

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: P644104

Luminaire Tested: ML5615LSWW9FS1E - 592SC WW - 1500LM - 4000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644104
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-129)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 2/17/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML5615LSWW9FS1E - 592SC WW - 1500LM - 4000K
Description: ML56 RR, WW OPTIC, 5" 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: 1146.0 lumens
Efficiency: N/A
Efficacy: 67.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.26
Luminous Opening: Circular (Dia: 0.42' x H: 0')
CIE Type: Direct

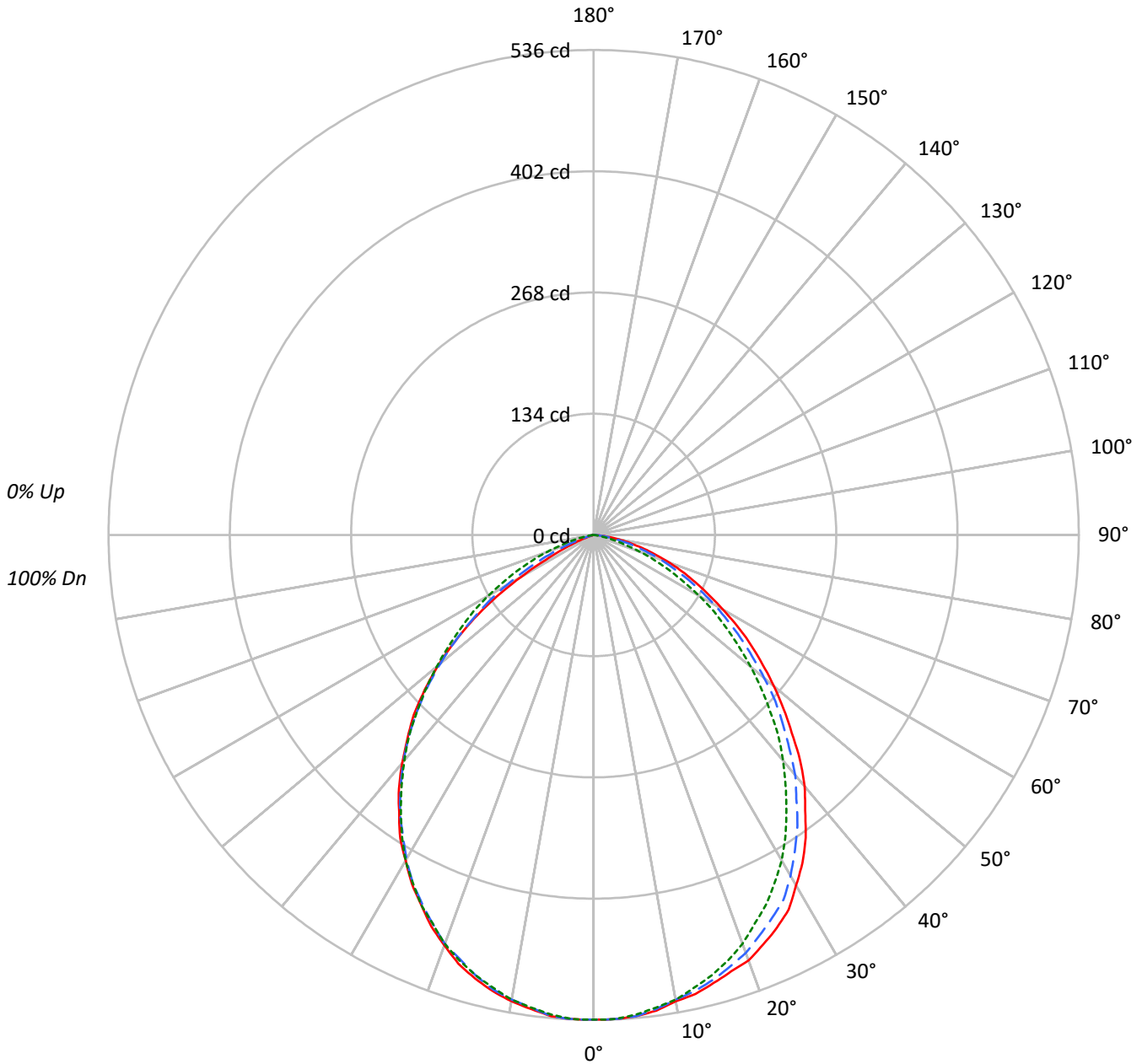
Input Watts (W): 17.1
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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	50	30	10	0		
RCR	0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	100	100	100		
	1	111	107	103	100	108	105	101	98	100	98	95	97	94	93	93	91	90	88	88	88	88	88	88		
	2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76	76	76	76	76	76		
	3	94	85	78	72	92	83	77	71	81	75	70	78	73	69	75	71	68	66	66	66	66	66	66		
	4	87	76	68	62	85	75	68	62	72	66	61	70	65	60	68	63	60	58	58	58	58	58	58		
	5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51	51	51	51	51	51		
	6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45	45	45	45	45	45		
	7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40	40	40	40	40	40		
	8	65	52	44	39	63	52	44	39	50	43	38	49	43	38	48	42	38	36	36	36	36	36	36		
	9	61	48	40	35	59	48	40	35	46	40	35	45	39	35	44	39	35	33	33	33	33	33	33		
	10	57	45	37	32	56	44	37	32	43	36	32	42	36	32	41	36	32	30	30	30	30	30	30		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	42289	42289	42289	42289	42289
5°	42315	42315	42173	42315	42315
10°	41947	41811	41811	41811	41947
15°	41901	41615	41182	41182	41468
20°	42037	41290	40399	40399	40550
25°	41730	40659	39274	39117	39274
30°	40773	39642	37874	37710	37874
35°	39357	37825	35782	35955	36119
40°	37356	35707	33522	33708	33893
45°	34541	32967	30790	30790	31382
50°	31918	30187	27792	27141	27571
55°	29205	27251	24581	22626	22145
60°	25956	24282	21219	17588	14509
65°	23125	21145	17166	11562	6930
70°	20403	17957	12648	5724	2031
75°	16714	14030	7564	1617	549
80°	12865	9638	3228	0	0
85°	6431	4800	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 34742 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	50.5	4.4
