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

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: METALUX

Report Number: P1433307

Luminaire Tested: EHBR1-54-UNV-A1-L930-UPL15

Issue Date: 3/20/2026

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

Scaled Data Report

Test Information

Test Method:	LM-79-2019
Report Number:	P1433307
	REPORT IS A COMBINATION OF REPORTS P1431861 AND P1431635
Test Lab:	INNOVATION CENTER
Issue Date:	3/20/2026
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	METALUX
Catalog Number:	EHBR1-54-UNV-A1-L930-UPL15
Description:	Elevate Round Highbay at, 53000 lumens, 3000K 90CRI LEDs with A lens
Light Source:	-
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	49125.8 lumens
Efficiency:	N/A
Efficacy:	160.9 lumens/watt
Spacing Criteria (0/90/45):	0.8 / 1.07 / 0.95
Luminous Opening:	Vertical Cylinder (Dia: 1.71' x H: 0.1')
CIE Type:	Direct

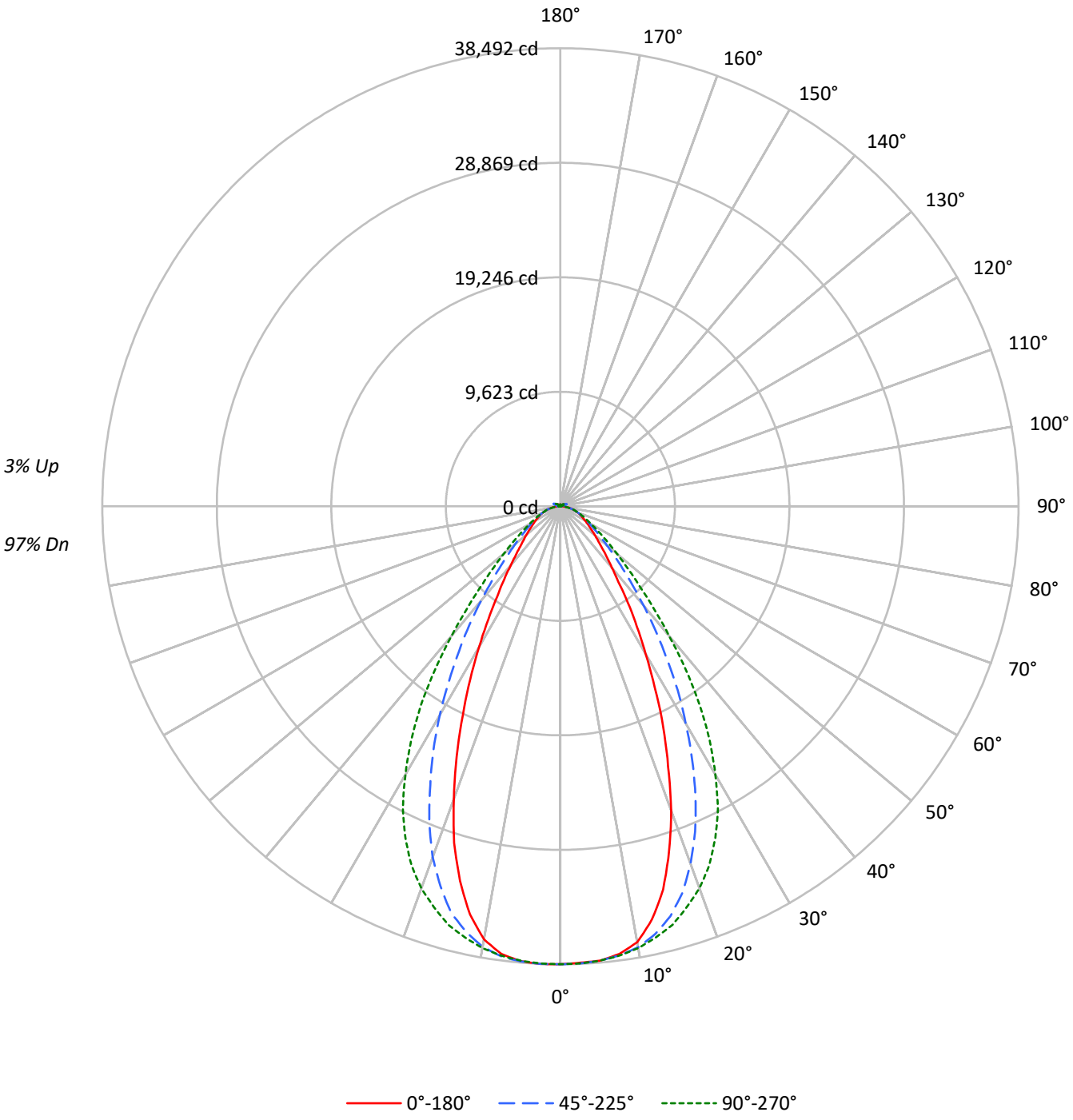
Input Watts (W):	305.3
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

Luminous Intensity Polar Plot



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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20			20			20			20
RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	118	118	118	118	115	115	115	115	110	110	110	104	104	104	100	100	100	97
1	111	107	104	101	108	105	102	100	100	98	96	96	94	93	92	91	89	87
2	104	98	92	88	101	96	91	87	92	88	85	88	85	82	85	82	80	78
3	97	89	83	78	95	87	82	77	84	79	75	81	77	74	78	75	72	70
4	91	81	75	69	89	80	74	69	77	72	68	75	70	67	73	69	65	64
5	85	75	68	63	83	74	67	62	72	66	61	70	64	61	68	63	60	58
6	80	69	62	57	78	68	62	57	66	60	56	65	59	55	63	58	55	53
7	75	64	57	52	74	63	57	52	62	56	51	60	55	51	59	54	51	49
8	71	60	53	48	70	59	53	48	58	52	48	56	51	47	55	50	47	45
9	67	56	49	45	66	55	49	44	54	48	44	53	48	44	52	47	43	42
10	64	53	46	41	62	52	46	41	51	45	41	50	45	41	49	44	41	39

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	180689	180689	180689	180689	180689
5°	179494	179468	179475	179792	179683
10°	175058	177098	177379	176879	173912
15°	158924	170013	173513	168650	155275
20°	132435	155541	166166	152612	127278
25°	102419	134489	154149	129578	97113
30°	74655	109525	135409	105369	70859
35°	53814	84418	111285	80782	50301
40°	38716	62350	82012	59718	37521
45°	30507	45614	57279	43636	29451
50°	25312	34272	41457	33141	24928
55°	22106	27062	31396	26608	21808
60°	19936	22590	25017	22450	20077
65°	18646	19927	21024	19989	18823
70°	17707	18130	18691	18231	17881
75°	16520	16416	16520	16461	16680
80°	14920	13848	13542	14063	14920
85°	10341	8769	8676	8909	10646

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
Vertical Angle: 45°
Luminance: 60014 cd/sqm

