

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: P130074

Luminaire Tested: **HL618TAT - HLM6940 - HL6NFL - 455TBZ**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130074
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33470)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL618TAT - HLM6940 - HL6NFL - 455TBZ
Description: HALO ALLSLOPE 6" 30W, Tuscan Bronze Reflector, Tuscan Bronze Metal Trim Ring using 25 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: 2182.8 lumens
Efficiency: N/A
Efficacy: 79.1 lumens/watt
Spacing Criteria (0/90/45): 1.88 / 0.71 / 1.15
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

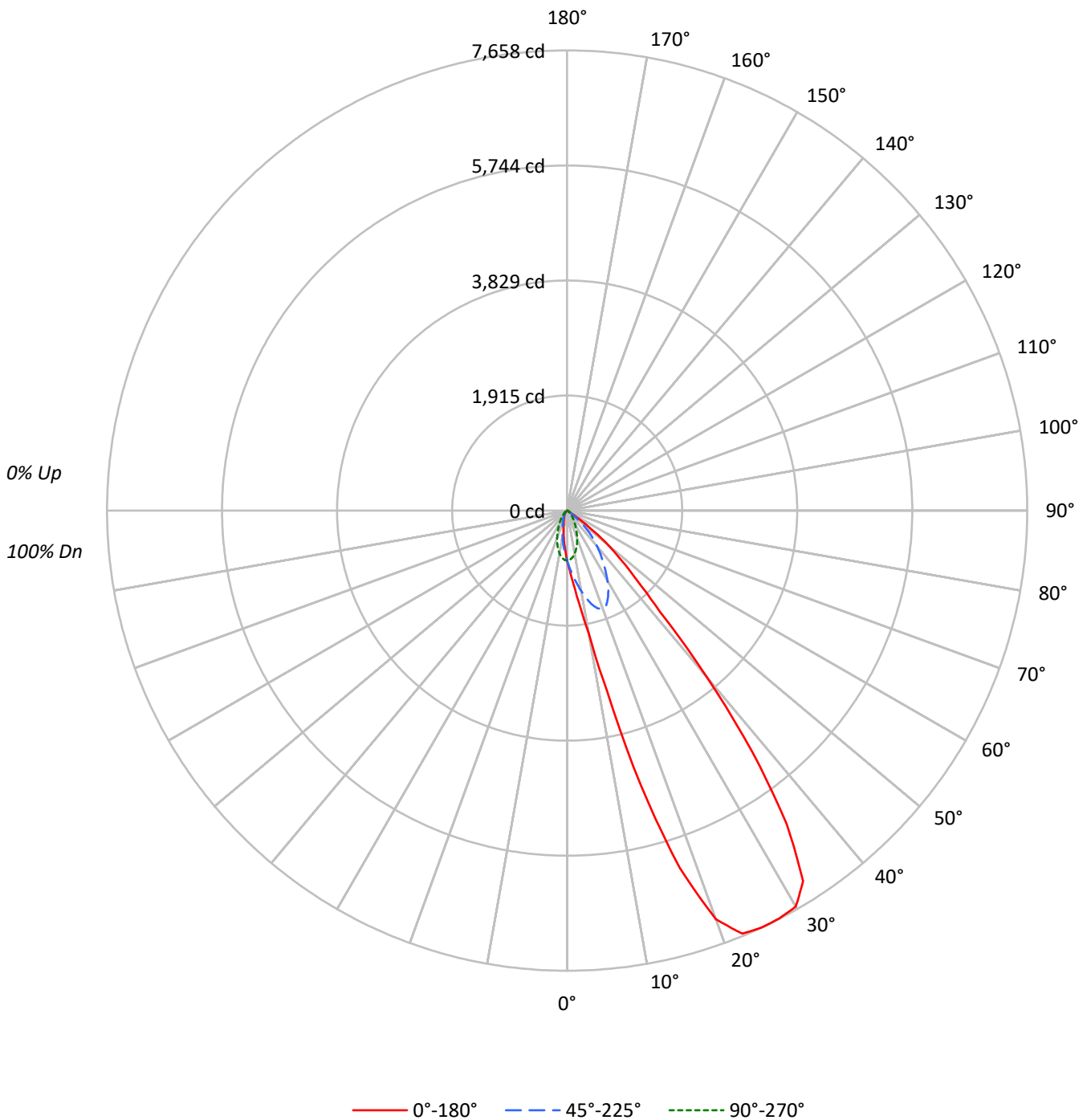
Input Watts (W): 27.6
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92					92			
2	106	100	96	92	104	99	94	91	95	92	89	92	89	87	90	87	85	83					83			
3	100	92	86	82	97	91	85	81	88	84	80	85	82	79	83	80	77	76					76			
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	69					69			
5	88	78	71	66	86	77	71	66	75	69	65	73	68	65	72	67	64	62					62			
6	82	72	65	60	80	71	64	60	69	63	59	68	63	59	66	62	58	57					57			
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52					52			
8	72	61	54	50	71	61	54	50	60	54	49	58	53	49	57	52	49	47					47			
9	68	57	50	45	67	56	50	45	55	49	45	54	49	45	53	48	45	43					43			
10	64	53	46	42	63	52	46	42	52	46	42	51	45	41	50	45	41	40					40			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	49585	49585	49585
5°	71856	47051	31920
10°	120302	41948	19743
15°	272678	35398	13003
20°	419062	28224	9088
25°	448738	21020	6845
30°	454777	15513	5432
35°	391304	11378	4135
40°	229442	8347	3160
45°	109384	5509	1887
50°	62911	3576	917
55°	17449	2316	181
60°	4627	1545	0
65°	2969	747	0
70°	1543	242	0
75°	544	278	0
80°	0	329	0
85°	0	407	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	83.1	3.8
10°-20°	357.9	16.4
20°-30°	718.3	32.9
30°-40°	647.7	29.7
40°-50°	289.8	13.3
50°-60°	68.3	3.1
60°-70°	13.2	0.6
70°-80°	2.9	0.1
80°-90°	1.4	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°	1159.4	53.1
0°-40°	1807.1	82.8
0°-60°	2165.2	99.2
0°-90°	2182.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2182.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	831	831	831	831	831	
5°	1227	1078	804	623	545	143
15°	4727	1626	614	295	225	1406
25°	7658	1606	359	149	117	3515
35°	6369	1041	185	87	67	3772
45°	1640	520	83	40	28	1406
55°	231	66	31	11	2	284
65°	33	24	8	2	0	33
75°	5	2	2	1	0	6
85°	0	2	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°	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7
2.5°	994.7	997.0	991.1	975.8	985.2	972.2	960.4	961.6	943.9	952.2	928.6
