

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: P644081

Luminaire Tested: ML5615LSWW9FS1E - 592H WW - 1200LM - 2700K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P644081  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-130)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5615LSWW9FS1E - 592H WW - 1200LM - 2700K  
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH HAZE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 801.6 lumens  
Efficiency: N/A  
Efficacy: 59.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.25  
Luminous Opening: Circular (Dia: 0.42' x H: 0')  
CIE Type: Direct

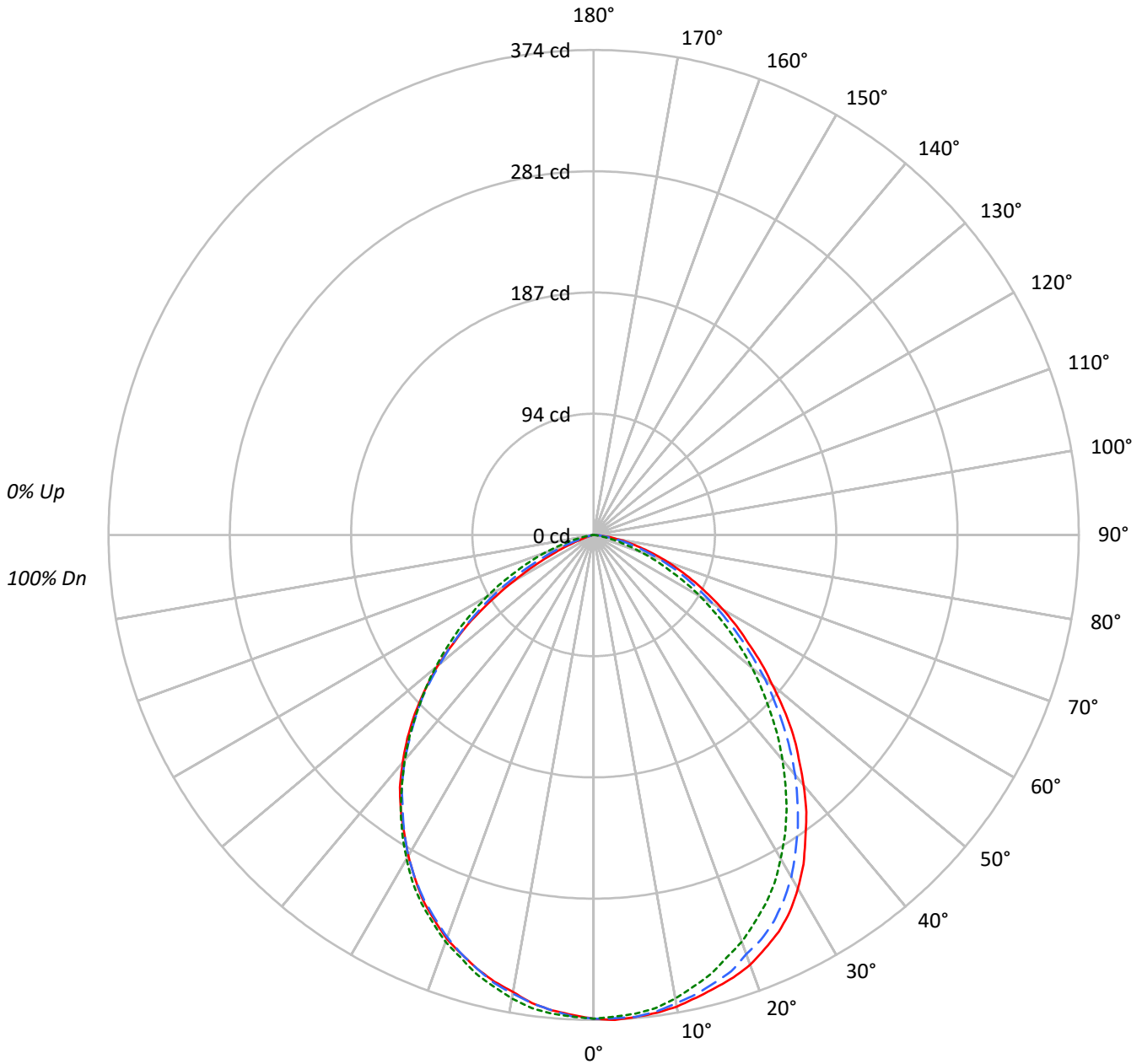
Input Watts (W): 13.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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					70					50					30				
RW	70	50	30	10	70	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	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88		
2	102	95	89	84	100	93	88	83	90	85	81	87	83	79	84	80	78	76		
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66		
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57		
5	80	69	60	54	78	67	60	54	65	59	54	64	58	53	62	57	52	50		
6	74	62	54	48	73	61	54	48	60	53	47	58	52	47	56	51	47	45		
7	69	57	49	43	68	56	48	43	54	48	42	53	47	42	52	46	42	40		
8	65	52	44	39	63	51	44	39	50	43	38	49	43	38	48	42	38	36		
9	61	48	40	35	59	47	40	35	46	39	35	45	39	35	44	39	34	33		
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	31	30		

