

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P130167

Luminaire Tested: **HL612ICAT - HLM6935 - HL6FL - 455SN**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130167
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33450)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6935 - HL6FL - 455SN
Description: HALO ALLSLOPE 6" 21W, Satin Nickel Reflector, Satin Nickel Metal Trim Ring using 40 Degree Optic at a 6-12 Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1606.4 lumens
Efficiency: N/A
Efficacy: 84.1 lumens/watt
Spacing Criteria (0/90/45): 1.56 / 0.66 / 1.06
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

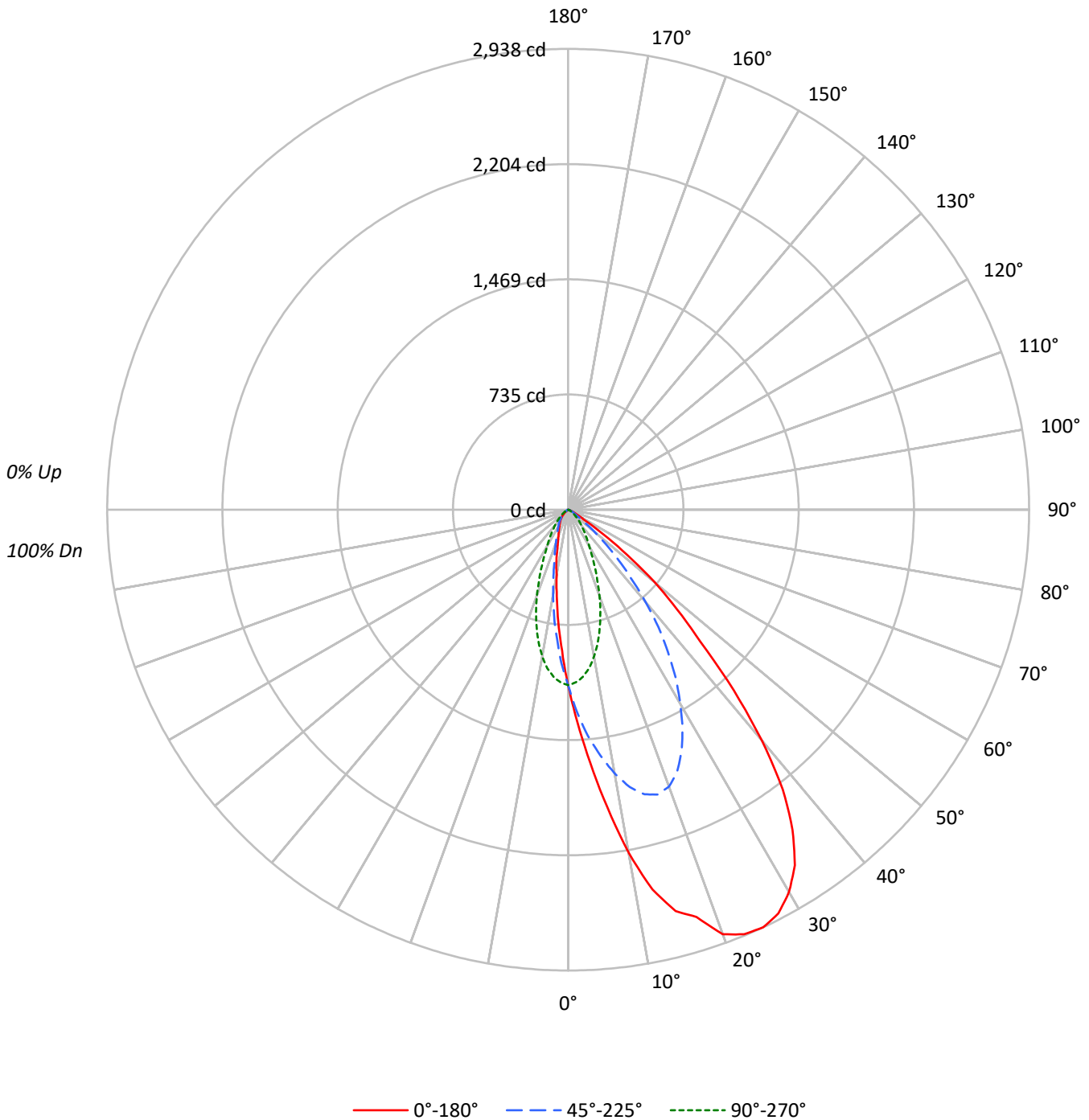
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92				92
2	106	101	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	84				84
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	76				76
4	94	85	79	74	92	84	78	73	81	76	72	79	75	72	77	74	71	69				69
5	88	78	72	67	86	77	71	66	75	70	66	74	69	65	72	68	65	63				63
6	83	72	66	61	81	72	65	60	70	64	60	68	63	60	67	63	59	57				57
7	78	67	60	55	76	66	60	55	65	59	55	64	59	55	63	58	54	53				53
8	73	62	56	51	72	62	55	51	61	55	51	60	54	50	58	54	50	49				49
9	69	58	51	47	68	58	51	47	57	51	47	56	50	47	55	50	46	45				45
10	65	54	48	43	64	54	48	43	53	47	43	52	47	43	51	47	43	42				42

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	66770	66770	66770
5°	94781	62674	42091
10°	128668	54998	24474
15°	152841	44813	15363
20°	166838	33796	10536
25°	172197	23376	8034
30°	168193	16015	6460
35°	153214	11501	5345
40°	122166	8398	4256
45°	79412	5976	2928
50°	50632	3964	1918
55°	20354	2716	928
60°	5895	1799	646
65°	3482	945	396
70°	1685	444	262
75°	301	301	208
80°	123	247	123
85°	0	305	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	107.4	6.7
10°-20°	313.1	19.5
20°-30°	440.8	27.4
30°-40°	415.2	25.8
40°-50°	240.1	14.9
50°-60°	69.7	4.3
60°-70°	16.0	1.0
70°-80°	3.1	0.2
80°-90°	1.0	0.1
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°	861.3	53.6
0°-40°	1276.5	79.5
0°-60°	1586.3	98.8
0°-90°	1606.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1606.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1119	1119	1119	1119	1119	
5°	1619	1447	1070	823	719	173
15°	2649	1879	777	342	266	746
25°	2938	1706	399	166	137	1343
35°	2494	1107	187	100	87	1527
45°	1191	454	90	54	44	957
55°	270	71	36	19	12	277
65°	39	25	10	5	4	40
75°	3	3	3	2	2	5
85°	0	1	2	1	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6
2.5°	1355.0	1343.6	1354.1	1329.5	1347.1	1311.9	1304.9	1298.8	1298.8	1292.6	1259.2
