

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: P345491

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 3000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345491
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 3000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2330.2 lumens
Efficiency: N/A
Efficacy: 89.3 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

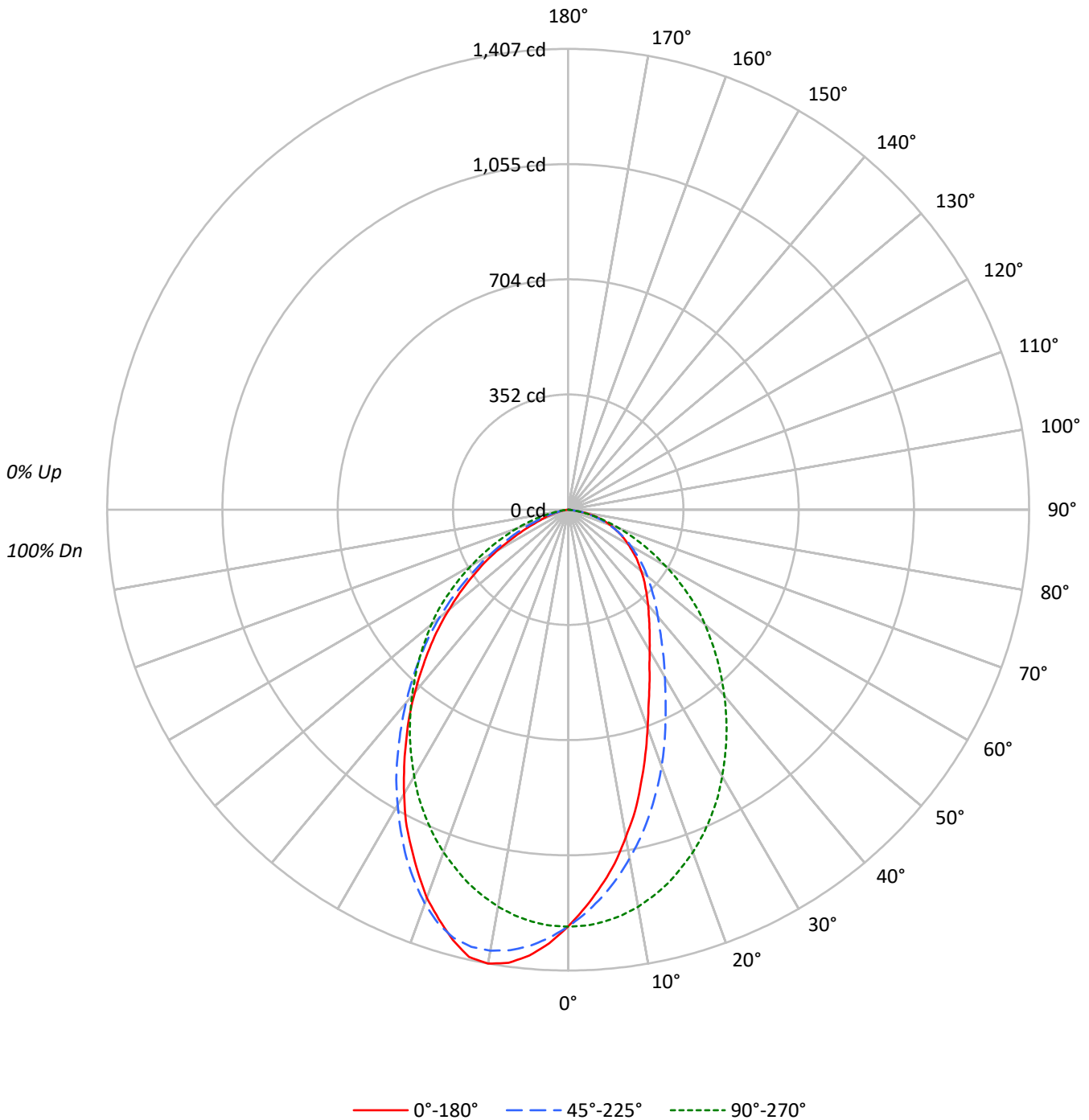
Input Watts (W): 26.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	111322	111322	111322
5°	101264	110861	120019
10°	90045	109309	124986
15°	77950	106873	123164
20°	65884	103601	117368
25°	56633	99629	109522
30°	50268	94921	101203
35°	46140	89941	92098
40°	43390	84655	83125
45°	41180	79440	74035
50°	39585	74122	64515
55°	38460	67694	54610
60°	37052	59707	43822
65°	36199	51494	31666
70°	34832	42147	21917
75°	32376	31835	15343
80°	22012	16925	7606
85°	1706	6724	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.2	5.1
10°-20°	322.4	13.8
20°-30°	434.1	18.6
30°-40°	454.7	19.5
40°-50°	407.8	17.5
50°-60°	312.2	13.4
60°-70°	190.1	8.2
70°-80°	80.8	3.5
80°-90°	9.1	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°	875.7	37.6
0°-40°	1330.4	57.1
0°-60°	2050.3	88.0
0°-90°	2330.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2330.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1273	1273	1273	1273	1273	
5°	1153	1187	1263	1337	1367	106
15°	861	962	1180	1353	1360	240
25°	587	703	1032	1170	1135	271
35°	432	498	842	906	862	271
45°	333	366	642	639	598	258
55°	252	267	444	388	358	225
65°	175	176	249	185	153	172
75°	96	86	94	57	45	99
85°	2	3	7	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°	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7
2.5°	1213.9	1215.5	1218.9	1217.2	1220.6	1220.6	1220.6	1224.0	1227.3	1229.0	1232.4
5°	1153.3	1155.0	1156.7	1160.1	1161.7	1160.1	1165.1	1170.2	1175.2	1181.9	1187.0
7.5°	1089.5	1089.5	1087.8	1092.8	1099.5	1101.2	1104.6	1109.6	1116.4	1126.4	1136.5
10°	1013.8	1015.5	1018.8	1020.5	1030.6	1032.3	1037.3	1044.1	1055.8	1067.6	1081.0
12.5°	943.2	941.5	943.2	948.2	955.0	963.4	968.4	976.8	991.9	1007.1	1023.9
15°	860.8	862.5	867.5	872.6	882.7	887.7	896.1	911.2	926.4	941.5	961.7
17.5°	783.5	781.8	788.5	796.9	805.3	813.7	820.5	833.9	854.1	875.9	897.8
