

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: P130037

Luminaire Tested: **HL618TAT - HLM6940 - HL6FL - 455TBZ**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130037  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33451)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL618TAT - HLM6940 - HL6FL - 455TBZ  
Description: HALO ALLSLOPE 6" 30W, Tuscan Bronze Reflector, Tuscan Bronze 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: 2159.9 lumens  
Efficiency: N/A  
Efficacy: 78.3 lumens/watt  
Spacing Criteria (0/90/45): 1.55 / 0.65 / 1.05  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

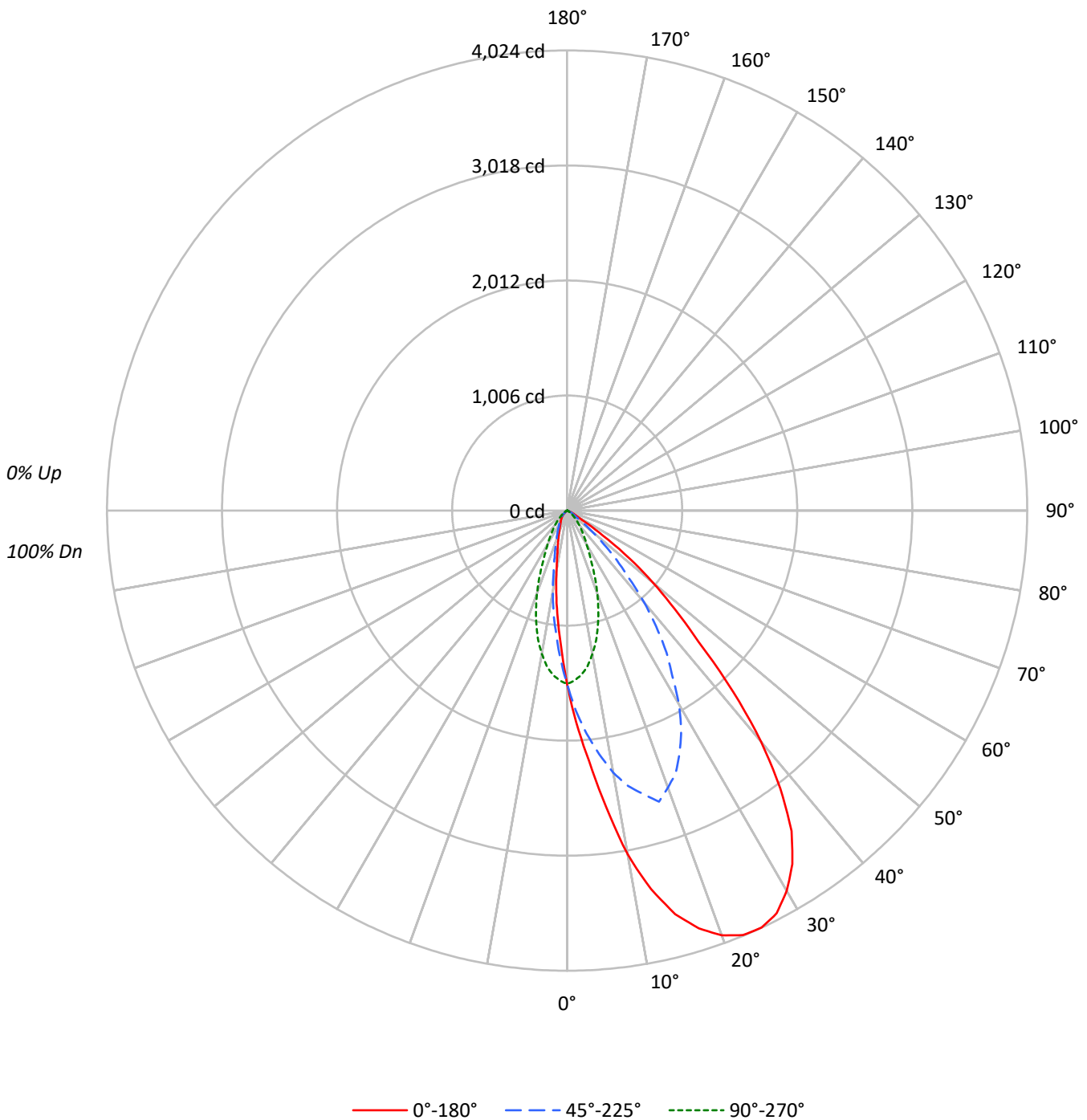
Input Watts (W): 27.6  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

