Certificate#4810.01

LM-79-19 Test Report

For

RAB LIGHTING INC

(Brand Name: RAB)

408 W 14th St,New York,NY,US,10014

Omnidirectional/Directional Medium Screw-Base

Replacement for HID Lamps

Model name(s): HIDFA-20S-E26-8CCT-BYP

Representative (Tested) Model:
HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 20W)
HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 20W)
HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 20W)
HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 15W)
HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 15W)
HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 15W)
HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 10W)
HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 10W)
HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 10W)

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

Test & Report By:

Winny Wu

Engineer: Winny Wu

Date: 2026-03-16

Review By:

Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB LIGHTING INC	
Brand Name	RAB	
Model Number	HIDFA-20S-E26-8CCT-BYP	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Omnidirectional/Directional Medium Screw-Base Replacement for HID Lamps	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	20/15/10W	
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	UTU2603010E-A1	
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	2026-03-11
Date of Test	2026-03-13
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2019 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.
Goniophotometer far field detector f1'=1.42%, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.Use 2m diameter integrated sphere (94-98% coating reflectance) and 4π geometry.
Self-absorption:
HIDFA-20S-E26-8CCT-BYP:1.107

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 20W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.165	19.69	0.994	7.96
0E-A1	277.0	60	0.077	19.47	0.911	9.72
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

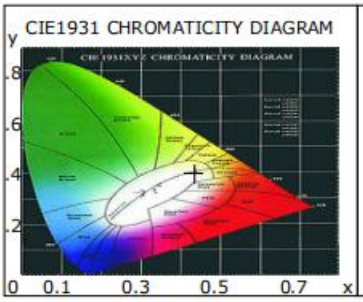
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3011
Duv	-0.0013
Chromaticity (x, y)	x=0.4343 y=0.3999
Chromaticity (u', v')	u'=0.2506 v'=0.5193
Color Rendering Index CRI(Ra)	83
R9	6
Rf	84
Rg	96
Rcs,h1(%)	-11

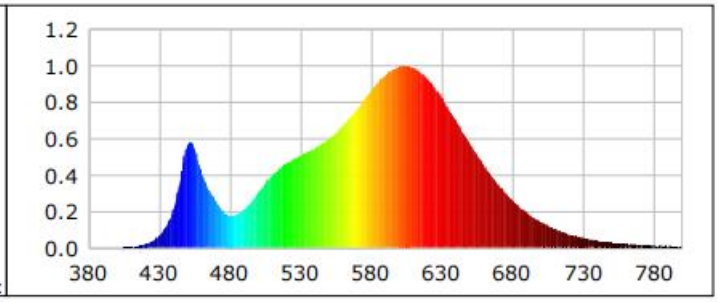
Special Color Rendering Indices			
R1	81	R9	6
R2	91	R10	80
R3	96	R11	80
R4	80	R12	70
R5	81	R13	84
R6	89	R14	99
R7	82	R15	74
R8	58	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3016.9	2911.6	>=2000(-10%)
Luminous Efficacy (lm/W)	153.2	149.5	Standard>=130(-3%)
Most worst Luminous/Highest	147.87		
Beam Angle	279.1	--	>=75°
Center Beam Candle Power (cd)	121	--	--

Spectral Power Distribution & Chromaticity Diagram

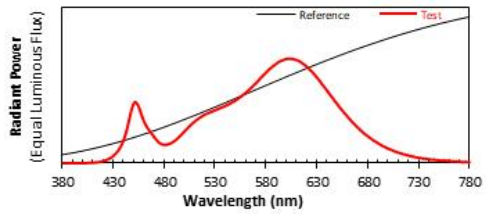


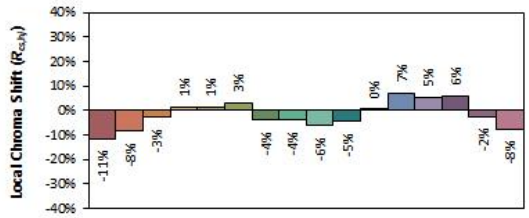


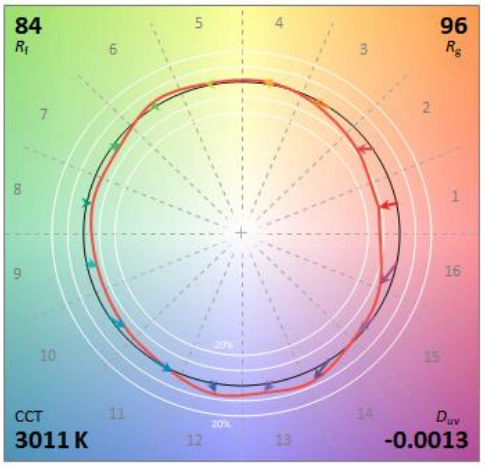
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0136	535	0.4867	30.4176	690	0.3432	21.4460
385	0.0008	0.0476	540	0.5057	31.6036	695	0.2981	18.6306
390	0.0009	0.0541	545	0.5267	32.9187	700	0.2595	16.2185
395	0.0006	0.0378	550	0.5464	34.1481	705	0.2220	13.8719
400	0.0010	0.0608	555	0.5699	35.6178	710	0.1929	12.0546
405	0.0019	0.1212	560	0.5991	37.4419	715	0.1638	10.2389
410	0.0037	0.2288	565	0.6325	39.5296	720	0.1397	8.7314
415	0.0088	0.5477	570	0.6713	41.9543	725	0.1201	7.5030
420	0.0191	1.1934	575	0.7152	44.6981	730	0.1015	6.3423
425	0.0367	2.2921	580	0.7604	47.5229	735	0.0856	5.3517
430	0.0678	4.2384	585	0.8153	50.9530	740	0.0733	4.5837
435	0.1199	7.4946	590	0.8636	53.9705	745	0.0640	3.9999
440	0.2097	13.1069	595	0.9105	56.9006	750	0.0529	3.3080
445	0.3807	23.7943	600	0.9498	59.3570	755	0.0425	2.6578
450	0.5649	35.3049	605	0.9792	61.1947	760	0.0384	2.3973
455	0.5422	33.8887	610	0.9965	62.2792	765	0.0347	2.1675
460	0.4091	25.5694	615	0.9963	62.2678	770	0.0279	1.7447
465	0.3208	20.0501	620	0.9879	61.7415	775	0.0250	1.5654
470	0.2542	15.8887	625	0.9629	60.1808	780	0.0209	1.3045
475	0.1982	12.3858	630	0.9236	57.7222	785	0.0172	1.0746
480	0.1769	11.0573	635	0.8780	54.8717	790	0.0161	1.0033
485	0.1838	11.4879	640	0.8223	51.3892	795	0.0111	0.6923
490	0.2103	13.1400	645	0.7575	47.3420	800	0.0102	0.6387
495	0.2519	15.7455	650	0.6970	43.5590			
500	0.3028	18.9259	655	0.6301	39.3821			
505	0.3527	22.0446	660	0.5675	35.4637			
510	0.3973	24.8318	665	0.5053	31.5787			
515	0.4341	27.1309	670	0.4480	27.9986			
520	0.4641	29.0051	675	0.3918	24.4846			
525	0.4867	30.4176	680	0.3432	21.4460			
530	0.5057	31.6036	685	0.2981	18.6306			

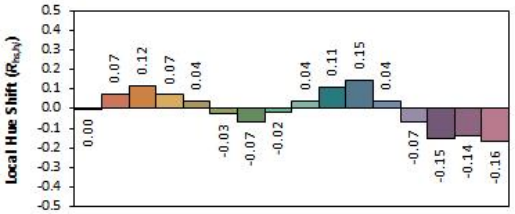
TM30

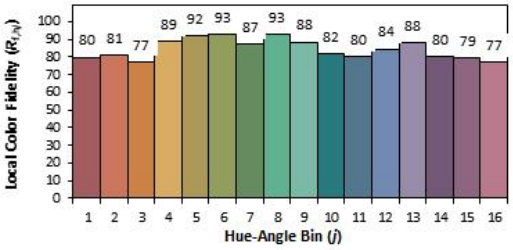
ANSI/IES TM-30-18 Color Rendition Report

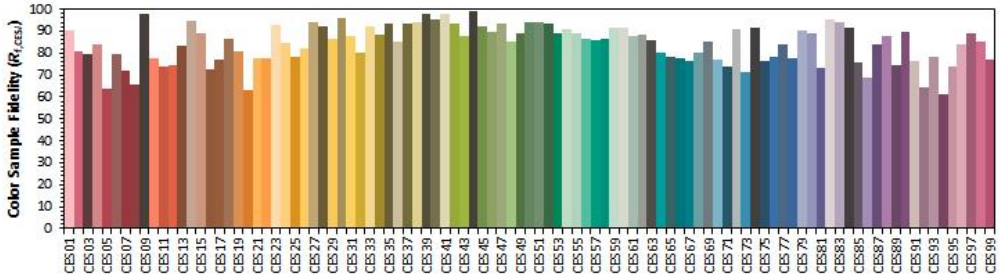












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4343
y	0.3999
u'	0.2506
v'	0.5193

CIE 13.3-1995 (CRI)

R_a	83
R_9	6

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

Zonal Lumen Tabulation

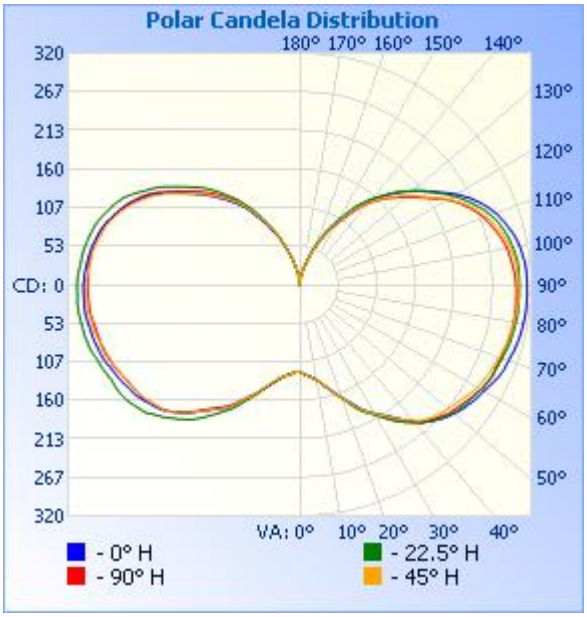
Zonal Lumen Summary

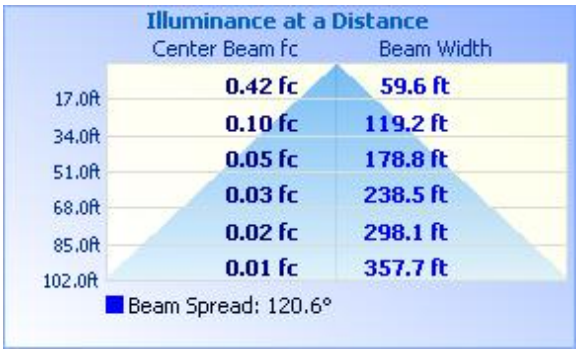
Zone	Lumens	% Lamp	% Luminaire
0-30	138.0	4.6%	4.6%
0-40	277.5	9.2%	9.2%
0-60	726.7	24.1%	24.1%
60-90	931.8	30.9%	30.9%
70-100	970.3	32.2%	32.2%
90-120	893.3	29.6%	29.6%
0-90	1,658.5	55%	55%
90-180	1,358.6	45%	45%
0-180	3,017.1	100%	100%