20°	707.8	706.1	711.2	717.9	731.3	736.4	744.8	765.0	783.5	807.0	833.9
22.5°	640.6	640.6	645.6	654.0	662.4	667.5	675.9	692.7	714.5	741.4	768.3
25°	586.8	586.8	590.1	595.2	605.3	610.3	618.7	630.5	650.6	675.9	702.8
27.5°	536.3	539.7	541.4	546.4	554.8	559.9	564.9	578.4	595.2	617.0	642.2
30°	497.7	499.3	501.0	504.4	511.1	514.5	521.2	533.0	548.1	566.6	590.1
32.5°	462.3	464.0	464.0	469.1	474.1	479.2	482.5	492.6	502.7	521.2	543.0
35°	432.1	432.1	435.4	437.1	440.5	443.9	447.2	455.6	467.4	480.8	497.7
37.5°	403.5	403.5	405.2	408.5	411.9	415.3	417.0	423.7	433.8	445.5	459.0
40°	380.0	380.0	380.0	383.3	386.7	388.4	390.1	396.8	405.2	413.6	425.4
42.5°	354.7	356.4	358.1	359.8	361.5	364.8	366.5	369.9	376.6	383.3	395.1
45°	332.9	334.6	334.6	336.3	339.6	339.6	341.3	346.3	351.4	358.1	366.5
47.5°	312.7	312.7	312.7	314.4	316.1	317.8	319.4	322.8	327.8	331.2	339.6
50°	290.9	290.9	292.5	294.2	295.9	295.9	297.6	299.3	304.3	307.7	314.4
52.5°	270.7	270.7	272.4	272.4	274.0	274.0	275.7	279.1	280.8	285.8	290.9
55°	252.2	250.5	252.2	252.2	252.2	253.9	253.9	257.2	260.6	262.3	267.3
57.5°	230.3	232.0	232.0	233.7	233.7	233.7	235.4	235.4	238.7	240.4	242.1
60°	211.8	213.5	213.5	213.5	213.5	213.5	215.2	215.2	216.9	218.6	220.2
62.5°	193.3	193.3	193.3	193.3	193.3	195.0	195.0	195.0	195.0	196.7	198.4
65°	174.9	174.9	174.9	174.9	174.9	174.9	174.9	174.9	174.9	174.9	176.5
67.5°	154.7	154.7	154.7	156.4	154.7	154.7	154.7	154.7	154.7	154.7	153.0
70°	136.2	136.2	136.2	136.2	136.2	134.5	134.5	132.8	132.8	131.1	131.1
72.5°	116.0	116.0	116.0	114.3	114.3	114.3	112.6	111.0	109.3	109.3	109.3
75°	95.8	95.8	94.2	94.2	92.5	92.5	90.8	89.1	87.4	85.7	85.7
77.5°	72.3	72.3	72.3	72.3	70.6	68.9	68.9	67.3	65.6	65.6	63.9
80°	43.7	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	40.4	40.4
82.5°	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
85°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	3.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7	1.7	3.4
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7
2.5°	1235.7	1239.1	1244.1	1247.5	1249.2	1250.9	1255.9	1260.9	1266.0	1271.0	1274.4
5°	1195.4	1202.1	1208.8	1217.2	1220.6	1225.6	1235.7	1244.1	1252.5	1262.6	1271.0
7.5°	1146.6	1158.4	1170.2	1183.6	1188.6	1193.7	1207.1	1222.3	1234.0	1249.2	1262.6
10°	1096.2	1109.6	1124.8	1143.3	1151.7	1160.1	1176.9	1195.4	1212.2	1230.7	1247.5
