

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: P130033

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

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130033
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33450)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL618TAT - HLM6940 - HL6FL - 455SN
Description: HALO ALLSLOPE 6" 30W, Satin Nickel Reflector, Satin Nickel 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: 2213.2 lumens
Efficiency: N/A
Efficacy: 80.2 lumens/watt
Spacing Criteria (0/90/45): 1.56 / 0.66 / 1.06
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

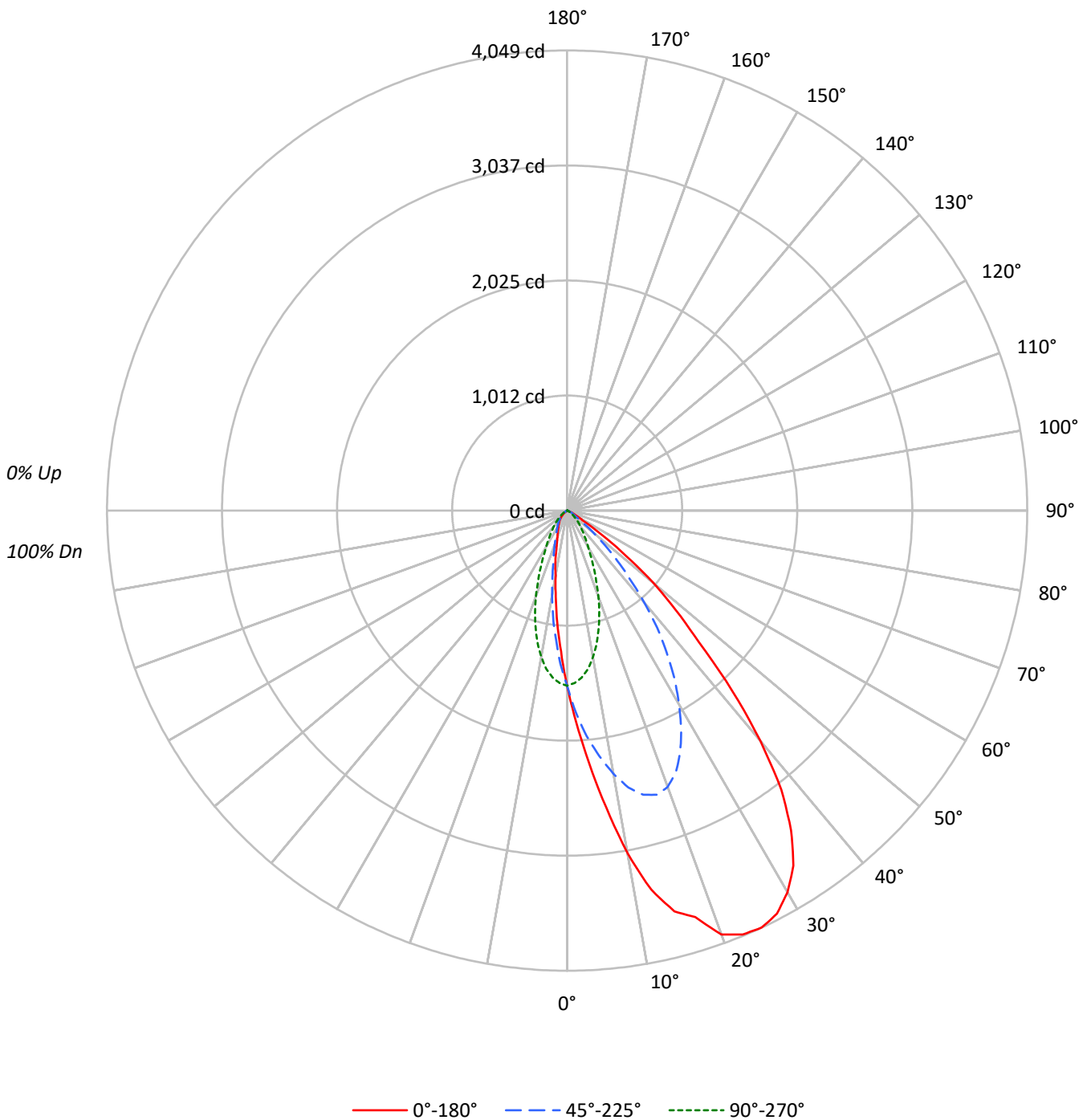
Input Watts (W): 27.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	84	84	84	84	84	84	84		
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	76	76	76	76	76	76	76		
4	94	85	79	74	92	84	78	73	81	76	72	79	75	72	77	74	71	69	69	69	69	69	69	69		
5	88	78	72	67	86	77	71	66	75	70	66	74	69	65	72	68	65	63	63	63	63	63	63	63		
6	83	72	66	61	81	72	65	60	70	64	60	68	63	60	67	63	59	57	57	57	57	57	57	57		
7	78	67	60	55	76	66	60	55	65	59	55	64	59	55	63	58	54	53	53	53	53	53	53	53		
8	73	62	56	51	72	62	55	51	61	55	51	60	54	50	58	54	50	49	49	49	49	49	49	49		
9	69	58	51	47	68	58	51	47	57	51	47	56	50	47	55	50	46	45	45	45	45	45	45	45		
10	65	54	48	43	64	54	48	43	53	47	43	52	47	43	51	47	43	42	42	42	42	42	42	42		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	92001	92001	92001
5°	130595	86355	57995
10°	177286	75778	33720
15°	210588	61744	21166
20°	229872	46562	14515
25°	237255	32213	11070
30°	231739	22068	8898
35°	211107	15845	7366
40°	168321	11571	5862
45°	109418	8237	4035
50°	69766	5466	2645
55°	28041	3742	1282
60°	8118	2477	891
65°	4795	1305	549
70°	2320	615	363
75°	417	417	278
80°	165	329	165
85°	0	407	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	147.9	6.7
10°-20°	431.3	19.5
20°-30°	607.4	27.4
30°-40°	572.1	25.9
40°-50°	330.8	14.9
50°-60°	96.1	4.3
60°-70°	22.0	1.0
70°-80°	4.2	0.2
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°	1186.7	53.6
0°-40°	1758.8	79.5
0°-60°	2185.7	98.8
0°-90°	2213.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2213.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1541	1541	1541	1541	1541	
