

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: P640530

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

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P640530
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: ML5609LSWWD2W1E - 592H WW - 900LM - 3000K
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH HAZE TRIM
Light Source: (1) D2W SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 683.1 lumens
Efficiency: N/A
Efficacy: 57.9 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

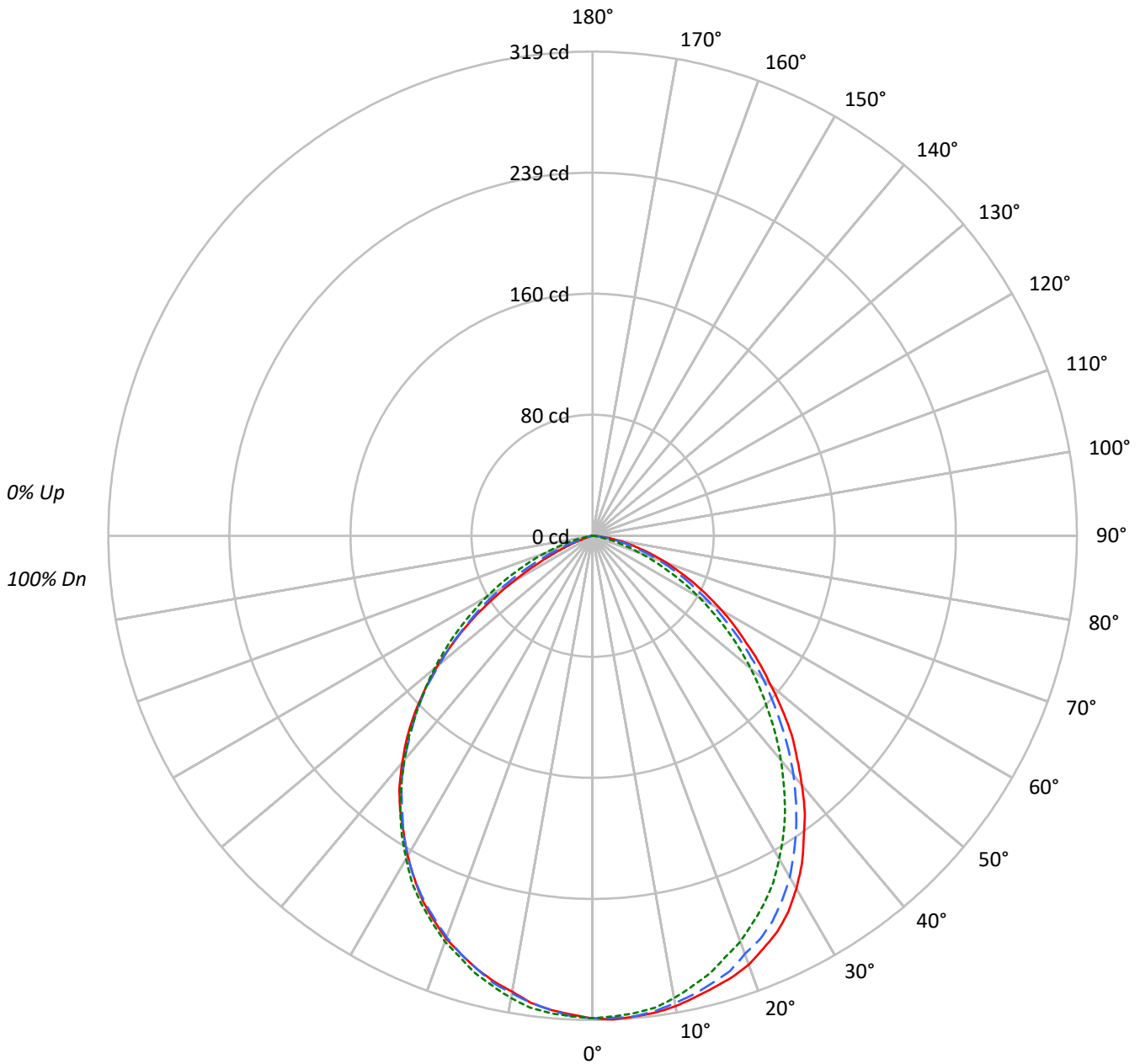
Input Watts (W): 11.8
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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									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	105	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	87	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	67	60	54	65	59	54	64	58	53	62	57	52	50				50															
6	74	62	54	48	73	61	54	48	60	53	47	58	52	47	56	51	47	45				45															
7	69	57	49	43	68	56	48	43	54	48	42	53	47	42	52	46	42	40				40															
8	65	52	44	39	63	51	44	39	50	43	38	49	43	38	48	42	38	36				36															
9	61	48	40	35	59	47	40	35	46	39	35	45	39	35	44	39	34	33				33															
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	31	30				30															

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	25095	25095	25095	25095	25095
5°	25191	25191	25025	24850	24850
10°	25226	25058	24793	24537	24448
15°	25188	24926	24395	24134	24134
20°	25261	24631	23900	23631	23724
25°	25068	24406	23282	23004	23091
30°	24465	23672	22396	22205	22205
35°	23369	22541	21288	21086	21288
40°	22104	21218	19878	19878	20105
45°	20698	19615	18287	18287	18532
50°	18790	18004	16678	16150	16407
55°	17052	16171	14836	13790	13501
60°	15488	14288	12757	11068	9536
65°	13692	12478	10273	7658	5641
70°	11933	10456	7709	4224	2239
75°	9547	8205	4941	1312	671
80°	7365	5410	1955	500	500
85°	3895	2898	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 20698 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	29.9	4.4
10°-20°	84.6	12.4
20°-30°	124.8	18.3
30°-40°	141.3	20.7
40°-50°	130.6	19.1
50°-60°	97.5	14.3
60°-70°	53.9	7.9
70°-80°	18.2	2.7
80°-90°	2.3	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°	239.4	35.0
0°-40°	380.7	55.7
0°-60°	608.8	89.1
