

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: HALO

Report Number: P644149

Luminaire Tested: ML5615LSWW9FS1E - 692SC WW - 1500LM - 4000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644149
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-131)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 2/17/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML5615LSWW9FS1E - 692SC WW - 1500LM - 4000K
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH SPECULAR CLEAR TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

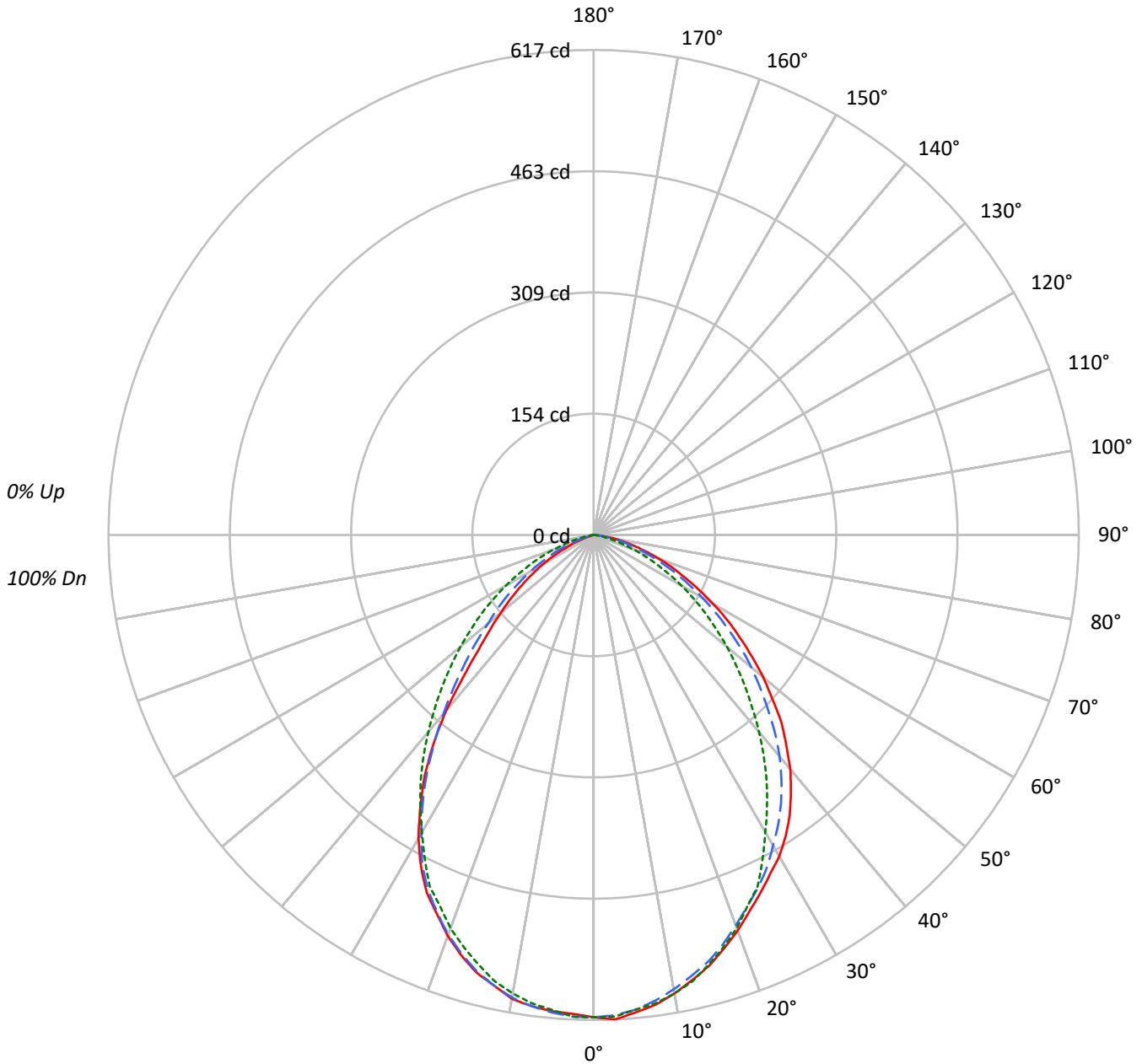
Lumens per Lamp: N/A
Luminaire Lumens: 1172.1 lumens
Efficiency: N/A
Efficacy: 68.5 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.09 / 1.17
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

Input Watts (W): 17.1
Input Voltage (V): NR
Input Current (A_{in}): 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



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	50	30	10	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	111	107	104	100	108	105	102	99	101	98	96	97	95	93	93	92	90	88								
2	103	96	90	85	100	94	89	84	90	86	82	87	84	80	84	81	79	77								
3	95	86	79	73	92	84	78	72	81	76	71	79	74	70	76	72	69	67								
4	88	77	69	64	85	76	69	63	73	67	62	71	66	62	69	65	61	59								
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52								
6	76	64	56	50	74	63	55	50	61	54	49	59	53	49	58	53	48	46								
7	70	58	50	45	69	57	50	44	56	49	44	55	48	44	53	48	44	42								
8	66	53	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38								
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34								
10	58	46	39	34	57	45	38	34	44	38	33	44	38	33	43	37	33	32								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	33632	33632	33632	33632	33632
5°	33563	33370	33370	33563	33469
10°	32971	32676	32971	33266	33361
15°	32208	31907	32106	32611	32707
20°	31252	30838	31048	31561	31666
25°	30371	29941	29838	30159	30371
30°	29878	28872	27643	27751	28201
35°	29105	27807	25672	24728	25083
40°	27831	26314	23408	21254	20875
45°	26181	24258	21111	17955	16033
50°	23974	22319	18848	14925	13117
55°	21629	19937	16563	12673	10647
60°	19187	17444	14155	10273	8146
65°	16513	14904	11467	7562	5046
70°	14169	12182	8495	4248	1988
75°	11226	9362	5613	1123	0
80°	8366	6693	2778	0	0
85°	4466	3334	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 26181 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	57.5	4.9
