

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: P644157

Luminaire Tested: ML5615LSWW9FS1E - 692W WW - 1200LM - 3000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644157  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-117)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5615LSWW9FS1E - 692W WW - 1200LM - 3000K  
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 852.8 lumens  
Efficiency: N/A  
Efficacy: 63.6 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.13 / 1.25  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

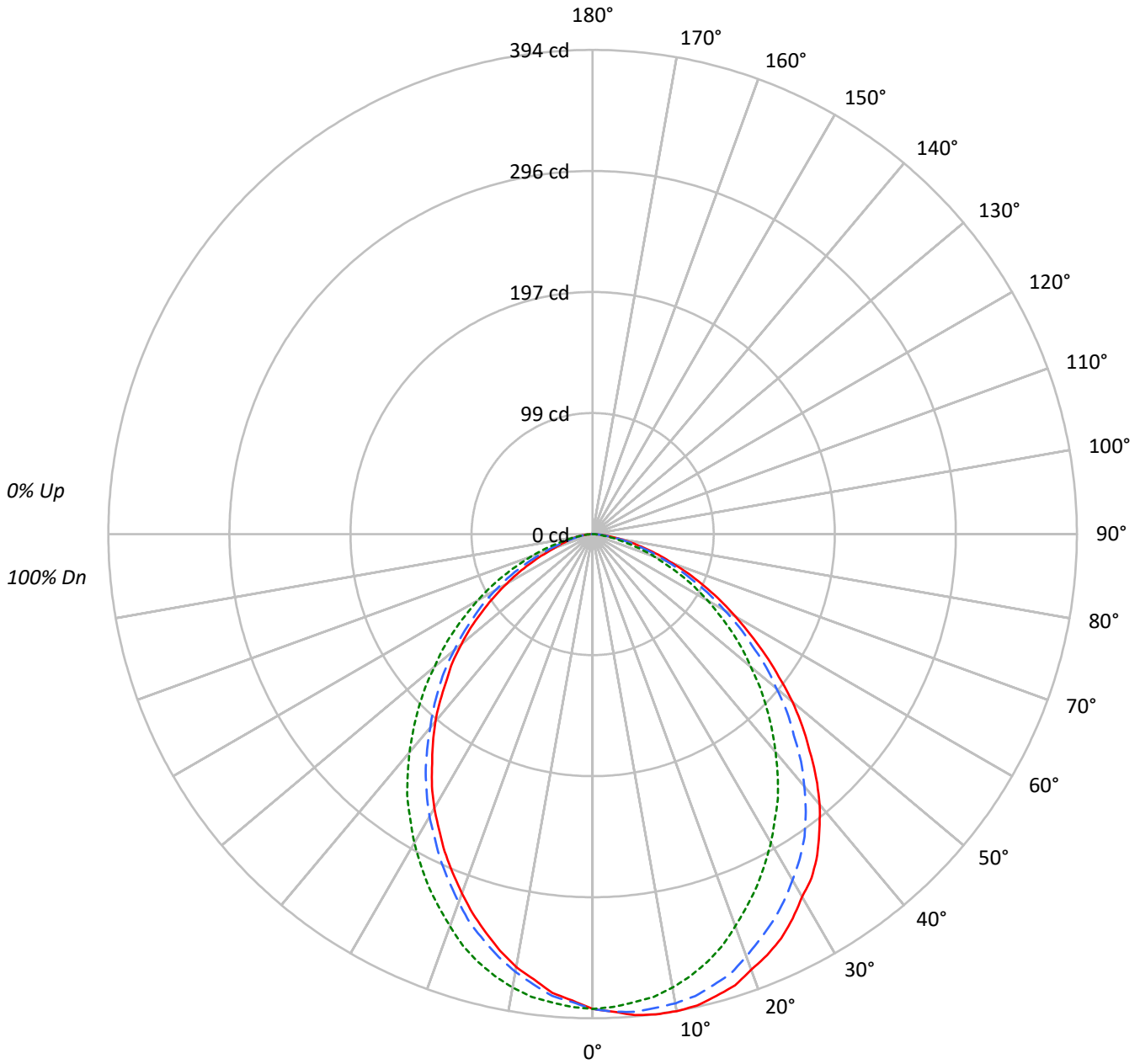
Input Watts (W): 13.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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									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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89	87																			
2	101	94	88	82	99	92	86	81	88	84	80	85	81	78	82	79	76	74																			
3	93	83	76	70	91	82	75	69	79	73	68	76	71	67	74	69	66	64																			
4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	57	55																			
5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51	49																			
6	73	61	52	46	72	60	52	46	58	51	46	56	50	45	55	49	45	43																			
7	68	55	47	41	67	55	47	41	53	46	41	52	45	41	50	45	40	38																			
8	64	51	43	37	62	50	42	37	49	42	37	48	41	37	46	41	36	35																			
9	60	47	39	34	58	46	39	34	45	38	33	44	38	33	43	37	33	31																			
10	56	43	36	31	55	43	36	31	42	35	30	41	35	30	40	34	30	29																			

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

	0°	45°	90°	135°	180°
0°	21183	21183	21183	21183	21183
5°	21621	21478	21049	20763	20620
10°	21943	21582	20858	20134	19917
15°	22077	21561	20454	19416	19047
20°	22011	21329	19806	18592	18137
25°	21957	21007	19120	17705	17233
30°	21573	20585	18364	16800	16306
35°	21328	20110	17587	15847	15238
40°	20574	19179	16574	14706	14241
45°	19366	17955	15529	13715	13009
50°	18089	16639	14311	12537	11872
55°	16410	15168	13180	11316	10446
60°	14692	13552	11841	9988	8848
65°	12998	11817	10299	8432	7082
70°	11044	10210	8543	6459	5209
75°	9087	8261	6333	4406	4406
80°	6977	6156	4514	3694	4104
85°	4906	4088	3271	3271	3271

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 19366 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	36.3	4.3
10°-20°	101.7	11.9
20°-30°	147.1	17.3
30°-40°	167.1	19.6
40°-50°	157.8	18.5
50°-60°	124.4	14.6
60°-70°	77.9	9.1
70°-80°	33.6	3.9
80°-90°	6.9	0.8