5°	2230	1994	1475	1134	990	238
15°	3650	2589	1070	471	367	1027
25°	4049	2351	550	229	189	1851
35°	3436	1526	258	138	120	2105
45°	1641	626	124	74	60	1319
55°	372	98	50	27	17	382
65°	53	34	14	7	6	56
75°	4	4	4	2	2	7
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°	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3
2.5°	1867.0	1851.2	1865.8	1831.9	1856.1	1807.6	1798.0	1789.5	1789.5	1781.0	1735.0
5°	2230.2	2193.9	2212.0	2173.3	2180.6	2105.5	2083.7	2047.4	2030.4	1994.1	1917.8
7.5°	2637.0	2594.6	2599.5	2529.2	2532.9	2432.4	2359.7	2316.2	2256.8	2179.3	2076.4
10°	3062.0	3022.0	3024.4	2960.3	2917.9	2781.1	2668.5	2578.9	2473.6	2352.5	2206.0
12.5°	3416.7	3390.1	3375.6	3294.4	3232.7	3083.8	2949.4	2813.8	2670.9	2496.6	2296.8
15°	3650.4	3649.2	3644.3	3545.1	3482.1	3309.0	3172.2	3000.2	2817.4	2588.6	2344.0
17.5°	3750.9	3829.6	3827.2	3720.6	3649.2	3467.6	3313.8	3115.2	2897.3	2622.5	2387.6
20°	3968.8	3950.7	3945.8	3828.4	3755.7	3560.8	3385.2	3157.6	2905.8	2587.4	2277.4
22.5°	4036.6	4016.0	4003.9	3879.2	3799.3	3594.7	3393.7	3132.2	2840.4	2496.6	2175.7
25°	4048.7	4022.1	4007.6	3874.4	3783.6	3558.4	3327.1	3025.7	2698.8	2351.3	2038.9
27.5°	3997.9	3970.0	3936.1	3806.6	3702.5	3454.3	3183.1	2848.9	2496.6	2174.5	1868.2
30°	3878.0	3853.8	3822.3	3686.7	3556.0	3275.1	2963.9	2581.3	2237.5	1967.5	1673.3
32.5°	3704.9	3671.0	3637.1	3470.0	3312.6	3006.3	2674.5	2308.9	2003.8	1759.2	1488.0
35°	3436.1	3420.4	3358.6	3166.1	2983.3	2643.1	2341.6	2038.9	1801.6	1525.5	1276.1
37.5°	3095.9	3128.6	3006.3	2790.8	2583.7	2271.4	2036.5	1759.2	1538.9	1300.3	1067.9
40°	2641.8	2615.2	2534.1	2339.2	2170.9	1931.1	1727.7	1491.6	1265.2	1054.6	849.9
42.5°	2151.5	2109.1	2066.7	1905.7	1761.6	1542.5	1358.5	1153.8	978.3	816.0	641.7
45°	1640.6	1635.7	1590.9	1462.6	1362.1	1203.5	1060.6	917.7	770.0	626.0	475.8
47.5°	1294.3	1290.7	1238.6	1151.4	1076.4	944.4	826.9	705.9	569.1	449.2	349.9
50°	989.2	991.6	951.6	888.7	806.4	703.4	596.9	486.7	374.1	295.4	233.7
52.5°	652.6	661.1	638.1	573.9	503.7	416.5	336.6	265.2	207.0	168.3	133.2
55°	371.7	356.0	329.3	299.1	245.8	187.7	156.2	130.8	113.8	98.1	87.2
