

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: P644167

Luminaire Tested: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644167  
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 - 900LM - 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**

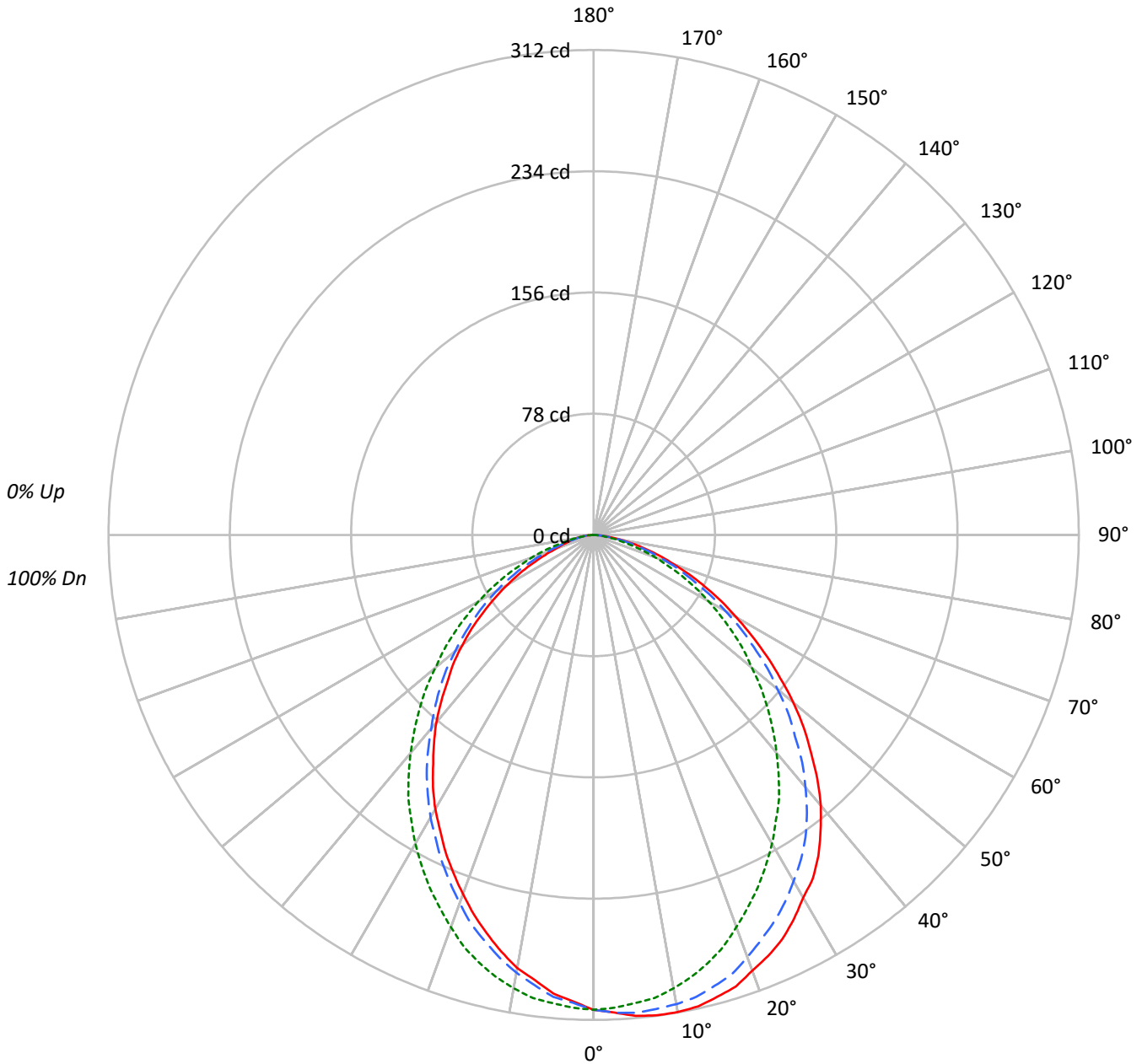
Lumens per Lamp: N/A  
Luminaire Lumens: 674.3 lumens  
Efficiency: N/A  
Efficacy: 64.2 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.13 / 1.25  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