0°-90°	683.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	683.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	318	318	318	318	318	
5°	318	318	316	314	314	30
15°	308	305	298	295	295	87
25°	288	280	267	264	265	132
35°	242	234	221	219	221	152
45°	185	176	164	164	166	142
55°	124	118	108	100	98	112
65°	73	67	55	41	30	73
75°	31	27	16	4	2	34
85°	4	3	0	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°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9
2.5°	319.0	319.0	319.0	319.0	317.9	317.9	319.0	317.9	317.9	317.9	317.9
5°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9
7.5°	316.9	316.9	316.9	316.9	316.9	316.9	316.9	316.9	315.8	315.8	315.8
10°	314.7	314.7	314.7	314.7	314.7	314.7	314.7	313.6	313.6	313.6	312.6
12.5°	311.5	312.6	311.5	312.6	311.5	311.5	310.4	310.4	310.4	309.3	309.3
15°	308.2	308.2	308.2	308.2	308.2	307.2	307.2	306.1	306.1	306.1	305.0
17.5°	305.0	303.9	303.9	303.9	302.9	302.9	302.9	302.9	301.8	300.7	300.7
20°	300.7	299.6	299.6	299.6	298.5	298.5	297.5	297.5	295.3	295.3	293.2
22.5°	294.2	294.2	294.2	293.2	293.2	292.1	292.1	291.0	289.9	288.8	287.8
25°	287.8	287.8	286.7	286.7	285.6	285.6	285.6	283.5	282.4	281.3	280.2
27.5°	279.1	279.1	278.1	278.1	277.0	275.9	275.9	273.8	273.8	271.6	270.5
30°	268.4	268.4	268.4	266.2	266.2	266.2	265.1	264.1	261.9	260.8	259.7
32.5°	256.5	255.4	255.4	255.4	254.4	253.3	253.3	251.1	250.0	249.0	246.8
35°	242.5	242.5	242.5	242.5	241.4	240.3	240.3	238.2	237.1	235.0	233.9
37.5°	229.6	229.6	228.5	228.5	226.3	227.4	226.3	225.3	224.2	220.9	219.9
40°	214.5	214.5	214.5	213.4	212.3	212.3	211.2	210.2	208.0	206.9	205.9
42.5°	199.4	199.4	199.4	198.3	197.2	197.2	197.2	195.1	194.0	192.9	190.8
45°	185.4	184.3	184.3	183.2	183.2	182.1	181.1	180.0	178.9	177.8	175.7
47.5°	169.2	169.2	168.1	168.1	167.1	167.1	166.0	164.9	163.8	162.7	160.6
50°	153.0	154.1	154.1	153.0	153.0	152.0	150.9	150.9	149.8	148.7	146.6
52.5°	139.0	139.0	139.0	138.0	138.0	136.9	136.9	135.8	134.7	132.6	131.5
55°	123.9	125.0	123.9	123.9	123.9	122.9	122.9	121.8	120.7	118.6	117.5
57.5°	111.0	111.0	109.9	109.9	108.9	108.9	108.9	107.8	106.7	105.6	103.5
60°	98.1	97.0	97.0	97.0	95.9	95.9	95.9	93.8	92.7	91.6	90.5
62.5°	85.1	85.1	85.1	84.1	84.1	83.0	81.9	81.9	80.8	79.8	77.6
65°	73.3	73.3	72.2	72.2	72.2	71.1	71.1	70.1	69.0	67.9	66.8
67.5°	61.4	61.4	61.4	60.4	60.4	60.4	59.3	58.2	58.2	57.1	56.0