57.5°	168.3	167.1	153.8	135.6	117.4	102.9	93.2	84.8	79.9	73.9	69.0
60°	99.3	98.1	95.6	89.6	83.5	77.5	71.4	66.6	64.2	59.3	54.5
62.5°	72.6	71.4	70.2	66.6	63.0	58.1	55.7	54.5	49.6	46.0	42.4
65°	53.3	52.1	52.1	49.6	47.2	44.8	42.4	40.0	36.3	33.9	31.5
67.5°	38.7	37.5	37.5	35.1	32.7	31.5	29.1	26.6	25.4	23.0	21.8
70°	23.0	23.0	23.0	21.8	20.6	18.2	17.0	15.7	14.5	13.3	12.1
72.5°	10.9	12.1	10.9	10.9	9.7	9.7	8.5	8.5	7.3	7.3	6.1
75°	3.6	4.8	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
77.5°	1.2	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4
80°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.4	2.4
82.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.4
85°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
87.5°	0.0	0.0	0.0	0.0	1.2	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



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3
2.5°	1726.5	1678.1	1658.7	1644.2	1605.4	1588.5	1554.6	1518.3	1491.6	1474.7	1442.0
5°	1883.9	1804.0	1751.9	1710.8	1644.2	1600.6	1561.9	1474.7	1423.8	1385.1	1331.8
7.5°	2015.9	1903.3	1818.5	1744.7	1649.0	1578.8	1512.2	1404.5	1331.8	1277.3	1204.7
10°	2104.3	1961.4	1845.2	1741.1	1617.6	1524.3	1433.5	1308.8	1215.6	1145.4	1069.1
12.5°	2160.0	1978.4	1834.3	1704.7	1555.8	1440.8	1330.6	1198.6	1093.3	1004.9	925.0
15°	2168.4	1957.8	1788.3	1632.1	1462.6	1334.2	1210.7	1070.3	958.9	871.7	771.2
17.5°	2135.8	1897.2	1702.3	1528.0	1350.0	1212.0	1077.6	939.5	828.2	722.8	633.2
20°	2058.3	1800.4	1592.1	1403.3	1222.9	1078.8	942.0	803.9	692.5	592.1	518.2
22.5°	1948.1	1679.3	1458.9	1266.4	1088.5	938.3	807.6	665.9	560.6	485.5	428.6
25°	1801.6	1530.4	1310.0	1119.9	939.5	794.2	669.5	549.7	458.9	404.4	357.2
27.5°	1597.0	1365.7	1150.2	967.4	805.1	656.2	543.6	448.0	385.0	339.0	300.3
30°	1443.2	1191.4	990.4	818.5	658.6	533.9	444.3	369.3	322.1	283.3	251.8
32.5°	1251.9	1017.0	833.0	670.8	529.1	435.9	368.1	310.0	268.8	240.9	216.7
35°	1055.8	851.2	675.6	532.7	427.4	359.6	306.3	257.9	226.4	203.4	185.2
37.5°	870.5	681.7	526.7	420.1	348.7	291.8	250.6	215.5	191.3	174.3	159.8
40°	682.9	524.3	408.0	333.0	277.3	237.3	207.0	181.6	162.2	148.9	139.2
42.5°	510.9	393.5	319.6	265.2	225.2	197.4	174.3	153.8	138.0	128.3	117.4
