



UL Solutions
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300



Photometric Test Report

Relevant Standards

IES LM-79-2019, ANSI C82.77-10-2014, CIE 13.3-1995
CIE 15-2004, ANSI C78.377-2017, IES TM-30-2018

Prepared For

H E Williams Inc

Dean Vandergriff
831 W Fairview Ave
PO Box 837
Carthage, MO 64836-0837
United States

Catalog Number

FS-4-3-8-3500K (FS-4-LS-8CS-DIM-UNV)

Order Number

15180278

Test Number

15180278.01

Test Date

2024-02-22 - 2024-02-23

Prepared By

Dennis Kabana, Laboratory Technician

Approved By

Jesse Litchfield, Project Handler

The results contained in this report pertain only to the tested sample.

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Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.

Absorption correction was employed for Sphere measurement



Luminaire Description: 45 inch Lumen/Wattage selectable, CCT selectable, LED strip w/frosted acrylic lens
Lamp: 224 LEDs
Mounting: Surface – Ceiling
Ballast/Driver: ISTAR ISC-042W-105DDSM-ADJ33

Luminaire



Luminaire Characteristics

Luminous Length: 44.50 in.
Luminous Width: 2.000 in.
Luminous Height: 0.50 in.

Summary of Results

Integrating Sphere

Luminous Flux: 4184 Lumens
Efficacy: 151.05 lm/w
CCT: 3495 K
CRI (Ra): 81.2

Distribution

Total Luminaire Output: 4106 Lumens
Luminaire Efficacy: 148.3 lm/w
Maximum Candela: 1299 Candela

Electrical Data at 120 VAC

Test Temperature: 24.9 °C
Voltage: 120.0 VAC
Current: 0.2319 A
Power: 27.70 W
Power Factor: 0.996
Frequency: 60 Hz
Current THD: 4.23 %

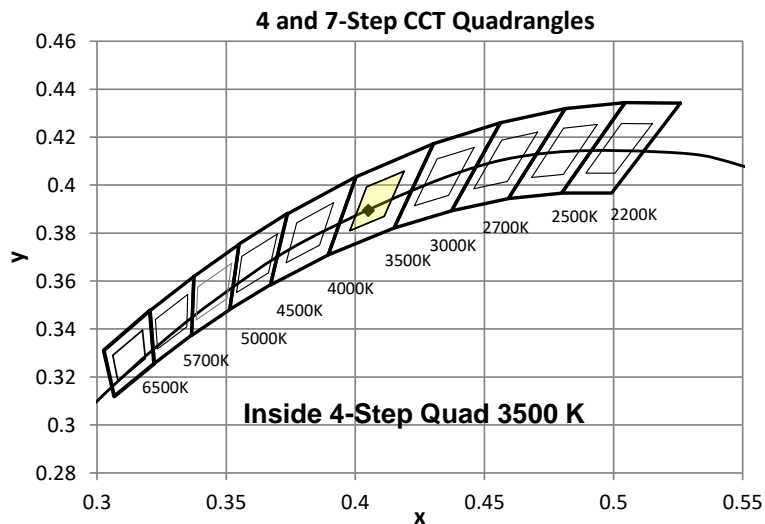
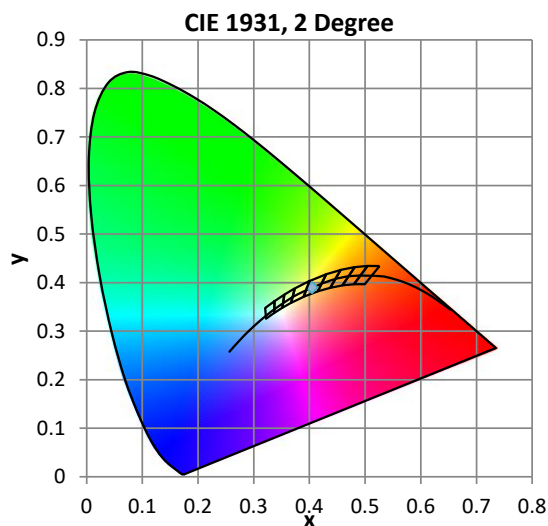
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.9 °C	120.0 VAC	0.2319 A	27.70 W	0.996	60 Hz	4.23 %

