

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: P130158

Luminaire Tested: **HL612ICAT - HLM6930 - HL6FL - 455SC**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130158  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33449)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL612ICAT - HLM6930 - HL6FL - 455SC  
Description: HALO ALLSLOPE 6" 21W, Specular Clear Reflector, White Metal Trim  
Ring using 40 Degree Optic at a 6-12 Pitch  
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1595.1 lumens  
Efficiency: N/A  
Efficacy: 83.5 lumens/watt  
Spacing Criteria (0/90/45): 1.45 / 0.65 / 1  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

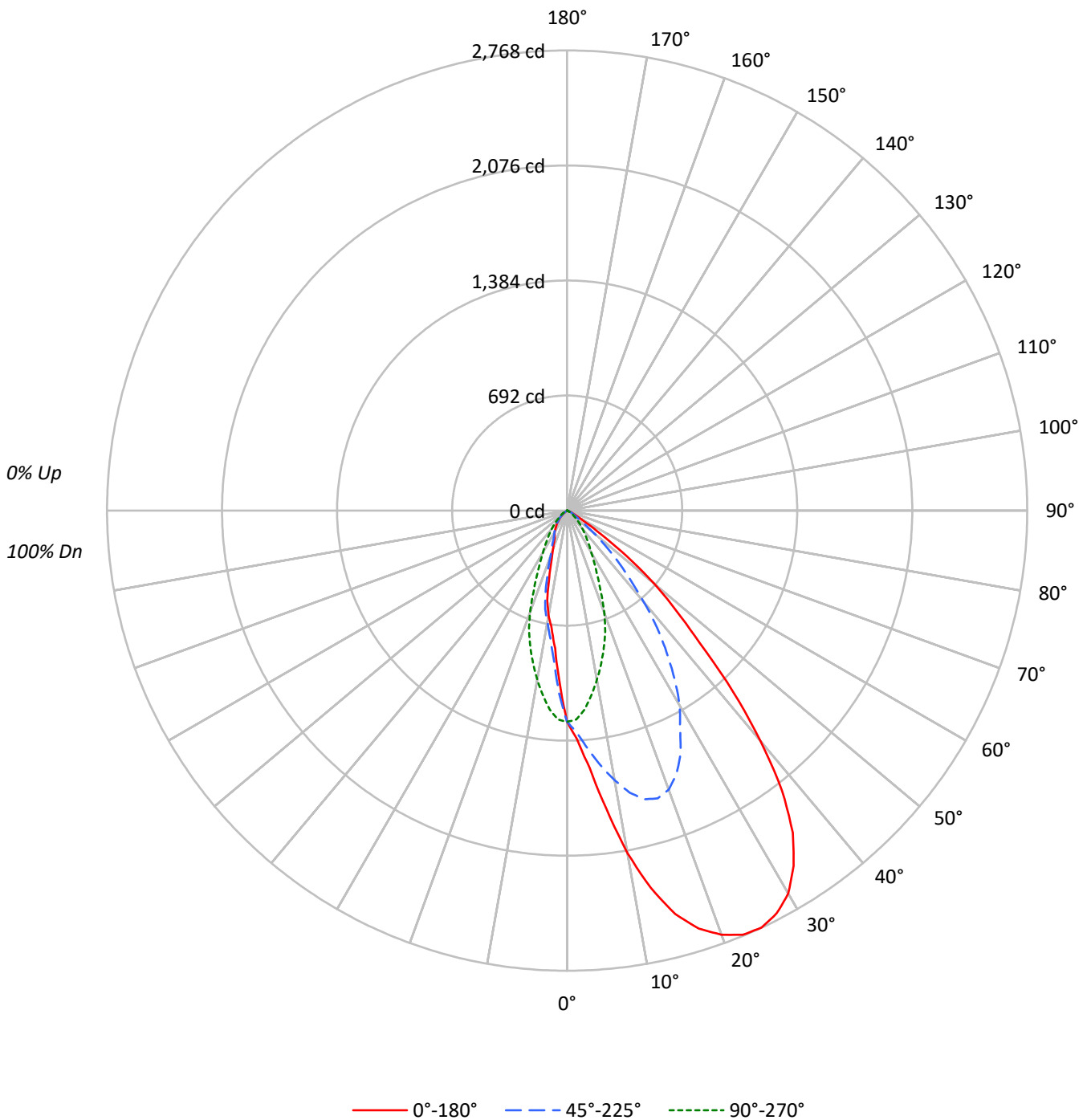
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	108	105	103	103	101	100	100	98	97	96	95	94	92				92
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	86	84				84
3	100	93	87	83	98	91	86	82	89	84	81	86	82	79	84	81	78	76				76
4	94	85	79	74	92	84	78	74	82	77	73	80	76	72	78	74	71	70				70
5	88	79	72	67	87	78	72	67	76	71	66	74	69	66	73	68	65	64				64
6	83	73	66	61	81	72	66	61	71	65	61	69	64	60	68	63	60	58				58
7	78	68	61	56	77	67	61	56	66	60	56	64	59	55	63	59	55	53				53
8	74	63	56	52	72	62	56	52	61	55	51	60	55	51	59	54	51	49				49
9	70	59	52	48	68	58	52	48	57	51	47	56	51	47	55	51	47	46				46
10	66	55	49	44	65	55	48	44	54	48	44	53	48	44	52	47	44	42				42

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	75825	75825	75825
5°	90969	70363	48685
10°	121113	59786	37113
15°	144943	49203	24027
20°	157276	37845	14532
25°	162177	25087	10290
30°	158948	17270	8958
35°	145356	12515	7071
40°	115336	9232	5225
45°	75277	6463	3648
50°	48298	4091	1925
55°	18551	2746	249
60°	5690	1692	0
65°	3203	747	0
70°	1503	171	0
75°	197	197	0
80°	0	233	0
85°	0	288	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	113.7	7.1
10°-20°	324.0	20.3
20°-30°	434.9	27.3
30°-40°	406.9	25.5
40°-50°	234.6	14.7
50°-60°	66.1	4.1
60°-70°	12.6	0.8
70°-80°	1.6	0.1
80°-90°	0.7	0.0
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°	872.5	54.7
0°-40°	1279.4	80.2
0°-60°	1580.2	99.1
