Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: INVUE

Report Number: P880391

Luminaire Tested: **EMM2-HTN-VA4-830-U-MQ**

Issue Date: 10/01/2024

Report Generated By 670245763

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P880391
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HTN-VA4-830-U-MQ
Description:	EPIC MODERN TALL HOUSING 4W 80CRI 3000K VISUAL COMFORT FIXTURE w/ TYPE V MEDIUM DISTRIBUTION OPTIC
Light Source:	(1) 3000K CCT, 80 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	6374.4 lumens
Efficiency:	N/A
Efficacy:	108.0 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G2

Input Watts (W):	59
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	9%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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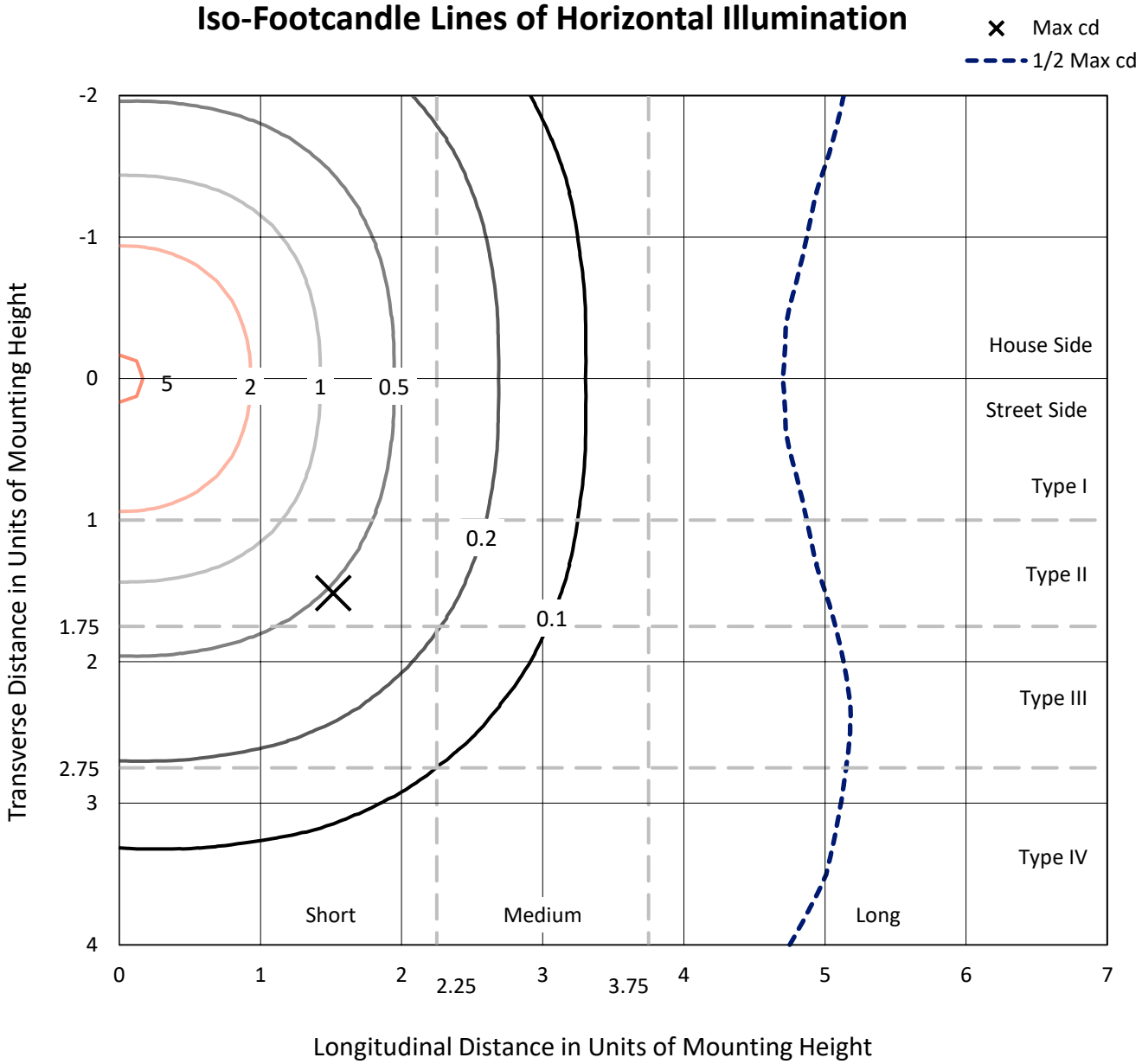
Scaled Data Report

REPORT NUMBER: P880391
CATALOG NUMBER: EMM2-HTN-VA4-830-U-MQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 5.2 fc
Type V - Short - N/A

