

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: P644123

Luminaire Tested: ML5615LSWW9FS1E - 592W WW - 900LM - 3500K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644123  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-116)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5615LSWW9FS1E - 592W WW - 900LM - 3500K  
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

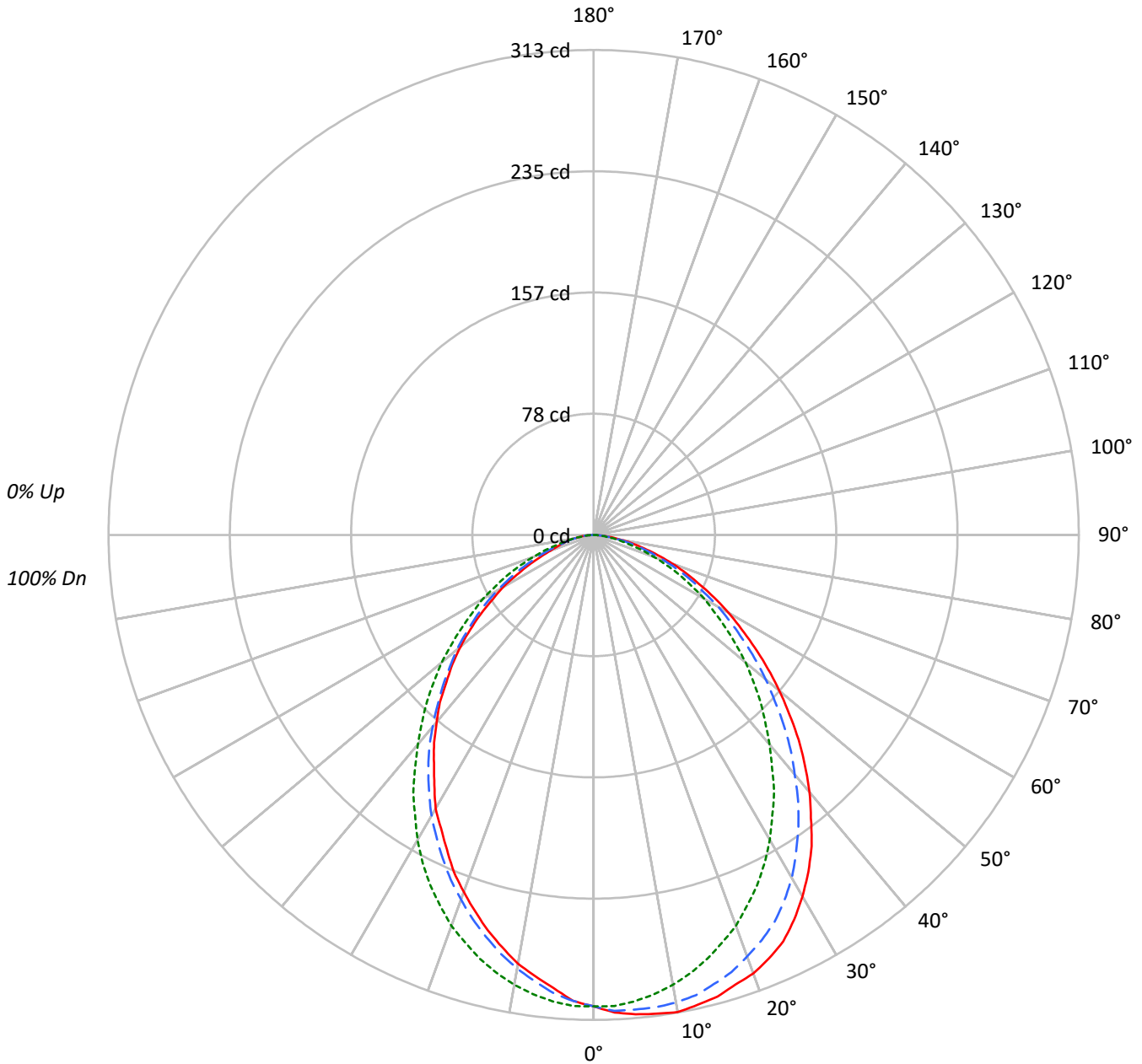
Lumens per Lamp: N/A  
Luminaire Lumens: 663.9 lumens  
Efficiency: N/A  
Efficacy: 63.2 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.13 / 1.23  
Luminous Opening: Circular (Dia: 0.42' x H: 0')  
CIE Type: Direct

