

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: P130180

Luminaire Tested: **HL612ICAT - HLM6940 - HL6FL - 456P**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130180
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33453)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6940 - HL6FL - 456P
Description: HALO ALLSLOPE 6" 21W, Black Coilex Baffle, White Metal Trim Ring using 40 Degree Optic at a 6-12 Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1641.2 lumens
Efficiency: N/A
Efficacy: 85.9 lumens/watt
Spacing Criteria (0/90/45): 1.62 / 0.66 / 1.08
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

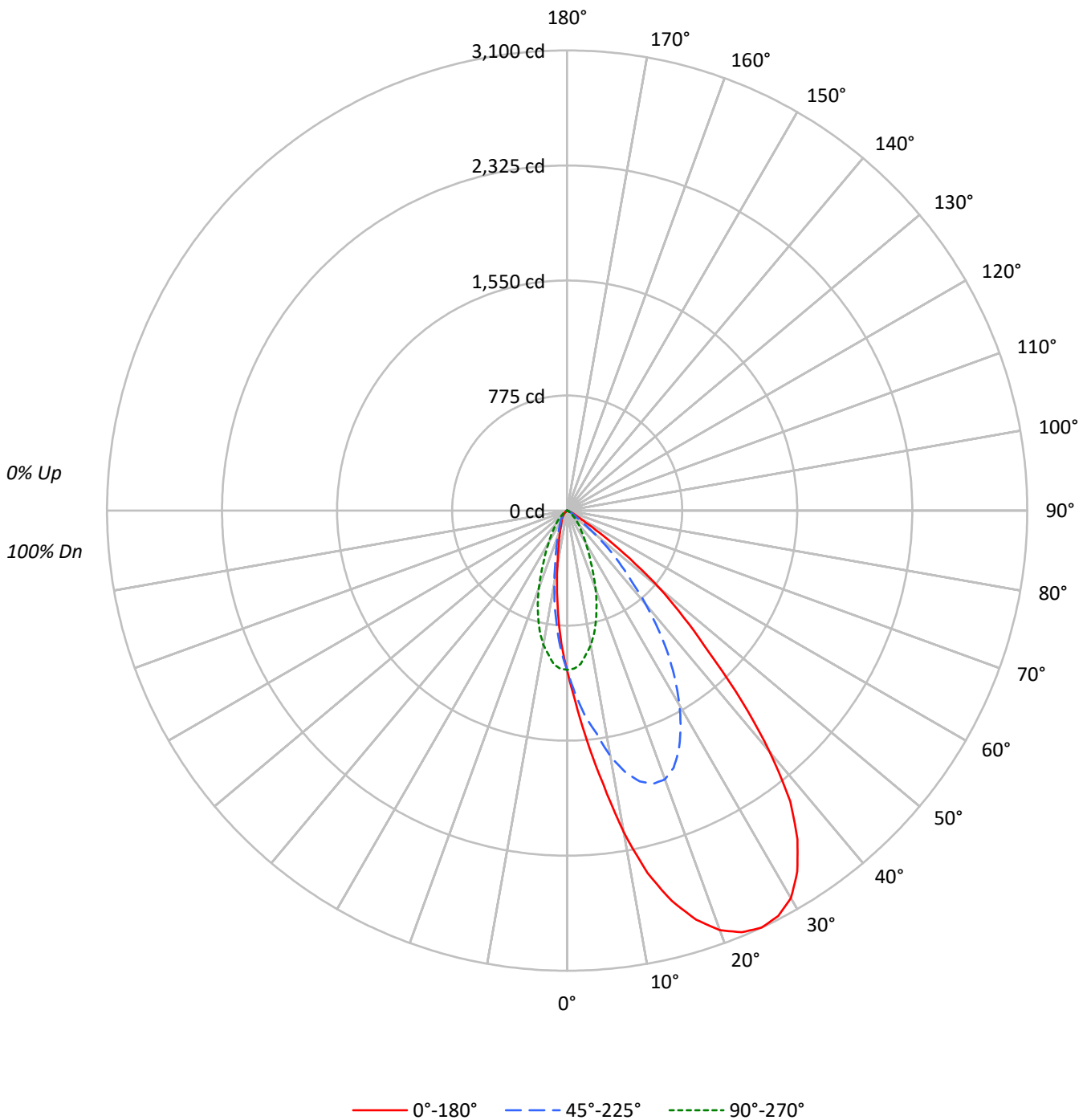
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

