

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: P345455

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 3000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345455
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 3000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2353.8 lumens
Efficiency: N/A
Efficacy: 90.2 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

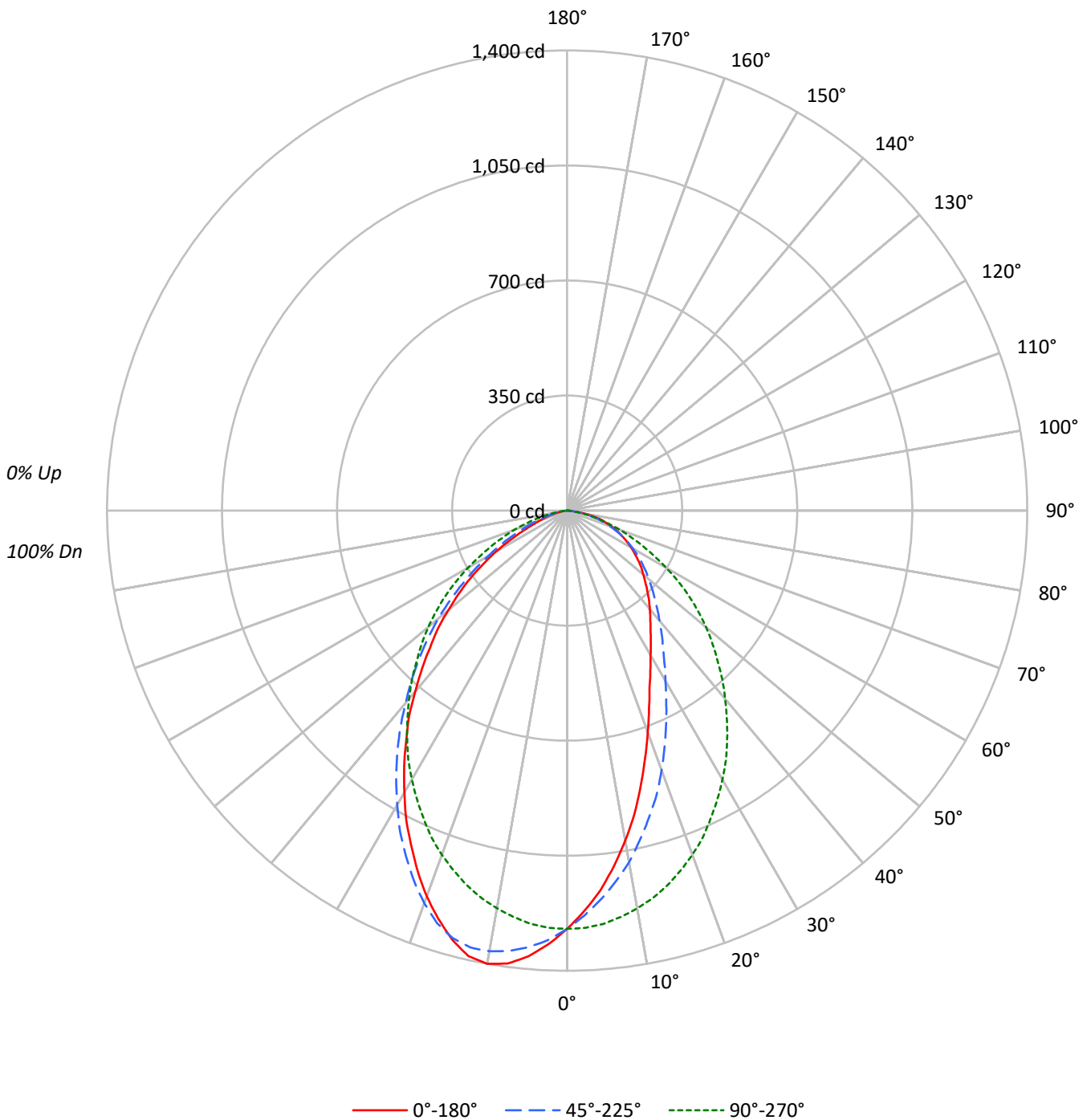
Input Watts (W): 26.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	123996	123996	123996
5°	113454	123491	133186
10°	100792	121584	138556
15°	87336	119047	136341
20°	74435	115577	129516
25°	63799	111157	120738
30°	57123	106300	111410
35°	52587	100985	101580
40°	49820	95150	91524
45°	47495	89188	81318
50°	45864	83587	71609
55°	44840	76818	61118
60°	43895	67811	48807
65°	42639	58136	34891
70°	41659	48384	24904
75°	39877	37354	17735
80°	28286	21720	10383
85°	7492	11294	1901



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.1	5.1
10°-20°	322.3	13.7
20°-30°	434.2	18.4
30°-40°	456.0	19.4
40°-50°	410.9	17.5
50°-60°	317.4	13.5
60°-70°	195.3	8.3
70°-80°	86.1	3.7
80°-90°	12.6	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°	875.5	37.2
0°-40°	1331.5	56.6
0°-60°	2059.8	87.5
0°-90°	2353.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2353.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1272	1272	1272	1272	1272	
5°	1160	1187	1262	1333	1361	106
15°	866	965	1180	1346	1351	241
25°	593	713	1034	1160	1123	275
35°	442	508	849	901	854	278
45°	345	376	647	637	590	267
55°	264	277	452	388	360	236
65°	185	185	252	187	151	184
75°	106	94	99	59	47	108
85°	7	8	10	5	2	16
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°	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3
2.5°	1218.6	1216.9	1215.2	1218.6	1218.6	1220.2	1220.2	1223.6	1223.6	1227.0	1232.0
5°	1159.7	1156.4	1158.1	1158.1	1163.1	1163.1	1166.5	1169.8	1174.9	1181.6	1186.6
7.5°	1090.8	1090.8	1092.5	1095.9	1100.9	1100.9	1105.9	1111.0	1119.4	1127.8	1137.9
10°	1018.5	1021.9	1023.6	1027.0	1035.4	1038.7	1040.4	1048.8	1060.6	1069.0	1085.8
12.5°	946.3	946.3	949.6	956.4	963.1	968.1	971.5	983.3	995.0	1010.1	1025.3
15°	865.6	867.3	872.3	879.0	890.8	894.2	900.9	914.3	931.1	949.6	964.8
17.5°	788.3	791.6	795.0	805.1	813.5	818.5	828.6	843.7	862.2	882.4	905.9