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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	3633.5	7.4
10°-20°	9765.6	19.9
20°-30°	11874.8	24.2
30°-40°	9672.9	19.7
40°-50°	5807.6	11.8
50°-60°	3342.3	6.8
60°-70°	2091.8	4.3
70°-80°	1231.9	2.5
80°-90°	362.6	0.7
90°-100°	35.1	0.1
100°-110°	231.4	0.5
110°-120°	427.8	0.9
120°-130°	254.2	0.5
130°-140°	155.1	0.3
140°-150°	109.4	0.2
150°-160°	72.7	0.1
160°-170°	42.6	0.1
170°-180°	14.4	0.0
0°-30°	25273.9	51.4
0°-40°	34946.8	71.1
0°-60°	44096.8	89.8
0°-90°	47783.1	97.3
90°-120°	694.3	1.4
90°-150°	1213.0	2.5
90°-180°	1343.0	2.7
0°-180°	49125.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	38476	38476	38476	38476	38476	
5°	38325	38319	38321	38388	38365	3622
15°	33341	35668	36402	35382	32576	9173
25°	20453	26857	30784	25877	19393	9319
35°	9877	15494	20425	14826	9232	6249
45°	4936	7380	9268	7060	4765	3894
55°	2987	3657	4243	3596	2947	2700
65°	1946	2080	2194	2086	1965	1935
75°	1164	1156	1164	1160	1175	1233
85°	355	301	298	306	366	379
90°	11	27	10	28	10	23
95°	18	60	18	51	17	17
105°	82	404	106	431	54	109
115°	371	478	455	529	389	342
125°	269	256	291	284	306	245
135°	198	198	186	207	215	155
145°	167	174	171	176	180	106
155°	152	155	153	156	164	71
165°	150	150	148	149	156	43
175°	154	153	150	151	157	15
180°	153	153	153	153	153	

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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
0°	38476.4	38476.4	38476.4	38476.4	38476.4	38476.4	*38476.4*	38476.4	38476.4
2.5°	*38391.7*	*38426.4*	*38440.9*	*38448.9*	*38457.9*	*38482.0*	*38492.4*	*38475.6*	*38490.0*
5°	38324.8	38327.3	38319.2	38355.5	38320.8	38345.0	*38388.5*	38371.6	38365.2
7.5°	37934.8	38015.4	38062.9	38075.0	38081.4	38111.3	*38142.0*	37968.6	37942.9
10°	37193.4	37328.0	37627.0	37712.4	37686.6	37735.0	*37580.3*	37127.3	36950.1
12.5°	35568.0	36041.0	36817.9	37163.6	37100.7	37143.4	*36616.4*	35660.7	35111.0
15°	33341.4	34035.2	35667.9	36349.7	36402.1	36349.7	*35381.8*	33519.4	32575.8
17.5°	30381.4	31662.7	34066.6	35389.8	35314.1	35339.1	*33501.7*	30748.9	29669.0
20°	27219.2	28585.1	31968.1	34175.4	34152.0	34011.9	*31366.2*	27735.7	26159.4
22.5°	23642.7	25404.4	29563.4	32682.1	32673.3	32439.5	*28765.6*	24445.3	22748.1
25°	20453.0	22180.8	26857.3	30852.8	30783.5	30517.5	*25876.6*	21163.0	19393.3
27.5°	17155.4	18951.7	23968.3	28709.2	28661.6	28371.5	*23114.8*	18095.0	16410.8
30°	14359.8	16002.2	21067.1	26350.4	26045.8	26012.7	*20267.6*	15254.4	13629.7
32.5°	11964.8	13372.6	18332.0	23883.6	23344.5	23498.4	*17430.2*	12878.7	11268.5
35°	9876.8	11117.0	15493.7	21030.8	20424.8	20623.9	*14826.4*	10567.4	9232.0
37.5°	8016.0	9208.7	13088.2	18256.3	17329.5	17705.0	*12536.1*	8825.1	7754.9
40°	6710.5	7656.6	10806.8	15211.7	14214.8	14826.4	*10350.6*	7360.8	6503.4
42.5°	5782.2	6399.5	8919.4	12304.9	11540.1	11973.6	*8531.0*	6153.7	5512.1
45°	4935.9	5428.4	7380.2	9710.0	9267.5	9669.7	*7060.2*	5247.0	4765.1
47.5°	4311.4	4691.0	6075.4	7841.1	7566.3	7693.7	*5896.6*	4578.9	4187.3
50°	3772.3	4065.6	5107.7	6328.5	6178.6	6256.8	*4939.2*	3984.2	3715.1
52.5°	3353.3	3568.4	4284.0	5201.1	5127.0	5139.0	*4209.0*	3504.8	3309.7
55°	2987.4	3137.3	3657.1	4260.6	4242.9	4246.1	*3595.8*	3105.8	2947.1
57.5°	2667.4	2791.6	3142.9	3578.9	3553.1	3558.8	*3113.9*	2758.5	2656.1
60°	2396.6	2479.7	2715.7	3024.4	3007.5	3000.3	*2698.9*	2449.0	2413.6
62.5°	2156.5	2209.7	2373.3	2592.5	2560.2	2567.6	*2372.5*	2212.1	2159.8
65°	1946.2	1964.7	2079.9	2215.4	2194.4	2212.1	*2086.4*	1976.8	1964.7
67.5°	1740.7	1759.2	1826.9	1918.0	1893.8	1908.3	*1828.5*	1764.0	1753.6
70°	1553.7	1552.9	1590.8	1640.0	1640.0	1642.4	*1599.7*	1561.0	1569.0
72.5°	1360.3	1355.5	1366.7	1399.8	1390.9	1421.5	*1376.5*	1364.3	1365.9
75°	1163.7	1150.0	1156.4	1173.4	1163.7	1179.8	*1159.6*	1175.0	1175.0
77.5°	978.3	952.5	944.5	946.9	929.2	953.3	*958.2*	968.7	992.8
80°	784.9	748.6	728.5	727.7	712.4	727.7	*739.8*	761.6	784.9
82.5°	582.6	551.3	517.4	510.9	501.3	510.1	*526.2*	552.1	589.9
85°	355.4	322.3	301.4	290.2	298.2	298.2	*306.2*	342.5	365.9
87.5°	128.1	112.0	91.9	92.7	95.1	98.3	*102.3*	128.9	141.1
90°	11.1	15.5	26.6	16.9	9.5	16.2	*28.0*	14.7	10.3
92.5°	14.8	23.6	42.7	22.1	12.6	22.1	*39.7*	19.9	14.1
95°	17.8	27.3	59.7	29.5	18.4	27.3	*50.8*	22.1	17.0
97.5°	22.2	30.2	68.5	36.1	28.7	33.9	*57.5*	23.6	20.7
100°	28.9	35.4	106.8	44.2	38.3	38.3	*105.3*	27.3	24.4
102.5°	48.0	75.1	226.9	83.2	58.2	75.1	*244.5*	55.3	29.6
105°	81.9	158.4	404.4	174.6	106.0	172.3	*431.0*	144.4	53.9
107.5°	140.8	283.6	533.3	309.4	201.1	321.9	*555.4*	285.8	125.4
110°	261.6	376.4	559.1	425.0	321.9	450.1	*606.2*	391.9	253.5

