

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: P644122

Luminaire Tested: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644122
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: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH WHITE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 646.2 lumens
Efficiency: N/A
Efficacy: 61.5 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

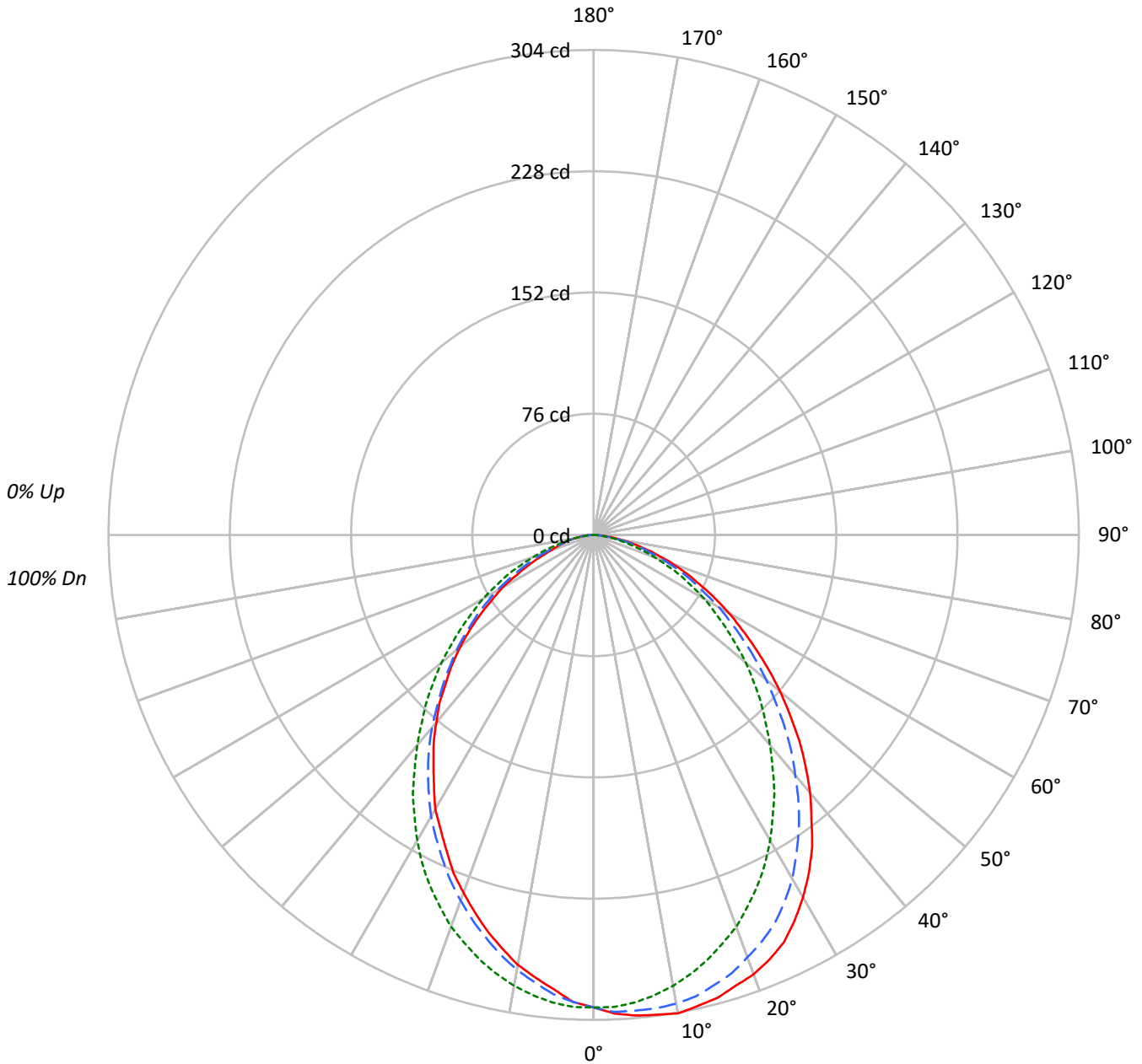
Input Watts (W): 10.5
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