20°	717.7	712.6	719.4	726.1	734.5	746.3	753.0	769.8	790.0	816.9	840.4
22.5°	650.5	650.5	655.5	660.5	668.9	677.4	685.8	699.2	721.1	747.9	774.8
25°	593.3	595.0	600.0	605.1	613.5	618.5	626.9	640.4	662.2	682.4	712.6
27.5°	547.9	549.6	551.3	558.0	564.7	569.8	574.8	588.3	605.1	626.9	652.1
30°	507.6	507.6	509.3	516.0	519.4	526.1	529.4	541.2	556.3	574.8	598.4
32.5°	474.0	474.0	475.7	479.0	485.7	489.1	490.8	502.6	514.3	532.8	551.3
35°	442.0	442.0	443.7	447.1	452.1	453.8	458.9	465.6	477.3	490.8	507.6
37.5°	415.2	415.2	416.8	418.5	421.9	425.2	428.6	435.3	442.0	455.5	472.3
40°	391.6	389.9	391.6	393.3	398.3	398.3	400.0	406.7	413.5	423.6	437.0
42.5°	368.1	368.1	368.1	369.8	373.1	374.8	376.5	379.9	386.6	395.0	405.1
45°	344.6	344.6	346.2	347.9	349.6	351.3	354.6	358.0	361.4	366.4	376.5
47.5°	322.7	324.4	324.4	326.1	327.8	329.4	331.1	334.5	337.8	342.9	349.6
50°	302.5	304.2	304.2	305.9	307.6	307.6	309.3	312.6	316.0	319.3	324.4
52.5°	284.1	284.1	282.4	284.1	285.7	285.7	287.4	289.1	292.5	297.5	300.9
55°	263.9	263.9	263.9	265.6	265.6	265.6	267.2	268.9	270.6	272.3	277.3
57.5°	243.7	243.7	245.4	243.7	245.4	245.4	245.4	247.1	248.8	252.1	253.8
60°	225.2	225.2	225.2	225.2	225.2	225.2	226.9	226.9	226.9	228.6	230.3
62.5°	205.1	205.1	205.1	205.1	205.1	205.1	205.1	205.1	206.7	206.7	208.4
65°	184.9	184.9	186.6	184.9	184.9	184.9	184.9	184.9	184.9	184.9	184.9
67.5°	166.4	164.7	166.4	164.7	164.7	164.7	164.7	163.0	163.0	163.0	161.4
70°	146.2	144.5	144.5	144.5	144.5	142.9	144.5	142.9	141.2	139.5	137.8
72.5°	124.4	124.4	124.4	124.4	124.4	122.7	121.0	121.0	119.3	117.7	116.0
75°	105.9	105.9	104.2	102.5	100.8	100.8	100.8	99.2	97.5	95.8	94.1
77.5°	82.4	80.7	80.7	79.0	77.3	75.6	77.3	75.6	74.0	72.3	70.6
80°	50.4	50.4	50.4	50.4	50.4	50.4	48.7	50.4	48.7	47.1	47.1
82.5°	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
85°	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	8.4	8.4
87.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	5.0	5.0	5.0
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°	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3
2.5°	1235.4	1238.7	1243.8	1247.1	1248.8	1250.5	1255.5	1260.6	1265.6	1270.7	1274.0
5°	1195.0	1203.4	1208.5	1216.9	1221.9	1227.0	1235.4	1243.8	1252.2	1262.3	1270.7
7.5°	1146.3	1159.7	1169.8	1181.6	1188.3	1195.0	1206.8	1220.2	1233.7	1247.1	1260.6
10°	1099.2	1111.0	1129.5	1146.3	1151.3	1161.4	1179.9	1195.0	1213.5	1228.6	1247.1
