

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: P640535

Luminaire Tested: ML5609LSWWD2W1E - 692H WW - 900LM - 2700K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P640535
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: ML5609LSWWD2W1E - 692H WW - 900LM - 2700K
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH HAZE TRIM
Light Source: (1) D2W SELECTABLE LUMEN LED 90CRI / 2700K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 650.5 lumens
Efficiency: N/A
Efficacy: 55.1 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

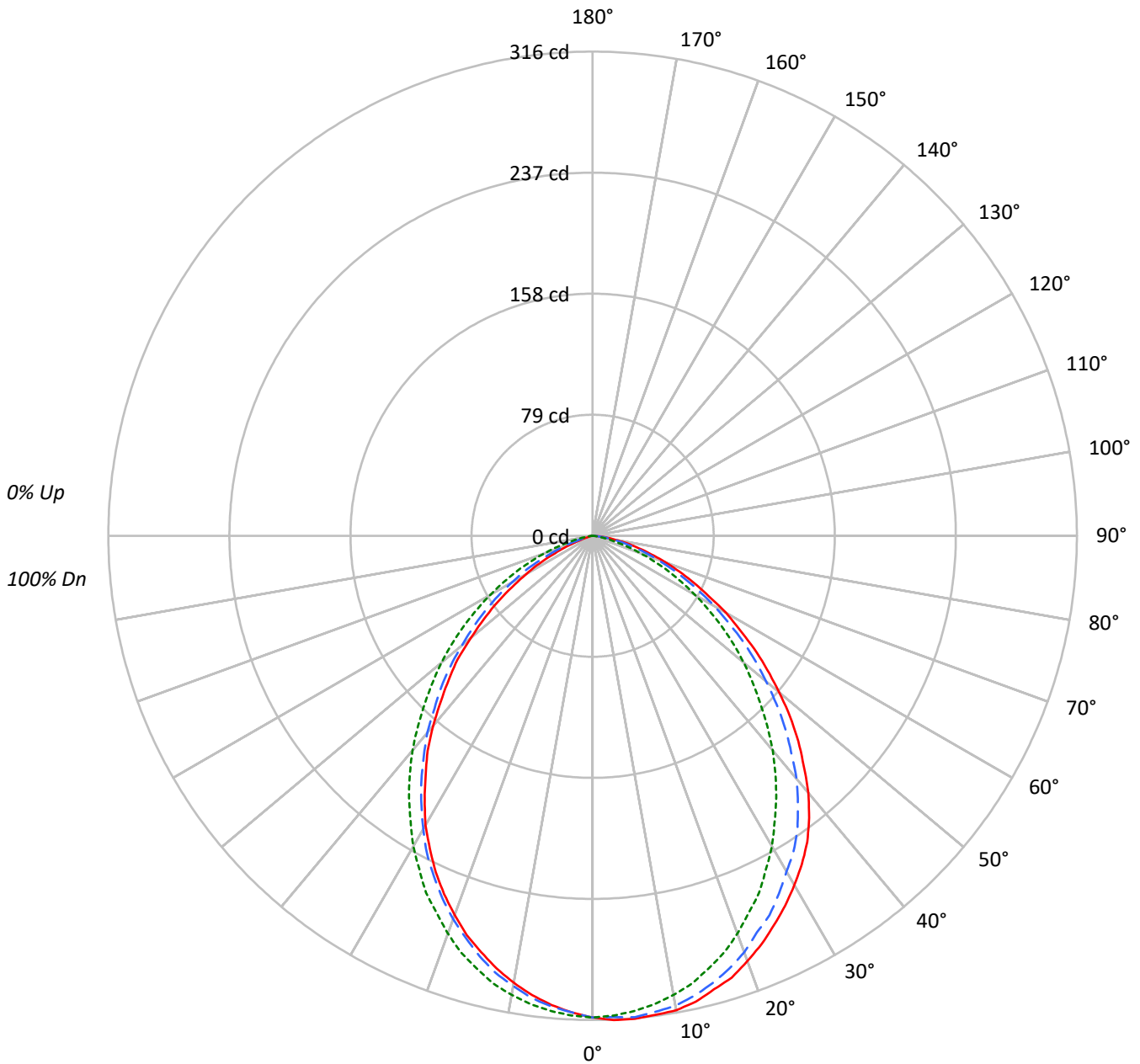
Input Watts (W): 11.8
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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	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°	17235	17235	17235	17235	17235
5°	17411	17356	17136	16971	16916
10°	17501	17334	16939	16605	16494
15°	17389	17157	16589	16135	15959
20°	17227	16877	16113	15530	15355
25°	16949	16525	15551	14825	14644
30°	16661	16021	14812	13989	13800
35°	16336	15593	13980	13043	12702
40°	15672	14806	13082	12001	11572
45°	14715	13784	11993	10823	10280
50°	13535	12597	10968	9509	8827
55°	12291	11421	9797	8162	7292
60°	11008	10021	8475	6611	5504
65°	9508	8600	7031	4955	3515
70°	8046	7085	5305	3061	1603
75°	6587	5528	3410	1059	635
80°	4767	3820	1578	316	316
85°	2516	1887	629	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 14715 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	29.5	4.5
10°-20°	82.5	12.7
20°-30°	119.0	18.3
30°-40°	133.0	20.4
40°-50°	121.9	18.7
50°-60°	91.6	14.1
60°-70°	52.3	8.0
70°-80°	18.2	2.8
80°-90°	2.4	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°	231.1	35.5
0°-40°	364.0	56.0
0°-60°	577.6	88.8
0°-90°	650.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	650.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	314	314	314	314	314	
5°	316	315	311	308	307	30
15°	306	302	292	284	281	87
25°	280	273	257	245	242	129
35°	244	233	209	195	190	152
45°	190	178	155	140	133	146
55°	129	120	102	85	76	115
65°	73	66	54	38	27	73
75°	31	26	16	5	3	33
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°	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4
2.5°	316.4	315.4	315.4	315.4	315.4	315.4	315.4	315.4	315.4	315.4	314.4