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

	0°	45°	90°	135°	180°
0°	29453	29453	29453	29453	29453
5°	29565	29565	29367	29161	29161
10°	29603	29402	29098	28793	28689
15°	29560	29250	28628	28318	28318
20°	29646	28898	28050	27731	27840
25°	29414	28639	27324	26993	27097
30°	28704	27783	26289	26052	26052
35°	27427	26444	24988	24738	24988
40°	25938	24897	23331	23331	23588
45°	24282	23020	21457	21457	21747
50°	22057	21123	19576	18950	19257
55°	20011	18979	17410	16185	15841
60°	18172	16767	14983	12978	11178
65°	16064	14644	12048	8985	6612
70°	14010	12256	9048	4962	2631
75°	11194	9638	5795	1556	763
80°	8637	6319	2318	591	591
85°	4619	3442	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 24282 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	35.1	4.4
10°-20°	99.3	12.4
20°-30°	146.5	18.3
30°-40°	165.8	20.7
40°-50°	153.2	19.1
50°-60°	114.4	14.3
60°-70°	63.2	7.9
70°-80°	21.3	2.7
80°-90°	2.7	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°	280.9	35.0
0°-40°	446.7	55.7
0°-60°	714.4	89.1
0°-90°	801.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	801.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	373	373	373	373	373	
5°	373	373	371	368	368	36
15°	362	358	350	346	346	102
25°	338	329	314	310	311	155
35°	285	274	259	257	259	178
45°	218	206	192	192	195	167
55°	145	138	126	118	115	131
65°	86	78	64	48	35	85
75°	37	32	19	5	2	40
85°	5	4	0	0	0	7
90°	0	0	0	0	0	