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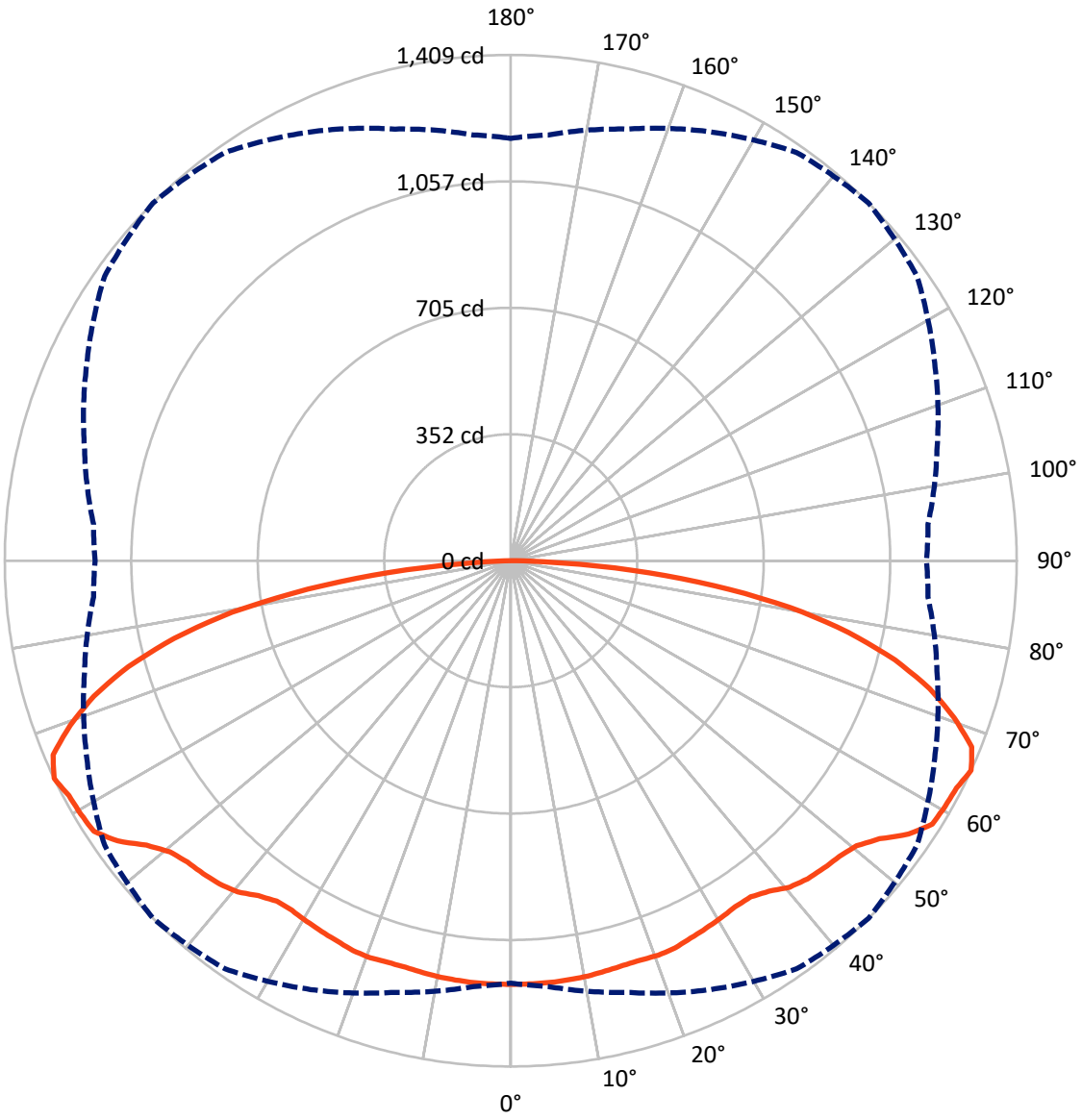
Luminous Intensity Polar Plot



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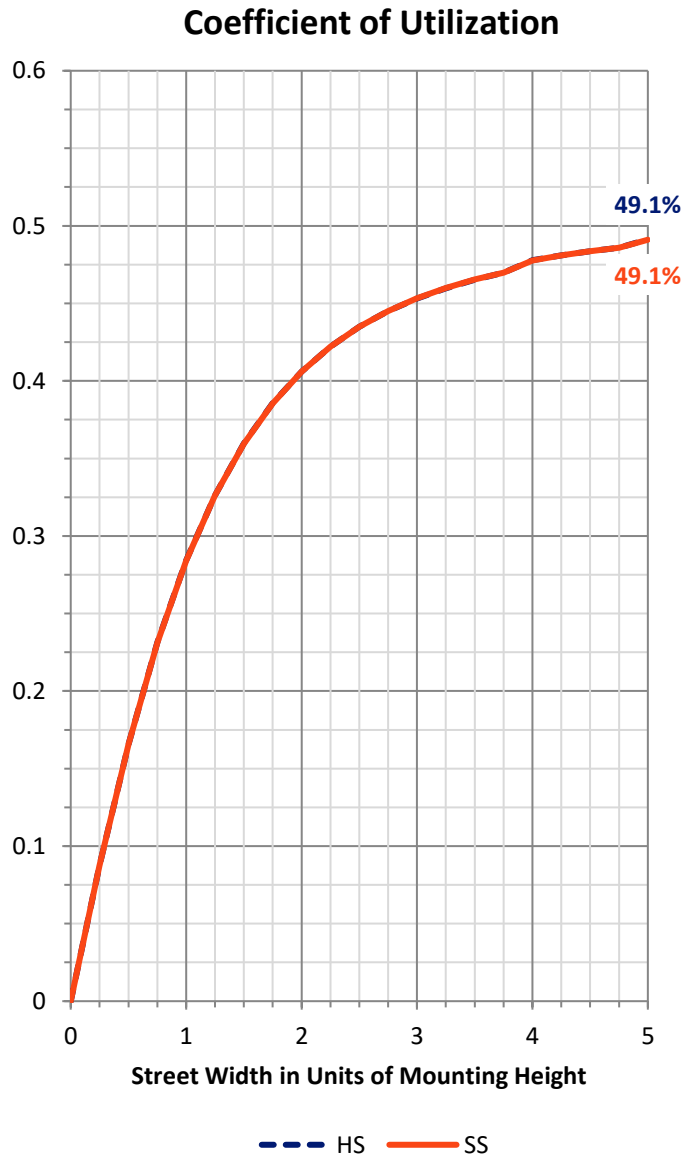
REPORT NUMBER: P880391
CATALOG NUMBER: EMM2-HTN-VA4-830-U-MQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	3187.2	0.0	3187.2
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	3187.2	0.0	3187.2
	% Fixture	50.0	0.0	50.0
Total	Lumens	6374.4	0.0	6374.4
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	112.5	1.8
10°-20°	331.8	5.2
20°-30°	537.3	8.4
30°-40°	722.1	11.3
40°-50°	921.6	14.5
50°-60°	1133.7	17.8
60°-70°	1262.5	19.8
70°-80°	1024.8	16.1
80°-90°	328.0	5.1
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-90°	6374.4	100.0
0°-180°	6374.4	100.0