10°-20°	142.8	12.5
20°-30°	210.7	18.4
30°-40°	238.5	20.8
40°-50°	220.3	19.2
50°-60°	162.7	14.2
60°-70°	87.5	7.6
70°-80°	29.3	2.6
80°-90°	3.7	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°	404.0	35.3
0°-40°	642.5	56.1
0°-60°	1025.5	89.5
0°-90°	1146.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1146.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	536	536	536	536	536	
5°	534	534	532	534	534	51
15°	513	509	504	504	507	145
25°	479	467	451	449	451	220
35°	408	392	371	373	375	254
45°	309	295	276	276	281	240
55°	212	198	179	164	161	190
65°	124	113	92	62	37	123
75°	55	46	25	5	2	59
85°	7	5	0	0	0	11
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°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
2.5°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
5°	534.0	534.0	532.2	534.0	534.0	534.0	534.0	532.2	534.0	534.0	534.0
7.5°	530.4	528.6	528.6	528.6	528.6	528.6	528.6	528.6	528.6	528.6	528.6
10°	523.3	523.3	523.3	523.3	523.3	523.3	523.3	523.3	523.3	523.3	521.6
12.5°	519.8	518.0	518.0	518.0	518.0	518.0	518.0	516.3	518.0	516.3	516.3
15°	512.7	512.7	512.7	512.7	512.7	512.7	511.0	511.0	511.0	511.0	509.2
17.5°	505.7	505.7	507.4	507.4	505.7	505.7	505.7	503.9	502.1	502.1	500.4
20°	500.4	500.4	498.6	498.6	496.8	498.6	496.8	495.1	495.1	493.3	491.5
22.5°	489.8	489.8	489.8	489.8	489.8	488.0	488.0	486.2	484.4	482.7	479.1
25°	479.1	479.1	479.1	479.1	477.4	477.4	477.4	473.8	472.1	470.3	466.8
27.5°	466.8	465.0	465.0	465.0	463.2	463.2	461.5	459.7	457.9	456.2	454.4
30°	447.3	447.3	447.3	447.3	445.6	443.8	443.8	442.0	440.2	436.7	434.9
32.5°	429.6	429.6	427.9	426.1	426.1	426.1	424.3	422.6	419.0	417.3	413.7
35°	408.4	406.7	406.7	404.9	404.9	404.9	403.1	399.6	397.8	396.0	392.5
37.5°	383.7	385.4	383.7	383.7	381.9	380.1	378.4	376.6	374.8	371.3	367.8
40°	362.5	362.5	360.7	358.9	357.1	357.1	355.4	353.6	351.8	350.1	346.5
42.5°	337.7	337.7	335.9	335.9	334.2	334.2	330.6	328.9	327.1	325.3	320.0
45°	309.4	309.4	311.2	309.4	307.6	305.9	305.9	304.1	300.6	298.8	295.3
47.5°	284.7	286.4	284.7	282.9	282.9	281.1	281.1	277.6	277.6	274.0	272.3
50°	259.9	259.9	259.9	259.9	258.1	256.4	256.4	254.6	251.1	249.3	245.8
52.5°	235.2	235.2	235.2	235.2	233.4	233.4	231.6	229.8	228.1	224.5	221.0
55°	212.2	210.4	210.4	210.4	208.6	208.6	206.9	205.1	203.3	201.6	198.0
57.5°	189.2	187.4	187.4	185.6	185.6	183.9	183.9	182.1	180.3	176.8	175.0
60°	164.4	166.2	164.4	164.4	162.7	162.7	162.7	160.9	157.4	155.6	153.8
