

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: P644151

Luminaire Tested: ML5615LSWW9FS1E - 692SC WW - 900LM - 2700K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644151  
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 - 900LM - 2700K  
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH SPECULAR CLEAR TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

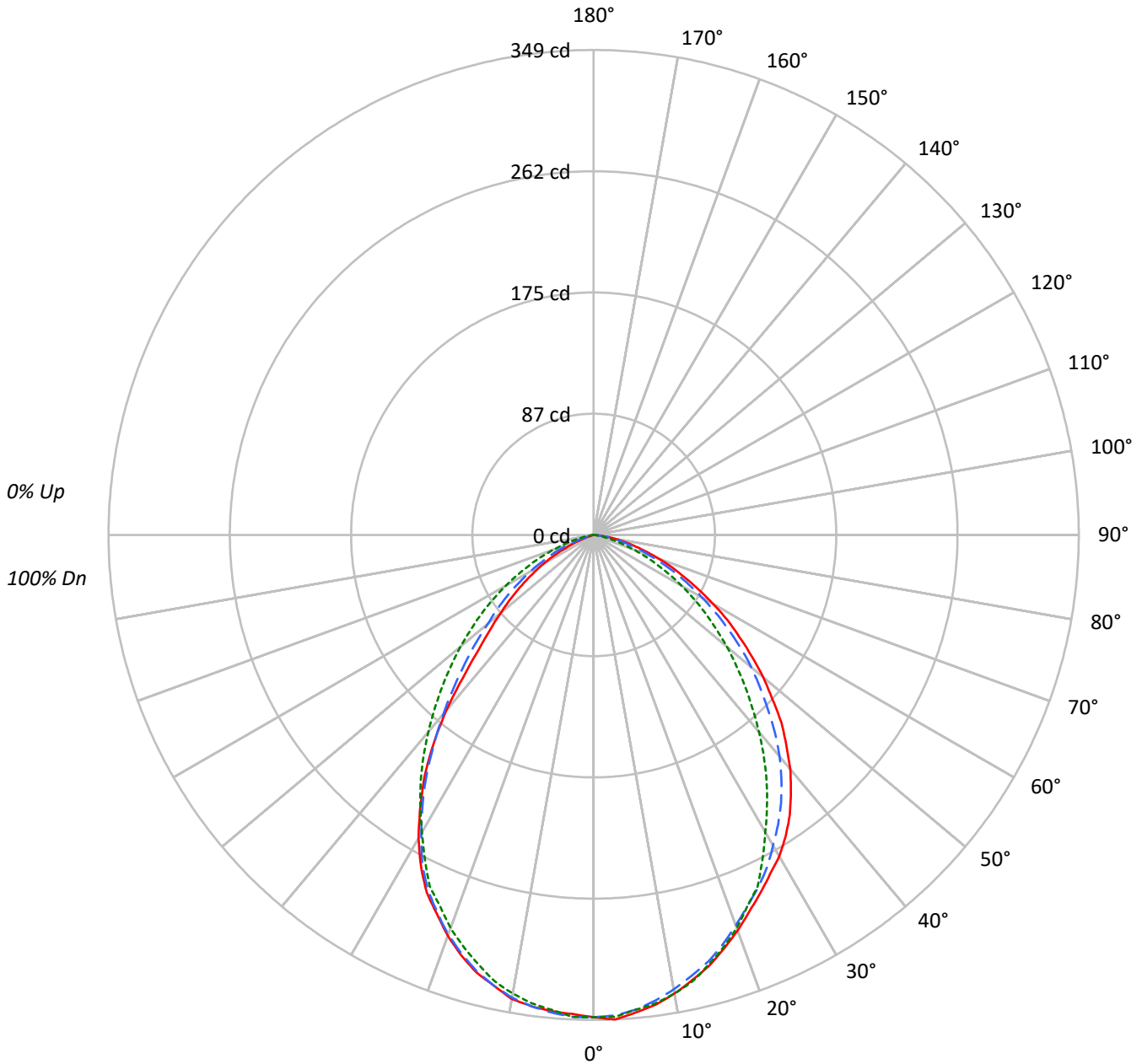
Lumens per Lamp: N/A  
Luminaire Lumens: 663.0 lumens  
Efficiency: N/A  
Efficacy: 63.1 lumens/watt  
Spacing Criteria (0/90/45): 1.13 / 1.09 / 1.17  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

Input Watts (W): 10.5  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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	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	104	100	108	105	102	99	101	98	96	97	95	93	93	92	90	88					88			
2	103	96	90	85	100	94	89	84	90	86	82	87	84	80	84	81	79	77					77			
3	95	86	79	73	92	84	78	72	81	76	71	79	74	70	76	72	69	67					67			
4	88	77	69	64	85	76	69	63	73	67	62	71	66	62	69	65	61	59					59			
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52					52			
6	76	64	56	50	74	63	55	50	61	54	49	59	53	49	58	53	48	46					46			
7	70	58	50	45	69	57	50	44	56	49	44	55	48	44	53	48	44	42					42			
8	66	53	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38					38			
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34					34			
10	58	46	39	34	57	45	38	34	44	38	33	44	38	33	43	37	33	32					32			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°	135°	180°
0°	19028	19028	19028	19028	19028
5°	18991	18881	18881	18991	18936
10°	18654	18487	18654	18821	18876
15°	18218	18048	18161	18445	18502
20°	17677	17443	17560	17852	17910
25°	17178	16936	16876	17057	17178
30°	16901	16332	15635	15699	15952
35°	16463	15727	14522	13987	14188
40°	15744	14885	13239	12023	11808
45°	14808	13722	11939	10156	9071
50°	13560	12622	10661	8443	7420
55°	12234	11278	9366	7168	6021
60°	10854	9868	8004	5811	4605
65°	9340	8432	6486	4281	2854
70°	8014	6892	4809	2404	1122
75°	6354	5295	3177	635	0
80°	4735	3788	1578	0	0
85°	2516	1887	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 14808 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	32.5	4.9
10°-20°	90.3	13.6
20°-30°	128.7	19.4
30°-40°	138.4	20.9
40°-50°	119.3	18.0
50°-60°	86.4	13.0
60°-70°	48.7	7.4
70°-80°	16.6	2.5