5°	316.4	316.4	316.4	316.4	316.4	316.4	316.4	315.4	315.4	315.4	315.4
7.5°	315.4	315.4	315.4	315.4	315.4	315.4	315.4	314.4	314.4	313.4	313.4
10°	314.4	314.4	314.4	313.4	313.4	313.4	313.4	313.4	312.4	312.4	311.4
12.5°	311.4	311.4	311.4	311.4	310.4	310.4	310.4	309.4	308.4	308.4	307.4
15°	306.4	307.4	307.4	306.4	306.4	306.4	306.4	305.3	304.3	303.3	302.3
17.5°	302.3	302.3	302.3	301.3	300.3	301.3	300.3	299.3	298.3	297.3	296.3
20°	295.3	295.3	294.3	294.3	294.3	294.3	293.3	292.3	291.3	290.3	289.3
22.5°	288.3	288.3	288.3	286.3	286.3	286.3	285.3	285.3	283.3	282.2	280.2
25°	280.2	280.2	280.2	279.2	278.2	277.2	278.2	276.2	275.2	273.2	273.2
27.5°	272.2	272.2	271.2	271.2	270.2	270.2	269.2	267.2	266.2	265.2	263.2
30°	263.2	263.2	262.2	262.2	261.2	260.1	260.1	258.1	257.1	255.1	253.1
32.5°	254.1	254.1	253.1	253.1	252.1	251.1	251.1	249.1	247.1	245.1	244.1
35°	244.1	244.1	243.1	243.1	242.1	241.1	240.1	238.1	237.0	234.0	233.0
37.5°	232.0	233.0	231.0	231.0	230.0	229.0	228.0	227.0	225.0	223.0	220.0
40°	219.0	218.0	218.0	217.0	216.0	216.0	214.9	212.9	211.9	208.9	206.9
42.5°	203.9	203.9	203.9	202.9	201.9	201.9	199.9	198.9	196.9	194.9	191.8
45°	189.8	189.8	188.8	188.8	186.8	186.8	185.8	183.8	182.8	179.8	177.8
47.5°	174.8	173.8	173.8	172.8	171.8	171.8	170.8	169.7	167.7	164.7	162.7
50°	158.7	158.7	158.7	157.7	156.7	156.7	155.7	153.7	152.7	150.7	147.7
52.5°	143.6	143.6	143.6	142.6	141.6	141.6	140.6	139.6	137.6	135.6	133.6
55°	128.6	128.6	128.6	127.6	127.6	125.6	125.6	124.5	122.5	120.5	119.5
57.5°	113.5	113.5	113.5	113.5	112.5	112.5	111.5	110.5	108.5	107.5	104.5
60°	100.4	99.4	99.4	98.4	98.4	97.4	96.4	95.4	94.4	92.4	91.4
62.5°	85.4	86.4	85.4	85.4	84.4	84.4	84.4	82.4	81.4	79.4	78.3
65°	73.3	73.3	73.3	73.3	71.3	71.3	71.3	69.3	68.3	68.3	66.3
67.5°	61.3	61.3	61.3	60.3	60.3	60.3	59.3	58.3	57.3	56.2	55.2
70°	50.2	50.2	50.2	49.2	49.2	48.2	48.2	47.2	46.2	46.2	44.2
72.5°	40.2	40.2	40.2	40.2	39.2	39.2	38.2	38.2	37.2	36.2	35.2
75°	31.1	31.1	31.1	30.1	30.1	30.1	29.1	29.1	28.1	27.1	26.1
77.5°	23.1	22.1	22.1	22.1	22.1	21.1	21.1	21.1	20.1	19.1	19.1
80°	15.1	15.1	15.1	15.1	15.1	14.1	14.1	14.1	13.1	13.1	12.1
82.5°	9.0	9.0	9.0	9.0	9.0	8.0	8.0	8.0	7.0	7.0	7.0
85°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0