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					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	88	86				86				
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	53	46	72	60	52	46	58	51	46	57	50	45	55	49	45	43				43				
7	68	56	47	41	67	55	47	41	53	46	41	52	45	41	51	45	40	39				39				
8	64	51	43	37	62	50	43	37	49	42	37	48	41	37	47	41	37	35				35				
9	60	47	39	34	58	46	39	34	45	38	34	44	38	33	43	37	33	32				32				
10	56	43	36	31	55	43	36	31	42	35	31	41	35	31	40	35	30	29				29				

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

	0°	45°	90°	135°	180°
0°	24022	24022	24022	24022	24022
5°	24613	24367	23947	23527	23274
10°	25066	24561	23631	22781	22533
15°	25212	24526	23145	21935	21584
20°	25295	24320	22548	21035	20590
25°	25216	24023	21723	20060	19511
30°	24557	23308	20710	19069	18586
35°	23620	22194	19553	17925	17308
40°	22321	20795	18178	16663	16220
45°	20877	19347	16980	15339	14982
50°	19208	17783	15695	14148	13755
55°	17451	16144	14245	12800	12221
60°	15851	14683	13009	11336	10673
65°	14009	13019	11450	9676	8686
70°	12441	11217	9509	7801	6832
75°	10309	9333	7412	6131	6131
80°	8183	7183	5773	5273	5273
85°	4800	4800	3804	4800	4800