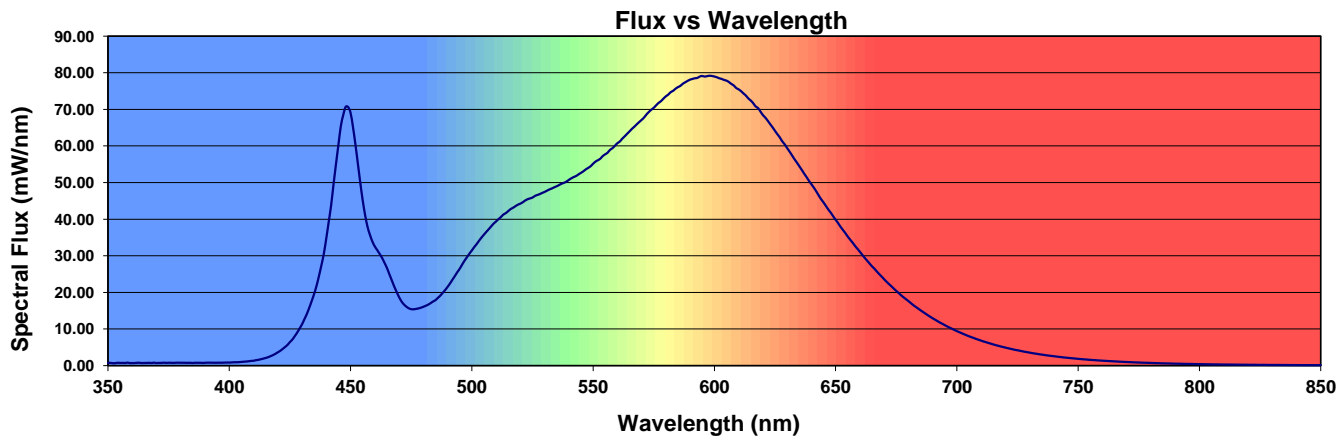
Summary of Results

Total Output:	4184 Lumens	Chromaticity (x):	0.4050
Efficacy:	151.0 lm/w	Chromaticity (y):	0.3895
CCT:	3495 K	Chromaticity (u'):	0.2360
CRI (Ra):	81.2	Chromaticity (v'):	0.5107
CRI (R9):	-1.3	TM-30 Rf:	83
Peak Wavelength:	598 nm	TM-30 Rg:	96
Dominant Wavelength:	555 nm	TM-30 Rcs,h1:	-13%
S/P Ratio:	1.5	Duv:	-0.0004
M/P Ratio:	0.59	WELL Building Standard v2	



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81.2	79.1	88.3	95.6	80.2	79.7	84.8	83.2	58.7	-1.3	73.4	79.7	65.8	81.2	97.8	71.6



Distribution - Goniophotometer

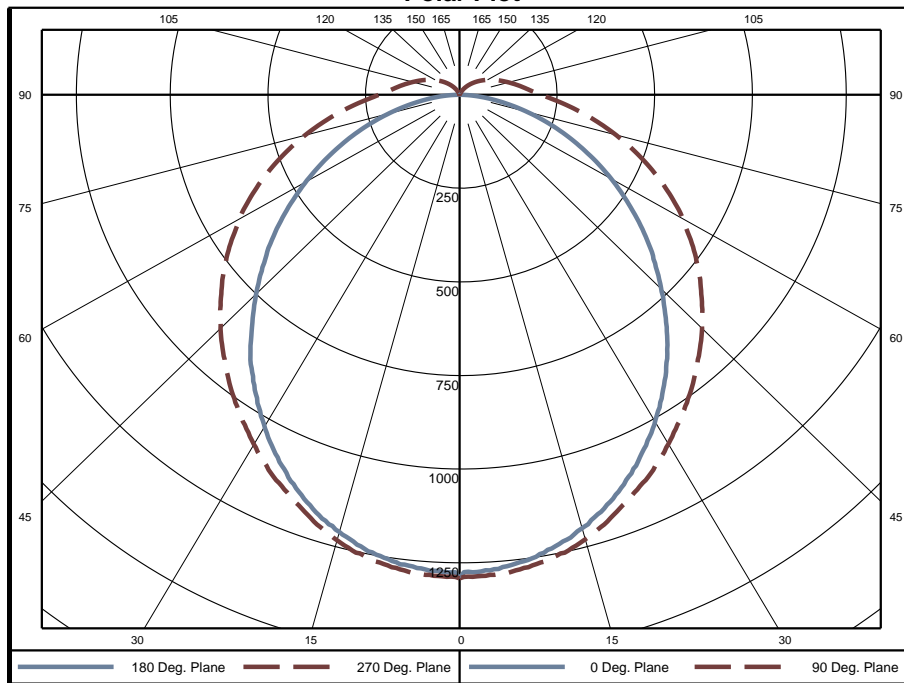
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.0 VAC	0.2317 A	27.68 W	0.995	60 Hz	4.34 %

