

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: P642319

Luminaire Tested: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

Issue Date: 2/17/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P642319  
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 - 600LM - 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**

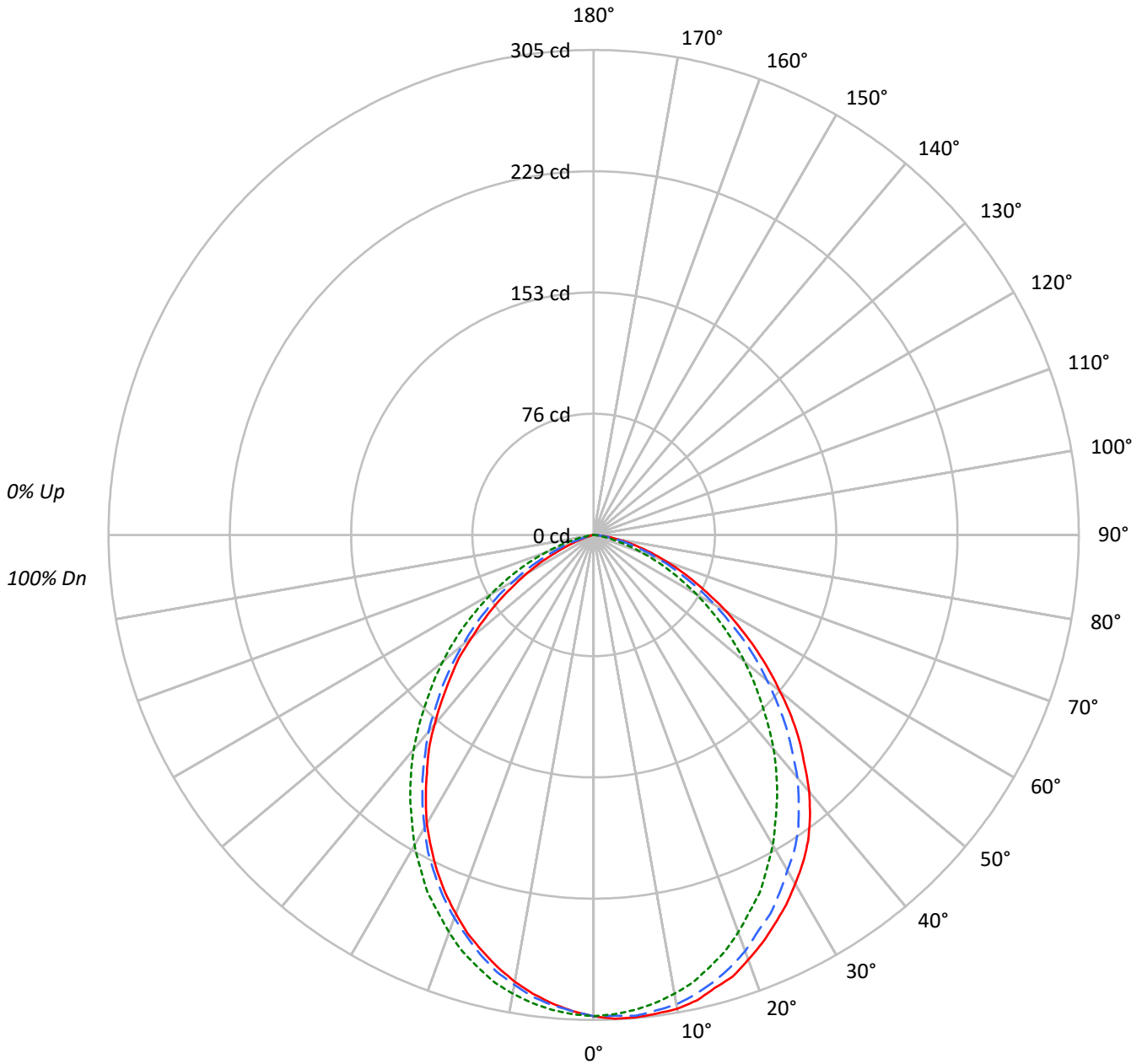
Lumens per Lamp: N/A  
Luminaire Lumens: 626.3 lumens  
Efficiency: N/A  
Efficacy: 60.8 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.12 / 1.23  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

