

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: P640534

Luminaire Tested: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P640534
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: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH WHITE TRIM
Light Source: (1) D2W SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 677.2 lumens
Efficiency: N/A
Efficacy: 57.4 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

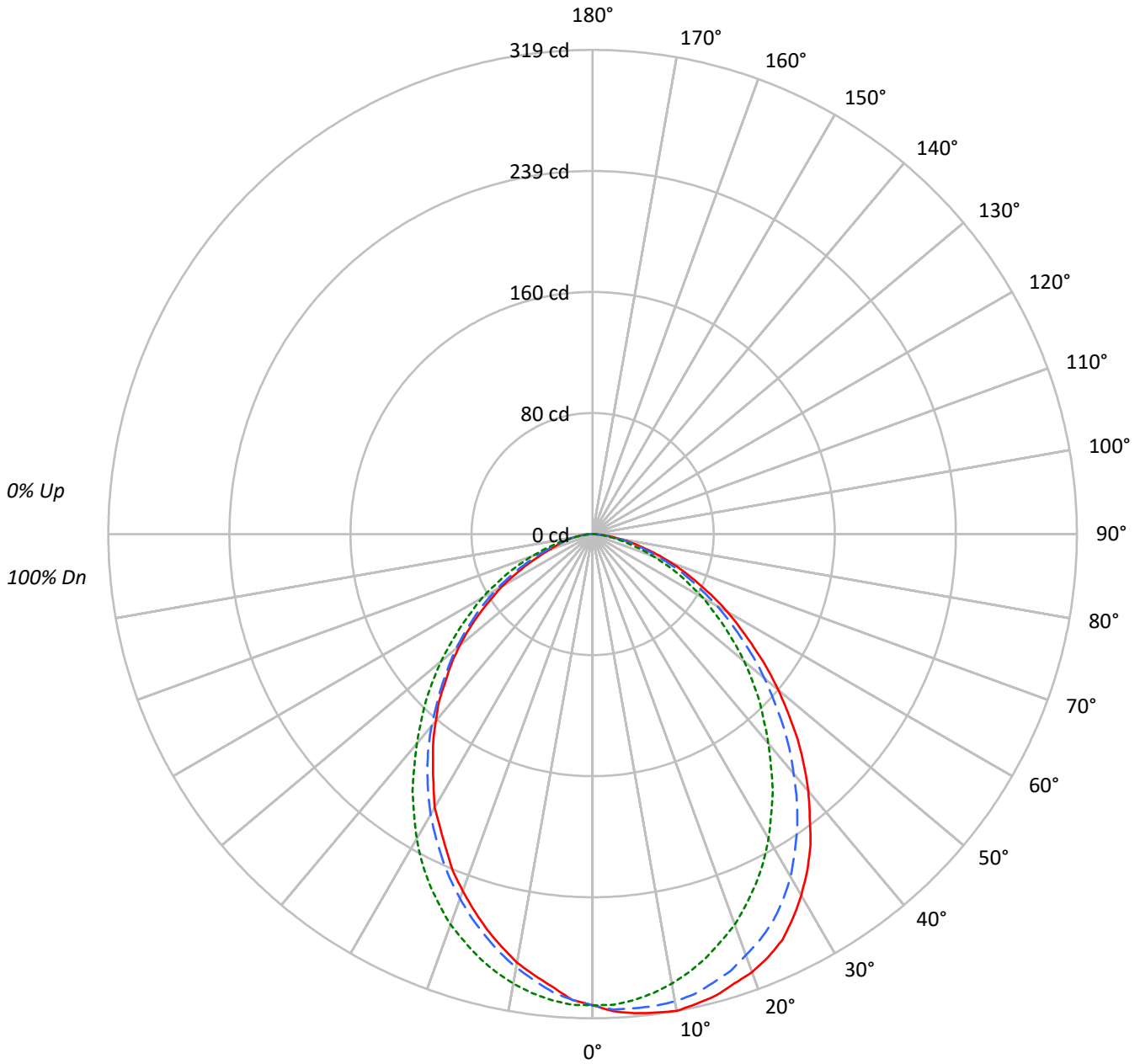
Input Watts (W): 11.8
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