TEST NUMBER: P644081

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1
2.5°	374.4	374.4	374.4	374.4	373.1	373.1	374.4	373.1	373.1	373.1	373.1
5°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1
7.5°	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8	370.6	370.6	370.6
10°	369.3	369.3	369.3	369.3	369.3	369.3	369.3	368.0	368.0	368.0	366.8
12.5°	365.5	366.8	365.5	366.8	365.5	365.5	364.2	364.2	364.2	363.0	363.0
15°	361.7	361.7	361.7	361.7	361.7	360.4	360.4	359.2	359.2	359.2	357.9
17.5°	357.9	356.7	356.7	356.7	355.4	355.4	355.4	355.4	354.1	352.9	352.9
20°	352.9	351.6	351.6	351.6	350.3	350.3	349.1	349.1	346.5	346.5	344.0
22.5°	345.3	345.3	345.3	344.0	344.0	342.7	342.7	341.5	340.2	338.9	337.7
25°	337.7	337.7	336.4	336.4	335.2	335.2	335.2	332.6	331.4	330.1	328.8
27.5°	327.6	327.6	326.3	326.3	325.0	323.8	323.8	321.2	321.2	318.7	317.4
30°	314.9	314.9	314.9	312.4	312.4	312.4	311.1	309.9	307.3	306.1	304.8
32.5°	301.0	299.7	299.7	299.7	298.5	297.2	297.2	294.7	293.4	292.2	289.6
35°	284.6	284.6	284.6	284.6	283.3	282.0	282.0	279.5	278.2	275.7	274.4
37.5°	269.4	269.4	268.1	268.1	265.6	266.9	265.6	264.3	263.1	259.3	258.0
40°	251.7	251.7	251.7	250.4	249.2	249.2	247.9	246.6	244.1	242.8	241.6
42.5°	234.0	234.0	234.0	232.7	231.4	231.4	231.4	228.9	227.7	226.4	223.9
45°	217.5	216.3	216.3	215.0	215.0	213.7	212.5	211.2	209.9	208.7	206.2
47.5°	198.6	198.6	197.3	197.3	196.0	196.0	194.8	193.5	192.2	191.0	188.4
50°	179.6	180.9	180.9	179.6	179.6	178.3	177.1	177.1	175.8	174.5	172.0
52.5°	163.1	163.1	163.1	161.9	161.9	160.6	160.6	159.4	158.1	155.6	154.3
55°	145.4	146.7	145.4	145.4	145.4	144.2	144.2	142.9	141.6	139.1	137.9
57.5°	130.3	130.3	129.0	129.0	127.7	127.7	127.7	126.5	125.2	123.9	121.4
60°	115.1	113.8	113.8	113.8	112.6	112.6	112.6	110.0	108.8	107.5	106.2
62.5°	99.9	99.9	99.9	98.6	98.6	97.4	96.1	96.1	94.9	93.6	91.1
65°	86.0	86.0	84.7	84.7	84.7	83.5	83.5	82.2	80.9	79.7	78.4
67.5°	72.1	72.1	72.1	70.8	70.8	70.8	69.6	68.3	68.3	67.0	65.8
70°	60.7	59.4	59.4	59.4	58.2	58.2	58.2	56.9	55.6	54.4	53.1
72.5°	48.1	48.1	48.1	48.1	46.8	46.8	45.5	45.5	44.3	43.0	41.7
75°	36.7	36.7	36.7	36.7	35.4	35.4	35.4	34.1	34.1	32.9	31.6
77.5°	27.8	27.8	27.8	26.6	26.6	25.3	25.3	25.3	24.0	24.0	22.8
80°	19.0	19.0	17.7	17.7	17.7	17.7	17.7	16.4	15.2	15.2	13.9
82.5°	11.4	11.4	11.4	10.1	10.1	10.1	10.1	10.1	8.9	8.9	7.6
85°	5.1	5.1	5.1	5.1	5.1	5.1	3.8	3.8	3.8	3.8	3.8
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1
2.5°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	371.8	371.8	371.8	371.8
5°	371.8	371.8	371.8	371.8	371.8	370.6	371.8	370.6	370.6	370.6	370.6
7.5°	369.3	369.3	369.3	369.3	368.0	369.3	368.0	368.0	368.0	368.0	366.8
10°	366.8	365.5	365.5	365.5	365.5	364.2	364.2	363.0	363.0	363.0	361.7
12.5°	363.0	361.7	361.7	360.4	360.4	360.4	359.2	359.2	357.9	356.7	356.7
15°	356.7	356.7	355.4	354.1	354.1	352.9	352.9	351.6	351.6	350.3	349.1
17.5°	351.6	350.3	349.1	347.8	346.5	346.5	345.3	344.0	344.0	341.5	341.5
20°	342.7	341.5	340.2	338.9	338.9	338.9	336.4	336.4	335.2	333.9	332.6
22.5°	335.2	333.9	331.4	330.1	330.1	328.8	327.6	326.3	325.0	323.8	322.5
25°	326.3	325.0	322.5	321.2	320.0	318.7	317.4	316.2	314.9	313.7	312.4
27.5°	314.9	312.4	312.4	309.9	308.6	307.3	306.1	304.8	303.5	302.3	301.0
30°	302.3	301.0	298.5	295.9	294.7	294.7	292.2	290.9	290.9	288.4	287.1
32.5°	288.4	285.8	283.3	282.0	280.8	279.5	278.2	277.0	275.7	274.4	273.2
35°	273.2	269.4	268.1	265.6	265.6	264.3	263.1	260.5	260.5	259.3	256.7
37.5°	256.7	254.2	252.9	250.4	249.2	247.9	246.6	245.4	244.1	242.8	241.6
40°	239.0	236.5	235.2	234.0	232.7	231.4	230.2	228.9	227.7	226.4	225.1
42.5°	221.3	220.1	217.5	215.0	215.0	213.7	212.5	211.2	209.9	209.9	208.7
45°	203.6	202.4	199.8	198.6	197.3	197.3	194.8	194.8	193.5	192.2	192.2
47.5°	187.2	184.7	182.1	182.1	179.6	180.9	178.3	178.3	175.8	175.8	174.5
50°	169.5	168.2	165.7	164.4	164.4	163.1	161.9	161.9	160.6	159.4	158.1
52.5°	153.0	150.5	149.2	148.0	146.7	146.7	145.4	145.4	142.9	142.9	141.6
55°	136.6	135.3	132.8	131.5	131.5	131.5	129.0	127.7	127.7	126.5	125.2
57.5°	120.1	118.9	117.6	116.4	115.1	115.1	113.8	112.6	111.3	110.0	107.5
60°	105.0	103.7	102.4	101.2	99.9	99.9	98.6	97.4	96.1	94.9	93.6
62.5°	89.8	89.8	87.3	86.0	84.7	84.7	83.5	82.2	80.9	79.7	78.4
65°	77.1	75.9	73.4	72.1	72.1	72.1	69.6	68.3	67.0	64.5	63.2
67.5°	64.5	62.0	60.7	60.7	59.4	58.2	56.9	55.6	53.1	51.9	49.3
70°	51.9	50.6	49.3	48.1	46.8	45.5	44.3	43.0	40.5	39.2	37.9
72.5°	40.5	39.2	37.9	36.7	35.4	35.4	32.9	31.6	30.4	27.8	26.6
75°	30.4	29.1	27.8	26.6	25.3	24.0	24.0	21.5	20.2	19.0	16.4
77.5°	21.5	20.2	19.0	17.7	17.7	16.4	15.2	13.9	12.6	11.4	10.1
80°	13.9	12.6	11.4	11.4	10.1	10.1	8.9	7.6	6.3	5.1	5.1
82.5°	7.6	6.3	6.3	5.1	5.1	5.1	3.8	2.5	2.5	2.5	1.3
85°	2.5	2.5	2.5	1.3	1.3	1.3	1.3	1.3	1.3	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



