

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: P644089

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

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644089
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-130)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 2/17/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML5615LSWW9FS1E - 592H WW - 1500LM - 4000K
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH HAZE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

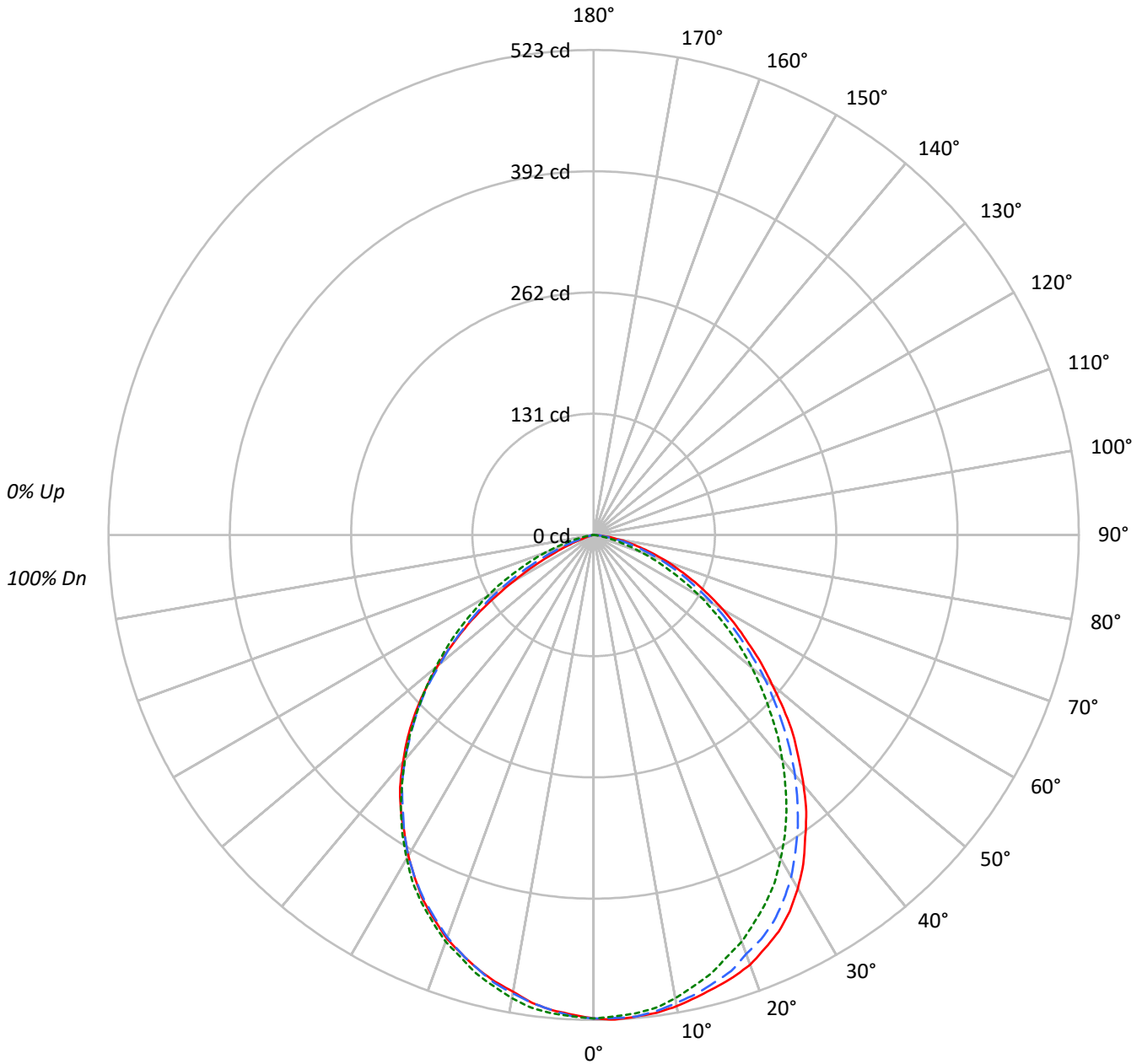
Lumens per Lamp: N/A
Luminaire Lumens: 1120.4 lumens
Efficiency: N/A
Efficacy: 65.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.25
Luminous Opening: Circular (Dia: 0.42' x H: 0')
CIE Type: Direct

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			
1	111	107	103	100	108	105	101	98	100	98	95	96	94	92	93	91	90	88					88			
2	102	95	89	84	100	93	88	83	90	85	81	87	83	79	84	80	78	76					76			
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66					66			
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57					57			
5	80	69	60	54	78	67	60	54	65	59	54	64	58	53	62	57	52	50					50			
6	74	62	54	48	73	61	54	48	60	53	47	58	52	47	56	51	47	45					45			
7	69	57	49	43	68	56	48	43	54	48	42	53	47	42	52	46	42	40					40			
8	65	52	44	39	63	51	44	39	50	43	38	49	43	38	48	42	38	36					36			
9	61	48	40	35	59	47	40	35	46	39	35	45	39	35	44	39	34	33					33			
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	31	30					30			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	41168	41168	41168	41168	41168
5°	41325	41325	41040	40762	40762
10°	41370	41089	40665	40240	40095
15°	41312	40879	40013	39580	39580
20°	41432	40391	39206	38761	38904
25°	41112	40032	38185	37724	37872
30°	40116	38831	36735	36416	36416
35°	38326	36967	34924	34577	34924
40°	36253	34790	32605	32605	32966
45°	33938	32163	29997	29997	30388
50°	30825	29524	27350	26490	26920
55°	27980	26521	24333	22626	22145
60°	25403	23445	20935	18141	15630
65°	22452	20472	16830	12552	9246
70°	19573	17126	12648	6924	3670
75°	15647	13481	8083	2166	1068
80°	12047	8819	3228	818	818
85°	6431	4800	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 33938 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.1	4.4
10°-20°	138.8	12.4
20°-30°	204.7	18.3
30°-40°	231.8	20.7
40°-50°	214.1	19.1
50°-60°	159.9	14.3
60°-70°	88.4	7.9
70°-80°	29.8	2.7
