

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: P644139

Luminaire Tested: ML5615LSWW9FS1E - 692H WW - 900LM - 4000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644139
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: ML5615LSWW9FS1E - 692H WW - 900LM - 4000K
Description: ML56 RR, WW OPTIC, 6" WW INSERT WITH HAZE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

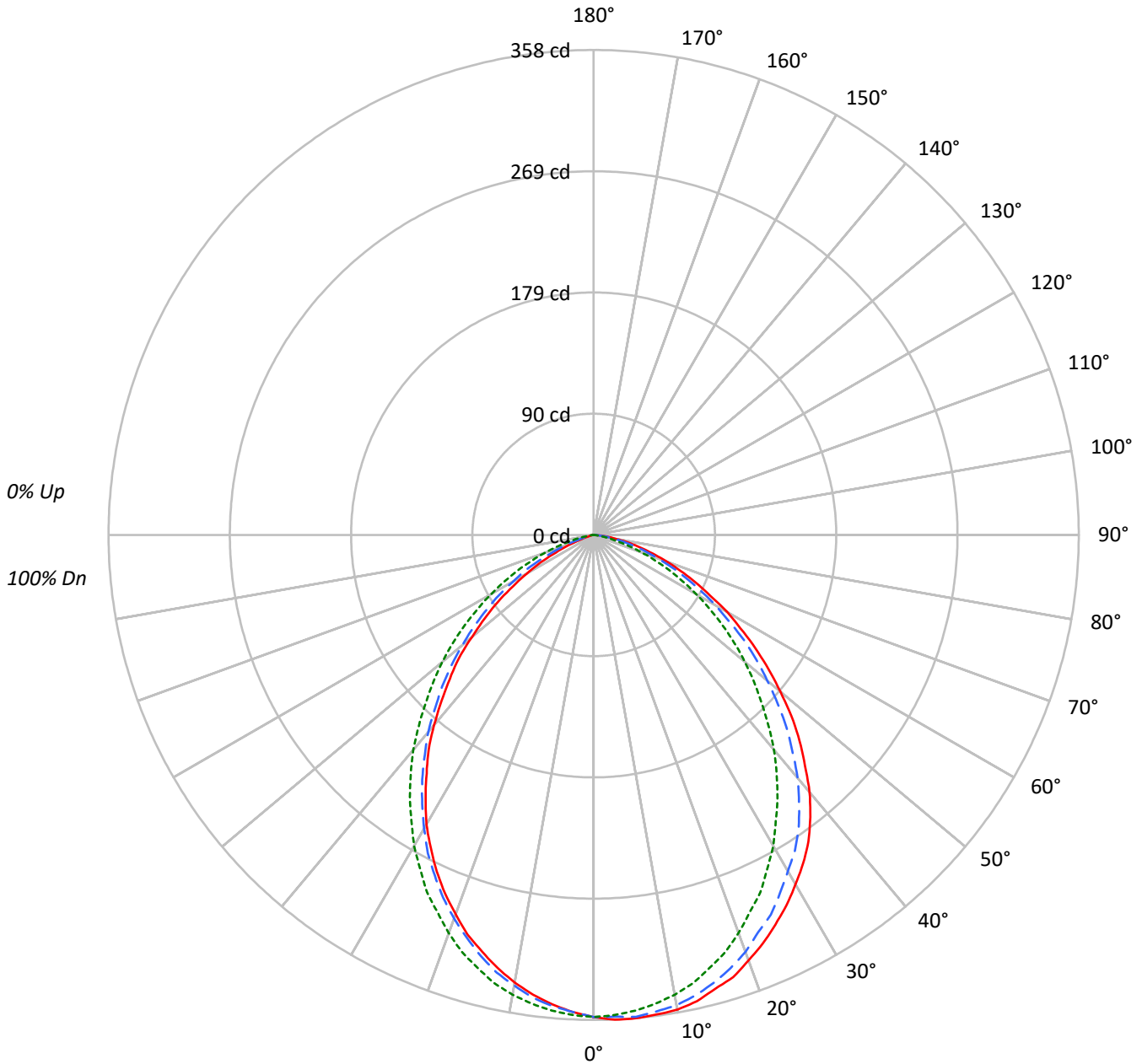
Lumens per Lamp: N/A
Luminaire Lumens: 736.4 lumens
Efficiency: N/A
Efficacy: 70.1 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.12 / 1.23
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

Input Watts (W): 10.5
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	100	100	100	100		
	1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88	88	88	88	88	88		
	2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76	76	76	76	76	76		
	3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66	66	66	66	66	66		
	4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57	57	57	57	57	57		
	5	80	69	60	54	78	68	60	54	66	59	54	64	58	53	62	57	53	51	51	51	51	51	51		
	6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45	45	45	45	45	45		
	7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40	40	40	40	40	40		
	8	65	52	44	39	63	52	44	39	50	43	38	49	43	38	48	42	38	36	36	36	36	36	36		
	9	61	48	40	35	59	48	40	35	46	40	35	45	39	35	44	39	35	33	33	33	33	33	33		
	10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	41	36	32	30	30	30	30	30	30		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	19510	19510	19510	19510	19510
5°	19712	19651	19398	19211	19150
10°	19811	19622	19182	18798	18676
15°	19682	19427	18780	18263	18070
20°	19503	19106	18242	17577	17379
25°	19193	18709	17608	16785	16574
30°	18857	18142	16775	15838	15623
35°	18491	17654	15827	14763	14382
40°	17740	16760	14813	13590	13103
45°	16661	15606	13575	12257	11637
50°	15326	14260	12418	10763	9987
55°	13916	12931	11087	9242	8258
60°	12466	11348	9604	7477	6239
65°	10766	9742	7965	5604	3982
70°	9120	8014	6011	3462	1827
75°	7477	6270	3855	1207	720
80°	5398	4293	1799	347	347
85°	2830	2139	692	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 16661 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.4	4.5
10°-20°	93.5	12.7
20°-30°	134.7	18.3
30°-40°	150.6	20.4
40°-50°	138.1	18.7
50°-60°	103.7	14.1
60°-70°	59.2	8.0
70°-80°	20.7	2.8