62.5°	143.2	145.0	143.2	141.4	141.4	141.4	141.4	137.9	136.1	134.4	132.6
65°	123.8	123.8	123.8	122.0	122.0	122.0	118.5	118.5	116.7	114.9	113.2
67.5°	106.1	104.3	104.3	104.3	102.5	102.5	100.8	100.8	97.2	97.2	93.7
70°	88.4	86.6	86.6	86.6	84.9	83.1	84.9	81.3	79.6	77.8	77.8
72.5°	70.7	70.7	69.0	69.0	69.0	67.2	67.2	65.4	63.7	61.9	60.1
75°	54.8	54.8	54.8	53.0	53.0	51.3	51.3	49.5	49.5	46.0	46.0
77.5°	40.7	40.7	40.7	38.9	38.9	38.9	37.1	37.1	35.4	33.6	31.8
80°	28.3	26.5	26.5	26.5	26.5	24.8	24.8	24.8	23.0	23.0	21.2
82.5°	15.9	15.9	15.9	15.9	15.9	15.9	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	5.3	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°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
2.5°	535.7	535.7	535.7	535.7	534.0	535.7	534.0	535.7	535.7	535.7	535.7
5°	534.0	532.2	532.2	532.2	534.0	534.0	532.2	532.2	532.2	532.2	532.2
7.5°	528.6	528.6	528.6	526.9	528.6	528.6	526.9	528.6	528.6	526.9	528.6
10°	523.3	523.3	521.6	521.6	521.6	521.6	521.6	521.6	519.8	521.6	521.6
12.5°	516.3	516.3	516.3	514.5	514.5	514.5	514.5	514.5	512.7	512.7	514.5
15°	509.2	509.2	507.4	507.4	507.4	505.7	505.7	505.7	505.7	503.9	503.9
17.5°	500.4	498.6	498.6	496.8	496.8	495.1	495.1	493.3	493.3	493.3	491.5
20°	489.8	488.0	486.2	486.2	484.4	484.4	482.7	482.7	480.9	480.9	479.1
22.5°	477.4	475.6	473.8	472.1	472.1	470.3	470.3	468.5	466.8	465.0	465.0
25°	466.8	463.2	461.5	459.7	456.2	456.2	454.4	454.4	452.6	450.9	449.1
27.5°	450.9	447.3	445.6	443.8	442.0	440.2	436.7	436.7	434.9	433.2	431.4
30°	431.4	429.6	426.1	424.3	422.6	422.6	419.0	415.5	415.5	415.5	413.7
32.5°	412.0	408.4	406.7	403.1	401.3	401.3	399.6	396.0	394.3	394.3	392.5
35°	390.7	387.2	383.7	381.9	380.1	378.4	376.6	374.8	373.1	371.3	369.5
37.5°	366.0	362.5	360.7	358.9	357.1	355.4	353.6	351.8	350.1	348.3	350.1
40°	343.0	339.5	335.9	334.2	332.4	332.4	330.6	328.9	327.1	325.3	325.3
42.5°	318.3	314.7	312.9	311.2	309.4	307.6	305.9	304.1	302.3	302.3	300.6
45°	291.7	290.0	286.4	284.7	282.9	282.9	279.4	277.6	277.6	275.8	275.8
47.5°	268.7	265.2	261.7	259.9	258.1	256.4	254.6	252.8	251.1	251.1	251.1
50°	242.2	240.5	236.9	235.2	233.4	233.4	231.6	229.8	228.1	226.3	226.3
52.5°	217.5	215.7	215.7	212.2	210.4	210.4	206.9	206.9	203.3	201.6	199.8
55°	196.3	192.7	191.0	187.4	187.4	185.6	183.9	182.1	180.3	178.6	176.8
57.5°	171.5	169.7	168.0	166.2	166.2	164.4	162.7	160.9	157.4	157.4	153.8
60°	152.1	148.5	146.7	145.0	143.2	143.2	141.4	139.7	136.1	134.4	132.6
