

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: P345490

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 3000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345490
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 3000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2098.2 lumens
Efficiency: N/A
Efficacy: 73.6 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

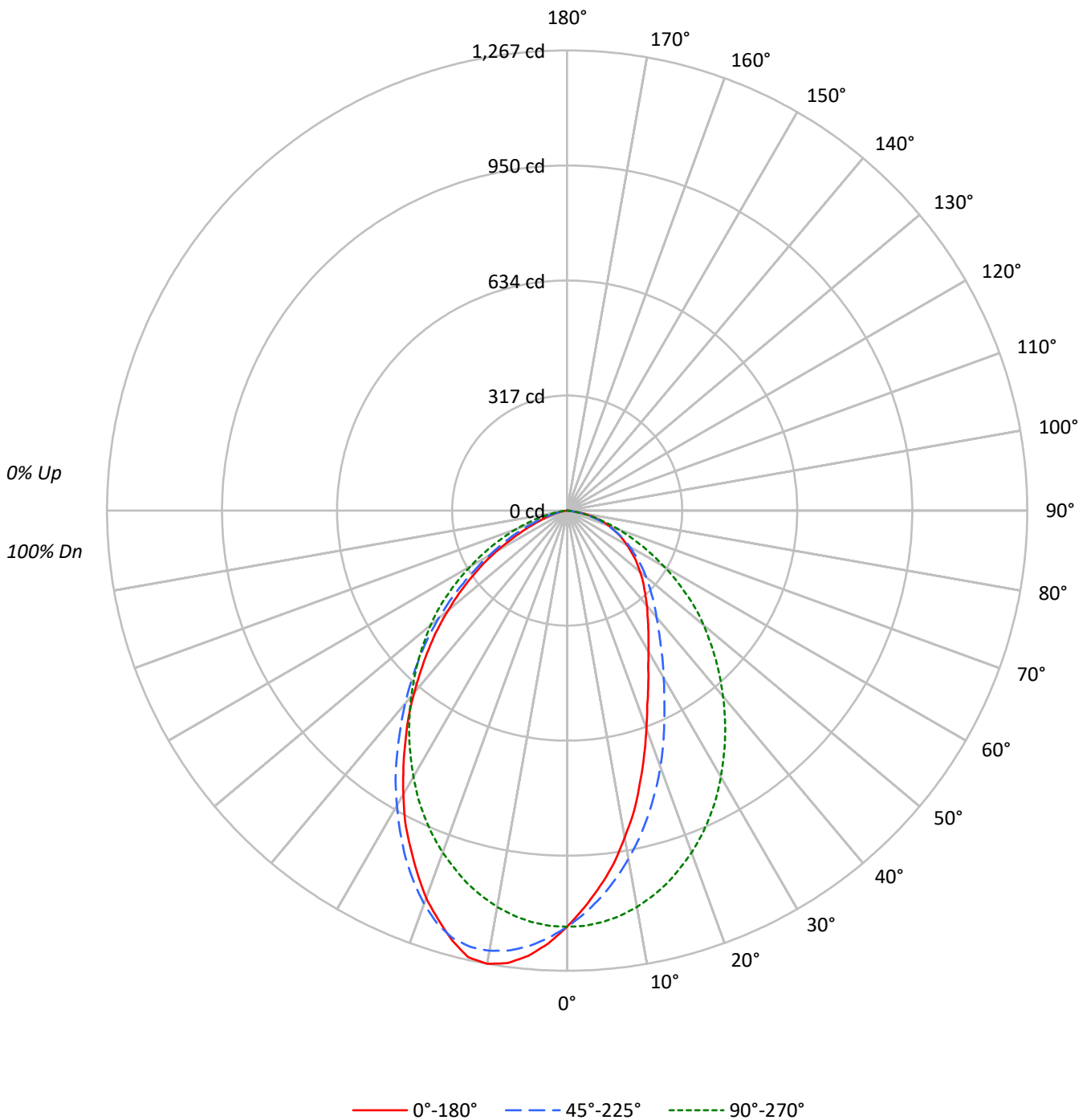
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	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°	100240	100240	100240
5°	91184	99824	108060
10°	81074	98420	112542
15°	70189	96233	110903
20°	59322	93279	105686
25°	50987	89708	98616
30°	45259	85467	91123
35°	41548	80982	82926
40°	39062	76229	74847
45°	37073	71536	66662
50°	35639	66746	58092
55°	34632	60938	49165
60°	33361	53759	39466
65°	32577	46361	28521
70°	31354	37952	19743
75°	29166	28659	13822
80°	19846	15263	6851
85°	1505	6122	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	107.3	5.1
10°-20°	290.3	13.8
20°-30°	390.8	18.6
30°-40°	409.4	19.5
40°-50°	367.1	17.5
50°-60°	281.1	13.4
60°-70°	171.2	8.2
70°-80°	72.7	3.5
80°-90°	8.2	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°	788.5	37.6
0°-40°	1197.9	57.1
0°-60°	1846.1	88.0
0°-90°	2098.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2098.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1146	1146	1146	1146	1146	
5°	1038	1069	1137	1204	1231	95
15°	775	866	1063	1219	1225	216
25°	528	633	930	1054	1022	244
35°	389	448	758	816	777	244
45°	300	330	578	575	539	232
55°	227	241	400	350	322	202
65°	157	159	224	166	138	155
75°	86	77	85	52	41	89
85°	2	3	6	2	0	10
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°	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0
2.5°	1093.0	1094.5	1097.5	1096.0	1099.0	1099.0	1099.0	1102.1	1105.1	1106.6	1109.6
5°	1038.5	1040.0	1041.5	1044.5	1046.1	1044.5	1049.1	1053.6	1058.2	1064.2	1068.8
7.5°	981.0	981.0	979.4	984.0	990.0	991.6	994.6	999.1	1005.2	1014.3	1023.3
10°	912.8	914.3	917.4	918.9	928.0	929.5	934.0	940.1	950.7	961.3	973.4
12.5°	849.3	847.7	849.3	853.8	859.9	867.4	872.0	879.5	893.2	906.8	921.9
15°	775.1	776.6	781.1	785.7	794.8	799.3	806.9	820.5	834.1	847.7	865.9
17.5°	705.4	703.9	710.0	717.6	725.1	732.7	738.7	750.9	769.0	788.7	808.4