5°	1227.1	1221.2	1220.0	1190.5	1189.3	1163.4	1152.8	1122.1	1089.1	1078.4	1038.3
7.5°	1569.3	1546.9	1522.1	1490.2	1469.0	1415.9	1375.8	1315.6	1254.2	1218.8	1146.9
10°	2077.8	2049.5	2007.0	1930.3	1869.0	1762.8	1655.4	1546.9	1443.0	1365.2	1251.9
12.5°	3080.7	2988.7	2811.7	2625.3	2476.6	2226.5	1992.9	1814.7	1640.1	1504.4	1343.9
15°	4726.7	4588.7	4340.9	3931.5	3490.2	2910.8	2464.8	2102.6	1833.6	1625.9	1410.0
17.5°	6238.2	6114.3	5806.3	5243.5	4709.0	3831.2	2998.1	2414.1	1989.3	1709.7	1443.0
20°	7235.2	7205.7	6894.2	6275.9	5599.8	4663.0	3564.5	2648.9	2083.7	1736.8	1434.8
22.5°	7619.8	7630.5	7415.7	6880.0	6157.9	5092.5	3871.3	2740.9	2087.3	1701.4	1384.0
25°	7657.6	7709.5	7580.9	7090.1	6342.0	5201.0	3841.8	2641.8	1970.4	1605.9	1295.5
27.5°	7649.3	7700.1	7563.2	7018.1	6170.9	4958.0	3485.4	2416.5	1840.7	1483.1	1166.9
30°	7610.4	7637.5	7383.9	6692.4	5675.4	4385.7	2976.9	2136.8	1659.0	1339.2	1086.7
32.5°	7308.4	7311.9	6834.0	5981.0	4876.6	3525.6	2442.4	1832.4	1452.5	1187.0	975.8
35°	6369.1	6290.1	5732.0	4941.5	3779.2	2702.0	1982.2	1559.8	1259.0	1040.7	856.6
37.5°	5063.0	4978.0	4470.7	3632.9	2683.1	2092.0	1646.0	1321.5	1090.2	909.7	739.8
40°	3601.1	3441.8	3061.9	2482.5	2017.6	1647.2	1354.5	1105.6	932.1	774.0	628.9
42.5°	2281.9	2286.7	2088.4	1797.0	1569.3	1314.4	1095.0	918.0	771.7	638.3	516.8
45°	1640.1	1628.3	1523.3	1359.3	1220.0	1047.8	896.7	755.1	630.1	520.3	417.7
47.5°	1229.5	1220.0	1164.6	1057.2	955.7	849.5	724.5	604.1	502.6	400.0	315.0
50°	892.0	906.2	861.3	781.1	700.9	614.7	519.2	411.8	335.1	258.4	194.7
52.5°	509.7	529.8	497.9	442.5	396.4	336.3	277.3	215.9	169.9	127.4	102.7
55°	231.3	218.3	210.0	188.8	164.0	136.9	114.5	93.2	77.9	66.1	60.2
57.5°	85.0	83.8	83.8	76.7	70.8	66.1	60.2	55.5	53.1	49.6	48.4
60°	56.6	56.6	55.5	53.1	51.9	50.7	48.4	46.0	43.7	40.1	37.8
62.5°	42.5	43.7	42.5	41.3	41.3	40.1	37.8	36.6	34.2	31.9	30.7
65°	33.0	33.0	33.0	31.9	31.9	30.7	29.5	28.3	26.0	23.6	22.4
67.5°	23.6	23.6	23.6	23.6	22.4	22.4	21.2	18.9	18.9	16.5	15.3
70°	15.3	15.3	15.3	15.3	14.2	14.2	13.0	13.0	11.8	10.6	9.4
72.5°	9.4	9.4	9.4	8.3	8.3	8.3	7.1	7.1	7.1	5.9	4.7
75°	4.7	4.7	3.5	3.5	3.5	3.5	3.5	2.4	2.4	2.4	2.4
77.5°	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4
80°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4
82.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
85°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
87.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
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°	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7
2.5°	920.3	900.3	887.3	875.5	862.5	847.2	834.2	824.8	808.2	807.1	784.6
5°	1012.4	977.0	943.9	914.4	887.3	856.6	828.3	803.5	775.2	759.9	728.0