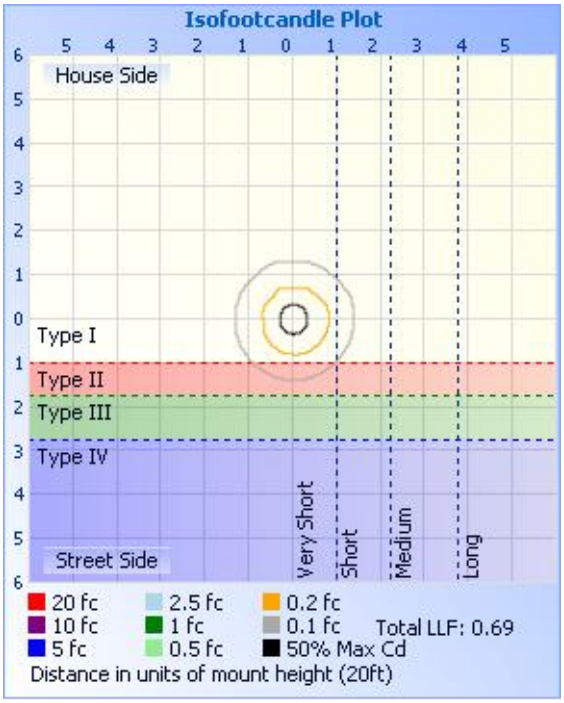
Lumens Per Zone

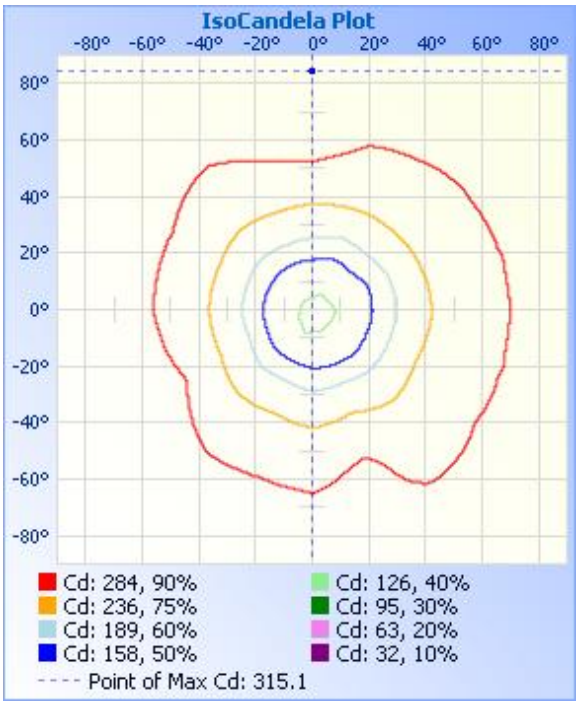
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	12.1	0.4%	90-100	326.3	10.8%
10-20	41.4	1.4%	100-110	305.1	10.1%
20-30	84.4	2.8%	110-120	261.9	8.7%
30-40	139.6	4.6%	120-130	200.2	6.6%
40-50	199.7	6.6%	130-140	138.3	4.6%
50-60	249.5	8.3%	140-150	81.1	2.7%
60-70	287.8	9.5%	150-160	35.4	1.2%
70-80	315.2	10.4%	160-170	9.4	0.3%
80-90	328.8	10.9%	170-180	0.9	0%

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121
1	121	122	122	122	122	121	121	120	120	120	120	120	120	120	121	121	121
2	123	123	123	123	123	122	123	120	120	120	120	120	120	121	122	122	123
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159	50	53	50	50	49	48	54	55	58	61	61	63	59	61	53	56	50
160	46	48	45	46	45	44	50	50	54	55	56	58	54	56	49	51	46
161	41	44	41	42	40	41	46	46	50	50	51	52	50	51	45	47	41
162	37	40	36	38	36	37	42	42	46	46	48	48	46	46	41	42	37
163	33	35	33	34	32	33	38	39	42	42	44	44	42	42	37	38	33
164	30	31	29	30	29	30	34	36	38	38	39	40	38	38	33	34	30
165	27	27	26	27	26	27	30	32	33	35	35	36	34	33	29	30	27
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167	21	21	20	20	20	21	24	25	27	28	28	29	27	26	23	23	21
168	19	18	17	18	18	19	21	23	24	25	25	26	24	23	21	20	19
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179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 20W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.159	18.93	0.995	7.77
0E-A1	277.0	60	0.074	18.72	0.911	9.57
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	
Duv	
Chromaticity (x, y)	
Chromaticity (u', v')	
Color Rendering Index CRI(Ra)	
R9	
Rf	
Rg	
Rcs,h1(%)	

Special Color Rendering Indices			
R1	84	R9	14
R2	92	R10	80
R3	96	R11	81
R4	82	R12	63
R5	83	R13	86
R6	88	R14	98
R7	85	R15	78
R8	65	--	--
--	--	--	--
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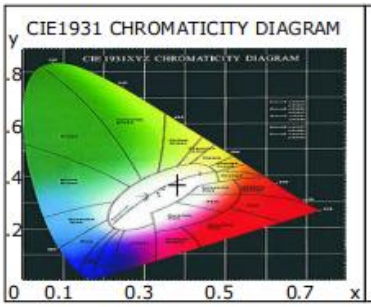
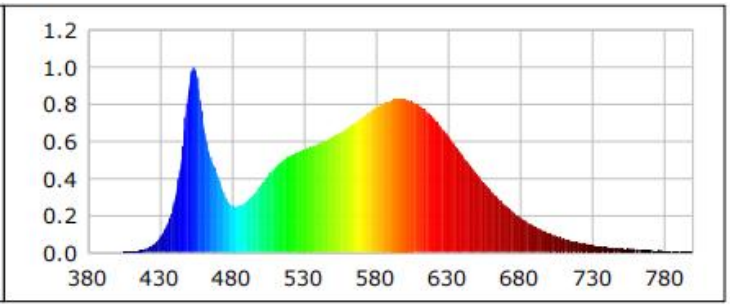
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3142.2	3033.2	>=2000(-10%)
Luminous Efficacy (lm/W)	166.0	162.0	Standard>=130(-3%)
Most worst Luminous/Highest Watts	160.23		

Spectral Power Distribution & Chromaticity Diagram

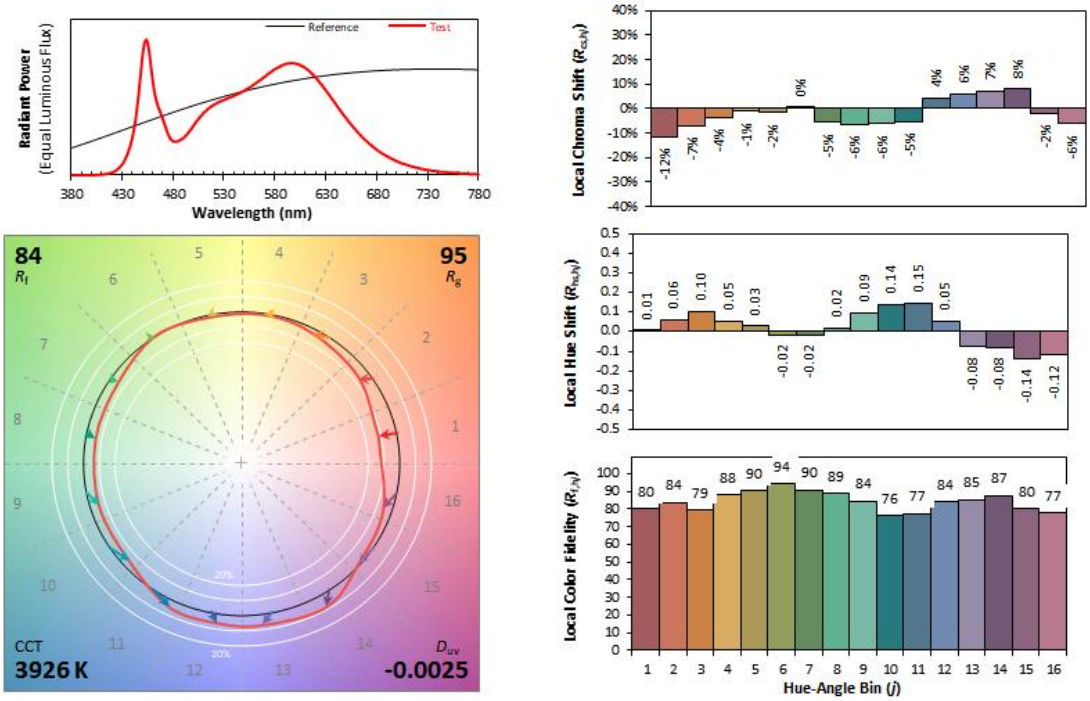


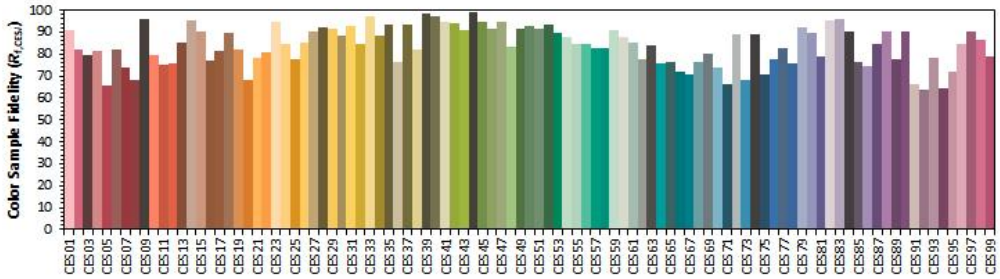


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0233	535	0.5402	37.0371	690	0.2530	17.3505
385	0.0011	0.0738	540	0.5541	37.9946	695	0.2179	14.9381
390	0.0006	0.0394	545	0.5700	39.0793	700	0.1896	12.9993
395	0.0006	0.0441	550	0.5859	40.1725	705	0.1615	11.0733
400	0.0010	0.0654	555	0.6031	41.3534	710	0.1412	9.6793
405	0.0024	0.1664	560	0.6243	42.8075	715	0.1207	8.2768
410	0.0038	0.2609	565	0.6474	44.3915	720	0.1018	6.9782
415	0.0087	0.5949	570	0.6725	46.1118	725	0.0862	5.9095
420	0.0198	1.3594	575	0.6996	47.9673	730	0.0742	5.0908
425	0.0398	2.7319	580	0.7249	49.7048	735	0.0622	4.2643
430	0.0790	5.4191	585	0.7563	51.8553	740	0.0550	3.7733
435	0.1495	10.2497	590	0.7835	53.7235	745	0.0466	3.1934
440	0.2729	18.7127	595	0.8030	55.0556	750	0.0382	2.6202
445	0.5108	35.0214	600	0.8203	56.2467	755	0.0307	2.1053
450	0.8771	60.1404	605	0.8271	56.7078	760	0.0290	1.9882
455	0.9791	67.1305	610	0.8250	56.5654	765	0.0251	1.7237
460	0.7022	48.1435	615	0.8130	55.7437	770	0.0207	1.4189
465	0.5164	35.4046	620	0.7903	54.1896	775	0.0193	1.3236
470	0.4147	28.4344	625	0.7609	52.1721	780	0.0149	1.0226
475	0.3055	20.9446	630	0.7226	49.5447	785	0.0117	0.8010
480	0.2508	17.1947	635	0.6773	46.4362	790	0.0109	0.7457
485	0.2519	17.2737	640	0.6276	43.0307	795	0.0094	0.6418
490	0.2735	18.7527	645	0.5753	39.4475	800	0.0052	0.3543
495	0.3128	21.4462	650	0.5240	35.9286			
500	0.3629	24.8844	655	0.4714	32.3222			
505	0.4143	28.4072	660	0.4208	28.8535			
510	0.4590	31.4681	665	0.3742	25.6588			
515	0.4930	33.8045	670	0.3291	22.5644			
520	0.5186	35.5596	675	0.2875	19.7097			
525	0.5402	37.0371	680	0.2530	17.3505			
530	0.5541	37.9946	685	0.2179	14.9381			

TM30

ANSI/IES TM-30-18 Color Rendition Report





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

x	0.3820
y	0.3724
u'	0.2279
v'	0.4999

CIE 13.3-1995 (CRI)

R_a	84
R_g	14

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	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 20W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301 0E-A1	120.0	60	0.167	19.93	0.994	7.81
	277.0	60	0.078	19.73	0.911	9.53
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