Luminous Intensity Polar Plot





TEST NUMBER: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

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	100		
1	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92	92	92	92	92	92	92		
2	106	101	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	83	83	83	83	83	83	83		
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	77	76	76	76	76	76	76	76		
4	93	85	78	74	92	84	78	73	81	76	72	79	75	71	77	74	70	69	69	69	69	69	69	69		
5	88	78	71	66	86	77	71	66	75	70	66	73	69	65	72	68	64	63	63	63	63	63	63	63		
6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57	57	57	57	57	57	57		
7	77	67	60	55	76	66	60	55	65	59	55	63	58	54	62	58	54	52	52	52	52	52	52	52		
8	73	62	55	51	72	61	55	50	60	54	50	59	54	50	58	53	50	48	48	48	48	48	48	48		
9	69	58	51	47	68	57	51	46	56	50	46	55	50	46	54	49	46	44	44	44	44	44	44	44		
10	65	54	47	43	64	54	47	43	53	47	43	52	46	43	51	46	43	41	41	41	41	41	41	41		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	64084	64084	64084
5°	91426	60753	40715
10°	127383	53197	21579
15°	157035	43324	12195
20°	174200	32325	7628
25°	181679	21676	5380
30°	180168	14790	4267
35°	166152	10199	3477
40°	135272	7385	2478
45°	90030	4762	1547
50°	57149	3075	719
55°	22172	2029	143
60°	6442	1210	74
65°	3500	414	171
70°	1594	192	192
75°	220	220	104
80°	0	261	123
85°	0	322	0



TEST NUMBER: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	103.5	6.3
10°-20°	310.0	18.9
20°-30°	451.4	27.5
30°-40°	436.6	26.6
40°-50°	254.0	15.5
50°-60°	69.6	4.2
60°-70°	13.0	0.8
70°-80°	2.2	0.1
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°	865.0	52.7
0°-40°	1301.6	79.3
0°-60°	1625.1	99.0
0°-90°	1641.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1641.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1074	1074	1074	1074	1074	
5°	1561	1388	1038	787	695	168
15°	2722	1890	751	288	211	771
25°	3100	1780	370	122	92	1419
35°	2704	1190	166	70	57	1658
45°	1350	495	71	32	23	1075
55°	294	70	27	8	2	310
65°	39	22	5	2	2	41
75°	2	1	2	1	1	4
85°	0	1	2	1	0	0
90°	0	0	0	0	0	