7.5°	1100.9	1040.7	988.8	941.6	896.7	849.5	807.1	770.5	728.0	704.4	659.6
10°	1171.6	1091.4	1017.1	952.2	890.8	829.5	774.0	724.5	674.9	639.5	591.1
12.5°	1204.7	1118.6	1023.0	942.7	866.1	792.9	726.8	671.4	617.1	579.3	525.1
15°	1257.8	1120.9	1010.0	914.4	825.9	745.7	670.2	613.6	555.7	509.7	454.3
17.5°	1255.4	1103.2	978.1	870.8	774.0	687.9	612.4	549.8	488.5	442.5	389.4
20°	1224.7	1063.1	928.6	816.5	715.0	623.0	548.7	487.3	422.4	378.8	338.6
22.5°	1165.7	1004.1	868.4	751.6	647.8	556.9	480.2	420.0	361.1	320.9	277.3
25°	1089.1	932.1	792.9	680.8	581.7	489.7	415.3	358.7	308.0	271.4	244.2
27.5°	1005.3	849.5	713.8	605.3	512.1	421.2	356.3	305.6	261.9	230.1	200.6
30°	910.9	761.0	633.6	533.3	437.7	358.7	303.2	259.6	221.8	197.0	173.4
32.5°	811.8	667.8	552.2	457.8	372.9	304.4	256.0	219.5	188.8	168.7	148.7
35°	703.2	578.2	472.0	385.8	313.9	256.0	214.7	185.2	160.5	145.1	127.4
37.5°	602.9	490.8	396.4	320.9	260.8	212.4	180.5	155.7	135.7	123.9	109.7
40°	503.8	402.3	325.7	263.1	213.6	175.8	149.8	131.0	114.5	105.0	96.8
42.5°	410.6	331.6	264.3	212.4	173.4	145.1	122.7	106.2	93.2	86.1	76.7
45°	326.8	261.9	207.7	168.7	134.5	110.9	94.4	82.6	73.2	68.4	60.2
47.5°	239.5	186.4	149.8	116.8	96.8	80.2	69.6	62.5	56.6	54.3	50.7
50°	146.3	113.3	93.2	75.5	66.1	59.0	54.3	50.7	46.0	42.5	37.8
52.5°	80.2	67.3	61.4	55.5	51.9	47.2	43.7	40.1	35.4	33.0	29.5
55°	54.3	51.9	49.6	44.8	41.3	36.6	33.0	30.7	28.3	26.0	23.6
57.5°	44.8	42.5	38.9	35.4	31.9	28.3	26.0	24.8	21.2	20.1	17.7
60°	35.4	33.0	30.7	28.3	26.0	22.4	21.2	18.9	16.5	14.2	13.0
62.5°	27.1	24.8	23.6	21.2	18.9	16.5	15.3	13.0	11.8	9.4	8.3
65°	20.1	18.9	16.5	15.3	13.0	11.8	10.6	8.3	7.1	5.9	4.7
67.5°	14.2	13.0	11.8	9.4	8.3	7.1	5.9	4.7	3.5	3.5	2.4
70°	8.3	7.1	7.1	5.9	4.7	3.5	3.5	2.4	2.4	2.4	2.4
72.5°	4.7	3.5	3.5	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
77.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
80°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
82.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
85°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
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°	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7	830.7
2.5°	768.1	762.2	771.7	737.4	731.5	732.7	726.8	712.7	702.0	700.9	691.4
5°	698.5	683.2	670.2	641.9	630.1	623.0	611.2	592.3	580.5	577.0	564.0
7.5°	625.4	604.1	586.4	549.8	536.9	527.4	508.5	490.8	473.1	468.4	449.5
10°	556.9	526.2	507.4	463.7	447.2	436.6	411.8	397.6	382.3	372.9	363.4
12.5°	482.6	453.1	425.9	391.7	371.7	358.7	337.5	320.9	311.5	303.2	291.4
15°	411.8	383.5	358.7	325.7	308.0	295.0	277.3	263.1	253.7	246.6	238.3
17.5°	349.3	322.1	298.5	271.4	254.9	244.2	231.3	211.2	208.8	205.3	200.6