5°	1618.6	1592.3	1605.4	1577.3	1582.6	1528.1	1512.3	1485.9	1473.6	1447.3	1391.9
7.5°	1913.9	1883.1	1886.6	1835.7	1838.3	1765.4	1712.6	1681.0	1637.9	1581.7	1507.0
10°	2222.3	2193.3	2195.1	2148.5	2117.7	2018.4	1936.7	1871.7	1795.2	1707.4	1601.0
12.5°	2479.8	2460.4	2449.9	2391.0	2346.2	2238.1	2140.6	2042.2	1938.5	1811.9	1666.9
15°	2649.4	2648.5	2645.0	2572.9	2527.2	2401.6	2302.3	2177.5	2044.8	1878.7	1701.2
17.5°	2722.3	2779.4	2777.7	2700.3	2648.5	2516.7	2405.1	2261.0	2102.8	1903.3	1732.9
20°	2880.5	2867.3	2863.8	2778.5	2725.8	2584.3	2456.9	2291.7	2108.9	1877.8	1652.9
22.5°	2929.7	2914.7	2906.0	2815.4	2757.4	2608.9	2463.1	2273.3	2061.5	1811.9	1579.1
25°	2938.5	2919.1	2908.6	2811.9	2746.0	2582.6	2414.7	2195.9	1958.7	1706.5	1479.8
27.5°	2901.6	2881.3	2856.7	2762.7	2687.2	2507.0	2310.2	2067.6	1811.9	1578.2	1355.9
30°	2814.6	2797.0	2774.1	2675.7	2580.8	2377.0	2151.1	1873.4	1623.9	1427.9	1214.4
32.5°	2688.9	2664.3	2639.7	2518.4	2404.2	2181.9	1941.1	1675.7	1454.3	1276.8	1080.0
35°	2493.8	2482.4	2437.6	2297.9	2165.2	1918.3	1699.5	1479.8	1307.5	1107.2	926.2
37.5°	2246.9	2270.6	2181.9	2025.5	1875.2	1648.5	1478.0	1276.8	1116.9	943.8	775.0
40°	1917.4	1898.1	1839.2	1697.7	1575.6	1401.6	1253.9	1082.6	918.3	765.4	616.9
42.5°	1561.5	1530.7	1500.0	1383.1	1278.5	1119.5	985.9	837.4	710.0	592.3	465.7
45°	1190.7	1187.2	1154.6	1061.5	988.6	873.5	769.8	666.1	558.9	454.3	345.3
47.5°	939.4	936.7	898.9	835.7	781.2	685.4	600.2	512.3	413.0	326.0	254.0
50°	717.9	719.7	690.7	645.0	585.2	510.5	433.2	353.2	271.5	214.4	169.6
52.5°	473.6	479.8	463.1	416.5	365.6	302.3	244.3	192.4	150.3	122.1	96.7
55°	269.8	258.3	239.0	217.0	178.4	136.2	113.4	94.9	82.6	71.2	63.3
57.5°	122.1	121.3	111.6	98.4	85.2	74.7	67.7	61.5	58.0	53.6	50.1
60°	72.1	71.2	69.4	65.0	60.6	56.2	51.8	48.3	46.6	43.1	39.5
62.5°	52.7	51.8	51.0	48.3	45.7	42.2	40.4	39.5	36.0	33.4	30.8
65°	38.7	37.8	37.8	36.0	34.3	32.5	30.8	29.0	26.4	24.6	22.8
67.5°	28.1	27.2	27.2	25.5	23.7	22.8	21.1	19.3	18.5	16.7	15.8
70°	16.7	16.7	16.7	15.8	14.9	13.2	12.3	11.4	10.5	9.7	8.8
72.5°	7.9	8.8	7.9	7.9	7.0	7.0	6.2	6.2	5.3	5.3	4.4
75°	2.6	3.5	3.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
77.5°	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8
80°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8
82.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8
85°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6
2.5°	1253.1	1217.9	1203.9	1193.3	1165.2	1152.9	1128.3	1101.9	1082.6	1070.3	1046.6
5°	1367.3	1309.3	1271.5	1241.6	1193.3	1161.7	1133.6	1070.3	1033.4	1005.3	966.6
7.5°	1463.1	1381.4	1319.8	1266.2	1196.8	1145.9	1097.5	1019.3	966.6	927.1	874.3