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°	392.6	35.0
0°-40°	624.4	55.7
0°-60°	998.4	89.1
0°-90°	1120.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1120.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	522	522	522	522	522	
5°	522	522	518	514	514	50
15°	506	500	490	484	484	143
25°	472	460	438	433	435	217
35°	398	384	362	359	362	249
45°	304	288	269	269	272	233
55°	203	193	177	164	161	183
65°	120	110	90	67	50	119
75°	51	44	26	7	4	56
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°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
2.5°	523.2	523.2	523.2	523.2	521.5	521.5	523.2	521.5	521.5	521.5	521.5
5°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
7.5°	519.7	519.7	519.7	519.7	519.7	519.7	519.7	519.7	517.9	517.9	517.9
10°	516.1	516.1	516.1	516.1	516.1	516.1	516.1	514.4	514.4	514.4	512.6
12.5°	510.8	512.6	510.8	512.6	510.8	510.8	509.1	509.1	509.1	507.3	507.3
15°	505.5	505.5	505.5	505.5	505.5	503.8	503.8	502.0	502.0	502.0	500.2
17.5°	500.2	498.5	498.5	498.5	496.7	496.7	496.7	496.7	494.9	493.2	493.2
20°	493.2	491.4	491.4	491.4	489.6	489.6	487.9	487.9	484.3	484.3	480.8
22.5°	482.6	482.6	482.6	480.8	480.8	479.0	479.0	477.3	475.5	473.7	472.0
25°	472.0	472.0	470.2	470.2	468.4	468.4	468.4	464.9	463.1	461.4	459.6
27.5°	457.8	457.8	456.1	456.1	454.3	452.5	452.5	449.0	449.0	445.4	443.7
30°	440.1	440.1	440.1	436.6	436.6	436.6	434.8	433.1	429.5	427.8	426.0
32.5°	420.7	418.9	418.9	418.9	417.2	415.4	415.4	411.9	410.1	408.3	404.8
35°	397.7	397.7	397.7	397.7	396.0	394.2	394.2	390.6	388.9	385.3	383.6
37.5°	376.5	376.5	374.7	374.7	371.2	373.0	371.2	369.4	367.7	362.4	360.6
40°	351.8	351.8	351.8	350.0	348.2	348.2	346.5	344.7	341.2	339.4	337.6
42.5°	327.0	327.0	327.0	325.2	323.5	323.5	323.5	319.9	318.2	316.4	312.9
45°	304.0	302.3	302.3	300.5	300.5	298.7	297.0	295.2	293.4	291.7	288.1
47.5°	277.5	277.5	275.8	275.8	274.0	274.0	272.2	270.4	268.7	266.9	263.4
50°	251.0	252.8	252.8	251.0	251.0	249.2	247.5	247.5	245.7	243.9	240.4
52.5°	228.0	228.0	228.0	226.3	226.3	224.5	224.5	222.7	221.0	217.4	215.7
55°	203.3	205.0	203.3	203.3	203.3	201.5	201.5	199.7	198.0	194.4	192.7
57.5°	182.1	182.1	180.3	180.3	178.5	178.5	178.5	176.8	175.0	173.2	169.7
60°	160.9	159.1	159.1	159.1	157.3	157.3	157.3	153.8	152.0	150.2	148.5
62.5°	139.6	139.6	139.6	137.9	137.9	136.1	134.3	134.3	132.6	130.8	127.3
