

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: P642324

Luminaire Tested: ML5612LSWW97FS1E - 692H WW - 900LM - 4000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P642324  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-132)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 2/17/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML5612LSWW97FS1E - 692H WW - 900LM - 4000K  
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH HAZE TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 803.5 lumens  
Efficiency: N/A  
Efficacy: 60.4 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.12 / 1.23  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

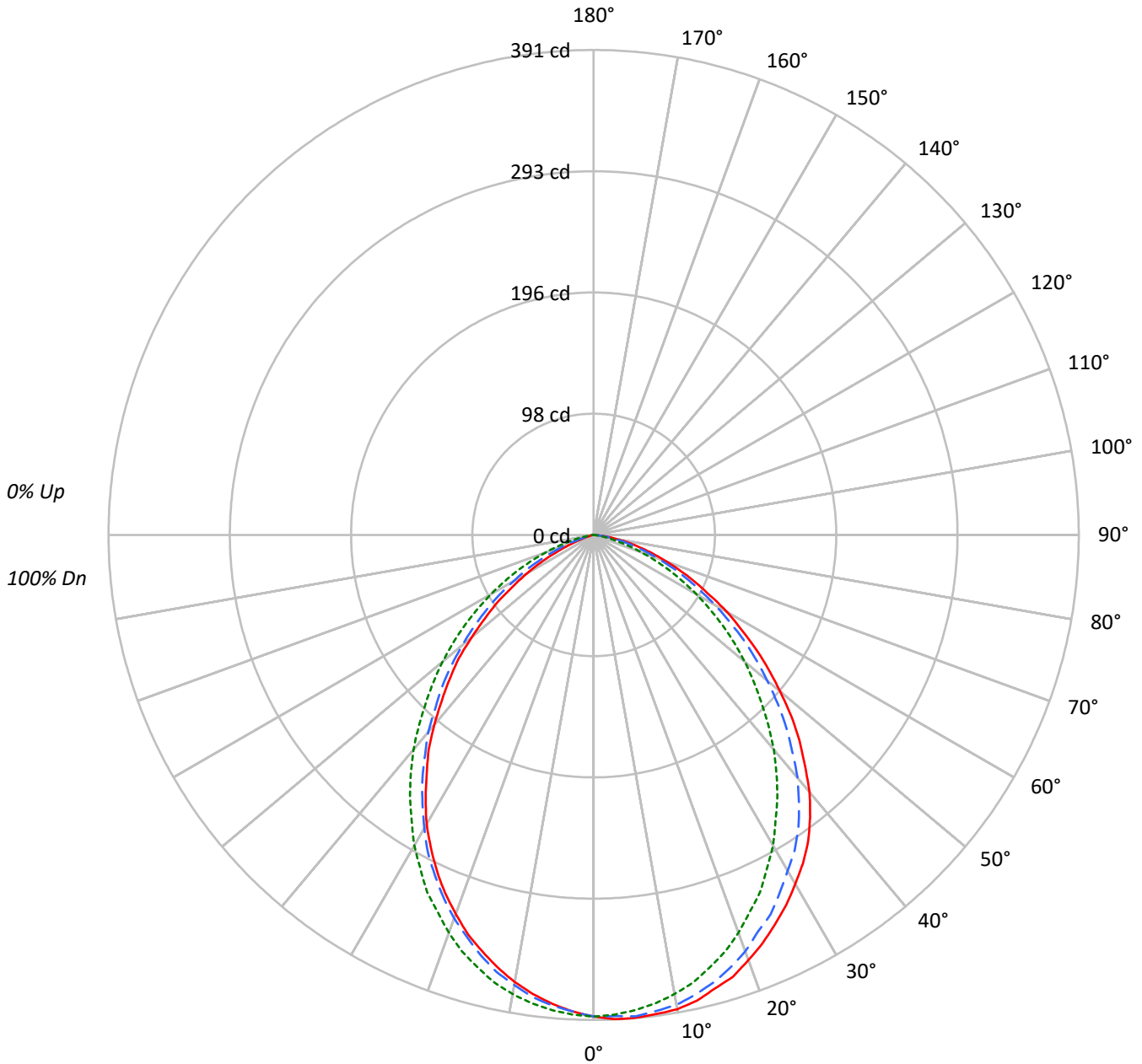
Input Watts (W): 13.3  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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				
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	86	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	68	60	54	66	59	54	64	58	53	62	57	53	51				
6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45				
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40				
8	65	52	44	39	63	52	44	39	50	43	38	49	43	38	48	42	38	36				
9	61	48	40	35	59	48	40	35	46	40	35	45	39	35	44	39	35	33				
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	41	36	32	30				

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

	0°	45°	90°	135°	180°
0°	21287	21287	21287	21287	21287
5°	21506	21440	21164	20961	20889
10°	21615	21409	20925	20513	20374
15°	21476	21192	20488	19926	19716
20°	21276	20844	19905	19182	18960
25°	20935	20414	19211	18310	18086
30°	20573	19788	18300	17275	17041
35°	20177	19260	17273	16108	15693
40°	19358	18291	16159	14828	14291
45°	18180	17025	14815	13366	12699
50°	16716	15556	13543	11744	10899
55°	15177	14107	12090	10083	9013
60°	13606	12378	10471	8157	6798
65°	11752	10624	8691	6110	4345
70°	9938	8751	6556	3783	1988
75°	8155	6841	4215	1313	784
80°	5872	4704	1957	379	379
85°	3145	2327	755	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 18180 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	36.5	4.5
10°-20°	102.0	12.7
20°-30°	146.9	18.3
30°-40°	164.3	20.4
40°-50°	150.6	18.7
50°-60°	113.1	14.1
60°-70°	64.6	8.0
70°-80°	22.5	2.8
80°-90°	2.9	0.4
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°	285.4	35.5
0°-40°	449.6	56.0
0°-60°	713.4	88.8