### 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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	110	107	104	110	107	105	103	103	101	100	100	98	97	96	95	94	92
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	85	84
3	100	93	87	82	98	91	86	82	88	84	80	86	82	79	84	80	78	76
4	94	85	79	74	92	84	78	74	82	77	73	80	75	72	78	74	71	69
5	88	79	72	67	86	78	71	67	76	70	66	74	69	65	72	68	65	63
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58
7	78	67	61	56	76	67	60	56	65	60	55	64	59	55	63	58	55	53
8	73	63	56	51	72	62	56	51	61	55	51	60	55	51	59	54	50	49
9	69	58	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45
10	66	55	48	44	64	54	48	44	53	48	44	52	47	43	52	47	43	42

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

	0°	90°	180°
0°	90545	90545	90545
5°	128809	84434	55436
10°	176915	73670	30704
15°	210778	59852	18016
20°	228940	44668	11781
25°	235814	29798	8515
30°	229402	20401	6657
35°	210191	14278	5505
40°	167996	10258	4167
45°	108357	6943	2668
50°	68990	4443	1368
55°	28674	3018	362
60°	7816	1782	98
65°	4688	765	0
70°	2199	242	0
75°	417	278	0
80°	0	329	0
85°	0	407	0



TEST NUMBER: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	145.8	6.8
10°-20°	425.2	19.7
20°-30°	598.2	27.7
30°-40°	559.9	25.9
40°-50°	320.0	14.8
50°-60°	89.8	4.2
60°-70°	17.3	0.8
70°-80°	2.7	0.1
80°-90°	1.0	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°	1169.2	54.1
0°-40°	1729.1	80.1
0°-60°	2138.9	99.0
0°-90°	2159.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2159.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1517	1517	1517	1517	1517	
5°	2200	1958	1442	1090	947	236
15°	3654	2564	1038	424	312	1032
25°	4024	2329	508	189	145	1839
35°	3421	1513	232	109	90	2087
45°	1625	614	104	54	40	1310
55°	380	93	40	14	5	391
65°	52	30	8	1	0	53
75°	4	1	2	1	0	7
85°	0	1	2	1	0	0
90°	0	0	0	0	0	



