

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P345456

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 3000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345456
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-8)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW8FSMMS 3000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2259.9 lumens
Efficiency: N/A
Efficacy: 79.3 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.38' x H: 0')
CIE Type: Direct

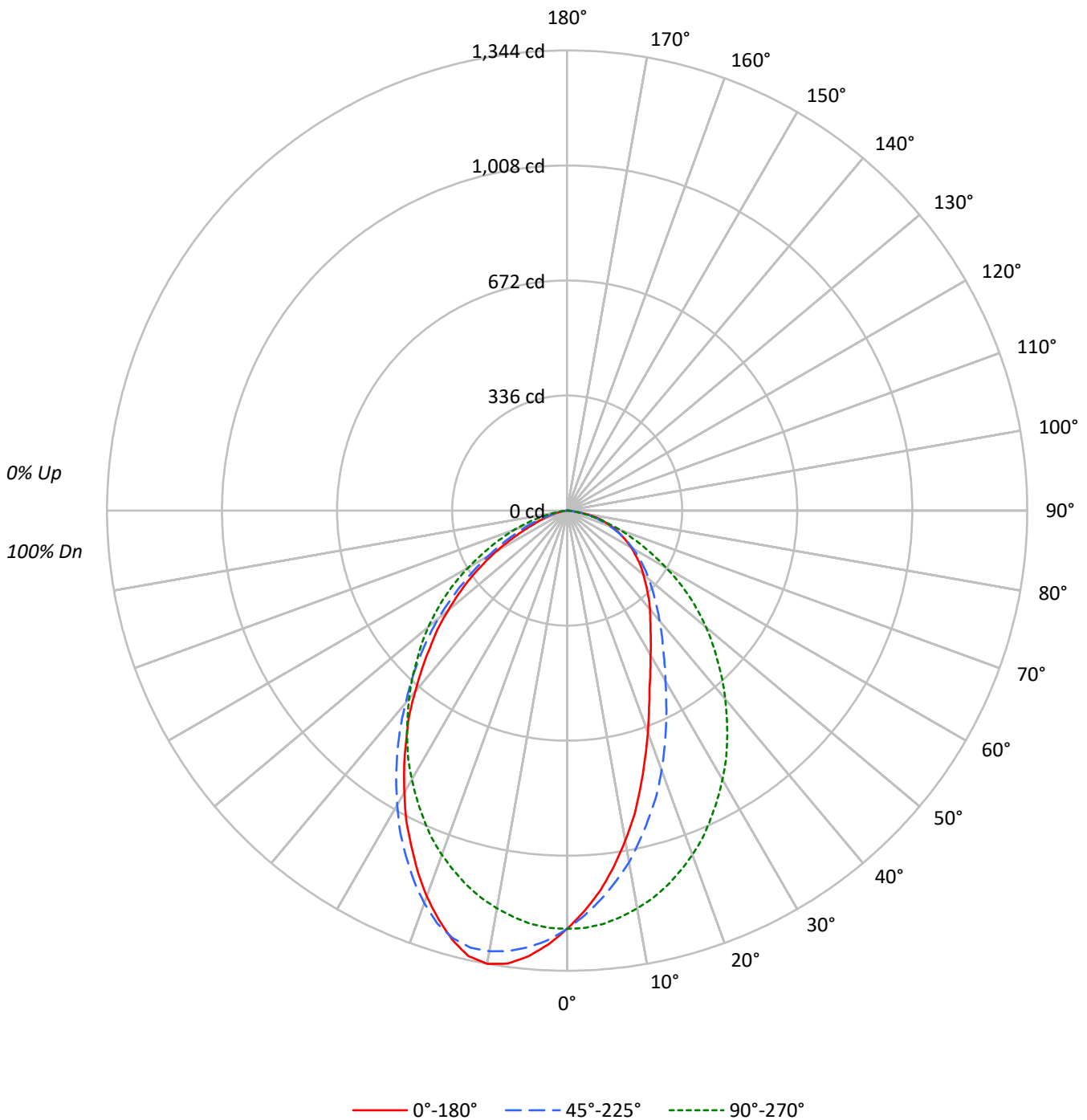
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	111	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89					87				
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77					75				
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68					66				
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59					57				
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53					51				
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47					45				
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43					41				
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39					37				
9	61	49	41	36	60	48	41	36	47	40	36	46	40	36	45	39	35					34				
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	37	32					31				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	119055	119055	119055
5°	108934	118561	127874
10°	96774	116735	133024
15°	83855	114295	130903
20°	71468	110962	124352
25°	61251	106716	115921
30°	54838	102058	106964
35°	50493	96952	97535
40°	47836	91358	87873
45°	45593	85632	78065
50°	44045	80251	68759
55°	43056	73759	58671
60°	42141	65102	46858
65°	40932	55830	33484
70°	40007	46447	23907
75°	38295	35847	17020
80°	27164	20822	9990
85°	7268	10847	1789



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	114.3	5.1
10°-20°	309.4	13.7
20°-30°	416.9	18.4
30°-40°	437.8	19.4
40°-50°	394.5	17.5
50°-60°	304.7	13.5
60°-70°	187.5	8.3
70°-80°	82.6	3.7
80°-90°	12.1	0.5
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°	840.6	37.2
0°-40°	1278.4	56.6
0°-60°	1977.6	87.5
0°-90°	2259.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2259.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1222	1222	1222	1222	1222	
5°	1114	1139	1212	1280	1307	102
15°	831	926	1133	1293	1297	232
25°	570	684	992	1114	1078	264
35°	424	487	815	865	820	267
45°	331	362	621	612	566	256
55°	253	266	434	373	345	227
65°	178	178	242	179	145	176
75°	102	90	95	56	45	104
85°	6	8	10	5	2	15