20°	637.3	635.8	640.3	646.4	658.5	663.1	670.6	688.8	705.4	726.6	750.9
22.5°	576.8	576.8	581.3	588.9	596.4	601.0	608.6	623.7	643.4	667.6	691.8
25°	528.3	528.3	531.4	535.9	545.0	549.5	557.1	567.7	585.8	608.6	632.8
27.5°	482.9	485.9	487.5	492.0	499.6	504.1	508.6	520.8	535.9	555.6	578.3
30°	448.1	449.6	451.1	454.1	460.2	463.2	469.3	479.9	493.5	510.2	531.4
32.5°	416.3	417.8	417.8	422.4	426.9	431.4	434.5	443.5	452.6	469.3	489.0
35°	389.1	389.1	392.1	393.6	396.6	399.6	402.7	410.2	420.8	433.0	448.1
37.5°	363.3	363.3	364.8	367.9	370.9	373.9	375.4	381.5	390.6	401.2	413.3
40°	342.1	342.1	342.1	345.2	348.2	349.7	351.2	357.3	364.8	372.4	383.0
42.5°	319.4	320.9	322.4	324.0	325.5	328.5	330.0	333.0	339.1	345.2	355.7
45°	299.7	301.3	301.3	302.8	305.8	305.8	307.3	311.8	316.4	322.4	330.0
47.5°	281.6	281.6	281.6	283.1	284.6	286.1	287.6	290.7	295.2	298.2	305.8
50°	261.9	261.9	263.4	264.9	266.4	266.4	267.9	269.5	274.0	277.0	283.1
52.5°	243.7	243.7	245.2	245.2	246.8	246.8	248.3	251.3	252.8	257.3	261.9
55°	227.1	225.6	227.1	227.1	227.1	228.6	228.6	231.6	234.6	236.2	240.7
57.5°	207.4	208.9	208.9	210.4	210.4	210.4	211.9	211.9	215.0	216.5	218.0
60°	190.7	192.3	192.3	192.3	192.3	192.3	193.8	193.8	195.3	196.8	198.3
62.5°	174.1	174.1	174.1	174.1	174.1	175.6	175.6	175.6	175.6	177.1	178.6
65°	157.4	157.4	157.4	157.4	157.4	157.4	157.4	157.4	157.4	157.4	159.0
67.5°	139.3	139.3	139.3	140.8	139.3	139.3	139.3	139.3	139.3	139.3	137.8
70°	122.6	122.6	122.6	122.6	122.6	121.1	121.1	119.6	119.6	118.1	118.1
72.5°	104.5	104.5	104.5	102.9	102.9	102.9	101.4	99.9	98.4	98.4	98.4
75°	86.3	86.3	84.8	84.8	83.3	83.3	81.7	80.2	78.7	77.2	77.2
77.5°	65.1	65.1	65.1	65.1	63.6	62.1	62.1	60.6	59.0	59.0	57.5
80°	39.4	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	36.3	36.3
82.5°	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
85°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	3.0
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°	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0
2.5°	1112.7	1115.7	1120.2	1123.3	1124.8	1126.3	1130.8	1135.4	1139.9	1144.4	1147.5
5°	1076.3	1082.4	1088.4	1096.0	1099.0	1103.6	1112.7	1120.2	1127.8	1136.9	1144.4
7.5°	1032.4	1043.0	1053.6	1065.7	1070.3	1074.8	1086.9	1100.5	1111.1	1124.8	1136.9
10°	987.0	999.1	1012.7	1029.4	1037.0	1044.5	1059.7	1076.3	1091.5	1108.1	1123.3
