

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: P640529

Luminaire Tested: ML5609LSWWD2W1E - 592H WW - 900LM - 2700K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P640529
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 - 2700K
Description: ML56 RR, WW OPTIC, 5" 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: 636.4 lumens
Efficiency: N/A
Efficacy: 53.9 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

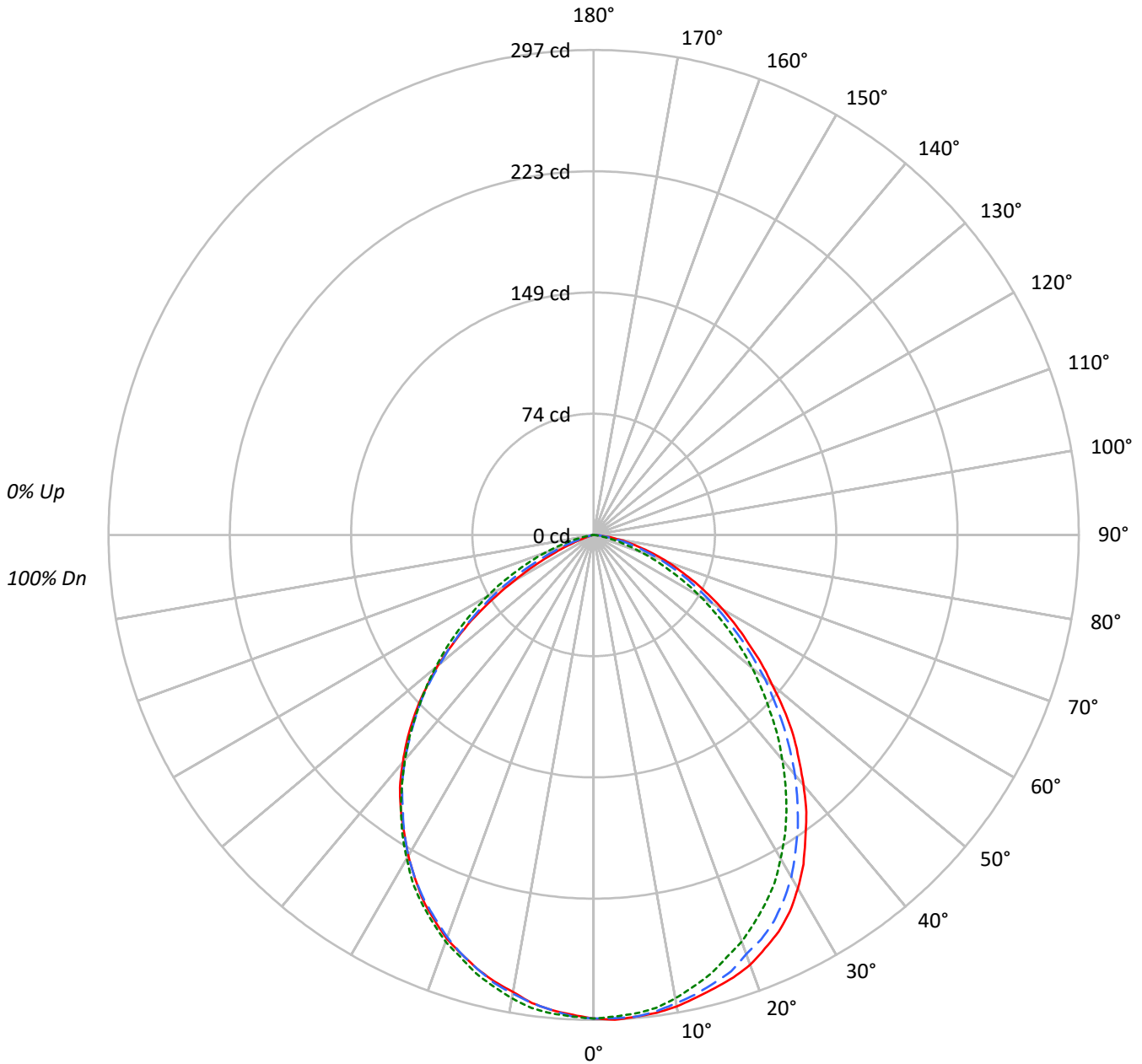
Input Watts (W): 11.8
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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	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	81	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°	23382	23382	23382	23382	23382
5°	23472	23472	23313	23155	23155
10°	23503	23342	23102	22861	22781
15°	23472	23226	22728	22483	22483
20°	23539	22942	22270	22018	22102
25°	23352	22742	21688	21427	21514
30°	22788	22059	20865	20683	20683
35°	21770	20999	19833	19640	19833
40°	20589	19765	18518	18518	18724
45°	19280	18275	17036	17036	17259
50°	17513	16776	15535	15044	15290
55°	15896	15070	13818	12855	12579
60°	14430	13309	11889	10310	8873
65°	12758	11637	9564	7135	5249
70°	11125	9740	7178	3947	2077
75°	8876	7656	4606	1220	610
80°	6864	5001	1818	455	455
85°	3623	2717	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 19280 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	27.9	4.4
10°-20°	78.8	12.4
20°-30°	116.3	18.3
30°-40°	131.7	20.7
40°-50°	121.6	19.1
50°-60°	90.9	14.3
60°-70°	50.2	7.9
70°-80°	16.9	2.7
80°-90°	2.1	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°	223.0	35.0
0°-40°	354.7	55.7
0°-60°	567.2	89.1
0°-90°	636.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	636.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	296	296	296	296	296	
5°	296	296	294	292	292	28
15°	287	284	278	275	275	81
25°	268	261	249	246	247	123
35°	226	218	206	204	206	141
45°	173	164	153	153	155	132
55°	116	110	100	93	91	104
65°	68	62	51	38	28	68
75°	29	25	15	4	2	32
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°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2
2.5°	297.2	297.2	297.2	297.2	296.2	296.2	297.2	296.2	296.2	296.2	296.2
5°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2