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 20877 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	28.6	4.3
10°-20°	80.1	12.1
20°-30°	116.3	17.5
30°-40°	129.7	19.5
40°-50°	120.3	18.1
50°-60°	94.6	14.2
60°-70°	60.5	9.1
70°-80°	27.7	4.2
80°-90°	6.0	0.9
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°	225.0	33.9
0°-40°	354.7	53.4
0°-60°	569.6	85.8
0°-90°	663.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	663.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	304	304	304	304	304	
5°	311	308	302	297	294	30
15°	308	300	283	268	264	87
25°	290	276	249	230	224	133
35°	245	230	203	186	180	153
45°	187	173	152	137	134	144
55°	127	117	104	93	89	114
65°	75	70	61	52	46	75
75°	34	31	24	20	20	36
85°	5	5	4	5	5	7
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°	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3
2.5°	308.5	308.5	308.5	308.5	308.5	308.5	307.5	307.5	307.5	307.5	307.5
5°	310.6	310.6	310.6	310.6	309.6	309.6	309.6	309.6	308.5	308.5	307.5
7.5°	311.7	311.7	311.7	310.6	310.6	310.6	309.6	309.6	309.6	308.5	307.5
10°	312.7	311.7	311.7	310.6	310.6	310.6	309.6	309.6	308.5	307.5	306.4
12.5°	310.6	310.6	310.6	310.6	309.6	309.6	308.5	307.5	306.4	305.4	304.3
15°	308.5	308.5	308.5	307.5	306.4	306.4	305.4	304.3	303.2	302.2	300.1
17.5°	304.3	305.4	304.3	304.3	303.2	303.2	302.2	301.1	299.0	298.0	295.8
20°	301.1	300.1	300.1	300.1	299.0	298.0	296.9	295.8	293.7	292.7	289.5
22.5°	295.8	295.8	294.8	293.7	292.7	292.7	291.6	289.5	288.4	286.3	283.2
25°	289.5	288.4	288.4	287.4	286.3	286.3	284.2	283.2	281.1	277.9	275.8
27.5°	280.0	280.0	280.0	278.9	277.9	276.8	275.8	273.7	272.6	268.4	266.3
30°	269.4	269.4	268.4	268.4	266.3	266.3	265.2	263.1	261.0	257.8	255.7
32.5°	257.8	257.8	257.8	255.7	254.6	253.6	252.5	251.5	248.3	245.1	243.0
35°	245.1	245.1	244.1	243.0	242.0	240.9	239.8	237.7	235.6	233.5	230.3
37.5°	230.3	231.4	230.3	229.3	228.2	227.2	226.1	225.1	221.9	219.8	216.6
40°	216.6	216.6	215.5	214.5	213.4	213.4	212.4	210.3	208.1	205.0	201.8
42.5°	201.8	201.8	200.8	199.7	199.7	198.6	196.5	195.5	193.4	191.2	188.1
45°	187.0	186.0	184.9	184.9	183.8	182.8	182.8	180.7	178.6	175.4	173.3
47.5°	171.2	171.2	170.1	170.1	169.1	168.0	168.0	165.9	162.7	160.6	158.5
50°	156.4	156.4	155.3	155.3	154.3	153.2	152.1	151.1	149.0	146.9	144.8
52.5°	141.6	141.6	141.6	139.5	138.4	138.4	138.4	136.3	135.2	133.1	131.0
55°	126.8	126.8	126.8	125.7	124.7	124.7	124.7	122.6	121.5	119.4	117.3
57.5°	113.1	113.1	113.1	112.0	112.0	110.9	109.9	108.8	107.8	106.7	104.6
60°	100.4	100.4	99.3	98.3	99.3	98.3	97.2	96.1	95.1	94.0	93.0
62.5°	87.7	87.7	87.7	86.6	85.6	85.6	85.6	84.5	82.4	81.4	80.3
65°	75.0	75.0	75.0	75.0	74.0	74.0	72.9	71.8	71.8	70.8	69.7
67.5°	64.5	64.5	63.4	63.4	62.3	62.3	62.3	61.3	60.2	60.2	59.2
70°	53.9	52.8	52.8	52.8	51.8	51.8	51.8	50.7	50.7	49.7	48.6
72.5°	43.3	43.3	43.3	43.3	42.3	42.3	41.2	41.2	40.2	40.2	39.1
75°	33.8	33.8	33.8	33.8	32.8	32.8	32.8	32.8	31.7	31.7	30.6
77.5°	25.4	25.4	25.4	25.4	25.4	25.4	24.3	24.3	24.3	23.2	23.2
80°	18.0	18.0	18.0	18.0	16.9	16.9	16.9	16.9	16.9	15.8	15.8
82.5°	11.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	9.5
85°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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°	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3
2.5°	306.4	306.4	306.4	306.4	305.4	305.4	305.4	304.3	304.3	304.3	304.3
5°	307.5	307.5	305.4	305.4	305.4	305.4	304.3	304.3	303.2	302.2	301.1
7.5°	306.4	306.4	305.4	304.3	303.2	303.2	302.2	301.1	300.1	299.0	298.0
10°	305.4	304.3	303.2	302.2	301.1	300.1	299.0	298.0	295.8	294.8	293.7
12.5°	303.2	301.1	300.1	298.0	298.0	296.9	294.8	293.7	291.6	289.5	288.4
15°	299.0	296.9	294.8	292.7	292.7	290.6	288.4	287.4	285.3	283.2	281.1
17.5°	293.7	291.6	289.5	287.4	286.3	284.2	282.1	280.0	277.9	275.8	273.7
20°	288.4	285.3	283.2	280.0	278.9	277.9	274.7	272.6	270.5	268.4	265.2
22.5°	281.1	278.9	274.7	272.6	271.5	269.4	267.3	264.1	261.0	258.9	256.7
25°	272.6	270.5	267.3	264.1	262.0	261.0	257.8	254.6	252.5	249.4	247.2
27.5°	263.1	259.9	257.8	253.6	252.5	250.4	247.2	244.1	242.0	238.8	235.6
30°	252.5	249.4	246.2	243.0	240.9	239.8	236.7	233.5	230.3	227.2	225.1
32.5°	239.8	236.7	233.5	231.4	228.2	226.1	224.0	220.8	217.7	214.5	212.4
35°	227.2	224.0	220.8	217.7	215.5	215.5	211.3	208.1	205.0	202.9	199.7
37.5°	213.4	210.3	207.1	203.9	202.9	200.8	197.6	194.4	192.3	189.1	187.0
40°	199.7	195.5	193.4	190.2	189.1	187.0	184.9	181.7	179.6	176.4	174.3
42.5°	184.9	182.8	179.6	177.5	175.4	174.3	171.2	168.0	165.9	163.8	162.7
45°	171.2	168.0	164.8	162.7	161.7	159.5	158.5	155.3	153.2	152.1	150.0
47.5°	156.4	154.3	152.1	149.0	147.9	146.9	144.8	143.7	141.6	139.5	137.4
50°	142.6	140.5	138.4	136.3	135.2	135.2	132.1	130.0	128.9	127.8	125.7
52.5°	128.9	126.8	124.7	122.6	122.6	121.5	119.4	118.3	117.3	115.2	113.1
55°	116.2	114.1	112.0	110.9	109.9	109.9	107.8	106.7	104.6	103.5	102.5
57.5°	103.5	101.4	100.4	99.3	98.3	98.3	96.1	95.1	94.0	91.9	91.9
60°	91.9	89.8	88.8	87.7	86.6	85.6	85.6	83.5	82.4	82.4	80.3
62.5°	79.2	78.2	77.1	76.1	75.0	75.0	74.0	72.9	71.8	70.8	69.7
65°	68.7	67.6	66.6	65.5	64.5	64.5	63.4	62.3	61.3	61.3	59.2
67.5°	58.1	57.1	56.0	54.9	54.9	53.9	52.8	52.8	51.8	50.7	49.7
70°	47.5	47.5	46.5	45.4	45.4	44.4	43.3	43.3	42.3	41.2	40.2
72.5°	39.1	38.0	37.0	37.0	35.9	35.9	34.9	34.9	33.8	32.8	31.7
75°	29.6	28.5	28.5	28.5	27.5	27.5	27.5	26.4	25.4	24.3	24.3
77.5°	22.2	22.2	21.1	20.1	20.1	20.1	19.0	19.0	19.0	18.0	18.0
80°	15.8	14.8	14.8	13.7	13.7	13.7	13.7	12.7	12.7	12.7	11.6
82.5°	9.5	9.5	9.5	8.5	8.5	8.5	8.5	8.5	7.4	7.4	7.4
85°	5.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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