80°-90°	2.1	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°	251.5	37.9
0°-40°	389.9	58.8
0°-60°	595.6	89.8
0°-90°	663.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	663.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	347	347	347	347	347	
5°	345	343	343	345	344	33
15°	321	318	320	325	326	90
25°	284	280	279	282	284	131
35°	246	235	217	209	212	153
45°	191	177	154	131	117	146
55°	128	118	98	75	63	115
65°	72	65	50	33	22	72
75°	30	25	15	3	0	33
85°	4	3	0	0	0	6
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°	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1
2.5°	349.1	346.1	345.1	346.1	346.1	346.1	346.1	346.1	346.1	345.1	346.1
5°	345.1	342.1	342.1	342.1	342.1	342.1	341.1	342.1	342.1	342.1	343.1
7.5°	341.1	337.1	338.1	337.1	338.1	337.1	337.1	338.1	337.1	338.1	338.1
10°	335.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1
12.5°	328.1	325.0	325.0	325.0	325.0	325.0	325.0	325.0	326.0	325.0	325.0
15°	321.0	317.0	318.0	317.0	317.0	317.0	317.0	317.0	317.0	317.0	318.0
17.5°	312.0	309.0	309.0	309.0	309.0	309.0	309.0	308.0	309.0	309.0	309.0
20°	303.0	300.0	300.0	299.0	300.0	299.0	299.0	299.0	300.0	299.0	299.0
22.5°	293.0	290.0	291.0	290.0	290.0	290.0	290.0	290.0	289.0	290.0	289.0
25°	284.0	283.0	282.0	283.0	282.0	282.0	282.0	281.0	281.0	281.0	280.0
27.5°	275.0	273.0	273.0	273.0	273.0	272.0	272.0	272.0	271.0	270.0	270.0
30°	267.0	264.0	264.0	264.0	263.0	263.0	262.0	262.0	260.0	259.0	258.0
32.5°	257.0	255.0	254.0	254.0	253.0	253.0	252.0	252.0	250.0	249.0	247.0
35°	246.0	245.0	245.0	244.0	243.0	242.0	241.0	240.0	239.0	237.0	235.0
37.5°	233.0	232.0	231.0	231.0	230.0	229.0	229.0	227.0	226.0	224.0	222.0
40°	220.0	218.0	218.0	217.0	216.0	215.0	215.0	213.0	212.0	210.0	208.0
42.5°	205.0	203.0	203.0	202.0	202.0	202.0	201.0	199.0	197.0	195.0	193.0
45°	191.0	189.0	189.0	187.0	187.0	186.0	185.0	184.0	182.0	180.0	177.0
47.5°	174.0	173.0	173.0	172.0	171.0	170.0	170.0	169.0	167.0	164.0	162.0
50°	159.0	158.0	158.0	157.0	156.0	155.0	154.0	153.0	152.0	150.0	148.0
52.5°	143.0	143.0	142.0	141.0	141.0	140.0	139.0	138.0	136.0	134.0	133.0
55°	128.0	127.0	127.0	126.0	126.0	125.0	124.0	123.0	122.0	120.0	118.0
57.5°	114.0	112.0	112.0	111.0	111.0	111.0	110.0	108.0	107.0	105.0	104.0
60°	99.0	98.0	98.0	98.0	97.0	96.0	96.0	94.0	93.0	92.0	90.0
62.5°	85.0	84.0	84.0	84.0	83.0	83.0	82.0	81.0	80.0	79.0	77.0
65°	72.0	72.0	72.0	71.0	71.0	70.0	69.0	69.0	68.0	67.0	65.0