7.5°	295.2	295.2	295.2	295.2	295.2	295.2	295.2	295.2	294.2	294.2	294.2
10°	293.2	293.2	293.2	293.2	293.2	293.2	293.2	292.2	292.2	292.2	291.2
12.5°	290.2	291.2	290.2	291.2	290.2	290.2	289.2	289.2	289.2	288.2	288.2
15°	287.2	287.2	287.2	287.2	287.2	286.2	286.2	285.2	285.2	285.2	284.2
17.5°	284.2	283.2	283.2	283.2	282.2	282.2	282.2	282.2	281.2	280.2	280.2
20°	280.2	279.2	279.2	279.2	278.1	278.1	277.1	277.1	275.1	275.1	273.1
22.5°	274.1	274.1	274.1	273.1	273.1	272.1	272.1	271.1	270.1	269.1	268.1
25°	268.1	268.1	267.1	267.1	266.1	266.1	266.1	264.1	263.1	262.1	261.1
27.5°	260.1	260.1	259.1	259.1	258.1	257.1	257.1	255.1	255.1	253.0	252.0
30°	250.0	250.0	250.0	248.0	248.0	248.0	247.0	246.0	244.0	243.0	242.0
32.5°	239.0	238.0	238.0	238.0	237.0	236.0	236.0	234.0	233.0	232.0	229.9
35°	225.9	225.9	225.9	225.9	224.9	223.9	223.9	221.9	220.9	218.9	217.9
37.5°	213.9	213.9	212.9	212.9	210.9	211.9	210.9	209.9	208.9	205.8	204.8
40°	199.8	199.8	199.8	198.8	197.8	197.8	196.8	195.8	193.8	192.8	191.8
42.5°	185.8	185.8	185.8	184.8	183.8	183.8	183.8	181.7	180.7	179.7	177.7
45°	172.7	171.7	171.7	170.7	170.7	169.7	168.7	167.7	166.7	165.7	163.7
47.5°	157.7	157.7	156.6	156.6	155.6	155.6	154.6	153.6	152.6	151.6	149.6
50°	142.6	143.6	143.6	142.6	142.6	141.6	140.6	140.6	139.6	138.6	136.6
52.5°	129.5	129.5	129.5	128.5	128.5	127.5	127.5	126.5	125.5	123.5	122.5
55°	115.5	116.5	115.5	115.5	115.5	114.5	114.5	113.5	112.5	110.5	109.5
57.5°	103.4	103.4	102.4	102.4	101.4	101.4	101.4	100.4	99.4	98.4	96.4
60°	91.4	90.4	90.4	90.4	89.4	89.4	89.4	87.4	86.4	85.4	84.3
62.5°	79.3	79.3	79.3	78.3	78.3	77.3	76.3	76.3	75.3	74.3	72.3
65°	68.3	68.3	67.3	67.3	67.3	66.3	66.3	65.3	64.3	63.3	62.3
67.5°	57.2	57.2	57.2	56.2	56.2	56.2	55.2	54.2	54.2	53.2	52.2
70°	48.2	47.2	47.2	47.2	46.2	46.2	46.2	45.2	44.2	43.2	42.2
72.5°	38.2	38.2	38.2	38.2	37.2	37.2	36.1	36.1	35.1	34.1	33.1
75°	29.1	29.1	29.1	29.1	28.1	28.1	28.1	27.1	27.1	26.1	25.1
77.5°	22.1	22.1	22.1	21.1	21.1	20.1	20.1	20.1	19.1	19.1	18.1
80°	15.1	15.1	14.1	14.1	14.1	14.1	14.1	13.1	12.0	12.0	11.0
82.5°	9.0	9.0	9.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0	6.0
85°	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
87.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	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°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2