12.5°	1045.4	1060.6	1080.7	1100.9	1112.7	1122.8	1144.6	1164.8	1186.6	1206.8	1228.6
15°	986.6	1010.1	1032.0	1055.5	1070.7	1080.7	1105.9	1131.2	1154.7	1179.9	1205.1
17.5°	927.8	954.7	981.6	1010.1	1021.9	1037.0	1065.6	1092.5	1121.1	1148.0	1176.5
20°	869.0	897.5	926.1	958.0	974.8	990.0	1020.2	1052.2	1084.1	1114.4	1144.6
22.5°	806.8	837.0	870.6	905.9	924.4	937.9	973.2	1008.5	1042.1	1077.4	1109.3
25°	744.6	779.9	815.2	852.2	870.6	890.8	926.1	963.1	998.4	1033.7	1070.7
27.5°	684.1	721.1	758.0	800.0	818.5	838.7	877.4	914.3	953.0	990.0	1027.0
30°	628.6	663.9	704.2	746.3	766.4	786.6	826.9	867.3	905.9	944.6	979.9
32.5°	578.2	608.4	650.5	692.5	714.3	734.5	776.5	818.5	858.9	899.2	934.5
35°	531.1	559.7	595.0	640.4	660.5	682.4	726.1	766.4	808.5	848.8	885.8
37.5°	489.1	516.0	547.9	586.6	611.8	632.0	675.7	717.7	758.0	798.4	835.3
40°	452.1	475.7	502.6	537.8	561.4	583.2	626.9	668.9	709.3	747.9	784.9
42.5°	418.5	437.0	462.2	494.1	512.6	534.5	579.9	620.2	660.5	699.2	732.8
45°	386.6	401.7	423.6	452.1	467.3	490.8	532.8	573.1	611.8	647.1	684.1
47.5°	358.0	371.5	388.3	411.8	426.9	445.4	487.4	527.8	564.7	600.0	632.0
50°	332.8	342.9	358.0	378.2	389.9	403.4	445.4	484.1	517.7	551.3	581.5
52.5°	307.6	314.3	326.1	342.9	354.6	366.4	401.7	438.7	472.3	500.9	532.8
55°	280.7	289.1	299.2	310.9	319.3	329.4	358.0	393.3	421.9	452.1	477.3
57.5°	257.2	262.2	268.9	279.0	285.7	294.1	316.0	346.2	374.8	400.0	425.2
60°	233.6	237.0	242.0	248.8	253.8	260.5	275.6	302.5	327.8	347.9	369.8
62.5°	210.1	210.1	213.5	218.5	221.9	226.9	240.4	260.5	282.4	297.5	316.0
65°	184.9	186.6	188.2	191.6	193.3	196.7	205.1	220.2	237.0	252.1	265.6
67.5°	161.4	161.4	163.0	164.7	164.7	166.4	171.4	181.5	198.3	208.4	218.5
70°	137.8	137.8	137.8	137.8	139.5	137.8	141.2	147.9	159.7	169.8	174.8
72.5°	116.0	114.3	112.6	112.6	112.6	112.6	114.3	119.3	126.1	131.1	137.8
75°	92.4	90.8	89.1	87.4	89.1	89.1	89.1	90.8	94.1	99.2	100.8
77.5°	68.9	68.9	65.6	63.9	65.6	63.9	62.2	62.2	63.9	65.6	65.6
80°	47.1	45.4	43.7	42.0	42.0	42.0	40.3	38.7	38.7	38.7	37.0
82.5°	23.5	23.5	21.9	21.9	21.9	21.9	21.9	20.2	20.2	18.5	18.5
85°	8.4	8.4	8.4	8.4	10.1	8.4	10.1	10.1	10.1	10.1	10.1
87.5°	5.0	5.0	6.7	6.7	6.7	6.7	6.7	8.4	8.4	8.4	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°	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3