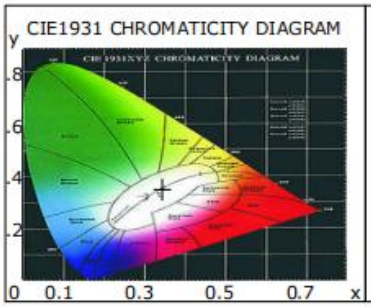
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5106
Duv	0.0015
Chromaticity (x, y)	x=0.3424 y=0.3525
Chromaticity (u', v')	u'=0.2093 v'=0.4847
Color Rendering Index CRI(Ra)	83
R9	2
Rf	83
Rg	94
Rcs,h1(%)	-14

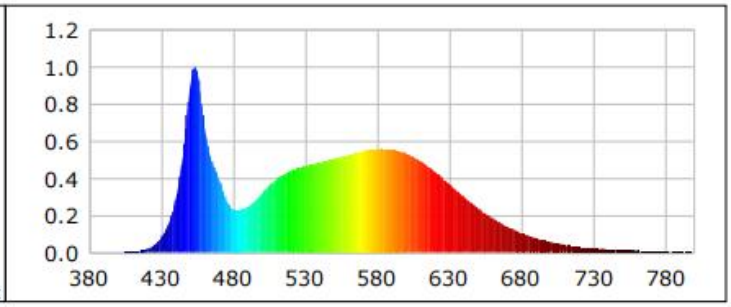
Special Color Rendering Indices			
R1	81	R9	2
R2	89	R10	74
R3	94	R11	80
R4	81	R12	59
R5	81	R13	84
R6	84	R14	97
R7	86	R15	76
R8	65	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3208.5	3110.2	>=2000(-10%)
Luminous Efficacy (lm/W)	161.0	157.6	Standard>=130(-3%)
Most worst Luminous/Highest Watts	156.06		

Spectral Power Distribution & Chromaticity Diagram

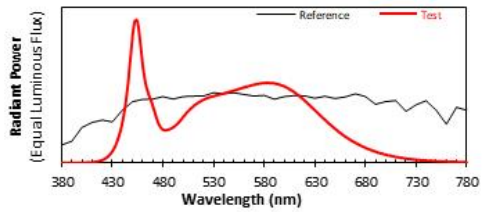


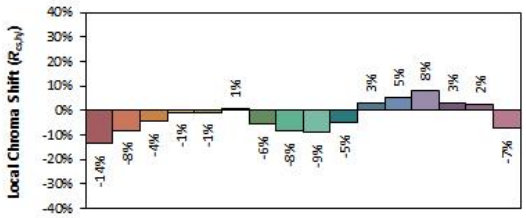


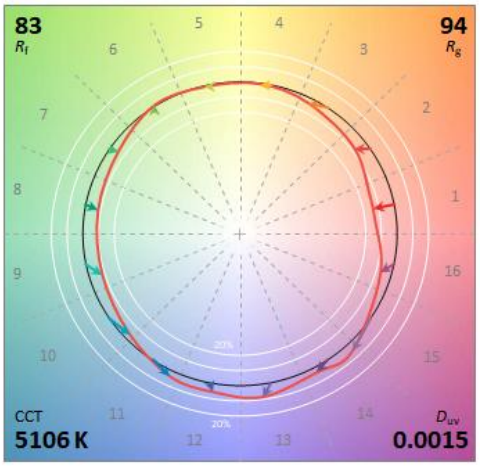
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0039	535	0.4558	41.6894	690	0.1396	12.7708
385	0.0006	0.0553	540	0.4653	42.5618	695	0.1216	11.1178
390	0.0007	0.0600	545	0.4751	43.4552	700	0.1038	9.4964
395	0.0006	0.0577	550	0.4847	44.3323	705	0.0898	8.2127
400	0.0007	0.0681	555	0.4943	45.2086	710	0.0765	6.9995
405	0.0020	0.1784	560	0.5045	46.1420	715	0.0653	5.9738
410	0.0036	0.3272	565	0.5159	47.1881	720	0.0562	5.1439
415	0.0081	0.7442	570	0.5276	48.2546	725	0.0486	4.4437
420	0.0194	1.7712	575	0.5356	48.9886	730	0.0403	3.6898
425	0.0398	3.6416	580	0.5446	49.8079	735	0.0340	3.1083
430	0.0800	7.3177	585	0.5532	50.5973	740	0.0296	2.7040
435	0.1561	14.2761	590	0.5575	50.9860	745	0.0249	2.2769
440	0.2862	26.1772	595	0.5574	50.9773	750	0.0221	2.0202
445	0.5282	48.3110	600	0.5552	50.7764	755	0.0161	1.4696
450	0.8913	81.5160	605	0.5467	50.0013	760	0.0157	1.4365
455	0.9753	89.2060	610	0.5335	48.7908	765	0.0164	1.5026
460	0.6800	62.1976	615	0.5135	46.9630	770	0.0104	0.9556
465	0.4963	45.3892	620	0.4928	45.0703	775	0.0104	0.9470
470	0.3941	36.0419	625	0.4636	42.4064	780	0.0089	0.8175
475	0.2828	25.8616	630	0.4331	39.6134	785	0.0058	0.5288
480	0.2310	21.1320	635	0.4015	36.7239	790	0.0069	0.6300
485	0.2306	21.0877	640	0.3678	33.6387	795	0.0042	0.3818
490	0.2473	22.6220	645	0.3330	30.4540	800	0.0046	0.4189
495	0.2783	25.4558	650	0.2996	27.4006			
500	0.3206	29.3238	655	0.2678	24.4960			
505	0.3609	33.0076	660	0.2370	21.6741			
510	0.3951	36.1329	665	0.2086	19.0759			
515	0.4207	38.4818	670	0.1834	16.7761			
520	0.4404	40.2841	675	0.1605	14.6803			
525	0.4558	41.6894	680	0.1396	12.7708			
530	0.4653	42.5618	685	0.1216	11.1178			

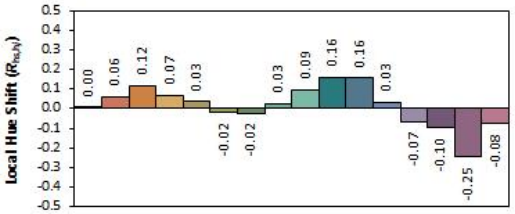
TM30

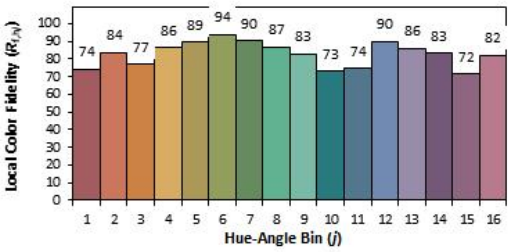
ANSI/IES TM-30-18 Color Rendition Report

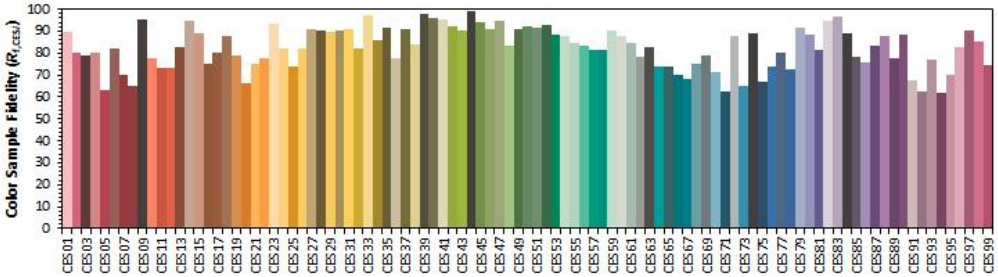












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3424
y	0.3525
u'	0.2093
v'	0.4847

CIE 13.3-1995 (CRI)

R_a	83
R_9	2

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2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 15W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.124	14.76	0.991	8.77
0E-A1	277.0	60	0.058	14.52	0.903	12.18
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

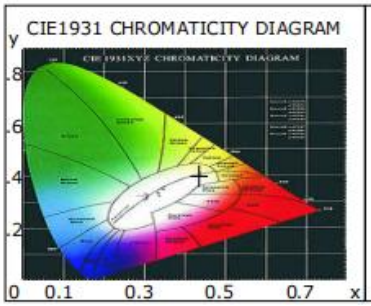
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3000
Duv	-0.0009
Chromaticity (x, y)	x=0.4357 y=0.4015
Chromaticity (u', v')	u'=0.2509 v'=0.5202
Color Rendering Index CRI(Ra)	83
R9	7
Rf	84
Rg	97
Rcs,h1(%)	-11

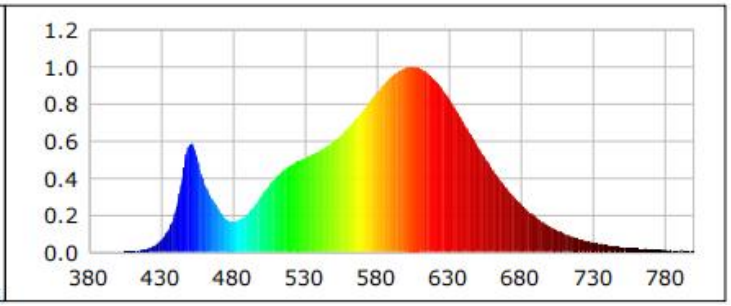
Special Color Rendering Indices			
R1	81	R9	7
R2	91	R10	79
R3	96	R11	81
R4	81	R12	70
R5	82	R13	84
R6	89	R14	99
R7	83	R15	74
R8	59	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2197.8	2102.5	>=2000(-10%)
Luminous Efficacy (lm/W)	148.90	144.80	Standard>=130(-3%)
Most worst Luminous/Highest	142.45		
Beam Angle	280.5	--	>=75°
Center Beam Candle Power (cd)	87	--	--