80°-90°	2.7	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°	261.6	35.5
0°-40°	412.1	56.0
0°-60°	653.9	88.8
0°-90°	736.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	736.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	356	356	356	356	356	
5°	358	357	352	349	348	34
15°	347	342	331	322	318	98
25°	317	309	291	278	274	146
35°	276	264	236	221	215	172
45°	215	201	175	158	150	165
55°	146	135	116	97	86	130
65°	83	75	61	43	31	83
75°	35	30	18	6	3	38
85°	4	3	1	0	0	7
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°	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9
2.5°	358.2	357.1	357.1	357.1	357.1	357.1	357.1	357.1	357.1	357.1	355.9
5°	358.2	358.2	358.2	358.2	358.2	358.2	358.2	357.1	357.1	357.1	357.1
7.5°	357.1	357.1	357.1	357.1	357.1	357.1	357.1	355.9	355.9	354.8	354.8
10°	355.9	355.9	355.9	354.8	354.8	354.8	354.8	354.8	353.6	353.6	352.5
12.5°	352.5	352.5	352.5	352.5	351.4	351.4	351.4	350.2	349.1	349.1	348.0
15°	346.8	348.0	348.0	346.8	346.8	346.8	346.8	345.7	344.6	343.4	342.3
17.5°	342.3	342.3	342.3	341.1	340.0	341.1	340.0	338.9	337.7	336.6	335.5
20°	334.3	334.3	333.2	333.2	333.2	333.2	332.0	330.9	329.8	328.6	327.5
22.5°	326.4	326.4	326.4	324.1	324.1	324.1	322.9	322.9	320.7	319.5	317.3
25°	317.3	317.3	317.3	316.1	315.0	313.8	315.0	312.7	311.6	309.3	309.3
27.5°	308.2	308.2	307.0	307.0	305.9	305.9	304.8	302.5	301.3	300.2	297.9
30°	297.9	297.9	296.8	296.8	295.7	294.5	294.5	292.2	291.1	288.8	286.6
32.5°	287.7	287.7	286.6	286.6	285.4	284.3	284.3	282.0	279.7	277.5	276.3
35°	276.3	276.3	275.2	275.2	274.0	272.9	271.8	269.5	268.4	265.0	263.8
37.5°	262.7	263.8	261.5	261.5	260.4	259.3	258.1	257.0	254.7	252.4	249.0
40°	247.9	246.8	246.8	245.6	244.5	244.5	243.3	241.1	239.9	236.5	234.2
42.5°	230.8	230.8	230.8	229.7	228.6	228.6	226.3	225.2	222.9	220.6	217.2
45°	214.9	214.9	213.8	213.8	211.5	211.5	210.4	208.1	207.0	203.5	201.3
47.5°	197.9	196.7	196.7	195.6	194.4	194.4	193.3	192.2	189.9	186.5	184.2
50°	179.7	179.7	179.7	178.5	177.4	177.4	176.3	174.0	172.8	170.6	167.2
52.5°	162.6	162.6	162.6	161.5	160.3	160.3	159.2	158.1	155.8	153.5	151.2
55°	145.6	145.6	145.6	144.4	144.4	142.1	142.1	141.0	138.7	136.5	135.3
57.5°	128.5	128.5	128.5	128.5	127.4	127.4	126.2	125.1	122.8	121.7	118.3
60°	113.7	112.6	112.6	111.4	111.4	110.3	109.2	108.0	106.9	104.6	103.5
62.5°	96.7	97.8	96.7	96.7	95.5	95.5	95.5	93.2	92.1	89.8	88.7
65°	83.0	83.0	83.0	83.0	80.7	80.7	80.7	78.5	77.3	77.3	75.1