TEST NUMBER: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6
2.5°	1290.6	1283.1	1273.9	1285.9	1265.5	1268.3	1252.6	1260.0	1224.7	1231.2	1219.2
5°	1561.3	1552.0	1540.9	1527.9	1507.5	1502.9	1466.7	1463.9	1410.2	1387.9	1366.6
7.5°	1857.0	1852.4	1831.1	1807.9	1772.7	1740.2	1683.7	1667.9	1586.3	1513.1	1489.9
10°	2200.1	2194.5	2146.3	2135.2	2077.7	2017.4	1916.4	1863.5	1749.5	1680.9	1600.2
12.5°	2499.5	2483.8	2447.6	2427.2	2345.6	2275.2	2153.7	2063.8	1908.0	1803.3	1677.2
15°	2722.1	2713.7	2685.0	2657.2	2577.4	2495.8	2345.6	2238.1	2034.1	1889.5	1729.1
17.5°	2888.9	2875.0	2851.9	2820.3	2739.7	2636.8	2469.9	2350.3	2117.6	1929.4	1740.2
20°	3007.6	2993.7	3028.9	2932.5	2839.8	2737.8	2547.8	2405.9	2143.5	1926.6	1714.3
22.5°	3074.4	3006.7	3034.5	2998.3	2895.4	2782.3	2578.4	2406.8	2113.9	1874.7	1652.1
25°	3100.3	3034.5	3056.7	3013.2	2902.8	2774.0	2549.6	2348.4	2030.4	1780.1	1559.4
27.5°	3079.0	3066.9	3029.9	2979.8	2861.1	2710.9	2514.4	2227.9	1899.7	1655.9	1441.7
30°	3015.0	2994.6	2954.8	2901.0	2772.1	2590.4	2305.8	2053.6	1741.2	1514.9	1306.3
32.5°	2884.3	2874.1	2835.2	2761.0	2609.9	2396.6	2101.8	1851.5	1567.8	1355.5	1156.1
35°	2704.4	2699.8	2649.7	2553.3	2364.2	2135.2	1845.9	1642.9	1384.2	1190.4	993.9
37.5°	2468.9	2447.6	2383.7	2268.7	2062.9	1849.6	1605.8	1428.7	1200.6	1007.8	834.4
40°	2123.1	2125.9	2049.9	1917.3	1742.1	1576.1	1366.6	1206.2	992.0	821.4	662.0
42.5°	1743.9	1728.2	1670.7	1562.2	1437.1	1274.8	1082.9	948.5	766.7	635.1	508.1
45°	1349.9	1321.2	1285.9	1207.1	1110.7	1002.2	852.0	746.3	603.6	495.1	381.1
47.5°	1065.3	1043.9	1021.7	954.0	880.8	778.8	664.8	577.6	458.9	362.5	274.4
50°	810.3	802.9	783.4	731.5	655.5	579.5	488.6	401.4	302.2	229.0	178.9
52.5°	530.3	562.8	509.0	484.0	417.2	353.2	285.6	217.9	159.5	124.2	100.1
55°	293.9	290.2	281.8	244.8	204.9	167.8	127.0	102.0	80.7	69.5	61.2
57.5°	143.7	144.6	134.4	115.0	93.6	81.6	69.5	63.0	55.6	51.0	47.3
60°	78.8	78.8	76.0	69.5	62.1	58.4	51.9	48.2	43.6	40.8	37.1
62.5°	54.7	53.8	52.8	50.1	47.3	43.6	39.9	37.1	33.4	31.5	27.8
65°	38.9	38.9	38.0	36.2	34.3	31.5	28.7	26.9	24.1	22.3	20.4
67.5°	26.9	26.0	26.0	26.0	23.2	22.3	19.5	18.5	15.8	13.9	13.0
70°	15.8	15.8	14.8	14.8	13.9	12.1	11.1	10.2	8.3	7.4	6.5
72.5°	6.5	6.5	6.5	6.5	5.6	5.6	4.6	3.7	3.7	2.8	2.8
75°	1.9	1.9	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.0	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