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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
112.5°	353.0	404.4	535.5	469.2	419.1	501.6	*592.3*	434.6	350.8
115°	371.4	388.9	478.1	458.1	455.2	494.3	*528.9*	433.1	389.1
117.5°	359.7	355.0	405.9	411.8	439.8	452.3	*456.7*	406.6	391.3
120°	332.3	316.0	338.8	359.5	397.0	391.9	*384.5*	368.4	369.2
122.5°	300.0	280.7	290.2	305.7	343.3	332.2	*324.8*	328.6	339.8
125°	269.0	249.8	255.6	259.3	291.0	279.9	*283.6*	294.7	305.9
127.5°	241.8	228.4	231.3	226.9	246.8	241.6	*253.4*	266.8	275.7
130°	223.4	212.3	216.6	205.5	215.9	217.3	*232.9*	243.2	249.2
132.5°	208.7	201.3	207.2	193.8	196.8	203.5	*217.5*	227.2	230.1
135°	198.5	191.8	198.4	185.8	185.9	194.7	*207.3*	213.2	214.7
137.5°	188.9	183.8	190.3	181.5	179.3	188.2	*197.7*	202.2	201.5
140°	181.7	176.4	183.8	177.2	175.7	184.6	*189.0*	194.9	193.5
142.5°	172.9	169.9	178.0	173.6	172.1	181.0	*183.2*	186.9	186.2
145°	167.1	164.9	173.6	171.5	170.7	177.3	*175.9*	181.9	179.7
147.5°	163.7	161.3	168.5	167.8	167.8	172.3	*170.8*	176.0	174.8
150°	159.3	157.0	164.1	163.4	164.1	167.1	*165.0*	171.8	171.9
152.5°	155.0	152.7	159.1	157.6	158.3	161.2	*160.0*	166.6	167.5
155°	152.1	149.8	154.8	153.1	153.1	155.4	*155.6*	163.2	164.0
157.5°	151.5	149.2	152.7	151.1	151.1	152.7	*153.5*	160.3	161.1
160°	151.0	148.6	151.4	149.8	149.1	151.3	*152.2*	158.3	159.1
162.5°	150.3	148.0	150.7	149.2	148.4	149.2	*150.1*	156.9	157.7
165°	149.6	148.0	150.2	148.6	147.8	148.6	*149.4*	154.0	155.5
167.5°	150.4	148.9	150.2	148.6	147.8	147.1	*149.5*	153.4	154.9
170°	150.5	149.7	150.2	147.9	146.4	147.2	*148.8*	152.7	154.2
172.5°	152.1	151.3	151.9	149.5	148.0	148.8	*149.7*	152.8	155.1
175°	153.8	152.2	152.8	150.4	149.6	149.6	*151.3*	153.6	156.8
177.5°	155.3	153.7	153.6	151.2	149.6	150.4	*152.8*	155.2	159.0
180°	152.8	152.8	152.8	152.8	152.8	152.8	*152.8*	152.8	152.8

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

Scaled Data Report

TEST NUMBER: P1433307
CATALOG NUMBER: EHBR1-54-UNV-A1-L930-UPL15

CIE UGR TABLE:

Reflectances:											
	Ceiling	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
	Wall	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
	Reference plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	19.75	20.96	20.16	21.34	21.72	20.73	21.95	21.14	22.32	22.70
	3H	21.23	22.31	21.66	22.70	23.13	21.99	23.07	22.42	23.46	23.90
	4H	21.83	22.84	22.28	23.25	23.70	22.49	23.50	22.94	23.91	24.36
	6H	22.30	23.23	22.76	23.65	24.11	22.85	23.78	23.31	24.21	24.67
	8H	22.45	23.33	22.93	23.77	24.25	22.95	23.83	23.43	24.27	24.75
	12H	22.52	23.36	23.00	23.80	24.30	22.99	23.83	23.47	24.27	24.76
4H	2H	20.27	21.28	20.72	21.69	22.14	21.05	22.06	21.50	22.47	22.92
	3H	21.96	22.79	22.42	23.25	23.72	22.54	23.37	23.00	23.83	24.30
	4H	22.67	23.42	23.16	23.89	24.40	23.16	23.91	23.65	24.38	24.89
	6H	23.25	23.90	23.77	24.40	24.93	23.64	24.29	24.15	24.79	25.32
	8H	23.44	24.04	23.96	24.54	25.08	23.78	24.38	24.29	24.88	25.41
	12H	23.55	24.08	24.08	24.61	25.15	23.85	24.38	24.38	24.91	25.45
8H	4H	22.90	23.50	23.42	24.00	24.54	23.35	23.95	23.86	24.45	24.98
	6H	23.59	24.08	24.14	24.63	25.17	23.93	24.42	24.48	24.97	25.51
	8H	23.84	24.28	24.41	24.84	25.40	24.12	24.56	24.69	25.12	25.68
	12H	24.01	24.39	24.57	24.94	25.57	24.25	24.63	24.81	25.17	25.81
12H	4H	22.90	23.43	23.43	23.96	24.50	23.34	23.88	23.88	24.41	24.95
	6H	23.61	24.05	24.18	24.62	25.17	23.95	24.39	24.52	24.95	25.51
	8H	23.91	24.29	24.47	24.84	25.47	24.19	24.57	24.75	25.12	25.75

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

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-5

Test Date: 08/01/2025

Luminaire Tested: EHBR-60-L930-N

Data in this report applies to families of products including EHBR-60-L930-N

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

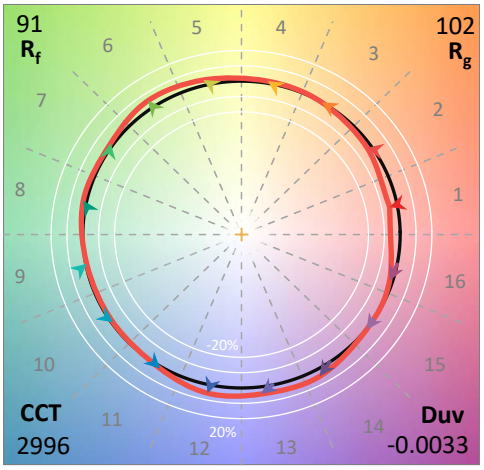
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2506-472-5
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	08/05/2025
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Metalux
Catalog Number:	**EHBR-60-L930-N**
Description:	Elevate Round Highbay at, 60000 lumens, 3000K 90CRI LEDs with N lens

Spectral Parameters

CCT (K):	2996
CIE u':	0.2519
CIE v':	0.5169
Duv:	-0.0033
CIE x:	0.4325
CIE y:	0.3945
CIE z:	0.1730
Peak Wavelength (nm):	630
Dominant Wavelength (nm):	584
Purity:	48.21818
Rf:	91.3
Rg:	102

CRI (Ra):	94.4
R1:	96.8
R2:	98.1
R3:	97.8
R4:	95.6
R5:	96.9
R6:	95.7
R7:	90.9
R8:	83.0
R9:	61.4
R10:	94.4
R11:	95.7
R12:	88.5
R13:	97.3
R14:	97.8
R15:	92.3