67.5°	69.4	69.4	69.4	68.2	68.2	68.2	67.1	66.0	64.8	63.7	62.5
70°	56.9	56.9	56.9	55.7	55.7	54.6	54.6	53.4	52.3	52.3	50.0
72.5°	45.5	45.5	45.5	45.5	44.3	44.3	43.2	43.2	42.1	40.9	39.8
75°	35.3	35.3	35.3	34.1	34.1	34.1	33.0	33.0	31.8	30.7	29.6
77.5°	26.2	25.0	25.0	25.0	25.0	23.9	23.9	23.9	22.7	21.6	21.6
80°	17.1	17.1	17.1	17.1	17.1	15.9	15.9	15.9	14.8	14.8	13.6
82.5°	10.2	10.2	10.2	10.2	10.2	9.1	9.1	9.1	8.0	8.0	8.0
85°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4
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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9
2.5°	357.1	357.1	355.9	355.9	355.9	355.9	355.9	354.8	354.8	354.8	354.8
5°	357.1	355.9	354.8	354.8	354.8	354.8	353.6	353.6	353.6	352.5	352.5
7.5°	353.6	353.6	353.6	352.5	352.5	351.4	351.4	350.2	350.2	349.1	349.1
10°	351.4	350.2	350.2	349.1	349.1	348.0	348.0	345.7	344.6	344.6	343.4
12.5°	346.8	345.7	345.7	343.4	343.4	343.4	342.3	340.0	338.9	338.9	337.7
15°	341.1	340.0	338.9	336.6	336.6	335.5	334.3	333.2	332.0	330.9	329.8
17.5°	334.3	332.0	330.9	329.8	328.6	327.5	326.4	325.2	322.9	322.9	320.7
20°	326.4	324.1	322.9	320.7	319.5	319.5	317.3	315.0	313.8	312.7	310.4
22.5°	316.1	315.0	312.7	310.4	309.3	309.3	307.0	304.8	303.6	301.3	300.2
25°	307.0	303.6	302.5	300.2	299.1	299.1	296.8	294.5	292.2	291.1	288.8
27.5°	295.7	293.4	292.2	288.8	287.7	286.6	284.3	282.0	279.7	277.5	275.2
30°	284.3	282.0	279.7	276.3	276.3	274.0	271.8	268.4	267.2	265.0	261.5
32.5°	272.9	270.6	267.2	265.0	262.7	261.5	258.1	255.9	253.6	250.2	249.0
35°	260.4	257.0	254.7	251.3	250.2	247.9	245.6	242.2	239.9	236.5	233.1
37.5°	246.8	242.2	239.9	236.5	235.4	233.1	230.8	228.6	225.2	221.7	219.5
40°	232.0	227.4	224.0	221.7	219.5	217.2	216.1	211.5	209.2	207.0	204.7
42.5°	214.9	211.5	208.1	205.8	203.5	202.4	199.0	196.7	193.3	191.0	188.8
45°	199.0	195.6	192.2	188.8	187.6	186.5	184.2	180.8	177.4	175.1	172.8
47.5°	181.9	179.7	175.1	174.0	171.7	170.6	167.2	164.9	163.7	160.3	158.1
50°	164.9	162.6	160.3	156.9	155.8	154.7	152.4	150.1	147.8	145.6	143.3
52.5°	147.8	146.7	144.4	141.0	141.0	139.9	137.6	135.3	133.0	130.8	128.5
55°	133.0	130.8	128.5	126.2	125.1	123.9	121.7	120.5	118.3	116.0	113.7
57.5°	117.1	114.9	113.7	111.4	110.3	109.2	106.9	105.8	103.5	101.2	98.9
60°	102.3	100.1	98.9	96.7	95.5	95.5	93.2	91.0	89.8	87.6	85.3
62.5°	87.6	85.3	84.1	81.9	81.9	80.7	79.6	77.3	76.2	73.9	72.8