10°-20°	159.6	13.6
20°-30°	227.5	19.4
30°-40°	244.7	20.9
40°-50°	210.8	18.0
50°-60°	152.8	13.0
60°-70°	86.2	7.4
70°-80°	29.3	2.5
80°-90°	3.8	0.3
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°-30°	444.6	37.9
0°-40°	689.3	58.8
0°-60°	1052.9	89.8
0°-90°	1172.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1172.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	614	614	614	614	614	
5°	610	606	606	610	608	58
15°	568	562	566	575	576	160
25°	502	495	493	499	502	232
35°	435	416	384	370	375	271
45°	338	313	272	232	207	259
55°	226	209	173	133	111	203
65°	127	115	88	58	39	128
75°	53	44	26	5	0	57
85°	7	5	0	0	0	10
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5
2.5°	617.0	611.7	609.9	611.7	611.7	611.7	611.7	611.7	611.7	609.9	611.7
5°	609.9	604.6	604.6	604.6	604.6	604.6	602.9	604.6	604.6	604.6	606.4
7.5°	602.9	595.8	597.6	595.8	597.6	595.8	595.8	597.6	595.8	597.6	597.6
10°	592.3	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0
12.5°	579.9	574.6	574.6	574.6	574.6	574.6	574.6	574.6	576.3	574.6	574.6
15°	567.5	560.4	562.2	560.4	560.4	560.4	560.4	560.4	560.4	560.4	562.2
17.5°	551.6	546.3	546.3	546.3	546.3	546.3	546.3	544.5	546.3	546.3	546.3
20°	535.7	530.4	530.4	528.6	530.4	528.6	528.6	528.6	530.4	528.6	528.6
22.5°	518.0	512.7	514.5	512.7	512.7	512.7	512.7	512.7	510.9	512.7	510.9
25°	502.1	500.3	498.6	500.3	498.6	498.6	498.6	496.8	496.8	496.8	495.0
27.5°	486.2	482.6	482.6	482.6	482.6	480.9	480.9	480.9	479.1	477.3	477.3
30°	472.0	466.7	466.7	466.7	465.0	465.0	463.2	463.2	459.7	457.9	456.1
32.5°	454.4	450.8	449.1	449.1	447.3	447.3	445.5	445.5	442.0	440.2	436.7
35°	434.9	433.1	433.1	431.4	429.6	427.8	426.1	424.3	422.5	419.0	415.5
37.5°	411.9	410.2	408.4	408.4	406.6	404.9	404.9	401.3	399.6	396.0	392.5
40°	388.9	385.4	385.4	383.6	381.9	380.1	380.1	376.6	374.8	371.3	367.7
42.5°	362.4	358.9	358.9	357.1	357.1	357.1	355.4	351.8	348.3	344.7	341.2
45°	337.7	334.1	334.1	330.6	330.6	328.8	327.1	325.3	321.8	318.2	312.9
47.5°	307.6	305.9	305.9	304.1	302.3	300.6	300.6	298.8	295.2	289.9	286.4
50°	281.1	279.3	279.3	277.6	275.8	274.0	272.3	270.5	268.7	265.2	261.7
52.5°	252.8	252.8	251.0	249.3	249.3	247.5	245.7	244.0	240.4	236.9	235.1
55°	226.3	224.5	224.5	222.8	222.8	221.0	219.2	217.5	215.7	212.2	208.6
57.5°	201.5	198.0	198.0	196.2	196.2	196.2	194.5	190.9	189.2	185.6	183.9
60°	175.0	173.3	173.3	173.3	171.5	169.7	169.7	166.2	164.4	162.7	159.1
62.5°	150.3	148.5	148.5	148.5	146.7	146.7	145.0	143.2	141.4	139.7	136.1