Input Watts (W): 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



TEST NUMBER: P644167  
CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

### 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	100						
	1	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89	87	87						
	2	101	94	88	82	99	92	86	81	88	84	80	85	81	78	82	79	76	74	74						
	3	93	83	76	70	91	82	75	69	79	73	68	76	71	67	74	69	66	64	64						
	4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	57	55	55						
	5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51	49	49						
	6	73	61	52	46	72	60	52	46	58	51	46	56	50	45	55	49	45	43	43						
	7	68	55	47	41	67	55	47	41	53	46	41	52	45	41	50	45	40	38	38						
	8	64	51	43	37	62	50	42	37	49	42	37	48	41	37	46	41	36	35	35						
	9	60	47	39	34	58	46	39	34	45	38	33	44	38	33	43	37	33	31	31						
	10	56	43	36	31	55	43	36	31	42	35	30	41	35	30	40	34	30	29	29						

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

	0°	45°	90°	135°	180°
0°	16748	16748	16748	16748	16748
5°	17092	16982	16641	16415	16300
10°	17351	17062	16488	15920	15748
15°	17458	17049	16169	15352	15063
20°	17402	16860	15664	14701	14340
25°	17360	16610	15116	13997	13628
30°	17060	16281	14521	13281	12894
35°	16865	15901	13907	12528	12046
40°	16266	15164	13103	11629	11264
45°	15312	14195	12280	10846	10288
50°	14302	13159	11317	9910	9390
55°	12979	11995	10418	8946	8258
60°	11611	10712	9363	7894	6995
65°	10273	9340	8133	6667	5604
70°	8735	8078	6764	5113	4119
75°	7180	6545	5020	3495	3495
80°	5525	4862	3567	2936	3252
85°	3900	3208	2579	2579	2579

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 15312 cd/sqm



TEST NUMBER: P644167

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	28.7	4.3
10°-20°	80.4	11.9
20°-30°	116.3	17.3
30°-40°	132.1	19.6
40°-50°	124.7	18.5
50°-60°	98.4	14.6
60°-70°	61.6	9.1
70°-80°	26.6	3.9
80°-90°	5.5	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°	225.4	33.4
0°-40°	357.6	53.0
0°-60°	580.7	86.1
0°-90°	674.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	674.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	306	306	306	306	306	
5°	311	309	302	298	296	30
15°	308	300	285	270	265	87
25°	287	275	250	231	225	132
35°	252	238	208	187	180	157
45°	198	183	158	140	133	153
55°	136	126	109	94	86	122
65°	79	72	63	51	43	79
75°	34	31	24	16	16	37
85°	6	5	4	4	4	7
90°	0	0	0	0	0	



