

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: P130176

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

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130176  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33452)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL612ICAT - HLM6940 - HL6FL - 456W  
Description: HALO ALLSLOPE 6" 21W, White 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: 1769.2 lumens  
Efficiency: N/A  
Efficacy: 92.6 lumens/watt  
Spacing Criteria (0/90/45): 1.64 / 0.67 / 1.09  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

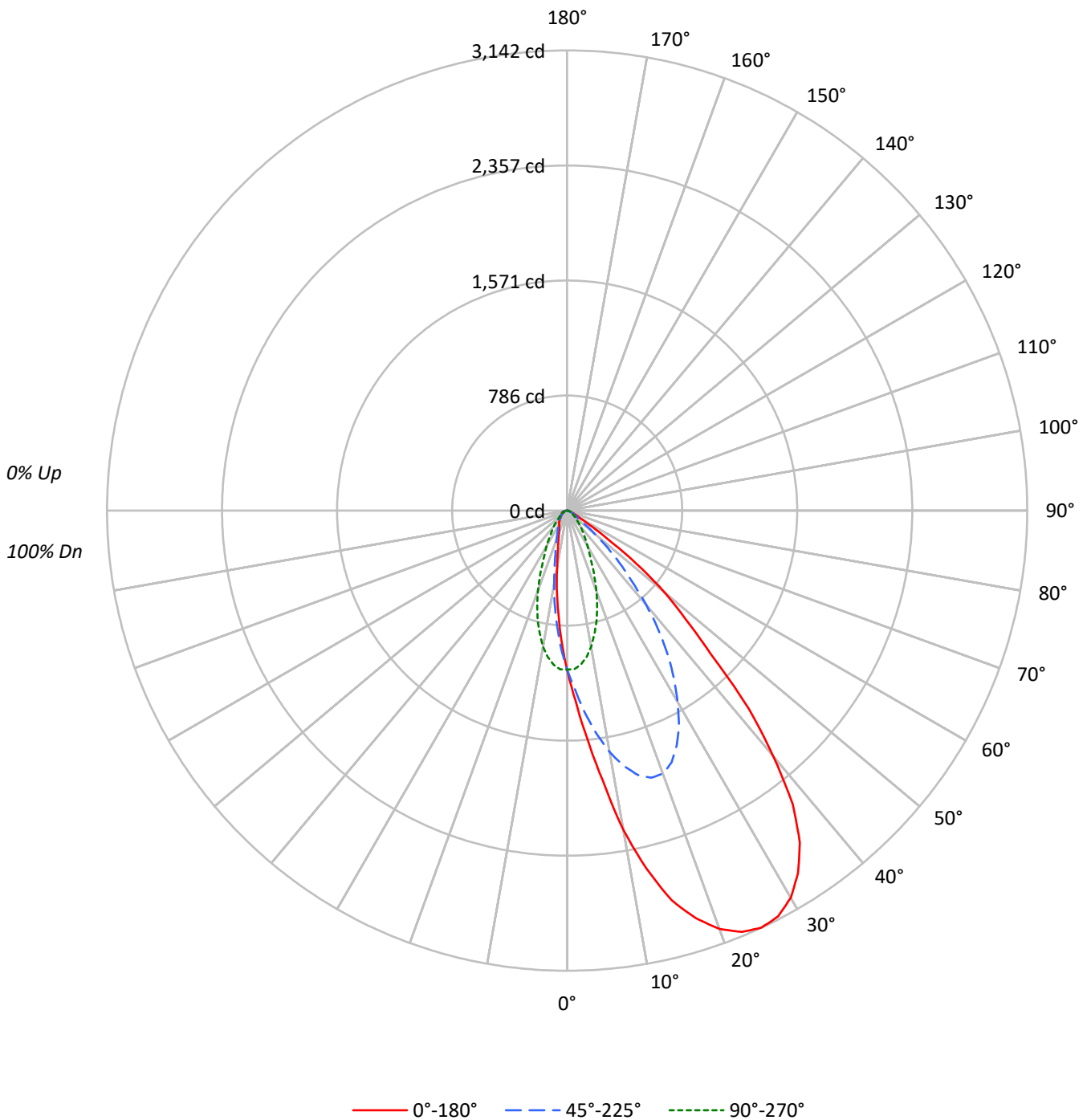
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	112	109	106	103	110	107	104	102	103	100	98	99	97	95	95	94	93	91					91			
2	105	99	94	90	103	97	93	89	94	90	87	91	88	85	88	86	84	82					82			
3	98	91	85	80	96	89	84	79	86	82	78	84	80	77	82	78	75	74					74			
4	92	83	76	71	90	82	76	71	80	74	70	77	73	69	75	72	68	67					67			
5	86	76	69	64	85	75	69	64	73	68	63	72	67	63	70	66	62	60					60			
6	81	70	63	58	79	69	63	58	68	62	57	66	61	57	65	60	57	55					55			
7	76	65	58	53	75	64	58	53	63	57	52	62	56	52	60	56	52	50					50			
8	71	60	53	48	70	60	53	48	58	52	48	57	52	48	56	51	48	46					46			
9	67	56	49	45	66	56	49	44	55	48	44	54	48	44	53	48	44	42					42			
10	64	52	46	41	62	52	45	41	51	45	41	50	45	41	49	44	41	39					39			

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

	0°	90°	180°
0°	64794	64794	64794
5°	91250	61883	40768
10°	128333	54639	22598
15°	158881	44761	13476
20°	176053	33663	9342
25°	184099	23194	7390
30°	182415	16619	6537
35°	170177	12017	5812
40°	139624	9156	4900
45°	92551	6556	4142
50°	61324	4972	3597
55°	25106	3983	3357
60°	8036	3180	3483
65°	4840	2501	3500
70°	2804	2239	3369
75°	1401	2038	3011
80°	1015	1659	2413
85°	628	1103	1408



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	104.9	5.9
10°-20°	315.0	17.8
20°-30°	461.9	26.1
30°-40°	453.3	25.6
40°-50°	276.4	15.6
50°-60°	94.9	5.4
60°-70°	36.6	2.1
70°-80°	19.3	1.1
80°-90°	6.8	0.4
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°	881.8	49.8
0°-40°	1335.1	75.5
0°-60°	1706.5	96.5
0°-90°	1769.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1769.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1086	1086	1086	1086	1086	