TEST NUMBER: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6
2.5°	1208.1	1176.5	1166.3	1127.4	1126.5	1105.1	1080.1	1066.2	1043.0	1023.6	1013.4
5°	1339.7	1278.5	1247.0	1183.0	1161.7	1118.1	1071.8	1037.5	995.7	957.7	929.0
7.5°	1441.7	1364.7	1303.5	1215.5	1145.0	1107.0	1040.2	976.3	930.8	878.0	840.0
10°	1519.6	1418.5	1332.3	1221.0	1156.1	1072.7	987.4	918.8	852.0	785.3	737.1
12.5°	1572.4	1444.5	1335.1	1202.5	1118.1	1018.0	919.7	842.8	760.2	688.9	633.2
15°	1590.0	1440.8	1310.0	1158.9	1057.9	947.5	840.9	751.0	664.8	590.6	526.6
17.5°	1576.1	1406.5	1255.3	1098.6	980.0	860.4	750.0	657.3	568.3	487.7	422.8
20°	1534.4	1346.2	1181.2	1014.3	893.8	766.7	654.6	558.1	469.1	391.2	337.5
22.5°	1461.2	1262.8	1091.2	917.9	792.7	667.5	554.4	458.9	380.1	320.8	276.3
25°	1360.1	1154.3	980.0	807.5	687.9	562.8	457.1	369.9	306.9	262.4	229.0
27.5°	1242.4	1040.2	866.9	701.8	585.9	473.8	361.6	305.0	254.0	214.2	186.4
30°	1104.2	905.8	747.3	595.2	484.0	374.6	298.5	247.5	210.5	177.1	156.7
32.5°	961.4	781.6	634.2	493.2	386.6	302.2	245.7	204.9	172.4	148.3	130.7
35°	815.9	655.5	514.6	391.2	306.9	247.5	199.3	166.0	143.7	123.3	109.4
37.5°	673.1	527.5	405.2	301.3	242.9	197.5	162.2	138.1	119.6	104.8	93.6
40°	519.2	396.8	306.0	234.6	191.9	158.5	134.4	115.9	100.1	88.1	78.8
42.5°	391.2	300.4	238.3	189.1	154.8	130.7	110.3	95.5	81.6	71.4	64.9
45°	292.0	230.9	184.5	147.4	121.5	102.0	84.4	71.4	62.1	55.6	50.1
47.5°	213.2	169.7	136.3	104.8	86.2	72.3	61.2	53.8	49.1	44.5	40.8
50°	136.3	105.7	87.2	68.6	58.4	52.8	47.3	43.6	39.9	36.2	32.4
52.5°	77.9	64.9	56.6	50.1	45.4	42.6	38.0	34.3	30.6	27.8	25.0
55°	53.8	49.1	45.4	39.9	37.1	32.4	29.7	26.9	24.1	21.3	19.5
57.5°	43.6	39.9	35.2	31.5	27.8	26.0	24.1	20.4	18.5	15.8	13.9
60°	33.4	30.6	27.8	24.1	22.3	19.5	17.6	14.8	13.0	10.2	9.3
62.5°	25.0	23.2	20.4	17.6	15.8	13.0	11.1	9.3	8.3	6.5	4.6
65°	18.5	15.8	13.9	11.1	10.2	8.3	6.5	4.6	4.6	3.7	2.8
67.5°	11.1	9.3	8.3	6.5	5.6	4.6	3.7	2.8	1.9	1.9	1.9
70°	5.6	4.6	3.7	2.8	2.8	1.9	1.9	1.9	1.9	1.9	1.9
72.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
75°	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
77.5°	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
80°	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
82.5°	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
85°	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
87.5°	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
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: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6	1073.6
2.5°	1003.2	980.9	976.3	953.1	941.0	942.0	916.0	916.9	904.0	898.4	888.2
5°	906.7	874.3	831.6	822.4	793.6	787.1	752.8	740.8	720.4	706.5	700.0
7.5°	800.1	758.4	727.8	685.1	653.6	637.9	609.1	594.3	562.8	562.8	534.0
10°	685.1	637.9	602.6	556.3	519.2	496.0	467.3	440.4	420.9	399.6	390.3
12.5°	574.8	516.4	480.3	433.0	398.7	371.8	349.5	328.2	308.7	297.6	285.6
15°	467.3	409.8	376.4	337.5	308.7	288.3	265.2	251.3	237.3	228.1	223.4
17.5°	377.3	326.3	295.8	266.1	241.1	229.0	209.5	197.5	185.4	178.0	168.7
20°	299.5	262.4	238.3	213.2	193.8	180.8	167.8	156.7	150.2	142.8	139.1
22.5°	242.9	215.1	193.8	170.6	157.6	149.3	136.3	128.9	122.4	116.8	114.0
25°	198.4	174.3	158.5	142.8	129.8	122.4	115.9	107.5	102.9	98.3	95.5
27.5°	164.1	146.5	132.6	118.7	109.4	103.8	96.4	91.8	88.1	85.3	82.5
30°	138.1	122.4	112.2	102.0	93.6	89.9	84.4	80.7	77.0	75.1	73.2
32.5°	115.9	104.8	96.4	88.1	81.6	78.8	75.1	72.3	69.5	67.7	65.8
35°	98.3	88.1	83.4	77.9	72.3	69.5	65.8	64.0	62.1	59.3	58.4
37.5°	84.4	77.9	71.4	67.7	63.0	60.3	56.6	53.8	51.9	51.0	49.1
40°	71.4	65.8	61.2	56.6	51.9	50.1	46.4	44.5	43.6	41.7	39.9
42.5°	57.5	51.9	50.1	46.4	42.6	40.8	38.0	36.2	35.2	33.4	32.4
45°	46.4	42.6	40.8	37.1	34.3	32.4	29.7	27.8	26.9	25.0	24.1
47.5°	38.0	34.3	32.4	28.7	26.9	26.0	23.2	22.3	20.4	19.5	17.6
50°	28.7	26.9	25.0	22.3	21.3	19.5	17.6	15.8	13.9	13.0	12.1
52.5°	23.2	21.3	19.5	16.7	14.8	13.0	11.1	10.2	9.3	7.4	6.5
55°	17.6	15.8	13.0	11.1	10.2	8.3	6.5	5.6	4.6	3.7	2.8
57.5°	12.1	10.2	8.3	6.5	5.6	4.6	2.8	2.8	1.9	1.9	1.9
60°	7.4	5.6	4.6	3.7	2.8	1.9	1.9	1.9	1.9	0.9	0.9
62.5°	3.7	2.8	2.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
65°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
67.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
70°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0.9
72.5°	1.9	1.9	1.9	1.9	1.9	1.9	0.9	0.9	0.9	0.9	0.9
75°	1.9	1.9	1.9	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	1.9	1.9	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80°	1.9	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
87.5°	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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: P130180