Test Conditions

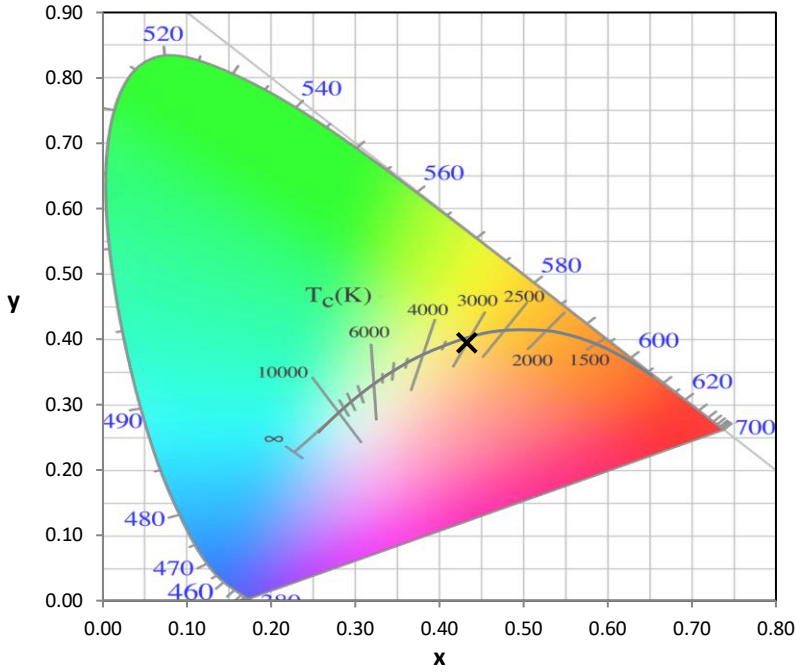
Stabilization Time:	40M
Operation Time:	1H 40M
Sphere Temperature (°C):	25.0

REPORT NUMBER: SP1-2506-472-5

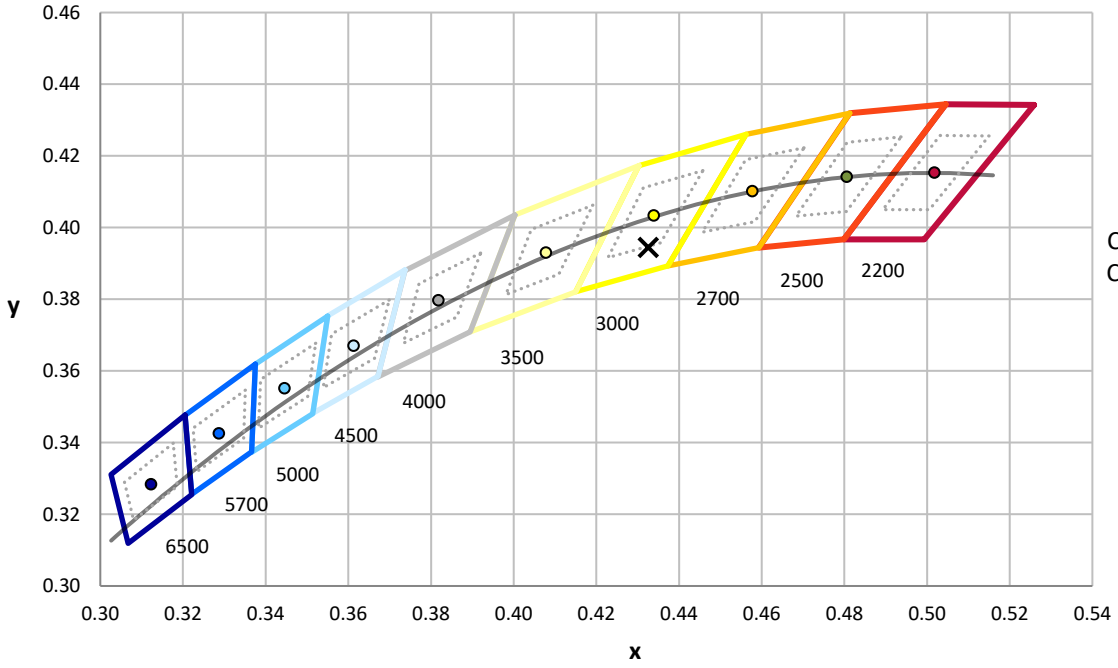
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	1/21/2025	1/21/2026
AC Power Source	CHROMA 61603 IN0063	10/22/2024	10/22/2025
DC Power Source	AGILENT E3634A IN0208	10/22/2024	10/22/2025
Sphere Thermometer	ONSET IN0085	10/22/2024	10/22/2025
Room Thermometer	ONSET IN0046	10/22/2024	10/22/2025

