

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: P345492

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 3000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345492
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-9)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW8FSBZ 3000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2237.2 lumens
Efficiency: N/A
Efficacy: 78.5 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.4' x H: 0')
CIE Type: Direct

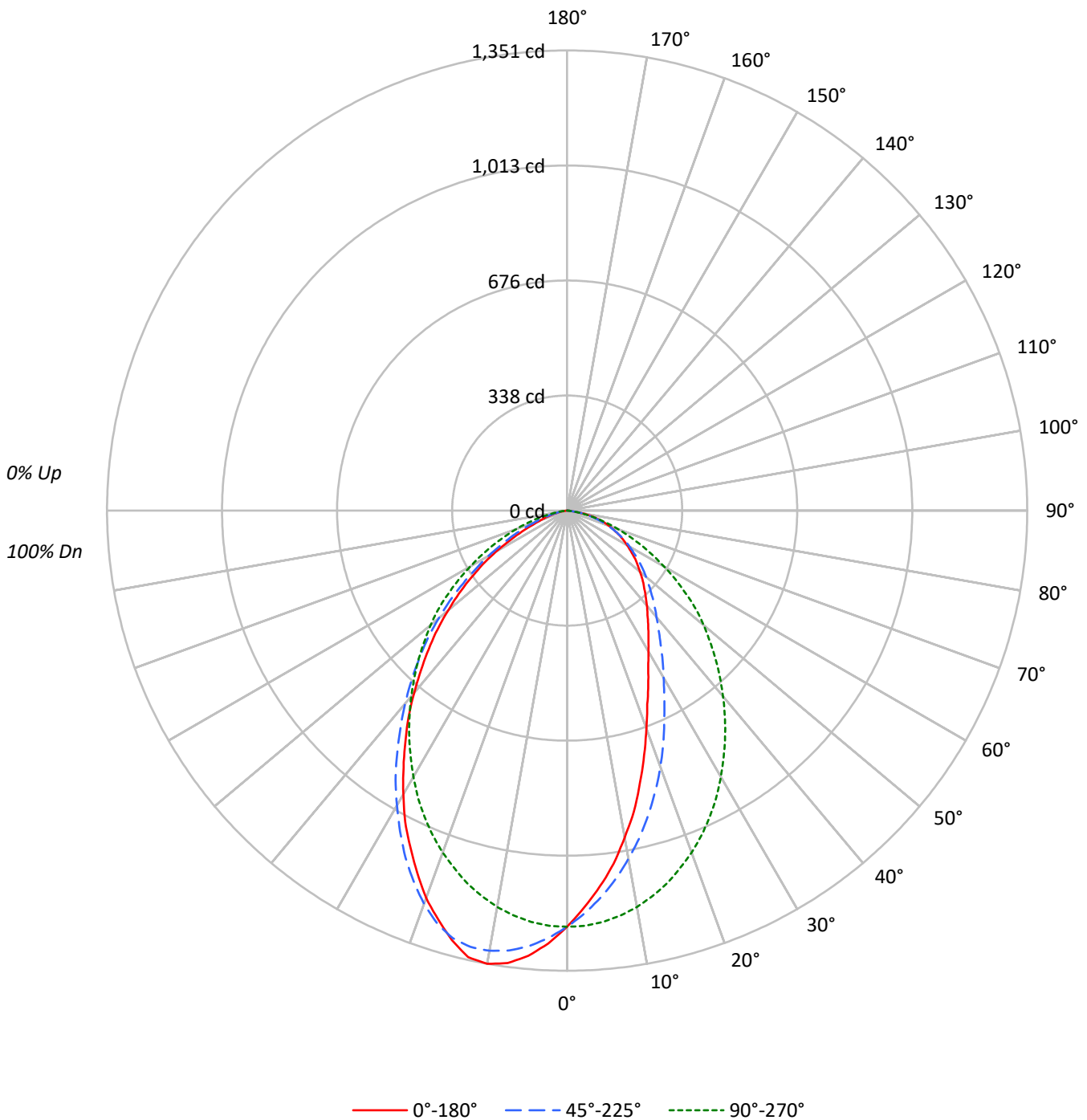
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	48	43	54	48	43	53	47	43	41
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36	34
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	42	37	33	31

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	106879	106879	106879
5°	97225	106435	115225
10°	86447	104948	120003
15°	74844	102608	118256
20°	63259	99469	112686
25°	54365	95653	105159
30°	48258	91133	97163
35°	44293	86353	88425
40°	41654	81276	79803
45°	39535	76274	71078
50°	38007	71169	61943
55°	36920	64980	52429
60°	35583	57327	42073
65°	34750	49445	30404
70°	33426	40459	21048
75°	31092	30551	14735
80°	21156	16270	7304
85°	1606	6523	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	114.4	5.1
10°-20°	309.6	13.8
20°-30°	416.7	18.6
30°-40°	436.5	19.5
40°-50°	391.5	17.5
50°-60°	299.7	13.4
60°-70°	182.5	8.2
70°-80°	77.5	3.5
80°-90°	8.7	0.4
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°	840.7	37.6
0°-40°	1277.3	57.1
0°-60°	1968.5	88.0
0°-90°	2237.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2237.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1222	1222	1222	1222	1222	
5°	1107	1140	1212	1283	1312	102
15°	826	923	1133	1299	1306	230
25°	563	675	991	1124	1090	260
35°	415	478	809	870	828	260
45°	320	352	617	613	575	247
55°	242	257	426	373	344	216
65°	168	170	239	178	147	166
75°	92	82	90	55	44	95
85°	2	3	6	2	0	11
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°	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9
2.5°	1165.4	1167.0	1170.3	1168.7	1171.9	1171.9	1171.9	1175.1	1178.3	1180.0	1183.2
5°	1107.3	1108.9	1110.5	1113.8	1115.4	1113.8	1118.6	1123.5	1128.3	1134.8	1139.6
7.5°	1046.0	1046.0	1044.4	1049.2	1055.7	1057.3	1060.5	1065.4	1071.8	1081.5	1091.2
10°	973.3	975.0	978.2	979.8	989.5	991.1	995.9	1002.4	1013.7	1025.0	1037.9
