

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: P130202

Luminaire Tested: **HL612ICAT - HLM6930 - HL6NFL - 455SC**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130202
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33468)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6930 - HL6NFL - 455SC
Description: HALO ALLSLOPE 6" 21W, Specular Clear Reflector, White Metal Trim
Ring using 25 Degree Optic at a 6-12 Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1552.4 lumens
Efficiency: N/A
Efficacy: 81.3 lumens/watt
Spacing Criteria (0/90/45): 1.96 / 0.82 / 1.16
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

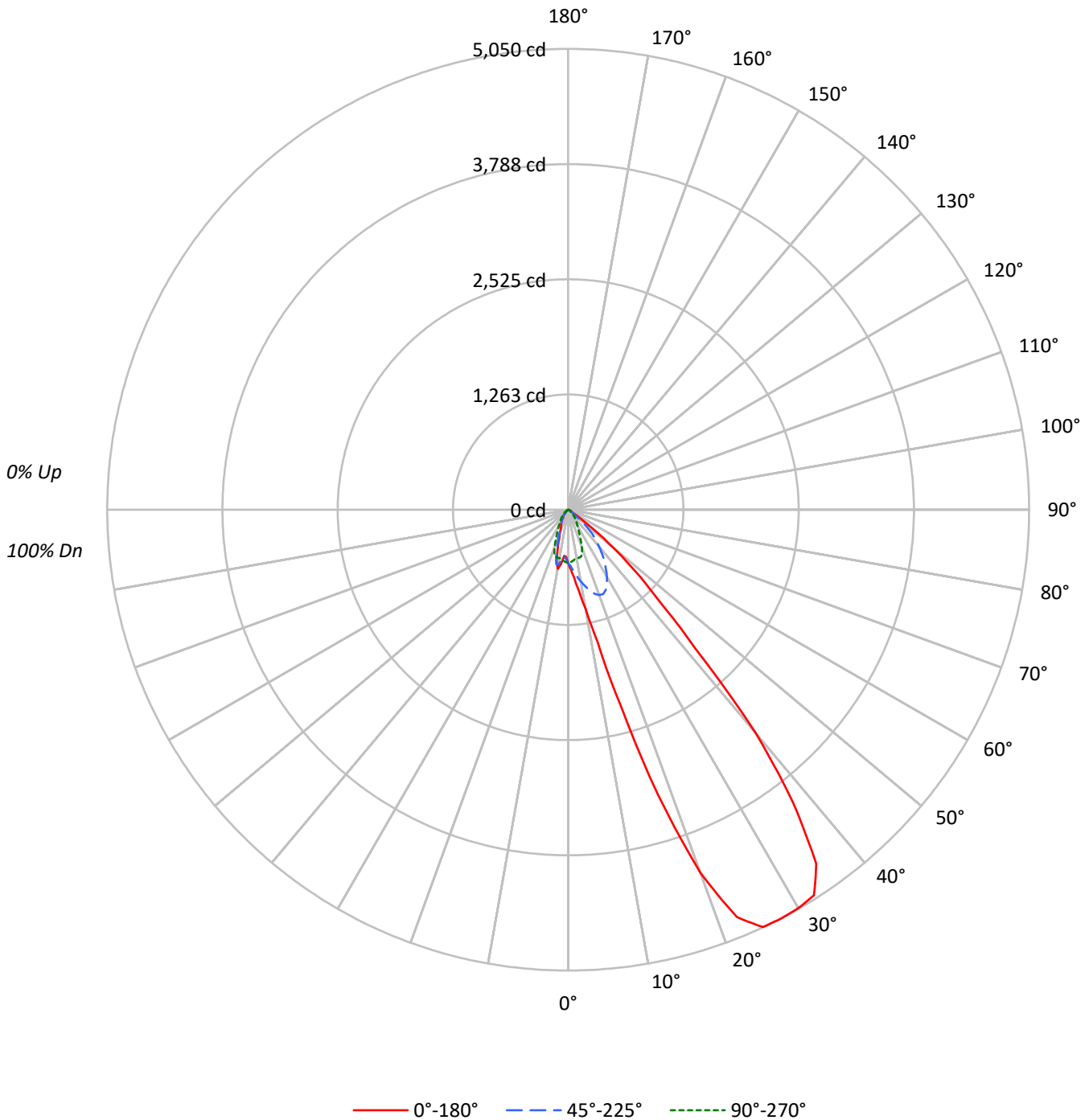
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