12.5°	935.5	955.2	973.4	991.6	999.1	1008.2	1027.9	1047.6	1067.2	1086.9	1105.1
15°	884.1	903.8	926.5	947.7	958.2	970.4	993.1	1017.3	1040.0	1062.7	1083.9
17.5°	832.6	852.3	876.5	903.8	917.4	929.5	953.7	981.0	1008.2	1032.4	1059.7
20°	775.1	800.8	829.6	858.3	872.0	887.1	915.9	944.6	974.9	1002.1	1030.9
22.5°	719.1	746.3	781.1	809.9	825.0	840.2	873.5	906.8	937.1	967.3	996.1
25°	663.1	694.8	728.1	763.0	779.6	796.3	831.1	862.9	897.7	929.5	962.8
27.5°	608.6	641.9	676.7	713.0	731.2	749.3	784.2	820.5	855.3	890.1	923.4
30°	557.1	588.9	626.7	664.6	682.7	702.4	738.7	776.6	811.4	846.2	882.6
32.5°	511.7	538.9	576.8	614.6	634.3	654.0	693.3	731.2	766.0	802.3	840.2
35°	469.3	495.0	528.3	567.7	587.4	607.0	646.4	685.8	723.6	758.4	794.8
37.5°	433.0	455.7	484.4	519.2	541.9	561.6	601.0	640.3	676.7	713.0	747.8
40°	398.1	417.8	445.1	478.4	496.5	516.2	555.6	596.4	632.8	667.6	702.4
42.5°	367.9	384.5	407.2	436.0	455.7	472.3	513.2	552.5	587.4	622.2	657.0
45°	340.6	354.2	372.4	396.6	413.3	434.5	472.3	508.6	543.5	578.3	611.6
47.5°	313.4	325.5	340.6	363.3	376.9	393.6	431.4	466.3	501.1	532.9	564.7
50°	290.7	299.7	311.8	330.0	343.6	355.7	390.6	426.9	458.7	490.5	519.2
52.5°	267.9	274.0	284.6	301.3	310.3	322.4	352.7	386.0	417.8	448.1	473.8
55°	245.2	251.3	258.9	271.0	280.1	289.1	314.9	346.7	375.4	399.6	425.4
57.5°	222.5	227.1	233.1	243.7	249.8	257.3	278.5	304.3	330.0	354.2	373.9
60°	202.9	205.9	210.4	216.5	221.0	225.6	240.7	264.9	289.1	307.3	325.5
62.5°	180.1	181.7	184.7	190.7	193.8	196.8	207.4	228.6	248.3	264.9	280.1
65°	159.0	160.5	162.0	165.0	168.0	169.5	178.6	193.8	210.4	224.0	234.6
67.5°	137.8	139.3	139.3	142.3	142.3	145.3	149.9	159.0	174.1	184.7	193.8
70°	116.6	118.1	118.1	119.6	118.1	119.6	124.1	130.2	139.3	148.4	154.4
72.5°	96.9	95.4	95.4	95.4	95.4	96.9	98.4	101.4	109.0	116.6	118.1
75°	75.7	75.7	74.2	74.2	74.2	74.2	74.2	75.7	80.2	84.8	86.3
77.5°	56.0	54.5	54.5	53.0	53.0	53.0	51.5	51.5	53.0	56.0	56.0
80°	36.3	34.8	33.3	34.8	31.8	33.3	31.8	30.3	30.3	30.3	28.8
82.5°	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	13.6	13.6	13.6
85°	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5	6.1	6.1	4.5
87.5°	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	6.1	6.1	6.1
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°	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0