10°	1527.2	1423.5	1339.2	1263.6	1174.0	1106.3	1040.4	949.9	882.2	831.3	775.9
12.5°	1567.7	1435.8	1331.3	1237.2	1129.2	1045.7	965.7	869.9	793.5	729.3	671.3
15°	1573.8	1420.9	1297.9	1184.5	1061.5	968.4	878.7	776.8	696.0	632.7	559.7
17.5°	1550.1	1377.0	1235.5	1109.0	979.8	879.6	782.1	681.9	601.0	524.6	459.6
20°	1493.8	1306.7	1155.5	1018.4	887.5	782.9	683.7	583.5	502.6	429.7	376.1
22.5°	1413.9	1218.8	1058.9	919.1	790.0	681.0	586.1	483.3	406.9	352.4	311.1
25°	1307.5	1110.7	950.8	812.8	681.9	576.4	485.9	398.9	333.0	293.5	259.2
27.5°	1159.0	991.2	834.8	702.1	584.4	476.3	394.5	325.1	279.4	246.0	217.9
30°	1047.4	864.7	718.8	594.0	478.0	387.5	322.5	268.0	233.7	205.6	182.8
32.5°	908.6	738.1	604.6	486.8	384.0	316.3	267.1	225.0	195.1	174.9	157.3
35°	766.3	617.7	490.3	386.6	310.2	261.0	222.3	187.2	164.3	147.6	134.4
37.5°	631.8	494.7	382.2	304.9	253.1	211.8	181.9	156.4	138.8	126.5	116.0
40°	495.6	380.5	296.1	241.7	201.2	172.2	150.3	131.8	117.7	108.1	101.1
42.5°	370.8	285.6	232.0	192.4	163.4	143.2	126.5	111.6	100.2	93.1	85.2
45°	278.6	221.4	183.7	155.5	131.8	116.0	101.9	89.6	80.8	74.7	69.4
47.5°	208.3	167.0	138.8	116.9	99.3	87.0	77.3	68.5	63.3	60.6	57.1
50°	139.7	112.5	94.9	80.8	71.2	64.1	59.8	56.2	52.7	50.1	47.5
52.5°	85.2	72.1	65.0	58.0	55.4	52.7	49.2	45.7	41.3	39.5	36.9
55°	58.9	53.6	51.0	47.5	44.8	42.2	38.7	36.0	33.4	32.5	29.9
57.5°	47.5	43.9	41.3	37.8	35.1	33.4	31.6	29.0	26.4	25.5	23.7
60°	36.9	34.3	32.5	29.9	28.1	26.4	24.6	22.0	20.2	18.5	16.7
62.5°	29.0	26.4	24.6	22.8	21.1	19.3	17.6	15.8	14.1	13.2	11.4
65°	22.0	19.3	17.6	15.8	14.1	13.2	11.4	10.5	8.8	8.8	7.0
67.5°	14.1	12.3	11.4	10.5	9.7	7.9	7.0	6.2	6.2	5.3	5.3
70°	7.9	7.0	6.2	6.2	5.3	5.3	4.4	4.4	3.5	3.5	3.5
72.5°	4.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6
75°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
77.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
80°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
85°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6	1118.6
2.5°	1044.8	1017.6	993.8	990.3	976.3	978.9	958.7	940.2	957.8	915.6	915.6
5°	949.0	911.2	872.6	857.6	833.0	823.4	799.6	779.4	771.5	743.4	738.1
7.5°	849.7	800.5	753.9	731.1	698.6	687.2	658.2	630.9	611.6	589.6	579.1
10°	734.6	682.8	634.4	608.1	570.3	549.2	521.1	488.6	482.4	446.4	438.5
12.5°	622.1	565.9	520.2	485.9	450.8	433.2	403.3	382.2	367.3	346.2	340.1
15°	513.2	460.5	414.8	388.4	357.6	341.8	322.5	305.8	294.4	279.4	274.2
17.5°	419.2	370.8	334.8	315.5	293.5	279.4	265.4	249.6	241.7	229.3	224.1
20°	338.3	305.8	274.2	258.3	242.5	231.1	219.7	206.5	202.1	193.3	188.9