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**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3
2.5°	303.2	303.2	302.2	302.2	302.2	302.2	302.2	301.1	301.1	301.1	301.1
5°	301.1	300.1	299.0	299.0	299.0	298.0	298.0	296.9	296.9	295.8	295.8
7.5°	296.9	295.8	294.8	294.8	293.7	293.7	291.6	291.6	290.6	289.5	289.5
10°	291.6	290.6	289.5	288.4	288.4	286.3	286.3	285.3	284.2	283.2	283.2
12.5°	286.3	285.3	283.2	282.1	282.1	281.1	278.9	277.9	276.8	275.8	274.7
15°	278.9	277.9	275.8	274.7	273.7	272.6	271.5	270.5	268.4	267.3	267.3
17.5°	271.5	270.5	267.3	266.3	266.3	264.1	263.1	261.0	259.9	258.9	257.8
20°	263.1	261.0	258.9	257.8	256.7	254.6	253.6	252.5	250.4	249.4	248.3
22.5°	253.6	251.5	249.4	248.3	247.2	245.1	244.1	242.0	240.9	239.8	238.8
25°	244.1	242.0	239.8	238.8	236.7	235.6	233.5	231.4	230.3	229.3	228.2
27.5°	233.5	231.4	228.2	227.2	226.1	225.1	222.9	220.8	219.8	217.7	217.7
30°	221.9	219.8	217.7	216.6	215.5	213.4	212.4	210.3	209.2	207.1	207.1
32.5°	210.3	207.1	205.0	203.9	202.9	201.8	199.7	198.6	197.6	196.5	195.5
35°	197.6	195.5	193.4	192.3	191.2	189.1	188.1	187.0	186.0	183.8	183.8
37.5°	184.9	182.8	180.7	179.6	179.6	177.5	176.4	174.3	174.3	172.2	172.2
40°	172.2	170.1	168.0	168.0	166.9	164.8	163.8	162.7	161.7	160.6	160.6
42.5°	160.6	157.4	156.4	156.4	154.3	153.2	152.1	151.1	149.0	149.0	149.0
45°	147.9	145.8	144.8	143.7	142.6	141.6	140.5	138.4	137.4	136.3	136.3
47.5°	136.3	134.2	133.1	132.1	131.0	130.0	128.9	127.8	125.7	125.7	124.7
50°	124.7	122.6	121.5	120.5	119.4	118.3	117.3	116.2	115.2	114.1	113.1
52.5°	112.0	110.9	109.9	108.8	108.8	106.7	105.7	104.6	103.5	103.5	101.4
55°	101.4	100.4	99.3	98.3	97.2	96.1	95.1	94.0	93.0	91.9	90.9
57.5°	89.8	88.8	87.7	87.7	86.6	85.6	84.5	83.5	82.4	81.4	80.3
60°	79.2	78.2	77.1	77.1	76.1	75.0	74.0	74.0	71.8	70.8	69.7
62.5°	68.7	67.6	66.6	66.6	65.5	65.5	64.5	63.4	61.3	61.3	60.2
65°	59.2	58.1	57.1	56.0	56.0	54.9	53.9	52.8	51.8	51.8	50.7
67.5°	49.7	48.6	47.5	47.5	46.5	45.4	44.4	43.3	42.3	42.3	41.2
70°	40.2	39.1	38.0	38.0	37.0	35.9	35.9	34.9	33.8	32.8	32.8
72.5°	30.6	30.6	29.6	29.6	28.5	28.5	27.5	26.4	26.4	25.4	24.3
75°	23.2	23.2	22.2	22.2	21.1	21.1	20.1	20.1	20.1	19.0	20.1
77.5°	16.9	16.9	15.8	15.8	15.8	14.8	14.8	14.8	15.8	15.8	15.8
80°	11.6	11.6	11.6	11.6	10.6	10.6	11.6	11.6	11.6	11.6	11.6
82.5°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	8.5	8.5	8.5
85°	4.2	4.2	4.2	4.2	4.2	4.2	4.2	5.3	5.3	5.3	5.3
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	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: P644123

