

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: P640537

Luminaire Tested: ML5609LSWWD2W1E - 692SC WW - 900LM - 2700K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P640537  
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: ML5609LSWWD2W1E - 692SC WW - 900LM - 2700K  
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH SPECULAR CLEAR TRIM  
Light Source: (1) D2W SELECTABLE LUMEN LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 665.9 lumens  
Efficiency: N/A  
Efficacy: 56.4 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

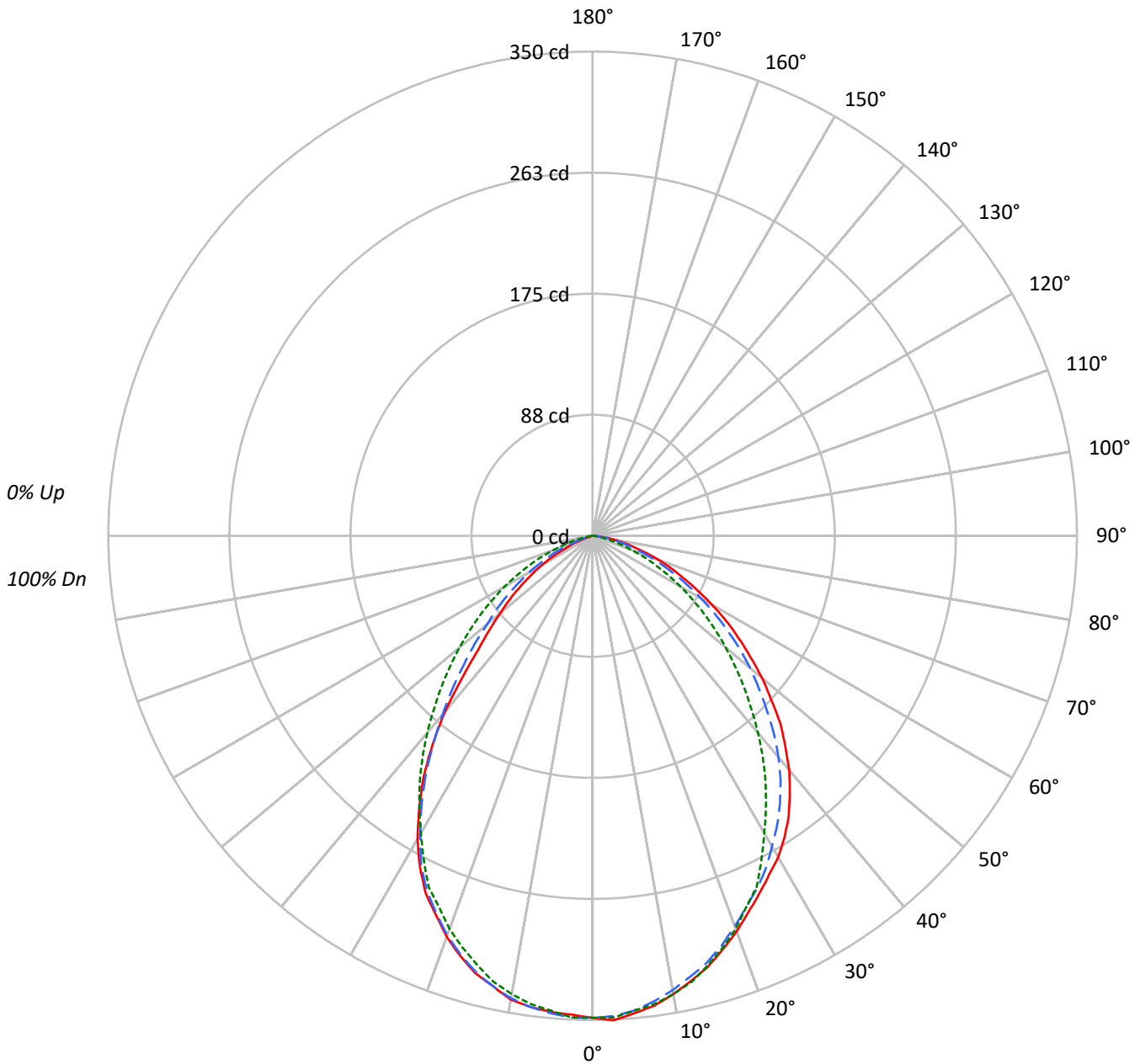
Input Watts (W): 11.8  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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	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°	19105	19105	19105	19105	19105
5°	19068	18958	18958	19068	19013
10°	18726	18559	18726	18899	18954
15°	18297	18127	18241	18525	18581
20°	17752	17519	17636	17927	17986
25°	17251	17009	16949	17130	17251
30°	16977	16401	15705	15768	16021
35°	16537	15794	14583	14047	14248
40°	15808	14949	13296	12073	11858
45°	14870	13784	11993	10203	9109
50°	13620	12673	10703	8477	7454
55°	12291	11326	9405	7197	6050
60°	10898	9911	8037	5833	4627
65°	9378	8470	6512	4294	2867
70°	8046	6924	4825	2420	1122
75°	6375	5316	3198	635	0
80°	4767	3820	1578	0	0
85°	2516	1887	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 14870 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	32.7	4.9
10°-20°	90.7	13.6
20°-30°	129.2	19.4
30°-40°	139.0	20.9
40°-50°	119.8	18.0
50°-60°	86.8	13.0
60°-70°	49.0	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°	252.6	37.9
0°-40°	391.6	58.8
0°-60°	598.1	89.8
0°-90°	665.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	665.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	348	348	348	348	348	
5°	346	344	344	346	346	33
15°	322	319	321	326	327	91
25°	285	281	280	283	285	132
35°	247	236	218	210	213	154
45°	192	178	155	132	118	147
55°	129	118	98	75	63	115
65°	72	65	50	33	22	73