67.5°	61.0	60.0	60.0	60.0	59.0	59.0	58.0	57.0	56.0	55.0	53.0
70°	50.0	49.0	49.0	48.0	48.0	48.0	48.0	47.0	45.0	45.0	43.0
72.5°	39.0	39.0	39.0	38.0	38.0	38.0	37.0	37.0	36.0	35.0	34.0
75°	30.0	30.0	30.0	29.0	29.0	29.0	28.0	28.0	27.0	26.0	25.0
77.5°	22.0	22.0	22.0	21.0	21.0	21.0	20.0	20.0	19.0	19.0	18.0
80°	15.0	15.0	15.0	14.0	14.0	14.0	14.0	13.0	13.0	12.0	12.0
82.5°	9.0	9.0	9.0	9.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0
85°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
87.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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°	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1
2.5°	346.1	346.1	346.1	346.1	346.1	346.1	346.1	346.1	346.1	347.1	346.1
5°	343.1	343.1	343.1	343.1	343.1	343.1	344.1	343.1	344.1	343.1	344.1
7.5°	338.1	338.1	339.1	339.1	338.1	339.1	339.1	339.1	339.1	340.1	340.1
10°	332.1	333.1	333.1	334.1	334.1	334.1	334.1	335.1	335.1	335.1	335.1
12.5°	326.0	326.0	326.0	326.0	327.0	326.0	327.0	327.0	328.1	329.1	328.1
15°	317.0	318.0	318.0	318.0	318.0	318.0	319.0	320.0	320.0	320.0	321.0
17.5°	309.0	309.0	309.0	310.0	309.0	310.0	310.0	310.0	311.0	311.0	312.0
20°	299.0	298.0	300.0	299.0	299.0	300.0	300.0	300.0	301.0	301.0	301.0
22.5°	288.0	289.0	288.0	288.0	289.0	289.0	289.0	288.0	289.0	289.0	290.0
25°	279.0	279.0	279.0	279.0	279.0	279.0	279.0	278.0	279.0	279.0	279.0
27.5°	269.0	267.0	267.0	266.0	266.0	265.0	264.0	264.0	264.0	263.0	264.0
30°	257.0	255.0	254.0	253.0	252.0	252.0	250.0	249.0	248.0	247.0	246.0
32.5°	245.0	243.0	242.0	241.0	239.0	238.0	236.0	235.0	234.0	232.0	230.0
35°	234.0	231.0	229.0	227.0	226.0	225.0	223.0	221.0	219.0	217.0	215.0
37.5°	219.0	217.0	215.0	213.0	212.0	211.0	209.0	205.0	203.0	201.0	199.0
40°	206.0	203.0	201.0	198.0	197.0	195.0	193.0	190.0	187.0	185.0	183.0
42.5°	190.0	188.0	186.0	183.0	182.0	180.0	177.0	175.0	173.0	169.0	167.0
45°	175.0	173.0	171.0	168.0	166.0	165.0	163.0	160.0	157.0	154.0	152.0
47.5°	160.0	158.0	155.0	153.0	151.0	150.0	148.0	145.0	142.0	139.0	137.0
50°	145.0	143.0	141.0	137.0	137.0	135.0	133.0	130.0	128.0	125.0	122.0
52.5°	131.0	128.0	126.0	123.0	123.0	122.0	119.0	116.0	114.0	111.0	109.0
55°	116.0	114.0	112.0	110.0	108.0	107.0	106.0	103.0	100.0	98.0	95.0
57.5°	102.0	99.0	98.0	96.0	95.0	94.0	92.0	89.0	87.0	85.0	83.0
60°	89.0	87.0	84.0	83.0	82.0	81.0	79.0	77.0	75.0	73.0	71.0