Luminous Intensity Polar Plot





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CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92				92
2	106	100	96	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83				83
3	99	92	86	81	97	90	85	81	88	83	79	85	81	78	83	80	77	75				75
4	93	84	78	73	91	83	77	72	81	75	71	79	74	70	77	73	70	68				68
5	87	77	70	65	85	76	70	65	74	69	64	73	68	64	71	67	63	61				61
6	81	71	64	59	80	70	64	59	69	63	58	67	62	58	66	61	57	56				56
7	76	65	58	53	75	65	58	53	63	57	53	62	57	53	61	56	52	51				51
8	72	60	53	49	70	60	53	49	59	53	48	58	52	48	57	52	48	46				46
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	53	48	44	42				42
10	63	52	45	41	62	52	45	41	51	45	41	50	44	40	49	44	40	39				39

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	34865	34865	34865
5°	43859	33067	29653
10°	64221	31207	38097
15°	127925	30869	25175
20°	245209	25363	14416
25°	295721	16953	10484
30°	301278	12226	8181
35°	291068	9222	5689
40°	203536	6989	4161
45°	92391	4929	2748
50°	44545	3124	1756
55°	9445	2052	407
60°	3180	1398	0
65°	1889	774	0
70°	1019	161	0
75°	266	185	0
80°	0	219	0
85°	0	271	0



TEST NUMBER: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	61.0	3.9
10°-20°	237.7	15.3
20°-30°	474.5	30.6
30°-40°	484.2	31.2
40°-50°	232.9	15.0
50°-60°	49.6	3.2
60°-70°	9.6	0.6
70°-80°	1.9	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°	773.3	49.8
0°-40°	1257.5	81.0
0°-60°	1539.9	99.2
0°-90°	1552.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1552.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	584	584	584	584	584	
5°	749	677	565	510	506	83
15°	2218	917	535	505	436	731
25°	5046	973	289	184	179	2273
35°	4738	692	150	107	93	2790
45°	1385	367	74	49	41	1204
55°	125	47	27	18	5	184
65°	21	16	9	1	0	22
75°	2	2	2	1	0	4
85°	0	2	2	1	0	0
90°	0	0	0	0	0	