2.5°	1152.0	1156.6	1161.1	1162.6	1164.1	1168.7	1171.7	1176.2	1177.8	1180.8	1183.8
5°	1152.0	1161.1	1168.7	1173.2	1176.2	1183.8	1191.4	1195.9	1203.5	1208.0	1212.6
7.5°	1149.0	1161.1	1171.7	1177.8	1183.8	1192.9	1203.5	1212.6	1221.7	1227.7	1235.3
10°	1139.9	1155.0	1168.7	1176.2	1183.8	1197.4	1209.5	1220.1	1230.7	1239.8	1247.4
12.5°	1126.3	1144.4	1161.1	1170.2	1177.8	1194.4	1208.0	1220.1	1230.7	1238.3	1244.4
15°	1106.6	1129.3	1149.0	1158.1	1167.2	1185.3	1198.9	1209.5	1218.6	1223.2	1227.7
17.5°	1083.9	1108.1	1130.8	1141.4	1150.5	1167.2	1179.3	1186.8	1191.4	1194.4	1192.9
20°	1058.2	1083.9	1106.6	1117.2	1127.8	1141.4	1150.5	1153.5	1152.0	1150.5	1147.5
22.5°	1026.4	1053.6	1077.8	1086.9	1096.0	1106.6	1109.6	1108.1	1105.1	1102.1	1097.5
25°	993.1	1020.3	1043.0	1050.6	1058.2	1062.7	1061.2	1058.2	1053.6	1049.1	1041.5
27.5°	955.2	984.0	1002.1	1011.2	1012.7	1012.7	1008.2	1003.7	996.1	990.0	982.5
30°	915.9	940.1	958.2	961.3	962.8	959.8	955.2	947.7	937.1	932.5	924.9
32.5°	870.4	896.2	909.8	909.8	906.8	902.2	893.2	885.6	879.5	868.9	861.4
35°	828.1	847.7	855.3	855.3	850.8	843.2	835.6	825.0	815.9	809.9	799.3
37.5°	779.6	799.3	802.3	797.8	794.8	785.7	773.6	764.5	753.9	746.3	738.7
40°	734.2	747.8	744.8	740.3	737.2	728.1	714.5	703.9	693.3	684.2	676.7
42.5°	682.7	691.8	687.3	684.2	678.2	667.6	655.5	644.9	634.3	625.2	617.6
45°	635.8	640.3	632.8	626.7	622.2	610.1	601.0	585.8	575.3	566.2	560.1
47.5°	585.8	585.8	578.3	572.2	564.7	552.5	541.9	526.8	520.8	508.6	502.6
50°	537.4	532.9	523.8	516.2	510.2	496.5	482.9	472.3	461.7	452.6	446.6
52.5°	485.9	479.9	467.8	460.2	457.2	440.5	428.4	414.8	405.7	395.1	389.1
55°	434.5	425.4	411.8	405.7	399.6	386.0	372.4	358.8	349.7	342.1	336.1
57.5°	381.5	370.9	358.8	351.2	343.6	330.0	316.4	304.3	296.7	289.1	284.6
60°	327.0	319.4	307.3	299.7	292.2	280.1	264.9	255.8	249.8	240.7	239.2
62.5°	280.1	269.5	255.8	249.8	243.7	231.6	219.5	211.9	204.4	199.8	193.8
65°	233.1	222.5	210.4	204.4	199.8	189.2	180.1	172.6	166.5	160.5	155.9
67.5°	187.7	180.1	169.5	165.0	159.0	149.9	142.3	136.2	130.2	124.1	119.6
70°	149.9	140.8	131.7	128.7	125.6	116.6	110.5	104.5	98.4	93.9	89.3
72.5°	115.1	107.5	99.9	95.4	92.3	87.8	83.3	77.2	72.7	68.1	65.1
75°	81.7	77.2	71.1	68.1	65.1	62.1	56.0	53.0	51.5	48.4	45.4