0°-90°	1595.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1595.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1270	1270	1270	1270	1270	
5°	1554	1439	1202	904	831	166
15°	2512	1798	853	498	416	709
25°	2768	1615	428	197	176	1266
35°	2366	1045	204	125	115	1444
45°	1129	427	97	61	55	905
55°	246	69	36	18	3	262
65°	36	22	8	1	0	37
75°	2	1	2	1	0	4
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°	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3
2.5°	1376.3	1378.8	1385.4	1371.3	1358.1	1354.0	1358.1	1335.7	1342.4	1335.7	1320.0
5°	1553.5	1564.3	1565.1	1545.2	1525.4	1516.3	1508.8	1464.1	1463.3	1439.2	1403.6
7.5°	1808.6	1812.7	1796.2	1768.0	1729.9	1699.3	1671.9	1609.0	1590.8	1546.9	1494.7
10°	2091.8	2102.6	2081.9	2041.3	1978.3	1932.8	1863.2	1770.5	1718.3	1647.1	1572.6
12.5°	2324.5	2332.8	2321.2	2265.7	2203.6	2152.2	2056.2	1935.3	1846.7	1737.4	1625.6
15°	2512.5	2516.6	2505.8	2445.4	2375.8	2306.3	2206.1	2064.5	1951.8	1797.8	1651.2
17.5°	2635.9	2640.0	2636.7	2566.3	2493.4	2420.5	2303.0	2145.6	1997.4	1814.4	1641.3
20°	2715.4	2728.6	2712.9	2648.3	2562.2	2484.3	2349.3	2170.5	1999.0	1786.2	1592.4
22.5°	2761.7	2773.3	2754.3	2685.5	2592.0	2505.8	2351.8	2149.8	1951.0	1717.5	1517.1
25°	2767.5	2779.9	2757.6	2680.6	2582.0	2478.5	2301.3	2076.9	1849.2	1614.8	1422.7
27.5°	2731.1	2743.5	2716.2	2637.5	2531.5	2408.1	2198.6	1952.7	1715.8	1469.1	1300.1
30°	2659.9	2660.7	2633.4	2552.2	2428.0	2283.9	2042.9	1777.9	1570.1	1354.0	1165.1
32.5°	2534.8	2545.6	2505.8	2412.3	2217.7	2094.3	1840.9	1596.6	1406.9	1203.2	1043.4
35°	2365.9	2370.0	2319.5	2212.7	2027.2	1849.2	1613.1	1409.4	1238.0	1045.1	880.3
37.5°	2124.9	2128.2	2062.8	1947.7	1751.4	1597.4	1394.5	1218.1	1058.3	891.0	737.8
40°	1810.2	1810.2	1736.5	1630.5	1471.5	1349.8	1180.9	1018.6	872.8	716.3	588.8
42.5°	1477.3	1463.3	1416.1	1320.0	1195.0	1070.7	922.5	791.7	678.2	556.5	452.1
45°	1128.7	1122.9	1093.1	1021.1	930.8	845.5	726.2	628.5	531.6	427.3	337.0
47.5°	885.2	885.2	862.9	804.9	735.4	665.0	573.9	483.6	401.6	308.9	244.3
50°	684.8	689.0	655.0	607.0	545.7	493.6	406.6	329.6	260.9	202.9	162.3