Luminous Intensity Polar Plot





TEST NUMBER: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
RC	80									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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	88	86																			
2	101	94	88	82	99	92	86	81	88	84	80	85	81	78	82	79	76	74																			
3	93	83	76	70	91	82	75	69	79	73	68	76	71	67	74	69	66	64																			
4	86	75	66	60	83	73	66	60	71	64	59	69	63	58	66	62	57	55																			
5	79	67	59	53	77	66	58	52	64	57	52	62	56	51	60	55	51	49																			
6	73	61	53	46	72	60	52	46	58	51	46	57	50	45	55	49	45	43																			
7	68	56	47	41	67	55	47	41	53	46	41	52	45	41	51	45	40	39																			
8	64	51	43	37	62	50	43	37	49	42	37	48	41	37	47	41	37	35																			
9	60	47	39	34	58	46	39	34	45	38	34	44	38	33	43	37	33	32																			
10	56	43	36	31	55	43	36	31	42	35	31	41	35	31	40	35	30	29																			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	24503	24503	24503	24503	24503
5°	25112	24850	24430	24003	23741
10°	25571	25058	24104	23238	22982
15°	25719	25016	23611	22376	22025
20°	25807	24807	23001	21455	21010
25°	25721	24502	22159	20469	19903
30°	25049	23773	21120	19452	18960
35°	24102	22647	19939	18281	17655
40°	22774	21218	18549	16993	16550
45°	21301	19738	17326	15641	15283
50°	19588	18139	16014	14430	14025
55°	17795	16460	14534	13047	12455
60°	16167	14967	13278	11573	10894
65°	14289	13281	11674	9863	8854
70°	12694	11448	9694	7963	6970
75°	10523	9547	7564	6253	6253
80°	8319	7365	5864	5410	5410
85°	4891	4891	3895	4891	4891

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 21301 cd/sqm



TEST NUMBER: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	29.2	4.3
10°-20°	81.8	12.1
20°-30°	118.6	17.5
30°-40°	132.3	19.5
40°-50°	122.7	18.1
50°-60°	96.5	14.2
60°-70°	61.7	9.1
70°-80°	28.3	4.2
80°-90°	6.1	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°	229.6	33.9
0°-40°	361.9	53.4
0°-60°	581.0	85.8
0°-90°	677.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	677.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	310	310	310	310	310	
5°	317	314	308	303	300	30
15°	315	306	289	274	270	89
25°	295	281	254	235	228	135
35°	250	235	207	190	183	156
45°	191	177	155	140	137	147
55°	129	120	106	95	90	116
65°	76	71	62	53	47	77
75°	34	31	25	20	20	37
85°	5	5	4	5	5	7
90°	0	0	0	0	0	