62.5°	130.8	127.3	127.3	125.5	122.0	122.0	120.2	116.7	114.9	111.4	109.6
65°	111.4	109.6	106.1	104.3	104.3	102.5	99.0	97.2	95.5	91.9	88.4
67.5°	91.9	90.2	88.4	84.9	84.9	83.1	79.6	77.8	74.3	72.5	69.0
70°	74.3	72.5	70.7	67.2	67.2	65.4	63.7	60.1	56.6	54.8	51.3
72.5°	58.3	56.6	54.8	51.3	51.3	49.5	46.0	44.2	40.7	37.1	35.4
75°	44.2	42.4	38.9	37.1	35.4	35.4	31.8	30.1	28.3	24.8	23.0
77.5°	30.1	28.3	26.5	24.8	24.8	23.0	21.2	19.4	17.7	15.9	12.4
80°	19.4	17.7	15.9	15.9	14.1	14.1	12.4	10.6	8.8	7.1	5.3
82.5°	10.6	10.6	8.8	7.1	7.1	7.1	5.3	5.3	3.5	1.8	1.8
85°	3.5	3.5	3.5	3.5	1.8	1.8	1.8	1.8	1.8	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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
2.5°	535.7	535.7	535.7	535.7	535.7	535.7	534.0	535.7	535.7	535.7	534.0
5°	534.0	532.2	532.2	534.0	532.2	532.2	534.0	534.0	534.0	532.2	532.2
7.5°	526.9	528.6	526.9	526.9	528.6	528.6	528.6	528.6	526.9	526.9	528.6
10°	521.6	521.6	519.8	521.6	519.8	521.6	521.6	521.6	521.6	521.6	521.6
12.5°	512.7	512.7	512.7	514.5	512.7	512.7	514.5	514.5	514.5	514.5	514.5
15°	502.1	502.1	503.9	502.1	503.9	503.9	503.9	503.9	503.9	503.9	505.7
17.5°	491.5	491.5	491.5	491.5	491.5	491.5	491.5	491.5	491.5	493.3	493.3
20°	479.1	479.1	479.1	479.1	479.1	477.4	479.1	479.1	480.9	480.9	480.9
22.5°	463.2	463.2	463.2	463.2	463.2	463.2	463.2	463.2	465.0	466.8	465.0
25°	447.3	447.3	447.3	447.3	447.3	447.3	447.3	449.1	449.1	449.1	450.9
27.5°	431.4	431.4	431.4	429.6	431.4	429.6	431.4	431.4	433.2	431.4	433.2
30°	413.7	412.0	412.0	412.0	412.0	413.7	412.0	412.0	413.7	415.5	413.7
32.5°	390.7	390.7	390.7	392.5	392.5	392.5	394.3	392.5	392.5	394.3	394.3
35°	369.5	369.5	369.5	371.3	371.3	371.3	371.3	373.1	373.1	373.1	374.8
37.5°	346.5	348.3	346.5	348.3	348.3	350.1	350.1	350.1	350.1	351.8	351.8
40°	325.3	323.6	325.3	325.3	325.3	325.3	325.3	325.3	327.1	328.9	328.9
42.5°	300.6	300.6	300.6	300.6	300.6	300.6	302.3	302.3	302.3	304.1	304.1
45°	275.8	274.0	274.0	274.0	274.0	275.8	274.0	275.8	275.8	277.6	277.6
47.5°	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	251.1	249.3
50°	226.3	224.5	222.8	222.8	221.0	222.8	221.0	221.0	221.0	222.8	221.0
52.5°	199.8	198.0	196.3	196.3	196.3	194.5	192.7	192.7	192.7	191.0	191.0
55°	176.8	175.0	171.5	173.3	169.7	168.0	168.0	166.2	164.4	164.4	162.7
57.5°	152.1	150.3	148.5	146.7	146.7	143.2	141.4	139.7	137.9	136.1	132.6
60°	130.8	127.3	123.8	123.8	122.0	120.2	116.7	113.2	111.4	107.9	106.1