52.5°	450.5	456.3	427.3	391.7	341.2	299.8	226.9	178.0	141.6	116.8	96.9
55°	245.9	242.6	225.2	199.6	161.5	135.8	107.7	90.3	78.7	68.7	62.1
57.5°	117.6	115.9	104.3	91.9	82.0	73.7	65.4	59.6	55.5	52.2	48.9
60°	69.6	67.9	66.2	61.3	58.0	53.8	49.7	46.4	43.9	40.6	38.1
62.5°	48.9	48.9	48.0	46.4	43.1	40.6	37.3	34.8	33.1	30.6	29.0
65°	35.6	34.8	34.8	33.1	31.5	29.8	27.3	25.7	24.8	22.4	20.7
67.5°	24.0	24.0	24.0	23.2	21.5	19.9	18.2	17.4	15.7	14.1	13.2
70°	14.9	14.9	14.1	13.2	12.4	11.6	9.9	9.9	9.1	7.5	6.6
72.5°	6.6	6.6	6.6	5.8	5.8	5.0	4.1	4.1	3.3	2.5	2.5
75°	1.7	1.7	1.7	1.7	1.7	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3
2.5°	1343.2	1317.5	1310.9	1320.0	1306.7	1280.2	1274.5	1257.9	1237.2	1227.3	1215.7
5°	1411.1	1375.5	1354.8	1349.8	1319.2	1272.8	1243.8	1201.6	1161.0	1129.5	1093.1
7.5°	1484.8	1426.8	1385.4	1354.8	1297.6	1226.4	1174.3	1118.8	1060.8	1017.7	974.7
10°	1540.3	1454.2	1383.8	1326.6	1249.6	1157.7	1098.1	1032.6	966.4	914.2	869.5
12.5°	1565.1	1450.8	1358.9	1283.6	1190.0	1093.1	1016.1	943.2	872.8	824.0	776.8
15°	1563.5	1426.0	1315.0	1226.4	1120.4	1012.8	927.5	852.9	785.0	739.5	695.6
17.5°	1528.7	1373.8	1246.3	1146.9	1032.6	920.0	839.7	761.9	694.8	639.3	583.0
20°	1469.1	1302.6	1161.8	1047.6	932.4	819.8	733.7	653.4	573.0	516.7	458.8
22.5°	1384.6	1209.9	1060.0	939.1	820.7	708.9	613.6	528.3	454.6	404.9	366.0
25°	1276.9	1098.9	946.5	822.3	703.9	593.8	498.5	428.1	364.4	326.3	296.5
27.5°	1150.2	972.2	830.6	710.5	591.3	487.8	405.8	348.6	301.4	271.6	248.4
30°	1016.9	849.6	710.5	602.0	487.8	392.5	330.4	289.0	255.1	228.6	212.0
32.5°	875.3	724.6	605.3	495.2	395.0	322.1	277.4	245.9	213.7	197.1	183.0
35°	742.8	603.7	490.2	394.2	321.3	270.0	232.7	203.7	184.7	168.9	158.2
37.5°	617.8	486.9	380.1	310.5	259.2	218.6	192.1	172.2	156.5	144.9	137.5
40°	479.5	371.8	297.3	250.9	212.0	178.9	159.8	144.9	133.3	125.0	118.4
42.5°	362.7	284.0	236.8	201.2	172.2	148.2	135.8	120.9	111.8	105.2	98.5
45°	273.3	221.1	186.3	161.5	138.3	119.2	108.5	96.9	88.6	84.5	79.5
47.5°	203.7	166.4	139.1	121.7	102.7	89.4	82.0	74.5	69.6	66.2	63.8
50°	137.5	111.8	95.2	82.8	73.7	67.1	62.9	58.0	55.5	53.8	50.5