70°	51.7	50.7	50.7	50.7	49.6	49.6	49.6	48.5	47.4	46.3	45.3
72.5°	41.0	41.0	41.0	41.0	39.9	39.9	38.8	38.8	37.7	36.6	35.6
75°	31.3	31.3	31.3	31.3	30.2	30.2	30.2	29.1	29.1	28.0	26.9
77.5°	23.7	23.7	23.7	22.6	22.6	21.6	21.6	21.6	20.5	20.5	19.4
80°	16.2	16.2	15.1	15.1	15.1	15.1	15.1	14.0	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	6.5
85°	4.3	4.3	4.3	4.3	4.3	4.3	3.2	3.2	3.2	3.2	3.2
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9
2.5°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	316.9	316.9	316.9	316.9
5°	316.9	316.9	316.9	316.9	316.9	315.8	316.9	315.8	315.8	315.8	315.8
7.5°	314.7	314.7	314.7	314.7	313.6	314.7	313.6	313.6	313.6	313.6	312.6
10°	312.6	311.5	311.5	311.5	311.5	310.4	310.4	309.3	309.3	309.3	308.2
12.5°	309.3	308.2	308.2	307.2	307.2	307.2	306.1	306.1	305.0	303.9	303.9
15°	303.9	303.9	302.9	301.8	301.8	300.7	300.7	299.6	299.6	298.5	297.5
17.5°	299.6	298.5	297.5	296.4	295.3	295.3	294.2	293.2	293.2	291.0	291.0
20°	292.1	291.0	289.9	288.8	288.8	288.8	286.7	286.7	285.6	284.5	283.5
22.5°	285.6	284.5	282.4	281.3	281.3	280.2	279.1	278.1	277.0	275.9	274.8
25°	278.1	277.0	274.8	273.8	272.7	271.6	270.5	269.4	268.4	267.3	266.2
27.5°	268.4	266.2	266.2	264.1	263.0	261.9	260.8	259.7	258.7	257.6	256.5
30°	257.6	256.5	254.4	252.2	251.1	251.1	249.0	247.9	247.9	245.7	244.7
32.5°	245.7	243.6	241.4	240.3	239.3	238.2	237.1	236.0	235.0	233.9	232.8
35°	232.8	229.6	228.5	226.3	226.3	225.3	224.2	222.0	222.0	220.9	218.8
37.5°	218.8	216.6	215.6	213.4	212.3	211.2	210.2	209.1	208.0	206.9	205.9
40°	203.7	201.5	200.5	199.4	198.3	197.2	196.2	195.1	194.0	192.9	191.8
42.5°	188.6	187.5	185.4	183.2	183.2	182.1	181.1	180.0	178.9	178.9	177.8
45°	173.5	172.4	170.3	169.2	168.1	168.1	166.0	166.0	164.9	163.8	163.8
47.5°	159.5	157.4	155.2	155.2	153.0	154.1	152.0	152.0	149.8	149.8	148.7
50°	144.4	143.3	141.2	140.1	140.1	139.0	138.0	138.0	136.9	135.8	134.7
52.5°	130.4	128.3	127.2	126.1	125.0	125.0	123.9	123.9	121.8	121.8	120.7
55°	116.4	115.3	113.2	112.1	112.1	112.1	109.9	108.9	108.9	107.8	106.7
57.5°	102.4	101.3	100.2	99.2	98.1	98.1	97.0	95.9	94.8	93.8	91.6
60°	89.5	88.4	87.3	86.2	85.1	85.1	84.1	83.0	81.9	80.8	79.8
62.5°	76.5	76.5	74.4	73.3	72.2	72.2	71.1	70.1	69.0	67.9	66.8
65°	65.7	64.7	62.5	61.4	61.4	61.4	59.3	58.2	57.1	55.0	53.9
67.5°	55.0	52.8	51.7	51.7	50.7	49.6	48.5	47.4	45.3	44.2	42.0