5°	1558	1384	1057	787	696	169
15°	2754	1870	776	310	234	778
25°	3142	1769	396	153	126	1438
35°	2770	1195	196	105	95	1695
45°	1388	508	98	67	62	1118
55°	333	86	53	44	44	348
65°	54	37	28	34	39	56
75°	12	12	18	23	26	15
85°	4	5	6	8	8	4
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°	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5
2.5°	1297.8	1285.8	1286.7	1279.3	1283.9	1292.2	1283.0	1256.1	1239.4	1222.7	1212.5
5°	1558.3	1555.5	1559.2	1536.0	1529.6	1527.7	1498.0	1458.2	1451.7	1384.0	1378.5
7.5°	1857.7	1848.4	1843.8	1802.1	1788.2	1765.9	1719.6	1656.6	1598.2	1537.0	1480.4
10°	2216.5	2187.7	2173.8	2122.8	2088.5	2036.6	1963.4	1855.9	1757.6	1674.2	1584.2
12.5°	2503.8	2483.4	2474.2	2417.6	2376.8	2290.6	2193.3	2046.8	1916.1	1785.4	1666.8
15°	2754.1	2723.5	2705.9	2644.7	2591.9	2509.4	2393.5	2220.2	2041.3	1869.8	1713.1
17.5°	2917.3	2894.1	2874.6	2817.2	2757.8	2661.4	2530.7	2328.6	2122.8	1912.4	1725.2
20°	3039.6	3013.7	2985.0	2925.6	2858.9	2756.0	2604.0	2386.1	2152.5	1911.5	1701.1
22.5°	3113.8	3076.7	3053.6	2983.1	2916.4	2801.4	2636.4	2388.0	2128.4	1861.4	1640.8
25°	3141.6	3105.5	3074.9	2997.9	2921.9	2792.1	2609.5	2332.3	2040.3	1768.7	1553.7
27.5°	3122.1	3083.2	3048.0	2969.2	2881.1	2728.2	2516.8	2211.8	1912.4	1654.7	1435.9
30°	3052.6	3016.5	2973.8	2893.2	2790.3	2609.5	2364.8	2039.4	1747.4	1507.3	1294.1
32.5°	2934.0	2901.5	2849.6	2760.6	2626.2	2417.6	2153.4	1830.8	1612.1	1356.2	1146.7
35°	2769.9	2730.0	2659.6	2555.7	2387.0	2148.8	1894.8	1628.7	1408.1	1194.9	990.0
37.5°	2530.7	2477.9	2425.0	2268.4	2083.9	1868.8	1651.0	1435.9	1206.0	1019.7	834.3
40°	2191.4	2146.0	2086.7	1919.8	1775.2	1601.9	1410.0	1208.8	1026.2	838.0	673.9
42.5°	1836.4	1765.0	1718.7	1598.2	1479.5	1308.0	1121.7	943.7	795.4	649.8	520.0
45°	1387.7	1365.5	1316.3	1227.4	1138.4	1014.1	893.6	748.1	622.0	508.0	399.5
47.5°	1094.8	1074.4	1037.3	971.5	907.5	803.7	699.0	584.0	477.4	369.9	291.1
50°	869.5	837.1	804.6	749.0	686.0	608.1	521.0	415.3	309.6	239.2	195.6
52.5°	596.1	573.8	549.7	505.2	454.2	394.0	309.6	232.7	176.1	138.1	114.9
55°	332.8	330.0	304.1	273.5	227.1	192.8	147.4	117.7	98.3	86.2	76.9
57.5°	170.6	166.9	148.3	131.6	115.9	99.2	87.1	78.8	73.2	67.7	64.9
60°	98.3	94.6	89.9	86.2	79.7	74.2	68.6	64.0	61.2	56.5	53.8