65°	120.2	120.2	118.4	118.4	118.4	116.7	116.7	114.9	113.1	111.4	109.6
67.5°	100.8	100.8	100.8	99.0	99.0	99.0	97.2	95.5	95.5	93.7	91.9
70°	84.8	83.1	83.1	83.1	81.3	81.3	81.3	79.5	77.8	76.0	74.2
72.5°	67.2	67.2	67.2	67.2	65.4	65.4	63.6	63.6	61.9	60.1	58.3
75°	51.3	51.3	51.3	51.3	49.5	49.5	49.5	47.7	47.7	46.0	44.2
77.5°	38.9	38.9	38.9	37.1	37.1	35.4	35.4	35.4	33.6	33.6	31.8
80°	26.5	26.5	24.7	24.7	24.7	24.7	24.7	23.0	21.2	21.2	19.4
82.5°	15.9	15.9	15.9	14.1	14.1	14.1	14.1	14.1	12.4	12.4	10.6
85°	7.1	7.1	7.1	7.1	7.1	7.1	5.3	5.3	5.3	5.3	5.3
87.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
2.5°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	519.7	519.7	519.7	519.7
5°	519.7	519.7	519.7	519.7	519.7	517.9	519.7	517.9	517.9	517.9	517.9
7.5°	516.1	516.1	516.1	516.1	514.4	516.1	514.4	514.4	514.4	514.4	512.6
10°	512.6	510.8	510.8	510.8	510.8	509.1	509.1	507.3	507.3	507.3	505.5
12.5°	507.3	505.5	505.5	503.8	503.8	503.8	502.0	502.0	500.2	498.5	498.5
15°	498.5	498.5	496.7	494.9	494.9	493.2	493.2	491.4	491.4	489.6	487.9
17.5°	491.4	489.6	487.9	486.1	484.3	484.3	482.6	480.8	480.8	477.3	477.3
20°	479.0	477.3	475.5	473.7	473.7	473.7	470.2	470.2	468.4	466.7	464.9
22.5°	468.4	466.7	463.1	461.4	461.4	459.6	457.8	456.1	454.3	452.5	450.7
25°	456.1	454.3	450.7	449.0	447.2	445.4	443.7	441.9	440.1	438.4	436.6
27.5°	440.1	436.6	436.6	433.1	431.3	429.5	427.8	426.0	424.2	422.5	420.7
30°	422.5	420.7	417.2	413.6	411.9	411.9	408.3	406.6	406.6	403.0	401.3
32.5°	403.0	399.5	396.0	394.2	392.4	390.6	388.9	387.1	385.3	383.6	381.8
35°	381.8	376.5	374.7	371.2	371.2	369.4	367.7	364.1	364.1	362.4	358.8
37.5°	358.8	355.3	353.5	350.0	348.2	346.5	344.7	342.9	341.2	339.4	337.6
40°	334.1	330.5	328.8	327.0	325.2	323.5	321.7	319.9	318.2	316.4	314.6
42.5°	309.3	307.6	304.0	300.5	300.5	298.7	297.0	295.2	293.4	293.4	291.7
45°	284.6	282.8	279.3	277.5	275.8	275.8	272.2	272.2	270.4	268.7	268.7
47.5°	261.6	258.1	254.5	254.5	251.0	252.8	249.2	249.2	245.7	245.7	243.9
50°	236.9	235.1	231.6	229.8	229.8	228.0	226.3	226.3	224.5	222.7	221.0
52.5°	213.9	210.3	208.6	206.8	205.0	205.0	203.3	203.3	199.7	199.7	198.0
55°	190.9	189.1	185.6	183.8	183.8	183.8	180.3	178.5	178.5	176.8	175.0
57.5°	167.9	166.2	164.4	162.6	160.9	160.9	159.1	157.3	155.6	153.8	150.2
60°	146.7	144.9	143.2	141.4	139.6	139.6	137.9	136.1	134.3	132.6	130.8
62.5°	125.5	125.5	122.0	120.2	118.4	118.4	116.7	114.9	113.1	111.4	109.6