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								
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°	23382	23382	23382	23382	23382
5°	23963	23717	23313	22901	22655
10°	24408	23911	23006	22180	21931
15°	24542	23872	22532	21355	21012
20°	24623	23673	21951	20481	20044
25°	24545	23387	21140	19528	18997
30°	23909	22688	20154	18568	18094
35°	22994	21606	19033	17443	16855
40°	21733	20249	17704	16220	15798
45°	20330	18834	16534	14926	14580
50°	18692	17304	15290	13767	13386
55°	16983	15717	13873	12455	11891
60°	15425	14288	12662	11036	10389
65°	13636	12683	11151	9414	8462
70°	12117	10917	9255	7594	6647
75°	10035	9089	7229	5948	5948
80°	7956	7001	5592	5137	5137
85°	4619	4619	3714	4619	4619

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 20330 cd/sqm



TEST NUMBER: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	27.9	4.3
10°-20°	78.0	12.1
20°-30°	113.2	17.5
30°-40°	126.3	19.5
40°-50°	117.1	18.1
50°-60°	92.1	14.2
60°-70°	58.9	9.1
70°-80°	27.0	4.2
80°-90°	5.8	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°	219.1	33.9
0°-40°	345.3	53.4
0°-60°	554.5	85.8
0°-90°	646.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	646.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	296	296	296	296	296	
5°	302	299	294	289	286	29
15°	300	292	276	261	257	85
25°	282	268	243	224	218	129
35°	239	224	198	181	175	149
45°	182	169	148	134	131	140
55°	123	114	101	90	86	111
65°	73	68	60	50	45	73
75°	33	30	24	20	20	36
85°	5	5	4	5	5	7
90°	0	0	0	0	0	



TEST NUMBER: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

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°	300.3	300.3	300.3	300.3	300.3	300.3	299.3	299.3	299.3	299.3	299.3
5°	302.4	302.4	302.4	302.4	301.4	301.4	301.4	301.4	300.3	300.3	299.3
7.5°	303.4	303.4	303.4	302.4	302.4	302.4	301.4	301.4	301.4	300.3	299.3
10°	304.5	303.4	303.4	302.4	302.4	302.4	301.4	301.4	300.3	299.3	298.3
12.5°	302.4	302.4	302.4	302.4	301.4	301.4	300.3	299.3	298.3	297.3	296.2
15°	300.3	300.3	300.3	299.3	298.3	298.3	297.3	296.2	295.2	294.2	292.1
17.5°	296.2	297.3	296.2	296.2	295.2	295.2	294.2	293.1	291.1	290.1	288.0
20°	293.1	292.1	292.1	292.1	291.1	290.1	289.0	288.0	285.9	284.9	281.8
22.5°	288.0	288.0	287.0	285.9	284.9	284.9	283.9	281.8	280.8	278.7	275.7
25°	281.8	280.8	280.8	279.8	278.7	278.7	276.7	275.7	273.6	270.5	268.5
27.5°	272.6	272.6	272.6	271.5	270.5	269.5	268.5	266.4	265.4	261.3	259.2
30°	262.3	262.3	261.3	261.3	259.2	259.2	258.2	256.1	254.1	251.0	248.9
32.5°	251.0	251.0	251.0	248.9	247.9	246.9	245.8	244.8	241.7	238.6	236.6
35°	238.6	238.6	237.6	236.6	235.5	234.5	233.5	231.4	229.4	227.3	224.2
37.5°	224.2	225.3	224.2	223.2	222.2	221.1	220.1	219.1	216.0	213.9	210.9
40°	210.9	210.9	209.8	208.8	207.8	207.8	206.7	204.7	202.6	199.5	196.5
42.5°	196.5	196.5	195.4	194.4	194.4	193.4	191.3	190.3	188.2	186.2	183.1
45°	182.1	181.0	180.0	180.0	179.0	177.9	177.9	175.9	173.8	170.7	168.7
47.5°	166.6	166.6	165.6	165.6	164.6	163.5	163.5	161.5	158.4	156.3	154.3
50°	152.2	152.2	151.2	151.2	150.2	149.1	148.1	147.1	145.0	143.0	140.9
52.5°	137.8	137.8	137.8	135.8	134.7	134.7	134.7	132.7	131.7	129.6	127.5
55°	123.4	123.4	123.4	122.4	121.4	121.4	121.4	119.3	118.3	116.2	114.2
57.5°	110.1	110.1	110.1	109.0	109.0	108.0	107.0	105.9	104.9	103.9	101.8
60°	97.7	97.7	96.7	95.7	96.7	95.7	94.6	93.6	92.6	91.5	90.5
62.5°	85.4	85.4	85.4	84.3	83.3	83.3	83.3	82.3	80.2	79.2	78.2
65°	73.0	73.0	73.0	73.0	72.0	72.0	71.0	69.9	69.9	68.9	67.9
67.5°	62.7	62.7	61.7	61.7	60.7	60.7	60.7	59.7	58.6	58.6	57.6
70°	52.5	51.4	51.4	51.4	50.4	50.4	50.4	49.4	49.4	48.3	47.3
72.5°	42.2	42.2	42.2	42.2	41.1	41.1	40.1	40.1	39.1	39.1	38.1
75°	32.9	32.9	32.9	32.9	31.9	31.9	31.9	31.9	30.9	30.9	29.8
77.5°	24.7	24.7	24.7	24.7	24.7	24.7	23.7	23.7	23.7	22.6	22.6
80°	17.5	17.5	17.5	17.5	16.5	16.5	16.5	16.5	16.5	15.4	15.4
82.5°	11.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.3
85°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
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