45°	383.8	305.1	253.0	214.3	181.6	159.8	140.4	123.5	111.4	102.9	95.6
47.5°	286.9	230.0	191.3	161.0	136.8	119.9	106.5	94.4	87.2	83.5	78.7
50°	192.5	155.0	130.8	111.4	98.1	88.4	82.3	77.5	72.6	69.0	65.4
52.5°	117.4	99.3	89.6	79.9	76.3	72.6	67.8	63.0	56.9	54.5	50.9
55°	81.1	73.9	70.2	65.4	61.7	58.1	53.3	49.6	46.0	44.8	41.2
57.5°	65.4	60.5	56.9	52.1	48.4	46.0	43.6	40.0	36.3	35.1	32.7
60°	50.9	47.2	44.8	41.2	38.7	36.3	33.9	30.3	27.8	25.4	23.0
62.5°	40.0	36.3	33.9	31.5	29.1	26.6	24.2	21.8	19.4	18.2	15.7
65°	30.3	26.6	24.2	21.8	19.4	18.2	15.7	14.5	12.1	12.1	9.7
67.5°	19.4	17.0	15.7	14.5	13.3	10.9	9.7	8.5	8.5	7.3	7.3
70°	10.9	9.7	8.5	8.5	7.3	7.3	6.1	6.1	4.8	4.8	4.8
72.5°	6.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6
75°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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°	1.2	1.2	1.2	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°	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3	1541.3
2.5°	1439.6	1402.0	1369.4	1364.5	1345.1	1348.8	1320.9	1295.5	1319.7	1261.6	1261.6
5°	1307.6	1255.5	1202.3	1181.7	1147.8	1134.5	1101.8	1073.9	1063.0	1024.3	1017.0
7.5°	1170.8	1103.0	1038.8	1007.3	962.5	946.8	906.8	869.3	842.7	812.4	797.9
10°	1012.2	940.7	874.2	837.8	785.8	756.7	718.0	673.2	664.7	615.1	604.2
12.5°	857.2	779.7	716.8	669.5	621.1	596.9	555.7	526.7	506.1	477.0	468.6
15°	707.1	634.4	571.5	535.1	492.8	471.0	444.3	421.3	405.6	385.0	377.8
17.5°	577.5	510.9	461.3	434.7	404.4	385.0	365.6	343.9	333.0	316.0	308.7
20°	466.1	421.3	377.8	356.0	334.2	318.4	302.7	284.5	278.5	266.4	260.3
22.5°	392.3	354.7	317.2	296.6	278.5	270.0	256.7	242.1	237.3	226.4	224.0
25°	326.9	291.8	267.6	253.0	238.5	228.8	217.9	207.0	203.4	194.9	193.7
27.5°	273.6	249.4	228.8	216.7	203.4	197.4	188.9	180.4	182.8	171.9	169.5
30°	230.0	213.1	196.1	187.7	176.8	173.1	167.1	159.8	156.2	152.6	152.6
32.5°	201.0	184.0	170.7	164.7	156.2	155.0	150.1	142.9	144.1	138.0	136.8
35°	174.3	159.8	151.3	145.3	140.4	138.0	134.4	128.3	127.1	123.5	122.3
37.5°	151.3	140.4	133.2	129.5	124.7	122.3	118.7	111.4	112.6	109.0	107.8
40°	132.0	123.5	116.2	113.8	107.8	106.5	102.9	96.9	96.9	93.2	93.2
42.5°	111.4	105.3	98.1	94.4	90.8	89.6	87.2	82.3	81.1	78.7	77.5