Spectral Power Distribution & Chromaticity Diagram

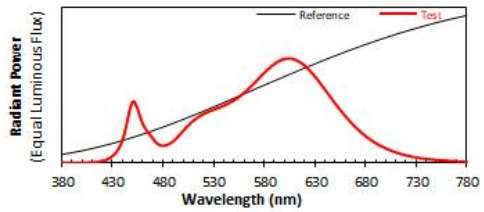


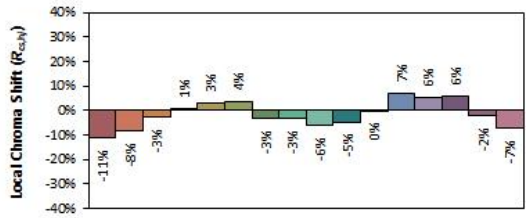


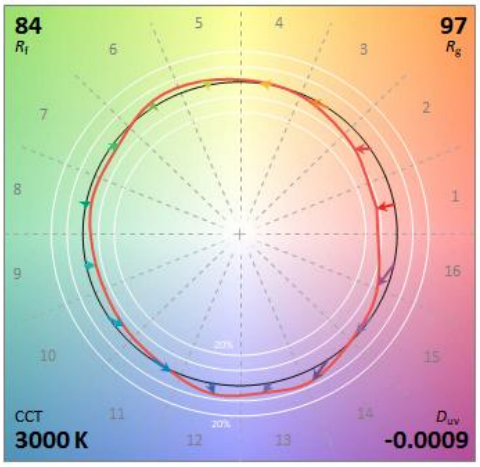
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0082	535	0.4909	21.5330	690	0.3436	15.0707
385	0.0009	0.0382	540	0.5081	22.2876	695	0.2976	13.0559
390	0.0004	0.0165	545	0.5274	23.1343	700	0.2564	11.2483
395	0.0005	0.0204	550	0.5472	24.0057	705	0.2202	9.6576
400	0.0010	0.0446	555	0.5707	25.0352	710	0.1898	8.3268
405	0.0015	0.0643	560	0.5977	26.2181	715	0.1608	7.0555
410	0.0028	0.1227	565	0.6307	27.6687	720	0.1376	6.0364
415	0.0068	0.2981	570	0.6724	29.4950	725	0.1166	5.1155
420	0.0166	0.7289	575	0.7154	31.3807	730	0.0995	4.3651
425	0.0326	1.4287	580	0.7613	33.3955	735	0.0837	3.6738
430	0.0634	2.7821	585	0.8126	35.6478	740	0.0720	3.1594
435	0.1173	5.1464	590	0.8619	37.8101	745	0.0608	2.6659
440	0.2179	9.5607	595	0.9056	39.7236	750	0.0514	2.2558
445	0.4133	18.1320	600	0.9479	41.5818	755	0.0418	1.8347
450	0.5831	25.5795	605	0.9774	42.8769	760	0.0376	1.6501
455	0.5139	22.5453	610	0.9955	43.6680	765	0.0329	1.4442
460	0.3739	16.4004	615	0.9974	43.7527	770	0.0270	1.1830
465	0.2952	12.9475	620	0.9912	43.4789	775	0.0226	0.9915
470	0.2317	10.1629	625	0.9681	42.4667	780	0.0195	0.8557
475	0.1791	7.8549	630	0.9309	40.8369	785	0.0155	0.6785
480	0.1628	7.1421	635	0.8844	38.7977	790	0.0140	0.6150
485	0.1751	7.6812	640	0.8278	36.3123	795	0.0104	0.4570
490	0.2051	8.9988	645	0.7654	33.5767	800	0.0091	0.3986
495	0.2513	11.0254	650	0.7014	30.7679			
500	0.3058	13.4149	655	0.6350	27.8576			
505	0.3579	15.7002	660	0.5697	24.9919			
510	0.4034	17.6966	665	0.5066	22.2234			
515	0.4403	19.3135	670	0.4482	19.6602			
520	0.4672	20.4934	675	0.3926	17.2237			
525	0.4909	21.5330	680	0.3436	15.0707			
530	0.5081	22.2876	685	0.2976	13.0559			

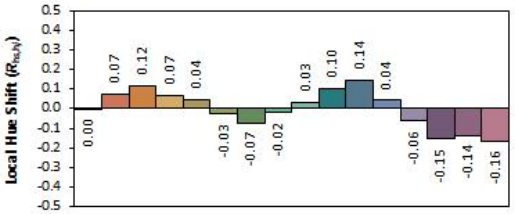
TM30

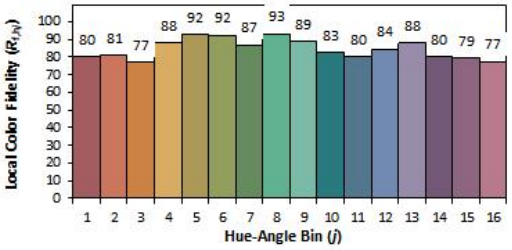
ANSI/IES TM-30-18 Color Rendition Report

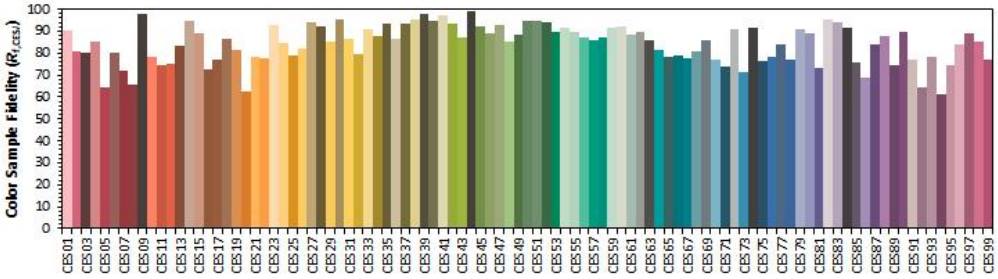












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4357
y	0.4015
u'	0.2509
v'	0.5202

CIE 13.3-1995 (CRI)

R_a	83
R_9	7

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Zonal Lumen Tabulation

Zonal Lumen Summary

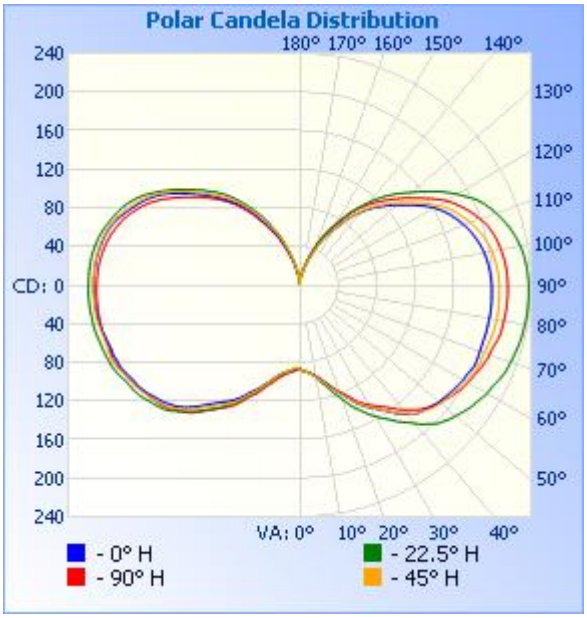
Zone	Lumens	% Lamp	% Luminaire
0-30	100.4	4.6%	4.6%
0-40	201.8	9.2%	9.2%
0-60	527.4	24%	24%
60-90	677.3	30.8%	30.8%
70-100	705.3	32.1%	32.1%
90-120	651.1	29.6%	29.6%
0-90	1,204.7	54.8%	54.8%
90-180	993.3	45.2%	45.2%
0-180	2,198.0	100%	100%

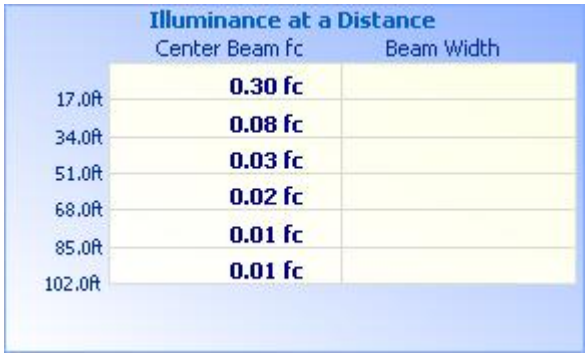
Lumens Per Zone

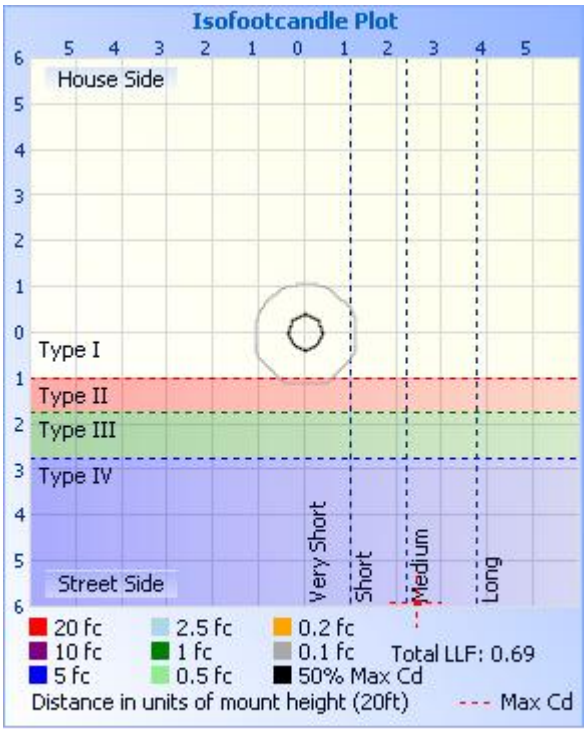
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	8.7	0.4%	90-100	237.5	10.8%
10-20	30.0	1.4%	100-110	222.3	10.1%
20-30	61.7	2.8%	110-120	191.3	8.7%
30-40	101.3	4.6%	120-130	146.3	6.7%
40-50	144.9	6.6%	130-140	100.9	4.6%
50-60	180.8	8.2%	140-150	59.8	2.7%
60-70	209.5	9.5%	150-160	27.0	1.2%
70-80	228.9	10.4%	160-170	7.4	0.3%
80-90	238.9	10.9%	170-180	0.8	0%

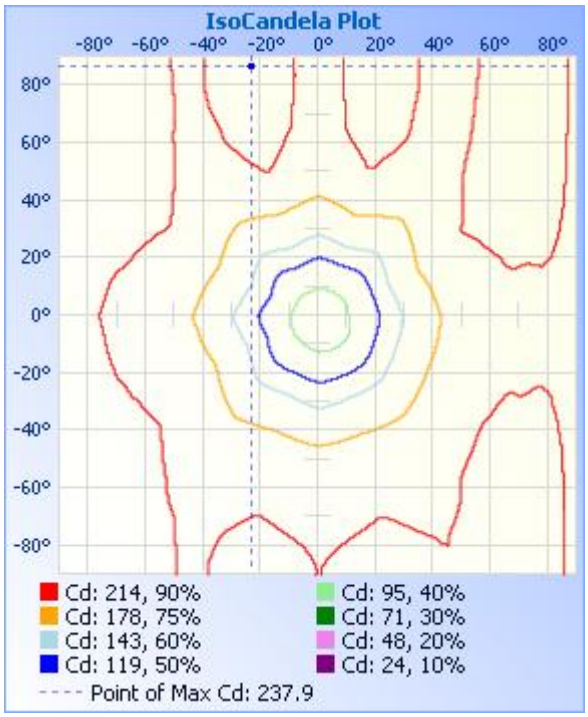
Certificate#4810.01

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
1	88	88	88	88	87	87	87	86	86	86	86	86	87	87	87	88	88
2	89	89	89	89	88	88	87	87	86	86	85	86	88	88	88	88	89
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76	200	236	207	229	214	224	208	218	209	217	211	224	209	232	197	235	200
77	199	237	207	230	214	225	209	219	210	217	211	225	210	233	197	236	199
78	200	237	207	230	215	225	209	219	211	218	212	226	210	233	197	236	200
79	200	237	207	231	215	226	209	220	212	218	213	227	210	233	197	236	200
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82	200	**238**	208	231	215	226	210	221	212	218	214	228	211	234	196	237	200
83	200	**238**	208	231	216	226	210	221	213	219	214	228	211	234	196	237	200
84	200	**238**	208	231	216	226	210	221	213	219	214	228	211	234	196	**238**	200
85	200	**238**	208	231	216	227	210	221	213	219	214	228	211	234	196	**238**	200
86	200	**238**	208	231	216	227	211	222	214	219	214	229	211	234	196	**238**	200
87	200	**238**	207	231	216	227	211	221	214	219	214	229	211	234	196	**238**	200
88	200	**238**	207	231	216	227	211	222	214	219	214	229	211	234	196	**238**	200
89	199	**238**	207	231	216	227	211	222	214	219	214	229	211	234	196	**238**	199
90	199	237	207	231	216	226	211	222	214	219	214	229	211	234	196	**238**	199
91	199	237	207	231	216	227	211	221	214	219	214	229	210	234	195	**238**	199
92	199	237	207	230	216	226	211	221	214	219	214	229	210	233	195	237	199

93	198	237	206	230	215	226	211	221	214	219	214	228	210	233	195	237	198
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95	197	236	206	229	215	226	211	221	213	219	214	228	209	233	194	236	197
96	197	235	205	228	215	225	210	221	213	218	214	228	209	232	194	236	197
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98	196	234	204	227	213	224	209	220	212	218	213	227	208	231	193	235	196
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123	151	177	155	171	164	177	166	176	172	177	174	182	164	180	150	179	151
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125	144	169	149	164	157	170	159	169	165	170	168	175	158	173	143	171	144
126	141	165	145	161	153	166	156	166	161	167	164	171	155	170	140	167	141
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148	68	79	68	81	77	90	82	91	85	93	89	95	81	90	70	82	68
149	65	75	65	77	73	86	78	87	81	90	85	90	77	86	67	79	65
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153	53	60	52	62	60	69	64	70	66	74	70	75	63	71	55	63	53
154	50	56	49	59	57	66	61	66	63	70	67	71	60	67	52	60	50
155	46	53	46	55	53	62	58	63	59	66	63	67	56	63	49	56	46
156	43	49	42	51	50	58	54	59	56	62	60	63	53	59	45	52	43