2.5°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	295.2	295.2	295.2	295.2
5°	295.2	295.2	295.2	295.2	295.2	294.2	295.2	294.2	294.2	294.2	294.2
7.5°	293.2	293.2	293.2	293.2	292.2	293.2	292.2	292.2	292.2	292.2	291.2
10°	291.2	290.2	290.2	290.2	290.2	289.2	289.2	288.2	288.2	288.2	287.2
12.5°	288.2	287.2	287.2	286.2	286.2	286.2	285.2	285.2	284.2	283.2	283.2
15°	283.2	283.2	282.2	281.2	281.2	280.2	280.2	279.2	279.2	278.1	277.1
17.5°	279.2	278.1	277.1	276.1	275.1	275.1	274.1	273.1	273.1	271.1	271.1
20°	272.1	271.1	270.1	269.1	269.1	269.1	267.1	267.1	266.1	265.1	264.1
22.5°	266.1	265.1	263.1	262.1	262.1	261.1	260.1	259.1	258.1	257.1	256.1
25°	259.1	258.1	256.1	255.1	254.0	253.0	252.0	251.0	250.0	249.0	248.0
27.5°	250.0	248.0	248.0	246.0	245.0	244.0	243.0	242.0	241.0	240.0	239.0
30°	240.0	239.0	237.0	235.0	234.0	234.0	232.0	231.0	231.0	228.9	227.9
32.5°	228.9	226.9	224.9	223.9	222.9	221.9	220.9	219.9	218.9	217.9	216.9
35°	216.9	213.9	212.9	210.9	210.9	209.9	208.9	206.9	206.9	205.8	203.8
37.5°	203.8	201.8	200.8	198.8	197.8	196.8	195.8	194.8	193.8	192.8	191.8
40°	189.8	187.8	186.8	185.8	184.8	183.8	182.8	181.7	180.7	179.7	178.7
42.5°	175.7	174.7	172.7	170.7	170.7	169.7	168.7	167.7	166.7	166.7	165.7
45°	161.7	160.7	158.7	157.7	156.6	156.6	154.6	154.6	153.6	152.6	152.6
47.5°	148.6	146.6	144.6	144.6	142.6	143.6	141.6	141.6	139.6	139.6	138.6
50°	134.6	133.6	131.5	130.5	130.5	129.5	128.5	128.5	127.5	126.5	125.5
52.5°	121.5	119.5	118.5	117.5	116.5	116.5	115.5	115.5	113.5	113.5	112.5
55°	108.4	107.4	105.4	104.4	104.4	104.4	102.4	101.4	101.4	100.4	99.4
57.5°	95.4	94.4	93.4	92.4	91.4	91.4	90.4	89.4	88.4	87.4	85.4
60°	83.3	82.3	81.3	80.3	79.3	79.3	78.3	77.3	76.3	75.3	74.3
62.5°	71.3	71.3	69.3	68.3	67.3	67.3	66.3	65.3	64.3	63.3	62.3
65°	61.3	60.2	58.2	57.2	57.2	57.2	55.2	54.2	53.2	51.2	50.2
67.5°	51.2	49.2	48.2	48.2	47.2	46.2	45.2	44.2	42.2	41.2	39.2
70°	41.2	40.2	39.2	38.2	37.2	36.1	35.1	34.1	32.1	31.1	30.1
72.5°	32.1	31.1	30.1	29.1	28.1	28.1	26.1	25.1	24.1	22.1	21.1
75°	24.1	23.1	22.1	21.1	20.1	19.1	19.1	17.1	16.1	15.1	13.1
77.5°	17.1	16.1	15.1	14.1	14.1	13.1	12.0	11.0	10.0	9.0	8.0
80°	11.0	10.0	9.0	9.0	8.0	8.0	7.0	6.0	5.0	4.0	4.0
82.5°	6.0	5.0	5.0	4.0	4.0	4.0	3.0	2.0	2.0	2.0	1.0