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6
2.5°	1169.9	1168.3	1166.7	1169.9	1169.9	1171.5	1171.5	1174.8	1174.8	1178.0	1182.8
5°	1113.5	1110.2	1111.8	1111.8	1116.7	1116.7	1119.9	1123.1	1128.0	1134.4	1139.3
7.5°	1047.3	1047.3	1048.9	1052.1	1057.0	1057.0	1061.8	1066.7	1074.7	1082.8	1092.5
10°	977.9	981.1	982.7	986.0	994.0	997.3	998.9	1006.9	1018.2	1026.3	1042.5
12.5°	908.5	908.5	911.7	918.2	924.7	929.5	932.7	944.0	955.3	969.8	984.4
15°	831.1	832.7	837.5	844.0	855.3	858.5	864.9	877.9	894.0	911.7	926.3
17.5°	756.8	760.1	763.3	773.0	781.0	785.9	795.6	810.1	827.8	847.2	869.8
20°	689.1	684.2	690.7	697.1	705.2	716.5	722.9	739.1	758.4	784.3	806.9
22.5°	624.5	624.5	629.3	634.2	642.3	650.3	658.4	671.3	692.3	718.1	743.9
25°	569.6	571.3	576.1	580.9	589.0	593.8	601.9	614.8	635.8	655.2	684.2
27.5°	526.1	527.7	529.3	535.7	542.2	547.0	551.9	564.8	580.9	601.9	626.1
30°	487.3	487.3	489.0	495.4	498.6	505.1	508.3	519.6	534.1	551.9	574.5
32.5°	455.1	455.1	456.7	459.9	466.4	469.6	471.2	482.5	493.8	511.5	529.3
35°	424.4	424.4	426.0	429.2	434.1	435.7	440.5	447.0	458.3	471.2	487.3
37.5°	398.6	398.6	400.2	401.8	405.0	408.3	411.5	417.9	424.4	437.3	453.5
40°	376.0	374.4	376.0	377.6	382.4	382.4	384.1	390.5	397.0	406.7	419.6
42.5°	353.4	353.4	353.4	355.0	358.2	359.9	361.5	364.7	371.2	379.2	388.9
45°	330.8	330.8	332.4	334.0	335.6	337.3	340.5	343.7	346.9	351.8	361.5
47.5°	309.8	311.4	311.4	313.1	314.7	316.3	317.9	321.1	324.4	329.2	335.6
50°	290.5	292.1	292.1	293.7	295.3	295.3	296.9	300.1	303.4	306.6	311.4
52.5°	272.7	272.7	271.1	272.7	274.3	274.3	275.9	277.6	280.8	285.6	288.9
55°	253.4	253.4	253.4	255.0	255.0	255.0	256.6	258.2	259.8	261.4	266.3
57.5°	234.0	234.0	235.6	234.0	235.6	235.6	235.6	237.2	238.8	242.1	243.7
60°	216.2	216.2	216.2	216.2	216.2	216.2	217.8	217.8	217.8	219.5	221.1
62.5°	196.9	196.9	196.9	196.9	196.9	196.9	196.9	196.9	198.5	198.5	200.1
65°	177.5	177.5	179.1	177.5	177.5	177.5	177.5	177.5	177.5	177.5	177.5
67.5°	159.8	158.1	159.8	158.1	158.1	158.1	158.1	156.5	156.5	156.5	154.9
70°	140.4	138.8	138.8	138.8	138.8	137.2	138.8	137.2	135.6	133.9	132.3
72.5°	119.4	119.4	119.4	119.4	119.4	117.8	116.2	116.2	114.6	113.0	111.3
75°	101.7	101.7	100.0	98.4	96.8	96.8	96.8	95.2	93.6	92.0	90.4
77.5°	79.1	77.5	77.5	75.8	74.2	72.6	74.2	72.6	71.0	69.4	67.8
80°	48.4	48.4	48.4	48.4	48.4	48.4	46.8	48.4	46.8	45.2	45.2
82.5°	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6
85°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	8.1	8.1