0°-90°	803.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	803.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	388	388	388	388	388	
5°	391	390	385	381	380	37
15°	378	373	361	351	347	107
25°	346	338	318	303	299	160
35°	302	288	258	241	234	188
45°	234	220	191	172	164	180
55°	159	148	126	106	94	142
65°	91	82	67	47	34	90
75°	38	32	20	6	4	41
85°	5	4	1	0	0	7
90°	0	0	0	0	0	



TEST NUMBER: P642324

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3
2.5°	390.8	389.6	389.6	389.6	389.6	389.6	389.6	389.6	389.6	389.6	388.3
5°	390.8	390.8	390.8	390.8	390.8	390.8	390.8	389.6	389.6	389.6	389.6
7.5°	389.6	389.6	389.6	389.6	389.6	389.6	389.6	388.3	388.3	387.1	387.1
10°	388.3	388.3	388.3	387.1	387.1	387.1	387.1	387.1	385.8	385.8	384.6
12.5°	384.6	384.6	384.6	384.6	383.4	383.4	383.4	382.1	380.9	380.9	379.6
15°	378.4	379.6	379.6	378.4	378.4	378.4	378.4	377.2	375.9	374.7	373.4
17.5°	373.4	373.4	373.4	372.2	371.0	372.2	371.0	369.7	368.5	367.2	366.0
20°	364.7	364.7	363.5	363.5	363.5	363.5	362.3	361.0	359.8	358.5	357.3
22.5°	356.1	356.1	356.1	353.6	353.6	353.6	352.3	352.3	349.9	348.6	346.1
25°	346.1	346.1	346.1	344.9	343.7	342.4	343.7	341.2	339.9	337.5	337.5
27.5°	336.2	336.2	335.0	335.0	333.7	333.7	332.5	330.0	328.8	327.5	325.0
30°	325.0	325.0	323.8	323.8	322.6	321.3	321.3	318.8	317.6	315.1	312.6
32.5°	313.9	313.9	312.6	312.6	311.4	310.2	310.2	307.7	305.2	302.7	301.5
35°	301.5	301.5	300.2	300.2	299.0	297.8	296.5	294.0	292.8	289.1	287.8
37.5°	286.6	287.8	285.3	285.3	284.1	282.9	281.6	280.4	277.9	275.4	271.7
40°	270.5	269.2	269.2	268.0	266.7	266.7	265.5	263.0	261.8	258.1	255.6
42.5°	251.9	251.9	251.9	250.6	249.4	249.4	246.9	245.6	243.2	240.7	237.0
45°	234.5	234.5	233.2	233.2	230.8	230.8	229.5	227.0	225.8	222.1	219.6
47.5°	215.9	214.6	214.6	213.4	212.1	212.1	210.9	209.7	207.2	203.5	201.0
50°	196.0	196.0	196.0	194.8	193.5	193.5	192.3	189.8	188.6	186.1	182.4
52.5°	177.4	177.4	177.4	176.2	174.9	174.9	173.7	172.4	170.0	167.5	165.0
55°	158.8	158.8	158.8	157.6	157.6	155.1	155.1	153.8	151.4	148.9	147.6
57.5°	140.2	140.2	140.2	140.2	139.0	139.0	137.7	136.5	134.0	132.7	129.0
60°	124.1	122.8	122.8	121.6	121.6	120.3	119.1	117.9	116.6	114.1	112.9
62.5°	105.5	106.7	105.5	105.5	104.2	104.2	104.2	101.7	100.5	98.0	96.8
65°	90.6	90.6	90.6	90.6	88.1	88.1	88.1	85.6	84.4	84.4	81.9
67.5°	75.7	75.7	75.7	74.4	74.4	74.4	73.2	72.0	70.7	69.5	68.2
70°	62.0	62.0	62.0	60.8	60.8	59.6	59.6	58.3	57.1	57.1	54.6