20°	295.0	270.2	250.1	226.5	213.6	205.3	193.5	184.1	175.8	172.3	165.2
22.5°	247.8	226.5	210.0	191.1	181.7	173.4	164.0	158.1	148.7	146.3	141.6
25°	210.0	193.5	180.5	164.0	156.9	148.7	140.4	134.5	128.6	126.3	122.7
27.5°	177.0	166.4	155.7	141.6	134.5	129.8	121.5	116.8	112.1	109.7	107.4
30°	154.6	142.8	134.5	122.7	118.0	113.3	107.4	102.7	99.1	95.6	94.4
32.5°	134.5	125.1	119.2	108.6	105.0	100.3	95.6	90.9	87.3	85.0	81.4
35°	116.8	108.6	103.8	95.6	93.2	87.3	82.6	79.1	75.5	73.2	70.8
37.5°	100.3	94.4	90.9	82.6	80.2	75.5	70.8	68.4	64.9	62.5	60.2
40°	85.0	80.2	75.5	69.6	66.1	62.5	59.0	56.6	54.3	53.1	50.7
42.5°	69.6	64.9	61.4	56.6	54.3	51.9	48.4	46.0	44.8	42.5	40.1
45°	55.5	53.1	49.6	44.8	43.7	40.1	36.6	35.4	33.0	30.7	29.5
47.5°	44.8	41.3	38.9	34.2	31.9	29.5	28.3	26.0	24.8	23.6	22.4
50°	34.2	31.9	29.5	27.1	24.8	23.6	21.2	18.9	17.7	16.5	15.3
52.5°	27.1	24.8	23.6	20.1	18.9	16.5	15.3	13.0	11.8	10.6	9.4
55°	21.2	18.9	17.7	14.2	13.0	10.6	9.4	8.3	7.1	5.9	4.7
57.5°	15.3	13.0	11.8	9.4	8.3	7.1	4.7	3.5	2.4	2.4	1.2
60°	10.6	9.4	7.1	5.9	4.7	3.5	2.4	1.2	1.2	1.2	1.2
62.5°	7.1	5.9	4.7	3.5	2.4	2.4	2.4	1.2	1.2	1.2	1.2
65°	3.5	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2
67.5°	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2
70°	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2
72.5°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2
75°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	0.0
77.5°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	0.0
80°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	0.0
82.5°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	0.0
85°	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	0.0
87.5°	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	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: P130074

CATALOG NUMBER: HL618TAT - HLM6940 - HL6NFL - 455TBZ

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	830.7	830.7	830.7	830.7
2.5°	705.6	696.1	679.6	674.9
5°	571.1	564.0	553.4	545.1
7.5°	453.1	444.8	440.1	431.8
10°	361.1	354.0	349.3	341.0
12.5°	292.6	285.5	278.5	276.1
15°	238.3	234.8	226.5	225.4
17.5°	195.9	192.3	190.0	186.4
20°	167.5	162.8	159.3	156.9
22.5°	142.8	139.2	135.7	135.7
25°	121.5	120.4	118.0	116.8
27.5°	107.4	106.2	103.8	102.7
30°	95.6	93.2	92.0	90.9
32.5°	82.6	80.2	79.1	79.1
35°	70.8	68.4	67.3	67.3
37.5°	61.4	59.0	57.8	57.8
40°	50.7	49.6	49.6	49.6
42.5°	41.3	38.9	38.9	38.9
45°	29.5	28.3	28.3	28.3
47.5°	22.4	21.2	20.1	20.1
50°	15.3	14.2	14.2	13.0
52.5°	9.4	8.3	7.1	7.1
55°	3.5	3.5	2.4	2.4
57.5°	1.2	0.0	0.0	0.0
60°	1.2	0.0	0.0	0.0
62.5°	1.2	1.2	0.0	0.0
65°	1.2	0.0	0.0	0.0
67.5°	1.2	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)