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456P

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1073.6	1073.6	1073.6	1073.6
2.5°	889.1	881.7	868.7	897.5
5°	697.2	680.5	678.7	695.3
7.5°	527.5	510.8	508.1	520.1
10°	384.8	372.7	370.9	372.7
12.5°	279.1	276.3	271.6	274.4
15°	216.0	208.6	208.6	211.4
17.5°	166.0	163.2	160.4	162.2
20°	134.4	131.7	128.9	131.7
22.5°	110.3	108.5	106.6	108.5
25°	93.6	91.8	89.9	91.8
27.5°	81.6	79.7	78.8	79.7
30°	72.3	70.5	70.5	71.4
32.5°	64.9	64.0	63.0	64.0
35°	57.5	56.6	55.6	56.6
37.5°	48.2	47.3	46.4	47.3
40°	39.9	38.9	38.0	38.9
42.5°	31.5	29.7	29.7	30.6
45°	23.2	22.3	22.3	23.2
47.5°	16.7	16.7	16.7	16.7
50°	11.1	10.2	10.2	10.2
52.5°	6.5	5.6	5.6	5.6
55°	2.8	1.9	1.9	1.9
57.5°	0.9	0.9	0.9	0.9
60°	0.9	0.9	0.9	0.9
62.5°	1.9	1.9	0.9	1.9
65°	1.9	1.9	1.9	1.9
67.5°	1.9	1.9	1.9	1.9
70°	1.9	1.9	0.9	1.9
72.5°	0.9	0.9	0.9	0.9
75°	0.9	0.9	0.9	0.9
77.5°	0.9	0.9	0.9	0.9
80°	0.9	0.9	0.0	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)