12.5°	905.5	903.9	905.5	910.4	916.8	924.9	929.8	937.8	952.4	966.9	983.0
15°	826.5	828.1	832.9	837.8	847.4	852.3	860.4	874.9	889.4	903.9	923.3
17.5°	752.2	750.6	757.0	765.1	773.2	781.3	787.7	800.6	820.0	841.0	862.0
20°	679.6	678.0	682.8	689.3	702.2	707.0	715.1	734.4	752.2	774.8	800.6
22.5°	615.0	615.0	619.8	627.9	636.0	640.8	648.9	665.0	686.0	711.8	737.7
25°	563.3	563.3	566.6	571.4	581.1	585.9	594.0	605.3	624.7	648.9	674.7
27.5°	514.9	518.1	519.8	524.6	532.7	537.5	542.4	555.3	571.4	592.4	616.6
30°	477.8	479.4	481.0	484.3	490.7	493.9	500.4	511.7	526.2	544.0	566.6
32.5°	443.9	445.5	445.5	450.4	455.2	460.0	463.3	473.0	482.6	500.4	521.4
35°	414.8	414.8	418.1	419.7	422.9	426.1	429.4	437.4	448.7	461.7	477.8
37.5°	387.4	387.4	389.0	392.2	395.5	398.7	400.3	406.8	416.5	427.8	440.7
40°	364.8	364.8	364.8	368.0	371.3	372.9	374.5	380.9	389.0	397.1	408.4
42.5°	340.6	342.2	343.8	345.4	347.0	350.3	351.9	355.1	361.6	368.0	379.3
45°	319.6	321.2	321.2	322.8	326.1	326.1	327.7	332.5	337.4	343.8	351.9
47.5°	300.2	300.2	300.2	301.8	303.5	305.1	306.7	309.9	314.8	318.0	326.1
50°	279.3	279.3	280.9	282.5	284.1	284.1	285.7	287.3	292.2	295.4	301.8
52.5°	259.9	259.9	261.5	261.5	263.1	263.1	264.7	268.0	269.6	274.4	279.3
55°	242.1	240.5	242.1	242.1	242.1	243.7	243.7	247.0	250.2	251.8	256.7
57.5°	221.1	222.8	222.8	224.4	224.4	224.4	226.0	226.0	229.2	230.8	232.4
60°	203.4	205.0	205.0	205.0	205.0	205.0	206.6	206.6	208.2	209.8	211.5
62.5°	185.6	185.6	185.6	185.6	185.6	187.2	187.2	187.2	187.2	188.9	190.5
65°	167.9	167.9	167.9	167.9	167.9	167.9	167.9	167.9	167.9	167.9	169.5
67.5°	148.5	148.5	148.5	150.1	148.5	148.5	148.5	148.5	148.5	148.5	146.9
70°	130.7	130.7	130.7	130.7	130.7	129.1	129.1	127.5	127.5	125.9	125.9
72.5°	111.4	111.4	111.4	109.8	109.8	109.8	108.1	106.5	104.9	104.9	104.9
75°	92.0	92.0	90.4	90.4	88.8	88.8	87.2	85.6	83.9	82.3	82.3
77.5°	69.4	69.4	69.4	69.4	67.8	66.2	66.2	64.6	63.0	63.0	61.3
80°	42.0	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	38.7	38.7
82.5°	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1
85°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	3.2
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	3.2
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9
2.5°	1186.4	1189.6	1194.5	1197.7	1199.3	1200.9	1205.8	1210.6	1215.5	1220.3	1223.5