2.5°	1279.1	1284.1	1287.5	1290.8	1292.5	1295.9	1300.9	1304.3	1307.6	1311.0	1314.4
5°	1279.1	1289.2	1295.9	1300.9	1306.0	1312.7	1321.1	1327.8	1332.9	1339.6	1344.6
7.5°	1274.0	1287.5	1299.2	1306.0	1312.7	1322.8	1332.9	1342.9	1351.3	1359.7	1366.5
10°	1263.9	1280.7	1297.6	1304.3	1312.7	1326.1	1339.6	1351.3	1361.4	1371.5	1379.9
12.5°	1248.8	1269.0	1289.2	1297.6	1306.0	1322.8	1337.9	1351.3	1361.4	1369.8	1374.9
15°	1228.6	1252.2	1274.0	1284.1	1294.2	1311.0	1326.1	1337.9	1346.3	1351.3	1354.7
17.5°	1203.4	1228.6	1252.2	1263.9	1275.7	1292.5	1304.3	1311.0	1316.0	1316.0	1314.4
20°	1174.9	1201.8	1227.0	1238.7	1248.8	1262.3	1270.7	1272.3	1270.7	1267.3	1263.9
22.5°	1139.6	1169.8	1195.0	1205.1	1213.5	1223.6	1223.6	1221.9	1218.6	1213.5	1211.8
25°	1102.6	1131.2	1156.4	1166.5	1169.8	1176.5	1171.5	1168.1	1159.7	1154.7	1149.6
27.5°	1062.2	1092.5	1111.0	1117.7	1121.1	1117.7	1112.7	1105.9	1100.9	1092.5	1085.8
30°	1018.5	1045.4	1060.6	1065.6	1063.9	1058.9	1053.8	1042.1	1033.7	1025.3	1016.9
32.5°	968.1	995.0	1006.8	1008.5	1003.4	995.0	986.6	978.2	968.1	958.0	953.0
35°	919.4	942.9	949.6	946.3	941.2	931.1	919.4	909.3	900.9	889.1	880.7
37.5°	867.3	887.4	887.4	882.4	879.0	867.3	855.5	845.4	833.7	823.6	811.8
40°	815.2	830.3	825.3	820.2	815.2	801.7	791.6	776.5	764.8	753.0	744.6
42.5°	763.1	771.5	764.8	758.0	751.3	737.9	727.8	711.0	700.9	689.1	682.4
45°	711.0	712.6	702.6	697.5	690.8	674.0	660.5	648.8	637.0	623.6	615.2
47.5°	657.2	653.8	642.1	635.3	628.6	613.5	600.0	586.6	573.1	563.1	553.0
50°	603.4	595.0	583.2	576.5	568.1	554.7	539.5	524.4	512.6	502.6	494.1
52.5°	544.6	537.8	524.4	514.3	507.6	489.1	475.7	462.2	448.8	438.7	432.0
55°	485.7	475.7	460.5	453.8	443.7	428.6	415.2	398.3	388.3	379.9	371.5
57.5°	426.9	415.2	401.7	393.3	383.2	368.1	353.0	342.9	332.8	322.7	317.7
60°	369.8	358.0	341.2	337.8	327.8	312.6	299.2	287.4	277.3	270.6	265.6
62.5°	316.0	304.2	287.4	280.7	274.0	258.8	247.1	237.0	230.3	223.5	218.5
65°	262.2	252.1	238.7	230.3	223.5	211.8	201.7	191.6	186.6	178.2	173.1
67.5°	213.5	201.7	191.6	184.9	179.8	168.1	159.7	153.0	146.2	141.2	134.5
70°	168.1	158.0	147.9	144.5	139.5	131.1	124.4	117.7	112.6	107.6	100.8
72.5°	129.4	122.7	112.6	109.3	105.9	99.2	94.1	89.1	82.4	79.0	75.6
75°	95.8	89.1	82.4	79.0	77.3	70.6	67.2	62.2	58.8	57.1	53.8
77.5°	62.2	57.1	53.8	52.1	50.4	47.1	43.7	42.0	38.7	37.0	37.0