TEST NUMBER: P644167

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
2.5°	307.6	307.6	308.6	308.6	307.6	307.6	307.6	307.6	307.6	307.6	307.6
5°	310.6	310.6	310.6	310.6	309.6	309.6	309.6	309.6	309.6	308.6	308.6
7.5°	311.7	311.7	311.7	311.7	310.6	310.6	309.6	309.6	309.6	308.6	307.6
10°	311.7	311.7	311.7	310.6	310.6	309.6	310.6	309.6	308.6	307.6	306.5
12.5°	310.6	309.6	309.6	309.6	308.6	308.6	308.6	307.6	306.5	305.5	304.5
15°	307.6	307.6	307.6	306.5	306.5	305.5	305.5	304.5	303.4	301.4	300.4
17.5°	304.5	304.5	303.4	303.4	302.4	301.4	301.4	300.4	299.3	297.3	296.2
20°	298.3	298.3	298.3	297.3	296.2	296.2	295.2	294.2	292.1	290.1	289.0
22.5°	293.2	292.1	292.1	291.1	290.1	290.1	289.0	287.0	286.0	283.9	281.8
25°	287.0	286.0	286.0	284.9	283.9	282.9	282.9	280.8	278.8	276.7	274.6
27.5°	278.8	278.8	277.7	276.7	275.7	275.7	274.6	273.6	270.5	268.5	266.4
30°	269.5	270.5	269.5	268.5	267.4	267.4	266.4	264.4	262.3	259.2	257.2
32.5°	262.3	262.3	261.3	260.2	258.2	258.2	258.2	255.1	253.0	251.0	247.9
35°	252.0	252.0	252.0	249.9	248.9	247.9	246.9	244.8	242.7	240.7	237.6
37.5°	239.7	240.7	239.7	238.6	237.6	236.6	235.5	233.5	230.4	228.3	225.3
40°	227.3	227.3	226.3	225.3	224.2	223.2	222.2	220.1	218.1	215.0	211.9
42.5°	212.9	212.9	211.9	210.9	209.8	208.8	208.8	206.7	203.7	201.6	198.5
45°	197.5	197.5	197.5	196.5	195.4	194.4	193.4	192.3	190.3	187.2	183.1
47.5°	183.1	183.1	183.1	181.0	181.0	179.0	177.9	175.9	174.9	171.8	169.7
50°	167.7	166.6	166.6	165.6	164.6	163.5	163.5	160.5	159.4	157.4	154.3
52.5°	151.2	151.2	151.2	150.2	149.1	148.1	148.1	146.1	144.0	141.9	140.9
55°	135.8	135.8	135.8	134.7	133.7	133.7	132.7	130.6	129.6	127.5	125.5
57.5°	120.3	121.4	120.3	119.3	119.3	118.3	118.3	117.3	115.2	113.1	112.1
60°	105.9	105.9	105.9	104.9	103.9	103.9	103.9	102.9	100.8	99.8	97.7
62.5°	92.6	92.6	91.5	91.5	90.5	90.5	89.5	88.5	87.4	86.4	85.4
65°	79.2	78.2	78.2	78.2	77.1	77.1	77.1	76.1	74.1	73.0	72.0
67.5°	66.9	66.9	65.8	65.8	64.8	64.8	64.8	63.8	62.7	61.7	60.7
70°	54.5	54.5	54.5	54.5	53.5	53.5	53.5	52.5	51.4	51.4	50.4
72.5°	44.2	44.2	44.2	44.2	43.2	43.2	43.2	42.2	41.1	40.1	40.1
75°	33.9	35.0	33.9	33.9	33.9	33.9	32.9	32.9	31.9	30.9	30.9
77.5°	25.7	25.7	25.7	25.7	24.7	24.7	24.7	24.7	23.7	22.6	22.6
80°	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.5	16.5	15.4
82.5°	10.3	11.3	11.3	11.3	10.3	10.3	10.3	10.3	10.3	10.3	9.3
85°	6.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
87.5°	2.1	2.1	2.1	2.1	2.1	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



TEST NUMBER: P644167

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
2.5°	306.5	306.5	306.5	306.5	305.5	305.5	305.5	304.5	304.5	304.5	304.5
5°	307.6	306.5	306.5	305.5	305.5	305.5	304.5	304.5	303.4	302.4	302.4
7.5°	306.5	306.5	305.5	304.5	304.5	303.4	302.4	301.4	300.4	300.4	298.3
10°	305.5	304.5	303.4	302.4	301.4	301.4	299.3	298.3	297.3	296.2	295.2
12.5°	302.4	301.4	300.4	298.3	298.3	297.3	295.2	294.2	292.1	291.1	289.0
15°	298.3	297.3	296.2	294.2	293.2	292.1	290.1	288.0	286.0	284.9	282.9
17.5°	294.2	292.1	290.1	288.0	287.0	286.0	283.9	281.8	279.8	277.7	275.7
20°	287.0	284.9	282.9	279.8	278.8	277.7	274.6	272.6	270.5	268.5	266.4
22.5°	279.8	277.7	274.6	272.6	271.6	269.5	267.4	264.4	262.3	259.2	257.2
25°	272.6	269.5	266.4	264.4	262.3	261.3	258.2	256.1	252.0	249.9	247.9
27.5°	263.3	261.3	258.2	255.1	253.0	251.0	248.9	245.8	242.7	239.7	237.6
30°	254.1	251.0	247.9	245.8	242.7	241.7	238.6	235.5	232.5	229.4	227.3
32.5°	244.8	241.7	238.6	235.5	233.5	231.4	228.3	225.3	221.1	218.1	216.0
35°	234.5	231.4	227.3	224.2	222.2	220.1	217.0	213.9	210.9	207.8	204.7
37.5°	222.2	218.1	216.0	212.9	209.8	207.8	204.7	200.6	198.5	195.4	192.3
40°	208.8	205.7	202.6	199.5	196.5	195.4	191.3	188.2	186.2	183.1	180.0
42.5°	195.4	192.3	188.2	185.1	183.1	182.1	179.0	175.9	172.8	170.7	167.7
45°	181.0	177.9	174.9	171.8	169.7	168.7	165.6	163.5	160.5	158.4	155.3
47.5°	166.6	163.5	161.5	158.4	156.3	155.3	153.3	150.2	147.1	146.1	144.0
50°	152.2	149.1	147.1	144.0	143.0	141.9	139.9	137.8	135.8	132.7	131.7
52.5°	137.8	134.7	132.7	130.6	130.6	128.6	126.5	125.5	123.4	121.4	119.3
55°	123.4	122.4	120.3	117.3	117.3	116.2	114.2	112.1	110.1	109.0	107.0
57.5°	109.0	108.0	105.9	104.9	103.9	102.9	101.8	99.8	98.7	96.7	95.7
60°	96.7	95.7	93.6	92.6	91.5	90.5	89.5	87.4	86.4	85.4	84.3
62.5°	83.3	82.3	81.3	80.2	79.2	78.2	78.2	76.1	75.1	74.1	73.0
65°	72.0	69.9	68.9	67.9	67.9	66.9	65.8	64.8	63.8	62.7	61.7
67.5°	59.7	58.6	58.6	56.6	56.6	55.5	54.5	54.5	52.5	51.4	50.4
70°	49.4	48.3	47.3	46.3	46.3	45.3	44.2	43.2	42.2	42.2	41.1
72.5°	39.1	38.1	38.1	37.0	36.0	36.0	35.0	33.9	32.9	32.9	31.9
75°	29.8	28.8	28.8	27.8	27.8	26.7	25.7	25.7	24.7	23.7	22.6
77.5°	21.6	21.6	20.6	20.6	19.5	19.5	18.5	18.5	17.5	16.5	16.5
80°	15.4	14.4	14.4	13.4	13.4	13.4	12.3	12.3	11.3	11.3	10.3
82.5°	9.3	9.3	8.2	8.2	8.2	8.2	7.2	7.2	7.2	6.2	6.2
85°	5.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.1
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