5°	1147.7	1154.1	1160.6	1168.7	1171.9	1176.7	1186.4	1194.5	1202.6	1212.2	1220.3
7.5°	1100.9	1112.2	1123.5	1136.4	1141.2	1146.1	1159.0	1173.5	1184.8	1199.3	1212.2
10°	1052.4	1065.4	1079.9	1097.6	1105.7	1113.8	1129.9	1147.7	1163.8	1181.6	1197.7
12.5°	997.6	1018.5	1037.9	1057.3	1065.4	1075.0	1096.0	1117.0	1138.0	1159.0	1178.3
15°	942.7	963.7	987.9	1010.5	1021.8	1034.7	1058.9	1084.7	1108.9	1133.1	1155.7
17.5°	887.8	908.8	934.6	963.7	978.2	991.1	1016.9	1046.0	1075.0	1100.9	1129.9
20°	826.5	853.9	884.6	915.2	929.8	945.9	976.6	1007.2	1039.5	1068.6	1099.2
22.5°	766.7	795.8	832.9	863.6	879.7	895.9	931.4	966.9	999.2	1031.5	1062.1
25°	707.0	740.9	776.4	813.5	831.3	849.1	886.2	920.1	957.2	991.1	1026.6
27.5°	648.9	684.4	721.5	760.3	779.6	799.0	836.1	874.9	912.0	949.1	984.6
30°	594.0	627.9	668.3	708.6	728.0	749.0	787.7	828.1	865.2	902.3	941.1
32.5°	545.6	574.6	615.0	655.4	676.3	697.3	739.3	779.6	816.8	855.5	895.9
35°	500.4	527.8	563.3	605.3	626.3	647.3	689.3	731.2	771.6	808.7	847.4
37.5°	461.7	485.9	516.5	553.7	577.9	598.9	640.8	682.8	721.5	760.3	797.4
40°	424.5	445.5	474.6	510.1	529.4	550.4	592.4	636.0	674.7	711.8	749.0
42.5°	392.2	410.0	434.2	464.9	485.9	503.6	547.2	589.2	626.3	663.4	700.5
45°	363.2	377.7	397.1	422.9	440.7	463.3	503.6	542.4	579.5	616.6	652.1
47.5°	334.1	347.0	363.2	387.4	401.9	419.7	460.0	497.2	534.3	568.2	602.1
50°	309.9	319.6	332.5	351.9	366.4	379.3	416.5	455.2	489.1	523.0	553.7
52.5°	285.7	292.2	303.5	321.2	330.9	343.8	376.1	411.6	445.5	477.8	505.2
55°	261.5	268.0	276.0	288.9	298.6	308.3	335.7	369.6	400.3	426.1	453.6
57.5°	237.3	242.1	248.6	259.9	266.3	274.4	297.0	324.4	351.9	377.7	398.7
60°	216.3	219.5	224.4	230.8	235.7	240.5	256.7	282.5	308.3	327.7	347.0
62.5°	192.1	193.7	196.9	203.4	206.6	209.8	221.1	243.7	264.7	282.5	298.6
65°	169.5	171.1	172.7	175.9	179.2	180.8	190.5	206.6	224.4	238.9	250.2
67.5°	146.9	148.5	148.5	151.7	151.7	155.0	159.8	169.5	185.6	196.9	206.6
70°	124.3	125.9	125.9	127.5	125.9	127.5	132.4	138.8	148.5	158.2	164.6
72.5°	103.3	101.7	101.7	101.7	101.7	103.3	104.9	108.1	116.2	124.3	125.9
75°	80.7	80.7	79.1	79.1	79.1	79.1	79.1	80.7	85.6	90.4	92.0
77.5°	59.7	58.1	58.1	56.5	56.5	56.5	54.9	54.9	56.5	59.7	59.7
80°	38.7	37.1	35.5	37.1	33.9	35.5	33.9	32.3	32.3	32.3	30.7
82.5°	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	14.5	14.5	14.5
85°	3.2	3.2	4.8	4.8	4.8	4.8	4.8	4.8	6.5	6.5	4.8