REPORT NUMBER: SP1-2506-472-5

CIE 1931 Chromaticity Diagram



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

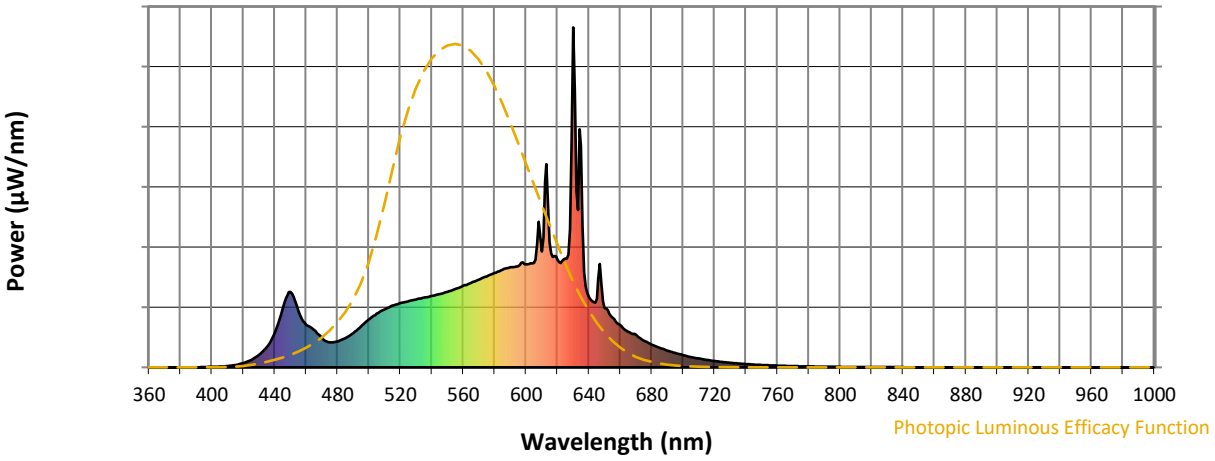


CCT = 2996K
CIE x = 0.4325
CIE y = 0.3945
Duv = -0.0033

Point lies inside the ANSI 3000K 7-step quadrangle

REPORT NUMBER: SP1-2506-472-5

Photopic Flux vs. Wavelength

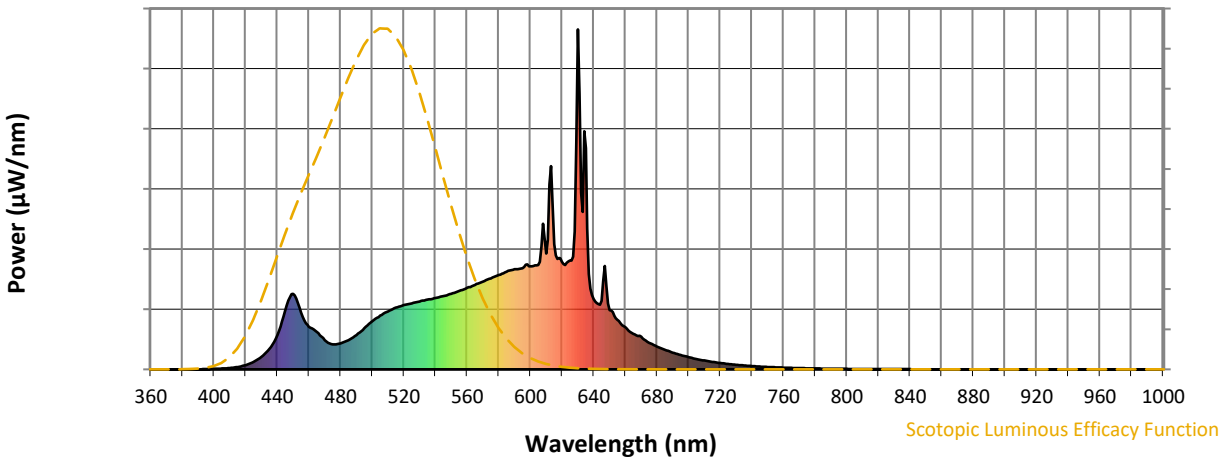


Photopic Lumens: NR

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	101	NR	620	317	NR	750	7	NR	880	0	NR
365	0	NR	495	121	NR	625	320	NR	755	6	NR	885	0	NR
370	0	NR	500	141	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	158	NR	635	651	NR	765	4	NR	895	0	NR
380	0	NR	510	171	NR	640	207	NR	770	4	NR	900	0	NR
385	0	NR	515	182	NR	645	201	NR	775	3	NR	905	0	NR
390	0	NR	520	189	NR	650	174	NR	780	3	NR	910	0	NR
395	1	NR	525	194	NR	655	146	NR	785	2	NR	915	0	NR
400	1	NR	530	199	NR	660	124	NR	790	2	NR	920	0	NR
405	3	NR	535	205	NR	665	105	NR	795	2	NR	925	0	NR
410	4	NR	540	210	NR	670	96	NR	800	1	NR	930	0	NR
415	7	NR	545	216	NR	675	79	NR	805	1	NR	935	0	NR
420	13	NR	550	222	NR	680	67	NR	810	1	NR	940	0	NR
425	22	NR	555	230	NR	685	58	NR	815	1	NR	945	0	NR
430	37	NR	560	240	NR	690	49	NR	820	1	NR	950	0	NR
435	60	NR	565	248	NR	695	42	NR	825	1	NR	955	0	NR
440	101	NR	570	258	NR	700	36	NR	830	1	NR	960	0	NR
445	172	NR	575	268	NR	705	30	NR	835	1	NR	965	0	NR
450	223	NR	580	278	NR	710	26	NR	840	1	NR	970	0	NR
455	167	NR	585	287	NR	715	22	NR	845	0	NR	975	0	NR
460	126	NR	590	295	NR	720	19	NR	850	0	NR	980	0	NR
465	111	NR	595	298	NR	725	16	NR	855	0	NR	985	0	NR
470	86	NR	600	303	NR	730	14	NR	860	0	NR	990	0	NR
475	74	NR	605	307	NR	735	12	NR	865	0	NR	995	0	NR
480	77	NR	610	341	NR	740	10	NR	870	0	NR	1000	0	NR
485	86	NR	615	368	NR	745	8	NR	875	0	NR			

REPORT NUMBER: SP1-2506-472-5

Scotopic Flux vs. Wavelength

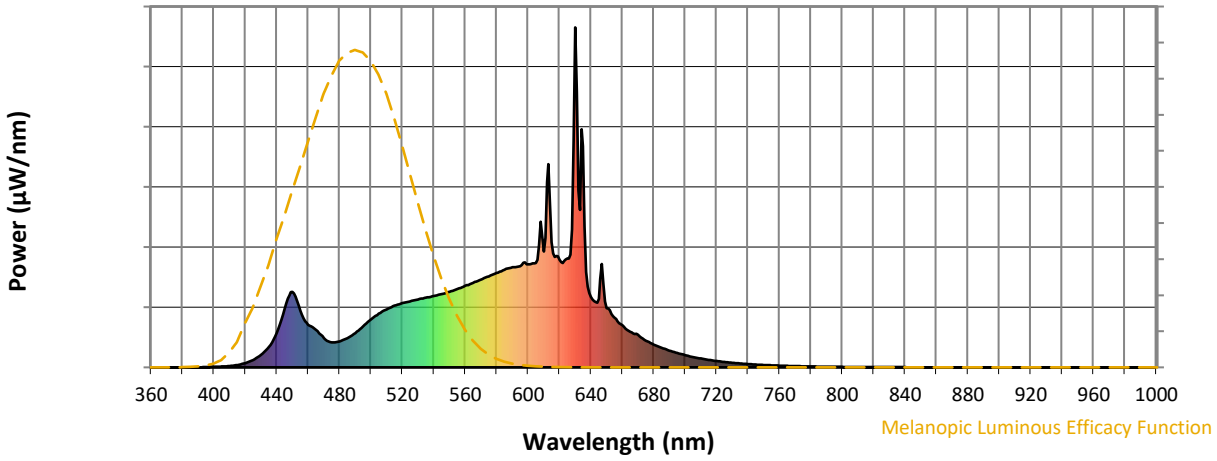


Scotopic Lumens: NR **S/P: 1.44**

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	101	NR	620	317	NR	750	7	NR	880	0	NR
365	0	NR	495	121	NR	625	320	NR	755	6	NR	885	0	NR
370	0	NR	500	141	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	158	NR	635	651	NR	765	4	NR	895	0	NR
380	0	NR	510	171	NR	640	207	NR	770	4	NR	900	0	NR
385	0	NR	515	182	NR	645	201	NR	775	3	NR	905	0	NR
390	0	NR	520	189	NR	650	174	NR	780	3	NR	910	0	NR
395	1	NR	525	194	NR	655	146	NR	785	2	NR	915	0	NR
400	1	NR	530	199	NR	660	124	NR	790	2	NR	920	0	NR
405	3	NR	535	205	NR	665	105	NR	795	2	NR	925	0	NR
410	4	NR	540	210	NR	670	96	NR	800	1	NR	930	0	NR
415	7	NR	545	216	NR	675	79	NR	805	1	NR	935	0	NR
420	13	NR	550	222	NR	680	67	NR	810	1	NR	940	0	NR
425	22	NR	555	230	NR	685	58	NR	815	1	NR	945	0	NR
430	37	NR	560	240	NR	690	49	NR	820	1	NR	950	0	NR
435	60	NR	565	248	NR	695	42	NR	825	1	NR	955	0	NR
440	101	NR	570	258	NR	700	36	NR	830	1	NR	960	0	NR
445	172	NR	575	268	NR	705	30	NR	835	1	NR	965	0	NR
450	223	NR	580	278	NR	710	26	NR	840	1	NR	970	0	NR
455	167	NR	585	287	NR	715	22	NR	845	0	NR	975	0	NR
460	126	NR	590	295	NR	720	19	NR	850	0	NR	980	0	NR
465	111	NR	595	298	NR	725	16	NR	855	0	NR	985	0	NR
470	86	NR	600	303	NR	730	14	NR	860	0	NR	990	0	NR
475	74	NR	605	307	NR	735	12	NR	865	0	NR	995	0	NR
480	77	NR	610	341	NR	740	10	NR	870	0	NR	1000	0	NR
485	86	NR	615	368	NR	745	8	NR	875	0	NR			