62.5°	76.0	74.0	72.0	70.0	69.0	68.0	67.0	65.0	63.0	61.0	59.0
65°	63.0	62.0	60.0	59.0	58.0	57.0	55.0	53.0	52.0	50.0	48.0
67.5°	52.0	51.0	49.0	48.0	47.0	47.0	44.0	43.0	41.0	40.0	38.0
70°	42.0	41.0	39.0	38.0	37.0	36.0	35.0	34.0	32.0	30.0	29.0
72.5°	33.0	31.0	30.0	29.0	28.0	28.0	26.0	25.0	23.0	22.0	20.0
75°	24.0	23.0	22.0	21.0	21.0	20.0	19.0	18.0	16.0	15.0	14.0
77.5°	17.0	16.0	15.0	14.0	14.0	13.0	12.0	11.0	10.0	9.0	8.0
80°	11.0	10.0	10.0	9.0	8.0	8.0	7.0	6.0	5.0	5.0	4.0
82.5°	6.0	6.0	5.0	5.0	4.0	4.0	3.0	3.0	2.0	2.0	1.0
85°	3.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	0.0	0.0	0.0
87.5°	1.0	1.0	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°	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1
2.5°	346.1	346.1	346.1	346.1	346.1	346.1	346.1	346.1	347.1	346.1	346.1
5°	344.1	344.1	345.1	344.1	345.1	345.1	344.1	344.1	345.1	346.1	345.1
7.5°	340.1	340.1	341.1	341.1	341.1	341.1	341.1	342.1	342.1	343.1	343.1
10°	336.1	336.1	336.1	336.1	337.1	337.1	338.1	338.1	338.1	338.1	338.1
12.5°	329.1	330.1	330.1	330.1	330.1	331.1	331.1	332.1	332.1	332.1	333.1
15°	321.0	322.0	323.0	323.0	322.0	323.0	324.0	324.0	325.0	325.0	325.0
17.5°	312.0	313.0	313.0	314.0	313.0	315.0	315.0	316.0	316.0	317.0	317.0
20°	302.0	303.0	303.0	303.0	304.0	304.0	305.0	305.0	306.0	306.0	306.0
22.5°	290.0	291.0	291.0	291.0	291.0	292.0	292.0	293.0	294.0	295.0	294.0
25°	279.0	280.0	281.0	280.0	281.0	281.0	281.0	282.0	282.0	283.0	282.0
27.5°	264.0	264.0	264.0	265.0	266.0	266.0	266.0	267.0	267.0	267.0	268.0
30°	246.0	245.0	246.0	246.0	246.0	246.0	248.0	248.0	248.0	249.0	250.0
32.5°	229.0	229.0	229.0	228.0	228.0	228.0	228.0	229.0	229.0	230.0	231.0
35°	213.0	212.0	210.0	210.0	210.0	209.0	208.0	208.0	209.0	209.0	209.0
37.5°	196.0	195.0	194.0	192.0	192.0	190.0	189.0	188.0	188.0	187.0	187.0
40°	180.0	178.0	176.0	176.0	174.0	173.0	171.0	170.0	168.0	166.0	166.0
42.5°	164.0	162.0	160.0	159.0	157.0	156.0	153.0	151.0	149.0	148.0	146.0
45°	149.0	147.0	144.0	143.0	141.0	139.0	137.0	134.0	131.0	129.0	128.0
47.5°	134.0	132.0	129.0	127.0	126.0	123.0	121.0	118.0	115.0	112.0	109.0
50°	120.0	117.0	114.0	112.0	111.0	108.0	106.0	103.0	99.0	98.0	95.0
52.5°	106.0	103.0	100.0	99.0	98.0	95.0	92.0	89.0	87.0	84.0	82.0
55°	92.0	90.0	87.0	86.0	85.0	82.0	79.0	77.0	75.0	72.0	70.0
57.5°	80.0	78.0	75.0	74.0	73.0	70.0	68.0	65.0	63.0	61.0	59.0
60°	69.0	66.0	64.0	63.0	62.0	59.0	57.0	55.0	53.0	51.0	48.0