87.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.8	4.8	4.8
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6
2.5°	1186.1	1189.3	1194.1	1197.4	1199.0	1200.6	1205.4	1210.3	1215.1	1220.0	1223.2
5°	1147.3	1155.4	1160.3	1168.3	1173.2	1178.0	1186.1	1194.1	1202.2	1211.9	1220.0
7.5°	1100.5	1113.5	1123.1	1134.4	1140.9	1147.3	1158.6	1171.5	1184.5	1197.4	1210.3
10°	1055.4	1066.7	1084.4	1100.5	1105.4	1115.1	1132.8	1147.3	1165.1	1179.6	1197.4
12.5°	1003.7	1018.2	1037.6	1057.0	1068.3	1078.0	1098.9	1118.3	1139.3	1158.6	1179.6
15°	947.2	969.8	990.8	1013.4	1027.9	1037.6	1061.8	1086.0	1108.6	1132.8	1157.0
17.5°	890.8	916.6	942.4	969.8	981.1	995.7	1023.1	1048.9	1076.3	1102.2	1129.6
20°	834.3	861.7	889.1	919.8	935.9	950.5	979.5	1010.2	1040.8	1069.9	1098.9
22.5°	774.6	803.6	835.9	869.8	887.5	900.4	934.3	968.2	1000.5	1034.4	1065.0
25°	714.9	748.8	782.6	818.1	835.9	855.3	889.1	924.7	958.5	992.4	1027.9
27.5°	656.8	692.3	727.8	768.1	785.9	805.2	842.4	877.9	915.0	950.5	986.0
30°	603.5	637.4	676.1	716.5	735.8	755.2	793.9	832.7	869.8	906.9	940.8
32.5°	555.1	584.2	624.5	664.8	685.8	705.2	745.5	785.9	824.6	863.3	897.2
35°	509.9	537.4	571.3	614.8	634.2	655.2	697.1	735.8	776.2	814.9	850.4
37.5°	469.6	495.4	526.1	563.2	587.4	606.8	648.7	689.1	727.8	766.5	802.0
40°	434.1	456.7	482.5	516.4	539.0	560.0	601.9	642.3	681.0	718.1	753.6
42.5°	401.8	419.6	443.8	474.4	492.2	513.2	556.7	595.5	634.2	671.3	703.6
45°	371.2	385.7	406.7	434.1	448.6	471.2	511.5	550.3	587.4	621.3	656.8
47.5°	343.7	356.6	372.8	395.4	409.9	427.6	468.0	506.7	542.2	576.1	606.8
50°	319.5	329.2	343.7	363.1	374.4	387.3	427.6	464.7	497.0	529.3	558.3
52.5°	295.3	301.8	313.1	329.2	340.5	351.8	385.7	421.2	453.5	480.9	511.5
55°	269.5	277.6	287.2	298.5	306.6	316.3	343.7	377.6	405.0	434.1	458.3
57.5°	246.9	251.7	258.2	267.9	274.3	282.4	303.4	332.4	359.9	384.1	408.3
60°	224.3	227.5	232.4	238.8	243.7	250.1	264.6	290.5	314.7	334.0	355.0
62.5°	201.7	201.7	204.9	209.8	213.0	217.8	230.8	250.1	271.1	285.6	303.4
65°	177.5	179.1	180.7	184.0	185.6	188.8	196.9	211.4	227.5	242.1	255.0
67.5°	154.9	154.9	156.5	158.1	158.1	159.8	164.6	174.3	190.4	200.1	209.8
70°	132.3	132.3	132.3	132.3	133.9	132.3	135.6	142.0	153.3	163.0	167.8
72.5°	111.3	109.7	108.1	108.1	108.1	108.1	109.7	114.6	121.0	125.9	132.3
75°	88.8	87.1	85.5	83.9	85.5	85.5	85.5	87.1	90.4	95.2	96.8
77.5°	66.2	66.2	62.9	61.3	62.9	61.3	59.7	59.7	61.3	62.9	62.9
80°	45.2	43.6	42.0	40.3	40.3	40.3	38.7	37.1	37.1	37.1	35.5