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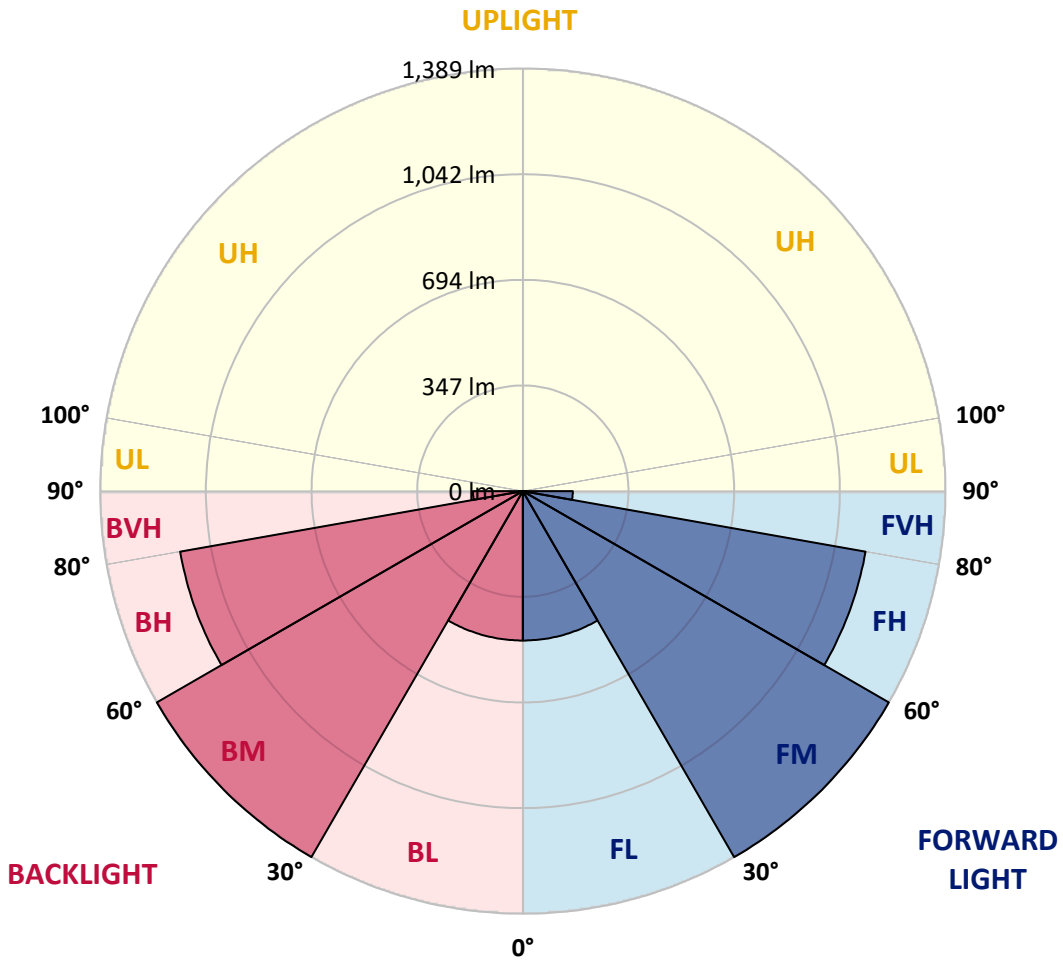
REPORT NUMBER: P880391
CATALOG NUMBER: EMM2-HTN-VA4-830-U-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	490.9	7.7			
FM	(30°-60°)	1388.7	21.8			
FH	(60°-80°)	1143.6	17.9			G1/1800
FVH	(80°-90°)	164.0	2.6			G2/225
BL	(0°-30°)	490.9	7.7	B1/500		
BM	(30°-60°)	1388.7	21.8	B2/2500		
BH	(60°-80°)	1143.6	17.9	B3/2500		G1/1800
BVH	(80°-90°)	164.0	2.6			G2/225
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G2
Type V Short



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REPORT NUMBER: P880391
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5
2.5°	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5
5°	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1180.5	1178.8	1180.5	1180.5
7.5°	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8	1178.8
10°	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0	1177.0
12.5°	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5	1173.5
15°	1168.3	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0	1168.3	1168.3
17.5°	1166.5	1166.5	1166.5	1168.3	1170.0	1170.0	1170.0	1168.3	1166.5	1164.8	1164.8
20°	1168.3	1168.3	1168.3	1170.0	1171.8	1173.5	1171.8	1170.0	1166.5	1166.5	1166.5
22.5°	1166.5	1168.3	1168.3	1170.0	1171.8	1171.8	1170.0	1168.3	1166.5	1164.8	1164.8
25°	1161.3	1161.3	1163.1	1164.8	1164.8	1164.8	1164.8	1161.3	1159.6	1157.8	1157.8
27.5°	1154.3	1156.1	1156.1	1157.8	1159.6	1159.6	1157.8	1154.3	1152.6	1150.8	1150.8
30°	1145.6	1145.6	1147.3	1150.8	1152.6	1154.3	1150.8	1147.3	1142.1	1140.4	1140.4
32.5°	1136.9	1138.6	1142.1	1145.6	1147.3	1149.1	1145.6	1142.1	1136.9	1133.4	1131.6
35°	1133.4	1133.4	1138.6	1145.6	1150.8	1150.8	1147.3	1140.4	1133.4	1126.4	1126.4
37.5°	1138.6	1140.4	1147.3	1159.6	1168.3	1168.3	1166.5	1154.3	1142.1	1131.6	1129.9
40°	1150.8	1152.6	1164.8	1180.5	1194.5	1196.2	1189.2	1173.5	1156.1	1143.8	1140.4
42.5°	1157.8	1161.3	1175.3	1194.5	1206.7	1212.0	1203.2	1187.5	1164.8	1149.1	1147.3
45°	1161.3	1164.8	1180.5	1201.5	1217.2	1222.4	1213.7	1192.7	1168.3	1150.8	1149.1
47.5°	1163.1	1166.5	1182.3	1208.5	1225.9	1231.2	1224.2	1199.7	1170.0	1152.6	1150.8
50°	1164.8	1171.8	1191.0	1218.9	1245.1	1248.6	1238.1	1208.5	1177.0	1156.1	1150.8
52.5°	1177.0	1182.3	1210.2	1250.4	1276.6	1287.0	1271.3	1241.6	1194.5	1163.1	1159.6
55°	1206.7	1208.5	1241.6	1292.3	1330.7	1344.7	1320.2	1280.1	1222.4	1191.0	1189.2
57.5°	1215.4	1225.9	1262.6	1320.2	1367.4	1384.8	1363.9	1302.8	1250.4	1208.5	1198.0
60°	1206.7	1215.4	1259.1	1325.5	1376.1	1390.1	1374.4	1316.7	1239.9	1192.7	1184.0
62.5°	1198.0	1208.5	1253.9	1329.0	1377.9	1393.6	1367.4	1318.5	1234.7	1187.5	1178.8
65°	1177.0	1191.0	1245.1	1318.5	1388.3	1409.3	1381.3	1302.8	1229.4	1166.5	1157.8
67.5°	1136.9	1143.8	1203.2	1288.8	1363.9	1384.8	1355.2	1273.1	1185.8	1124.6	1117.6
70°	1061.8	1077.5	1133.4	1227.7	1299.3	1309.7	1287.0	1205.0	1119.4	1054.8	1046.1
72.5°	962.2	984.9	1046.1	1142.1	1199.7	1220.7	1191.0	1124.6	1035.6	962.2	950.0
75°	857.4	869.7	932.5	1026.8	1086.2	1105.4	1079.2	1014.6	908.1	857.4	845.2
77.5°	742.2	750.9	806.8	890.6	946.5	962.2	936.0	883.6	787.6	740.4	735.2
80°	581.5	599.0	651.4	723.0	764.9	789.3	761.4	710.8	640.9	585.0	576.3
82.5°	415.6	427.9	475.0	523.9	564.1	571.0	558.8	509.9	457.5	413.9	403.4
85°	227.0	232.3	261.9	312.6	328.3	340.5	323.1	286.4	260.2	232.3	223.5
87.5°	59.4	61.1	69.9	82.1	89.1	90.8	89.1	78.6	64.6	50.6	55.9
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-7