77.5°	53.0	48.4	45.4	42.4	42.4	39.4	36.3	34.8	31.8	31.8	30.3
80°	27.2	25.7	24.2	24.2	24.2	21.2	19.7	19.7	18.2	16.7	16.7
82.5°	12.1	12.1	10.6	10.6	10.6	9.1	9.1	7.6	7.6	6.1	6.1
85°	4.5	4.5	4.5	4.5	4.5	3.0	3.0	3.0	1.5	1.5	1.5
87.5°	4.5	4.5	4.5	4.5	4.5	3.0	3.0	3.0	1.5	1.5	1.5
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: P345490

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 3000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0	1146.0
2.5°	1185.3	1188.3	1188.3	1189.9	1191.4	1192.9	1191.4	1192.9
5°	1217.1	1221.7	1223.2	1223.2	1226.2	1227.7	1230.7	1230.7
7.5°	1241.3	1245.9	1248.9	1250.4	1253.4	1256.5	1256.5	1256.5
10°	1253.4	1258.0	1259.5	1262.5	1264.0	1265.6	1267.1	1267.1
12.5°	1248.9	1253.4	1255.0	1255.0	1258.0	1258.0	1258.0	1259.5
15°	1229.2	1227.7	1227.7	1227.7	1226.2	1226.2	1226.2	1224.7
17.5°	1189.9	1188.3	1188.3	1188.3	1186.8	1185.3	1183.8	1180.8
20°	1146.0	1142.9	1139.9	1141.4	1138.4	1136.9	1135.4	1135.4
22.5°	1094.5	1090.0	1088.4	1086.9	1083.9	1082.4	1079.4	1079.4
25°	1038.5	1035.5	1030.9	1029.4	1027.9	1024.9	1021.8	1021.8
27.5°	979.4	974.9	973.4	970.4	968.8	965.8	964.3	965.8
30°	918.9	914.3	912.8	909.8	903.8	906.8	903.8	902.2
32.5°	855.3	850.8	847.7	844.7	844.7	840.2	840.2	838.7
35°	793.2	788.7	785.7	784.2	781.1	781.1	778.1	776.6
37.5°	732.7	728.1	725.1	723.6	720.6	717.6	716.0	717.6
40°	670.6	666.1	663.1	661.5	658.5	655.5	655.5	655.5
42.5°	610.1	605.5	605.5	602.5	598.0	596.4	594.9	594.9
45°	554.1	548.0	546.5	543.5	543.5	540.4	538.9	538.9
47.5°	495.0	490.5	489.0	487.5	485.9	484.4	484.4	484.4
50°	440.5	434.5	434.5	431.4	429.9	431.4	428.4	426.9
52.5°	386.0	381.5	380.0	380.0	376.9	376.9	376.9	375.4
55°	331.5	328.5	328.5	327.0	324.0	325.5	325.5	322.4
57.5°	281.6	277.0	277.0	275.5	275.5	275.5	272.5	275.5
60°	234.6	231.6	230.1	228.6	227.1	227.1	227.1	225.6
62.5°	190.7	187.7	186.2	184.7	181.7	181.7	178.6	177.1
65°	151.4	148.4	145.3	143.8	140.8	139.3	139.3	137.8
67.5°	115.1	112.0	109.0	107.5	104.5	102.9	101.4	101.4
70°	86.3	81.7	81.7	80.2	78.7	78.7	77.2	77.2
72.5°	62.1	62.1	60.6	60.6	59.0	59.0	59.0	59.0
75°	43.9	43.9	43.9	43.9	42.4	42.4	40.9	40.9
77.5°	28.8	28.8	28.8	27.2	27.2	27.2	27.2	27.2
80°	15.1	15.1	15.1	15.1	15.1	13.6	15.1	13.6
82.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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)