62.5°	70.5	70.5	67.7	64.9	62.1	58.4	54.7	51.9	50.1	46.4	44.5
65°	53.8	53.8	51.9	50.1	48.2	46.4	43.6	40.8	39.9	37.1	35.2
67.5°	40.8	39.9	38.9	38.0	36.2	35.2	32.4	30.6	29.7	27.8	26.9
70°	27.8	27.8	26.9	26.9	26.9	25.0	23.2	22.2	21.3	20.4	20.4
72.5°	17.6	17.6	17.6	17.6	16.7	15.8	15.8	15.8	15.8	14.8	14.8
75°	12.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	12.1	12.1	12.1
77.5°	8.3	8.3	8.3	8.3	8.3	9.3	9.3	9.3	10.2	10.2	11.1
80°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	8.3	8.3	9.3
82.5°	5.6	5.6	5.6	5.6	5.6	5.6	6.5	6.5	6.5	6.5	7.4
85°	3.7	3.7	3.7	3.7	3.7	3.7	4.6	4.6	4.6	4.6	4.6
87.5°	1.9	1.9	1.9	1.9	1.9	1.9	2.8	2.8	2.8	2.8	2.8
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°	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5
2.5°	1204.2	1195.8	1162.5	1150.4	1146.7	1104.1	1110.6	1084.6	1062.3	1042.9	1026.2
5°	1327.5	1301.5	1239.4	1207.0	1181.0	1116.1	1100.4	1056.8	1016.0	981.7	945.5
7.5°	1433.1	1380.3	1294.1	1241.3	1192.1	1105.0	1069.8	1009.5	951.1	902.9	854.7
10°	1510.1	1431.3	1323.8	1250.5	1179.1	1069.8	1016.9	943.7	866.7	811.1	755.5
12.5°	1562.0	1460.0	1327.5	1228.3	1139.3	1015.1	950.2	860.3	780.5	717.5	648.0
15°	1579.6	1454.5	1302.4	1185.6	1079.0	951.1	870.5	775.9	687.8	612.7	549.7
17.5°	1566.6	1420.2	1249.6	1120.7	1002.1	864.9	778.7	678.6	589.6	520.0	448.7
20°	1521.2	1359.0	1178.2	1038.2	912.2	774.0	681.3	581.2	494.1	422.7	363.4
22.5°	1448.9	1275.6	1086.4	940.0	815.8	678.6	581.2	485.8	403.2	346.7	302.2
25°	1350.6	1174.5	980.8	838.0	712.9	572.0	483.0	395.8	332.8	289.2	254.0
27.5°	1231.1	1054.0	870.5	733.3	609.0	480.2	395.8	330.0	279.0	245.7	215.1
30°	1099.4	929.8	755.5	619.2	507.1	390.3	328.2	278.1	237.3	208.6	185.4
32.5°	959.4	805.6	640.6	512.6	407.9	323.5	274.4	234.5	201.2	178.9	160.4
35°	817.6	674.9	526.5	410.7	330.9	268.8	228.0	195.6	172.4	153.9	140.0
37.5°	685.1	547.9	412.5	326.3	267.0	218.8	190.0	165.9	148.3	134.4	123.3
40°	534.0	417.2	316.1	259.6	218.8	181.7	162.2	143.7	128.9	117.7	109.4
42.5°	406.0	320.7	256.8	212.3	179.8	153.0	137.2	121.4	110.3	99.2	92.7
45°	307.8	251.2	205.8	167.8	147.4	124.2	110.3	98.3	89.9	84.4	79.7
47.5°	229.9	187.3	152.0	125.1	111.2	93.6	86.2	79.7	76.0	74.2	70.5
50°	154.8	125.1	102.9	89.9	83.4	75.1	73.2	70.5	66.7	64.0	61.2