Test Date: 09/27/2024

Luminaire Tested: MEM2-HTN-VA-30-830-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-830-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

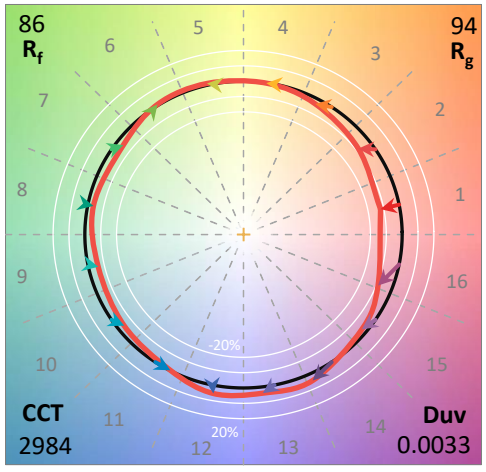
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-7
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	09/27/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-VA-30-830-U-WQ**
Description:	EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	2984
CIE u':	0.2500
CIE v':	0.5264
Duv:	0.0033
CIE x:	0.4431
CIE y:	0.4147
CIE z:	0.1422
Peak Wavelength (nm):	601
Dominant Wavelength (nm):	581
Purity:	57.4798
Rf:	85.8
Rg:	94.1

CRI (Ra):	81.8
R1:	79.4
R2:	89.9
R3:	96.6
R4:	80.6
R5:	80.1
R6:	88.9
R7:	82.6
R8:	56.0
R9:	-1.1
R10:	78.4
R11:	80.8
R12:	72.8
R13:	81.7
R14:	98.5
R15:	70.2



Test Conditions

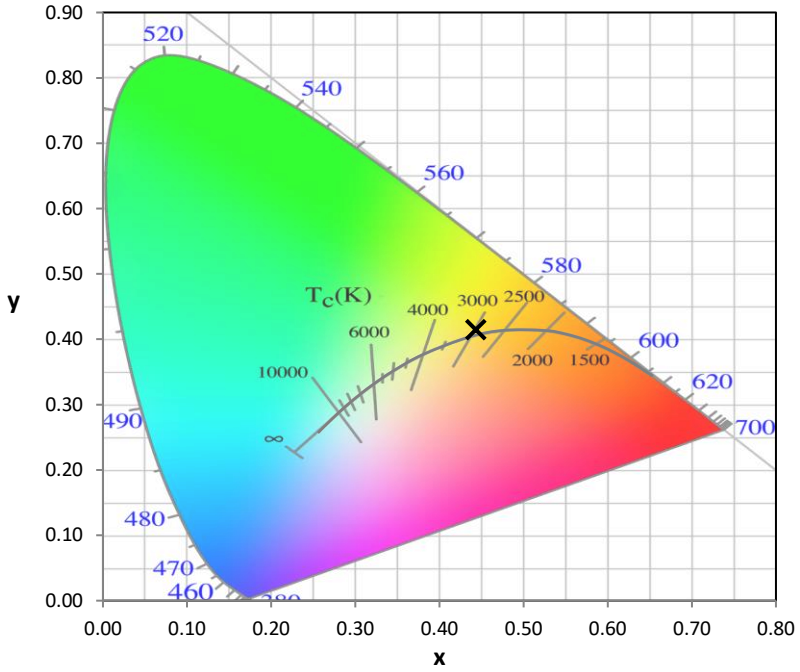
Stabilization Time:	29M
Operation Time:	1H 29M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-7

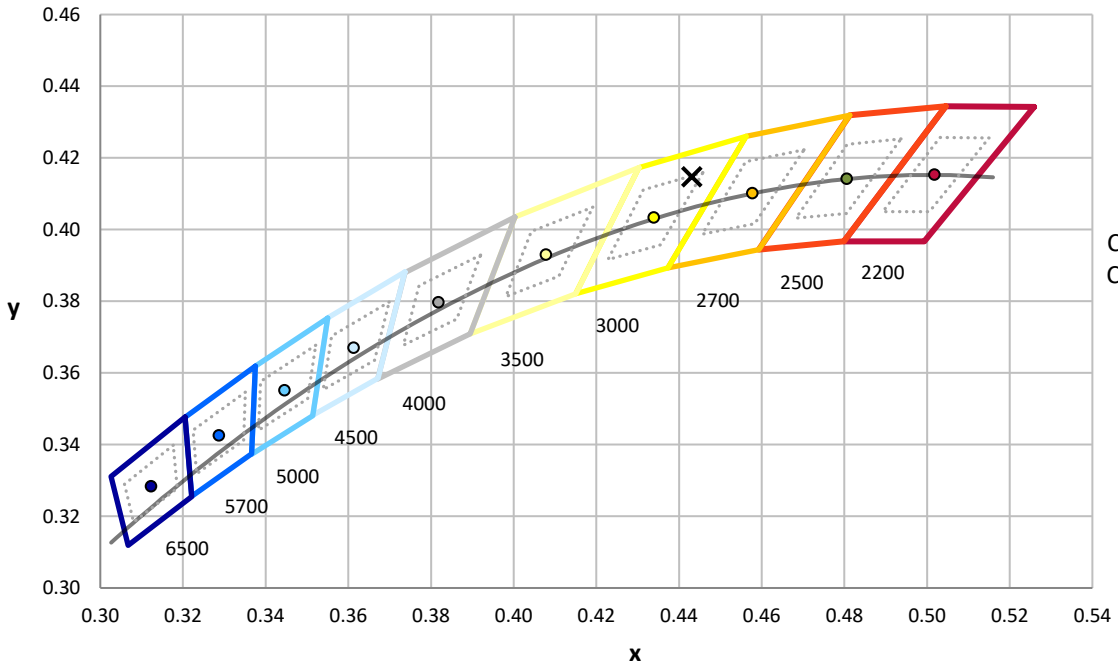
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

