

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: P644099

Luminaire Tested: ML5615LSWW9FS1E - 592SC WW - 1200LM - 4000K

Issue Date: 2/17/2023

Test Information

Test Method: LM-79-2019
Report Number: P644099
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2212-866-129)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 2/17/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML5615LSWW9FS1E - 592SC WW - 1200LM - 4000K
Description: ML56 RR, WW OPTIC, 5" WW INSERT WITH SPECULAR CLEAR TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 932.1 lumens
Efficiency: N/A
Efficacy: 69.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.26
Luminous Opening: Circular (Dia: 0.42' x H: 0')
CIE Type: Direct

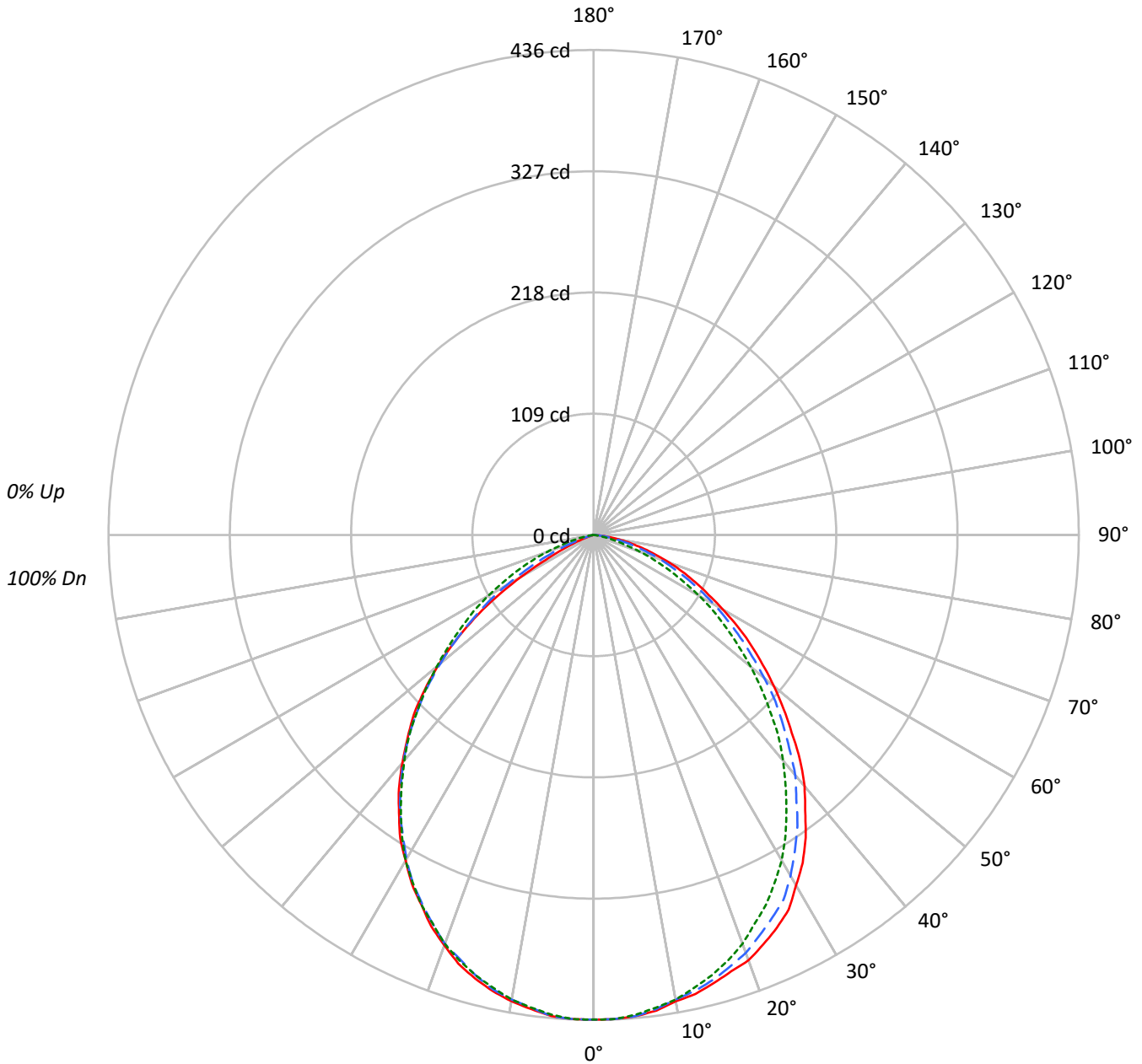
Input Watts (W): 13.4
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P644099