62.5°	107.9	104.3	100.8	99.0	97.2	95.5	91.9	88.4	84.9	83.1	79.6
65°	86.6	83.1	79.6	77.8	76.0	72.5	69.0	65.4	61.9	58.3	56.6
67.5°	65.4	61.9	60.1	56.6	54.8	51.3	47.7	46.0	42.4	38.9	33.6
70°	47.7	44.2	40.7	38.9	37.1	33.6	31.8	28.3	24.8	23.0	19.4
72.5°	31.8	28.3	26.5	24.8	23.0	21.2	17.7	15.9	12.4	10.6	8.8
75°	19.4	17.7	15.9	14.1	12.4	10.6	8.8	7.1	5.3	3.5	1.8
77.5°	10.6	8.8	7.1	7.1	5.3	3.5	3.5	1.8	1.8	1.8	1.8
80°	5.3	3.5	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	1.8
82.5°	1.8	0.0	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



TEST NUMBER: P644104

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CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
2.5°	535.7	535.7	535.7	535.7	535.7	535.7	535.7	535.7
5°	534.0	534.0	532.2	534.0	532.2	532.2	532.2	534.0
7.5°	528.6	528.6	528.6	528.6	528.6	528.6	528.6	528.6
10°	521.6	521.6	521.6	523.3	523.3	523.3	521.6	523.3
12.5°	514.5	514.5	514.5	516.3	514.5	516.3	514.5	516.3
15°	505.7	505.7	507.4	507.4	505.7	505.7	507.4	507.4
17.5°	493.3	495.1	495.1	495.1	495.1	495.1	495.1	496.8
20°	482.7	482.7	480.9	482.7	482.7	484.4	484.4	482.7
22.5°	465.0	468.5	468.5	468.5	468.5	468.5	468.5	468.5
25°	450.9	450.9	450.9	452.6	450.9	450.9	452.6	450.9
27.5°	433.2	434.9	433.2	434.9	434.9	434.9	434.9	434.9
30°	415.5	415.5	415.5	415.5	415.5	417.3	415.5	415.5
32.5°	394.3	396.0	396.0	396.0	397.8	396.0	396.0	397.8
35°	374.8	374.8	374.8	376.6	374.8	376.6	376.6	374.8
37.5°	351.8	353.6	351.8	353.6	353.6	353.6	353.6	353.6
40°	330.6	328.9	330.6	328.9	330.6	330.6	330.6	328.9
42.5°	304.1	305.9	305.9	305.9	305.9	305.9	305.9	304.1
45°	277.6	279.4	279.4	279.4	279.4	279.4	281.1	281.1
47.5°	249.3	252.8	252.8	252.8	251.1	254.6	252.8	252.8
50°	221.0	221.0	222.8	222.8	224.5	224.5	224.5	224.5
52.5°	192.7	191.0	192.7	192.7	194.5	192.7	194.5	192.7
55°	160.9	160.9	160.9	159.1	160.9	160.9	160.9	160.9
57.5°	132.6	130.8	129.1	127.3	127.3	127.3	125.5	127.3
60°	102.5	99.0	100.8	97.2	95.5	93.7	93.7	91.9
62.5°	76.0	72.5	70.7	69.0	65.4	61.9	61.9	60.1
65°	51.3	47.7	46.0	42.4	40.7	38.9	37.1	37.1
67.5°	31.8	28.3	28.3	26.5	24.8	23.0	21.2	21.2
70°	17.7	15.9	14.1	12.4	12.4	10.6	8.8	8.8
72.5°	7.1	5.3	5.3	3.5	3.5	3.5	3.5	1.8
75°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
77.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
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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(END OF REPORT)