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°	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5
2.5°	350.5	347.5	346.5	347.5	347.5	347.5	347.5	347.5	347.5	346.5	347.5
5°	346.5	343.5	343.5	343.5	343.5	343.5	342.5	343.5	343.5	343.5	344.5
7.5°	342.5	338.5	339.5	338.5	339.5	338.5	338.5	339.5	338.5	339.5	339.5
10°	336.4	333.4	333.4	333.4	333.4	333.4	333.4	333.4	333.4	333.4	333.4
12.5°	329.4	326.4	326.4	326.4	326.4	326.4	326.4	326.4	327.4	326.4	326.4
15°	322.4	318.4	319.4	318.4	318.4	318.4	318.4	318.4	318.4	318.4	319.4
17.5°	313.3	310.3	310.3	310.3	310.3	310.3	310.3	309.3	310.3	310.3	310.3
20°	304.3	301.3	301.3	300.3	301.3	300.3	300.3	300.3	301.3	300.3	300.3
22.5°	294.3	291.3	292.3	291.3	291.3	291.3	291.3	291.3	290.2	291.3	290.2
25°	285.2	284.2	283.2	284.2	283.2	283.2	283.2	282.2	282.2	282.2	281.2
27.5°	276.2	274.2	274.2	274.2	274.2	273.2	273.2	273.2	272.2	271.2	271.2
30°	268.2	265.1	265.1	265.1	264.1	264.1	263.1	263.1	261.1	260.1	259.1
32.5°	258.1	256.1	255.1	255.1	254.1	254.1	253.1	253.1	251.1	250.1	248.1
35°	247.1	246.1	246.1	245.1	244.0	243.0	242.0	241.0	240.0	238.0	236.0
37.5°	234.0	233.0	232.0	232.0	231.0	230.0	230.0	228.0	227.0	225.0	223.0
40°	220.9	218.9	218.9	217.9	216.9	215.9	215.9	213.9	212.9	210.9	208.9
42.5°	205.9	203.9	203.9	202.9	202.9	202.9	201.9	199.9	197.9	195.8	193.8
45°	191.8	189.8	189.8	187.8	187.8	186.8	185.8	184.8	182.8	180.8	177.8
47.5°	174.8	173.7	173.7	172.7	171.7	170.7	170.7	169.7	167.7	164.7	162.7
50°	159.7	158.7	158.7	157.7	156.7	155.7	154.7	153.7	152.7	150.6	148.6
52.5°	143.6	143.6	142.6	141.6	141.6	140.6	139.6	138.6	136.6	134.6	133.6
55°	128.6	127.5	127.5	126.5	126.5	125.5	124.5	123.5	122.5	120.5	118.5
57.5°	114.5	112.5	112.5	111.5	111.5	111.5	110.5	108.5	107.5	105.5	104.4
60°	99.4	98.4	98.4	98.4	97.4	96.4	96.4	94.4	93.4	92.4	90.4
62.5°	85.4	84.4	84.4	84.4	83.4	83.4	82.4	81.3	80.3	79.3	77.3
65°	72.3	72.3	72.3	71.3	71.3	70.3	69.3	69.3	68.3	67.3	65.3
67.5°	61.3	60.3	60.3	60.3	59.3	59.3	58.3	57.2	56.2	55.2	53.2
70°	50.2	49.2	49.2	48.2	48.2	48.2	48.2	47.2	45.2	45.2	43.2
72.5°	39.2	39.2	39.2	38.2	38.2	38.2	37.2	37.2	36.2	35.2	34.1