TEST NUMBER: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

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°	298.3	298.3	298.3	298.3	297.3	297.3	297.3	296.2	296.2	296.2	296.2
5°	299.3	299.3	297.3	297.3	297.3	297.3	296.2	296.2	295.2	294.2	293.1
7.5°	298.3	298.3	297.3	296.2	295.2	295.2	294.2	293.1	292.1	291.1	290.1
10°	297.3	296.2	295.2	294.2	293.1	292.1	291.1	290.1	288.0	287.0	285.9
12.5°	295.2	293.1	292.1	290.1	290.1	289.0	287.0	285.9	283.9	281.8	280.8
15°	291.1	289.0	287.0	284.9	284.9	282.9	280.8	279.8	277.7	275.7	273.6
17.5°	285.9	283.9	281.8	279.8	278.7	276.7	274.6	272.6	270.5	268.5	266.4
20°	280.8	277.7	275.7	272.6	271.5	270.5	267.4	265.4	263.3	261.3	258.2
22.5°	273.6	271.5	267.4	265.4	264.3	262.3	260.2	257.1	254.1	252.0	249.9
25°	265.4	263.3	260.2	257.1	255.1	254.1	251.0	247.9	245.8	242.7	240.7
27.5°	256.1	253.0	251.0	246.9	245.8	243.8	240.7	237.6	235.5	232.5	229.4
30°	245.8	242.7	239.7	236.6	234.5	233.5	230.4	227.3	224.2	221.1	219.1
32.5°	233.5	230.4	227.3	225.3	222.2	220.1	218.1	215.0	211.9	208.8	206.7
35°	221.1	218.1	215.0	211.9	209.8	209.8	205.7	202.6	199.5	197.5	194.4
37.5°	207.8	204.7	201.6	198.5	197.5	195.4	192.3	189.3	187.2	184.1	182.1
40°	194.4	190.3	188.2	185.1	184.1	182.1	180.0	176.9	174.9	171.8	169.7
42.5°	180.0	177.9	174.9	172.8	170.7	169.7	166.6	163.5	161.5	159.4	158.4
45°	166.6	163.5	160.5	158.4	157.4	155.3	154.3	151.2	149.1	148.1	146.1
47.5°	152.2	150.2	148.1	145.0	144.0	143.0	140.9	139.9	137.8	135.8	133.7
50°	138.9	136.8	134.7	132.7	131.7	131.7	128.6	126.5	125.5	124.5	122.4
52.5°	125.5	123.4	121.4	119.3	119.3	118.3	116.2	115.2	114.2	112.1	110.1
55°	113.1	111.1	109.0	108.0	107.0	107.0	104.9	103.9	101.8	100.8	99.8
57.5°	100.8	98.7	97.7	96.7	95.7	95.7	93.6	92.6	91.5	89.5	89.5
60°	89.5	87.4	86.4	85.4	84.3	83.3	83.3	81.3	80.2	80.2	78.2
62.5°	77.1	76.1	75.1	74.1	73.0	73.0	72.0	71.0	69.9	68.9	67.9
65°	66.9	65.8	64.8	63.8	62.7	62.7	61.7	60.7	59.7	59.7	57.6
67.5°	56.6	55.5	54.5	53.5	53.5	52.5	51.4	51.4	50.4	49.4	48.3
70°	46.3	46.3	45.3	44.2	44.2	43.2	42.2	42.2	41.1	40.1	39.1
72.5°	38.1	37.0	36.0	36.0	35.0	35.0	33.9	33.9	32.9	31.9	30.9
75°	28.8	27.8	27.8	27.8	26.7	26.7	26.7	25.7	24.7	23.7	23.7
77.5°	21.6	21.6	20.6	19.5	19.5	19.5	18.5	18.5	18.5	17.5	17.5
80°	15.4	14.4	14.4	13.4	13.4	13.4	13.4	12.3	12.3	12.3	11.3
82.5°	9.3	9.3	9.3	8.2	8.2	8.2	8.2	8.2	7.2	7.2	7.2
85°	5.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
87.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1
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: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