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°	285.1	33.4
0°-40°	452.2	53.0
0°-60°	734.4	86.1
0°-90°	852.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	852.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	386	386	386	386	386	
5°	393	390	382	377	375	38
15°	389	380	360	342	336	110
25°	363	347	316	293	285	167
35°	319	300	263	237	228	198
45°	250	232	200	177	168	193
55°	172	159	138	118	109	154
65°	100	91	79	65	55	100
75°	43	39	30	21	21	47
85°	8	6	5	5	5	9
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°	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4
2.5°	389.0	389.0	390.3	390.3	389.0	389.0	389.0	389.0	389.0	389.0	389.0
5°	392.9	392.9	392.9	392.9	391.6	391.6	391.6	391.6	391.6	390.3	390.3
7.5°	394.2	394.2	394.2	394.2	392.9	392.9	391.6	391.6	391.6	390.3	389.0
10°	394.2	394.2	394.2	392.9	392.9	391.6	392.9	391.6	390.3	389.0	387.7
12.5°	392.9	391.6	391.6	391.6	390.3	390.3	390.3	389.0	387.7	386.4	385.1
15°	389.0	389.0	389.0	387.7	387.7	386.4	386.4	385.1	383.8	381.2	379.9
17.5°	385.1	385.1	383.8	383.8	382.5	381.2	381.2	379.9	378.6	376.0	374.7
20°	377.3	377.3	377.3	376.0	374.7	374.7	373.4	372.1	369.5	366.9	365.6
22.5°	370.8	369.5	369.5	368.2	366.9	366.9	365.6	363.0	361.7	359.1	356.5
25°	363.0	361.7	361.7	360.4	359.1	357.8	357.8	355.2	352.6	349.9	347.3
27.5°	352.6	352.6	351.2	349.9	348.6	348.6	347.3	346.0	342.1	339.5	336.9
30°	340.8	342.1	340.8	339.5	338.2	338.2	336.9	334.3	331.7	327.8	325.2
32.5°	331.7	331.7	330.4	329.1	326.5	326.5	326.5	322.6	320.0	317.4	313.5
35°	318.7	318.7	318.7	316.1	314.8	313.5	312.2	309.6	307.0	304.4	300.5
37.5°	303.1	304.4	303.1	301.8	300.5	299.2	297.9	295.3	291.4	288.8	284.9
40°	287.5	287.5	286.2	284.9	283.6	282.3	281.0	278.4	275.8	271.9	268.0
42.5°	269.3	269.3	268.0	266.7	265.4	264.1	264.1	261.5	257.6	255.0	251.1
45°	249.8	249.8	249.8	248.5	247.2	245.9	244.6	243.3	240.7	236.8	231.6
47.5°	231.6	231.6	231.6	229.0	229.0	226.4	225.1	222.5	221.2	217.3	214.7
50°	212.1	210.7	210.7	209.4	208.1	206.8	206.8	202.9	201.6	199.0	195.1
52.5°	191.2	191.2	191.2	189.9	188.6	187.3	187.3	184.7	182.1	179.5	178.2
55°	171.7	171.7	171.7	170.4	169.1	169.1	167.8	165.2	163.9	161.3	158.7
57.5°	152.2	153.5	152.2	150.9	150.9	149.6	149.6	148.3	145.7	143.1	141.8
60°	134.0	134.0	134.0	132.7	131.4	131.4	131.4	130.1	127.5	126.2	123.6
62.5°	117.1	117.1	115.8	115.8	114.5	114.5	113.2	111.9	110.6	109.3	108.0
65°	100.2	98.9	98.9	98.9	97.6	97.6	97.6	96.3	93.7	92.4	91.1
67.5°	84.6	84.6	83.3	83.3	82.0	82.0	82.0	80.7	79.4	78.1	76.8