TEST NUMBER: P644167

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
2.5°	303.4	303.4	302.4	303.4	302.4	302.4	302.4	302.4	301.4	301.4	301.4
5°	301.4	300.4	300.4	299.3	300.4	299.3	298.3	298.3	298.3	298.3	297.3
7.5°	297.3	297.3	296.2	295.2	295.2	294.2	293.2	293.2	292.1	292.1	291.1
10°	294.2	292.1	291.1	290.1	290.1	289.0	288.0	287.0	286.0	284.9	284.9
12.5°	287.0	286.0	284.9	283.9	283.9	281.8	280.8	279.8	278.8	277.7	276.7
15°	281.8	279.8	277.7	276.7	276.7	274.6	273.6	272.6	270.5	270.5	268.5
17.5°	273.6	271.6	269.5	268.5	267.4	266.4	265.4	263.3	262.3	260.2	260.2
20°	263.3	262.3	259.2	258.2	257.2	256.1	254.1	253.0	252.0	249.9	248.9
22.5°	255.1	252.0	249.9	248.9	248.9	245.8	244.8	242.7	241.7	240.7	238.6
25°	244.8	242.7	240.7	238.6	238.6	236.6	235.5	233.5	231.4	230.4	229.4
27.5°	234.5	232.5	229.4	228.3	227.3	226.3	224.2	222.2	220.1	219.1	218.1
30°	223.2	221.1	219.1	218.1	216.0	213.9	211.9	210.9	209.8	207.8	206.7
32.5°	212.9	209.8	207.8	205.7	205.7	202.6	201.6	199.5	198.5	197.5	195.4
35°	201.6	198.5	196.5	195.4	194.4	191.3	189.3	187.2	187.2	185.1	184.1
37.5°	189.3	186.2	185.1	183.1	182.1	180.0	177.9	176.9	174.9	172.8	172.8
40°	177.9	174.9	171.8	171.8	169.7	168.7	165.6	164.6	162.5	161.5	160.5
42.5°	165.6	162.5	160.5	159.4	158.4	156.3	154.3	152.2	151.2	150.2	149.1
45°	152.2	150.2	149.1	147.1	146.1	144.0	143.0	140.9	139.9	137.8	136.8
47.5°	140.9	138.9	136.8	135.8	134.7	132.7	131.7	129.6	128.6	126.5	125.5
50°	129.6	127.5	125.5	124.5	123.4	121.4	119.3	118.3	116.2	115.2	113.1
52.5°	117.3	115.2	113.1	113.1	112.1	110.1	109.0	107.0	104.9	102.9	101.8
55°	105.9	103.9	101.8	100.8	100.8	98.7	96.7	95.7	93.6	92.6	90.5
57.5°	93.6	91.5	90.5	89.5	89.5	87.4	86.4	84.3	83.3	81.3	80.2
60°	82.3	81.3	79.2	79.2	78.2	76.1	75.1	73.0	72.0	71.0	69.9
62.5°	71.0	69.9	67.9	67.9	66.9	65.8	64.8	62.7	61.7	59.7	58.6
65°	59.7	58.6	57.6	56.6	56.6	54.5	53.5	52.5	51.4	50.4	49.4
67.5°	49.4	48.3	47.3	47.3	46.3	45.3	43.2	42.2	41.1	40.1	39.1
70°	40.1	38.1	37.0	37.0	36.0	35.0	33.9	32.9	31.9	30.9	29.8
72.5°	30.9	28.8	28.8	27.8	26.7	25.7	25.7	24.7	23.7	23.7	21.6
75°	22.6	21.6	20.6	20.6	19.5	18.5	17.5	17.5	16.5	16.5	16.5
77.5°	15.4	14.4	14.4	13.4	13.4	13.4	12.3	12.3	12.3	12.3	13.4
80°	10.3	10.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	10.3	10.3
82.5°	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	7.2
85°	3.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
87.5°	1.0	1.0	2.1	1.0	2.1	1.0	2.1	2.1	2.1	2.1	2.1
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: P644167