12.5°	1039.0	1060.9	1081.0	1101.2	1109.6	1119.7	1141.6	1163.4	1185.3	1207.1	1227.3
15°	981.9	1003.7	1028.9	1052.5	1064.2	1077.7	1102.9	1129.8	1155.0	1180.2	1203.8
17.5°	924.7	946.5	973.4	1003.7	1018.8	1032.3	1059.2	1089.5	1119.7	1146.6	1176.9
20°	860.8	889.4	921.3	953.3	968.4	985.2	1017.2	1049.1	1082.7	1113.0	1144.9
22.5°	798.6	828.9	867.5	899.5	916.3	933.1	970.1	1007.1	1040.7	1074.3	1106.3
25°	736.4	771.7	808.7	847.4	865.8	884.3	923.0	958.3	997.0	1032.3	1069.3
27.5°	675.9	712.9	751.5	791.9	812.0	832.2	870.9	911.2	949.9	988.6	1025.6
30°	618.7	654.0	696.0	738.1	758.2	780.1	820.5	862.5	901.2	939.8	980.2
32.5°	568.3	598.5	640.6	682.6	704.4	726.3	770.0	812.0	850.7	891.1	933.1
35°	521.2	549.8	586.8	630.5	652.3	674.2	717.9	761.6	803.6	842.3	882.7
37.5°	480.8	506.1	538.0	576.7	601.9	623.7	667.5	711.2	751.5	791.9	830.5
40°	442.2	464.0	494.3	531.3	551.5	573.3	617.0	662.4	702.8	741.4	780.1
42.5°	408.5	427.0	452.3	484.2	506.1	524.6	569.9	613.7	652.3	691.0	729.7
45°	378.3	393.4	413.6	440.5	459.0	482.5	524.6	564.9	603.6	642.2	679.2
47.5°	348.0	361.5	378.3	403.5	418.6	437.1	479.2	517.8	556.5	591.8	627.1
50°	322.8	332.9	346.3	366.5	381.6	395.1	433.8	474.1	509.4	544.7	576.7
52.5°	297.6	304.3	316.1	334.6	344.7	358.1	391.7	428.7	464.0	497.7	526.2
55°	272.4	279.1	287.5	300.9	311.0	321.1	349.7	385.0	417.0	443.9	472.4
57.5°	247.1	252.2	258.9	270.7	277.4	285.8	309.4	337.9	366.5	393.4	415.3
60°	225.3	228.7	233.7	240.4	245.5	250.5	267.3	294.2	321.1	341.3	361.5
62.5°	200.1	201.8	205.1	211.8	215.2	218.6	230.3	253.9	275.7	294.2	311.0
65°	176.5	178.2	179.9	183.3	186.6	188.3	198.4	215.2	233.7	248.8	260.6
67.5°	153.0	154.7	154.7	158.0	158.0	161.4	166.4	176.5	193.3	205.1	215.2
70°	129.5	131.1	131.1	132.8	131.1	132.8	137.9	144.6	154.7	164.8	171.5
72.5°	107.6	105.9	105.9	105.9	105.9	107.6	109.3	112.6	121.1	129.5	131.1
75°	84.1	84.1	82.4	82.4	82.4	82.4	82.4	84.1	89.1	94.2	95.8
77.5°	62.2	60.5	60.5	58.8	58.8	58.8	57.2	57.2	58.8	62.2	62.2
80°	40.4	38.7	37.0	38.7	35.3	37.0	35.3	33.6	33.6	33.6	31.9
82.5°	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	15.1	15.1	15.1
85°	3.4	3.4	5.0	5.0	5.0	5.0	5.0	5.0	6.7	6.7	5.0
87.5°	3.4	3.4	3.4	5.0	5.0	5.0	5.0	5.0	6.7	6.7	6.7
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°	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7
