62.9864
385	0.0003	0.1099	530	0.5023	201.2626	675	0.1361	54.5224
390	0.0000	0.0014	535	0.5137	205.7991	680	0.1179	47.2251
395	0.0005	0.2085	540	0.5210	208.7495	685	0.1017	40.7540
400	0.0004	0.1738	545	0.5330	213.5520	690	0.0867	34.7428
405	0.0012	0.4961	550	0.5431	217.6096	695	0.0748	29.9737
410	0.0030	1.2126	555	0.5541	222.0199	700	0.0642	25.7049
415	0.0085	3.3939	560	0.5653	226.4986	705	0.0543	21.7408
420	0.0199	7.9799	565	0.5756	230.5986	710	0.0462	18.5297
425	0.0429	17.1850	570	0.5848	234.3001	715	0.0395	15.8318
430	0.0872	34.9333	575	0.5935	237.7908	720	0.0339	13.5713
435	0.1621	64.9269	580	0.5985	239.8107	725	0.0283	11.3385
440	0.3041	121.8293	585	0.6004	240.5420	730	0.0239	9.5896
445	0.5870	235.1727	590	0.5984	239.7597	735	0.0203	8.1226
450	0.9377	375.6771	595	0.5908	236.6981	740	0.0171	6.8521
455	0.9470	379.4183	600	0.5795	232.1865	745	0.0141	5.6671
460	0.7088	284.0027	605	0.5592	224.0524	750	0.0127	5.0722
465	0.5133	205.6690	610	0.5376	215.4130	755	0.0099	3.9520
470	0.3953	158.3872	615	0.5085	203.7337	760	0.0090	3.6250
475	0.2871	115.0151	620	0.4779	191.4838	765	0.0080	3.1958
480	0.2336	93.6075	625	0.4436	177.7190	770	0.0069	2.7588
485	0.2251	90.1689	630	0.4071	163.1045	775	0.0054	2.1552
490	0.2424	97.1275	635	0.3698	148.1705	780	0.0037	1.4776
495	0.2779	111.3330	640	0.3343	133.9418	785	0.0039	1.5664
500	0.3252	130.2940	645	0.2986	119.6450	790	0.0026	1.0285
505	0.3744	149.9956	650	0.2660	106.5785	795	0.0028	1.1360
510	0.4155	166.4797	655	0.2346	93.9750	800	0.0020	0.8071
515	0.4479	179.4518	660	0.2067	82.8024			
520	0.4710	188.7089	665	0.1805	72.3035			

TM-30

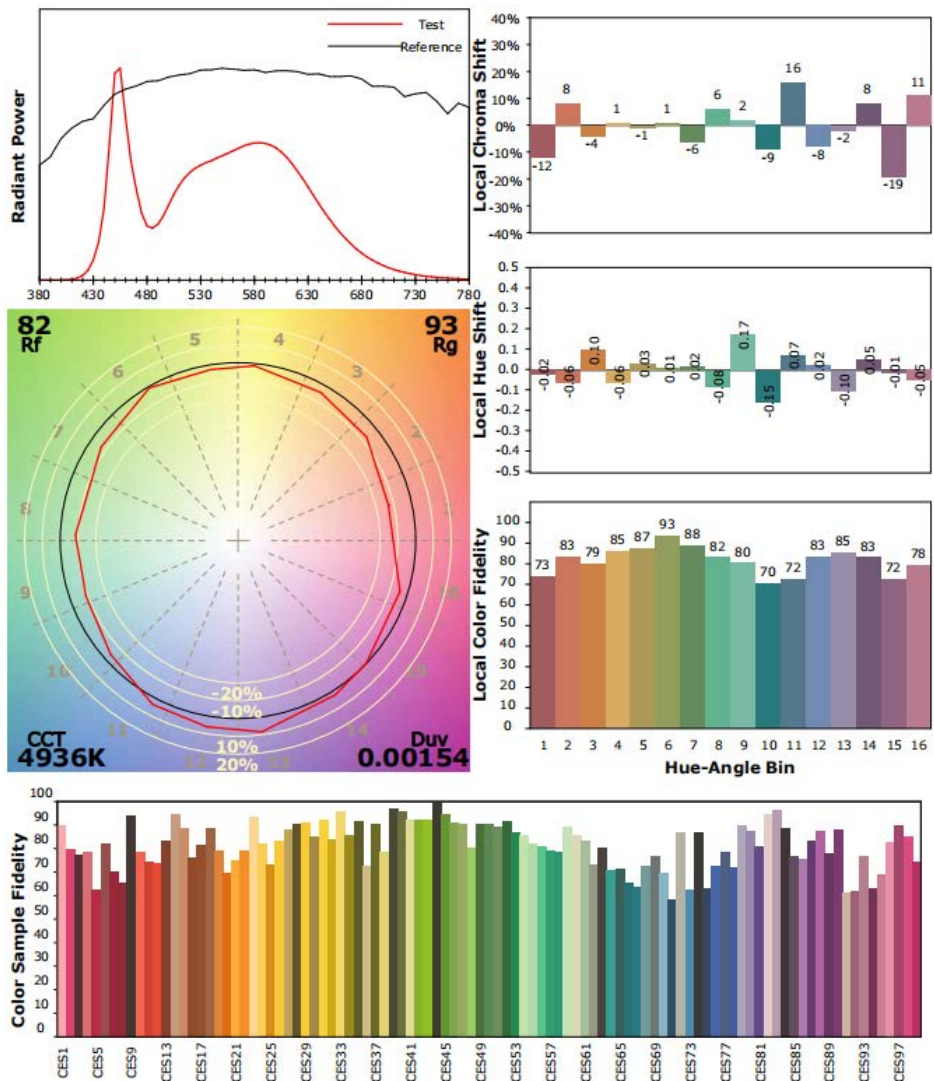
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: RAB LIGHTING INC

Date: 2024/11/29

Model: HIDFA-150S-EX39-8CCT-BYP
@80 5000K



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

x 0.3473
 y 0.3564
 u' 0.2110
 v' 0.4873

(CRI)	
R_a	82.3
R_g	5