TEST NUMBER: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4
2.5°	314.7	314.7	314.7	314.7	314.7	314.7	313.6	313.6	313.6	313.6	313.6
5°	316.9	316.9	316.9	316.9	315.8	315.8	315.8	315.8	314.7	314.7	313.6
7.5°	318.0	318.0	318.0	316.9	316.9	316.9	315.8	315.8	315.8	314.7	313.6
10°	319.0	318.0	318.0	316.9	316.9	316.9	315.8	315.8	314.7	313.6	312.6
12.5°	316.9	316.9	316.9	316.9	315.8	315.8	314.7	313.6	312.6	311.5	310.4
15°	314.7	314.7	314.7	313.6	312.6	312.6	311.5	310.4	309.3	308.3	306.1
17.5°	310.4	311.5	310.4	310.4	309.3	309.3	308.3	307.2	305.0	303.9	301.8
20°	307.2	306.1	306.1	306.1	305.0	303.9	302.9	301.8	299.6	298.6	295.3
22.5°	301.8	301.8	300.7	299.6	298.6	298.6	297.5	295.3	294.2	292.1	288.9
25°	295.3	294.2	294.2	293.2	292.1	292.1	289.9	288.9	286.7	283.5	281.3
27.5°	285.6	285.6	285.6	284.5	283.5	282.4	281.3	279.2	278.1	273.8	271.6
30°	274.8	274.8	273.8	273.8	271.6	271.6	270.5	268.4	266.2	263.0	260.8
32.5°	263.0	263.0	263.0	260.8	259.8	258.7	257.6	256.5	253.3	250.1	247.9
35°	250.1	250.1	249.0	247.9	246.8	245.7	244.7	242.5	240.4	238.2	235.0
37.5°	235.0	236.0	235.0	233.9	232.8	231.7	230.7	229.6	226.3	224.2	221.0
40°	221.0	221.0	219.9	218.8	217.7	217.7	216.6	214.5	212.3	209.1	205.9
42.5°	205.9	205.9	204.8	203.7	203.7	202.6	200.5	199.4	197.2	195.1	191.9
45°	190.8	189.7	188.6	188.6	187.5	186.5	186.5	184.3	182.2	178.9	176.8
47.5°	174.6	174.6	173.5	173.5	172.5	171.4	171.4	169.2	166.0	163.8	161.7
50°	159.5	159.5	158.4	158.4	157.4	156.3	155.2	154.1	152.0	149.8	147.7
52.5°	144.4	144.4	144.4	142.3	141.2	141.2	141.2	139.0	138.0	135.8	133.7
55°	129.3	129.3	129.3	128.3	127.2	127.2	127.2	125.0	124.0	121.8	119.6
57.5°	115.3	115.3	115.3	114.2	114.2	113.2	112.1	111.0	109.9	108.9	106.7
60°	102.4	102.4	101.3	100.2	101.3	100.2	99.2	98.1	97.0	95.9	94.8
62.5°	89.5	89.5	89.5	88.4	87.3	87.3	87.3	86.2	84.1	83.0	81.9
65°	76.5	76.5	76.5	76.5	75.4	75.4	74.4	73.3	73.3	72.2	71.1
67.5°	65.7	65.7	64.7	64.7	63.6	63.6	63.6	62.5	61.4	61.4	60.4
70°	55.0	53.9	53.9	53.9	52.8	52.8	52.8	51.7	51.7	50.7	49.6
72.5°	44.2	44.2	44.2	44.2	43.1	43.1	42.0	42.0	41.0	41.0	39.9
75°	34.5	34.5	34.5	34.5	33.4	33.4	33.4	33.4	32.3	32.3	31.3
77.5°	25.9	25.9	25.9	25.9	25.9	25.9	24.8	24.8	24.8	23.7	23.7
80°	18.3	18.3	18.3	18.3	17.2	17.2	17.2	17.2	17.2	16.2	16.2
82.5°	11.9	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	9.7
85°	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
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