TEST NUMBER: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1
2.5°	653.4	645.6	641.7	644.0	648.7	642.5	640.1	637.8	637.8	619.1	623.0
5°	749.0	736.6	727.3	731.1	736.6	721.0	715.6	707.0	700.8	676.7	674.4
7.5°	896.0	871.9	862.6	858.7	852.5	824.5	809.7	793.4	770.0	737.4	724.1
10°	1109.2	1085.0	1065.6	1046.2	1029.0	969.1	931.8	894.5	850.1	798.0	770.0
12.5°	1478.6	1417.2	1358.1	1327.7	1252.3	1156.6	1092.0	1016.6	941.9	857.1	810.5
15°	2217.5	2111.7	1943.0	1819.3	1625.6	1455.3	1274.0	1160.5	1036.8	917.0	846.3
17.5°	3277.7	3147.0	2944.0	2637.5	2297.6	1834.8	1534.6	1308.3	1130.9	966.0	870.4
20°	4233.6	4097.5	3809.7	3486.9	3031.9	2370.8	1820.1	1467.7	1201.7	995.6	875.8
22.5°	4832.5	4765.6	4512.8	4136.4	3603.6	2842.9	2072.1	1543.2	1232.0	1000.3	861.0
25°	5046.4	5013.0	4830.2	4498.1	3941.9	3102.7	2190.3	1571.9	1214.9	973.0	825.3
27.5°	5050.3	5044.1	4915.0	4607.7	4025.9	3123.7	2150.6	1516.7	1161.3	917.0	773.1
30°	5041.7	5036.3	4890.9	4537.0	3885.9	2931.6	1971.7	1394.6	1079.6	846.3	717.9
32.5°	5010.6	4974.1	4735.3	4256.9	3531.2	2529.4	1707.3	1242.2	972.3	770.8	651.8
35°	4737.6	4684.7	4302.1	3710.9	2960.3	2025.4	1430.4	1076.5	853.3	691.5	580.2
37.5°	4046.2	3967.6	3576.4	2985.2	2230.8	1566.5	1181.5	921.7	744.4	607.5	506.4
40°	3194.5	3061.5	2699.0	2127.3	1635.0	1225.8	969.9	783.3	644.0	522.7	432.5
42.5°	2061.2	2115.6	1766.4	1484.8	1225.0	980.0	798.0	658.0	543.7	443.4	360.9
45°	1385.3	1395.4	1239.8	1087.4	941.1	782.5	654.1	548.4	453.5	367.1	296.3
47.5°	989.4	997.9	920.1	820.6	710.1	612.9	519.6	427.0	353.1	278.5	220.9
50°	631.6	644.8	598.1	530.5	472.9	411.5	344.6	275.3	224.0	171.1	131.4
52.5°	324.3	340.7	303.3	289.3	245.0	210.8	175.8	137.7	112.8	87.1	70.8
55°	125.2	133.8	121.3	108.1	96.4	85.6	71.6	60.7	54.4	47.4	43.6
57.5°	56.8	56.0	52.9	50.6	48.2	44.3	42.0	38.9	37.3	35.0	35.0
60°	38.9	38.9	37.3	37.3	35.8	34.2	32.7	31.1	30.3	28.0	28.0
62.5°	28.0	28.8	28.0	28.0	28.0	26.4	25.7	24.1	24.1	22.6	21.8
65°	21.0	21.8	21.0	21.0	21.0	20.2	19.4	18.7	17.9	16.3	15.6
67.5°	14.8	15.6	14.8	14.8	14.8	14.0	14.0	13.2	12.4	11.7	10.9
70°	10.1	10.1	9.3	10.1	10.1	9.3	9.3	8.6	8.6	7.8	7.0
72.5°	6.2	6.2	5.4	5.4	5.4	5.4	5.4	4.7	4.7	3.9	3.1
75°	2.3	2.3	2.3	2.3	2.3	2.3	2.3	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	1.6
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: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1
2.5°	620.7	618.4	610.6	602.0	598.1	595.0	577.9	575.6	577.9	565.5	569.4
5°	665.8	651.8	637.8	619.9	607.5	597.4	573.2	564.7	560.8	542.1	542.1
7.5°	704.7	682.9	657.2	630.0	609.8	592.7	562.4	548.4	542.9	525.0	527.4
10°	737.4	704.7	669.7	635.5	607.5	583.4	551.5	539.0	536.7	526.6	537.5
12.5°	761.5	714.0	671.2	626.9	595.0	573.2	546.0	539.8	542.1	542.9	560.0
15°	777.0	717.1	665.8	619.1	584.9	563.9	539.0	535.1	542.9	536.7	547.6
17.5°	780.9	711.7	654.1	605.1	568.6	545.2	518.0	504.0	502.5	481.5	472.9
20°	773.9	697.7	633.1	576.4	536.7	504.0	465.1	437.9	420.8	390.5	375.7
22.5°	752.9	668.9	595.8	531.2	479.1	438.7	390.5	357.8	334.5	305.7	287.0
25°	714.0	623.0	542.9	476.0	416.9	370.2	322.0	289.3	269.1	242.7	231.0
27.5°	665.0	568.6	486.1	417.7	358.6	311.1	269.9	241.1	223.2	203.0	194.5
30°	603.6	511.8	430.9	361.7	308.0	266.0	228.7	204.6	189.8	173.5	167.2
32.5°	546.0	451.9	379.6	312.7	263.7	226.3	196.0	175.8	164.1	150.1	144.7
35°	479.9	395.1	332.9	266.8	223.2	192.9	167.2	150.1	140.8	129.9	126.0
37.5°	413.8	336.8	276.1	229.5	189.0	164.9	143.9	128.3	120.6	112.8	112.8
40°	350.8	280.0	227.9	188.2	157.1	138.4	121.3	109.7	103.4	97.2	95.7
42.5°	288.6	231.8	186.7	154.0	129.9	115.1	101.1	92.6	87.1	81.7	79.3
45°	231.8	186.7	148.6	122.1	103.4	91.0	80.9	73.9	70.8	66.1	63.8
47.5°	169.6	135.3	108.9	87.1	76.2	68.4	61.4	56.8	55.2	52.1	50.6
50°	103.4	84.8	70.0	59.1	53.7	50.6	46.7	44.3	43.6	41.2	39.7
52.5°	59.9	52.1	47.4	43.6	41.2	39.7	37.3	35.0	34.2	31.1	31.1
55°	41.2	38.9	37.3	35.8	33.4	31.1	28.8	27.2	27.2	24.9	24.9
57.5°	32.7	31.1	29.6	27.2	25.7	24.9	23.3	21.8	21.8	20.2	18.7
60°	26.4	24.1	23.3	21.8	20.2	19.4	17.9	17.1	16.3	14.8	14.0
62.5°	20.2	18.7	18.7	17.1	16.3	14.8	13.2	12.4	11.7	10.1	10.1
65°	14.8	14.0	13.2	12.4	11.7	10.1	9.3	8.6	7.0	6.2	5.4
67.5°	10.9	10.1	9.3	8.6	7.0	6.2	5.4	4.7	3.9	2.3	2.3
70°	6.2	5.4	5.4	4.7	3.1	3.1	2.3	1.6	1.6	1.6	1.6
72.5°	3.1	2.3	2.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
85°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
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: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1	584.1
2.5°	567.0	563.9	548.4	542.9	543.7	542.1	539.8	540.6	528.9	529.7	528.1
5°	536.7	530.5	514.1	508.7	509.5	509.5	509.5	513.4	504.0	512.6	511.0
7.5°	525.0	525.8	518.0	524.2	535.9	546.8	554.6	571.7	573.2	589.6	593.5
10°	545.2	560.0	563.1	575.6	597.4	612.9	620.7	640.1	636.2	654.9	654.1
12.5°	574.0	582.6	581.8	591.9	598.9	609.0	607.5	611.4	597.4	598.9	591.1
15°	550.7	546.0	529.7	525.8	518.0	504.8	490.0	490.8	470.6	465.1	458.1
17.5°	461.2	452.7	423.1	401.3	390.5	377.2	361.7	374.1	342.2	339.1	333.7
20°	355.5	338.3	315.0	299.5	290.1	283.9	276.1	274.6	262.1	261.3	259.0
22.5°	270.7	259.0	242.7	233.3	229.5	222.5	217.8	217.0	209.2	209.2	206.1
25°	218.6	211.6	198.3	191.3	186.7	183.6	181.2	179.7	174.2	177.3	180.5
27.5°	185.1	178.1	167.2	161.8	158.7	157.9	158.7	160.2	158.7	163.3	164.1
30°	159.5	153.2	143.9	140.8	140.8	143.9	145.5	146.2	141.6	143.1	140.0
32.5°	139.2	134.6	129.1	129.1	129.1	129.1	126.0	122.1	115.1	114.3	110.4
35°	122.1	119.8	116.7	115.1	110.4	106.6	103.4	100.3	95.7	95.7	94.1
37.5°	107.3	105.8	100.3	97.2	93.3	90.2	88.7	87.9	85.6	86.3	84.0
40°	92.6	89.4	84.0	80.9	79.3	78.6	77.8	77.0	74.7	71.6	68.4
42.5°	76.2	73.1	69.2	68.4	66.1	65.3	62.2	57.6	54.4	54.4	52.9
45°	61.4	59.9	56.8	54.4	49.8	49.0	47.4	45.9	44.3	43.6	42.8
47.5°	49.0	47.4	43.6	41.2	38.9	38.9	38.1	37.3	35.0	34.2	34.2
50°	37.3	35.8	34.2	32.7	31.9	31.1	29.6	28.8	28.0	27.2	26.4
52.5°	29.6	28.8	27.2	26.4	24.9	24.1	22.6	21.8	20.2	19.4	18.7
55°	23.3	22.6	21.0	20.2	18.7	17.9	16.3	14.8	12.4	10.9	8.6
57.5°	17.9	17.1	15.6	14.0	12.4	10.9	9.3	7.0	4.7	2.3	0.8
60°	13.2	11.7	10.1	8.6	6.2	4.7	2.3	0.8	0.0	0.0	0.0
62.5°	8.6	7.0	5.4	3.9	2.3	0.8	0.8	0.8	0.0	0.0	0.0
65°	3.9	3.1	1.6	1.6	0.8	0.8	0.8	0.8	0.0	0.0	0.0
67.5°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
70°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
72.5°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0	0.0
75°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0
77.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
80°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
82.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
85°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
87.5°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	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: P130202