62.5°	57.0	55.0	53.0	52.0	50.0	49.0	46.0	45.0	42.0	41.0	39.0
65°	46.0	44.0	42.0	42.0	41.0	38.0	37.0	35.0	33.0	31.0	30.0
67.5°	37.0	35.0	33.0	32.0	31.0	29.0	28.0	26.0	24.0	23.0	21.0
70°	28.0	26.0	24.0	23.0	22.0	21.0	19.0	17.0	15.0	14.0	12.0
72.5°	19.0	17.0	16.0	16.0	15.0	13.0	11.0	10.0	8.0	7.0	6.0
75°	12.0	10.0	9.0	8.0	8.0	7.0	5.0	4.0	3.0	2.0	1.0
77.5°	7.0	6.0	5.0	4.0	4.0	3.0	2.0	1.0	1.0	0.0	0.0
80°	3.0	2.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	1.0	1.0	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: P644151

CATALOG NUMBER: ML5615LSWW9FS1E - 692SC WW - 900LM - 2700K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	347.1	347.1	347.1	347.1	347.1	347.1	347.1	347.1
2.5°	346.1	346.1	346.1	346.1	345.1	345.1	345.1	345.1
5°	345.1	345.1	345.1	345.1	344.1	344.1	345.1	344.1
7.5°	343.1	343.1	342.1	342.1	342.1	342.1	342.1	342.1
10°	339.1	339.1	339.1	338.1	339.1	339.1	338.1	339.1
12.5°	333.1	333.1	333.1	333.1	332.1	332.1	333.1	332.1
15°	326.0	326.0	326.0	326.0	326.0	325.0	326.0	326.0
17.5°	318.0	318.0	317.0	317.0	317.0	318.0	318.0	317.0
20°	307.0	307.0	307.0	307.0	307.0	307.0	307.0	307.0
22.5°	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0
25°	283.0	283.0	283.0	283.0	283.0	283.0	283.0	284.0
27.5°	268.0	268.0	268.0	268.0	268.0	267.0	267.0	269.0
30°	250.0	251.0	251.0	251.0	251.0	251.0	251.0	252.0
32.5°	232.0	232.0	232.0	233.0	232.0	233.0	232.0	232.0
35°	211.0	211.0	211.0	211.0	211.0	212.0	212.0	212.0
37.5°	187.0	188.0	188.0	189.0	189.0	189.0	190.0	189.0
40°	165.0	165.0	165.0	164.0	165.0	164.0	165.0	165.0
42.5°	144.0	142.0	142.0	141.0	141.0	140.0	139.0	139.0
45°	125.0	122.0	122.0	121.0	120.0	118.0	117.0	117.0
47.5°	107.0	106.0	105.0	104.0	103.0	101.0	100.0	101.0
50°	92.0	91.0	90.0	90.0	89.0	88.0	87.0	87.0
52.5°	80.0	78.0	77.0	77.0	76.0	75.0	75.0	75.0
55°	68.0	66.0	66.0	66.0	65.0	64.0	64.0	63.0
57.5°	57.0	55.0	55.0	54.0	53.0	53.0	53.0	52.0
60°	47.0	45.0	44.0	44.0	43.0	42.0	42.0	42.0
62.5°	37.0	36.0	34.0	34.0	33.0	32.0	31.0	32.0
65°	28.0	26.0	25.0	25.0	24.0	23.0	22.0	22.0
67.5°	19.0	18.0	17.0	17.0	15.0	15.0	14.0	14.0
70°	11.0	10.0	10.0	9.0	8.0	8.0	7.0	7.0
72.5°	5.0	4.0	4.0	3.0	3.0	2.0	2.0	2.0
75°	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	1.0	1.0	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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(END OF REPORT)