65°	107.8	106.1	102.5	100.8	100.8	100.8	97.2	95.5	93.7	90.1	88.4
67.5°	90.1	86.6	84.8	84.8	83.1	81.3	79.5	77.8	74.2	72.5	68.9
70°	72.5	70.7	68.9	67.2	65.4	63.6	61.9	60.1	56.6	54.8	53.0
72.5°	56.6	54.8	53.0	51.3	49.5	49.5	46.0	44.2	42.4	38.9	37.1
75°	42.4	40.7	38.9	37.1	35.4	33.6	33.6	30.0	28.3	26.5	23.0
77.5°	30.0	28.3	26.5	24.7	24.7	23.0	21.2	19.4	17.7	15.9	14.1
80°	19.4	17.7	15.9	15.9	14.1	14.1	12.4	10.6	8.8	7.1	7.1
82.5°	10.6	8.8	8.8	7.1	7.1	7.1	5.3	3.5	3.5	3.5	1.8
85°	3.5	3.5	3.5	1.8	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°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
2.5°	519.7	519.7	519.7	519.7	519.7	519.7	519.7	519.7	519.7	517.9	517.9
5°	516.1	516.1	516.1	516.1	516.1	516.1	514.4	514.4	514.4	514.4	514.4
7.5°	512.6	512.6	512.6	510.8	510.8	510.8	510.8	509.1	509.1	509.1	509.1
10°	505.5	505.5	505.5	503.8	503.8	503.8	503.8	503.8	502.0	502.0	502.0
12.5°	496.7	496.7	496.7	496.7	496.7	494.9	494.9	494.9	494.9	493.2	494.9
15°	487.9	487.9	486.1	486.1	486.1	484.3	484.3	484.3	484.3	484.3	484.3
17.5°	477.3	475.5	475.5	473.7	473.7	473.7	473.7	473.7	473.7	473.7	473.7
20°	464.9	463.1	463.1	463.1	463.1	461.4	461.4	459.6	461.4	461.4	461.4
22.5°	450.7	449.0	449.0	449.0	447.2	447.2	447.2	447.2	447.2	447.2	447.2
25°	436.6	434.8	433.1	433.1	433.1	431.3	431.3	433.1	433.1	433.1	433.1
27.5°	418.9	418.9	417.2	417.2	417.2	415.4	415.4	415.4	417.2	417.2	417.2
30°	399.5	399.5	399.5	399.5	397.7	397.7	399.5	397.7	399.5	397.7	399.5
32.5°	381.8	381.8	380.0	378.3	378.3	380.0	378.3	378.3	380.0	380.0	380.0
35°	358.8	358.8	358.8	358.8	358.8	358.8	358.8	358.8	358.8	360.6	362.4
37.5°	337.6	337.6	337.6	337.6	337.6	337.6	337.6	339.4	339.4	339.4	339.4
40°	314.6	314.6	314.6	314.6	314.6	314.6	314.6	314.6	316.4	316.4	318.2
42.5°	289.9	291.7	291.7	291.7	289.9	289.9	291.7	291.7	291.7	293.4	293.4
45°	266.9	266.9	266.9	266.9	268.7	266.9	266.9	266.9	268.7	268.7	268.7
47.5°	243.9	242.2	242.2	243.9	242.2	242.2	242.2	242.2	243.9	243.9	242.2
50°	221.0	219.2	219.2	219.2	217.4	217.4	219.2	215.7	215.7	215.7	217.4
52.5°	198.0	196.2	194.4	194.4	194.4	192.7	190.9	190.9	190.9	189.1	189.1
55°	173.2	171.5	169.7	169.7	169.7	167.9	167.9	164.4	164.4	162.6	162.6
57.5°	150.2	148.5	146.7	146.7	144.9	143.2	143.2	139.6	139.6	137.9	134.3
60°	127.3	125.5	123.7	123.7	123.7	120.2	118.4	114.9	114.9	111.4	109.6
62.5°	106.1	104.3	102.5	100.8	100.8	97.2	95.5	91.9	90.1	88.4	84.8