75°	30.1	30.1	30.1	29.1	29.1	29.1	28.1	28.1	27.1	26.1	25.1
77.5°	22.1	22.1	22.1	21.1	21.1	21.1	20.1	20.1	19.1	19.1	18.1
80°	15.1	15.1	15.1	14.1	14.1	14.1	14.1	13.1	13.1	12.1	12.1
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°	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5
2.5°	347.5	347.5	347.5	347.5	347.5	347.5	347.5	347.5	347.5	348.5	347.5
5°	344.5	344.5	344.5	344.5	344.5	344.5	345.5	344.5	345.5	344.5	345.5
7.5°	339.5	339.5	340.5	340.5	339.5	340.5	340.5	340.5	340.5	341.5	341.5
10°	333.4	334.4	334.4	335.4	335.4	335.4	335.4	336.4	336.4	336.4	336.4
12.5°	327.4	327.4	327.4	327.4	328.4	327.4	328.4	328.4	329.4	330.4	329.4
15°	318.4	319.4	319.4	319.4	319.4	319.4	320.4	321.4	321.4	321.4	322.4
17.5°	310.3	310.3	310.3	311.3	310.3	311.3	311.3	311.3	312.3	312.3	313.3
20°	300.3	299.3	301.3	300.3	300.3	301.3	301.3	301.3	302.3	302.3	302.3
22.5°	289.2	290.2	289.2	289.2	290.2	290.2	290.2	289.2	290.2	290.2	291.3
25°	280.2	280.2	280.2	280.2	280.2	280.2	280.2	279.2	280.2	280.2	280.2
27.5°	270.2	268.2	268.2	267.1	267.1	266.1	265.1	265.1	265.1	264.1	265.1
30°	258.1	256.1	255.1	254.1	253.1	253.1	251.1	250.1	249.1	248.1	247.1
32.5°	246.1	244.0	243.0	242.0	240.0	239.0	237.0	236.0	235.0	233.0	231.0
35°	235.0	232.0	230.0	228.0	227.0	226.0	224.0	222.0	219.9	217.9	215.9
37.5°	219.9	217.9	215.9	213.9	212.9	211.9	209.9	205.9	203.9	201.9	199.9
40°	206.9	203.9	201.9	198.9	197.9	195.8	193.8	190.8	187.8	185.8	183.8
42.5°	190.8	188.8	186.8	183.8	182.8	180.8	177.8	175.8	173.7	169.7	167.7
45°	175.8	173.7	171.7	168.7	166.7	165.7	163.7	160.7	157.7	154.7	152.7
47.5°	160.7	158.7	155.7	153.7	151.7	150.6	148.6	145.6	142.6	139.6	137.6
50°	145.6	143.6	141.6	137.6	137.6	135.6	133.6	130.6	128.6	125.5	122.5
52.5°	131.6	128.6	126.5	123.5	123.5	122.5	119.5	116.5	114.5	111.5	109.5
55°	116.5	114.5	112.5	110.5	108.5	107.5	106.5	103.4	100.4	98.4	95.4
57.5°	102.4	99.4	98.4	96.4	95.4	94.4	92.4	89.4	87.4	85.4	83.4
60°	89.4	87.4	84.4	83.4	82.4	81.3	79.3	77.3	75.3	73.3	71.3
62.5°	76.3	74.3	72.3	70.3	69.3	68.3	67.3	65.3	63.3	61.3	59.3