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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4
2.5°	315.4	315.4	314.4	314.4	314.4	314.4	314.4	313.4	313.4	313.4	313.4
5°	315.4	314.4	313.4	313.4	313.4	313.4	312.4	312.4	312.4	311.4	311.4
7.5°	312.4	312.4	312.4	311.4	311.4	310.4	310.4	309.4	309.4	308.4	308.4
10°	310.4	309.4	309.4	308.4	308.4	307.4	307.4	305.3	304.3	304.3	303.3
12.5°	306.4	305.3	305.3	303.3	303.3	303.3	302.3	300.3	299.3	299.3	298.3
15°	301.3	300.3	299.3	297.3	297.3	296.3	295.3	294.3	293.3	292.3	291.3
17.5°	295.3	293.3	292.3	291.3	290.3	289.3	288.3	287.3	285.3	285.3	283.3
20°	288.3	286.3	285.3	283.3	282.2	282.2	280.2	278.2	277.2	276.2	274.2
22.5°	279.2	278.2	276.2	274.2	273.2	273.2	271.2	269.2	268.2	266.2	265.2
25°	271.2	268.2	267.2	265.2	264.2	264.2	262.2	260.1	258.1	257.1	255.1
27.5°	261.2	259.1	258.1	255.1	254.1	253.1	251.1	249.1	247.1	245.1	243.1
30°	251.1	249.1	247.1	244.1	244.1	242.1	240.1	237.0	236.0	234.0	231.0
32.5°	241.1	239.1	236.0	234.0	232.0	231.0	228.0	226.0	224.0	221.0	220.0
35°	230.0	227.0	225.0	222.0	221.0	219.0	217.0	213.9	211.9	208.9	205.9
37.5°	218.0	213.9	211.9	208.9	207.9	205.9	203.9	201.9	198.9	195.9	193.9
40°	204.9	200.9	197.9	195.9	193.9	191.8	190.8	186.8	184.8	182.8	180.8
42.5°	189.8	186.8	183.8	181.8	179.8	178.8	175.8	173.8	170.8	168.7	166.7
45°	175.8	172.8	169.7	166.7	165.7	164.7	162.7	159.7	156.7	154.7	152.7
47.5°	160.7	158.7	154.7	153.7	151.7	150.7	147.7	145.6	144.6	141.6	139.6
50°	145.6	143.6	141.6	138.6	137.6	136.6	134.6	132.6	130.6	128.6	126.6
52.5°	130.6	129.6	127.6	124.5	124.5	123.5	121.5	119.5	117.5	115.5	113.5
55°	117.5	115.5	113.5	111.5	110.5	109.5	107.5	106.5	104.5	102.5	100.4
57.5°	103.5	101.4	100.4	98.4	97.4	96.4	94.4	93.4	91.4	89.4	87.4
60°	90.4	88.4	87.4	85.4	84.4	84.4	82.4	80.4	79.4	77.3	75.3
62.5°	77.3	75.3	74.3	72.3	72.3	71.3	70.3	68.3	67.3	65.3	64.3
65°	65.3	64.3	62.3	61.3	60.3	59.3	58.3	57.3	55.2	54.2	52.2
67.5°	54.2	52.2	51.2	50.2	49.2	48.2	47.2	46.2	44.2	43.2	41.2
70°	43.2	42.2	41.2	40.2	39.2	39.2	37.2	36.2	34.2	33.1	31.1
72.5°	34.2	33.1	32.1	30.1	30.1	29.1	28.1	27.1	25.1	24.1	22.1
75°	25.1	25.1	23.1	22.1	22.1	21.1	20.1	19.1	18.1	16.1	15.1
77.5°	18.1	17.1	16.1	15.1	14.1	14.1	13.1	12.1	11.0	10.0	8.0