Summary of Results

Spacing Criteria	Total Lumen Output:	4106 Lumens
0-180: 1.16	Luminaire Efficacy:	148.3 lm/w
90-270: 1.24	Maximum Candela:	1299 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)		
Crosswise: 23.6	Endwise: 28.6	

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	30.8	0.8%	60-65	254.7	6.2%	120-125	17.5	0.4%
5-10	91.2	2.2%	65-70	222.1	5.4%	125-130	13.1	0.3%
10-15	147.8	3.6%	70-75	185.8	4.5%	130-135	9.4	0.2%
15-20	198.3	4.8%	75-80	148.0	3.6%	135-140	6.4	0.2%
20-25	240.8	5.9%	80-85	112.0	2.7%	140-145	4.1	0.1%
25-30	274.5	6.7%	85-90	80.7	2.0%	145-150	2.3	0.1%
30-35	298.3	7.3%	90-95	60.8	1.5%	150-155	1.2	0.0%
35-40	312.7	7.6%	95-100	50.8	1.2%	155-160	0.6	0.0%
40-45	317.2	7.7%	100-105	42.4	1.0%	160-165	0.4	0.0%
45-50	312.8	7.6%	105-110	35.0	0.9%	165-170	0.3	0.0%
50-55	300.9	7.3%	110-115	28.4	0.7%	170-175	0.2	0.0%
55-60	281.3	6.9%	115-120	22.6	0.6%	175-180	0.1	0.0%

Zone	Lumens	% of Luminaire
0-40	1594	38.8%
0-60	2807	68.4%
0-90	3810	92.8%
90-180	296	7.2%

Candela Tabulation
Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
	0	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292
	5	1266	1286	1283	1289	1284	1290	1286	1291	1269	1291	1286	1290	1284	1289	1283
	10	1243	1264	1260	1266	1266	1271	1268	1272	1248	1272	1268	1271	1266	1266	1260
	15	1201	1224	1226	1236	1233	1238	1232	1235	1209	1235	1232	1238	1233	1236	1226
	20	1148	1170	1173	1187	1185	1189	1183	1184	1158	1184	1183	1189	1185	1187	1173
	25	1081	1103	1112	1130	1136	1137	1124	1121	1093	1121	1124	1137	1136	1130	1112
	30	1002	1029	1042	1068	1077	1075	1057	1048	1016	1048	1057	1075	1077	1068	1042
	35	919	945	966	1002	1015	1009	983	965	934	965	983	1009	1015	1002	966
	40	825	855	889	933	952	940	904	881	841	881	904	940	952	933	889
	45	729	762	809	862	885	868	824	781	746	781	824	868	885	862	809
	50	637	671	727	787	813	796	742	688	652	688	742	796	813	787	727
	55	541	582	648	712	741	721	661	599	555	599	661	721	741	712	648
	60	447	492	564	637	666	644	575	506	458	506	575	644	666	637	564
	65	354	403	481	555	585	562	491	414	363	414	491	562	585	555	481
	70	266	318	399	472	502	478	408	327	273	327	408	478	502	472	399
	75	182	238	320	391	420	396	328	244	187	244	328	396	420	391	320
	80	107	165	247	313	341	319	253	170	111	170	253	319	341	313	247
	85	46	105	183	245	269	249	189	109	50	109	189	249	269	245	183
	90	1	60	135	191	212	194	138	61	2	61	138	194	212	191	135
	95	1	45	110	159	176	161	113	46	1	46	113	161	176	159	110
	100	1	36	93	137	151	138	95	36	1	36	95	138	151	137	93
	105	1	28	79	117	130	119	80	28	1	28	80	119	130	117	79
	110	1	22	66	100	111	101	67	22	1	22	67	101	111	100	66
	115	1	16	55	85	95	85	55	17	1	17	55	85	95	85	55
	120	1	12	44	71	80	71	45	12	1	12	45	71	80	71	44
	125	1	8	35	58	66	58	35	8	1	8	35	58	66	58	35
	130	1	4	27	47	54	47	27	4	2	4	27	47	54	47	27
	135	1	3	19	36	42	36	20	3	2	3	20	36	42	36	19
	140	1	2	12	27	32	27	13	2	2	2	13	27	32	27	12
	145	1	2	7	18	22	18	8	2	2	2	8	18	22	18	7
	150	2	2	4	10	14	11	4	2	2	2	4	11	14	10	4
	155	2	2	3	5	6	5	3	2	2	2	3	5	6	5	3
	160	2	2	2	3	3	3	2	2	3	2	2	3	3	3	2
	165	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2
	170	2	3	2	2	2	2	3	3	3	2	2	2	2	2	3
	175	3	3	2	2	2	2	3	3	3	2	2	2	2	2	3
	180	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Average Luminance (cd/m²)
Horizontal Angle (Degrees)