REPORT NUMBER: SP1-2407-176-7

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles

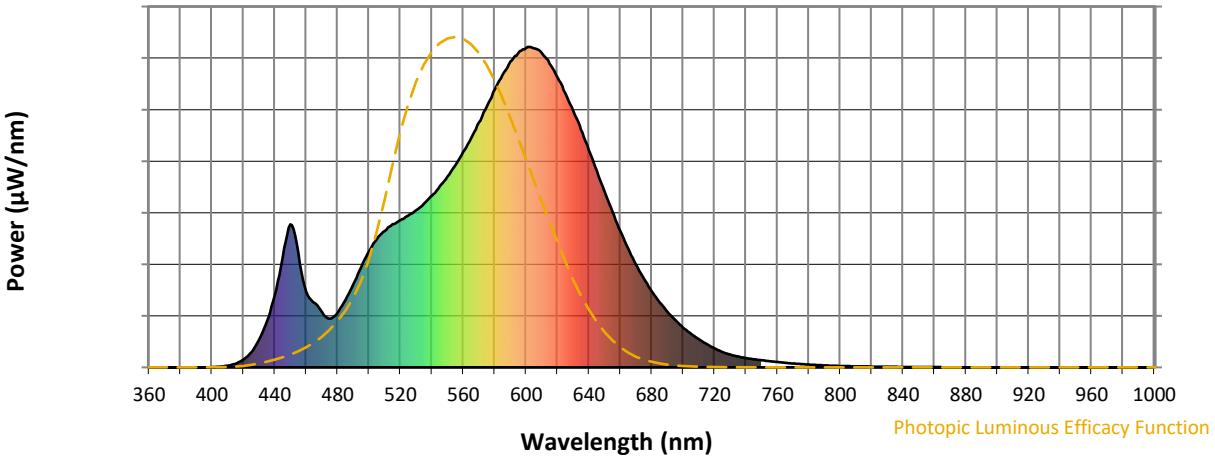


CCT = 2984K
CIE x = 0.4431
CIE y = 0.4147
Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-7

Photopic Flux vs. Wavelength

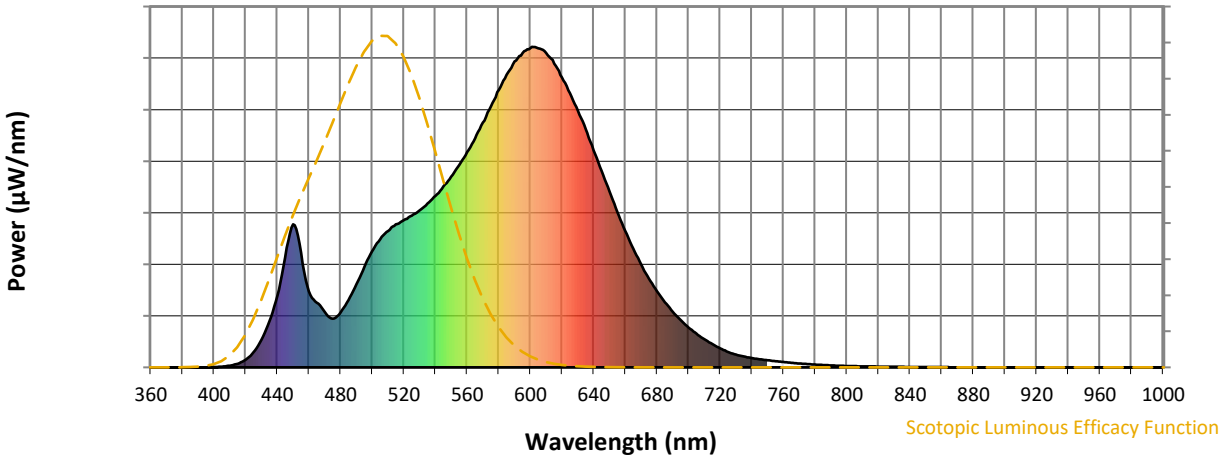


Photopic Lumens: NR

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Scotopic Flux vs. Wavelength