80°	12.1	11.0	10.0	9.0	9.0	8.0	7.0	7.0	6.0	5.0	4.0
82.5°	6.0	6.0	5.0	5.0	4.0	4.0	4.0	3.0	3.0	2.0	2.0
85°	3.0	2.0	2.0	2.0	2.0	2.0	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



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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4
2.5°	313.4	312.4	313.4	313.4	312.4	312.4	312.4	312.4	311.4	312.4	311.4
5°	311.4	310.4	310.4	310.4	310.4	309.4	309.4	308.4	308.4	308.4	308.4
7.5°	307.4	306.4	306.4	305.3	305.3	305.3	305.3	304.3	304.3	303.3	303.3
10°	303.3	302.3	301.3	301.3	300.3	300.3	300.3	299.3	298.3	298.3	297.3
12.5°	296.3	296.3	295.3	295.3	294.3	294.3	293.3	292.3	292.3	291.3	291.3
15°	290.3	289.3	288.3	288.3	287.3	286.3	285.3	285.3	284.3	284.3	283.3
17.5°	282.2	280.2	280.2	279.2	278.2	278.2	277.2	276.2	275.2	275.2	275.2
20°	273.2	272.2	271.2	270.2	269.2	269.2	268.2	267.2	266.2	265.2	265.2
22.5°	263.2	262.2	261.2	260.1	260.1	259.1	258.1	257.1	256.1	255.1	255.1
25°	253.1	252.1	251.1	250.1	249.1	248.1	247.1	246.1	245.1	244.1	244.1
27.5°	242.1	240.1	239.1	238.1	237.0	236.0	236.0	234.0	234.0	233.0	232.0
30°	230.0	228.0	226.0	226.0	225.0	224.0	222.0	222.0	221.0	220.0	219.0
32.5°	217.0	216.0	213.9	213.9	211.9	210.9	209.9	208.9	207.9	206.9	206.9
35°	204.9	201.9	200.9	200.9	198.9	197.9	196.9	194.9	194.9	192.9	192.9
37.5°	191.8	189.8	188.8	186.8	185.8	184.8	183.8	181.8	180.8	179.8	178.8
40°	178.8	176.8	174.8	173.8	172.8	170.8	169.7	167.7	167.7	165.7	164.7
42.5°	164.7	162.7	160.7	159.7	158.7	156.7	155.7	153.7	152.7	151.7	150.7
45°	150.7	148.7	147.7	146.6	145.6	144.6	141.6	140.6	139.6	137.6	136.6
47.5°	137.6	135.6	133.6	133.6	131.6	130.6	128.6	126.6	125.6	123.5	122.5
50°	124.5	122.5	120.5	119.5	119.5	116.5	115.5	113.5	111.5	109.5	108.5
52.5°	111.5	109.5	107.5	106.5	105.5	103.5	101.4	100.4	98.4	96.4	95.4
55°	98.4	96.4	94.4	93.4	92.4	90.4	89.4	86.4	85.4	83.4	81.4
57.5°	86.4	84.4	82.4	81.4	80.4	78.3	76.3	74.3	73.3	71.3	69.3
60°	73.3	72.3	70.3	69.3	68.3	67.3	64.3	62.3	60.3	59.3	57.3
62.5°	62.3	60.3	58.3	57.3	56.2	55.2	53.2	51.2	50.2	47.2	45.2
65°	51.2	49.2	47.2	46.2	45.2	44.2	42.2	40.2	38.2	36.2	35.2
67.5°	39.2	38.2	36.2	36.2	35.2	33.1	31.1	30.1	28.1	27.1	25.1
70°	30.1	29.1	27.1	26.1	25.1	23.1	22.1	20.1	19.1	18.1	16.1