65°	127.3	127.3	127.3	125.5	125.5	123.8	122.0	122.0	120.2	118.5	114.9
67.5°	107.8	106.1	106.1	106.1	104.3	104.3	102.5	100.8	99.0	97.2	93.7
70°	88.4	86.6	86.6	84.9	84.9	84.9	84.9	83.1	79.6	79.6	76.0
72.5°	68.9	68.9	68.9	67.2	67.2	67.2	65.4	65.4	63.6	61.9	60.1
75°	53.0	53.0	53.0	51.3	51.3	51.3	49.5	49.5	47.7	46.0	44.2
77.5°	38.9	38.9	38.9	37.1	37.1	37.1	35.4	35.4	33.6	33.6	31.8
80°	26.5	26.5	26.5	24.8	24.8	24.8	24.8	23.0	23.0	21.2	21.2
82.5°	15.9	15.9	15.9	15.9	14.1	14.1	14.1	14.1	14.1	12.4	12.4
85°	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	5.3	5.3
87.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
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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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5
2.5°	611.7	611.7	611.7	611.7	611.7	611.7	611.7	611.7	611.7	613.5	611.7
5°	606.4	606.4	606.4	606.4	606.4	606.4	608.2	606.4	608.2	606.4	608.2
7.5°	597.6	597.6	599.3	599.3	597.6	599.3	599.3	599.3	599.3	601.1	601.1
10°	587.0	588.7	588.7	590.5	590.5	590.5	590.5	592.3	592.3	592.3	592.3
12.5°	576.3	576.3	576.3	576.3	578.1	576.3	578.1	578.1	579.9	581.7	579.9
15°	560.4	562.2	562.2	562.2	562.2	562.2	564.0	565.7	565.7	565.7	567.5
17.5°	546.3	546.3	546.3	548.1	546.3	548.1	548.1	548.1	549.8	549.8	551.6
20°	528.6	526.8	530.4	528.6	528.6	530.4	530.4	530.4	532.2	532.2	532.2
22.5°	509.2	510.9	509.2	509.2	510.9	510.9	510.9	509.2	510.9	510.9	512.7
25°	493.3	493.3	493.3	493.3	493.3	493.3	493.3	491.5	493.3	493.3	493.3
27.5°	475.6	472.0	472.0	470.3	470.3	468.5	466.7	466.7	466.7	465.0	466.7
30°	454.4	450.8	449.1	447.3	445.5	445.5	442.0	440.2	438.4	436.7	434.9
32.5°	433.1	429.6	427.8	426.1	422.5	420.8	417.2	415.5	413.7	410.2	406.6
35°	413.7	408.4	404.9	401.3	399.6	397.8	394.3	390.7	387.2	383.6	380.1
37.5°	387.2	383.6	380.1	376.6	374.8	373.0	369.5	362.4	358.9	355.4	351.8
40°	364.2	358.9	355.4	350.1	348.3	344.7	341.2	335.9	330.6	327.1	323.5
42.5°	335.9	332.4	328.8	323.5	321.8	318.2	312.9	309.4	305.9	298.8	295.2
45°	309.4	305.9	302.3	297.0	293.5	291.7	288.2	282.9	277.6	272.3	268.7
47.5°	282.9	279.3	274.0	270.5	267.0	265.2	261.7	256.4	251.0	245.7	242.2
50°	256.4	252.8	249.3	242.2	242.2	238.7	235.1	229.8	226.3	221.0	215.7
52.5°	231.6	226.3	222.8	217.5	217.5	215.7	210.4	205.1	201.5	196.2	192.7
55°	205.1	201.5	198.0	194.5	190.9	189.2	187.4	182.1	176.8	173.3	168.0
57.5°	180.3	175.0	173.3	169.7	168.0	166.2	162.7	157.3	153.8	150.3	146.7