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**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1
2.5°	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8	370.6	370.6
5°	369.3	369.3	369.3	369.3	369.3	369.3	368.0	368.0	368.0	368.0	368.0
7.5°	366.8	366.8	366.8	365.5	365.5	365.5	365.5	364.2	364.2	364.2	364.2
10°	361.7	361.7	361.7	360.4	360.4	360.4	360.4	360.4	359.2	359.2	359.2
12.5°	355.4	355.4	355.4	355.4	355.4	354.1	354.1	354.1	354.1	352.9	354.1
15°	349.1	349.1	347.8	347.8	347.8	346.5	346.5	346.5	346.5	346.5	346.5
17.5°	341.5	340.2	340.2	338.9	338.9	338.9	338.9	338.9	338.9	338.9	338.9
20°	332.6	331.4	331.4	331.4	331.4	330.1	330.1	328.8	330.1	330.1	330.1
22.5°	322.5	321.2	321.2	321.2	320.0	320.0	320.0	320.0	320.0	320.0	320.0
25°	312.4	311.1	309.9	309.9	309.9	308.6	308.6	309.9	309.9	309.9	309.9
27.5°	299.7	299.7	298.5	298.5	298.5	297.2	297.2	297.2	298.5	298.5	298.5
30°	285.8	285.8	285.8	285.8	284.6	284.6	285.8	284.6	285.8	284.6	285.8
32.5°	273.2	273.2	271.9	270.7	270.7	271.9	270.7	270.7	271.9	271.9	271.9
35°	256.7	256.7	256.7	256.7	256.7	256.7	256.7	256.7	256.7	258.0	259.3
37.5°	241.6	241.6	241.6	241.6	241.6	241.6	241.6	242.8	242.8	242.8	242.8
40°	225.1	225.1	225.1	225.1	225.1	225.1	225.1	225.1	226.4	226.4	227.7
42.5°	207.4	208.7	208.7	208.7	207.4	207.4	208.7	208.7	208.7	209.9	209.9
45°	191.0	191.0	191.0	191.0	192.2	191.0	191.0	191.0	192.2	192.2	192.2
47.5°	174.5	173.3	173.3	174.5	173.3	173.3	173.3	173.3	174.5	174.5	173.3
50°	158.1	156.8	156.8	156.8	155.6	155.6	156.8	154.3	154.3	154.3	155.6
52.5°	141.6	140.4	139.1	139.1	139.1	137.9	136.6	136.6	136.6	135.3	135.3
55°	123.9	122.7	121.4	121.4	121.4	120.1	120.1	117.6	117.6	116.4	116.4
57.5°	107.5	106.2	105.0	105.0	103.7	102.4	102.4	99.9	99.9	98.6	96.1
60°	91.1	89.8	88.5	88.5	88.5	86.0	84.7	82.2	82.2	79.7	78.4
62.5°	75.9	74.6	73.4	72.1	72.1	69.6	68.3	65.8	64.5	63.2	60.7
65°	62.0	59.4	58.2	56.9	56.9	54.4	53.1	50.6	48.1	46.8	44.3
67.5°	48.1	46.8	44.3	43.0	43.0	40.5	37.9	36.7	34.1	31.6	30.4
70°	35.4	34.1	31.6	30.4	29.1	27.8	25.3	24.0	21.5	20.2	17.7
72.5°	24.0	22.8	20.2	20.2	19.0	16.4	15.2	13.9	11.4	10.1	8.9
75°	15.2	13.9	12.6	11.4	10.1	8.9	7.6	6.3	5.1	3.8	3.8
77.5°	8.9	7.6	6.3	5.1	5.1	3.8	2.5	2.5	2.5	1.3	1.3
80°	3.8	2.5	2.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.0	0.0	1.3	1.3
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: P644081