TEST NUMBER: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9
2.5°	1854.7	1843.8	1870.4	1834.1	1800.2	1807.5	1802.6	1790.5	1784.5	1750.6	1703.4
5°	2199.7	2199.7	2216.7	2169.4	2121.0	2117.4	2128.3	2055.6	2027.8	1957.6	1886.2
7.5°	2613.7	2623.4	2630.7	2553.2	2491.5	2445.5	2374.0	2318.4	2255.4	2148.9	2046.0
10°	3055.6	3058.0	3062.9	2955.1	2875.2	2803.8	2693.6	2592.0	2472.1	2326.8	2173.1
12.5°	3391.0	3406.7	3415.2	3296.5	3196.1	3104.0	2978.1	2836.5	2682.8	2467.3	2259.0
15°	3653.7	3667.0	3682.7	3559.2	3434.6	3347.4	3197.3	3031.4	2819.6	2564.1	2308.7
17.5°	3830.4	3854.6	3869.2	3737.2	3608.9	3504.8	3342.5	3141.6	2909.1	2669.4	2309.9
20°	3952.7	3978.1	3984.2	3852.2	3710.6	3602.8	3416.4	3188.8	2917.6	2577.4	2253.0
22.5°	4018.1	4038.7	4049.5	3903.1	3752.9	3631.9	3422.4	3157.3	2848.6	2481.8	2150.1
25°	4024.1	4049.5	4052.0	3891.0	3731.2	3591.9	3352.2	3048.4	2699.7	2329.2	2008.4
27.5°	3969.6	3995.1	3990.2	3824.4	3648.8	3485.4	3198.5	2866.8	2497.5	2158.5	1843.8
30°	3838.9	3929.7	3860.7	3693.6	3499.9	3305.0	2970.9	2606.5	2268.7	1957.6	1654.9
32.5°	3664.6	3688.8	3667.0	3483.0	3250.5	3027.8	2675.5	2315.9	2030.2	1707.0	1449.1
35°	3421.2	3429.7	3386.1	3174.3	2904.3	2645.2	2329.2	2042.3	1788.1	1513.3	1238.5
37.5°	3061.7	3073.8	3027.8	2783.2	2530.2	2286.9	2038.7	1774.8	1527.8	1278.4	1047.2
40°	2636.7	2611.3	2535.1	2330.5	2125.9	1939.4	1725.1	1492.7	1262.7	1046.0	818.4
42.5°	2150.1	2133.1	2067.8	1904.3	1711.8	1554.4	1366.8	1162.2	979.4	797.8	625.9
45°	1624.7	1638.0	1587.1	1473.3	1340.2	1204.6	1062.9	910.4	765.1	613.8	464.9
47.5°	1277.2	1285.7	1260.3	1159.8	1064.1	939.4	826.9	696.1	565.4	434.6	342.6
50°	978.2	992.7	973.3	893.4	802.6	714.3	601.7	469.7	369.2	284.5	226.4
52.5°	692.5	688.8	667.1	590.8	514.5	438.2	339.0	260.3	207.0	162.2	132.0
55°	380.1	378.9	346.2	302.7	243.3	198.5	158.6	125.9	107.7	93.2	81.1
57.5°	170.7	163.4	153.7	132.0	113.8	101.7	89.6	81.1	76.3	69.0	63.0
60°	95.6	95.6	93.2	84.7	79.9	73.8	69.0	64.2	59.3	54.5	49.6
62.5°	70.2	70.2	67.8	64.2	60.5	56.9	53.3	49.6	46.0	42.4	38.7
65°	52.1	50.8	50.8	47.2	44.8	42.4	40.0	37.5	33.9	30.3	27.8
67.5°	35.1	36.3	36.3	32.7	31.5	29.1	27.8	25.4	23.0	20.6	18.2
70°	21.8	21.8	20.6	20.6	18.2	16.9	15.7	14.5	12.1	10.9	9.7
72.5°	10.9	10.9	9.7	9.7	8.5	8.5	7.3	6.1	6.1	4.8	3.6
75°	3.6	3.6	3.6	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2
77.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
80°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
82.5°	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2
85°	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2
87.5°	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2
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: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9
2.5°	1699.7	1661.0	1647.7	1617.4	1590.8	1561.7	1548.4	1486.7	1479.4	1431.0	1409.2
5°	1858.3	1788.1	1744.5	1686.4	1629.5	1571.4	1552.0	1441.9	1409.2	1341.4	1297.8
7.5°	1991.5	1921.3	1807.5	1721.5	1633.1	1547.2	1479.4	1370.4	1316.0	1234.8	1169.5
10°	2082.3	1946.7	1836.5	1723.9	1604.1	1493.9	1395.9	1272.4	1202.2	1107.7	1029.0
12.5°	2131.9	1962.4	1823.2	1685.2	1542.3	1411.6	1294.2	1164.6	1078.7	963.7	885.0
15°	2142.8	1944.3	1773.6	1612.6	1452.8	1306.3	1176.7	1037.5	943.1	830.5	739.7
17.5°	2112.5	1889.8	1691.2	1518.1	1337.7	1186.4	1052.0	905.5	802.6	698.5	599.3
20°	2035.1	1794.1	1585.9	1395.9	1207.0	1052.0	914.0	771.2	664.6	562.9	483.0
22.5°	1915.2	1670.7	1452.8	1259.1	1069.0	916.4	770.0	634.4	536.3	450.4	394.7
25°	1743.3	1521.8	1306.3	1110.1	923.7	778.4	634.4	508.5	433.4	369.2	324.4
27.5°	1601.7	1351.1	1148.9	955.2	796.6	640.4	508.5	412.8	360.8	307.5	268.8
30°	1428.5	1174.3	980.6	807.5	644.1	514.5	412.8	341.4	297.8	253.0	225.2
32.5°	1231.2	998.8	819.6	663.4	514.5	416.5	341.4	283.3	245.8	213.1	188.9
35°	1029.0	831.7	682.8	520.6	406.8	337.8	278.4	232.4	204.6	178.0	159.8
37.5°	847.4	659.8	508.5	406.8	325.7	272.4	227.6	194.9	171.9	150.1	136.8
40°	662.2	500.0	387.4	320.8	260.3	217.9	188.9	161.0	144.1	127.1	116.2
42.5°	495.1	382.6	307.5	254.2	210.6	180.4	155.0	132.0	119.9	106.5	96.9
45°	368.0	289.3	238.5	199.8	167.1	141.6	121.1	104.1	94.4	84.7	77.5
47.5°	270.0	214.3	175.5	147.7	119.9	105.3	89.6	79.9	73.8	66.6	63.0
50°	179.2	141.6	117.4	100.5	86.0	77.5	69.0	63.0	59.3	54.5	49.6
52.5°	107.7	90.8	79.9	72.6	65.4	61.7	55.7	50.8	47.2	42.4	38.7
55°	73.8	67.8	61.7	58.1	53.3	48.4	43.6	40.0	36.3	33.9	30.3
57.5°	59.3	54.5	49.6	46.0	41.2	38.7	35.1	30.3	27.8	25.4	21.8
60°	46.0	42.4	37.5	36.3	31.5	29.1	25.4	21.8	20.6	16.9	14.5
62.5°	35.1	31.5	27.8	26.6	23.0	20.6	16.9	14.5	12.1	9.7	8.5
65°	25.4	23.0	19.4	16.9	14.5	12.1	10.9	8.5	7.3	4.8	3.6
67.5°	15.7	13.3	12.1	9.7	8.5	7.3	6.1	3.6	3.6	2.4	2.4
70°	8.5	7.3	6.1	4.8	3.6	3.6	2.4	2.4	2.4	2.4	2.4
72.5°	3.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
75°	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
77.5°	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
80°	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
82.5°	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.2
85°	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.2
87.5°	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.2
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: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9	1516.9
2.5°	1400.7	1372.9	1366.8	1335.3	1326.8	1303.8	1266.3	1228.8	1256.6	1243.3	1249.4
5°	1263.9	1221.5	1202.2	1150.1	1122.3	1089.6	1069.0	1031.5	1013.3	1009.7	985.5
7.5°	1116.2	1066.6	1026.6	978.2	961.2	904.3	864.4	829.3	800.2	789.3	763.9
10°	973.3	905.5	858.3	800.2	759.1	716.7	676.7	636.8	613.8	593.2	565.4
12.5°	820.8	751.8	693.7	630.7	582.3	547.2	504.8	473.4	460.0	443.1	428.6
15°	669.5	593.2	544.8	496.4	457.6	423.7	399.5	377.7	362.0	346.2	334.1
17.5°	530.3	475.8	440.7	391.0	366.8	337.8	317.2	300.2	284.5	273.6	263.9
20°	427.4	382.6	352.3	320.8	295.4	271.2	254.2	242.1	232.4	224.0	217.9
22.5°	354.7	317.2	285.7	260.3	242.1	227.6	214.3	201.0	191.3	186.4	181.6
25°	288.1	257.9	236.1	217.9	203.4	188.9	174.3	167.1	162.2	156.2	153.7
27.5°	239.7	216.7	199.8	182.8	170.7	159.8	153.7	144.1	139.2	135.6	134.4
30°	202.2	182.8	168.3	156.2	146.5	139.2	133.2	127.1	123.5	121.1	118.6
32.5°	170.7	156.2	145.3	135.6	128.3	123.5	118.6	113.8	111.4	107.7	106.5
35°	146.5	134.4	127.1	118.6	113.8	109.0	105.3	101.7	99.3	95.6	94.4
37.5°	125.9	117.4	111.4	104.1	99.3	95.6	92.0	88.4	86.0	83.5	82.3
40°	110.2	101.7	95.6	89.6	86.0	81.1	77.5	73.8	72.6	70.2	69.0
42.5°	90.8	83.5	78.7	73.8	70.2	67.8	64.2	60.5	59.3	56.9	56.9
45°	72.6	67.8	64.2	60.5	58.1	54.5	50.8	48.4	46.0	44.8	42.4
47.5°	59.3	55.7	52.1	47.2	44.8	41.2	38.7	37.5	35.1	33.9	32.7
50°	47.2	42.4	40.0	36.3	33.9	31.5	30.3	26.6	25.4	24.2	23.0
52.5°	36.3	33.9	31.5	27.8	25.4	23.0	20.6	18.2	16.9	14.5	13.3
55°	27.8	25.4	21.8	19.4	16.9	14.5	13.3	10.9	8.5	7.3	7.3
57.5°	19.4	16.9	14.5	12.1	9.7	8.5	6.1	4.8	3.6	3.6	2.4
60°	12.1	9.7	8.5	6.1	4.8	3.6	2.4	2.4	1.2	1.2	1.2
62.5°	7.3	4.8	3.6	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2
65°	3.6	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
67.5°	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
70°	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0
72.5°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
75°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
77.5°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
80°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
82.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0
85°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0
87.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	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: P130037