60°	157.3	153.8	148.5	146.7	145.0	143.2	139.7	136.1	132.6	129.1	125.5
62.5°	134.4	130.8	127.3	123.8	122.0	120.2	118.5	114.9	111.4	107.8	104.3
65°	111.4	109.6	106.1	104.3	102.5	100.8	97.2	93.7	91.9	88.4	84.9
67.5°	91.9	90.2	86.6	84.9	83.1	83.1	77.8	76.0	72.5	70.7	67.2
70°	74.3	72.5	68.9	67.2	65.4	63.6	61.9	60.1	56.6	53.0	51.3
72.5°	58.3	54.8	53.0	51.3	49.5	49.5	46.0	44.2	40.7	38.9	35.4
75°	42.4	40.7	38.9	37.1	37.1	35.4	33.6	31.8	28.3	26.5	24.8
77.5°	30.1	28.3	26.5	24.8	24.8	23.0	21.2	19.4	17.7	15.9	14.1
80°	19.4	17.7	17.7	15.9	14.1	14.1	12.4	10.6	8.8	8.8	7.1
82.5°	10.6	10.6	8.8	8.8	7.1	7.1	5.3	5.3	3.5	3.5	1.8
85°	5.3	3.5	3.5	3.5	3.5	1.8	1.8	1.8	0.0	0.0	0.0
87.5°	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5
2.5°	611.7	611.7	611.7	611.7	611.7	611.7	611.7	611.7	613.5	611.7	611.7
5°	608.2	608.2	609.9	608.2	609.9	609.9	608.2	608.2	609.9	611.7	609.9
7.5°	601.1	601.1	602.9	602.9	602.9	602.9	602.9	604.6	604.6	606.4	606.4
10°	594.0	594.0	594.0	594.0	595.8	595.8	597.6	597.6	597.6	597.6	597.6
12.5°	581.7	583.4	583.4	583.4	583.4	585.2	585.2	587.0	587.0	587.0	588.7
15°	567.5	569.3	571.0	571.0	569.3	571.0	572.8	572.8	574.6	574.6	574.6
17.5°	551.6	553.4	553.4	555.1	553.4	556.9	556.9	558.7	558.7	560.4	560.4
20°	533.9	535.7	535.7	535.7	537.5	537.5	539.2	539.2	541.0	541.0	541.0
22.5°	512.7	514.5	514.5	514.5	514.5	516.2	516.2	518.0	519.8	521.5	519.8
25°	493.3	495.0	496.8	495.0	496.8	496.8	496.8	498.6	498.6	500.3	498.6
27.5°	466.7	466.7	466.7	468.5	470.3	470.3	470.3	472.0	472.0	472.0	473.8
30°	434.9	433.1	434.9	434.9	434.9	434.9	438.4	438.4	438.4	440.2	442.0
32.5°	404.9	404.9	404.9	403.1	403.1	403.1	403.1	404.9	404.9	406.6	408.4
35°	376.6	374.8	371.3	371.3	371.3	369.5	367.7	367.7	369.5	369.5	369.5
37.5°	346.5	344.7	343.0	339.4	339.4	335.9	334.1	332.4	332.4	330.6	330.6
40°	318.2	314.7	311.2	311.2	307.6	305.9	302.3	300.6	297.0	293.5	293.5
42.5°	289.9	286.4	282.9	281.1	277.6	275.8	270.5	267.0	263.4	261.7	258.1
45°	263.4	259.9	254.6	252.8	249.3	245.7	242.2	236.9	231.6	228.1	226.3
47.5°	236.9	233.4	228.1	224.5	222.8	217.5	213.9	208.6	203.3	198.0	192.7
50°	212.2	206.8	201.5	198.0	196.2	190.9	187.4	182.1	175.0	173.3	168.0
52.5°	187.4	182.1	176.8	175.0	173.3	168.0	162.7	157.3	153.8	148.5	145.0
55°	162.7	159.1	153.8	152.0	150.3	145.0	139.7	136.1	132.6	127.3	123.8
57.5°	141.4	137.9	132.6	130.8	129.1	123.8	120.2	114.9	111.4	107.8	104.3
60°	122.0	116.7	113.1	111.4	109.6	104.3	100.8	97.2	93.7	90.2	84.9