CATALOG NUMBER: ML5615LSWW9FS1E - 692W WW - 900LM - 3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
2.5°	300.4	301.4	301.4	300.4	301.4	300.4	300.4	300.4
5°	297.3	296.2	296.2	296.2	295.2	296.2	296.2	296.2
7.5°	291.1	291.1	290.1	290.1	289.0	289.0	290.1	289.0
10°	283.9	282.9	283.9	282.9	282.9	282.9	281.8	282.9
12.5°	276.7	275.7	275.7	274.6	274.6	274.6	274.6	274.6
15°	268.5	267.4	267.4	266.4	266.4	265.4	266.4	265.4
17.5°	259.2	259.2	257.2	257.2	257.2	257.2	257.2	256.1
20°	247.9	247.9	246.9	247.9	245.8	245.8	245.8	245.8
22.5°	238.6	237.6	236.6	236.6	236.6	235.5	235.5	235.5
25°	227.3	227.3	226.3	226.3	225.3	225.3	225.3	225.3
27.5°	217.0	216.0	216.0	216.0	215.0	213.9	213.9	213.9
30°	205.7	205.7	204.7	204.7	203.7	203.7	203.7	203.7
32.5°	194.4	194.4	193.4	192.3	192.3	192.3	191.3	192.3
35°	183.1	182.1	182.1	181.0	181.0	181.0	180.0	180.0
37.5°	171.8	170.7	169.7	170.7	169.7	168.7	168.7	168.7
40°	159.4	158.4	158.4	157.4	157.4	157.4	156.3	157.4
42.5°	148.1	148.1	147.1	146.1	146.1	146.1	145.0	145.0
45°	136.8	134.7	135.8	134.7	134.7	133.7	133.7	132.7
47.5°	124.5	123.4	123.4	123.4	122.4	122.4	122.4	122.4
50°	112.1	111.1	112.1	111.1	111.1	110.1	110.1	110.1
52.5°	100.8	99.8	99.8	99.8	99.8	98.7	98.7	98.7
55°	89.5	88.5	88.5	88.5	87.4	87.4	86.4	86.4
57.5°	79.2	78.2	77.1	76.1	76.1	76.1	75.1	75.1
60°	67.9	66.9	65.8	65.8	64.8	64.8	64.8	63.8
62.5°	57.6	56.6	55.5	55.5	54.5	53.5	53.5	53.5
65°	47.3	46.3	46.3	45.3	44.2	44.2	43.2	43.2
67.5°	38.1	37.0	37.0	36.0	35.0	33.9	33.9	33.9
70°	29.8	28.8	27.8	27.8	27.8	26.7	25.7	25.7
72.5°	21.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
75°	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
77.5°	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
80°	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
82.5°	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
85°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.0
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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Scaled Data Report





— 0°-180°    - - 45°-225°    - - - - 90°-270°

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(END OF REPORT)