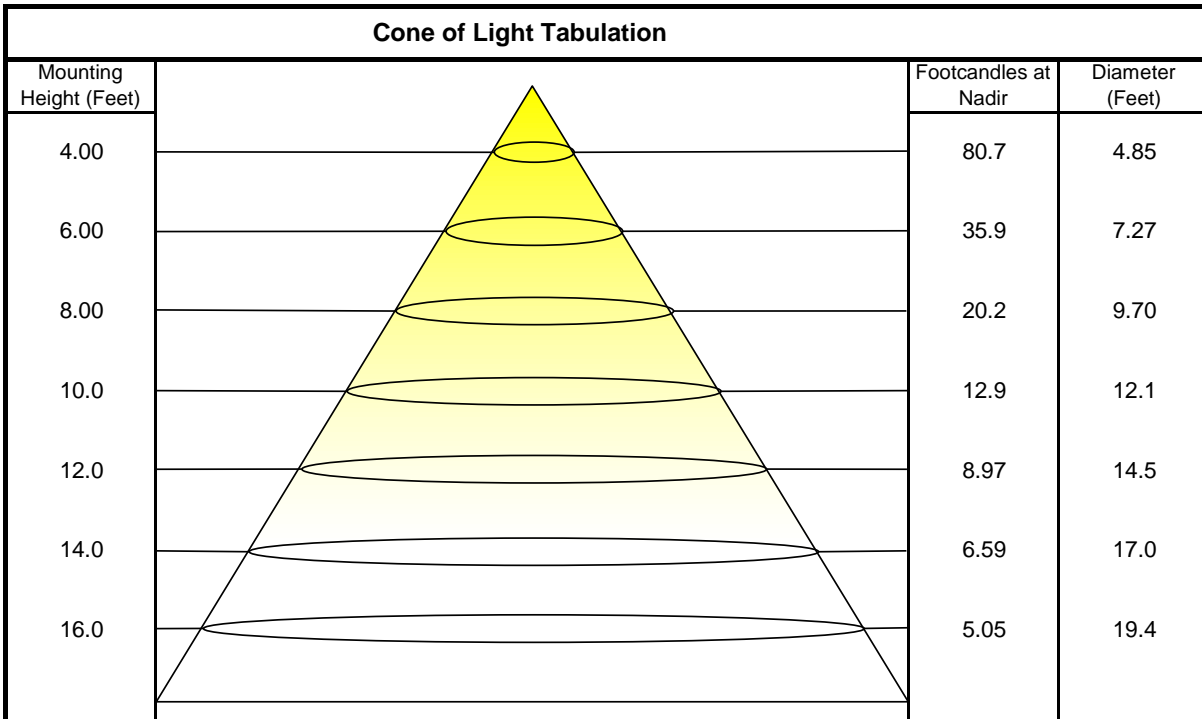
Vertical Angle (Degrees)	0	45	90
	0	22500	22500
	45	17750	17430
	55	16160	16590
	65	14230	15700
	75	11720	14610
	85	8105	13930