62.5°	100.8	97.2	93.7	91.9	88.4	86.6	81.3	79.6	74.3	72.5	68.9
65°	81.3	77.8	74.3	74.3	72.5	67.2	65.4	61.9	58.3	54.8	53.0
67.5°	65.4	61.9	58.3	56.6	54.8	51.3	49.5	46.0	42.4	40.7	37.1
70°	49.5	46.0	42.4	40.7	38.9	37.1	33.6	30.1	26.5	24.8	21.2
72.5°	33.6	30.1	28.3	28.3	26.5	23.0	19.4	17.7	14.1	12.4	10.6
75°	21.2	17.7	15.9	14.1	14.1	12.4	8.8	7.1	5.3	3.5	1.8
77.5°	12.4	10.6	8.8	7.1	7.1	5.3	3.5	1.8	1.8	0.0	0.0
80°	5.3	3.5	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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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CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	613.5	613.5	613.5	613.5	613.5	613.5	613.5	613.5
2.5°	611.7	611.7	611.7	611.7	609.9	609.9	609.9	609.9
5°	609.9	609.9	609.9	609.9	608.2	608.2	609.9	608.2
7.5°	606.4	606.4	604.6	604.6	604.6	604.6	604.6	604.6
10°	599.3	599.3	599.3	597.6	599.3	599.3	597.6	599.3
12.5°	588.7	588.7	588.7	588.7	587.0	587.0	588.7	587.0
15°	576.3	576.3	576.3	576.3	576.3	574.6	576.3	576.3
17.5°	562.2	562.2	560.4	560.4	560.4	562.2	562.2	560.4
20°	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8
22.5°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
25°	500.3	500.3	500.3	500.3	500.3	500.3	500.3	502.1
27.5°	473.8	473.8	473.8	473.8	473.8	472.0	472.0	475.6
30°	442.0	443.8	443.8	443.8	443.8	443.8	443.8	445.5
32.5°	410.2	410.2	410.2	411.9	410.2	411.9	410.2	410.2
35°	373.0	373.0	373.0	373.0	373.0	374.8	374.8	374.8
37.5°	330.6	332.4	332.4	334.1	334.1	334.1	335.9	334.1
40°	291.7	291.7	291.7	289.9	291.7	289.9	291.7	291.7
42.5°	254.6	251.0	251.0	249.3	249.3	247.5	245.7	245.7
45°	221.0	215.7	215.7	213.9	212.2	208.6	206.8	206.8
47.5°	189.2	187.4	185.6	183.9	182.1	178.6	176.8	178.6
50°	162.7	160.9	159.1	159.1	157.3	155.6	153.8	153.8
52.5°	141.4	137.9	136.1	136.1	134.4	132.6	132.6	132.6
55°	120.2	116.7	116.7	116.7	114.9	113.1	113.1	111.4
57.5°	100.8	97.2	97.2	95.5	93.7	93.7	93.7	91.9
60°	83.1	79.6	77.8	77.8	76.0	74.3	74.3	74.3
62.5°	65.4	63.6	60.1	60.1	58.3	56.6	54.8	56.6
65°	49.5	46.0	44.2	44.2	42.4	40.7	38.9	38.9
67.5°	33.6	31.8	30.1	30.1	26.5	26.5	24.8	24.8
70°	19.4	17.7	17.7	15.9	14.1	14.1	12.4	12.4
72.5°	8.8	7.1	7.1	5.3	5.3	3.5	3.5	3.5
75°	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	1.8	1.8	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



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— 0°-180° - - 45°-225° - - - - 90°-270°

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