

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: P345449

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 2000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345449
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 2000lm3500K
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: 1836.0 lumens
Efficiency: N/A
Efficacy: 90.0 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

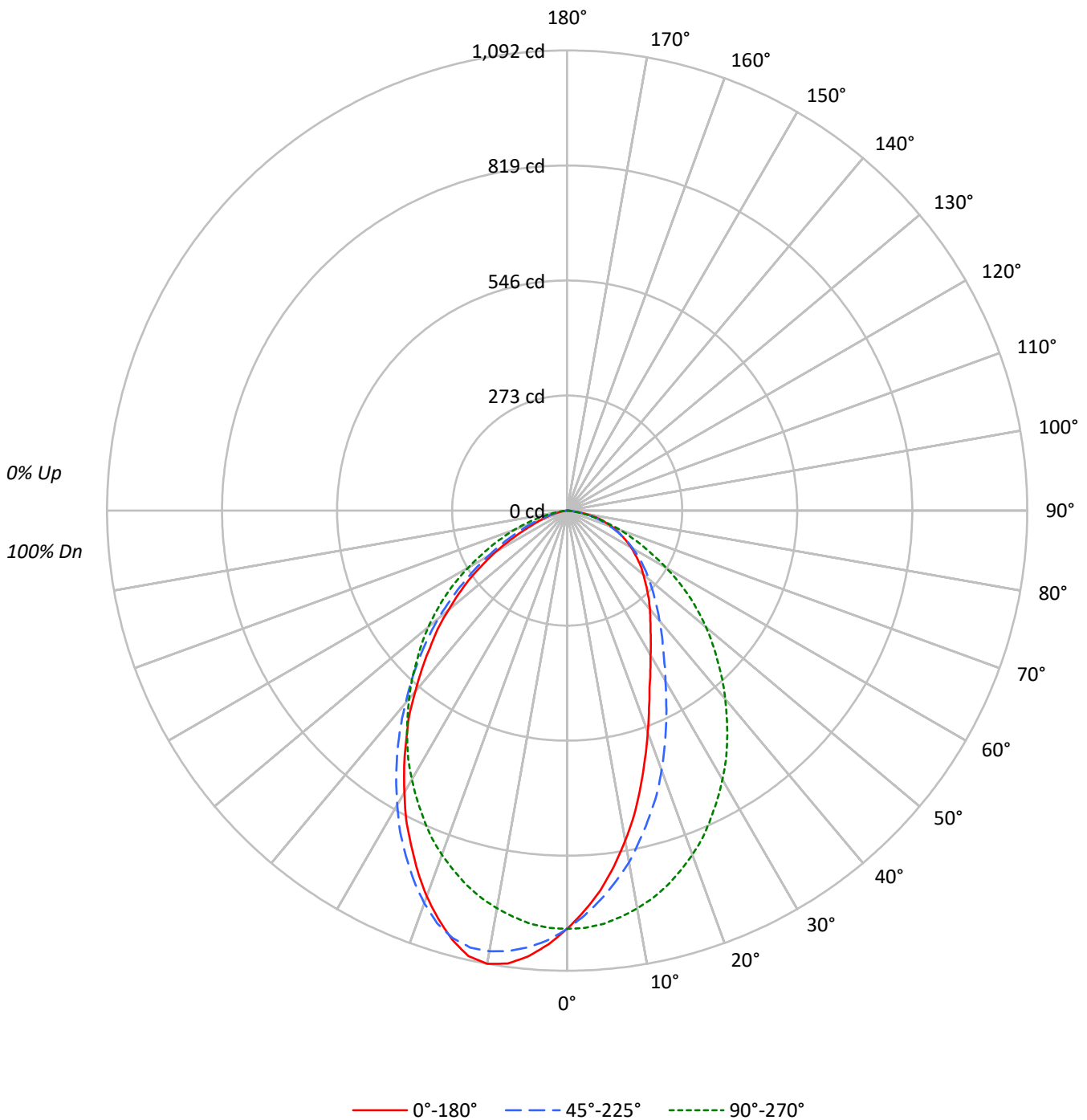
Input Watts (W): 20.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3500K

Luminous Intensity Polar Plot





TEST NUMBER: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3500K

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°	96727	96727	96727
5°	88497	96324	103896
10°	78625	94845	108076
15°	68125	92865	106355
20°	58058	90147	101027
25°	49766	86704	94177
30°	44553	82916	86899
35°	41022	78773	79237
40°	38866	74222	71385
45°	37048	69575	63428
50°	35782	65196	55856
55°	34968	59928	47678
60°	34247	52900	38067
65°	33253	45360	27211
70°	32513	37727	19433
75°	31103	29145	13819
80°	22057	16949	8082
85°	5815	8834	1454