72.5°	49.6	49.6	49.6	49.6	48.4	48.4	47.1	47.1	45.9	44.7	43.4
75°	38.5	38.5	38.5	37.2	37.2	37.2	36.0	36.0	34.7	33.5	32.3
77.5°	28.5	27.3	27.3	27.3	27.3	26.1	26.1	26.1	24.8	23.6	23.6
80°	18.6	18.6	18.6	18.6	18.6	17.4	17.4	17.4	16.1	16.1	14.9
82.5°	11.2	11.2	11.2	11.2	11.2	9.9	9.9	9.9	8.7	8.7	8.7
85°	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	3.7	3.7	3.7
87.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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°	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3
2.5°	389.6	389.6	388.3	388.3	388.3	388.3	388.3	387.1	387.1	387.1	387.1
5°	389.6	388.3	387.1	387.1	387.1	387.1	385.8	385.8	385.8	384.6	384.6
7.5°	385.8	385.8	385.8	384.6	384.6	383.4	383.4	382.1	382.1	380.9	380.9
10°	383.4	382.1	382.1	380.9	380.9	379.6	379.6	377.2	375.9	375.9	374.7
12.5°	378.4	377.2	377.2	374.7	374.7	374.7	373.4	371.0	369.7	369.7	368.5
15°	372.2	371.0	369.7	367.2	367.2	366.0	364.7	363.5	362.3	361.0	359.8
17.5°	364.7	362.3	361.0	359.8	358.5	357.3	356.1	354.8	352.3	352.3	349.9
20°	356.1	353.6	352.3	349.9	348.6	348.6	346.1	343.7	342.4	341.2	338.7
22.5°	344.9	343.7	341.2	338.7	337.5	337.5	335.0	332.5	331.3	328.8	327.5
25°	335.0	331.3	330.0	327.5	326.3	326.3	323.8	321.3	318.8	317.6	315.1
27.5°	322.6	320.1	318.8	315.1	313.9	312.6	310.2	307.7	305.2	302.7	300.2
30°	310.2	307.7	305.2	301.5	301.5	299.0	296.5	292.8	291.6	289.1	285.3
32.5°	297.8	295.3	291.6	289.1	286.6	285.3	281.6	279.1	276.7	272.9	271.7
35°	284.1	280.4	277.9	274.2	272.9	270.5	268.0	264.3	261.8	258.1	254.3
37.5°	269.2	264.3	261.8	258.1	256.8	254.3	251.9	249.4	245.6	241.9	239.4
40°	253.1	248.1	244.4	241.9	239.4	237.0	235.7	230.8	228.3	225.8	223.3
42.5°	234.5	230.8	227.0	224.6	222.1	220.8	217.1	214.6	210.9	208.4	205.9
45°	217.1	213.4	209.7	205.9	204.7	203.5	201.0	197.3	193.5	191.1	188.6
47.5°	198.5	196.0	191.1	189.8	187.3	186.1	182.4	179.9	178.7	174.9	172.4
50°	179.9	177.4	174.9	171.2	170.0	168.7	166.2	163.8	161.3	158.8	156.3
52.5°	161.3	160.0	157.6	153.8	153.8	152.6	150.1	147.6	145.2	142.7	140.2
55°	145.2	142.7	140.2	137.7	136.5	135.2	132.7	131.5	129.0	126.5	124.1
57.5°	127.8	125.3	124.1	121.6	120.3	119.1	116.6	115.4	112.9	110.4	107.9
60°	111.7	109.2	107.9	105.5	104.2	104.2	101.7	99.3	98.0	95.5	93.0
62.5°	95.5	93.0	91.8	89.3	89.3	88.1	86.8	84.4	83.1	80.6	79.4
65°	80.6	79.4	76.9	75.7	74.4	73.2	72.0	70.7	68.2	67.0	64.5