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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	105	101	98	100	98	95	97	94	93	93	91	90	88					88			
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76					76			
3	94	85	78	72	92	83	77	71	81	75	70	78	73	69	75	71	68	66					66			
4	87	76	68	62	85	75	68	62	72	66	61	70	65	60	68	63	60	58					58			
5	80	69	61	55	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	36	32	42	36	32	41	36	32	30					30			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	34395	34395	34395	34395	34395
5°	34415	34415	34304	34415	34415
10°	34124	34003	34003	34003	34124
15°	34088	33851	33499	33499	33728
20°	34191	33586	32864	32864	32981
25°	33944	33073	31940	31818	31940
30°	33162	32250	30810	30673	30810
35°	32014	30771	29103	29238	29383
40°	30379	29050	27267	27422	27566
45°	28100	26816	25041	25041	25532
50°	25962	24550	22609	22081	22425
55°	23755	22172	19984	18401	18016
60°	21109	19751	17256	14304	11810
65°	18810	17185	13972	9396	5641
70°	16595	14610	10294	4639	1662
75°	13603	11407	6131	1312	427
80°	10456	7865	2637	0	0
85°	5253	3895	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 28256 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	41.1	4.4
10°-20°	116.2	12.5
20°-30°	171.4	18.4
30°-40°	194.0	20.8
40°-50°	179.2	19.2
50°-60°	132.4	14.2
60°-70°	71.2	7.6
70°-80°	23.8	2.6
80°-90°	3.0	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°	328.6	35.3
0°-40°	522.6	56.1
0°-60°	834.1	89.5
0°-90°	932.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	932.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	436	436	436	436	436	
5°	434	434	433	434	434	41
15°	417	414	410	410	413	118
25°	390	380	367	365	367	179
35°	332	319	302	303	305	207
45°	252	240	224	224	229	195
55°	173	161	145	134	131	154
65°	101	92	75	50	30	100
75°	45	37	20	4	1	48
85°	6	4	0	0	0	9
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°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
2.5°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
5°	434.3	434.3	432.9	434.3	434.3	434.3	434.3	432.9	434.3	434.3	434.3
7.5°	431.4	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0
10°	425.7	425.7	425.7	425.7	425.7	425.7	425.7	425.7	425.7	425.7	424.2
12.5°	422.8	421.4	421.4	421.4	421.4	421.4	421.4	419.9	421.4	419.9	419.9
15°	417.1	417.1	417.1	417.1	417.1	417.1	415.6	415.6	415.6	415.6	414.2
17.5°	411.3	411.3	412.7	412.7	411.3	411.3	411.3	409.9	408.4	408.4	407.0
20°	407.0	407.0	405.5	405.5	404.1	405.5	404.1	402.7	402.7	401.2	399.8
22.5°	398.4	398.4	398.4	398.4	398.4	396.9	396.9	395.5	394.0	392.6	389.7
25°	389.7	389.7	389.7	389.7	388.3	388.3	388.3	385.4	384.0	382.5	379.7
27.5°	379.7	378.2	378.2	378.2	376.8	376.8	375.3	373.9	372.5	371.0	369.6
30°	363.8	363.8	363.8	363.8	362.4	361.0	361.0	359.5	358.1	355.2	353.8
32.5°	349.5	349.5	348.0	346.6	346.6	346.6	345.1	343.7	340.8	339.4	336.5
35°	332.2	330.8	330.8	329.3	329.3	329.3	327.9	325.0	323.6	322.1	319.3
37.5°	312.1	313.5	312.1	312.1	310.6	309.2	307.8	306.3	304.9	302.0	299.1
40°	294.8	294.8	293.4	291.9	290.5	290.5	289.1	287.6	286.2	284.7	281.9
42.5°	274.7	274.7	273.2	273.2	271.8	271.8	268.9	267.5	266.1	264.6	260.3
45°	251.7	251.7	253.1	251.7	250.2	248.8	248.8	247.4	244.5	243.0	240.2
47.5°	231.5	233.0	231.5	230.1	230.1	228.7	228.7	225.8	225.8	222.9	221.5
50°	211.4	211.4	211.4	211.4	210.0	208.5	208.5	207.1	204.2	202.8	199.9
52.5°	191.3	191.3	191.3	191.3	189.8	189.8	188.4	187.0	185.5	182.6	179.8
55°	172.6	171.1	171.1	171.1	169.7	169.7	168.3	166.8	165.4	163.9	161.1
57.5°	153.9	152.4	152.4	151.0	151.0	149.6	149.6	148.1	146.7	143.8	142.4
60°	133.7	135.2	133.7	133.7	132.3	132.3	132.3	130.9	128.0	126.6	125.1
62.5°	116.5	117.9	116.5	115.0	115.0	115.0	115.0	112.2	110.7	109.3	107.9
65°	100.7	100.7	100.7	99.2	99.2	99.2	96.4	96.4	94.9	93.5	92.0
67.5°	86.3	84.8	84.8	84.8	83.4	83.4	82.0	82.0	79.1	79.1	76.2
70°	71.9	70.5	70.5	70.5	69.0	67.6	69.0	66.2	64.7	63.3	63.3
72.5°	57.5	57.5	56.1	56.1	56.1	54.6	54.6	53.2	51.8	50.3	48.9
75°	44.6	44.6	44.6	43.1	43.1	41.7	41.7	40.3	40.3	37.4	37.4
77.5°	33.1	33.1	33.1	31.6	31.6	31.6	30.2	30.2	28.8	27.3	25.9
80°	23.0	21.6	21.6	21.6	21.6	20.1	20.1	20.1	18.7	18.7	17.3
82.5°	12.9	12.9	12.9	12.9	12.9	12.9	11.5	11.5	11.5	10.1	10.1
85°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	4.3	4.3	4.3
87.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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: P644099