65°	73.9	72.8	70.5	69.4	68.2	67.1	66.0	64.8	62.5	61.4	59.1
67.5°	61.4	59.1	58.0	56.9	55.7	54.6	53.4	52.3	50.0	48.9	46.6
70°	48.9	47.8	46.6	45.5	44.3	44.3	42.1	40.9	38.7	37.5	35.3
72.5°	38.7	37.5	36.4	34.1	34.1	33.0	31.8	30.7	28.4	27.3	25.0
75°	28.4	28.4	26.2	25.0	25.0	23.9	22.7	21.6	20.5	18.2	17.1
77.5°	20.5	19.3	18.2	17.1	15.9	15.9	14.8	13.6	12.5	11.4	9.1
80°	13.6	12.5	11.4	10.2	10.2	9.1	8.0	8.0	6.8	5.7	4.5
82.5°	6.8	6.8	5.7	5.7	4.5	4.5	4.5	3.4	3.4	2.3	2.3
85°	3.4	2.3	2.3	2.3	2.3	2.3	1.1	1.1	1.1	1.1	0.0
87.5°	1.1	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°	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9
2.5°	354.8	353.6	354.8	354.8	353.6	353.6	353.6	353.6	352.5	353.6	352.5
5°	352.5	351.4	351.4	351.4	351.4	350.2	350.2	349.1	349.1	349.1	349.1
7.5°	348.0	346.8	346.8	345.7	345.7	345.7	345.7	344.6	344.6	343.4	343.4
10°	343.4	342.3	341.1	341.1	340.0	340.0	340.0	338.9	337.7	337.7	336.6
12.5°	335.5	335.5	334.3	334.3	333.2	333.2	332.0	330.9	330.9	329.8	329.8
15°	328.6	327.5	326.4	326.4	325.2	324.1	322.9	322.9	321.8	321.8	320.7
17.5°	319.5	317.3	317.3	316.1	315.0	315.0	313.8	312.7	311.6	311.6	311.6
20°	309.3	308.2	307.0	305.9	304.8	304.8	303.6	302.5	301.3	300.2	300.2
22.5°	297.9	296.8	295.7	294.5	294.5	293.4	292.2	291.1	290.0	288.8	288.8
25°	286.6	285.4	284.3	283.1	282.0	280.9	279.7	278.6	277.5	276.3	276.3
27.5°	274.0	271.8	270.6	269.5	268.4	267.2	267.2	265.0	265.0	263.8	262.7
30°	260.4	258.1	255.9	255.9	254.7	253.6	251.3	251.3	250.2	249.0	247.9
32.5°	245.6	244.5	242.2	242.2	239.9	238.8	237.7	236.5	235.4	234.2	234.2
35°	232.0	228.6	227.4	227.4	225.2	224.0	222.9	220.6	220.6	218.3	218.3
37.5°	217.2	214.9	213.8	211.5	210.4	209.2	208.1	205.8	204.7	203.5	202.4
40°	202.4	200.1	197.9	196.7	195.6	193.3	192.2	189.9	189.9	187.6	186.5
42.5°	186.5	184.2	181.9	180.8	179.7	177.4	176.3	174.0	172.8	171.7	170.6
45°	170.6	168.3	167.2	166.0	164.9	163.7	160.3	159.2	158.1	155.8	154.7
47.5°	155.8	153.5	151.2	151.2	149.0	147.8	145.6	143.3	142.1	139.9	138.7
50°	141.0	138.7	136.5	135.3	135.3	131.9	130.8	128.5	126.2	123.9	122.8
52.5°	126.2	123.9	121.7	120.5	119.4	117.1	114.9	113.7	111.4	109.2	108.0
55°	111.4	109.2	106.9	105.8	104.6	102.3	101.2	97.8	96.7	94.4	92.1
57.5°	97.8	95.5	93.2	92.1	91.0	88.7	86.4	84.1	83.0	80.7	78.5
60°	83.0	81.9	79.6	78.5	77.3	76.2	72.8	70.5	68.2	67.1	64.8
62.5°	70.5	68.2	66.0	64.8	63.7	62.5	60.3	58.0	56.9	53.4	51.2