70°	44.2	43.1	42.0	41.0	39.9	38.8	37.7	36.6	34.5	33.4	32.3
72.5°	34.5	33.4	32.3	31.3	30.2	30.2	28.0	26.9	25.9	23.7	22.6
75°	25.9	24.8	23.7	22.6	21.6	20.5	20.5	18.3	17.2	16.2	14.0
77.5°	18.3	17.2	16.2	15.1	15.1	14.0	12.9	11.9	10.8	9.7	8.6
80°	11.9	10.8	9.7	9.7	8.6	8.6	7.5	6.5	5.4	4.3	4.3
82.5°	6.5	5.4	5.4	4.3	4.3	4.3	3.2	2.2	2.2	2.2	1.1
85°	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	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°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9
2.5°	316.9	316.9	316.9	316.9	316.9	316.9	316.9	316.9	316.9	315.8	315.8
5°	314.7	314.7	314.7	314.7	314.7	314.7	313.6	313.6	313.6	313.6	313.6
7.5°	312.6	312.6	312.6	311.5	311.5	311.5	311.5	310.4	310.4	310.4	310.4
10°	308.2	308.2	308.2	307.2	307.2	307.2	307.2	307.2	306.1	306.1	306.1
12.5°	302.9	302.9	302.9	302.9	302.9	301.8	301.8	301.8	301.8	300.7	301.8
15°	297.5	297.5	296.4	296.4	296.4	295.3	295.3	295.3	295.3	295.3	295.3
17.5°	291.0	289.9	289.9	288.8	288.8	288.8	288.8	288.8	288.8	288.8	288.8
20°	283.5	282.4	282.4	282.4	282.4	281.3	281.3	280.2	281.3	281.3	281.3
22.5°	274.8	273.8	273.8	273.8	272.7	272.7	272.7	272.7	272.7	272.7	272.7
25°	266.2	265.1	264.1	264.1	264.1	263.0	263.0	264.1	264.1	264.1	264.1
27.5°	255.4	255.4	254.4	254.4	254.4	253.3	253.3	253.3	254.4	254.4	254.4
30°	243.6	243.6	243.6	243.6	242.5	242.5	243.6	242.5	243.6	242.5	243.6
32.5°	232.8	232.8	231.7	230.6	230.6	231.7	230.6	230.6	231.7	231.7	231.7
35°	218.8	218.8	218.8	218.8	218.8	218.8	218.8	218.8	218.8	219.9	220.9
37.5°	205.9	205.9	205.9	205.9	205.9	205.9	205.9	206.9	206.9	206.9	206.9
40°	191.8	191.8	191.8	191.8	191.8	191.8	191.8	191.8	192.9	192.9	194.0
42.5°	176.8	177.8	177.8	177.8	176.8	176.8	177.8	177.8	177.8	178.9	178.9
45°	162.7	162.7	162.7	162.7	163.8	162.7	162.7	162.7	163.8	163.8	163.8
47.5°	148.7	147.7	147.7	148.7	147.7	147.7	147.7	147.7	148.7	148.7	147.7
50°	134.7	133.6	133.6	133.6	132.6	132.6	133.6	131.5	131.5	131.5	132.6
52.5°	120.7	119.6	118.6	118.6	118.6	117.5	116.4	116.4	116.4	115.3	115.3
55°	105.6	104.5	103.5	103.5	103.5	102.4	102.4	100.2	100.2	99.2	99.2
57.5°	91.6	90.5	89.5	89.5	88.4	87.3	87.3	85.1	85.1	84.1	81.9
60°	77.6	76.5	75.4	75.4	75.4	73.3	72.2	70.1	70.1	67.9	66.8
62.5°	64.7	63.6	62.5	61.4	61.4	59.3	58.2	56.0	55.0	53.9	51.7
65°	52.8	50.7	49.6	48.5	48.5	46.3	45.3	43.1	41.0	39.9	37.7
67.5°	41.0	39.9	37.7	36.6	36.6	34.5	32.3	31.3	29.1	26.9	25.9