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	294.2	294.2	294.2	294.2	294.2	293.1	293.1	293.1	293.1
5°	293.1	292.1	291.1	291.1	291.1	290.1	290.1	289.0	289.0	288.0	288.0
7.5°	289.0	288.0	287.0	287.0	285.9	285.9	283.9	283.9	282.9	281.8	281.8
10°	283.9	282.9	281.8	280.8	280.8	278.7	278.7	277.7	276.7	275.7	275.7
12.5°	278.7	277.7	275.7	274.6	274.6	273.6	271.5	270.5	269.5	268.5	267.4
15°	271.5	270.5	268.5	267.4	266.4	265.4	264.3	263.3	261.3	260.2	260.2
17.5°	264.3	263.3	260.2	259.2	259.2	257.1	256.1	254.1	253.0	252.0	251.0
20°	256.1	254.1	252.0	251.0	249.9	247.9	246.9	245.8	243.8	242.7	241.7
22.5°	246.9	244.8	242.7	241.7	240.7	238.6	237.6	235.5	234.5	233.5	232.5
25°	237.6	235.5	233.5	232.5	230.4	229.4	227.3	225.3	224.2	223.2	222.2
27.5°	227.3	225.3	222.2	221.1	220.1	219.1	217.0	215.0	213.9	211.9	211.9
30°	216.0	213.9	211.9	210.9	209.8	207.8	206.7	204.7	203.7	201.6	201.6
32.5°	204.7	201.6	199.5	198.5	197.5	196.5	194.4	193.4	192.3	191.3	190.3
35°	192.3	190.3	188.2	187.2	186.2	184.1	183.1	182.1	181.0	179.0	179.0
37.5°	180.0	177.9	175.9	174.9	174.9	172.8	171.8	169.7	169.7	167.7	167.7
40°	167.7	165.6	163.5	163.5	162.5	160.5	159.4	158.4	157.4	156.3	156.3
42.5°	156.3	153.3	152.2	152.2	150.2	149.1	148.1	147.1	145.0	145.0	145.0
45°	144.0	141.9	140.9	139.9	138.9	137.8	136.8	134.7	133.7	132.7	132.7
47.5°	132.7	130.6	129.6	128.6	127.5	126.5	125.5	124.5	122.4	122.4	121.4
50°	121.4	119.3	118.3	117.3	116.2	115.2	114.2	113.1	112.1	111.1	110.1
52.5°	109.0	108.0	107.0	105.9	105.9	103.9	102.9	101.8	100.8	100.8	98.7
55°	98.7	97.7	96.7	95.7	94.6	93.6	92.6	91.5	90.5	89.5	88.5
57.5°	87.4	86.4	85.4	85.4	84.3	83.3	82.3	81.3	80.2	79.2	78.2
60°	77.1	76.1	75.1	75.1	74.1	73.0	72.0	72.0	69.9	68.9	67.9
62.5°	66.9	65.8	64.8	64.8	63.8	63.8	62.7	61.7	59.7	59.7	58.6
65°	57.6	56.6	55.5	54.5	54.5	53.5	52.5	51.4	50.4	50.4	49.4
67.5°	48.3	47.3	46.3	46.3	45.3	44.2	43.2	42.2	41.1	41.1	40.1
70°	39.1	38.1	37.0	37.0	36.0	35.0	35.0	33.9	32.9	31.9	31.9
72.5°	29.8	29.8	28.8	28.8	27.8	27.8	26.7	25.7	25.7	24.7	23.7
75°	22.6	22.6	21.6	21.6	20.6	20.6	19.5	19.5	19.5	18.5	19.5
77.5°	16.5	16.5	15.4	15.4	15.4	14.4	14.4	14.4	15.4	15.4	15.4
80°	11.3	11.3	11.3	11.3	10.3	10.3	11.3	11.3	11.3	11.3	11.3
82.5°	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	8.2	8.2	8.2
85°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.1	5.1	5.1	5.1
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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: P644122