65°	63.3	62.3	60.3	59.3	58.3	57.2	55.2	53.2	52.2	50.2	48.2
67.5°	52.2	51.2	49.2	48.2	47.2	47.2	44.2	43.2	41.2	40.2	38.2
70°	42.2	41.2	39.2	38.2	37.2	36.2	35.2	34.1	32.1	30.1	29.1
72.5°	33.1	31.1	30.1	29.1	28.1	28.1	26.1	25.1	23.1	22.1	20.1
75°	24.1	23.1	22.1	21.1	21.1	20.1	19.1	18.1	16.1	15.1	14.1
77.5°	17.1	16.1	15.1	14.1	14.1	13.1	12.1	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°	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5
2.5°	347.5	347.5	347.5	347.5	347.5	347.5	347.5	347.5	348.5	347.5	347.5
5°	345.5	345.5	346.5	345.5	346.5	346.5	345.5	345.5	346.5	347.5	346.5
7.5°	341.5	341.5	342.5	342.5	342.5	342.5	342.5	343.5	343.5	344.5	344.5
10°	337.5	337.5	337.5	337.5	338.5	338.5	339.5	339.5	339.5	339.5	339.5
12.5°	330.4	331.4	331.4	331.4	331.4	332.4	332.4	333.4	333.4	333.4	334.4
15°	322.4	323.4	324.4	324.4	323.4	324.4	325.4	325.4	326.4	326.4	326.4
17.5°	313.3	314.4	314.4	315.4	314.4	316.4	316.4	317.4	317.4	318.4	318.4
20°	303.3	304.3	304.3	304.3	305.3	305.3	306.3	306.3	307.3	307.3	307.3
22.5°	291.3	292.3	292.3	292.3	292.3	293.3	293.3	294.3	295.3	296.3	295.3
25°	280.2	281.2	282.2	281.2	282.2	282.2	282.2	283.2	283.2	284.2	283.2
27.5°	265.1	265.1	265.1	266.1	267.1	267.1	267.1	268.2	268.2	268.2	269.2
30°	247.1	246.1	247.1	247.1	247.1	247.1	249.1	249.1	249.1	250.1	251.1
32.5°	230.0	230.0	230.0	229.0	229.0	229.0	229.0	230.0	230.0	231.0	232.0
35°	213.9	212.9	210.9	210.9	210.9	209.9	208.9	208.9	209.9	209.9	209.9
37.5°	196.8	195.8	194.8	192.8	192.8	190.8	189.8	188.8	188.8	187.8	187.8
40°	180.8	178.8	176.8	176.8	174.8	173.7	171.7	170.7	168.7	166.7	166.7
42.5°	164.7	162.7	160.7	159.7	157.7	156.7	153.7	151.7	149.6	148.6	146.6
45°	149.6	147.6	144.6	143.6	141.6	139.6	137.6	134.6	131.6	129.6	128.6
47.5°	134.6	132.6	129.6	127.5	126.5	123.5	121.5	118.5	115.5	112.5	109.5
50°	120.5	117.5	114.5	112.5	111.5	108.5	106.5	103.4	99.4	98.4	95.4
52.5°	106.5	103.4	100.4	99.4	98.4	95.4	92.4	89.4	87.4	84.4	82.4
55°	92.4	90.4	87.4	86.4	85.4	82.4	79.3	77.3	75.3	72.3	70.3
57.5°	80.3	78.3	75.3	74.3	73.3	70.3	68.3	65.3	63.3	61.3	59.3