2.5°	1279.4	1284.5	1289.5	1291.2	1292.9	1297.9	1301.3	1306.3	1308.0	1311.4	1314.7
5°	1279.4	1289.5	1297.9	1303.0	1306.3	1314.7	1323.2	1328.2	1336.6	1341.6	1346.7
7.5°	1276.1	1289.5	1301.3	1308.0	1314.7	1324.8	1336.6	1346.7	1356.8	1363.5	1371.9
10°	1266.0	1282.8	1297.9	1306.3	1314.7	1329.9	1343.3	1355.1	1366.9	1377.0	1385.4
12.5°	1250.9	1271.0	1289.5	1299.6	1308.0	1326.5	1341.6	1355.1	1366.9	1375.3	1382.0
15°	1229.0	1254.2	1276.1	1286.2	1296.3	1316.4	1331.6	1343.3	1353.4	1358.5	1363.5
17.5°	1203.8	1230.7	1255.9	1267.7	1277.8	1296.3	1309.7	1318.1	1323.2	1326.5	1324.8
20°	1175.2	1203.8	1229.0	1240.8	1252.5	1267.7	1277.8	1281.1	1279.4	1277.8	1274.4
22.5°	1139.9	1170.2	1197.1	1207.1	1217.2	1229.0	1232.4	1230.7	1227.3	1224.0	1218.9
25°	1102.9	1133.2	1158.4	1166.8	1175.2	1180.2	1178.6	1175.2	1170.2	1165.1	1156.7
27.5°	1060.9	1092.8	1113.0	1123.1	1124.8	1124.8	1119.7	1114.7	1106.3	1099.5	1091.1
30°	1017.2	1044.1	1064.2	1067.6	1069.3	1065.9	1060.9	1052.5	1040.7	1035.7	1027.2
32.5°	966.7	995.3	1010.4	1010.4	1007.1	1002.0	991.9	983.5	976.8	965.0	956.6
35°	919.6	941.5	949.9	949.9	944.9	936.5	928.1	916.3	906.2	899.5	887.7
37.5°	865.8	887.7	891.1	886.0	882.7	872.6	859.1	849.0	837.3	828.9	820.5
40°	815.4	830.5	827.2	822.1	818.8	808.7	793.6	781.8	770.0	759.9	751.5
42.5°	758.2	768.3	763.3	759.9	753.2	741.4	728.0	716.2	704.4	694.4	686.0
45°	706.1	711.2	702.8	696.0	691.0	677.5	667.5	650.6	638.9	628.8	622.1
47.5°	650.6	650.6	642.2	635.5	627.1	613.7	601.9	585.1	578.4	564.9	558.2
50°	596.8	591.8	581.7	573.3	566.6	551.5	536.3	524.6	512.8	502.7	496.0
52.5°	539.7	533.0	519.5	511.1	507.7	489.2	475.8	460.7	450.6	438.8	432.1
55°	482.5	472.4	457.3	450.6	443.9	428.7	413.6	398.5	388.4	380.0	373.2
57.5°	423.7	411.9	398.5	390.1	381.6	366.5	351.4	337.9	329.5	321.1	316.1
60°	363.2	354.7	341.3	332.9	324.5	311.0	294.2	284.1	277.4	267.3	265.6
62.5°	311.0	299.3	284.1	277.4	270.7	257.2	243.8	235.4	227.0	221.9	215.2
65°	258.9	247.1	233.7	227.0	221.9	210.2	200.1	191.7	184.9	178.2	173.2
67.5°	208.5	200.1	188.3	183.3	176.5	166.4	158.0	151.3	144.6	137.9	132.8
70°	166.4	156.4	146.3	142.9	139.5	129.5	122.7	116.0	109.3	104.2	99.2
72.5°	127.8	119.4	111.0	105.9	102.6	97.5	92.5	85.7	80.7	75.7	72.3
75°	90.8	85.7	79.0	75.7	72.3	68.9	62.2	58.8	57.2	53.8	50.4