85°	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	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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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2
2.5°	295.2	295.2	295.2	295.2	295.2	295.2	295.2	295.2	295.2	294.2	294.2
5°	293.2	293.2	293.2	293.2	293.2	293.2	292.2	292.2	292.2	292.2	292.2
7.5°	291.2	291.2	291.2	290.2	290.2	290.2	290.2	289.2	289.2	289.2	289.2
10°	287.2	287.2	287.2	286.2	286.2	286.2	286.2	286.2	285.2	285.2	285.2
12.5°	282.2	282.2	282.2	282.2	282.2	281.2	281.2	281.2	281.2	280.2	281.2
15°	277.1	277.1	276.1	276.1	276.1	275.1	275.1	275.1	275.1	275.1	275.1
17.5°	271.1	270.1	270.1	269.1	269.1	269.1	269.1	269.1	269.1	269.1	269.1
20°	264.1	263.1	263.1	263.1	263.1	262.1	262.1	261.1	262.1	262.1	262.1
22.5°	256.1	255.1	255.1	255.1	254.0	254.0	254.0	254.0	254.0	254.0	254.0
25°	248.0	247.0	246.0	246.0	246.0	245.0	245.0	246.0	246.0	246.0	246.0
27.5°	238.0	238.0	237.0	237.0	237.0	236.0	236.0	236.0	237.0	237.0	237.0
30°	226.9	226.9	226.9	226.9	225.9	225.9	226.9	225.9	226.9	225.9	226.9
32.5°	216.9	216.9	215.9	214.9	214.9	215.9	214.9	214.9	215.9	215.9	215.9
35°	203.8	203.8	203.8	203.8	203.8	203.8	203.8	203.8	203.8	204.8	205.8
37.5°	191.8	191.8	191.8	191.8	191.8	191.8	191.8	192.8	192.8	192.8	192.8
40°	178.7	178.7	178.7	178.7	178.7	178.7	178.7	178.7	179.7	179.7	180.7
42.5°	164.7	165.7	165.7	165.7	164.7	164.7	165.7	165.7	165.7	166.7	166.7
45°	151.6	151.6	151.6	151.6	152.6	151.6	151.6	151.6	152.6	152.6	152.6
47.5°	138.6	137.6	137.6	138.6	137.6	137.6	137.6	137.6	138.6	138.6	137.6
50°	125.5	124.5	124.5	124.5	123.5	123.5	124.5	122.5	122.5	122.5	123.5
52.5°	112.5	111.5	110.5	110.5	110.5	109.5	108.4	108.4	108.4	107.4	107.4
55°	98.4	97.4	96.4	96.4	96.4	95.4	95.4	93.4	93.4	92.4	92.4
57.5°	85.4	84.3	83.3	83.3	82.3	81.3	81.3	79.3	79.3	78.3	76.3
60°	72.3	71.3	70.3	70.3	70.3	68.3	67.3	65.3	65.3	63.3	62.3
62.5°	60.2	59.2	58.2	57.2	57.2	55.2	54.2	52.2	51.2	50.2	48.2
65°	49.2	47.2	46.2	45.2	45.2	43.2	42.2	40.2	38.2	37.2	35.1
67.5°	38.2	37.2	35.1	34.1	34.1	32.1	30.1	29.1	27.1	25.1	24.1
70°	28.1	27.1	25.1	24.1	23.1	22.1	20.1	19.1	17.1	16.1	14.1
72.5°	19.1	18.1	16.1	16.1	15.1	13.1	12.0	11.0	9.0	8.0	7.0
75°	12.0	11.0	10.0	9.0	8.0	7.0	6.0	5.0	4.0	3.0	3.0