60°	69.3	66.3	64.3	63.3	62.3	59.3	57.2	55.2	53.2	51.2	48.2
62.5°	57.2	55.2	53.2	52.2	50.2	49.2	46.2	45.2	42.2	41.2	39.2
65°	46.2	44.2	42.2	42.2	41.2	38.2	37.2	35.2	33.1	31.1	30.1
67.5°	37.2	35.2	33.1	32.1	31.1	29.1	28.1	26.1	24.1	23.1	21.1
70°	28.1	26.1	24.1	23.1	22.1	21.1	19.1	17.1	15.1	14.1	12.1
72.5°	19.1	17.1	16.1	16.1	15.1	13.1	11.0	10.0	8.0	7.0	6.0
75°	12.1	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: P640537

CATALOG NUMBER: ML5609LSWWD2W1E - 692SC WW - 900LM - 2700K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	348.5	348.5	348.5	348.5	348.5	348.5	348.5	348.5
2.5°	347.5	347.5	347.5	347.5	346.5	346.5	346.5	346.5
5°	346.5	346.5	346.5	346.5	345.5	345.5	346.5	345.5
7.5°	344.5	344.5	343.5	343.5	343.5	343.5	343.5	343.5
10°	340.5	340.5	340.5	339.5	340.5	340.5	339.5	340.5
12.5°	334.4	334.4	334.4	334.4	333.4	333.4	334.4	333.4
15°	327.4	327.4	327.4	327.4	327.4	326.4	327.4	327.4
17.5°	319.4	319.4	318.4	318.4	318.4	319.4	319.4	318.4
20°	308.3	308.3	308.3	308.3	308.3	308.3	308.3	308.3
22.5°	296.3	296.3	296.3	296.3	296.3	296.3	296.3	296.3
25°	284.2	284.2	284.2	284.2	284.2	284.2	284.2	285.2
27.5°	269.2	269.2	269.2	269.2	269.2	268.2	268.2	270.2
30°	251.1	252.1	252.1	252.1	252.1	252.1	252.1	253.1
32.5°	233.0	233.0	233.0	234.0	233.0	234.0	233.0	233.0
35°	211.9	211.9	211.9	211.9	211.9	212.9	212.9	212.9
37.5°	187.8	188.8	188.8	189.8	189.8	189.8	190.8	189.8
40°	165.7	165.7	165.7	164.7	165.7	164.7	165.7	165.7
42.5°	144.6	142.6	142.6	141.6	141.6	140.6	139.6	139.6
45°	125.5	122.5	122.5	121.5	120.5	118.5	117.5	117.5
47.5°	107.5	106.5	105.5	104.4	103.4	101.4	100.4	101.4
50°	92.4	91.4	90.4	90.4	89.4	88.4	87.4	87.4
52.5°	80.3	78.3	77.3	77.3	76.3	75.3	75.3	75.3
55°	68.3	66.3	66.3	66.3	65.3	64.3	64.3	63.3
57.5°	57.2	55.2	55.2	54.2	53.2	53.2	53.2	52.2
60°	47.2	45.2	44.2	44.2	43.2	42.2	42.2	42.2
62.5°	37.2	36.2	34.1	34.1	33.1	32.1	31.1	32.1
65°	28.1	26.1	25.1	25.1	24.1	23.1	22.1	22.1
67.5°	19.1	18.1	17.1	17.1	15.1	15.1	14.1	14.1
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)