CATALOG NUMBER: ML5615LSWW9FS1E - 592SC WW - 1200LM - 4000K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
2.5°	435.7	435.7	435.7	435.7	434.3	435.7	434.3	435.7	435.7	435.7	435.7
5°	434.3	432.9	432.9	432.9	434.3	434.3	432.9	432.9	432.9	432.9	432.9
7.5°	430.0	430.0	430.0	428.6	430.0	430.0	428.6	430.0	430.0	428.6	430.0
10°	425.7	425.7	424.2	424.2	424.2	424.2	424.2	424.2	422.8	424.2	424.2
12.5°	419.9	419.9	419.9	418.5	418.5	418.5	418.5	418.5	417.1	417.1	418.5
15°	414.2	414.2	412.7	412.7	412.7	411.3	411.3	411.3	411.3	409.9	409.9
17.5°	407.0	405.5	405.5	404.1	404.1	402.7	402.7	401.2	401.2	401.2	399.8
20°	398.4	396.9	395.5	395.5	394.0	394.0	392.6	392.6	391.2	391.2	389.7
22.5°	388.3	386.9	385.4	384.0	384.0	382.5	382.5	381.1	379.7	378.2	378.2
25°	379.7	376.8	375.3	373.9	371.0	371.0	369.6	369.6	368.2	366.7	365.3
27.5°	366.7	363.8	362.4	361.0	359.5	358.1	355.2	355.2	353.8	352.3	350.9
30°	350.9	349.5	346.6	345.1	343.7	343.7	340.8	338.0	338.0	338.0	336.5
32.5°	335.1	332.2	330.8	327.9	326.5	326.5	325.0	322.1	320.7	320.7	319.3
35°	317.8	314.9	312.1	310.6	309.2	307.8	306.3	304.9	303.4	302.0	300.6
37.5°	297.7	294.8	293.4	291.9	290.5	289.1	287.6	286.2	284.7	283.3	284.7
40°	279.0	276.1	273.2	271.8	270.4	270.4	268.9	267.5	266.1	264.6	264.6
42.5°	258.9	256.0	254.5	253.1	251.7	250.2	248.8	247.4	245.9	245.9	244.5
45°	237.3	235.9	233.0	231.5	230.1	230.1	227.2	225.8	225.8	224.3	224.3
47.5°	218.6	215.7	212.8	211.4	210.0	208.5	207.1	205.7	204.2	204.2	204.2
50°	197.0	195.6	192.7	191.3	189.8	189.8	188.4	187.0	185.5	184.1	184.1
52.5°	176.9	175.5	175.5	172.6	171.1	171.1	168.3	168.3	165.4	163.9	162.5
55°	159.6	156.8	155.3	152.4	152.4	151.0	149.6	148.1	146.7	145.2	143.8
57.5°	139.5	138.1	136.6	135.2	135.2	133.7	132.3	130.9	128.0	128.0	125.1
60°	123.7	120.8	119.4	117.9	116.5	116.5	115.0	113.6	110.7	109.3	107.9
62.5°	106.4	103.5	103.5	102.1	99.2	99.2	97.8	94.9	93.5	90.6	89.2
65°	90.6	89.2	86.3	84.8	84.8	83.4	80.5	79.1	77.7	74.8	71.9
67.5°	74.8	73.3	71.9	69.0	69.0	67.6	64.7	63.3	60.4	59.0	56.1
70°	60.4	59.0	57.5	54.6	54.6	53.2	51.8	48.9	46.0	44.6	41.7
72.5°	47.5	46.0	44.6	41.7	41.7	40.3	37.4	36.0	33.1	30.2	28.8
75°	36.0	34.5	31.6	30.2	28.8	28.8	25.9	24.4	23.0	20.1	18.7
77.5°	24.4	23.0	21.6	20.1	20.1	18.7	17.3	15.8	14.4	12.9	10.1
80°	15.8	14.4	12.9	12.9	11.5	11.5	10.1	8.6	7.2	5.8	4.3
82.5°	8.6	8.6	7.2	5.8	5.8	5.8	4.3	4.3	2.9	1.4	1.4
85°	2.9	2.9	2.9	2.9	1.4	1.4	1.4	1.4	1.4	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: P644099