REPORT NUMBER: SP1-2506-472-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.85**

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	101	NR	620	317	NR	750	7	NR	880	0	NR
365	0	NR	495	121	NR	625	320	NR	755	6	NR	885	0	NR
370	0	NR	500	141	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	158	NR	635	651	NR	765	4	NR	895	0	NR
380	0	NR	510	171	NR	640	207	NR	770	4	NR	900	0	NR
385	0	NR	515	182	NR	645	201	NR	775	3	NR	905	0	NR
390	0	NR	520	189	NR	650	174	NR	780	3	NR	910	0	NR
395	1	NR	525	194	NR	655	146	NR	785	2	NR	915	0	NR
400	1	NR	530	199	NR	660	124	NR	790	2	NR	920	0	NR
405	3	NR	535	205	NR	665	105	NR	795	2	NR	925	0	NR
410	4	NR	540	210	NR	670	96	NR	800	1	NR	930	0	NR
415	7	NR	545	216	NR	675	79	NR	805	1	NR	935	0	NR
420	13	NR	550	222	NR	680	67	NR	810	1	NR	940	0	NR
425	22	NR	555	230	NR	685	58	NR	815	1	NR	945	0	NR
430	37	NR	560	240	NR	690	49	NR	820	1	NR	950	0	NR
435	60	NR	565	248	NR	695	42	NR	825	1	NR	955	0	NR
440	101	NR	570	258	NR	700	36	NR	830	1	NR	960	0	NR
445	172	NR	575	268	NR	705	30	NR	835	1	NR	965	0	NR
450	223	NR	580	278	NR	710	26	NR	840	1	NR	970	0	NR
455	167	NR	585	287	NR	715	22	NR	845	0	NR	975	0	NR
460	126	NR	590	295	NR	720	19	NR	850	0	NR	980	0	NR
465	111	NR	595	298	NR	725	16	NR	855	0	NR	985	0	NR
470	86	NR	600	303	NR	730	14	NR	860	0	NR	990	0	NR
475	74	NR	605	307	NR	735	12	NR	865	0	NR	995	0	NR
480	77	NR	610	341	NR	740	10	NR	870	0	NR	1000	0	NR
485	86	NR	615	368	NR	745	8	NR	875	0	NR			

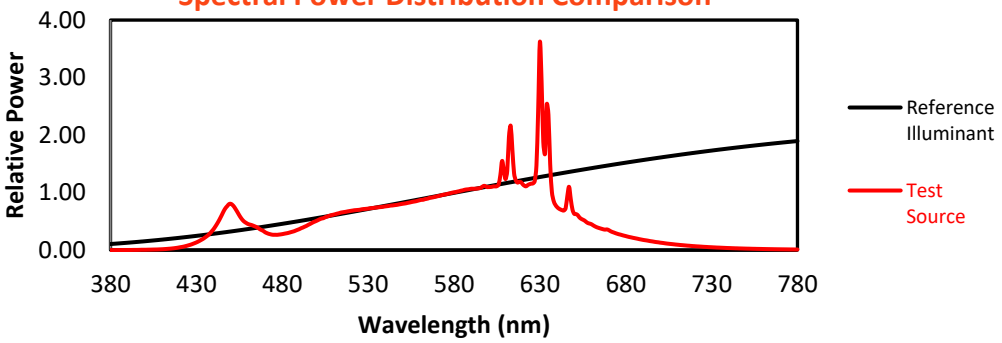
REPORT NUMBER: SP1-2506-472-5

TM-30-18

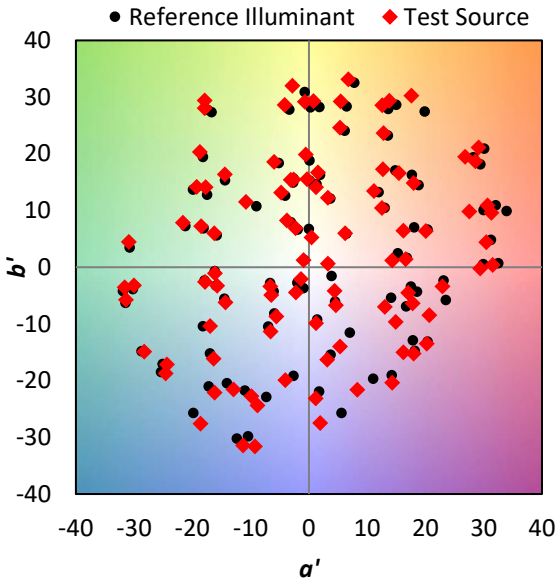
Summary

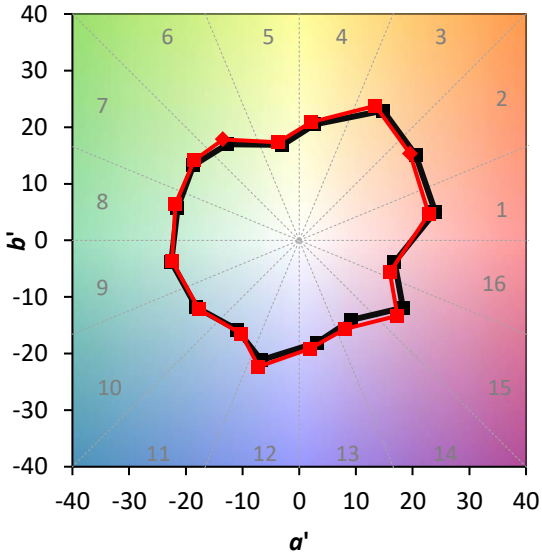
R_f = 91.3
R_g = 102
CIE R_a = 94.4
R_9 = 61.4