TEST NUMBER: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4
2.5°	312.6	312.6	312.6	312.6	311.5	311.5	311.5	310.4	310.4	310.4	310.4
5°	313.6	313.6	311.5	311.5	311.5	311.5	310.4	310.4	309.3	308.3	307.2
7.5°	312.6	312.6	311.5	310.4	309.3	309.3	308.3	307.2	306.1	305.0	303.9
10°	311.5	310.4	309.3	308.3	307.2	306.1	305.0	303.9	301.8	300.7	299.6
12.5°	309.3	307.2	306.1	303.9	303.9	302.9	300.7	299.6	297.5	295.3	294.2
15°	305.0	302.9	300.7	298.6	298.6	296.4	294.2	293.2	291.0	288.9	286.7
17.5°	299.6	297.5	295.3	293.2	292.1	289.9	287.8	285.6	283.5	281.3	279.2
20°	294.2	291.0	288.9	285.6	284.5	283.5	280.2	278.1	275.9	273.8	270.5
22.5°	286.7	284.5	280.2	278.1	277.0	274.8	272.7	269.5	266.2	264.1	261.9
25°	278.1	275.9	272.7	269.5	267.3	266.2	263.0	259.8	257.6	254.4	252.2
27.5°	268.4	265.1	263.0	258.7	257.6	255.4	252.2	249.0	246.8	243.6	240.4
30°	257.6	254.4	251.1	247.9	245.7	244.7	241.4	238.2	235.0	231.7	229.6
32.5°	244.7	241.4	238.2	236.0	232.8	230.7	228.5	225.3	222.0	218.8	216.6
35°	231.7	228.5	225.3	222.0	219.9	219.9	215.6	212.3	209.1	206.9	203.7
37.5°	217.7	214.5	211.3	208.0	206.9	204.8	201.6	198.3	196.2	192.9	190.8
40°	203.7	199.4	197.2	194.0	192.9	190.8	188.6	185.4	183.2	180.0	177.8
42.5°	188.6	186.5	183.2	181.1	178.9	177.8	174.6	171.4	169.2	167.1	166.0
45°	174.6	171.4	168.1	166.0	164.9	162.8	161.7	158.4	156.3	155.2	153.1
47.5°	159.5	157.4	155.2	152.0	150.9	149.8	147.7	146.6	144.4	142.3	140.1
50°	145.5	143.4	141.2	139.0	138.0	138.0	134.7	132.6	131.5	130.4	128.3
52.5°	131.5	129.3	127.2	125.0	125.0	124.0	121.8	120.7	119.6	117.5	115.3
55°	118.6	116.4	114.2	113.2	112.1	112.1	109.9	108.9	106.7	105.6	104.5
57.5°	105.6	103.5	102.4	101.3	100.2	100.2	98.1	97.0	95.9	93.8	93.8
60°	93.8	91.6	90.5	89.5	88.4	87.3	87.3	85.1	84.1	84.1	81.9
62.5°	80.8	79.8	78.7	77.6	76.5	76.5	75.4	74.4	73.3	72.2	71.1
65°	70.1	69.0	67.9	66.8	65.7	65.7	64.7	63.6	62.5	62.5	60.4
67.5°	59.3	58.2	57.1	56.0	56.0	55.0	53.9	53.9	52.8	51.7	50.7
70°	48.5	48.5	47.4	46.3	46.3	45.3	44.2	44.2	43.1	42.0	41.0
72.5°	39.9	38.8	37.7	37.7	36.6	36.6	35.6	35.6	34.5	33.4	32.3
75°	30.2	29.1	29.1	29.1	28.0	28.0	28.0	26.9	25.9	24.8	24.8
77.5°	22.6	22.6	21.6	20.5	20.5	20.5	19.4	19.4	19.4	18.3	18.3
80°	16.2	15.1	15.1	14.0	14.0	14.0	14.0	12.9	12.9	12.9	11.9
82.5°	9.7	9.7	9.7	8.6	8.6	8.6	8.6	8.6	7.5	7.5	7.5
85°	5.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.2	2.2
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: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4
2.5°	309.3	309.3	308.3	308.3	308.3	308.3	308.3	307.2	307.2	307.2	307.2
5°	307.2	306.1	305.0	305.0	305.0	303.9	303.9	302.9	302.9	301.8	301.8
7.5°	302.9	301.8	300.7	300.7	299.6	299.6	297.5	297.5	296.4	295.3	295.3
10°	297.5	296.4	295.3	294.2	294.2	292.1	292.1	291.0	289.9	288.9	288.9
12.5°	292.1	291.0	288.9	287.8	287.8	286.7	284.5	283.5	282.4	281.3	280.2
15°	284.5	283.5	281.3	280.2	279.2	278.1	277.0	275.9	273.8	272.7	272.7
17.5°	277.0	275.9	272.7	271.6	271.6	269.5	268.4	266.2	265.1	264.1	263.0
20°	268.4	266.2	264.1	263.0	261.9	259.8	258.7	257.6	255.4	254.4	253.3
22.5°	258.7	256.5	254.4	253.3	252.2	250.1	249.0	246.8	245.7	244.7	243.6
25°	249.0	246.8	244.7	243.6	241.4	240.4	238.2	236.0	235.0	233.9	232.8
27.5°	238.2	236.0	232.8	231.7	230.7	229.6	227.4	225.3	224.2	222.0	222.0
30°	226.3	224.2	222.0	221.0	219.9	217.7	216.6	214.5	213.4	211.3	211.3
32.5°	214.5	211.3	209.1	208.0	206.9	205.9	203.7	202.6	201.6	200.5	199.4
35°	201.6	199.4	197.2	196.2	195.1	192.9	191.9	190.8	189.7	187.5	187.5
37.5°	188.6	186.5	184.3	183.2	183.2	181.1	180.0	177.8	177.8	175.7	175.7
40°	175.7	173.5	171.4	171.4	170.3	168.1	167.1	166.0	164.9	163.8	163.8
42.5°	163.8	160.6	159.5	159.5	157.4	156.3	155.2	154.1	152.0	152.0	152.0
45°	150.9	148.7	147.7	146.6	145.5	144.4	143.4	141.2	140.1	139.0	139.0
47.5°	139.0	136.9	135.8	134.7	133.7	132.6	131.5	130.4	128.3	128.3	127.2
50°	127.2	125.0	124.0	122.9	121.8	120.7	119.6	118.6	117.5	116.4	115.3
52.5°	114.2	113.2	112.1	111.0	111.0	108.9	107.8	106.7	105.6	105.6	103.5
55°	103.5	102.4	101.3	100.2	99.2	98.1	97.0	95.9	94.8	93.8	92.7
57.5°	91.6	90.5	89.5	89.5	88.4	87.3	86.2	85.1	84.1	83.0	81.9
60°	80.8	79.8	78.7	78.7	77.6	76.5	75.4	75.4	73.3	72.2	71.1
62.5°	70.1	69.0	67.9	67.9	66.8	66.8	65.7	64.7	62.5	62.5	61.4
65°	60.4	59.3	58.2	57.1	57.1	56.0	55.0	53.9	52.8	52.8	51.7
67.5°	50.7	49.6	48.5	48.5	47.4	46.3	45.3	44.2	43.1	43.1	42.0
70°	41.0	39.9	38.8	38.8	37.7	36.6	36.6	35.6	34.5	33.4	33.4
72.5°	31.3	31.3	30.2	30.2	29.1	29.1	28.0	26.9	26.9	25.9	24.8
75°	23.7	23.7	22.6	22.6	21.6	21.6	20.5	20.5	20.5	19.4	20.5
77.5°	17.2	17.2	16.2	16.2	16.2	15.1	15.1	15.1	16.2	16.2	16.2
80°	11.9	11.9	11.9	11.9	10.8	10.8	11.9	11.9	11.9	11.9	11.9
82.5°	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.6	8.6	8.6
85°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	5.4	5.4	5.4	5.4
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
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: P640534