70°	68.9	68.9	68.9	68.9	67.6	67.6	67.6	66.3	65.0	65.0	63.7
72.5°	55.9	55.9	55.9	55.9	54.6	54.6	54.6	53.3	52.0	50.7	50.7
75°	42.9	44.2	42.9	42.9	42.9	42.9	41.6	41.6	40.3	39.0	39.0
77.5°	32.5	32.5	32.5	32.5	31.2	31.2	31.2	31.2	29.9	28.6	28.6
80°	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	20.8	20.8	19.5
82.5°	13.0	14.3	14.3	14.3	13.0	13.0	13.0	13.0	13.0	13.0	11.7
85°	7.8	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
87.5°	2.6	2.6	2.6	2.6	2.6	1.3	1.3	1.3	1.3	1.3	1.3
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°	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4
2.5°	387.7	387.7	387.7	387.7	386.4	386.4	386.4	385.1	385.1	385.1	385.1
5°	389.0	387.7	387.7	386.4	386.4	386.4	385.1	385.1	383.8	382.5	382.5
7.5°	387.7	387.7	386.4	385.1	385.1	383.8	382.5	381.2	379.9	379.9	377.3
10°	386.4	385.1	383.8	382.5	381.2	381.2	378.6	377.3	376.0	374.7	373.4
12.5°	382.5	381.2	379.9	377.3	377.3	376.0	373.4	372.1	369.5	368.2	365.6
15°	377.3	376.0	374.7	372.1	370.8	369.5	366.9	364.3	361.7	360.4	357.8
17.5°	372.1	369.5	366.9	364.3	363.0	361.7	359.1	356.5	353.9	351.2	348.6
20°	363.0	360.4	357.8	353.9	352.6	351.2	347.3	344.7	342.1	339.5	336.9
22.5°	353.9	351.2	347.3	344.7	343.4	340.8	338.2	334.3	331.7	327.8	325.2
25°	344.7	340.8	336.9	334.3	331.7	330.4	326.5	323.9	318.7	316.1	313.5
27.5°	333.0	330.4	326.5	322.6	320.0	317.4	314.8	310.9	307.0	303.1	300.5
30°	321.3	317.4	313.5	310.9	307.0	305.7	301.8	297.9	294.0	290.1	287.5
32.5°	309.6	305.7	301.8	297.9	295.3	292.7	288.8	284.9	279.7	275.8	273.2
35°	296.6	292.7	287.5	283.6	281.0	278.4	274.5	270.6	266.7	262.8	258.9
37.5°	281.0	275.8	273.2	269.3	265.4	262.8	258.9	253.7	251.1	247.2	243.3
40°	264.1	260.2	256.3	252.4	248.5	247.2	242.0	238.1	235.5	231.6	227.7
42.5°	247.2	243.3	238.1	234.2	231.6	230.3	226.4	222.5	218.6	216.0	212.1
45°	229.0	225.1	221.2	217.3	214.7	213.4	209.4	206.8	202.9	200.3	196.4
47.5°	210.7	206.8	204.2	200.3	197.7	196.4	193.8	189.9	186.0	184.7	182.1
50°	192.5	188.6	186.0	182.1	180.8	179.5	176.9	174.3	171.7	167.8	166.5
52.5°	174.3	170.4	167.8	165.2	165.2	162.6	160.0	158.7	156.1	153.5	150.9
55°	156.1	154.8	152.2	148.3	148.3	147.0	144.4	141.8	139.2	137.9	135.3
57.5°	137.9	136.6	134.0	132.7	131.4	130.1	128.8	126.2	124.9	122.3	121.0
60°	122.3	121.0	118.4	117.1	115.8	114.5	113.2	110.6	109.3	108.0	106.7
62.5°	105.4	104.1	102.8	101.5	100.2	98.9	98.9	96.3	95.0	93.7	92.4
65°	91.1	88.5	87.2	85.9	85.9	84.6	83.3	82.0	80.7	79.4	78.1
67.5°	75.5	74.2	74.2	71.6	71.6	70.2	68.9	68.9	66.3	65.0	63.7