77.5°	7.0	6.0	5.0	4.0	4.0	3.0	2.0	2.0	2.0	1.0	1.0
80°	3.0	2.0	2.0	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	0.0	0.0	1.0	1.0
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: P640529

CATALOG NUMBER: ML5609LSWWD2W1E - 592H WW - 900LM - 2700K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	296.2	296.2	296.2	296.2	296.2	296.2	296.2	296.2
2.5°	295.2	294.2	295.2	295.2	294.2	294.2	294.2	294.2
5°	292.2	292.2	292.2	292.2	292.2	292.2	292.2	292.2
7.5°	290.2	289.2	289.2	289.2	289.2	289.2	289.2	289.2
10°	285.2	285.2	285.2	285.2	285.2	285.2	285.2	284.2
12.5°	280.2	280.2	280.2	280.2	280.2	280.2	280.2	280.2
15°	275.1	275.1	275.1	275.1	275.1	275.1	275.1	275.1
17.5°	269.1	269.1	269.1	269.1	269.1	268.1	269.1	269.1
20°	262.1	262.1	262.1	262.1	262.1	262.1	262.1	263.1
22.5°	254.0	254.0	254.0	254.0	254.0	254.0	254.0	255.1
25°	246.0	246.0	246.0	246.0	246.0	246.0	246.0	247.0
27.5°	237.0	237.0	237.0	237.0	237.0	237.0	237.0	237.0
30°	226.9	226.9	227.9	226.9	226.9	226.9	227.9	226.9
32.5°	216.9	216.9	216.9	216.9	216.9	216.9	216.9	215.9
35°	205.8	204.8	205.8	205.8	205.8	205.8	205.8	205.8
37.5°	193.8	193.8	193.8	193.8	193.8	193.8	194.8	194.8
40°	181.7	180.7	180.7	181.7	181.7	181.7	180.7	181.7
42.5°	166.7	167.7	167.7	167.7	168.7	167.7	168.7	168.7
45°	152.6	153.6	153.6	153.6	153.6	153.6	154.6	154.6
47.5°	138.6	138.6	138.6	138.6	139.6	139.6	139.6	139.6
50°	123.5	123.5	123.5	123.5	124.5	123.5	124.5	124.5
52.5°	107.4	107.4	107.4	107.4	107.4	107.4	108.4	107.4
55°	91.4	91.4	91.4	91.4	90.4	90.4	90.4	91.4
57.5°	76.3	75.3	74.3	75.3	73.3	73.3	73.3	73.3
60°	60.2	59.2	59.2	58.2	57.2	56.2	57.2	56.2
62.5°	46.2	45.2	45.2	43.2	42.2	42.2	41.2	41.2
65°	34.1	32.1	31.1	31.1	30.1	29.1	28.1	28.1
67.5°	22.1	21.1	20.1	20.1	19.1	18.1	18.1	17.1
70°	13.1	12.0	11.0	12.0	10.0	9.0	9.0	9.0
72.5°	6.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
75°	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
77.5°	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
82.5°	1.0	0.0	0.0	0.0	1.0	1.0	0.0	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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Peachtree City, GA 30269

Scaled Data Report



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

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(END OF REPORT)