CATALOG NUMBER: ML5615LSWW9FS1E - 592SC WW - 1200LM - 4000K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
2.5°	435.7	435.7	435.7	435.7	435.7	435.7	434.3	435.7	435.7	435.7	434.3
5°	434.3	432.9	432.9	434.3	432.9	432.9	434.3	434.3	434.3	432.9	432.9
7.5°	428.6	430.0	428.6	428.6	430.0	430.0	430.0	430.0	428.6	428.6	430.0
10°	424.2	424.2	422.8	424.2	422.8	424.2	424.2	424.2	424.2	424.2	424.2
12.5°	417.1	417.1	417.1	418.5	417.1	417.1	418.5	418.5	418.5	418.5	418.5
15°	408.4	408.4	409.9	408.4	409.9	409.9	409.9	409.9	409.9	409.9	411.3
17.5°	399.8	399.8	399.8	399.8	399.8	399.8	399.8	399.8	399.8	401.2	401.2
20°	389.7	389.7	389.7	389.7	389.7	388.3	389.7	389.7	391.2	391.2	391.2
22.5°	376.8	376.8	376.8	376.8	376.8	376.8	376.8	376.8	378.2	379.7	378.2
25°	363.8	363.8	363.8	363.8	363.8	363.8	363.8	365.3	365.3	365.3	366.7
27.5°	350.9	350.9	350.9	349.5	350.9	349.5	350.9	350.9	352.3	350.9	352.3
30°	336.5	335.1	335.1	335.1	335.1	336.5	335.1	335.1	336.5	338.0	336.5
32.5°	317.8	317.8	317.8	319.3	319.3	319.3	320.7	319.3	319.3	320.7	320.7
35°	300.6	300.6	300.6	302.0	302.0	302.0	302.0	303.4	303.4	303.4	304.9
37.5°	281.9	283.3	281.9	283.3	283.3	284.7	284.7	284.7	284.7	286.2	286.2
40°	264.6	263.2	264.6	264.6	264.6	264.6	264.6	264.6	266.1	267.5	267.5
42.5°	244.5	244.5	244.5	244.5	244.5	244.5	245.9	245.9	245.9	247.4	247.4
45°	224.3	222.9	222.9	222.9	222.9	224.3	222.9	224.3	224.3	225.8	225.8
47.5°	202.8	202.8	202.8	202.8	202.8	202.8	202.8	202.8	202.8	204.2	202.8
50°	184.1	182.6	181.2	181.2	179.8	181.2	179.8	179.8	179.8	181.2	179.8
52.5°	162.5	161.1	159.6	159.6	159.6	158.2	156.8	156.8	156.8	155.3	155.3
55°	143.8	142.4	139.5	140.9	138.1	136.6	136.6	135.2	133.7	133.7	132.3
57.5°	123.7	122.2	120.8	119.4	119.4	116.5	115.0	113.6	112.2	110.7	107.9
60°	106.4	103.5	100.7	100.7	99.2	97.8	94.9	92.0	90.6	87.7	86.3
62.5°	87.7	84.8	82.0	80.5	79.1	77.7	74.8	71.9	69.0	67.6	64.7
65°	70.5	67.6	64.7	63.3	61.8	59.0	56.1	53.2	50.3	47.5	46.0
67.5°	53.2	50.3	48.9	46.0	44.6	41.7	38.8	37.4	34.5	31.6	27.3
70°	38.8	36.0	33.1	31.6	30.2	27.3	25.9	23.0	20.1	18.7	15.8
72.5°	25.9	23.0	21.6	20.1	18.7	17.3	14.4	12.9	10.1	8.6	7.2
75°	15.8	14.4	12.9	11.5	10.1	8.6	7.2	5.8	4.3	2.9	1.4
77.5°	8.6	7.2	5.8	5.8	4.3	2.9	2.9	1.4	1.4	1.4	1.4
80°	4.3	2.9	1.4	1.4	1.4	1.4	0.0	0.0	0.0	0.0	1.4
82.5°	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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: P644099