70°	62.4	61.1	59.8	58.5	58.5	57.2	55.9	54.6	53.3	53.3	52.0
72.5°	49.4	48.1	48.1	46.8	45.5	45.5	44.2	42.9	41.6	41.6	40.3
75°	37.7	36.4	36.4	35.1	35.1	33.8	32.5	32.5	31.2	29.9	28.6
77.5°	27.3	27.3	26.0	26.0	24.7	24.7	23.4	23.4	22.1	20.8	20.8
80°	19.5	18.2	18.2	16.9	16.9	16.9	15.6	15.6	14.3	14.3	13.0
82.5°	11.7	11.7	10.4	10.4	10.4	10.4	9.1	9.1	9.1	7.8	7.8
85°	6.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	3.9
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
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°	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4
2.5°	383.8	383.8	382.5	383.8	382.5	382.5	382.5	382.5	381.2	381.2	381.2
5°	381.2	379.9	379.9	378.6	379.9	378.6	377.3	377.3	377.3	377.3	376.0
7.5°	376.0	376.0	374.7	373.4	373.4	372.1	370.8	370.8	369.5	369.5	368.2
10°	372.1	369.5	368.2	366.9	366.9	365.6	364.3	363.0	361.7	360.4	360.4
12.5°	363.0	361.7	360.4	359.1	359.1	356.5	355.2	353.9	352.6	351.2	349.9
15°	356.5	353.9	351.2	349.9	349.9	347.3	346.0	344.7	342.1	342.1	339.5
17.5°	346.0	343.4	340.8	339.5	338.2	336.9	335.6	333.0	331.7	329.1	329.1
20°	333.0	331.7	327.8	326.5	325.2	323.9	321.3	320.0	318.7	316.1	314.8
22.5°	322.6	318.7	316.1	314.8	314.8	310.9	309.6	307.0	305.7	304.4	301.8
25°	309.6	307.0	304.4	301.8	301.8	299.2	297.9	295.3	292.7	291.4	290.1
27.5°	296.6	294.0	290.1	288.8	287.5	286.2	283.6	281.0	278.4	277.1	275.8
30°	282.3	279.7	277.1	275.8	273.2	270.6	268.0	266.7	265.4	262.8	261.5
32.5°	269.3	265.4	262.8	260.2	260.2	256.3	255.0	252.4	251.1	249.8	247.2
35°	255.0	251.1	248.5	247.2	245.9	242.0	239.4	236.8	236.8	234.2	232.9
37.5°	239.4	235.5	234.2	231.6	230.3	227.7	225.1	223.8	221.2	218.6	218.6
40°	225.1	221.2	217.3	217.3	214.7	213.4	209.4	208.1	205.5	204.2	202.9
42.5°	209.4	205.5	202.9	201.6	200.3	197.7	195.1	192.5	191.2	189.9	188.6
45°	192.5	189.9	188.6	186.0	184.7	182.1	180.8	178.2	176.9	174.3	173.0
47.5°	178.2	175.6	173.0	171.7	170.4	167.8	166.5	163.9	162.6	160.0	158.7
50°	163.9	161.3	158.7	157.4	156.1	153.5	150.9	149.6	147.0	145.7	143.1
52.5°	148.3	145.7	143.1	143.1	141.8	139.2	137.9	135.3	132.7	130.1	128.8
55°	134.0	131.4	128.8	127.5	127.5	124.9	122.3	121.0	118.4	117.1	114.5
57.5°	118.4	115.8	114.5	113.2	113.2	110.6	109.3	106.7	105.4	102.8	101.5
60°	104.1	102.8	100.2	100.2	98.9	96.3	95.0	92.4	91.1	89.8	88.5
62.5°	89.8	88.5	85.9	85.9	84.6	83.3	82.0	79.4	78.1	75.5	74.2
65°	75.5	74.2	72.9	71.6	71.6	68.9	67.6	66.3	65.0	63.7	62.4
67.5°	62.4	61.1	59.8	59.8	58.5	57.2	54.6	53.3	52.0	50.7	49.4
70°	50.7	48.1	46.8	46.8	45.5	44.2	42.9	41.6	40.3	39.0	37.7