67.5°	67.0	64.5	63.3	62.0	60.8	59.6	58.3	57.1	54.6	53.3	50.9
70°	53.3	52.1	50.9	49.6	48.4	48.4	45.9	44.7	42.2	40.9	38.5
72.5°	42.2	40.9	39.7	37.2	37.2	36.0	34.7	33.5	31.0	29.8	27.3
75°	31.0	31.0	28.5	27.3	27.3	26.1	24.8	23.6	22.3	19.9	18.6
77.5°	22.3	21.1	19.9	18.6	17.4	17.4	16.1	14.9	13.6	12.4	9.9
80°	14.9	13.6	12.4	11.2	11.2	9.9	8.7	8.7	7.4	6.2	5.0
82.5°	7.4	7.4	6.2	6.2	5.0	5.0	5.0	3.7	3.7	2.5	2.5
85°	3.7	2.5	2.5	2.5	2.5	2.5	1.2	1.2	1.2	1.2	0.0
87.5°	1.2	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°	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3
2.5°	387.1	385.8	387.1	387.1	385.8	385.8	385.8	385.8	384.6	385.8	384.6
5°	384.6	383.4	383.4	383.4	383.4	382.1	382.1	380.9	380.9	380.9	380.9
7.5°	379.6	378.4	378.4	377.2	377.2	377.2	377.2	375.9	375.9	374.7	374.7
10°	374.7	373.4	372.2	372.2	371.0	371.0	371.0	369.7	368.5	368.5	367.2
12.5°	366.0	366.0	364.7	364.7	363.5	363.5	362.3	361.0	361.0	359.8	359.8
15°	358.5	357.3	356.1	356.1	354.8	353.6	352.3	352.3	351.1	351.1	349.9
17.5°	348.6	346.1	346.1	344.9	343.7	343.7	342.4	341.2	339.9	339.9	339.9
20°	337.5	336.2	335.0	333.7	332.5	332.5	331.3	330.0	328.8	327.5	327.5
22.5°	325.0	323.8	322.6	321.3	321.3	320.1	318.8	317.6	316.4	315.1	315.1
25°	312.6	311.4	310.2	308.9	307.7	306.4	305.2	304.0	302.7	301.5	301.5
27.5°	299.0	296.5	295.3	294.0	292.8	291.6	291.6	289.1	289.1	287.8	286.6
30°	284.1	281.6	279.1	279.1	277.9	276.7	274.2	274.2	272.9	271.7	270.5
32.5°	268.0	266.7	264.3	264.3	261.8	260.5	259.3	258.1	256.8	255.6	255.6
35°	253.1	249.4	248.1	248.1	245.6	244.4	243.2	240.7	240.7	238.2	238.2
37.5°	237.0	234.5	233.2	230.8	229.5	228.3	227.0	224.6	223.3	222.1	220.8
40°	220.8	218.4	215.9	214.6	213.4	210.9	209.7	207.2	207.2	204.7	203.5
42.5°	203.5	201.0	198.5	197.3	196.0	193.5	192.3	189.8	188.6	187.3	186.1
45°	186.1	183.6	182.4	181.1	179.9	178.7	174.9	173.7	172.4	170.0	168.7
47.5°	170.0	167.5	165.0	165.0	162.5	161.3	158.8	156.3	155.1	152.6	151.4
50°	153.8	151.4	148.9	147.6	147.6	143.9	142.7	140.2	137.7	135.2	134.0
52.5°	137.7	135.2	132.7	131.5	130.3	127.8	125.3	124.1	121.6	119.1	117.9
55°	121.6	119.1	116.6	115.4	114.1	111.7	110.4	106.7	105.5	103.0	100.5
57.5°	106.7	104.2	101.7	100.5	99.3	96.8	94.3	91.8	90.6	88.1	85.6
60°	90.6	89.3	86.8	85.6	84.4	83.1	79.4	76.9	74.4	73.2	70.7
62.5°	76.9	74.4	72.0	70.7	69.5	68.2	65.8	63.3	62.0	58.3	55.8
65°	63.3	60.8	58.3	57.1	55.8	54.6	52.1	49.6	47.1	44.7	43.4