TEST NUMBER: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3500K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	92.9	5.1
10°-20°	251.4	13.7
20°-30°	338.7	18.4
30°-40°	355.7	19.4
40°-50°	320.5	17.5
50°-60°	247.6	13.5
60°-70°	152.3	8.3
70°-80°	67.1	3.7
80°-90°	9.8	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°	682.9	37.2
0°-40°	1038.6	56.6
0°-60°	1606.7	87.5
0°-90°	1836.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1836.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	992	992	992	992	992	
5°	905	926	985	1040	1062	83
15°	675	752	920	1050	1054	188
25°	463	556	806	905	876	215
35°	345	396	662	703	666	217
45°	269	294	505	497	460	208
55°	206	216	353	303	281	184
65°	144	144	197	146	118	143
75°	83	73	77	46	37	84
85°	5	7	8	4	1	12
90°	0	0	0	0	0	



TEST NUMBER: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000Lm3500K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5
2.5°	950.5	949.2	947.9	950.5	950.5	951.8	951.8	954.4	954.4	957.1	961.0
5°	904.6	902.0	903.3	903.3	907.2	907.2	909.9	912.5	916.4	921.7	925.6
7.5°	850.9	850.9	852.2	854.8	858.7	858.7	862.7	866.6	873.2	879.7	887.6
10°	794.5	797.1	798.4	801.1	807.6	810.2	811.5	818.1	827.3	833.8	846.9
12.5°	738.1	738.1	740.7	746.0	751.2	755.2	757.8	767.0	776.1	787.9	799.7
15°	675.2	676.5	680.4	685.7	694.9	697.5	702.7	713.2	726.3	740.7	752.5
17.5°	614.9	617.5	620.1	628.0	634.5	638.5	646.3	658.1	672.6	688.3	706.7
20°	559.8	555.9	561.1	566.4	572.9	582.1	587.4	600.5	616.2	637.2	655.5
22.5°	507.4	507.4	511.3	515.2	521.8	528.4	534.9	545.4	562.4	583.4	604.4
25°	462.8	464.1	468.0	472.0	478.5	482.5	489.0	499.5	516.6	532.3	555.9
27.5°	427.4	428.7	430.0	435.3	440.5	444.4	448.4	458.9	472.0	489.0	508.7
30°	395.9	395.9	397.2	402.5	405.1	410.4	413.0	422.2	434.0	448.4	466.7
32.5°	369.7	369.7	371.0	373.6	378.9	381.5	382.8	392.0	401.2	415.6	430.0
35°	344.8	344.8	346.1	348.7	352.7	354.0	357.9	363.2	372.3	382.8	395.9
37.5°	323.8	323.8	325.1	326.5	329.1	331.7	334.3	339.6	344.8	355.3	368.4
40°	305.5	304.2	305.5	306.8	310.7	310.7	312.0	317.3	322.5	330.4	340.9
42.5°	287.1	287.1	287.1	288.4	291.1	292.4	293.7	296.3	301.5	308.1	316.0
45°	268.8	268.8	270.1	271.4	272.7	274.0	276.6	279.3	281.9	285.8	293.7
47.5°	251.7	253.0	253.0	254.3	255.7	257.0	258.3	260.9	263.5	267.5	272.7
50°	236.0	237.3	237.3	238.6	239.9	239.9	241.2	243.9	246.5	249.1	253.0
52.5°	221.6	221.6	220.3	221.6	222.9	222.9	224.2	225.5	228.1	232.1	234.7
55°	205.8	205.8	205.8	207.1	207.1	207.1	208.5	209.8	211.1	212.4	216.3
57.5°	190.1	190.1	191.4	190.1	191.4	191.4	191.4	192.7	194.0	196.7	198.0
60°	175.7	175.7	175.7	175.7	175.7	175.7	177.0	177.0	177.0	178.3	179.6
62.5°	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	161.3	161.3	162.6
65°	144.2	144.2	145.5	144.2	144.2	144.2	144.2	144.2	144.2	144.2	144.2
67.5°	129.8	128.5	129.8	128.5	128.5	128.5	128.5	127.2	127.2	127.2	125.9
70°	114.1	112.8	112.8	112.8	112.8	111.4	112.8	111.4	110.1	108.8	107.5
72.5°	97.0	97.0	97.0	97.0	97.0	95.7	94.4	94.4	93.1	91.8	90.5
75°	82.6	82.6	81.3	80.0	78.7	78.7	78.7	77.4	76.0	74.7	73.4
77.5°	64.2	62.9	62.9	61.6	60.3	59.0	60.3	59.0	57.7	56.4	55.1
80°	39.3	39.3	39.3	39.3	39.3	39.3	38.0	39.3	38.0	36.7	36.7