77.5°	58.8	53.8	50.4	47.1	47.1	43.7	40.4	38.7	35.3	35.3	33.6
80°	30.3	28.6	26.9	26.9	26.9	23.5	21.9	21.9	20.2	18.5	18.5
82.5°	13.5	13.5	11.8	11.8	11.8	10.1	10.1	8.4	8.4	6.7	6.7
85°	5.0	5.0	5.0	5.0	5.0	3.4	3.4	3.4	1.7	1.7	1.7
87.5°	5.0	5.0	5.0	5.0	5.0	3.4	3.4	3.4	1.7	1.7	1.7
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: P345491

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 3000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7	1272.7
2.5°	1316.4	1319.8	1319.8	1321.5	1323.2	1324.8	1323.2	1324.8
5°	1351.7	1356.8	1358.5	1358.5	1361.8	1363.5	1366.9	1366.9
7.5°	1378.6	1383.7	1387.0	1388.7	1392.1	1395.4	1395.4	1395.4
10°	1392.1	1397.1	1398.8	1402.2	1403.9	1405.5	1407.2	1407.2
12.5°	1387.0	1392.1	1393.8	1393.8	1397.1	1397.1	1397.1	1398.8
15°	1365.2	1363.5	1363.5	1363.5	1361.8	1361.8	1361.8	1360.1
17.5°	1321.5	1319.8	1319.8	1319.8	1318.1	1316.4	1314.7	1311.4
20°	1272.7	1269.4	1266.0	1267.7	1264.3	1262.6	1260.9	1260.9
22.5°	1215.5	1210.5	1208.8	1207.1	1203.8	1202.1	1198.7	1198.7
25°	1153.3	1150.0	1144.9	1143.3	1141.6	1138.2	1134.8	1134.8
27.5°	1087.8	1082.7	1081.0	1077.7	1076.0	1072.6	1071.0	1072.6
30°	1020.5	1015.5	1013.8	1010.4	1003.7	1007.1	1003.7	1002.0
32.5°	949.9	944.9	941.5	938.1	938.1	933.1	933.1	931.4
35°	881.0	875.9	872.6	870.9	867.5	867.5	864.2	862.5
37.5°	813.7	808.7	805.3	803.6	800.3	796.9	795.2	796.9
40°	744.8	739.8	736.4	734.7	731.3	728.0	728.0	728.0
42.5°	677.5	672.5	672.5	669.1	664.1	662.4	660.7	660.7
45°	615.3	608.6	606.9	603.6	603.6	600.2	598.5	598.5
47.5°	549.8	544.7	543.0	541.4	539.7	538.0	538.0	538.0
50°	489.2	482.5	482.5	479.2	477.5	479.2	475.8	474.1
52.5°	428.7	423.7	422.0	422.0	418.6	418.6	418.6	417.0
55°	368.2	364.8	364.8	363.2	359.8	361.5	361.5	358.1
57.5°	312.7	307.7	307.7	306.0	306.0	306.0	302.6	306.0
60°	260.6	257.2	255.6	253.9	252.2	252.2	252.2	250.5
62.5°	211.8	208.5	206.8	205.1	201.8	201.8	198.4	196.7
65°	168.1	164.8	161.4	159.7	156.4	154.7	154.7	153.0
67.5°	127.8	124.4	121.1	119.4	116.0	114.3	112.6	112.6
70°	95.8	90.8	90.8	89.1	87.4	87.4	85.7	85.7
72.5°	68.9	68.9	67.3	67.3	65.6	65.6	65.6	65.6
75°	48.8	48.8	48.8	48.8	47.1	47.1	45.4	45.4
77.5°	31.9	31.9	31.9	30.3	30.3	30.3	30.3	30.3
80°	16.8	16.8	16.8	16.8	16.8	15.1	16.8	15.1
82.5°	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)