52.5°	84.5	72.0	64.6	60.5	56.3	53.0	50.5	47.2	43.1	41.4	38.9
55°	58.0	53.8	51.3	48.0	44.7	41.4	38.9	36.4	34.8	33.1	30.6
57.5°	47.2	43.1	39.7	37.3	34.8	32.3	30.6	29.0	26.5	24.8	23.2
60°	35.6	33.1	30.6	29.0	26.5	24.8	23.2	20.7	19.0	17.4	15.7
62.5°	27.3	24.8	23.2	21.5	19.9	17.4	15.7	14.1	12.4	10.8	9.1
65°	19.0	17.4	15.7	14.1	12.4	10.8	9.9	8.3	6.6	5.0	3.3
67.5°	12.4	10.8	9.1	7.5	6.6	5.0	4.1	3.3	1.7	1.7	0.8
70°	5.8	5.0	3.3	3.3	2.5	1.7	1.7	1.7	0.8	0.8	0.8
72.5°	1.7	1.7	1.7	1.7	1.7	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.8	0.8	0.8	0.8	1.7	1.7	0.8	1.7	1.7	0.8	0.8
77.5°	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	0.8	0.8	1.7
80°	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.8
82.5°	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85°	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87.5°	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.8
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°	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3	1270.3
2.5°	1183.4	1180.9	1157.7	1137.8	1123.7	1100.6	1089.8	1078.2	1050.9	1051.7	1063.3
5°	1047.6	1026.0	993.7	960.6	937.4	904.3	888.6	872.0	859.6	846.3	845.5
7.5°	920.9	891.9	857.9	825.6	805.7	773.4	759.4	742.8	731.2	722.9	723.8
10°	813.2	785.9	753.6	737.8	709.7	683.2	673.2	661.7	654.2	648.4	653.4
12.5°	731.2	703.9	676.6	649.2	631.8	608.7	596.2	585.5	575.5	570.6	568.9
15°	644.3	613.6	581.3	548.2	531.6	497.7	484.4	467.9	454.6	443.0	430.6
17.5°	530.0	497.7	465.4	429.8	404.9	383.4	367.7	350.3	336.2	326.3	321.3
20°	416.5	385.1	360.2	328.8	311.4	293.1	283.2	270.0	262.5	258.4	256.7
22.5°	328.8	302.3	283.2	262.5	250.1	237.7	231.0	221.9	215.3	210.3	210.3
25°	267.5	249.3	233.5	219.4	211.2	197.1	192.1	186.3	182.2	178.9	180.5
27.5°	223.6	217.0	200.4	186.3	179.7	170.6	168.1	164.0	162.3	160.7	161.5
30°	192.9	181.4	173.9	164.0	159.0	152.4	152.4	149.9	149.1	149.1	150.7
32.5°	168.1	159.0	152.4	145.7	144.1	139.1	139.9	137.5	135.8	135.0	135.0
35°	146.6	139.9	135.8	131.7	130.0	125.0	124.2	121.7	119.2	116.8	117.6
37.5°	128.4	124.2	120.1	115.9	113.5	108.5	107.7	106.0	104.3	103.5	103.5