65°	86.6	83.1	81.3	79.5	79.5	76.0	74.2	70.7	67.2	65.4	61.9
67.5°	67.2	65.4	61.9	60.1	60.1	56.6	53.0	51.3	47.7	44.2	42.4
70°	49.5	47.7	44.2	42.4	40.7	38.9	35.4	33.6	30.0	28.3	24.7
72.5°	33.6	31.8	28.3	28.3	26.5	23.0	21.2	19.4	15.9	14.1	12.4
75°	21.2	19.4	17.7	15.9	14.1	12.4	10.6	8.8	7.1	5.3	5.3
77.5°	12.4	10.6	8.8	7.1	7.1	5.3	3.5	3.5	3.5	1.8	1.8
80°	5.3	3.5	3.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0	1.8	1.8
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: P644089

CATALOG NUMBER: ML5615LSWW9FS1E - 592H WW - 1500LM - 4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5
2.5°	519.7	517.9	519.7	519.7	517.9	517.9	517.9	517.9
5°	514.4	514.4	514.4	514.4	514.4	514.4	514.4	514.4
7.5°	510.8	509.1	509.1	509.1	509.1	509.1	509.1	509.1
10°	502.0	502.0	502.0	502.0	502.0	502.0	502.0	500.2
12.5°	493.2	493.2	493.2	493.2	493.2	493.2	493.2	493.2
15°	484.3	484.3	484.3	484.3	484.3	484.3	484.3	484.3
17.5°	473.7	473.7	473.7	473.7	473.7	472.0	473.7	473.7
20°	461.4	461.4	461.4	461.4	461.4	461.4	461.4	463.1
22.5°	447.2	447.2	447.2	447.2	447.2	447.2	447.2	449.0
25°	433.1	433.1	433.1	433.1	433.1	433.1	433.1	434.8
27.5°	417.2	417.2	417.2	417.2	417.2	417.2	417.2	417.2
30°	399.5	399.5	401.3	399.5	399.5	399.5	401.3	399.5
32.5°	381.8	381.8	381.8	381.8	381.8	381.8	381.8	380.0
35°	362.4	360.6	362.4	362.4	362.4	362.4	362.4	362.4
37.5°	341.2	341.2	341.2	341.2	341.2	341.2	342.9	342.9
40°	319.9	318.2	318.2	319.9	319.9	319.9	318.2	319.9
42.5°	293.4	295.2	295.2	295.2	297.0	295.2	297.0	297.0
45°	268.7	270.4	270.4	270.4	270.4	270.4	272.2	272.2
47.5°	243.9	243.9	243.9	243.9	245.7	245.7	245.7	245.7
50°	217.4	217.4	217.4	217.4	219.2	217.4	219.2	219.2
52.5°	189.1	189.1	189.1	189.1	189.1	189.1	190.9	189.1
55°	160.9	160.9	160.9	160.9	159.1	159.1	159.1	160.9
57.5°	134.3	132.6	130.8	132.6	129.0	129.0	129.0	129.0
60°	106.1	104.3	104.3	102.5	100.8	99.0	100.8	99.0
62.5°	81.3	79.5	79.5	76.0	74.2	74.2	72.5	72.5
65°	60.1	56.6	54.8	54.8	53.0	51.3	49.5	49.5
67.5°	38.9	37.1	35.4	35.4	33.6	31.8	31.8	30.0
70°	23.0	21.2	19.4	21.2	17.7	15.9	15.9	15.9
72.5°	10.6	8.8	8.8	8.8	7.1	7.1	7.1	7.1
75°	5.3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
77.5°	1.8	1.8	3.5	1.8	1.8	1.8	1.8	1.8
80°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82.5°	1.8	0.0	0.0	0.0	1.8	1.8	0.0	1.8
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)