87.5°	3.2	3.2	3.2	4.8	4.8	4.8	4.8	4.8	6.5	6.5	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°	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9
2.5°	1228.4	1233.2	1238.1	1239.7	1241.3	1246.1	1249.4	1254.2	1255.8	1259.1	1262.3
5°	1228.4	1238.1	1246.1	1251.0	1254.2	1262.3	1270.4	1275.2	1283.3	1288.1	1292.9
7.5°	1225.2	1238.1	1249.4	1255.8	1262.3	1272.0	1283.3	1292.9	1302.6	1309.1	1317.2
10°	1215.5	1231.6	1246.1	1254.2	1262.3	1276.8	1289.7	1301.0	1312.3	1322.0	1330.1
12.5°	1200.9	1220.3	1238.1	1247.8	1255.8	1273.6	1288.1	1301.0	1312.3	1320.4	1326.8
15°	1180.0	1204.2	1225.2	1234.8	1244.5	1263.9	1278.4	1289.7	1299.4	1304.2	1309.1
17.5°	1155.7	1181.6	1205.8	1217.1	1226.8	1244.5	1257.4	1265.5	1270.4	1273.6	1272.0
20°	1128.3	1155.7	1180.0	1191.3	1202.6	1217.1	1226.8	1230.0	1228.4	1226.8	1223.5
22.5°	1094.4	1123.5	1149.3	1159.0	1168.7	1180.0	1183.2	1181.6	1178.3	1175.1	1170.3
25°	1058.9	1087.9	1112.2	1120.2	1128.3	1133.1	1131.5	1128.3	1123.5	1118.6	1110.5
27.5°	1018.5	1049.2	1068.6	1078.3	1079.9	1079.9	1075.0	1070.2	1062.1	1055.7	1047.6
30°	976.6	1002.4	1021.8	1025.0	1026.6	1023.4	1018.5	1010.5	999.2	994.3	986.3
32.5°	928.1	955.6	970.1	970.1	966.9	962.0	952.4	944.3	937.8	926.5	918.5
35°	883.0	903.9	912.0	912.0	907.2	899.1	891.0	879.7	870.0	863.6	852.3
37.5°	831.3	852.3	855.5	850.7	847.4	837.8	824.8	815.2	803.9	795.8	787.7
40°	782.9	797.4	794.2	789.3	786.1	776.4	761.9	750.6	739.3	729.6	721.5
42.5°	728.0	737.7	732.8	729.6	723.1	711.8	698.9	687.6	676.3	666.7	658.6
45°	678.0	682.8	674.7	668.3	663.4	650.5	640.8	624.7	613.4	603.7	597.2
47.5°	624.7	624.7	616.6	610.2	602.1	589.2	577.9	561.7	555.3	542.4	535.9
50°	573.0	568.2	558.5	550.4	544.0	529.4	514.9	503.6	492.3	482.6	476.2
52.5°	518.1	511.7	498.8	490.7	487.5	469.7	456.8	442.3	432.6	421.3	414.8
55°	463.3	453.6	439.1	432.6	426.1	411.6	397.1	382.6	372.9	364.8	358.3
57.5°	406.8	395.5	382.6	374.5	366.4	351.9	337.4	324.4	316.4	308.3	303.5
60°	348.7	340.6	327.7	319.6	311.5	298.6	282.5	272.8	266.3	256.7	255.0
62.5°	298.6	287.3	272.8	266.3	259.9	247.0	234.1	226.0	217.9	213.1	206.6
65°	248.6	237.3	224.4	217.9	213.1	201.8	192.1	184.0	177.6	171.1	166.3
67.5°	200.2	192.1	180.8	175.9	169.5	159.8	151.7	145.3	138.8	132.4	127.5
70°	159.8	150.1	140.4	137.2	134.0	124.3	117.8	111.4	104.9	100.1	95.2
72.5°	122.7	114.6	106.5	101.7	98.5	93.6	88.8	82.3	77.5	72.6	69.4