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3500K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3
2.5°	300.1	300.1	300.1	300.1	300.1	300.1	300.1	301.1
5°	294.8	294.8	294.8	294.8	294.8	294.8	294.8	293.7
7.5°	289.5	288.4	288.4	288.4	288.4	287.4	287.4	287.4
10°	282.1	282.1	281.1	281.1	281.1	281.1	280.0	281.1
12.5°	274.7	273.7	273.7	273.7	272.6	272.6	272.6	272.6
15°	266.3	265.2	265.2	265.2	264.1	264.1	264.1	264.1
17.5°	256.7	256.7	255.7	255.7	254.6	254.6	254.6	254.6
20°	247.2	247.2	247.2	246.2	246.2	246.2	245.1	245.1
22.5°	237.7	236.7	235.6	236.7	235.6	234.6	235.6	235.6
25°	227.2	226.1	225.1	225.1	225.1	225.1	224.0	224.0
27.5°	216.6	214.5	214.5	214.5	214.5	213.4	213.4	213.4
30°	206.0	205.0	205.0	203.9	202.9	202.9	202.9	203.9
32.5°	194.4	193.4	192.3	192.3	192.3	192.3	191.2	191.2
35°	182.8	182.8	181.7	181.7	181.7	180.7	180.7	179.6
37.5°	171.2	171.2	170.1	170.1	170.1	169.1	169.1	169.1
40°	159.5	158.5	158.5	159.5	158.5	158.5	157.4	157.4
42.5°	147.9	147.9	146.9	146.9	146.9	146.9	145.8	146.9
45°	135.2	135.2	135.2	135.2	135.2	135.2	134.2	134.2
47.5°	124.7	123.6	123.6	123.6	123.6	123.6	123.6	123.6
50°	113.1	112.0	112.0	112.0	112.0	112.0	112.0	112.0
52.5°	101.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4
55°	90.9	89.8	89.8	88.8	89.8	88.8	88.8	88.8
57.5°	80.3	79.2	78.2	79.2	78.2	78.2	78.2	77.1
60°	69.7	68.7	68.7	68.7	67.6	66.6	66.6	67.6
62.5°	59.2	59.2	58.1	58.1	57.1	56.0	56.0	56.0
65°	49.7	48.6	48.6	47.5	47.5	46.5	46.5	46.5
67.5°	40.2	40.2	39.1	39.1	38.0	38.0	38.0	37.0
70°	31.7	31.7	30.6	30.6	30.6	29.6	29.6	29.6
72.5°	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
75°	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
77.5°	15.8	15.8	15.8	15.8	15.8	15.8	15.8	16.9
80°	11.6	11.6	12.7	11.6	12.7	11.6	11.6	11.6
82.5°	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
85°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
87.5°	2.1	2.1	2.1	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

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)