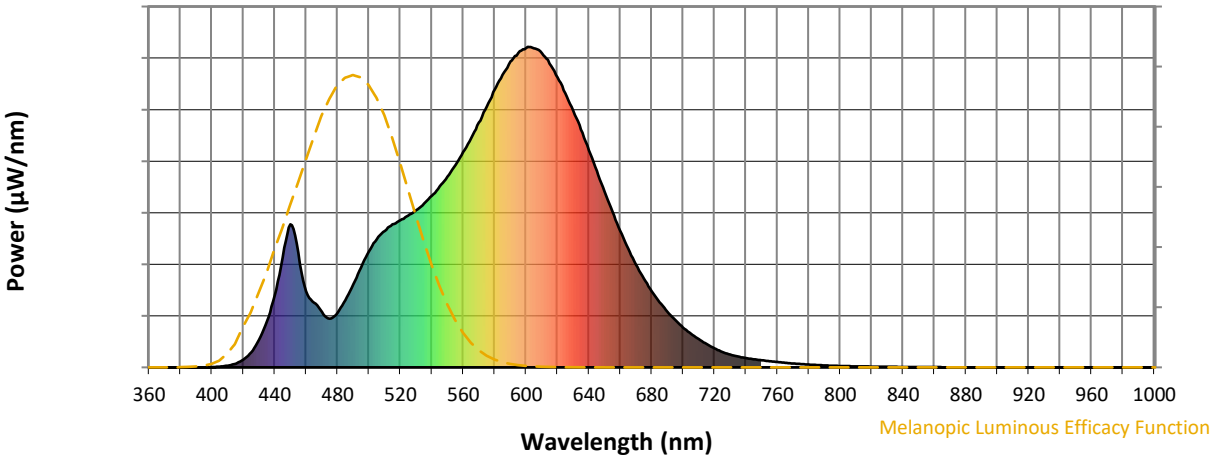


Scotopic Lumens: NR **S/P: 1.32**

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.51**

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

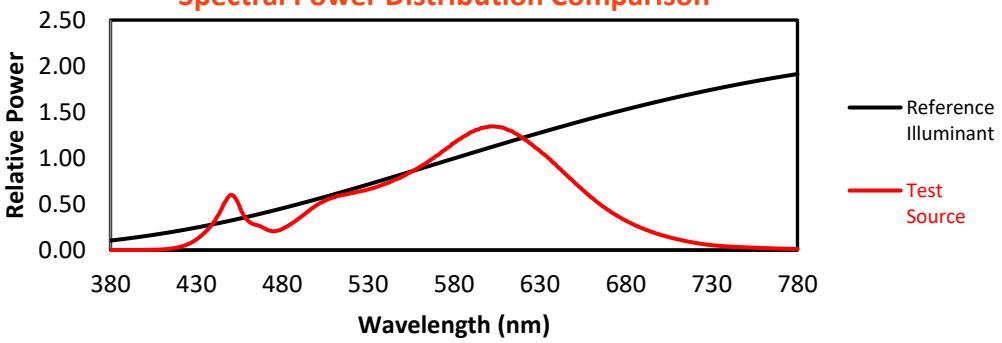
REPORT NUMBER: SP1-2407-176-7

TM-30-18

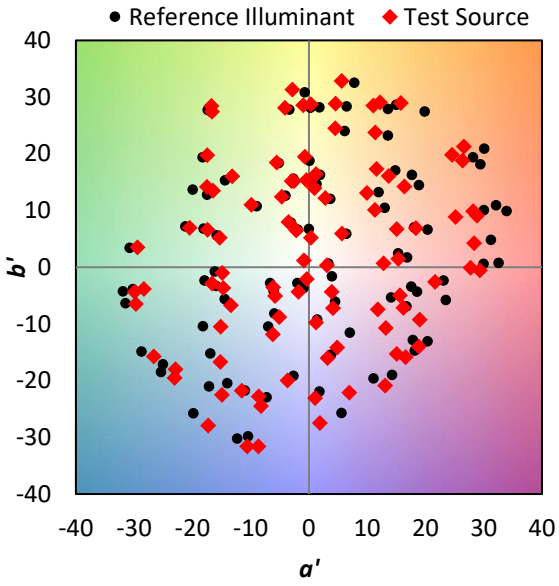
Summary

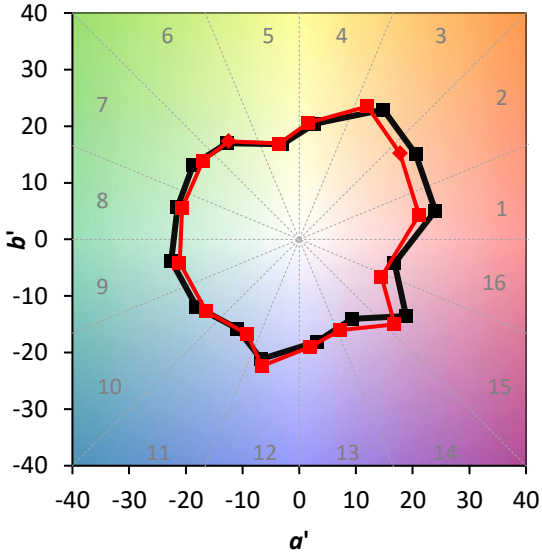
R_f = 85.8
R_g = 94.1
CIE R_a = 81.8
R_9 = -1.1