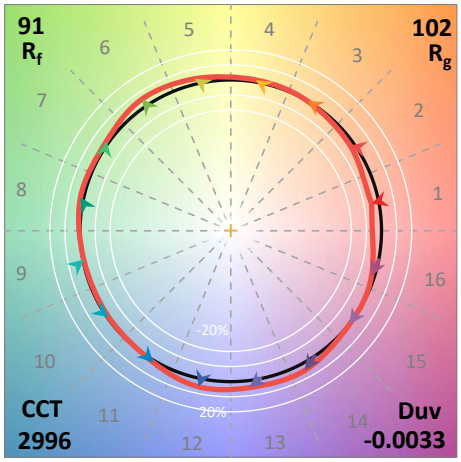
Spectral Power Distribution Comparison

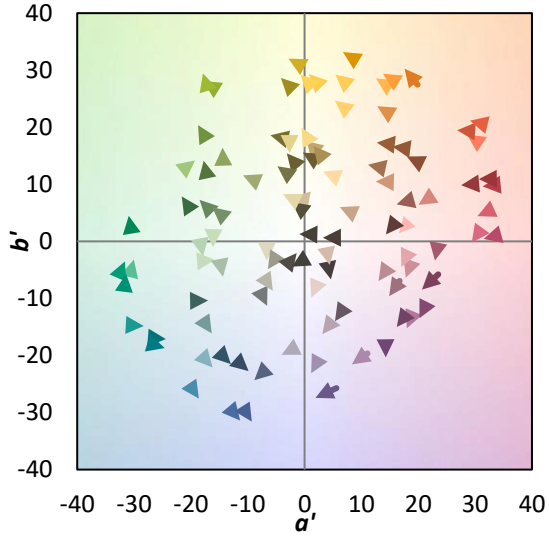


Color Vector Graphics







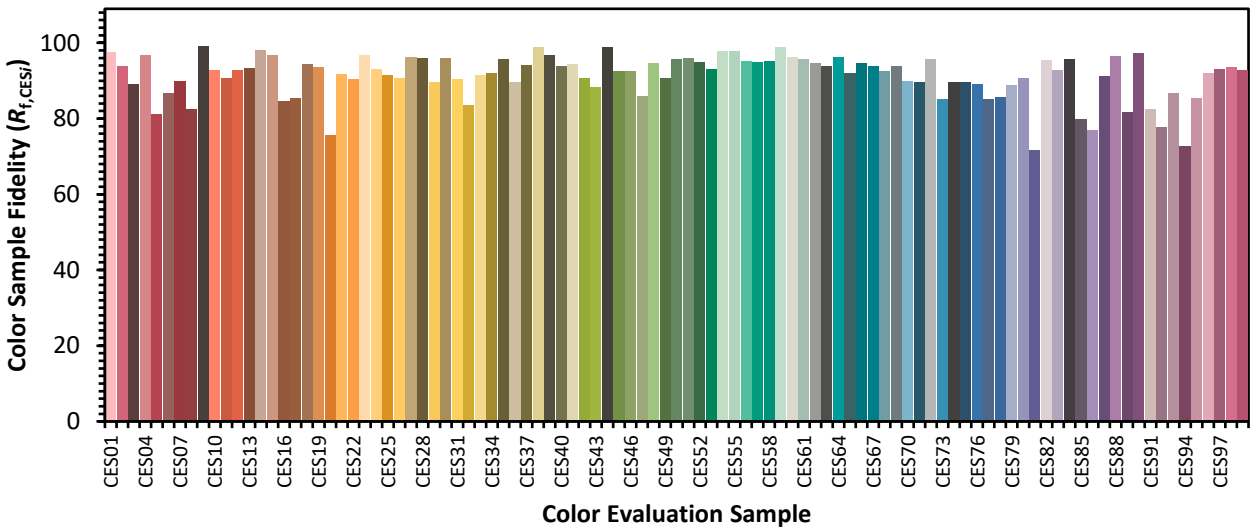


REPORT NUMBER: SP1-2506-472-5

TM-30-18

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

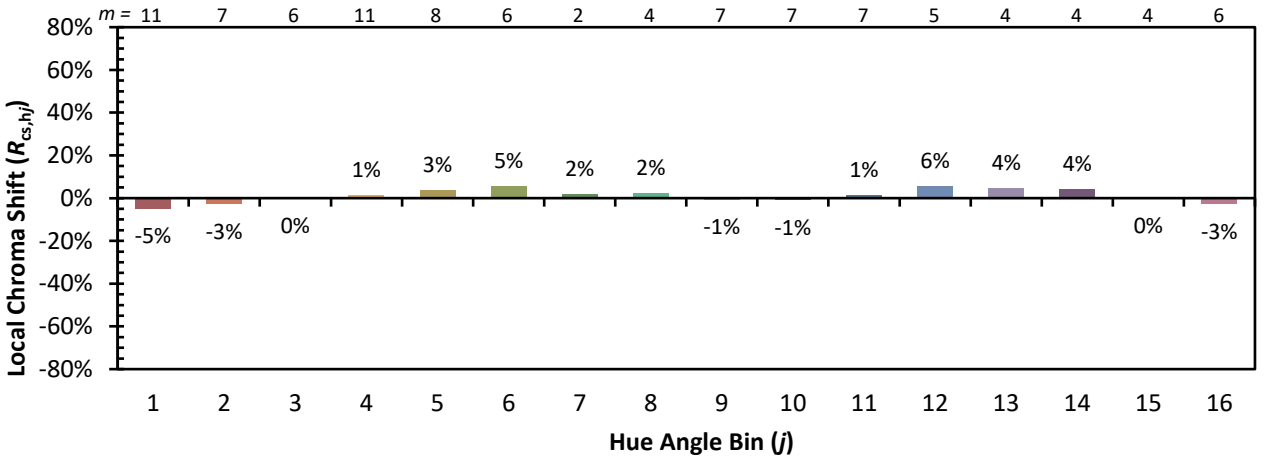
CES01 = 86	CES26 = 91	CES51 = 96	CES76 = 89
CES02 = 63	CES27 = 96	CES52 = 95	CES77 = 85
CES03 = 32	CES28 = 96	CES53 = 93	CES78 = 86
CES04 = 70	CES29 = 90	CES54 = 98	CES79 = 89
CES05 = 51	CES30 = 96	CES55 = 98	CES80 = 91
CES06 = 51	CES31 = 90	CES56 = 95	CES81 = 72
CES07 = 44	CES32 = 84	CES57 = 95	CES82 = 95
CES08 = 42	CES33 = 91	CES58 = 95	CES83 = 93
CES09 = 29	CES34 = 92	CES59 = 99	CES84 = 96
CES10 = 76	CES35 = 96	CES60 = 96	CES85 = 80
CES11 = 59	CES36 = 90	CES61 = 96	CES86 = 77
CES12 = 65	CES37 = 94	CES62 = 95	CES87 = 91
CES13 = 44	CES38 = 99	CES63 = 94	CES88 = 96
CES14 = 74	CES39 = 97	CES64 = 96	CES89 = 82
CES15 = 72	CES40 = 94	CES65 = 92	CES90 = 97
CES16 = 48	CES41 = 94	CES66 = 95	CES91 = 82
CES17 = 50	CES42 = 91	CES67 = 94	CES92 = 78
CES18 = 57	CES43 = 88	CES68 = 93	CES93 = 87
CES19 = 72	CES44 = 99	CES69 = 94	CES94 = 73
CES20 = 67	CES45 = 93	CES70 = 90	CES95 = 85
CES21 = 86	CES46 = 93	CES71 = 90	CES96 = 92
CES22 = 79	CES47 = 86	CES72 = 96	CES97 = 93
CES23 = 92	CES48 = 95	CES73 = 85	CES98 = 94
CES24 = 91	CES49 = 91	CES74 = 90	CES99 = 93
CES25 = 72	CES50 = 96	CES75 = 90	