52.5°	96.4	84.4	76.0	72.3	70.5	67.7	64.0	61.2	57.5	56.5	54.7
55°	72.3	69.5	64.9	62.1	60.3	55.6	53.8	52.8	51.0	50.1	48.2
57.5°	61.2	58.4	54.7	51.9	51.0	48.2	47.3	44.5	43.6	42.6	41.7
60°	51.0	49.1	46.4	44.5	43.6	40.8	39.9	38.9	38.0	37.1	36.2
62.5°	41.7	40.8	38.0	37.1	36.2	34.3	33.4	33.4	32.4	32.4	31.5
65°	33.4	32.4	30.6	29.7	28.7	27.8	27.8	27.8	27.8	28.7	28.7
67.5°	26.0	26.0	24.1	24.1	24.1	23.2	24.1	24.1	25.0	26.0	26.9
70°	19.5	19.5	19.5	19.5	20.4	20.4	21.3	22.2	23.2	24.1	25.0
72.5°	14.8	15.8	15.8	16.7	17.6	17.6	19.5	19.5	20.4	21.3	22.2
75°	13.0	13.9	13.9	14.8	15.8	15.8	16.7	17.6	18.5	18.5	19.5
77.5°	11.1	12.1	12.1	13.0	13.9	13.9	14.8	14.8	15.8	16.7	16.7
80°	9.3	9.3	10.2	10.2	11.1	11.1	12.1	12.1	12.1	13.0	13.0
82.5°	7.4	7.4	7.4	8.3	8.3	8.3	9.3	9.3	9.3	10.2	10.2
85°	4.6	5.6	5.6	5.6	5.6	5.6	6.5	6.5	6.5	6.5	6.5
87.5°	2.8	2.8	2.8	2.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7
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°	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5	1085.5
2.5°	1011.4	1003.9	982.6	972.4	958.5	941.8	931.6	930.7	935.3	903.8	897.3
5°	918.7	893.6	857.5	837.1	806.5	787.0	770.3	762.9	749.9	733.3	713.8
7.5°	815.8	777.8	738.8	703.6	675.8	645.2	623.9	602.6	593.3	571.0	556.2
10°	708.2	664.7	616.5	575.7	543.2	507.1	483.9	463.5	447.7	428.3	412.5
12.5°	595.1	548.8	491.3	453.3	420.9	391.2	367.1	355.0	342.1	330.9	314.3
15°	490.4	438.5	393.0	358.8	333.7	309.6	294.8	282.7	269.8	258.6	251.2
17.5°	394.0	353.2	318.0	291.1	270.7	251.2	238.2	228.0	220.6	207.6	203.9
20°	323.5	290.2	264.2	241.9	222.5	207.6	196.5	191.0	185.4	175.2	170.6
22.5°	269.8	244.7	220.6	202.1	191.0	178.0	168.7	163.2	158.5	151.1	149.2
25°	226.2	207.6	188.2	175.2	163.2	153.0	147.4	142.8	139.1	133.5	131.6
27.5°	194.7	178.9	163.2	152.0	143.7	136.3	128.9	127.9	127.0	121.4	120.5
30°	167.8	155.7	143.7	135.3	128.9	123.3	119.6	115.9	116.8	113.1	112.2
32.5°	147.4	138.1	128.9	121.4	117.7	113.1	110.3	110.3	109.4	105.7	105.7
35°	129.8	123.3	116.8	111.2	108.5	104.8	102.0	101.0	101.0	96.4	96.4
37.5°	116.8	110.3	104.8	101.0	98.3	93.6	91.8	90.8	89.9	87.1	87.1
40°	102.0	97.3	92.7	89.0	86.2	83.4	81.6	81.6	81.6	78.8	78.8
42.5°	87.1	84.4	81.6	78.8	77.9	75.1	73.2	73.2	73.2	69.5	70.5