Input Watts (W): 10.3  
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



TEST NUMBER: P642319  
CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

### 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	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88				88				
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76				76				
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66				66				
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57				57				
5	80	69	60	54	78	68	60	54	66	59	54	64	58	53	62	57	53	51				51				
6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45				45				
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40				40				
8	65	52	44	39	63	52	44	39	50	43	38	49	43	38	48	42	38	36				36				
9	61	48	40	35	59	48	40	35	46	40	35	45	39	35	44	39	35	33				33				
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	41	36	32	30				30				

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

	0°	45°	90°	135°	180°
0°	16594	16594	16594	16594	16594
5°	16762	16707	16498	16338	16283
10°	16850	16689	16310	15987	15881
15°	16737	16521	15971	15534	15369
20°	16586	16247	15512	14952	14783
25°	16319	15908	14977	14275	14094
30°	16040	15426	14262	13464	13281
35°	15727	15011	13458	12555	12234
40°	15085	14255	12595	11557	11142
45°	14172	13273	11544	10420	9892
50°	13032	12128	10558	9151	8494
55°	11832	11001	9424	7856	7025
60°	10602	9648	8168	6359	5307
65°	9158	8276	6771	4761	3386
70°	7758	6812	5113	2949	1555
75°	6354	5316	3283	1017	614
80°	4578	3662	1515	316	316
85°	2453	1824	629	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 14172 cd/sqm



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CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	28.4	4.5
10°-20°	79.5	12.7
20°-30°	114.5	18.3
30°-40°	128.0	20.4
40°-50°	117.4	18.7
50°-60°	88.2	14.1
60°-70°	50.4	8.0
70°-80°	17.6	2.8
80°-90°	2.3	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°	222.4	35.5
0°-40°	350.5	56.0
0°-60°	556.1	88.8
0°-90°	626.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	626.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	303	303	303	303	303	
5°	305	304	300	297	296	29
15°	295	291	281	274	271	83
25°	270	263	248	236	233	124
35°	235	224	201	188	183	146
45°	183	171	149	134	128	141
55°	124	115	99	82	74	111
65°	71	64	52	37	26	70
75°	30	25	16	5	3	32
85°	4	3	1	0	0	6
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°	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7
2.5°	304.6	303.6	303.6	303.6	303.6	303.6	303.6	303.6	303.6	303.6	302.7
5°	304.6	304.6	304.6	304.6	304.6	304.6	304.6	303.6	303.6	303.6	303.6
7.5°	303.6	303.6	303.6	303.6	303.6	303.6	303.6	302.7	302.7	301.7	301.7
10°	302.7	302.7	302.7	301.7	301.7	301.7	301.7	301.7	300.7	300.7	299.8
12.5°	299.8	299.8	299.8	299.8	298.8	298.8	298.8	297.8	296.9	296.9	295.9
15°	294.9	295.9	295.9	294.9	294.9	294.9	294.9	294.0	293.0	292.0	291.1
17.5°	291.1	291.1	291.1	290.1	289.1	290.1	289.1	288.2	287.2	286.2	285.3
20°	284.3	284.3	283.3	283.3	283.3	283.3	282.4	281.4	280.4	279.5	278.5
22.5°	277.5	277.5	277.5	275.6	275.6	275.6	274.6	274.6	272.7	271.7	269.8
25°	269.8	269.8	269.8	268.8	267.9	266.9	267.9	265.9	265.0	263.0	263.0
27.5°	262.1	262.1	261.1	261.1	260.1	260.1	259.2	257.2	256.3	255.3	253.4
30°	253.4	253.4	252.4	252.4	251.4	250.5	250.5	248.5	247.6	245.6	243.7
32.5°	244.7	244.7	243.7	243.7	242.7	241.8	241.8	239.8	237.9	236.0	235.0
35°	235.0	235.0	234.0	234.0	233.0	232.1	231.1	229.2	228.2	225.3	224.3
37.5°	223.4	224.3	222.4	222.4	221.4	220.5	219.5	218.5	216.6	214.7	211.8
40°	210.8	209.8	209.8	208.9	207.9	207.9	206.9	205.0	204.0	201.1	199.2
42.5°	196.3	196.3	196.3	195.3	194.4	194.4	192.4	191.5	189.5	187.6	184.7
45°	182.8	182.8	181.8	181.8	179.9	179.9	178.9	177.0	176.0	173.1	171.2
47.5°	168.3	167.3	167.3	166.3	165.4	165.4	164.4	163.4	161.5	158.6	156.7
50°	152.8	152.8	152.8	151.8	150.9	150.9	149.9	148.0	147.0	145.1	142.2
52.5°	138.3	138.3	138.3	137.3	136.3	136.3	135.4	134.4	132.5	130.5	128.6
55°	123.8	123.8	123.8	122.8	122.8	120.9	120.9	119.9	118.0	116.0	115.1
57.5°	109.3	109.3	109.3	109.3	108.3	108.3	107.3	106.4	104.4	103.5	100.6
60°	96.7	95.7	95.7	94.8	94.8	93.8	92.8	91.9	90.9	89.0	88.0
62.5°	82.2	83.2	82.2	82.2	81.2	81.2	81.2	79.3	78.3	76.4	75.4
65°	70.6	70.6	70.6	70.6	68.7	68.7	68.7	66.7	65.8	65.8	63.8
67.5°	59.0	59.0	59.0	58.0	58.0	58.0	57.1	56.1	55.1	54.2	53.2
70°	48.4	48.4	48.4	47.4	47.4	46.4	46.4	45.4	44.5	44.5	42.5
72.5°	38.7	38.7	38.7	38.7	37.7	37.7	36.7	36.7	35.8	34.8	33.8
75°	30.0	30.0	30.0	29.0	29.0	29.0	28.0	28.0	27.1	26.1	25.1
77.5°	22.2	21.3	21.3	21.3	21.3	20.3	20.3	20.3	19.3	18.4	18.4
80°	14.5	14.5	14.5	14.5	14.5	13.5	13.5	13.5	12.6	12.6	11.6
82.5°	8.7	8.7	8.7	8.7	8.7	7.7	7.7	7.7	6.8	6.8	6.8
85°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	2.9	2.9	2.9
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: P642319

CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7
2.5°	303.6	303.6	302.7	302.7	302.7	302.7	302.7	301.7	301.7	301.7	301.7
5°	303.6	302.7	301.7	301.7	301.7	301.7	300.7	300.7	300.7	299.8	299.8
7.5°	300.7	300.7	300.7	299.8	299.8	298.8	298.8	297.8	297.8	296.9	296.9
10°	298.8	297.8	297.8	296.9	296.9	295.9	295.9	294.0	293.0	293.0	292.0
12.5°	294.9	294.0	294.0	292.0	292.0	292.0	291.1	289.1	288.2	288.2	287.2
15°	290.1	289.1	288.2	286.2	286.2	285.3	284.3	283.3	282.4	281.4	280.4
17.5°	284.3	282.4	281.4	280.4	279.5	278.5	277.5	276.6	274.6	274.6	272.7
20°	277.5	275.6	274.6	272.7	271.7	271.7	269.8	267.9	266.9	265.9	264.0
22.5°	268.8	267.9	265.9	264.0	263.0	263.0	261.1	259.2	258.2	256.3	255.3
25°	261.1	258.2	257.2	255.3	254.3	254.3	252.4	250.5	248.5	247.6	245.6
27.5°	251.4	249.5	248.5	245.6	244.7	243.7	241.8	239.8	237.9	236.0	234.0
30°	241.8	239.8	237.9	235.0	235.0	233.0	231.1	228.2	227.2	225.3	222.4
32.5°	232.1	230.1	227.2	225.3	223.4	222.4	219.5	217.6	215.6	212.7	211.8
35°	221.4	218.5	216.6	213.7	212.7	210.8	208.9	206.0	204.0	201.1	198.2
37.5°	209.8	206.0	204.0	201.1	200.2	198.2	196.3	194.4	191.5	188.6	186.6
40°	197.3	193.4	190.5	188.6	186.6	184.7	183.7	179.9	177.9	176.0	174.1
42.5°	182.8	179.9	177.0	175.0	173.1	172.1	169.2	167.3	164.4	162.5	160.5
45°	169.2	166.3	163.4	160.5	159.6	158.6	156.7	153.8	150.9	148.9	147.0
47.5°	154.7	152.8	148.9	148.0	146.0	145.1	142.2	140.2	139.2	136.3	134.4
50°	140.2	138.3	136.3	133.4	132.5	131.5	129.6	127.6	125.7	123.8	121.8
52.5°	125.7	124.7	122.8	119.9	119.9	118.9	117.0	115.1	113.1	111.2	109.3
55°	113.1	111.2	109.3	107.3	106.4	105.4	103.5	102.5	100.6	98.6	96.7
57.5°	99.6	97.7	96.7	94.8	93.8	92.8	90.9	89.9	88.0	86.1	84.1
60°	87.0	85.1	84.1	82.2	81.2	81.2	79.3	77.4	76.4	74.5	72.5
62.5°	74.5	72.5	71.6	69.6	69.6	68.7	67.7	65.8	64.8	62.9	61.9
65°	62.9	61.9	60.0	59.0	58.0	57.1	56.1	55.1	53.2	52.2	50.3
67.5°	52.2	50.3	49.3	48.4	47.4	46.4	45.4	44.5	42.5	41.6	39.6
70°	41.6	40.6	39.6	38.7	37.7	37.7	35.8	34.8	32.9	31.9	30.0
72.5°	32.9	31.9	30.9	29.0	29.0	28.0	27.1	26.1	24.2	23.2	21.3
75°	24.2	24.2	22.2	21.3	21.3	20.3	19.3	18.4	17.4	15.5	14.5
77.5°	17.4	16.4	15.5	14.5	13.5	13.5	12.6	11.6	10.6	9.7	7.7
80°	11.6	10.6	9.7	8.7	8.7	7.7	6.8	6.8	5.8	4.8	3.9
82.5°	5.8	5.8	4.8	4.8	3.9	3.9	3.9	2.9	2.9	1.9	1.9
85°	2.9	1.9	1.9	1.9	1.9	1.9	1.0	1.0	1.0	1.0	0.0
87.5°	1.0	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: P642319

CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7
2.5°	301.7	300.7	301.7	301.7	300.7	300.7	300.7	300.7	299.8	300.7	299.8
5°	299.8	298.8	298.8	298.8	298.8	297.8	297.8	296.9	296.9	296.9	296.9
7.5°	295.9	294.9	294.9	294.0	294.0	294.0	294.0	293.0	293.0	292.0	292.0
10°	292.0	291.1	290.1	290.1	289.1	289.1	289.1	288.2	287.2	287.2	286.2
12.5°	285.3	285.3	284.3	284.3	283.3	283.3	282.4	281.4	281.4	280.4	280.4
15°	279.5	278.5	277.5	277.5	276.6	275.6	274.6	274.6	273.7	273.7	272.7
17.5°	271.7	269.8	269.8	268.8	267.9	267.9	266.9	265.9	265.0	265.0	265.0
20°	263.0	262.1	261.1	260.1	259.2	259.2	258.2	257.2	256.3	255.3	255.3
22.5°	253.4	252.4	251.4	250.5	250.5	249.5	248.5	247.6	246.6	245.6	245.6
25°	243.7	242.7	241.8	240.8	239.8	238.9	237.9	236.9	236.0	235.0	235.0
27.5°	233.0	231.1	230.1	229.2	228.2	227.2	227.2	225.3	225.3	224.3	223.4
30°	221.4	219.5	217.6	217.6	216.6	215.6	213.7	213.7	212.7	211.8	210.8
32.5°	208.9	207.9	206.0	206.0	204.0	203.1	202.1	201.1	200.2	199.2	199.2
35°	197.3	194.4	193.4	193.4	191.5	190.5	189.5	187.6	187.6	185.7	185.7
37.5°	184.7	182.8	181.8	179.9	178.9	177.9	177.0	175.0	174.1	173.1	172.1
40°	172.1	170.2	168.3	167.3	166.3	164.4	163.4	161.5	161.5	159.6	158.6
42.5°	158.6	156.7	154.7	153.8	152.8	150.9	149.9	148.0	147.0	146.0	145.1
45°	145.1	143.1	142.2	141.2	140.2	139.2	136.3	135.4	134.4	132.5	131.5
47.5°	132.5	130.5	128.6	128.6	126.7	125.7	123.8	121.8	120.9	118.9	118.0
50°	119.9	118.0	116.0	115.1	115.1	112.2	111.2	109.3	107.3	105.4	104.4
52.5°	107.3	105.4	103.5	102.5	101.5	99.6	97.7	96.7	94.8	92.8	91.9
55°	94.8	92.8	90.9	89.9	89.0	87.0	86.1	83.2	82.2	80.3	78.3
57.5°	83.2	81.2	79.3	78.3	77.4	75.4	73.5	71.6	70.6	68.7	66.7
60°	70.6	69.6	67.7	66.7	65.8	64.8	61.9	60.0	58.0	57.1	55.1
62.5°	60.0	58.0	56.1	55.1	54.2	53.2	51.3	49.3	48.4	45.4	43.5
65°	49.3	47.4	45.4	44.5	43.5	42.5	40.6	38.7	36.7	34.8	33.8
67.5°	37.7	36.7	34.8	34.8	33.8	31.9	30.0	29.0	27.1	26.1	24.2
70°	29.0	28.0	26.1	25.1	24.2	22.2	21.3	19.3	18.4	17.4	15.5
72.5°	20.3	19.3	17.4	16.4	15.5	14.5	12.6	11.6	10.6	9.7	8.7
75°	13.5	11.6	10.6	9.7	9.7	7.7	6.8	5.8	4.8	3.9	3.9
77.5°	7.7	6.8	4.8	4.8	4.8	3.9	2.9	2.9	1.9	1.9	1.9
80°	3.9	2.9	1.9	1.9	1.9	1.9	1.0	1.0	1.0	1.0	1.0
82.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.0	1.0	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: P642319