82.5°	22.6	22.6	21.0	21.0	21.0	21.0	21.0	19.4	19.4	17.8	17.8
85°	8.1	8.1	8.1	8.1	9.7	8.1	9.7	9.7	9.7	9.7	9.7
87.5°	4.8	4.8	6.5	6.5	6.5	6.5	6.5	8.1	8.1	8.1	6.5
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6
2.5°	1228.0	1232.9	1236.1	1239.3	1240.9	1244.2	1249.0	1252.2	1255.5	1258.7	1261.9
5°	1228.0	1237.7	1244.2	1249.0	1253.8	1260.3	1268.4	1274.8	1279.7	1286.1	1291.0
7.5°	1223.2	1236.1	1247.4	1253.8	1260.3	1270.0	1279.7	1289.3	1297.4	1305.5	1311.9
10°	1213.5	1229.6	1245.8	1252.2	1260.3	1273.2	1286.1	1297.4	1307.1	1316.8	1324.8
12.5°	1199.0	1218.3	1237.7	1245.8	1253.8	1270.0	1284.5	1297.4	1307.1	1315.2	1320.0
15°	1179.6	1202.2	1223.2	1232.9	1242.6	1258.7	1273.2	1284.5	1292.6	1297.4	1300.6
17.5°	1155.4	1179.6	1202.2	1213.5	1224.8	1240.9	1252.2	1258.7	1263.5	1263.5	1261.9
20°	1128.0	1153.8	1178.0	1189.3	1199.0	1211.9	1220.0	1221.6	1220.0	1216.7	1213.5
22.5°	1094.1	1123.1	1147.3	1157.0	1165.1	1174.8	1174.8	1173.2	1169.9	1165.1	1163.5
25°	1058.6	1086.0	1110.2	1119.9	1123.1	1129.6	1124.7	1121.5	1113.5	1108.6	1103.8
27.5°	1019.9	1048.9	1066.7	1073.1	1076.3	1073.1	1068.3	1061.8	1057.0	1048.9	1042.5
30°	977.9	1003.7	1018.2	1023.1	1021.5	1016.6	1011.8	1000.5	992.4	984.4	976.3
32.5°	929.5	955.3	966.6	968.2	963.4	955.3	947.2	939.2	929.5	919.8	915.0
35°	882.7	905.3	911.7	908.5	903.7	894.0	882.7	873.0	864.9	853.6	845.6
37.5°	832.7	852.0	852.0	847.2	844.0	832.7	821.4	811.7	800.4	790.7	779.4
40°	782.6	797.2	792.3	787.5	782.6	769.7	760.1	745.5	734.2	722.9	714.9
42.5°	732.6	740.7	734.2	727.8	721.3	708.4	698.7	682.6	672.9	661.6	655.2
45°	682.6	684.2	674.5	669.7	663.2	647.1	634.2	622.9	611.6	598.7	590.6
47.5°	631.0	627.7	616.4	610.0	603.5	589.0	576.1	563.2	550.3	540.6	530.9
50°	579.3	571.3	560.0	553.5	545.4	532.5	518.0	503.5	492.2	482.5	474.4
52.5°	522.8	516.4	503.5	493.8	487.3	469.6	456.7	443.8	430.9	421.2	414.7
55°	466.4	456.7	442.2	435.7	426.0	411.5	398.6	382.4	372.8	364.7	356.6
57.5°	409.9	398.6	385.7	377.6	367.9	353.4	338.9	329.2	319.5	309.8	305.0
60°	355.0	343.7	327.6	324.4	314.7	300.1	287.2	275.9	266.3	259.8	255.0
62.5°	303.4	292.1	275.9	269.5	263.0	248.5	237.2	227.5	221.1	214.6	209.8
65°	251.7	242.1	229.1	221.1	214.6	203.3	193.6	184.0	179.1	171.1	166.2
67.5°	204.9	193.6	184.0	177.5	172.7	161.4	153.3	146.8	140.4	135.6	129.1
70°	161.4	151.7	142.0	138.8	133.9	125.9	119.4	113.0	108.1	103.3	96.8
72.5°	124.3	117.8	108.1	104.9	101.7	95.2	90.4	85.5	79.1	75.8	72.6