67.5°	48.4	47.1	44.7	44.7	43.4	40.9	38.5	37.2	34.7	33.5	31.0
70°	37.2	36.0	33.5	32.3	31.0	28.5	27.3	24.8	23.6	22.3	19.9
72.5°	26.1	24.8	22.3	21.1	19.9	18.6	16.1	14.9	13.6	12.4	11.2
75°	17.4	14.9	13.6	12.4	12.4	9.9	8.7	7.4	6.2	5.0	5.0
77.5°	9.9	8.7	6.2	6.2	6.2	5.0	3.7	3.7	2.5	2.5	2.5
80°	5.0	3.7	2.5	2.5	2.5	2.5	1.2	1.2	1.2	1.2	1.2
82.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
85°	0.0	0.0	0.0	0.0	0.0	1.2	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: P642324

CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 900LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	388.3	388.3	388.3	388.3	388.3	388.3	388.3	388.3
2.5°	384.6	384.6	384.6	384.6	384.6	384.6	384.6	384.6
5°	380.9	379.6	379.6	379.6	379.6	379.6	379.6	379.6
7.5°	374.7	374.7	373.4	374.7	373.4	373.4	373.4	373.4
10°	367.2	367.2	367.2	367.2	366.0	366.0	366.0	366.0
12.5°	359.8	358.5	358.5	358.5	357.3	358.5	357.3	357.3
15°	349.9	348.6	348.6	348.6	348.6	347.4	348.6	347.4
17.5°	338.7	338.7	337.5	338.7	337.5	337.5	337.5	337.5
20°	326.3	326.3	326.3	325.0	326.3	325.0	325.0	325.0
22.5°	313.9	313.9	312.6	312.6	312.6	312.6	312.6	312.6
25°	300.2	300.2	300.2	300.2	299.0	299.0	299.0	299.0
27.5°	286.6	285.3	285.3	285.3	284.1	285.3	284.1	284.1
30°	270.5	270.5	269.2	269.2	269.2	268.0	268.0	269.2
32.5°	253.1	253.1	253.1	253.1	251.9	251.9	251.9	251.9
35°	237.0	237.0	235.7	235.7	235.7	234.5	234.5	234.5
37.5°	219.6	219.6	218.4	218.4	218.4	217.1	217.1	218.4
40°	202.2	202.2	201.0	201.0	201.0	199.7	199.7	199.7
42.5°	184.9	183.6	183.6	182.4	182.4	182.4	181.1	181.1
45°	167.5	166.2	166.2	166.2	165.0	163.8	163.8	163.8
47.5°	150.1	148.9	147.6	147.6	146.4	146.4	146.4	147.6
50°	132.7	131.5	131.5	130.3	129.0	129.0	129.0	127.8
52.5°	115.4	114.1	114.1	112.9	112.9	111.7	110.4	110.4
55°	99.3	98.0	96.8	95.5	95.5	94.3	94.3	94.3
57.5°	83.1	81.9	80.6	80.6	79.4	79.4	78.2	76.9
60°	68.2	67.0	65.8	65.8	64.5	63.3	62.0	62.0
62.5°	54.6	53.3	52.1	50.9	49.6	48.4	47.1	48.4
65°	42.2	39.7	38.5	37.2	37.2	36.0	34.7	33.5
67.5°	29.8	28.5	27.3	26.1	24.8	23.6	22.3	22.3
70°	18.6	16.1	16.1	16.1	14.9	13.6	12.4	12.4
72.5°	9.9	8.7	7.4	7.4	6.2	6.2	6.2	6.2
75°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
77.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
80°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
82.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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)