157	39	45	39	47	46	54	50	56	53	58	57	60	50	56	42	49	39
158	36	41	35	43	42	50	46	52	50	55	53	56	46	52	39	45	36
159	33	37	32	39	39	46	42	48	46	51	50	52	42	48	36	41	33
160	31	34	30	36	36	42	39	44	42	47	46	48	39	44	33	37	31
161	28	31	27	33	32	38	36	40	39	43	42	44	36	40	31	34	28
162	25	28	25	29	29	35	33	37	36	39	39	41	33	37	29	30	25
163	23	25	22	26	26	31	30	33	33	35	36	37	30	33	26	27	23
164	21	22	20	23	24	27	27	30	30	32	33	34	27	29	23	24	21
165	18	19	18	20	22	25	25	27	27	29	30	31	24	26	21	21	18
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167	15	14	15	15	17	19	20	21	22	22	24	24	20	20	17	16	15
168	13	13	13	13	15	16	17	19	19	20	21	22	17	17	15	14	13
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179	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 15W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.122	14.5	0.992	8.58
0E-A1	277.0	60	0.057	14.23	0.903	12.19
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3905
Duv	-0.0022
Chromaticity (x, y)	x=0.3831 y=0.3737
Chromaticity (u', v')	u'=0.2281 v'=0.5006
Color Rendering Index CRI(Ra)	84
R9	13
Rf	84
Rg	96
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	83	R9	13
R2	92	R10	80
R3	96	R11	82
R4	82	R12	62
R5	83	R13	86
R6	88	R14	98
R7	85	R15	78
R8	65	--	--
--	--	--	--
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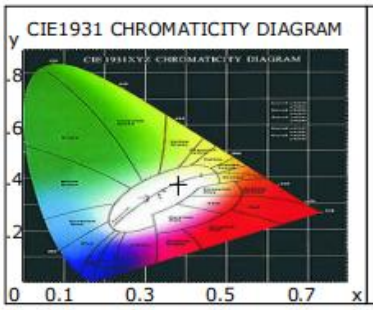
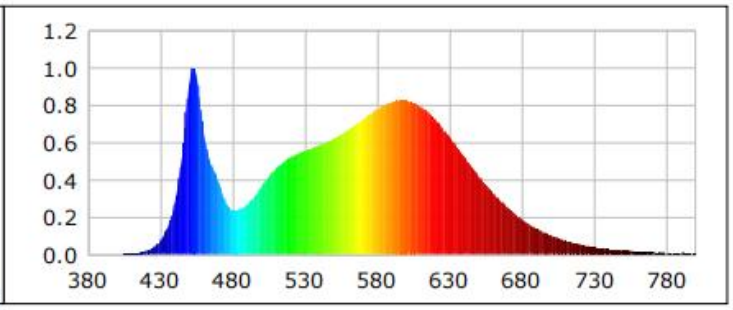
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2305.8	2218.5	>=2000(-10%)
Luminous Efficacy (lm/W)	159.02	155.90	Standard>=130(-3%)
Most worst Luminous/Highest Watts	153.0		

Spectral Power Distribution & Chromaticity Diagram

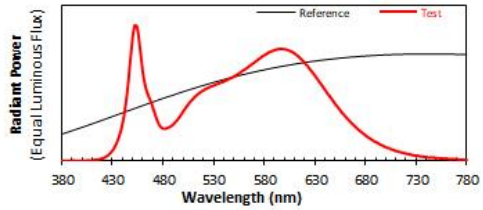


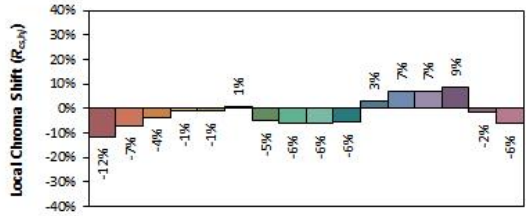


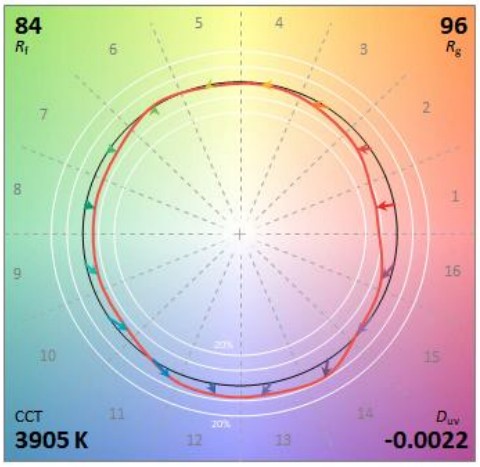
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0004	535	0.5412	26.9910	690	0.2515	12.5415
385	0.0007	0.0346	540	0.5552	27.6917	695	0.2171	10.8297
390	0.0006	0.0320	545	0.5705	28.4537	700	0.1879	9.3694
395	0.0004	0.0193	550	0.5855	29.2002	705	0.1611	8.0326
400	0.0010	0.0502	555	0.6041	30.1288	710	0.1386	6.9126
405	0.0021	0.1070	560	0.6221	31.0254	715	0.1180	5.8855
410	0.0032	0.1579	565	0.6456	32.2003	720	0.1007	5.0239
415	0.0075	0.3757	570	0.6715	33.4893	725	0.0855	4.2631
420	0.0176	0.8767	575	0.6980	34.8150	730	0.0728	3.6309
425	0.0364	1.8167	580	0.7237	36.0920	735	0.0609	3.0362
430	0.0745	3.7153	585	0.7545	37.6284	740	0.0529	2.6372
435	0.1459	7.2756	590	0.7807	38.9384	745	0.0456	2.2767
440	0.2747	13.7006	595	0.8021	40.0046	750	0.0381	1.8993
445	0.5345	26.6581	600	0.8181	40.8026	755	0.0304	1.5149
450	0.9131	45.5388	605	0.8264	41.2144	760	0.0278	1.3874
455	0.9610	47.9319	610	0.8250	41.1484	765	0.0250	1.2455
460	0.6576	32.7964	615	0.8113	40.4654	770	0.0206	1.0250
465	0.4904	24.4566	620	0.7939	39.5974	775	0.0168	0.8364
470	0.3915	19.5283	625	0.7618	37.9924	780	0.0165	0.8231
475	0.2837	14.1473	630	0.7242	36.1175	785	0.0127	0.6319
480	0.2379	11.8634	635	0.6779	33.8123	790	0.0134	0.6695
485	0.2438	12.1581	640	0.6302	31.4316	795	0.0094	0.4699
490	0.2681	13.3691	645	0.5765	28.7551	800	0.0074	0.3668
495	0.3104	15.4793	650	0.5244	26.1560			
500	0.3648	18.1944	655	0.4720	23.5412			
505	0.4172	20.8095	660	0.4195	20.9237			
510	0.4605	22.9679	665	0.3732	18.6125			
515	0.4957	24.7225	670	0.3290	16.4064			
520	0.5205	25.9591	675	0.2879	14.3589			
525	0.5412	26.9910	680	0.2515	12.5415			
530	0.5552	27.6917	685	0.2171	10.8297			

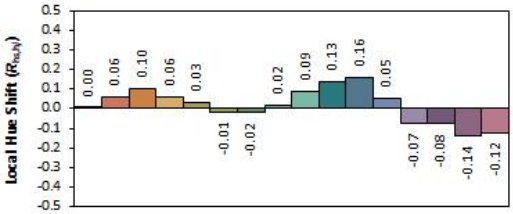
TM30

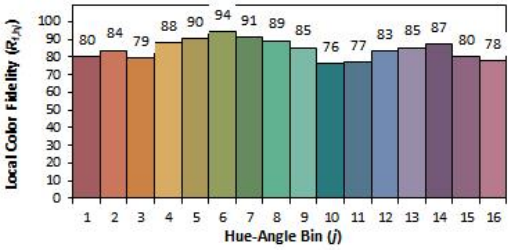
ANSI/IES TM-30-18 Color Rendition Report

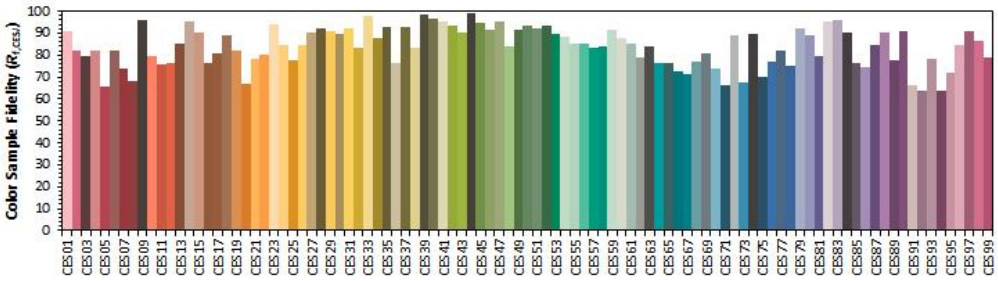












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3831
y	0.3737
u'	0.2281
v'	0.5006

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.

2.6 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 15W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301 0E-A1	120.0	60	0.125	14.89	0.991	8.91
	277.0	60	0.058	14.63	0.903	12.28
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5064
Duv	0.0019
Chromaticity (x, y)	x=0.3437 y=0.3541
Chromaticity (u', v')	u'=0.2095 v'=0.4857
Color Rendering Index CRI(Ra)	82
R9	1
Rf	83
Rg	95
Rcs,h1(%)	-13

Special Color Rendering Indices			
R1	81	R9	1
R2	89	R10	73
R3	93	R11	80
R4	81	R12	58
R5	81	R13	83
R6	84	R14	97
R7	86	R15	75
R8	64	--	--
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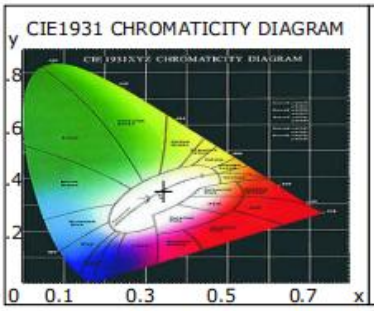
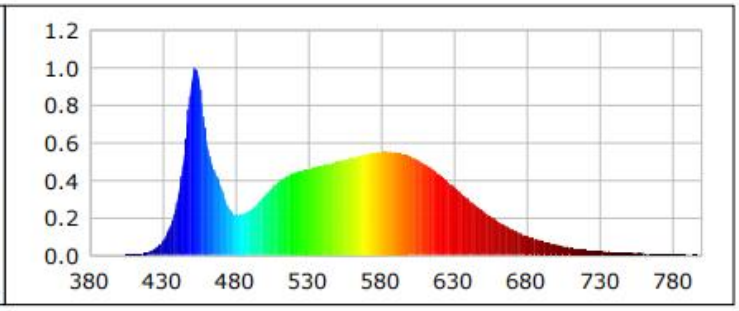
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2345.9	2242.0	>=2000(-10%)
Luminous Efficacy (lm/W)	157.55	153.25	Standard>=130(-3%)
Most worst Luminous/Highest Watts	150.57		