22.5°	284.7	257.5	230.2	215.3	202.1	196.0	186.3	175.7	172.2	164.3	162.6
25°	237.3	211.8	194.2	183.7	173.1	166.1	158.2	150.3	147.6	141.5	140.6
27.5°	198.6	181.0	166.1	157.3	147.6	143.2	137.1	130.9	132.7	124.8	123.0
30°	167.0	154.7	142.4	136.2	128.3	125.7	121.3	116.0	113.4	110.7	110.7
32.5°	145.9	133.6	123.9	119.5	113.4	112.5	109.0	103.7	104.6	100.2	99.3
35°	126.5	116.0	109.8	105.4	101.9	100.2	97.5	93.1	92.3	89.6	88.8
37.5°	109.8	101.9	96.7	94.0	90.5	88.8	86.1	80.8	81.7	79.1	78.2
40°	95.8	89.6	84.4	82.6	78.2	77.3	74.7	70.3	70.3	67.7	67.7
42.5°	80.8	76.4	71.2	68.5	65.9	65.0	63.3	59.8	58.9	57.1	56.2
45°	66.8	62.4	59.8	57.1	55.4	53.6	51.8	49.2	48.3	46.6	45.7
47.5°	55.4	51.8	48.3	46.6	43.9	43.1	41.3	39.5	38.7	36.9	36.0
50°	44.8	41.3	38.7	36.9	35.1	35.1	33.4	30.8	29.9	29.0	28.1
52.5°	35.1	33.4	31.6	29.9	28.1	27.2	25.5	22.8	22.0	21.1	20.2
55°	28.1	26.4	23.7	22.8	20.2	19.3	17.6	16.7	14.9	14.1	14.1
57.5°	22.0	19.3	17.6	15.8	14.1	14.1	12.3	11.4	10.5	9.7	9.7
60°	15.8	13.2	12.3	10.5	9.7	8.8	8.8	7.9	7.9	7.0	7.0
62.5°	10.5	8.8	7.9	7.9	7.0	7.0	6.2	6.2	6.2	6.2	6.2
65°	7.0	6.2	6.2	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
67.5°	5.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.5	3.5
70°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
72.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.8	1.8
75°	2.6	2.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
77.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
80°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
87.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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: HL612ICAT - HLM6935 - HL6FL - 455SN

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1118.6	1118.6	1118.6	1118.6
2.5°	922.7	917.4	910.4	899.8
5°	741.6	718.8	725.8	718.8
7.5°	586.1	565.9	564.1	556.2
10°	436.7	427.1	421.8	422.7
12.5°	341.8	331.3	326.9	349.7
15°	275.0	264.5	264.5	266.3
17.5°	222.3	217.9	216.2	214.4
20°	188.0	184.5	181.9	181.9
22.5°	160.8	158.2	155.5	157.3
25°	139.7	137.1	136.2	137.1
27.5°	123.9	121.3	118.6	120.4
30°	110.7	109.0	108.1	108.1
32.5°	100.2	98.4	97.5	97.5
35°	89.6	87.0	87.0	87.0
37.5°	78.2	76.4	76.4	77.3
40°	67.7	63.3	65.9	66.8
42.5°	56.2	54.5	54.5	55.4
45°	44.8	43.9	43.9	43.9
47.5°	36.0	35.1	34.3	35.1
50°	27.2	26.4	26.4	27.2
52.5°	19.3	18.5	18.5	18.5
55°	13.2	13.2	12.3	12.3
57.5°	9.7	8.8	8.8	8.8
60°	7.0	7.0	7.0	7.9
62.5°	6.2	6.2	6.2	6.2
65°	5.3	5.3	4.4	4.4
67.5°	3.5	3.5	3.5	3.5
70°	2.6	2.6	2.6	2.6
72.5°	1.8	1.8	1.8	1.8
75°	1.8	1.8	1.8	1.8
77.5°	0.9	0.9	0.9	0.9
80°	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)