CATALOG NUMBER: ML5609LSWWD2W1E - 592W WW - 900LM - 3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	310.4	310.4	310.4	310.4	310.4	310.4	310.4	310.4
2.5°	306.1	306.1	306.1	306.1	306.1	306.1	306.1	307.2
5°	300.7	300.7	300.7	300.7	300.7	300.7	300.7	299.6
7.5°	295.3	294.2	294.2	294.2	294.2	293.2	293.2	293.2
10°	287.8	287.8	286.7	286.7	286.7	286.7	285.6	286.7
12.5°	280.2	279.2	279.2	279.2	278.1	278.1	278.1	278.1
15°	271.6	270.5	270.5	270.5	269.5	269.5	269.5	269.5
17.5°	261.9	261.9	260.8	260.8	259.8	259.8	259.8	259.8
20°	252.2	252.2	252.2	251.1	251.1	251.1	250.1	250.1
22.5°	242.5	241.4	240.4	241.4	240.4	239.3	240.4	240.4
25°	231.7	230.7	229.6	229.6	229.6	229.6	228.5	228.5
27.5°	221.0	218.8	218.8	218.8	218.8	217.7	217.7	217.7
30°	210.2	209.1	209.1	208.0	206.9	206.9	206.9	208.0
32.5°	198.3	197.2	196.2	196.2	196.2	196.2	195.1	195.1
35°	186.5	186.5	185.4	185.4	185.4	184.3	184.3	183.2
37.5°	174.6	174.6	173.5	173.5	173.5	172.5	172.5	172.5
40°	162.8	161.7	161.7	162.8	161.7	161.7	160.6	160.6
42.5°	150.9	150.9	149.8	149.8	149.8	149.8	148.7	149.8
45°	138.0	138.0	138.0	138.0	138.0	138.0	136.9	136.9
47.5°	127.2	126.1	126.1	126.1	126.1	126.1	126.1	126.1
50°	115.3	114.2	114.2	114.2	114.2	114.2	114.2	114.2
52.5°	103.5	102.4	102.4	102.4	102.4	102.4	102.4	102.4
55°	92.7	91.6	91.6	90.5	91.6	90.5	90.5	90.5
57.5°	81.9	80.8	79.8	80.8	79.8	79.8	79.8	78.7
60°	71.1	70.1	70.1	70.1	69.0	67.9	67.9	69.0
62.5°	60.4	60.4	59.3	59.3	58.2	57.1	57.1	57.1
65°	50.7	49.6	49.6	48.5	48.5	47.4	47.4	47.4
67.5°	41.0	41.0	39.9	39.9	38.8	38.8	38.8	37.7
70°	32.3	32.3	31.3	31.3	31.3	30.2	30.2	30.2
72.5°	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
75°	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
77.5°	16.2	16.2	16.2	16.2	16.2	16.2	16.2	17.2
80°	11.9	11.9	12.9	11.9	12.9	11.9	11.9	11.9
82.5°	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
85°	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
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



Report Generated By 670245859 / DESKTOP-T8S5UU9

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





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

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



(END OF REPORT)