75°	92.0	85.5	79.1	75.8	74.2	67.8	64.5	59.7	56.5	54.9	51.6
77.5°	59.7	54.9	51.6	50.0	48.4	45.2	42.0	40.3	37.1	35.5	35.5
80°	33.9	32.3	30.7	29.0	27.4	25.8	25.8	24.2	22.6	21.0	19.4
82.5°	16.1	16.1	14.5	14.5	14.5	12.9	12.9	11.3	11.3	9.7	9.7
85°	8.1	8.1	8.1	8.1	8.1	6.5	6.5	6.5	4.8	4.8	3.2
87.5°	6.5	6.5	6.5	6.5	6.5	4.8	4.8	4.8	3.2	3.2	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: P345456

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 3000Lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6	1221.6
2.5°	1261.9	1263.5	1265.1	1266.8	1266.8	1268.4	1270.0	1268.4
5°	1294.2	1299.0	1300.6	1302.3	1303.9	1305.5	1307.1	1307.1
7.5°	1318.4	1324.8	1326.5	1326.5	1331.3	1332.9	1334.5	1334.5
10°	1331.3	1334.5	1337.8	1337.8	1341.0	1341.0	1344.2	1344.2
12.5°	1324.8	1328.1	1329.7	1331.3	1331.3	1332.9	1332.9	1332.9
15°	1302.3	1300.6	1300.6	1299.0	1299.0	1297.4	1297.4	1297.4
17.5°	1260.3	1258.7	1257.1	1257.1	1253.8	1253.8	1250.6	1250.6
20°	1210.3	1207.0	1205.4	1203.8	1203.8	1202.2	1199.0	1199.0
22.5°	1157.0	1153.8	1150.6	1147.3	1144.1	1142.5	1140.9	1140.9
25°	1097.3	1092.5	1090.9	1089.2	1084.4	1082.8	1079.6	1078.0
27.5°	1036.0	1027.9	1026.3	1024.7	1021.5	1019.9	1018.2	1018.2
30°	971.4	966.6	963.4	961.8	956.9	955.3	950.5	950.5
32.5°	906.9	898.8	895.6	894.0	890.8	887.5	885.9	885.9
35°	839.1	834.3	832.7	827.8	823.0	823.0	819.8	819.8
37.5°	774.6	769.7	764.9	763.3	760.1	755.2	753.6	758.4
40°	710.0	703.6	700.3	698.7	695.5	690.7	690.7	690.7
42.5°	647.1	642.3	640.6	637.4	634.2	632.6	629.3	627.7
45°	582.5	579.3	577.7	574.5	572.9	569.6	566.4	566.4
47.5°	526.1	519.6	519.6	516.4	513.2	511.5	511.5	513.2
50°	469.6	464.7	461.5	459.9	456.7	456.7	455.1	453.5
52.5°	408.3	405.0	403.4	403.4	400.2	400.2	398.6	398.6
55°	351.8	351.8	350.2	348.6	345.3	345.3	345.3	345.3
57.5°	301.8	298.5	296.9	295.3	293.7	292.1	292.1	290.5
60°	250.1	248.5	245.3	246.9	242.1	242.1	242.1	240.4
62.5°	203.3	200.1	198.5	196.9	193.6	193.6	190.4	188.8
65°	163.0	158.1	154.9	154.9	151.7	148.5	146.8	145.2
67.5°	122.6	119.4	117.8	116.2	113.0	109.7	109.7	108.1
70°	93.6	90.4	88.8	87.1	85.5	83.9	83.9	83.9
72.5°	69.4	67.8	66.2	66.2	64.5	62.9	62.9	64.5
75°	50.0	48.4	48.4	48.4	46.8	46.8	46.8	45.2
77.5°	33.9	32.3	32.3	30.7	30.7	30.7	30.7	30.7
80°	19.4	17.8	17.8	17.8	17.8	17.8	17.8	17.8
82.5°	8.1	8.1	8.1	8.1	6.5	6.5	6.5	6.5
85°	3.2	3.2	3.2	3.2	3.2	1.6	1.6	1.6
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	0.0	1.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)