80°	35.3	33.6	31.9	30.3	28.6	26.9	26.9	25.2	23.5	21.9	20.2
82.5°	16.8	16.8	15.1	15.1	15.1	13.4	13.4	11.8	11.8	10.1	10.1
85°	8.4	8.4	8.4	8.4	8.4	6.7	6.7	6.7	5.0	5.0	3.4
87.5°	6.7	6.7	6.7	6.7	6.7	5.0	5.0	5.0	3.4	3.4	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: P345455

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 3000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3	1272.3
2.5°	1314.4	1316.0	1317.7	1319.4	1319.4	1321.1	1322.8	1321.1
5°	1348.0	1353.0	1354.7	1356.4	1358.1	1359.7	1361.4	1361.4
7.5°	1373.2	1379.9	1381.6	1381.6	1386.6	1388.3	1390.0	1390.0
10°	1386.6	1390.0	1393.4	1393.4	1396.7	1396.7	1400.1	1400.1
12.5°	1379.9	1383.3	1385.0	1386.6	1386.6	1388.3	1388.3	1388.3
15°	1356.4	1354.7	1354.7	1353.0	1353.0	1351.3	1351.3	1351.3
17.5°	1312.7	1311.0	1309.3	1309.3	1306.0	1306.0	1302.6	1302.6
20°	1260.6	1257.2	1255.5	1253.9	1253.9	1252.2	1248.8	1248.8
22.5°	1205.1	1201.8	1198.4	1195.0	1191.7	1190.0	1188.3	1188.3
25°	1142.9	1137.9	1136.2	1134.5	1129.5	1127.8	1124.4	1122.8
27.5°	1079.1	1070.7	1069.0	1067.3	1063.9	1062.2	1060.6	1060.6
30°	1011.8	1006.8	1003.4	1001.7	996.7	995.0	990.0	990.0
32.5°	944.6	936.2	932.8	931.1	927.8	924.4	922.7	922.7
35°	874.0	869.0	867.3	862.2	857.2	857.2	853.8	853.8
37.5°	806.8	801.7	796.7	795.0	791.6	786.6	784.9	790.0
40°	739.5	732.8	729.5	727.8	724.4	719.4	719.4	719.4
42.5°	674.0	668.9	667.3	663.9	660.5	658.9	655.5	653.8
45°	606.8	603.4	601.7	598.4	596.7	593.3	590.0	590.0
47.5°	547.9	541.2	541.2	537.8	534.5	532.8	532.8	534.5
50°	489.1	484.1	480.7	479.0	475.7	475.7	474.0	472.3
52.5°	425.2	421.9	420.2	420.2	416.8	416.8	415.2	415.2
55°	366.4	366.4	364.7	363.0	359.7	359.7	359.7	359.7
57.5°	314.3	310.9	309.3	307.6	305.9	304.2	304.2	302.5
60°	260.5	258.8	255.5	257.2	252.1	252.1	252.1	250.4
62.5°	211.8	208.4	206.7	205.1	201.7	201.7	198.3	196.7
65°	169.8	164.7	161.4	161.4	158.0	154.6	153.0	151.3
67.5°	127.7	124.4	122.7	121.0	117.7	114.3	114.3	112.6
70°	97.5	94.1	92.4	90.8	89.1	87.4	87.4	87.4
72.5°	72.3	70.6	68.9	68.9	67.2	65.6	65.6	67.2
75°	52.1	50.4	50.4	50.4	48.7	48.7	48.7	47.1
77.5°	35.3	33.6	33.6	31.9	31.9	31.9	31.9	31.9
80°	20.2	18.5	18.5	18.5	18.5	18.5	18.5	18.5
82.5°	8.4	8.4	8.4	8.4	6.7	6.7	6.7	6.7
85°	3.4	3.4	3.4	3.4	3.4	1.7	1.7	1.7
87.5°	1.7	1.7	1.7	1.7	1.7	1.7	0.0	1.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)