Spectral Power Distribution & Chromaticity Diagram



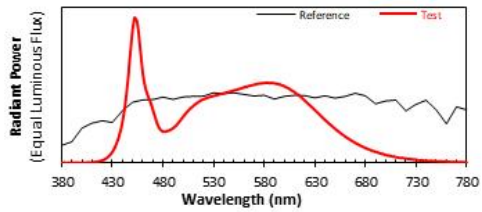


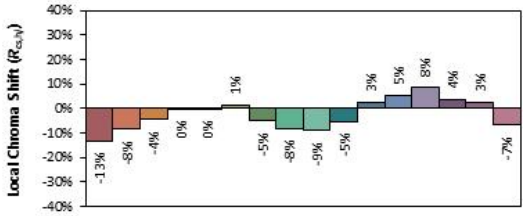
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0246	535	0.4525	31.0313	690	0.1363	9.3463
385	0.0006	0.0440	540	0.4595	31.5120	695	0.1182	8.1033
390	0.0006	0.0395	545	0.4689	32.1574	700	0.1031	7.0723
395	0.0008	0.0528	550	0.4787	32.8281	705	0.0871	5.9743
400	0.0006	0.0385	555	0.4864	33.3589	710	0.0752	5.1603
405	0.0017	0.1136	560	0.4990	34.2247	715	0.0630	4.3175
410	0.0030	0.2038	565	0.5082	34.8552	720	0.0536	3.6756
415	0.0072	0.4944	570	0.5198	35.6531	725	0.0459	3.1504
420	0.0168	1.1514	575	0.5296	36.3206	730	0.0398	2.7289
425	0.0362	2.4807	580	0.5373	36.8485	735	0.0331	2.2720
430	0.0750	5.1433	585	0.5464	37.4749	740	0.0288	1.9750
435	0.1501	10.2936	590	0.5504	37.7479	745	0.0246	1.6844
440	0.2845	19.5154	595	0.5496	37.6946	750	0.0215	1.4740
445	0.5495	37.6874	600	0.5479	37.5768	755	0.0164	1.1235
450	0.9223	63.2585	605	0.5417	37.1516	760	0.0155	1.0639
455	0.9418	64.5939	610	0.5263	36.0986	765	0.0138	0.9475
460	0.6200	42.5209	615	0.5092	34.9220	770	0.0104	0.7131
465	0.4643	31.8466	620	0.4875	33.4383	775	0.0089	0.6090
470	0.3646	25.0045	625	0.4599	31.5413	780	0.0075	0.5125
475	0.2565	17.5922	630	0.4299	29.4879	785	0.0063	0.4352
480	0.2147	14.7274	635	0.3974	27.2542	790	0.0045	0.3063
485	0.2211	15.1619	640	0.3632	24.9113	795	0.0045	0.3102
490	0.2383	16.3407	645	0.3303	22.6525	800	0.0033	0.2283
495	0.2738	18.7762	650	0.2962	20.3180			
500	0.3175	21.7767	655	0.2643	18.1294			
505	0.3594	24.6480	660	0.2346	16.0871			
510	0.3933	26.9723	665	0.2067	14.1758			
515	0.4187	28.7169	670	0.1812	12.4310			
520	0.4371	29.9751	675	0.1575	10.8054			
525	0.4525	31.0313	680	0.1363	9.3463			
530	0.4595	31.5120	685	0.1182	8.1033			

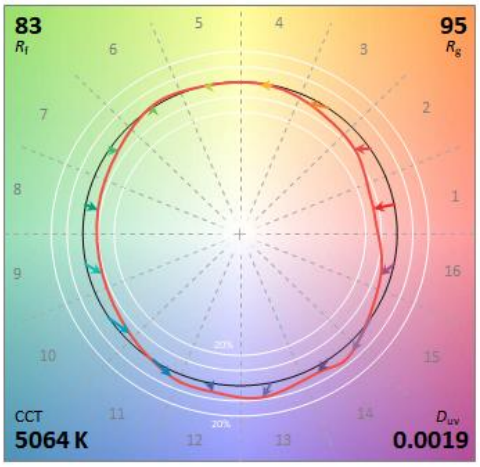
Certificate#4810.01

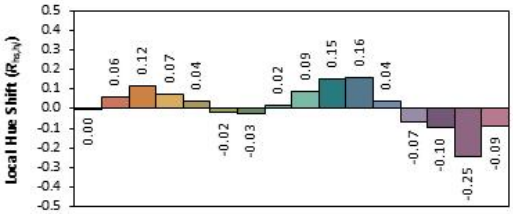
TM30

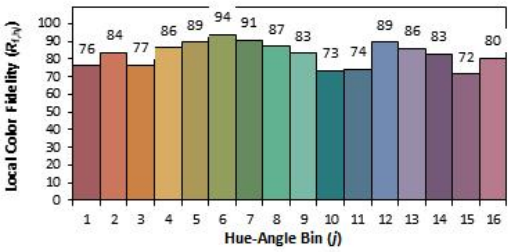
ANSI/IES TM-30-18 Color Rendition Report

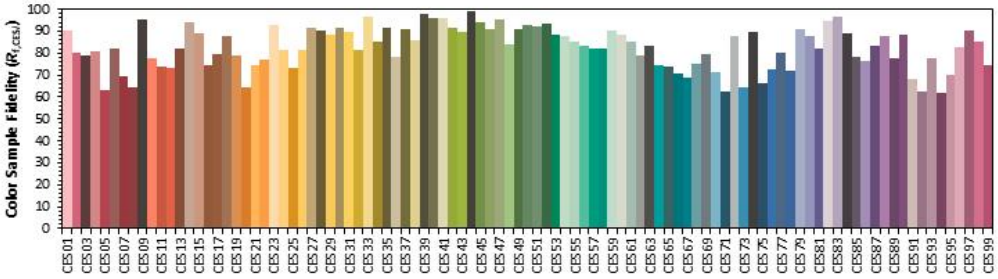












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3437
y	0.3541
u'	0.2095
v'	0.4857

CIE 13.3-1995 (CRI)

R_a	82
R_g	1

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2.7 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 3000K 10W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.080	9.51	0.986	7.45
0E-A1	277.0	60	0.038	9.32	0.892	15.72
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

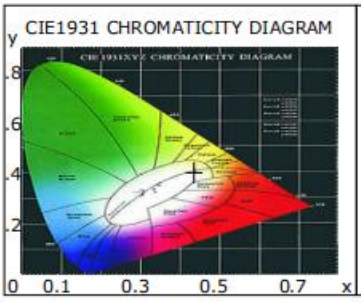
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3006
Duv	-0.0011
Chromaticity (x, y)	x=0.4349 y=0.4006
Chromaticity (u', v')	u'=0.2508 v'=0.5197
Color Rendering Index CRI(Ra)	83
R9	6
Rf	84
Rg	96
Rcs,h1(%)	-11

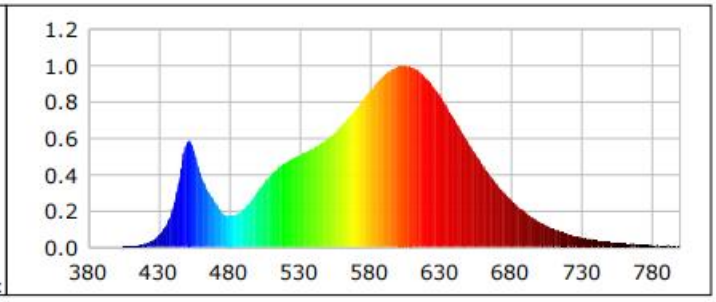
Special Color Rendering Indices			
R1	81	R9	6
R2	91	R10	80
R3	96	R11	80
R4	81	R12	70
R5	81	R13	84
R6	89	R14	99
R7	82	R15	74
R8	59	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	1447.8	1389.4	>=2000(-10%)
Luminous Efficacy (lm/W)	152.24	149.08	Standard>=130(-3%)
Most worst Luminous/Highest	146.10		
Beam Angle	280.6	--	>=75°
Center Beam Candle Power (cd)	57	--	--

Spectral Power Distribution & Chromaticity Diagram

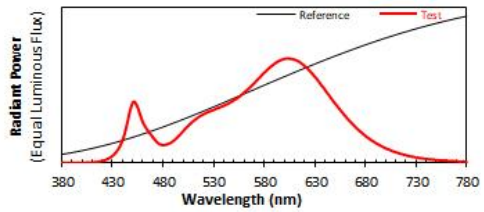


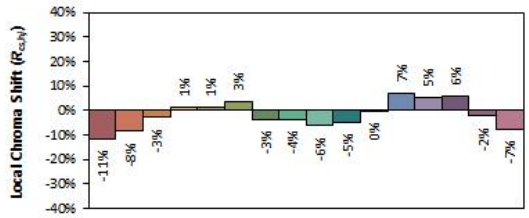


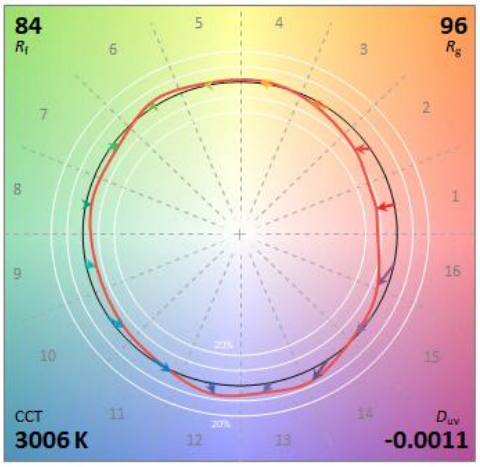
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0034	535	0.4890	13.9127	690	0.3441	9.7890
385	0.0005	0.0132	540	0.5071	14.4273	695	0.2990	8.5071
390	0.0012	0.0348	545	0.5250	14.9360	700	0.2580	7.3408
395	0.0003	0.0092	550	0.5467	15.5530	705	0.2204	6.2709
400	0.0009	0.0269	555	0.5694	16.1976	710	0.1900	5.4059
405	0.0019	0.0536	560	0.5992	17.0456	715	0.1628	4.6323
410	0.0033	0.0939	565	0.6317	17.9716	720	0.1385	3.9408
415	0.0079	0.2234	570	0.6717	19.1088	725	0.1180	3.3580
420	0.0179	0.5086	575	0.7155	20.3551	730	0.0998	2.8400
425	0.0348	0.9902	580	0.7614	21.6605	735	0.0849	2.4156
430	0.0653	1.8565	585	0.8125	23.1151	740	0.0723	2.0580
435	0.1187	3.3776	590	0.8642	24.5853	745	0.0613	1.7436
440	0.2138	6.0830	595	0.9089	25.8571	750	0.0514	1.4626
445	0.3954	11.2476	600	0.9484	26.9820	755	0.0417	1.1862
450	0.5755	16.3725	605	0.9792	27.8574	760	0.0373	1.0623
455	0.5291	15.0513	610	0.9957	28.3254	765	0.0336	0.9559
460	0.3918	11.1450	615	0.9983	28.4010	770	0.0273	0.7756
465	0.3082	8.7692	620	0.9895	28.1489	775	0.0234	0.6649
470	0.2433	6.9211	625	0.9659	27.4771	780	0.0201	0.5721
475	0.1885	5.3620	630	0.9272	26.3766	785	0.0173	0.4930
480	0.1694	4.8186	635	0.8804	25.0452	790	0.0148	0.4210
485	0.1796	5.1086	640	0.8245	23.4551	795	0.0111	0.3158
490	0.2077	5.9074	645	0.7627	21.6966	800	0.0082	0.2333
495	0.2509	7.1371	650	0.6996	19.9032			
500	0.3043	8.6557	655	0.6320	17.9789			
505	0.3556	10.1163	660	0.5681	16.1609			
510	0.4001	11.3834	665	0.5066	14.4110			
515	0.4372	12.4370	670	0.4497	12.7933			
520	0.4652	13.2346	675	0.3930	11.1809			
525	0.4890	13.9127	680	0.3441	9.7890			
530	0.5071	14.4273	685	0.2990	8.5071			

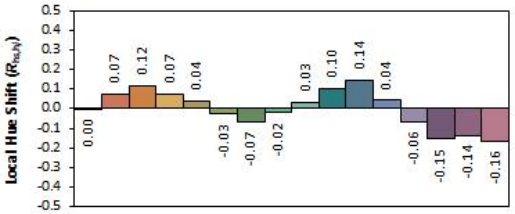
TM30

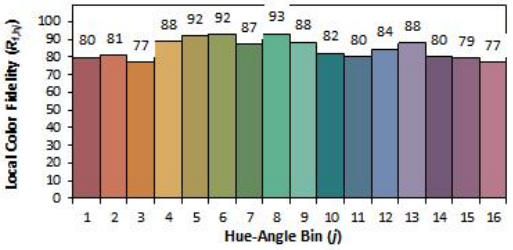
ANSI/IES TM-30-18 Color Rendition Report