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455TBZ

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1516.9	1516.9	1516.9	1516.9
2.5°	1233.6	1210.6	1210.6	1192.5
5°	983.0	951.6	964.9	946.7
7.5°	757.9	737.3	747.0	724.0
10°	561.7	546.0	542.4	530.3
12.5°	421.3	409.2	405.6	394.7
15°	326.9	317.2	317.2	312.3
17.5°	257.9	250.6	251.8	250.6
20°	213.1	207.0	205.8	203.4
22.5°	178.0	171.9	171.9	170.7
25°	150.1	146.5	146.5	145.3
27.5°	130.7	128.3	128.3	127.1
30°	116.2	113.8	113.8	111.4
32.5°	104.1	101.7	102.9	101.7
35°	92.0	90.8	90.8	89.6
37.5°	81.1	78.7	78.7	77.5
40°	67.8	66.6	67.8	65.4
42.5°	54.5	53.3	54.5	53.3
45°	41.2	40.0	41.2	40.0
47.5°	31.5	30.3	29.1	29.1
50°	21.8	20.6	20.6	19.4
52.5°	13.3	12.1	12.1	10.9
55°	6.1	6.1	4.8	4.8
57.5°	2.4	2.4	1.2	1.2
60°	1.2	1.2	1.2	1.2
62.5°	1.2	1.2	1.2	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)