70°	30.2	29.1	26.9	25.9	24.8	23.7	21.6	20.5	18.3	17.2	15.1
72.5°	20.5	19.4	17.2	17.2	16.2	14.0	12.9	11.9	9.7	8.6	7.5
75°	12.9	11.9	10.8	9.7	8.6	7.5	6.5	5.4	4.3	3.2	3.2
77.5°	7.5	6.5	5.4	4.3	4.3	3.2	2.2	2.2	2.2	1.1	1.1
80°	3.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	1.1	1.1
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: P640530

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	317.9	317.9	317.9	317.9	317.9	317.9	317.9	317.9
2.5°	316.9	315.8	316.9	316.9	315.8	315.8	315.8	315.8
5°	313.6	313.6	313.6	313.6	313.6	313.6	313.6	313.6
7.5°	311.5	310.4	310.4	310.4	310.4	310.4	310.4	310.4
10°	306.1	306.1	306.1	306.1	306.1	306.1	306.1	305.0
12.5°	300.7	300.7	300.7	300.7	300.7	300.7	300.7	300.7
15°	295.3	295.3	295.3	295.3	295.3	295.3	295.3	295.3
17.5°	288.8	288.8	288.8	288.8	288.8	287.8	288.8	288.8
20°	281.3	281.3	281.3	281.3	281.3	281.3	281.3	282.4
22.5°	272.7	272.7	272.7	272.7	272.7	272.7	272.7	273.8
25°	264.1	264.1	264.1	264.1	264.1	264.1	264.1	265.1
27.5°	254.4	254.4	254.4	254.4	254.4	254.4	254.4	254.4
30°	243.6	243.6	244.7	243.6	243.6	243.6	244.7	243.6
32.5°	232.8	232.8	232.8	232.8	232.8	232.8	232.8	231.7
35°	220.9	219.9	220.9	220.9	220.9	220.9	220.9	220.9
37.5°	208.0	208.0	208.0	208.0	208.0	208.0	209.1	209.1
40°	195.1	194.0	194.0	195.1	195.1	195.1	194.0	195.1
42.5°	178.9	180.0	180.0	180.0	181.1	180.0	181.1	181.1
45°	163.8	164.9	164.9	164.9	164.9	164.9	166.0	166.0
47.5°	148.7	148.7	148.7	148.7	149.8	149.8	149.8	149.8
50°	132.6	132.6	132.6	132.6	133.6	132.6	133.6	133.6
52.5°	115.3	115.3	115.3	115.3	115.3	115.3	116.4	115.3
55°	98.1	98.1	98.1	98.1	97.0	97.0	97.0	98.1
57.5°	81.9	80.8	79.8	80.8	78.7	78.7	78.7	78.7
60°	64.7	63.6	63.6	62.5	61.4	60.4	61.4	60.4
62.5°	49.6	48.5	48.5	46.3	45.3	45.3	44.2	44.2
65°	36.6	34.5	33.4	33.4	32.3	31.3	30.2	30.2
67.5°	23.7	22.6	21.6	21.6	20.5	19.4	19.4	18.3
70°	14.0	12.9	11.9	12.9	10.8	9.7	9.7	9.7
72.5°	6.5	5.4	5.4	5.4	4.3	4.3	4.3	4.3
75°	3.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
77.5°	1.1	1.1	2.2	1.1	1.1	1.1	1.1	1.1
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	1.1	0.0	0.0	0.0	1.1	1.1	0.0	1.1
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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— 0°-180° - - 45°-225° - - - - 90°-270°

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(END OF REPORT)