72.5°	39.0	36.4	36.4	35.1	33.8	32.5	32.5	31.2	29.9	29.9	27.3
75°	28.6	27.3	26.0	26.0	24.7	23.4	22.1	22.1	20.8	20.8	20.8
77.5°	19.5	18.2	18.2	16.9	16.9	16.9	15.6	15.6	15.6	15.6	16.9
80°	13.0	13.0	11.7	11.7	11.7	11.7	11.7	11.7	11.7	13.0	13.0
82.5°	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	9.1
85°	3.9	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
87.5°	1.3	1.3	2.6	1.3	2.6	1.3	2.6	2.6	2.6	2.6	2.6
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: P644157

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 1200LM - 3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	386.4	386.4	386.4	386.4	386.4	386.4	386.4	386.4
2.5°	379.9	381.2	381.2	379.9	381.2	379.9	379.9	379.9
5°	376.0	374.7	374.7	374.7	373.4	374.7	374.7	374.7
7.5°	368.2	368.2	366.9	366.9	365.6	365.6	366.9	365.6
10°	359.1	357.8	359.1	357.8	357.8	357.8	356.5	357.8
12.5°	349.9	348.6	348.6	347.3	347.3	347.3	347.3	347.3
15°	339.5	338.2	338.2	336.9	336.9	335.6	336.9	335.6
17.5°	327.8	327.8	325.2	325.2	325.2	325.2	325.2	323.9
20°	313.5	313.5	312.2	313.5	310.9	310.9	310.9	310.9
22.5°	301.8	300.5	299.2	299.2	299.2	297.9	297.9	297.9
25°	287.5	287.5	286.2	286.2	284.9	284.9	284.9	284.9
27.5°	274.5	273.2	273.2	273.2	271.9	270.6	270.6	270.6
30°	260.2	260.2	258.9	258.9	257.6	257.6	257.6	257.6
32.5°	245.9	245.9	244.6	243.3	243.3	243.3	242.0	243.3
35°	231.6	230.3	230.3	229.0	229.0	229.0	227.7	227.7
37.5°	217.3	216.0	214.7	216.0	214.7	213.4	213.4	213.4
40°	201.6	200.3	200.3	199.0	199.0	199.0	197.7	199.0
42.5°	187.3	187.3	186.0	184.7	184.7	184.7	183.4	183.4
45°	173.0	170.4	171.7	170.4	170.4	169.1	169.1	167.8
47.5°	157.4	156.1	156.1	156.1	154.8	154.8	154.8	154.8
50°	141.8	140.5	141.8	140.5	140.5	139.2	139.2	139.2
52.5°	127.5	126.2	126.2	126.2	126.2	124.9	124.9	124.9
55°	113.2	111.9	111.9	111.9	110.6	110.6	109.3	109.3
57.5°	100.2	98.9	97.6	96.3	96.3	96.3	95.0	95.0
60°	85.9	84.6	83.3	83.3	82.0	82.0	82.0	80.7
62.5°	72.9	71.6	70.2	70.2	68.9	67.6	67.6	67.6
65°	59.8	58.5	58.5	57.2	55.9	55.9	54.6	54.6
67.5°	48.1	46.8	46.8	45.5	44.2	42.9	42.9	42.9
70°	37.7	36.4	35.1	35.1	35.1	33.8	32.5	32.5
72.5°	27.3	26.0	26.0	26.0	26.0	26.0	26.0	26.0
75°	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8
77.5°	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
80°	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
82.5°	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
85°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.3
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)