45°	92.0	86.0	82.3	78.7	76.3	73.9	71.4	67.8	66.6	64.2	63.0
47.5°	76.3	71.4	66.6	64.2	60.5	59.3	56.9	54.5	53.3	50.9	49.6
50°	61.7	56.9	53.3	50.9	48.4	48.4	46.0	42.4	41.2	40.0	38.7
52.5°	48.4	46.0	43.6	41.2	38.7	37.5	35.1	31.5	30.3	29.1	27.8
55°	38.7	36.3	32.7	31.5	27.8	26.6	24.2	23.0	20.6	19.4	19.4
57.5°	30.3	26.6	24.2	21.8	19.4	19.4	17.0	15.7	14.5	13.3	13.3
60°	21.8	18.2	17.0	14.5	13.3	12.1	12.1	10.9	10.9	9.7	9.7
62.5°	14.5	12.1	10.9	10.9	9.7	9.7	8.5	8.5	8.5	8.5	8.5
65°	9.7	8.5	8.5	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
67.5°	7.3	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	4.8	4.8
70°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6	3.6
72.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.4	2.4
75°	3.6	3.6	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	1.2	1.2	1.2	1.2
80°	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
82.5°	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
85°	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
87.5°	2.4	1.2	1.2	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: P130033

CATALOG NUMBER: HL618TAT - HLM6940 - HL6FL - 455SN

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1541.3	1541.3	1541.3	1541.3
2.5°	1271.3	1264.0	1254.3	1239.8
5°	1021.9	990.4	1000.1	990.4
7.5°	807.6	779.7	777.3	766.4
10°	601.7	588.4	581.2	582.4
12.5°	471.0	456.5	450.4	481.9
15°	379.0	364.4	364.4	366.9
17.5°	306.3	300.3	297.8	295.4
20°	259.1	254.3	250.6	250.6
22.5°	221.6	217.9	214.3	216.7
25°	192.5	188.9	187.7	188.9
27.5°	170.7	167.1	163.5	165.9
30°	152.6	150.1	148.9	148.9
32.5°	138.0	135.6	134.4	134.4
35°	123.5	119.9	119.9	119.9
37.5°	107.8	105.3	105.3	106.5
40°	93.2	87.2	90.8	92.0
42.5°	77.5	75.1	75.1	76.3
45°	61.7	60.5	60.5	60.5
47.5°	49.6	48.4	47.2	48.4
50°	37.5	36.3	36.3	37.5
52.5°	26.6	25.4	25.4	25.4
55°	18.2	18.2	17.0	17.0
57.5°	13.3	12.1	12.1	12.1
60°	9.7	9.7	9.7	10.9
62.5°	8.5	8.5	8.5	8.5
65°	7.3	7.3	6.1	6.1
67.5°	4.8	4.8	4.8	4.8
70°	3.6	3.6	3.6	3.6
72.5°	2.4	2.4	2.4	2.4
75°	2.4	2.4	2.4	2.4
77.5°	1.2	1.2	1.2	1.2
80°	1.2	1.2	1.2	1.2
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

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