40°	111.0	106.8	103.5	98.5	96.9	91.9	92.7	91.1	87.8	86.1	85.3
42.5°	91.9	88.6	85.3	82.8	81.2	76.2	74.5	70.4	69.6	68.7	69.6
45°	75.4	72.0	69.6	65.4	63.8	61.3	60.5	58.8	57.1	55.5	56.3
47.5°	60.5	58.0	54.7	53.0	51.3	48.9	48.0	46.4	45.5	43.9	43.9
50°	47.2	45.5	43.9	41.4	40.6	38.1	37.3	35.6	34.0	32.3	31.5
52.5°	37.3	36.4	34.8	32.3	30.6	29.0	27.3	24.0	21.5	19.0	19.0
55°	29.0	27.3	25.7	23.2	21.5	18.2	15.7	13.2	10.8	7.5	6.6
57.5°	21.5	19.0	17.4	14.1	11.6	8.3	6.6	3.3	2.5	0.8	0.0
60°	13.2	11.6	8.3	5.8	4.1	1.7	0.8	0.8	0.0	0.0	0.0
62.5°	6.6	5.0	2.5	1.7	0.8	0.8	0.0	0.0	0.0	0.0	0.0
65°	2.5	1.7	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0
67.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
70°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
75°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
82.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
85°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
87.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	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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CATALOG NUMBER: HL612ICAT - HLM6930 - HL6FL - 455SC

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1270.3	1270.3	1270.3	1270.3
2.5°	1018.6	1031.0	1009.5	1033.5
5°	817.3	819.0	813.2	831.4
7.5°	700.6	707.2	698.9	712.2
10°	633.5	636.0	631.8	641.0
12.5°	555.7	548.2	544.9	554.0
15°	424.8	422.3	411.6	416.5
17.5°	313.9	310.5	309.7	308.9
20°	249.3	245.9	245.1	250.9
22.5°	203.7	202.1	199.6	205.4
25°	175.6	175.6	173.9	175.6
27.5°	158.2	159.0	158.2	160.7
30°	147.4	148.2	147.4	149.9
32.5°	130.8	131.7	130.0	130.8
35°	114.3	114.3	113.5	115.1
37.5°	101.0	101.9	101.0	102.7
40°	82.8	82.0	81.2	82.0
42.5°	67.9	67.1	67.1	68.7
45°	53.8	53.8	53.8	54.7
47.5°	42.2	41.4	41.4	41.4
50°	29.8	28.2	28.2	27.3
52.5°	15.7	14.9	14.9	14.1
55°	5.0	4.1	4.1	3.3
57.5°	0.0	0.0	0.0	0.0
60°	0.0	0.0	0.0	0.0
62.5°	0.0	0.0	0.0	0.0
65°	0.0	0.0	0.0	0.0
67.5°	0.0	0.0	0.0	0.0
70°	0.0	0.0	0.0	0.0
72.5°	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0
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)