45°	76.9	76.0	73.2	70.5	68.6	66.7	64.9	65.8	65.8	63.0	64.0
47.5°	68.6	66.7	64.0	62.1	61.2	60.3	59.3	59.3	59.3	57.5	57.5
50°	60.3	58.4	57.5	56.5	55.6	54.7	52.8	52.8	52.8	51.9	51.9
52.5°	53.8	52.8	51.0	50.1	50.1	48.2	48.2	46.4	48.2	46.4	47.3
55°	47.3	46.4	45.4	44.5	44.5	43.6	43.6	43.6	43.6	43.6	44.5
57.5°	40.8	40.8	39.9	39.9	39.9	38.9	39.9	40.8	41.7	40.8	42.6
60°	36.2	36.2	35.2	36.2	37.1	37.1	38.0	38.9	40.8	40.8	41.7
62.5°	31.5	33.4	33.4	34.3	35.2	36.2	37.1	38.0	39.9	38.9	40.8
65°	29.7	30.6	31.5	32.4	34.3	34.3	35.2	36.2	37.1	37.1	38.9
67.5°	27.8	29.7	29.7	30.6	31.5	31.5	33.4	34.3	35.2	35.2	36.2
70°	26.0	26.9	27.8	28.7	29.7	29.7	30.6	31.5	32.4	31.5	32.4
72.5°	23.2	24.1	25.0	25.0	26.0	26.0	26.9	27.8	28.7	28.7	29.7
75°	20.4	21.3	21.3	22.2	23.2	23.2	24.1	24.1	25.0	25.0	26.0
77.5°	17.6	17.6	18.5	18.5	19.5	19.5	20.4	20.4	21.3	21.3	21.3
80°	13.9	14.8	14.8	14.8	15.8	15.8	15.8	16.7	16.7	16.7	17.6
82.5°	10.2	11.1	11.1	11.1	12.1	12.1	12.1	12.1	13.0	13.0	13.0
85°	7.4	7.4	7.4	7.4	7.4	8.3	8.3	8.3	8.3	8.3	8.3
87.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
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: P130176

CATALOG NUMBER: HL612ICAT - HLM6940 - HL6FL - 456W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1085.5	1085.5	1085.5	1085.5
2.5°	905.7	901.0	888.1	885.3
5°	717.5	708.2	699.0	696.2
7.5°	557.1	545.1	532.1	538.6
10°	400.5	398.6	392.1	390.3
12.5°	305.9	304.1	298.5	292.9
15°	242.9	242.9	238.2	233.6
17.5°	195.6	197.5	191.9	189.1
20°	165.9	165.0	163.2	161.3
22.5°	144.6	144.6	143.7	140.0
25°	127.9	128.9	127.9	126.1
27.5°	117.7	118.7	117.7	116.8
30°	110.3	110.3	109.4	109.4
32.5°	103.8	103.8	103.8	102.9
35°	94.6	95.5	94.6	94.6
37.5°	85.3	85.3	85.3	85.3
40°	76.9	77.9	77.9	76.9
42.5°	68.6	68.6	68.6	67.7
45°	62.1	63.0	62.1	62.1
47.5°	56.5	56.5	56.5	55.6
50°	51.0	51.0	51.0	51.0
52.5°	46.4	46.4	47.3	46.4
55°	43.6	44.5	44.5	44.5
57.5°	42.6	42.6	43.6	43.6
60°	41.7	41.7	42.6	42.6
62.5°	39.9	41.7	40.8	40.8
65°	38.0	38.0	38.9	38.9
67.5°	35.2	36.2	36.2	36.2
70°	32.4	32.4	33.4	33.4
72.5°	28.7	29.7	29.7	29.7
75°	25.0	26.0	26.0	26.0
77.5°	21.3	21.3	22.2	22.2
80°	17.6	17.6	17.6	17.6
82.5°	13.0	13.0	13.0	13.0
85°	8.3	8.3	8.3	8.3
87.5°	3.7	3.7	3.7	3.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)