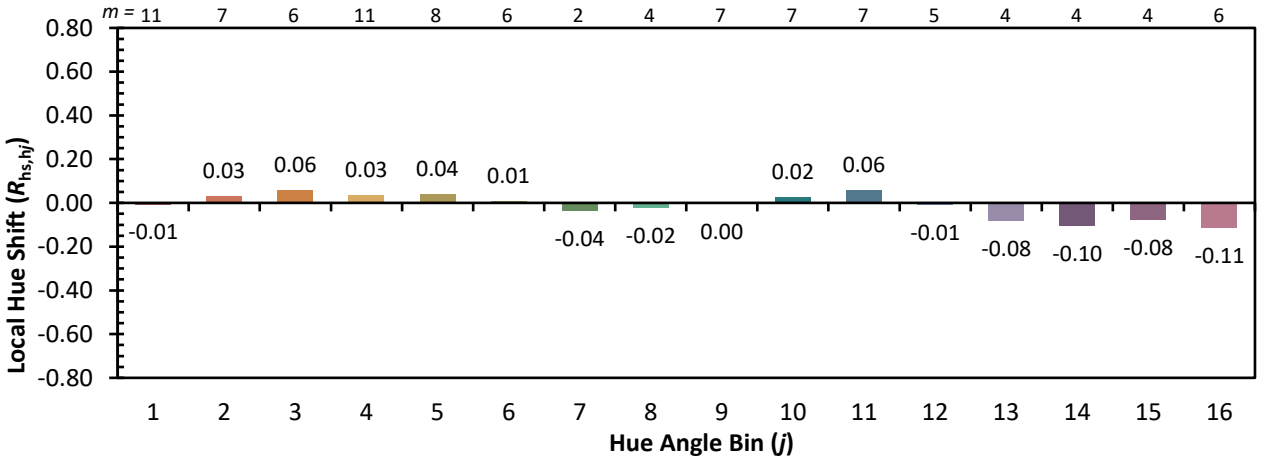


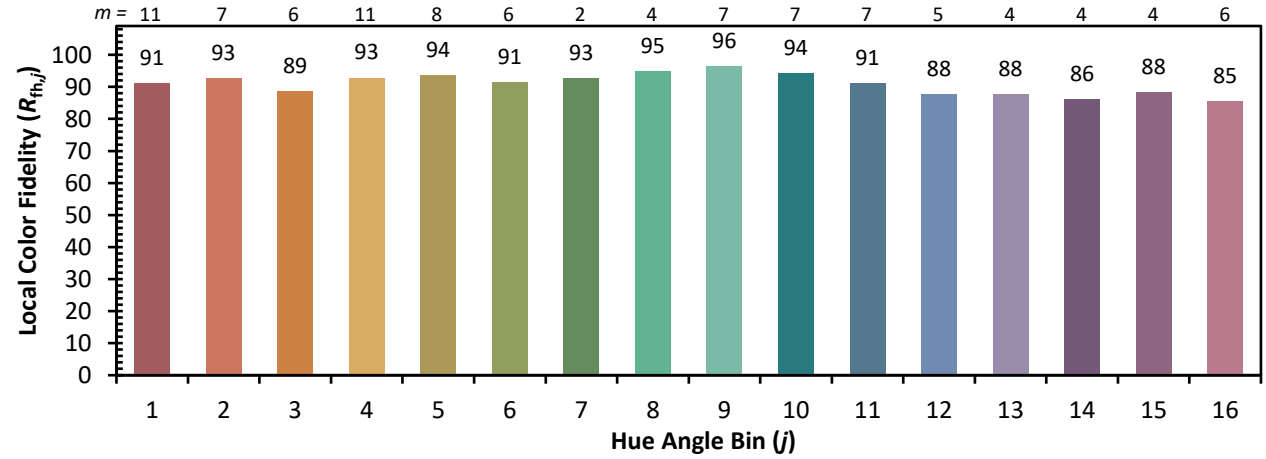
REPORT NUMBER: SP1-2506-472-5

TM-30-18

Color Rendition by Hue-Angle Bin



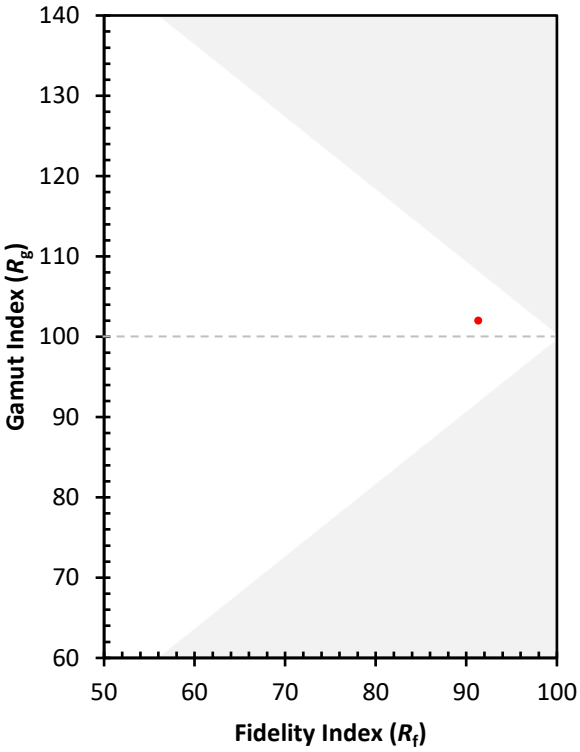


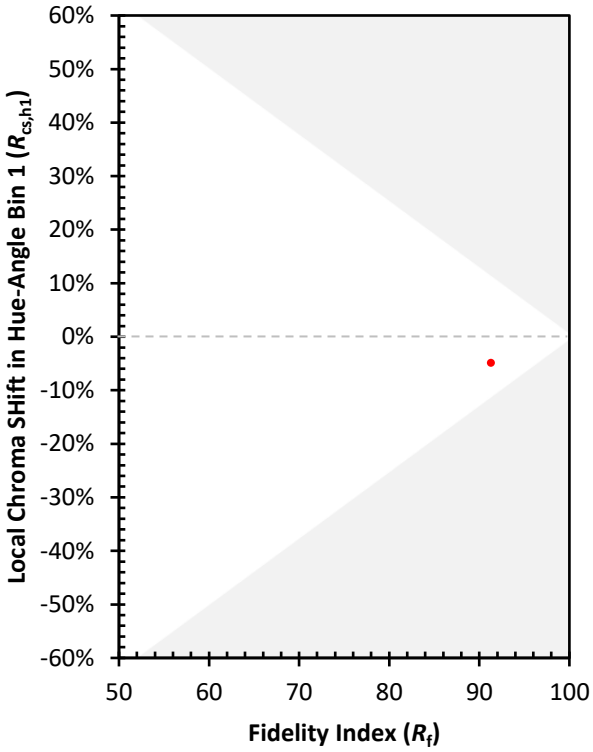


REPORT NUMBER: SP1-2506-472-5

TM-30-18

Measure Comparisons





(END OF REPORT)