Coefficients of Utilization - Zonal Cavity Method

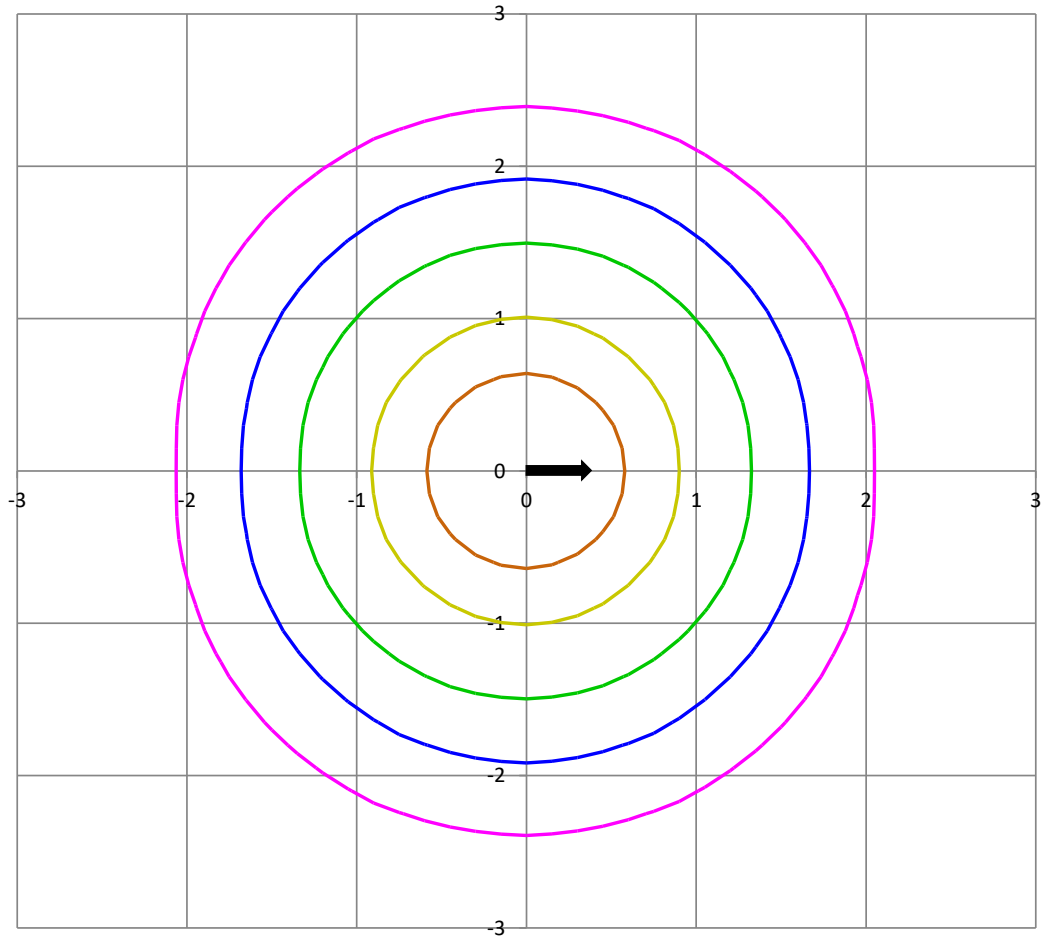
Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
0	117	117	117	117	114	114	114	114	107	107	107	101	101	101	95	95	95	93
1	106	100	96	91	102	97	93	89	92	88	85	87	84	81	82	79	77	75
2	96	87	80	73	92	84	78	72	80	74	69	75	71	66	71	67	64	61
3	87	76	67	61	84	74	66	60	70	63	58	66	60	56	63	58	54	51
4	80	67	58	51	77	65	57	50	62	55	49	59	52	47	56	50	46	44
5	73	60	51	44	70	58	50	43	55	48	42	53	46	41	50	44	40	38
6	67	54	45	38	65	53	44	38	50	42	37	48	41	36	45	40	35	33
7	63	49	40	34	60	48	39	33	45	38	33	43	37	32	41	36	31	29
8	58	44	36	30	56	43	35	30	42	34	29	40	33	28	38	32	28	26
9	54	41	33	27	53	40	32	27	38	31	26	37	30	26	35	29	25	23
10	51	38	30	24	49	37	29	24	35	28	24	34	28	23	33	27	23	21

Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	1292 Candela
Central Cone Intensity:	1289 Candela
Beam Flux:	2583.3 Lumens
Beam Angle (0-180):	99.9 Degrees
Beam Angle (90-270):	122.7 Degrees
Field Angle (0-180):	157.2 Degrees
Field Angle (90-270):	210.3 Degrees