65°	58.0	55.7	53.4	52.3	51.2	50.0	47.8	45.5	43.2	40.9	39.8
67.5°	44.3	43.2	40.9	40.9	39.8	37.5	35.3	34.1	31.8	30.7	28.4
70°	34.1	33.0	30.7	29.6	28.4	26.2	25.0	22.7	21.6	20.5	18.2
72.5°	23.9	22.7	20.5	19.3	18.2	17.1	14.8	13.6	12.5	11.4	10.2
75°	15.9	13.6	12.5	11.4	11.4	9.1	8.0	6.8	5.7	4.5	4.5
77.5°	9.1	8.0	5.7	5.7	5.7	4.5	3.4	3.4	2.3	2.3	2.3
80°	4.5	3.4	2.3	2.3	2.3	2.3	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	1.1	1.1	1.1	1.1
85°	0.0	0.0	0.0	0.0	0.0	1.1	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: P644139

CATALOG NUMBER: ML5615LSWW9FS1E - 692H WW - 900LM - 4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	355.9	355.9	355.9	355.9	355.9	355.9	355.9	355.9
2.5°	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5
5°	349.1	348.0	348.0	348.0	348.0	348.0	348.0	348.0
7.5°	343.4	343.4	342.3	343.4	342.3	342.3	342.3	342.3
10°	336.6	336.6	336.6	336.6	335.5	335.5	335.5	335.5
12.5°	329.8	328.6	328.6	328.6	327.5	328.6	327.5	327.5
15°	320.7	319.5	319.5	319.5	319.5	318.4	319.5	318.4
17.5°	310.4	310.4	309.3	310.4	309.3	309.3	309.3	309.3
20°	299.1	299.1	299.1	297.9	299.1	297.9	297.9	297.9
22.5°	287.7	287.7	286.6	286.6	286.6	286.6	286.6	286.6
25°	275.2	275.2	275.2	275.2	274.0	274.0	274.0	274.0
27.5°	262.7	261.5	261.5	261.5	260.4	261.5	260.4	260.4
30°	247.9	247.9	246.8	246.8	246.8	245.6	245.6	246.8
32.5°	232.0	232.0	232.0	232.0	230.8	230.8	230.8	230.8
35°	217.2	217.2	216.1	216.1	216.1	214.9	214.9	214.9
37.5°	201.3	201.3	200.1	200.1	200.1	199.0	199.0	200.1
40°	185.4	185.4	184.2	184.2	184.2	183.1	183.1	183.1
42.5°	169.4	168.3	168.3	167.2	167.2	167.2	166.0	166.0
45°	153.5	152.4	152.4	152.4	151.2	150.1	150.1	150.1
47.5°	137.6	136.5	135.3	135.3	134.2	134.2	134.2	135.3
50°	121.7	120.5	120.5	119.4	118.3	118.3	118.3	117.1
52.5°	105.8	104.6	104.6	103.5	103.5	102.3	101.2	101.2
55°	91.0	89.8	88.7	87.6	87.6	86.4	86.4	86.4
57.5°	76.2	75.1	73.9	73.9	72.8	72.8	71.6	70.5
60°	62.5	61.4	60.3	60.3	59.1	58.0	56.9	56.9
62.5°	50.0	48.9	47.8	46.6	45.5	44.3	43.2	44.3
65°	38.7	36.4	35.3	34.1	34.1	33.0	31.8	30.7
67.5°	27.3	26.2	25.0	23.9	22.7	21.6	20.5	20.5
70°	17.1	14.8	14.8	14.8	13.6	12.5	11.4	11.4
72.5°	9.1	8.0	6.8	6.8	5.7	5.7	5.7	5.7
75°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
77.5°	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
80°	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	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)