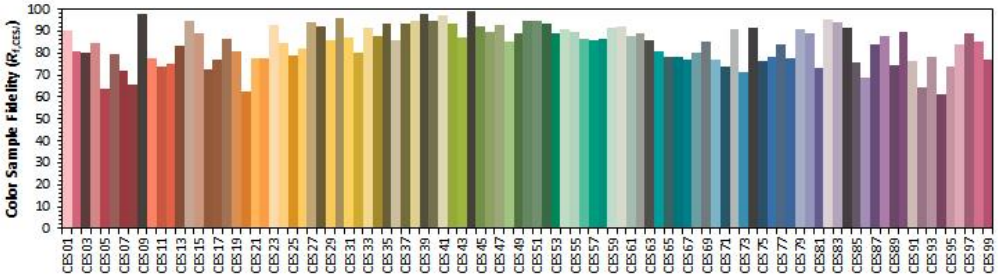












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4349
y	0.4006
u'	0.2508
v'	0.5197

CIE 13.3-1995 (CRI)

R_a	83
R_9	6

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Zonal Lumen Tabulation

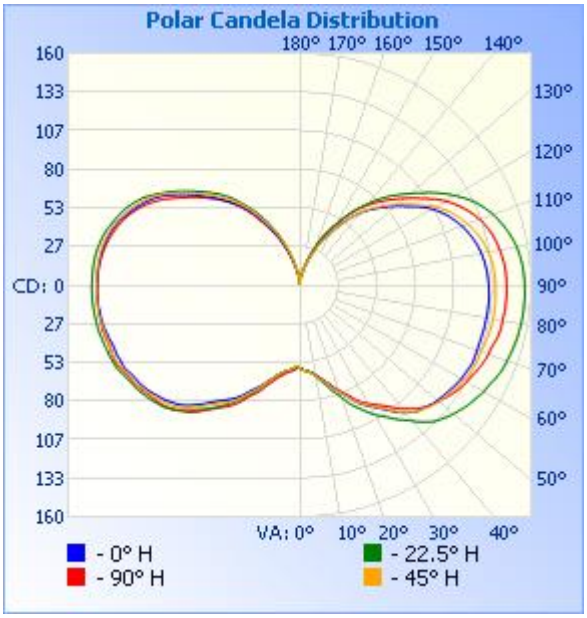
Zonal Lumen Summary

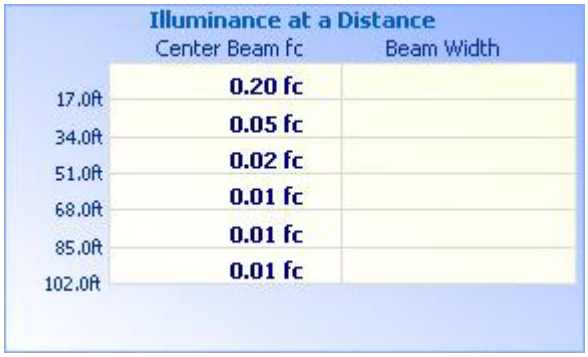
Zone	Lumens	% Lamp	% Luminaire
0-30	66.1	4.6%	4.6%
0-40	132.9	9.2%	9.2%
0-60	347.4	24%	24%
60-90	445.9	30.8%	30.8%
70-100	464.4	32.1%	32.1%
90-120	428.8	29.6%	29.6%
0-90	793.3	54.8%	54.8%
90-180	654.6	45.2%	45.2%
0-180	1,447.9	100%	100%

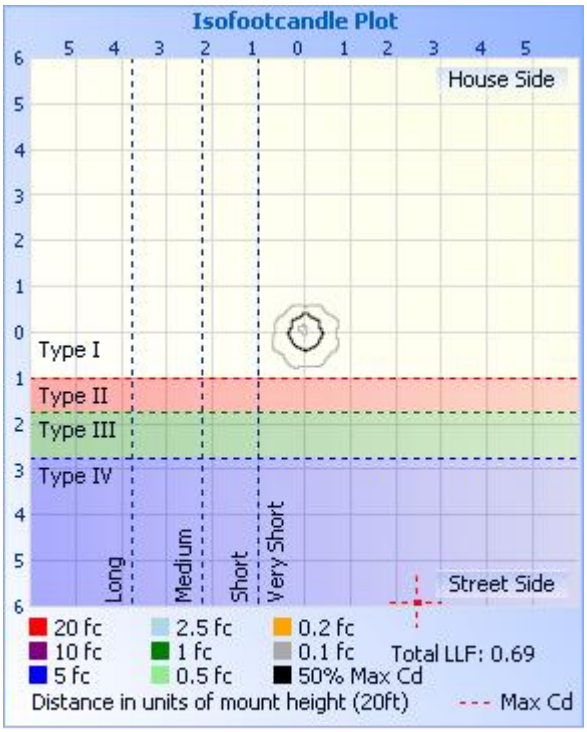
Lumens Per Zone

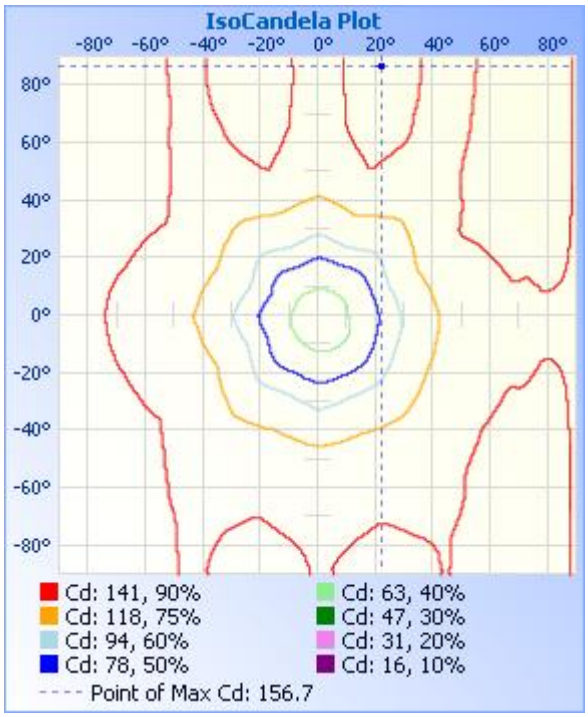
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	5.7	0.4%	90-100	156.4	10.8%
10-20	19.8	1.4%	100-110	146.4	10.1%
20-30	40.6	2.8%	110-120	126.1	8.7%
30-40	66.8	4.6%	120-130	96.5	6.7%
40-50	95.5	6.6%	130-140	66.6	4.6%
50-60	119.1	8.2%	140-150	39.5	2.7%
60-70	137.9	9.5%	150-160	17.8	1.2%
70-80	150.7	10.4%	160-170	4.9	0.3%
80-90	157.3	10.9%	170-180	0.5	0%

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
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1	58	58	58	58	58	57	57	57	57	57	56	57	57	57	58	58	58
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59	129	146	131	141	133	140	130	134	130	134	132	137	133	144	127	146	129
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2.8 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 4000K 10W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301 0E-A1	120.0	60	0.079	9.31	0.987	7.57
	277.0	60	0.037	9.03	0.893	15.77
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3917
Duv	-0.0024
Chromaticity (x, y)	x=0.3824 y=0.3729
Chromaticity (u', v')	u'=0.2279 v'=0.5002
Color Rendering Index CRI(Ra)	84
R9	13
Rf	84
Rg	95
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	84	R9	13
R2	92	R10	80
R3	96	R11	81
R4	82	R12	63
R5	83	R13	86
R6	88	R14	98
R7	85	R15	78
R8	65	--	--
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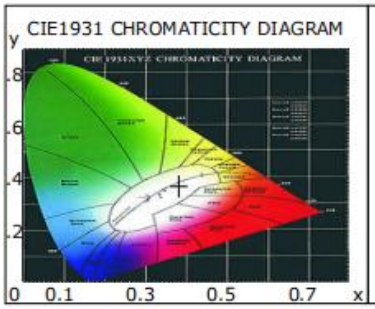
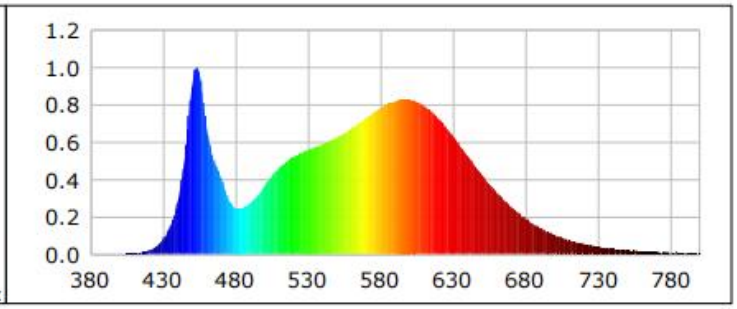
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	1501.2	1416.9	>=2000(-10%)
Luminous Efficacy (lm/W)	161.25	156.91	Standard>=130(-3%)
Most worst Luminous/Highest Watts	152.19		

Spectral Power Distribution & Chromaticity Diagram

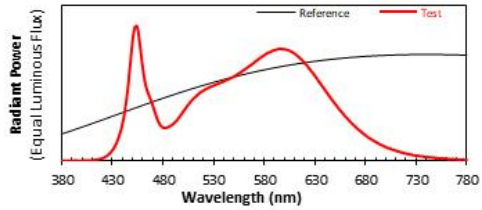


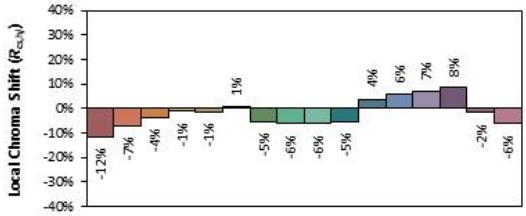


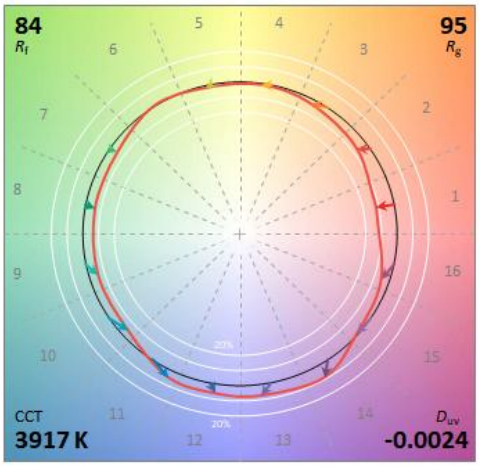
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0048	535	0.5422	17.5325	690	0.2526	8.1684
385	0.0013	0.0428	540	0.5561	17.9824	695	0.2185	7.0660
390	0.0014	0.0441	545	0.5729	18.5252	700	0.1888	6.1045
395	0.0012	0.0399	550	0.5880	19.0134	705	0.1626	5.2582
400	0.0011	0.0351	555	0.6044	19.5458	710	0.1396	4.5135
405	0.0018	0.0566	560	0.6255	20.2287	715	0.1186	3.8356
410	0.0033	0.1067	565	0.6480	20.9563	720	0.1015	3.2836
415	0.0081	0.2616	570	0.6746	21.8153	725	0.0883	2.8557
420	0.0187	0.6050	575	0.7016	22.6867	730	0.0748	2.4195
425	0.0390	1.2602	580	0.7270	23.5083	735	0.0615	1.9889
430	0.0773	2.4983	585	0.7579	24.5088	740	0.0538	1.7394
435	0.1487	4.8080	590	0.7837	25.3444	745	0.0456	1.4747
440	0.2750	8.8941	595	0.8045	26.0159	750	0.0386	1.2496
445	0.5234	16.9265	600	0.8205	26.5323	755	0.0317	1.0262
450	0.8945	28.9276	605	0.8299	26.8383	760	0.0280	0.9060
455	0.9756	31.5478	610	0.8281	26.7798	765	0.0251	0.8115
460	0.6865	22.2014	615	0.8149	26.3536	770	0.0212	0.6850
465	0.5069	16.3910	620	0.7957	25.7297	775	0.0188	0.6094
470	0.4071	13.1652	625	0.7640	24.7051	780	0.0149	0.4818
475	0.2968	9.5980	630	0.7228	23.3736	785	0.0115	0.3706
480	0.2461	7.9589	635	0.6803	21.9986	790	0.0106	0.3434
485	0.2489	8.0495	640	0.6296	20.3607	795	0.0083	0.2698
490	0.2719	8.7910	645	0.5781	18.6953	800	0.0071	0.2298
495	0.3124	10.1009	650	0.5254	16.9907			
500	0.3652	11.8105	655	0.4719	15.2600			
505	0.4163	13.4625	660	0.4220	13.6460			
510	0.4599	14.8727	665	0.3740	12.0947			
515	0.4941	15.9793	670	0.3292	10.6470			
520	0.5204	16.8297	675	0.2890	9.3451			
525	0.5422	17.5325	680	0.2526	8.1684			
530	0.5561	17.9824	685	0.2185	7.0660			