CATALOG NUMBER: HL612ICAT - HLM6930 - HL6NFL - 455SC

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	584.1	584.1	584.1	584.1
2.5°	532.0	532.8	528.1	516.5
5°	516.5	519.6	518.8	506.4
7.5°	603.6	612.1	612.1	599.7
10°	668.1	672.0	670.5	658.0
12.5°	598.1	602.0	591.9	588.0
15°	458.9	459.7	449.6	436.4
17.5°	333.7	337.6	332.1	322.8
20°	258.2	259.8	255.9	248.9
22.5°	206.9	206.9	206.9	201.5
25°	179.7	182.0	182.0	178.9
27.5°	166.5	168.8	168.8	165.7
30°	140.0	139.2	138.4	136.9
32.5°	108.9	108.9	108.1	103.4
35°	94.9	94.9	94.1	92.6
37.5°	86.3	86.3	85.6	83.2
40°	68.4	67.7	66.9	65.3
42.5°	53.7	52.9	52.1	51.3
45°	42.8	42.8	42.0	41.2
47.5°	34.2	34.2	33.4	32.7
50°	26.4	26.4	25.7	24.9
52.5°	17.9	17.1	16.3	15.6
55°	7.8	6.2	5.4	5.4
57.5°	0.0	0.0	0.0	0.0
60°	0.0	0.0	0.0	0.0
62.5°	0.0	0.0	0.0	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)