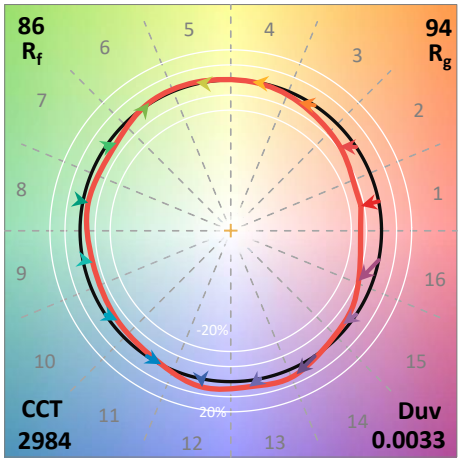
Spectral Power Distribution Comparison

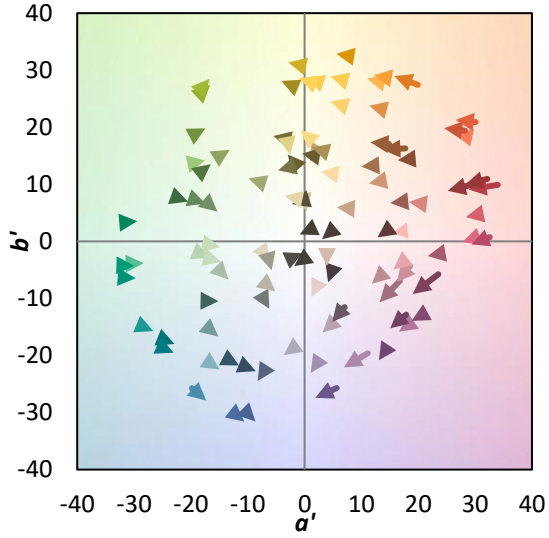


Color Vector Graphics







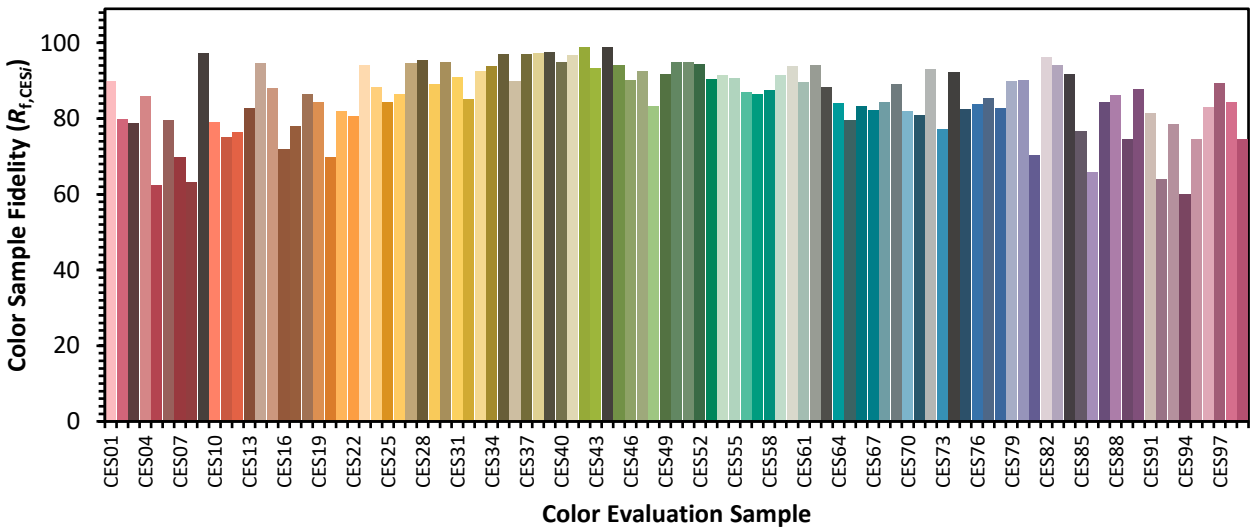


REPORT NUMBER: SP1-2407-176-7

TM-30-18

Individual Sample Fidelity Index ($R_{f,i}$)

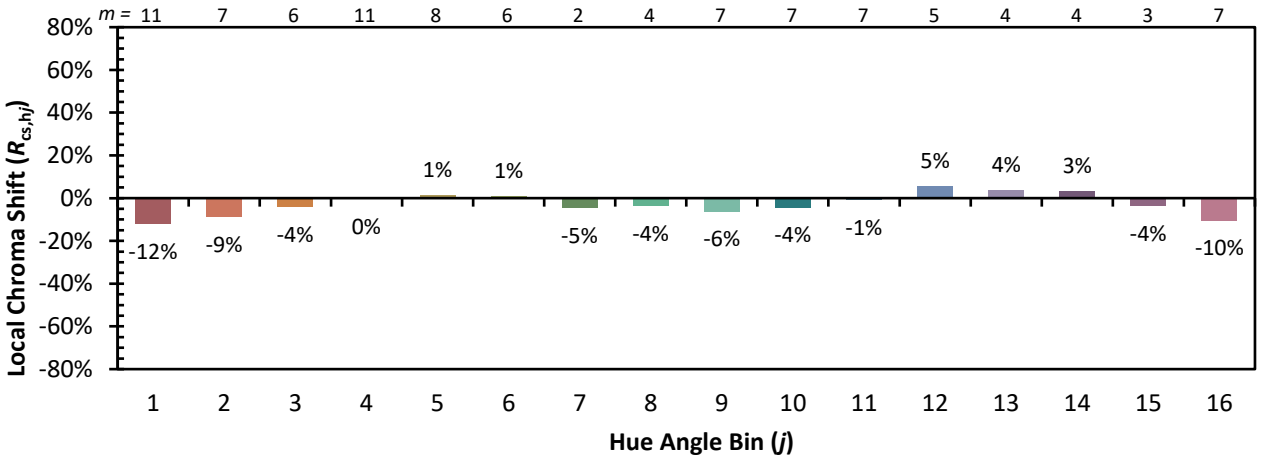
CES01 = 86	CES26 = 86	CES51 = 95	CES76 = 84
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82 = 96
CES08 = 41	CES33 = 93	CES58 = 87	CES83 = 94
CES09 = 29	CES34 = 94	CES59 = 92	CES84 = 92
CES10 = 76	CES35 = 97	CES60 = 94	CES85 = 77
CES11 = 59	CES36 = 90	CES61 = 90	CES86 = 66
CES12 = 65	CES37 = 97	CES62 = 94	CES87 = 84
CES13 = 43	CES38 = 97	CES63 = 88	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 84	CES89 = 75
CES15 = 72	CES40 = 95	CES65 = 80	CES90 = 88
CES16 = 47	CES41 = 97	CES66 = 83	CES91 = 81
CES17 = 50	CES42 = 99	CES67 = 82	CES92 = 64
CES18 = 56	CES43 = 93	CES68 = 84	CES93 = 79
CES19 = 72	CES44 = 99	CES69 = 89	CES94 = 60
CES20 = 67	CES45 = 94	CES70 = 82	CES95 = 74
CES21 = 87	CES46 = 90	CES71 = 81	CES96 = 83
CES22 = 79	CES47 = 93	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 83	CES73 = 77	CES98 = 84
CES24 = 91	CES49 = 92	CES74 = 92	CES99 = 75
CES25 = 72	CES50 = 95	CES75 = 83	