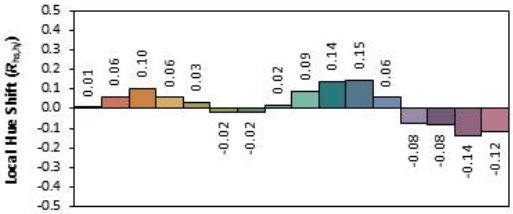
TM30

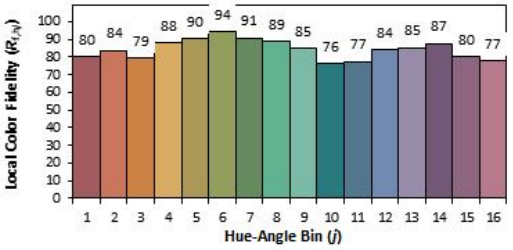
ANSI/IES TM-30-18 Color Rendition Report

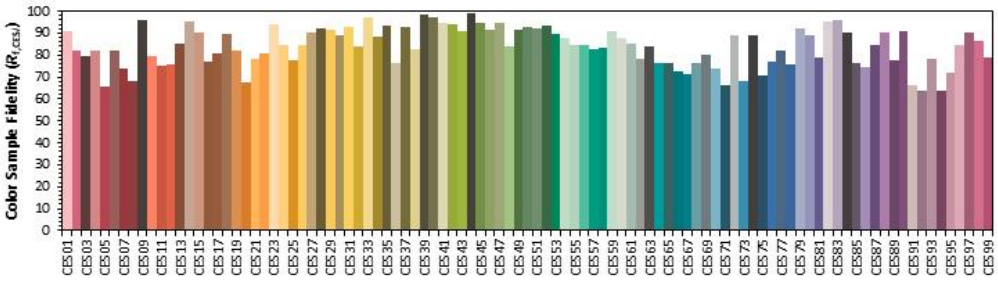












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3824
y	0.3729
u'	0.2279
v'	0.5002

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.

2.9 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2026-03-13	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HIDFA-20S-E26-8CCT-BYP(Setting at 5000K 10W)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU260301	120.0	60	0.080	9.43	0.987	7.41
0E-A1	277.0	60	0.037	9.24	0.891	15.52
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5085
Duv	0.0017
Chromaticity (x, y)	x=0.343 y=0.3532
Chromaticity (u', v')	u'=0.2094 v'=0.4851
Color Rendering Index CRI(Ra)	82
R9	2
Rf	83
Rg	94
Rcs,h1(%)	-13

Special Color Rendering Indices			
R1	81	R9	2
R2	89	R10	74
R3	94	R11	80
R4	81	R12	58
R5	81	R13	83
R6	84	R14	97
R7	86	R15	75
R8	65	--	--
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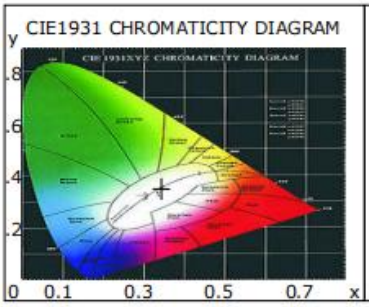
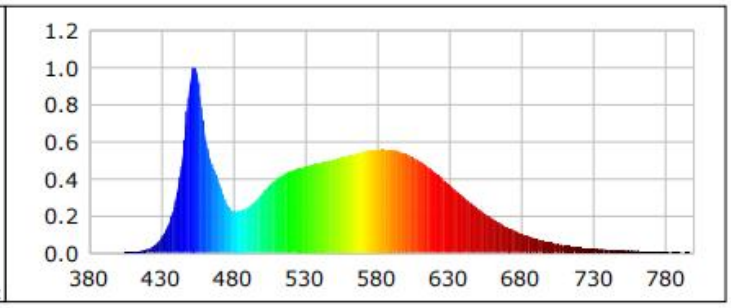
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V6.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	1498.4	1440.3	>=2000(-10%)
Luminous Efficacy (lm/W)	158.90	155.88	Standard>=130(-3%)
Most worst Luminous/Highest Watts	152.74		

Spectral Power Distribution & Chromaticity Diagram

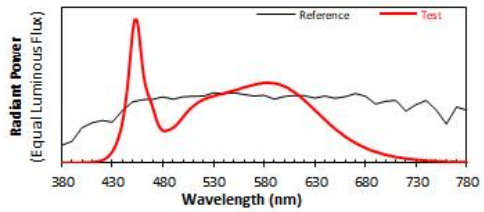


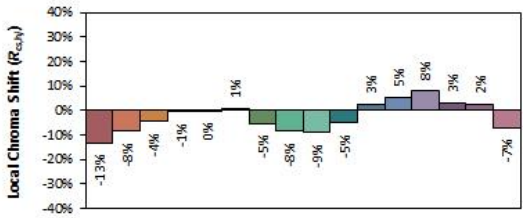


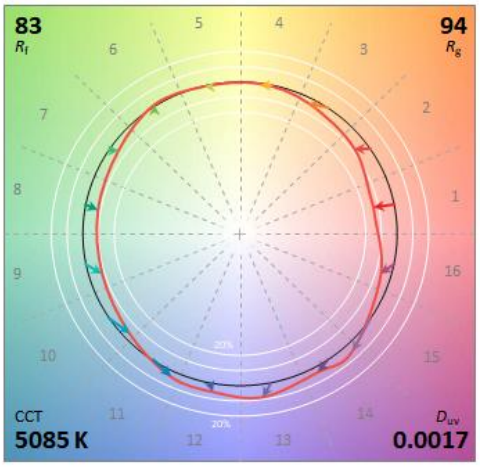
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.0246	535	0.4571	19.7660	690	0.1398	6.0430
385	0.0006	0.0260	540	0.4664	20.1694	695	0.1208	5.2232
390	0.0007	0.0303	545	0.4761	20.5886	700	0.1038	4.4879
395	0.0010	0.0424	550	0.4858	21.0083	705	0.0882	3.8125
400	0.0010	0.0415	555	0.4943	21.3758	710	0.0761	3.2912
405	0.0020	0.0883	560	0.5045	21.8160	715	0.0648	2.8012
410	0.0033	0.1410	565	0.5154	22.2860	720	0.0554	2.3972
415	0.0084	0.3651	570	0.5272	22.7961	725	0.0468	2.0217
420	0.0177	0.7664	575	0.5358	23.1693	730	0.0403	1.7442
425	0.0386	1.6695	580	0.5445	23.5445	735	0.0345	1.4922
430	0.0782	3.3797	585	0.5540	23.9556	740	0.0299	1.2914
435	0.1545	6.6786	590	0.5580	24.1287	745	0.0252	1.0883
440	0.2870	12.4091	595	0.5590	24.1700	750	0.0211	0.9139
445	0.5405	23.3724	600	0.5563	24.0568	755	0.0178	0.7684
450	0.9121	39.4381	605	0.5477	23.6824	760	0.0162	0.7004
455	0.9665	41.7935	610	0.5336	23.0715	765	0.0156	0.6730
460	0.6563	28.3811	615	0.5135	22.2047	770	0.0112	0.4853
465	0.4825	20.8642	620	0.4928	21.3107	775	0.0100	0.4321
470	0.3831	16.5637	625	0.4659	20.1464	780	0.0086	0.3714
475	0.2715	11.7415	630	0.4342	18.7774	785	0.0064	0.2780
480	0.2248	9.7226	635	0.4012	17.3496	790	0.0063	0.2736
485	0.2270	9.8157	640	0.3672	15.8773	795	0.0044	0.1917
490	0.2443	10.5644	645	0.3338	14.4342	800	0.0036	0.1539
495	0.2779	12.0172	650	0.2993	12.9403			
500	0.3205	13.8604	655	0.2673	11.5601			
505	0.3629	15.6941	660	0.2364	10.2240			
510	0.3964	17.1421	665	0.2091	9.0426			
515	0.4234	18.3090	670	0.1834	7.9323			
520	0.4420	19.1123	675	0.1593	6.8865			
525	0.4571	19.7660	680	0.1398	6.0430			
530	0.4664	20.1694	685	0.1208	5.2232			

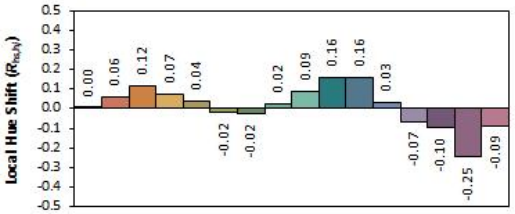
TM30

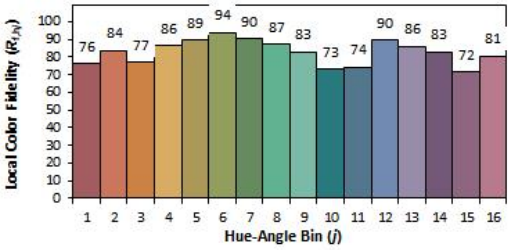
ANSI/IES TM-30-18 Color Rendition Report

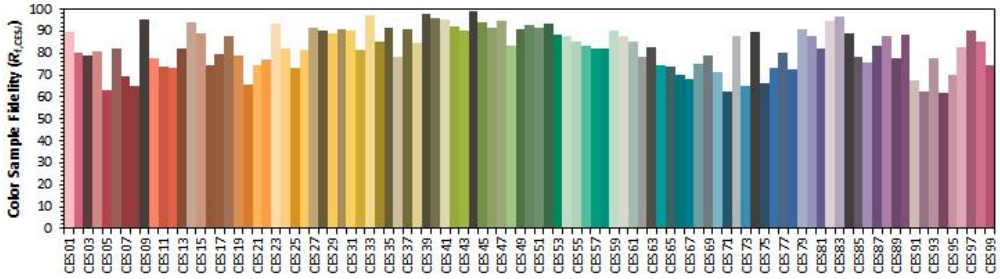












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3430
y	0.3532
u'	0.2094
v'	0.4851

CIE 13.3-1995 (CRI)

R_a	82
R_g	2

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

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2025-10-23
AC Power Source	CHP-500C	DYBWD010159	2025-10-13
Standard Lamp*	24V/150W	DYJYR040040	2025-12-30
Standard Lamp**	24V/100W	DYBWR030014	2025-12-30
Digital Power Meter	WT500	DYDWQ20010	2025-10-13
Integral Sphere (2M)	2M	DYJCE120067	2025-10-23
Digital Power Meter	WT500	DYDWQ200006	2025-10-13
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2025-10-23

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

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

Expand Uncertainty:

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

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

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

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