CATALOG NUMBER: ML5615LSWW9FS1E - 592SC WW - 1200LM - 4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
2.5°	435.7	435.7	435.7	435.7	435.7	435.7	435.7	435.7
5°	434.3	434.3	432.9	434.3	432.9	432.9	432.9	434.3
7.5°	430.0	430.0	430.0	430.0	430.0	430.0	430.0	430.0
10°	424.2	424.2	424.2	425.7	425.7	425.7	424.2	425.7
12.5°	418.5	418.5	418.5	419.9	418.5	419.9	418.5	419.9
15°	411.3	411.3	412.7	412.7	411.3	411.3	412.7	412.7
17.5°	401.2	402.7	402.7	402.7	402.7	402.7	402.7	404.1
20°	392.6	392.6	391.2	392.6	392.6	394.0	394.0	392.6
22.5°	378.2	381.1	381.1	381.1	381.1	381.1	381.1	381.1
25°	366.7	366.7	366.7	368.2	366.7	366.7	368.2	366.7
27.5°	352.3	353.8	352.3	353.8	353.8	353.8	353.8	353.8
30°	338.0	338.0	338.0	338.0	338.0	339.4	338.0	338.0
32.5°	320.7	322.1	322.1	322.1	323.6	322.1	322.1	323.6
35°	304.9	304.9	304.9	306.3	304.9	306.3	306.3	304.9
37.5°	286.2	287.6	286.2	287.6	287.6	287.6	287.6	287.6
40°	268.9	267.5	268.9	267.5	268.9	268.9	268.9	267.5
42.5°	247.4	248.8	248.8	248.8	248.8	248.8	248.8	247.4
45°	225.8	227.2	227.2	227.2	227.2	227.2	228.7	228.7
47.5°	202.8	205.7	205.7	205.7	204.2	207.1	205.7	205.7
50°	179.8	179.8	181.2	181.2	182.6	182.6	182.6	182.6
52.5°	156.8	155.3	156.8	156.8	158.2	156.8	158.2	156.8
55°	130.9	130.9	130.9	129.4	130.9	130.9	130.9	130.9
57.5°	107.9	106.4	105.0	103.5	103.5	103.5	102.1	103.5
60°	83.4	80.5	82.0	79.1	77.7	76.2	76.2	74.8
62.5°	61.8	59.0	57.5	56.1	53.2	50.3	50.3	48.9
65°	41.7	38.8	37.4	34.5	33.1	31.6	30.2	30.2
67.5°	25.9	23.0	23.0	21.6	20.1	18.7	17.3	17.3
70°	14.4	12.9	11.5	10.1	10.1	8.6	7.2	7.2
72.5°	5.8	4.3	4.3	2.9	2.9	2.9	2.9	1.4
75°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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

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Peachtree City, GA 30269

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

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(END OF REPORT)