75°	87.2	82.3	75.9	72.6	69.4	66.2	59.7	56.5	54.9	51.7	48.4
77.5°	56.5	51.7	48.4	45.2	45.2	42.0	38.7	37.1	33.9	33.9	32.3
80°	29.1	27.4	25.8	25.8	25.8	22.6	21.0	21.0	19.4	17.8	17.8
82.5°	12.9	12.9	11.3	11.3	11.3	9.7	9.7	8.1	8.1	6.5	6.5
85°	4.8	4.8	4.8	4.8	4.8	3.2	3.2	3.2	1.6	1.6	1.6
87.5°	4.8	4.8	4.8	4.8	4.8	3.2	3.2	3.2	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: P345492

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 3000lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9	1221.9
2.5°	1263.9	1267.1	1267.1	1268.7	1270.4	1272.0	1270.4	1272.0
5°	1297.8	1302.6	1304.2	1304.2	1307.5	1309.1	1312.3	1312.3
7.5°	1323.6	1328.5	1331.7	1333.3	1336.5	1339.8	1339.8	1339.8
10°	1336.5	1341.4	1343.0	1346.2	1347.8	1349.4	1351.1	1351.1
12.5°	1331.7	1336.5	1338.1	1338.1	1341.4	1341.4	1341.4	1343.0
15°	1310.7	1309.1	1309.1	1309.1	1307.5	1307.5	1307.5	1305.9
17.5°	1268.7	1267.1	1267.1	1267.1	1265.5	1263.9	1262.3	1259.1
20°	1221.9	1218.7	1215.5	1217.1	1213.9	1212.2	1210.6	1210.6
22.5°	1167.0	1162.2	1160.6	1159.0	1155.7	1154.1	1150.9	1150.9
25°	1107.3	1104.1	1099.2	1097.6	1096.0	1092.8	1089.6	1089.6
27.5°	1044.4	1039.5	1037.9	1034.7	1033.1	1029.8	1028.2	1029.8
30°	979.8	975.0	973.3	970.1	963.7	966.9	963.7	962.0
32.5°	912.0	907.2	903.9	900.7	900.7	895.9	895.9	894.2
35°	845.8	841.0	837.8	836.1	832.9	832.9	829.7	828.1
37.5°	781.3	776.4	773.2	771.6	768.3	765.1	763.5	765.1
40°	715.1	710.2	707.0	705.4	702.2	698.9	698.9	698.9
42.5°	650.5	645.7	645.7	642.4	637.6	636.0	634.4	634.4
45°	590.8	584.3	582.7	579.5	579.5	576.3	574.6	574.6
47.5°	527.8	523.0	521.4	519.8	518.1	516.5	516.5	516.5
50°	469.7	463.3	463.3	460.0	458.4	460.0	456.8	455.2
52.5°	411.6	406.8	405.2	405.2	401.9	401.9	401.9	400.3
55°	353.5	350.3	350.3	348.7	345.4	347.0	347.0	343.8
57.5°	300.2	295.4	295.4	293.8	293.8	293.8	290.6	293.8
60°	250.2	247.0	245.4	243.7	242.1	242.1	242.1	240.5
62.5°	203.4	200.2	198.5	196.9	193.7	193.7	190.5	188.9
65°	161.4	158.2	155.0	153.3	150.1	148.5	148.5	146.9
67.5°	122.7	119.4	116.2	114.6	111.4	109.8	108.1	108.1
70°	92.0	87.2	87.2	85.6	83.9	83.9	82.3	82.3
72.5°	66.2	66.2	64.6	64.6	63.0	63.0	63.0	63.0
75°	46.8	46.8	46.8	46.8	45.2	45.2	43.6	43.6
77.5°	30.7	30.7	30.7	29.1	29.1	29.1	29.1	29.1
80°	16.1	16.1	16.1	16.1	16.1	14.5	16.1	14.5
82.5°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)