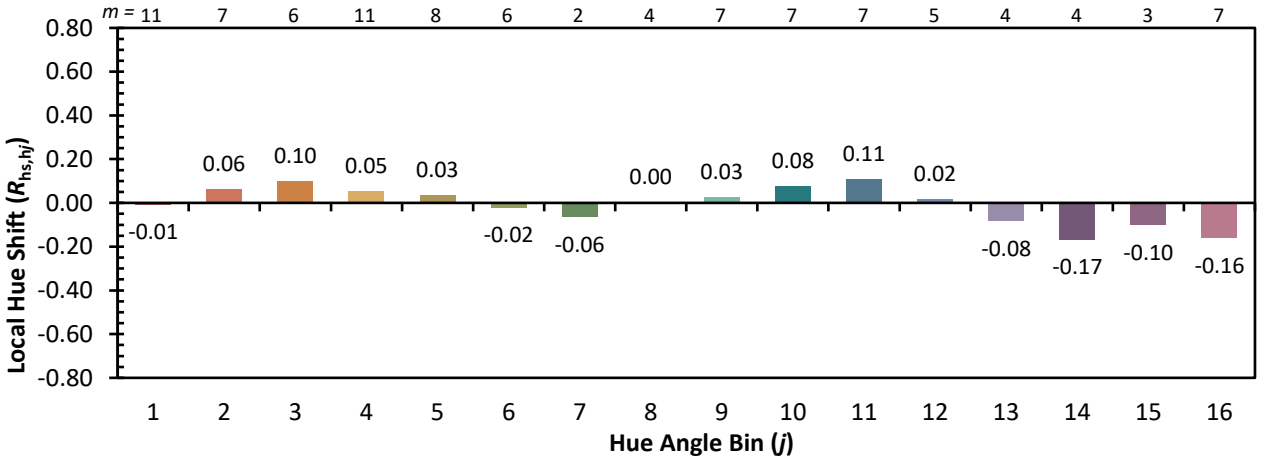


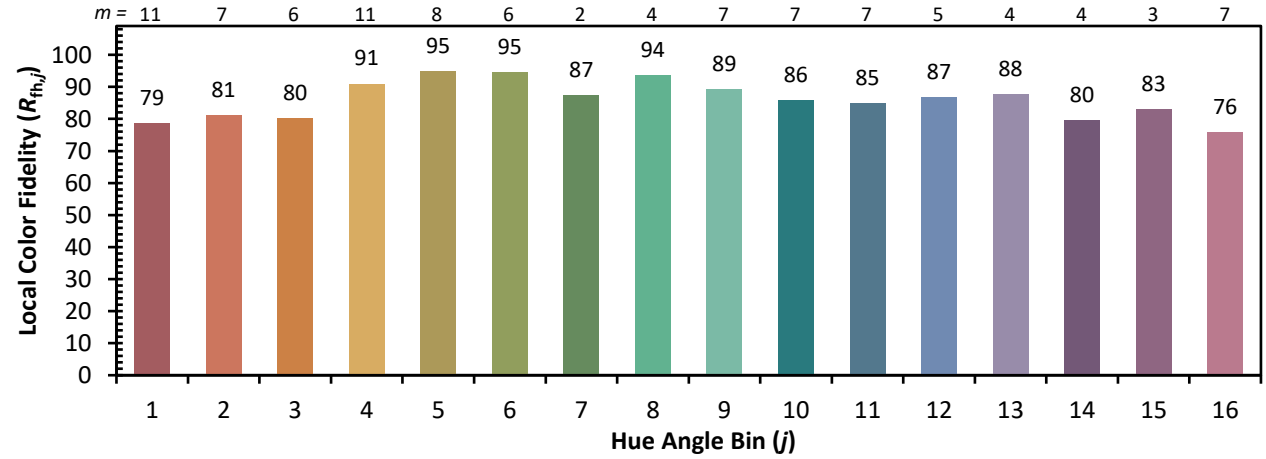
REPORT NUMBER: SP1-2407-176-7

TM-30-18

Color Rendition by Hue-Angle Bin



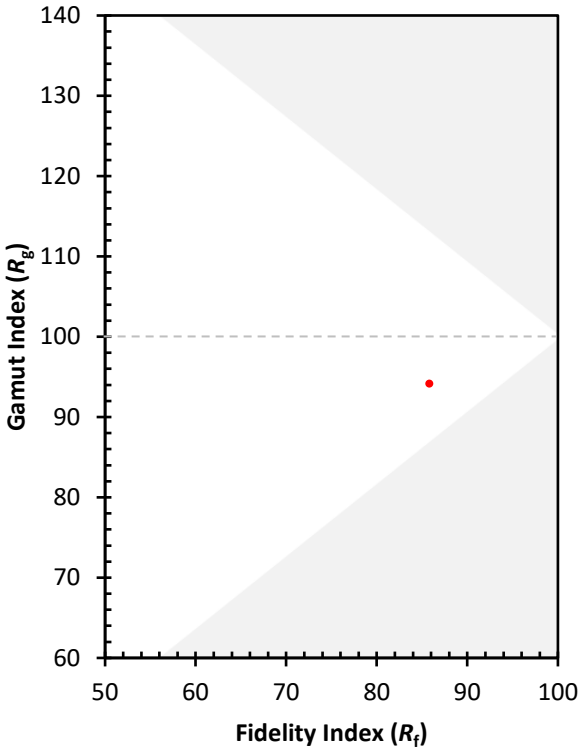


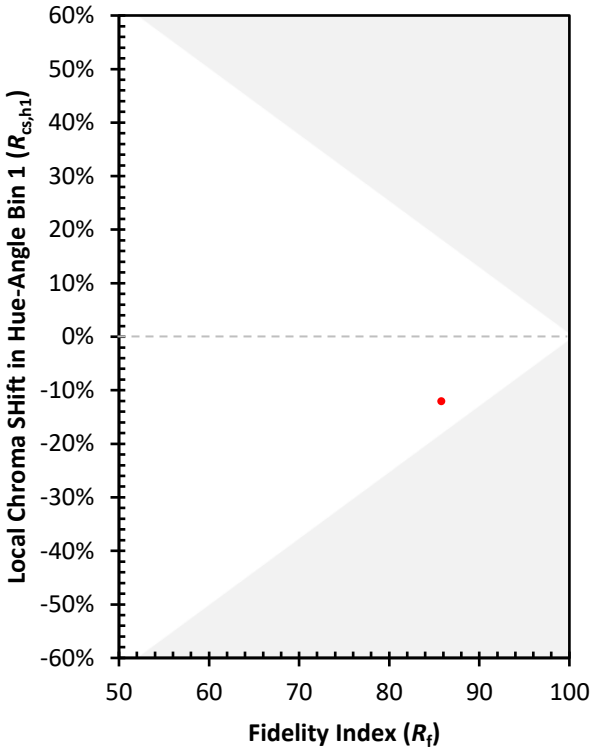


REPORT NUMBER: SP1-2407-176-7

TM-30-18

Measure Comparisons





(END OF REPORT)