72.5°	21.1	20.1	18.1	17.1	16.1	15.1	13.1	12.1	11.0	10.0	9.0
75°	14.1	12.1	11.0	10.0	10.0	8.0	7.0	6.0	5.0	4.0	4.0
77.5°	8.0	7.0	5.0	5.0	5.0	4.0	3.0	3.0	2.0	2.0	2.0
80°	4.0	3.0	2.0	2.0	2.0	2.0	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	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



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CATALOG NUMBER: ML5609LSWWD2W1E - 692H WW - 900LM - 2700K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	314.4	314.4	314.4	314.4	314.4	314.4	314.4	314.4
2.5°	311.4	311.4	311.4	311.4	311.4	311.4	311.4	311.4
5°	308.4	307.4	307.4	307.4	307.4	307.4	307.4	307.4
7.5°	303.3	303.3	302.3	303.3	302.3	302.3	302.3	302.3
10°	297.3	297.3	297.3	297.3	296.3	296.3	296.3	296.3
12.5°	291.3	290.3	290.3	290.3	289.3	290.3	289.3	289.3
15°	283.3	282.2	282.2	282.2	282.2	281.2	282.2	281.2
17.5°	274.2	274.2	273.2	274.2	273.2	273.2	273.2	273.2
20°	264.2	264.2	264.2	263.2	264.2	263.2	263.2	263.2
22.5°	254.1	254.1	253.1	253.1	253.1	253.1	253.1	253.1
25°	243.1	243.1	243.1	243.1	242.1	242.1	242.1	242.1
27.5°	232.0	231.0	231.0	231.0	230.0	231.0	230.0	230.0
30°	219.0	219.0	218.0	218.0	218.0	217.0	217.0	218.0
32.5°	204.9	204.9	204.9	204.9	203.9	203.9	203.9	203.9
35°	191.8	191.8	190.8	190.8	190.8	189.8	189.8	189.8
37.5°	177.8	177.8	176.8	176.8	176.8	175.8	175.8	176.8
40°	163.7	163.7	162.7	162.7	162.7	161.7	161.7	161.7
42.5°	149.7	148.7	148.7	147.7	147.7	147.7	146.6	146.6
45°	135.6	134.6	134.6	134.6	133.6	132.6	132.6	132.6
47.5°	121.5	120.5	119.5	119.5	118.5	118.5	118.5	119.5
50°	107.5	106.5	106.5	105.5	104.5	104.5	104.5	103.5
52.5°	93.4	92.4	92.4	91.4	91.4	90.4	89.4	89.4
55°	80.4	79.4	78.3	77.3	77.3	76.3	76.3	76.3
57.5°	67.3	66.3	65.3	65.3	64.3	64.3	63.3	62.3
60°	55.2	54.2	53.2	53.2	52.2	51.2	50.2	50.2
62.5°	44.2	43.2	42.2	41.2	40.2	39.2	38.2	39.2
65°	34.2	32.1	31.1	30.1	30.1	29.1	28.1	27.1
67.5°	24.1	23.1	22.1	21.1	20.1	19.1	18.1	18.1
70°	15.1	13.1	13.1	13.1	12.1	11.0	10.0	10.0
72.5°	8.0	7.0	6.0	6.0	5.0	5.0	5.0	5.0
75°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
77.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
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
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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)