CATALOG NUMBER: ML5615LSWW9FS1E - 592W WW - 900LM - 3000K

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°	292.1	292.1	292.1	292.1	292.1	292.1	292.1	293.1
5°	287.0	287.0	287.0	287.0	287.0	287.0	287.0	285.9
7.5°	281.8	280.8	280.8	280.8	280.8	279.8	279.8	279.8
10°	274.6	274.6	273.6	273.6	273.6	273.6	272.6	273.6
12.5°	267.4	266.4	266.4	266.4	265.4	265.4	265.4	265.4
15°	259.2	258.2	258.2	258.2	257.1	257.1	257.1	257.1
17.5°	249.9	249.9	248.9	248.9	247.9	247.9	247.9	247.9
20°	240.7	240.7	240.7	239.7	239.7	239.7	238.6	238.6
22.5°	231.4	230.4	229.4	230.4	229.4	228.3	229.4	229.4
25°	221.1	220.1	219.1	219.1	219.1	219.1	218.1	218.1
27.5°	210.9	208.8	208.8	208.8	208.8	207.8	207.8	207.8
30°	200.6	199.5	199.5	198.5	197.5	197.5	197.5	198.5
32.5°	189.3	188.2	187.2	187.2	187.2	187.2	186.2	186.2
35°	177.9	177.9	176.9	176.9	176.9	175.9	175.9	174.9
37.5°	166.6	166.6	165.6	165.6	165.6	164.6	164.6	164.6
40°	155.3	154.3	154.3	155.3	154.3	154.3	153.3	153.3
42.5°	144.0	144.0	143.0	143.0	143.0	143.0	141.9	143.0
45°	131.7	131.7	131.7	131.7	131.7	131.7	130.6	130.6
47.5°	121.4	120.3	120.3	120.3	120.3	120.3	120.3	120.3
50°	110.1	109.0	109.0	109.0	109.0	109.0	109.0	109.0
52.5°	98.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7
55°	88.5	87.4	87.4	86.4	87.4	86.4	86.4	86.4
57.5°	78.2	77.1	76.1	77.1	76.1	76.1	76.1	75.1
60°	67.9	66.9	66.9	66.9	65.8	64.8	64.8	65.8
62.5°	57.6	57.6	56.6	56.6	55.5	54.5	54.5	54.5
65°	48.3	47.3	47.3	46.3	46.3	45.3	45.3	45.3
67.5°	39.1	39.1	38.1	38.1	37.0	37.0	37.0	36.0
70°	30.9	30.9	29.8	29.8	29.8	28.8	28.8	28.8
72.5°	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
75°	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
77.5°	15.4	15.4	15.4	15.4	15.4	15.4	15.4	16.5
80°	11.3	11.3	12.3	11.3	12.3	11.3	11.3	11.3
82.5°	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
85°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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)