CATALOG NUMBER: ML5612LSWW97FS1E - 692H WW - 600LM - 4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	302.7	302.7	302.7	302.7	302.7	302.7	302.7	302.7
2.5°	299.8	299.8	299.8	299.8	299.8	299.8	299.8	299.8
5°	296.9	295.9	295.9	295.9	295.9	295.9	295.9	295.9
7.5°	292.0	292.0	291.1	292.0	291.1	291.1	291.1	291.1
10°	286.2	286.2	286.2	286.2	285.3	285.3	285.3	285.3
12.5°	280.4	279.5	279.5	279.5	278.5	279.5	278.5	278.5
15°	272.7	271.7	271.7	271.7	271.7	270.8	271.7	270.8
17.5°	264.0	264.0	263.0	264.0	263.0	263.0	263.0	263.0
20°	254.3	254.3	254.3	253.4	254.3	253.4	253.4	253.4
22.5°	244.7	244.7	243.7	243.7	243.7	243.7	243.7	243.7
25°	234.0	234.0	234.0	234.0	233.0	233.0	233.0	233.0
27.5°	223.4	222.4	222.4	222.4	221.4	222.4	221.4	221.4
30°	210.8	210.8	209.8	209.8	209.8	208.9	208.9	209.8
32.5°	197.3	197.3	197.3	197.3	196.3	196.3	196.3	196.3
35°	184.7	184.7	183.7	183.7	183.7	182.8	182.8	182.8
37.5°	171.2	171.2	170.2	170.2	170.2	169.2	169.2	170.2
40°	157.6	157.6	156.7	156.7	156.7	155.7	155.7	155.7
42.5°	144.1	143.1	143.1	142.2	142.2	142.2	141.2	141.2
45°	130.5	129.6	129.6	129.6	128.6	127.6	127.6	127.6
47.5°	117.0	116.0	115.1	115.1	114.1	114.1	114.1	115.1
50°	103.5	102.5	102.5	101.5	100.6	100.6	100.6	99.6
52.5°	89.9	89.0	89.0	88.0	88.0	87.0	86.1	86.1
55°	77.4	76.4	75.4	74.5	74.5	73.5	73.5	73.5
57.5°	64.8	63.8	62.9	62.9	61.9	61.9	60.9	60.0
60°	53.2	52.2	51.3	51.3	50.3	49.3	48.4	48.4
62.5°	42.5	41.6	40.6	39.6	38.7	37.7	36.7	37.7
65°	32.9	30.9	30.0	29.0	29.0	28.0	27.1	26.1
67.5°	23.2	22.2	21.3	20.3	19.3	18.4	17.4	17.4
70°	14.5	12.6	12.6	12.6	11.6	10.6	9.7	9.7
72.5°	7.7	6.8	5.8	5.8	4.8	4.8	4.8	4.8
75°	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
77.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
82.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)