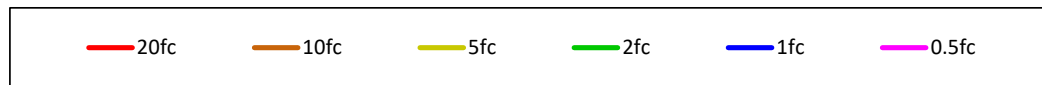


ISOFootcandle Plot

Mounting Height - 8 Feet

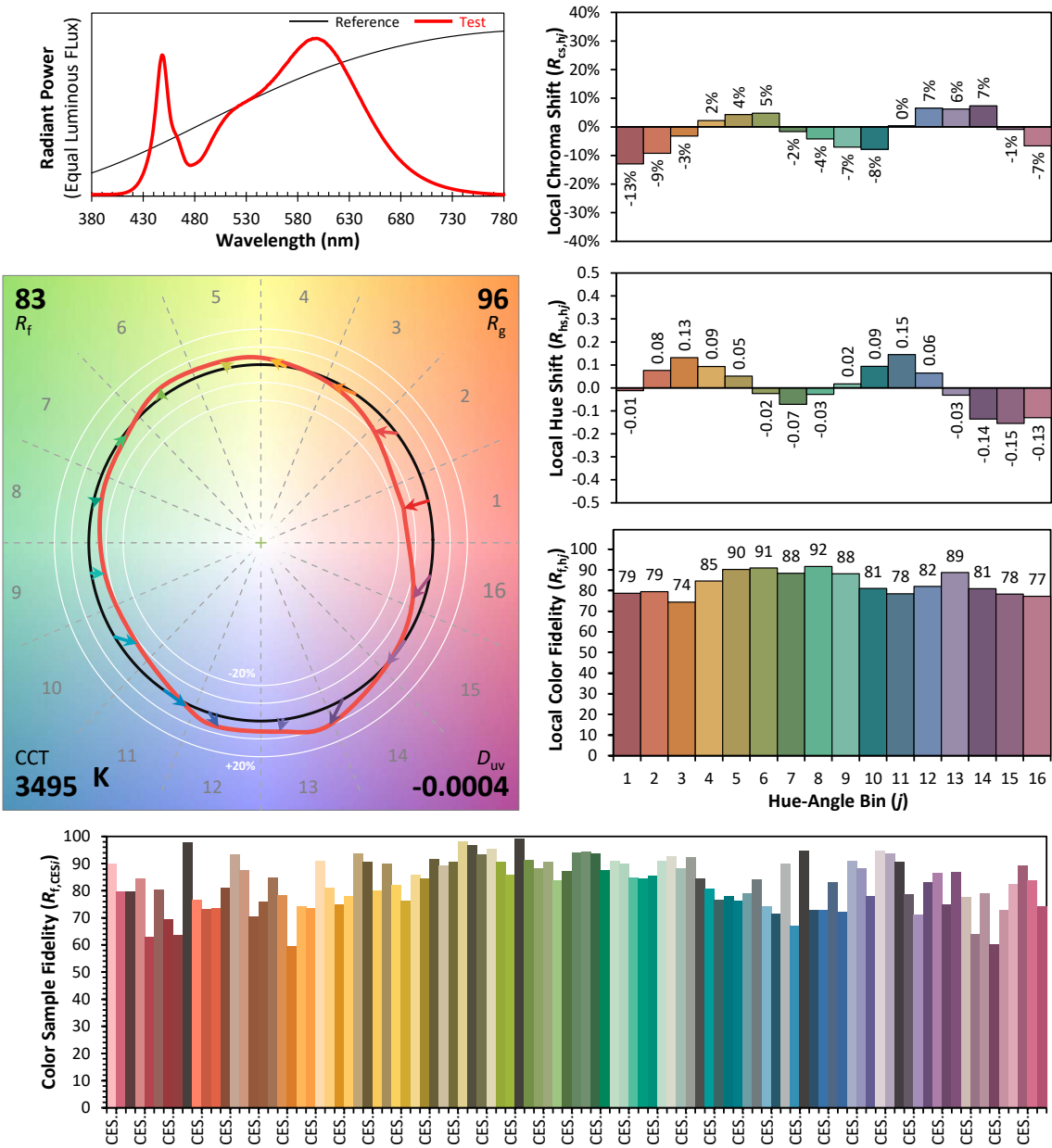


Grid Lines in Units of Mounting Height



ANSI/IES TM-30-18 Color Rendition Report

Date:	2024-02-23	Manufacturer:	H E Williams Inc
Model:	FS-4-3-8-3500K (FS-4-LS-8CS-DIM-UNV)		



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

x 0.4050
y 0.3895
u' 0.2360
v' 0.5107

CIE 13.3-1995
(CRI)

R_a 81
 R_g -1

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