CATALOG NUMBER: ML5615LSWW9FS1E - 592H WW - 1200LM - 2700K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	373.1	373.1	373.1	373.1	373.1	373.1	373.1	373.1
2.5°	371.8	370.6	371.8	371.8	370.6	370.6	370.6	370.6
5°	368.0	368.0	368.0	368.0	368.0	368.0	368.0	368.0
7.5°	365.5	364.2	364.2	364.2	364.2	364.2	364.2	364.2
10°	359.2	359.2	359.2	359.2	359.2	359.2	359.2	357.9
12.5°	352.9	352.9	352.9	352.9	352.9	352.9	352.9	352.9
15°	346.5	346.5	346.5	346.5	346.5	346.5	346.5	346.5
17.5°	338.9	338.9	338.9	338.9	338.9	337.7	338.9	338.9
20°	330.1	330.1	330.1	330.1	330.1	330.1	330.1	331.4
22.5°	320.0	320.0	320.0	320.0	320.0	320.0	320.0	321.2
25°	309.9	309.9	309.9	309.9	309.9	309.9	309.9	311.1
27.5°	298.5	298.5	298.5	298.5	298.5	298.5	298.5	298.5
30°	285.8	285.8	287.1	285.8	285.8	285.8	287.1	285.8
32.5°	273.2	273.2	273.2	273.2	273.2	273.2	273.2	271.9
35°	259.3	258.0	259.3	259.3	259.3	259.3	259.3	259.3
37.5°	244.1	244.1	244.1	244.1	244.1	244.1	245.4	245.4
40°	228.9	227.7	227.7	228.9	228.9	228.9	227.7	228.9
42.5°	209.9	211.2	211.2	211.2	212.5	211.2	212.5	212.5
45°	192.2	193.5	193.5	193.5	193.5	193.5	194.8	194.8
47.5°	174.5	174.5	174.5	174.5	175.8	175.8	175.8	175.8
50°	155.6	155.6	155.6	155.6	156.8	155.6	156.8	156.8
52.5°	135.3	135.3	135.3	135.3	135.3	135.3	136.6	135.3
55°	115.1	115.1	115.1	115.1	113.8	113.8	113.8	115.1
57.5°	96.1	94.9	93.6	94.9	92.3	92.3	92.3	92.3
60°	75.9	74.6	74.6	73.4	72.1	70.8	72.1	70.8
62.5°	58.2	56.9	56.9	54.4	53.1	53.1	51.9	51.9
65°	43.0	40.5	39.2	39.2	37.9	36.7	35.4	35.4
67.5°	27.8	26.6	25.3	25.3	24.0	22.8	22.8	21.5
70°	16.4	15.2	13.9	15.2	12.6	11.4	11.4	11.4
72.5°	7.6	6.3	6.3	6.3	5.1	5.1	5.1	5.1
75°	3.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5
77.5°	1.3	1.3	2.5	1.3	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	0.0	0.0	0.0	1.3	1.3	0.0	1.3
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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Scaled Data Report





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

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(END OF REPORT)