82.5°	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
85°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	6.6	6.6
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3.9	3.9	3.9
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: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000Lm3500K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5
2.5°	963.6	966.2	970.2	972.8	974.1	975.4	979.4	983.3	987.2	991.2	993.8
5°	932.2	938.7	942.6	949.2	953.1	957.1	963.6	970.2	976.7	984.6	991.2
7.5°	894.1	904.6	912.5	921.7	926.9	932.2	941.3	951.8	962.3	972.8	983.3
10°	857.4	866.6	881.0	894.1	898.1	905.9	920.4	932.2	946.6	958.4	972.8
12.5°	815.5	827.3	843.0	858.7	867.9	875.8	892.8	908.6	925.6	941.3	958.4
15°	769.6	787.9	805.0	823.3	835.1	843.0	862.7	882.3	900.7	920.4	940.0
17.5°	723.7	744.7	765.7	787.9	797.1	808.9	831.2	852.2	874.5	895.4	917.7
20°	677.8	700.1	722.4	747.3	760.4	772.2	795.8	820.7	845.6	869.2	892.8
22.5°	629.3	652.9	679.1	706.7	721.1	731.6	759.1	786.6	812.9	840.4	865.3
25°	580.8	608.3	635.9	664.7	679.1	694.9	722.4	751.2	778.8	806.3	835.1
27.5°	533.6	562.4	591.3	624.1	638.5	654.2	684.4	713.2	743.4	772.2	801.1
30°	490.3	517.9	549.3	582.1	597.8	613.6	645.0	676.5	706.7	736.8	764.3
32.5°	451.0	474.6	507.4	540.2	557.2	572.9	605.7	638.5	669.9	701.4	728.9
35°	414.3	436.6	464.1	499.5	515.2	532.3	566.4	597.8	630.6	662.1	690.9
37.5°	381.5	402.5	427.4	457.6	477.2	493.0	527.0	559.8	591.3	622.7	651.6
40°	352.7	371.0	392.0	419.5	437.9	454.9	489.0	521.8	553.3	583.4	612.3
42.5°	326.5	340.9	360.5	385.4	399.9	416.9	452.3	483.8	515.2	545.4	571.6
45°	301.5	313.3	330.4	352.7	364.5	382.8	415.6	447.1	477.2	504.8	533.6
47.5°	279.3	289.7	302.9	321.2	333.0	347.4	380.2	411.7	440.5	468.0	493.0
50°	259.6	267.5	279.3	295.0	304.2	314.7	347.4	377.6	403.8	430.0	453.6
52.5°	239.9	245.2	254.3	267.5	276.6	285.8	313.3	342.2	368.4	390.7	415.6
55°	218.9	225.5	233.4	242.5	249.1	257.0	279.3	306.8	329.1	352.7	372.3
57.5°	200.6	204.5	209.8	217.6	222.9	229.4	246.5	270.1	292.4	312.0	331.7
60°	182.2	184.9	188.8	194.0	198.0	203.2	215.0	236.0	255.7	271.4	288.4
62.5°	163.9	163.9	166.5	170.4	173.1	177.0	187.5	203.2	220.3	232.1	246.5
65°	144.2	145.5	146.8	149.5	150.8	153.4	159.9	171.7	184.9	196.7	207.1
67.5°	125.9	125.9	127.2	128.5	128.5	129.8	133.7	141.6	154.7	162.6	170.4
70°	107.5	107.5	107.5	107.5	108.8	107.5	110.1	115.4	124.5	132.4	136.3
72.5°	90.5	89.2	87.8	87.8	87.8	87.8	89.2	93.1	98.3	102.3	107.5
75°	72.1	70.8	69.5	68.2	69.5	69.5	69.5	70.8	73.4	77.4	78.7
77.5°	53.8	53.8	51.1	49.8	51.1	49.8	48.5	48.5	49.8	51.1	51.1
80°	36.7	35.4	34.1	32.8	32.8	32.8	31.5	30.2	30.2	30.2	28.8
82.5°	18.4	18.4	17.0	17.0	17.0	17.0	17.0	15.7	15.7	14.4	14.4
85°	6.6	6.6	6.6	6.6	7.9	6.6	7.9	7.9	7.9	7.9	7.9
87.5°	3.9	3.9	5.2	5.2	5.2	5.2	5.2	6.6	6.6	6.6	5.2
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: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000Lm3500K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5
2.5°	997.7	1001.6	1004.3	1006.9	1008.2	1010.8	1014.8	1017.4	1020.0	1022.6	1025.2
5°	997.7	1005.6	1010.8	1014.8	1018.7	1023.9	1030.5	1035.7	1039.7	1044.9	1048.8
7.5°	993.8	1004.3	1013.4	1018.7	1023.9	1031.8	1039.7	1047.5	1054.1	1060.6	1065.9
10°	985.9	999.0	1012.1	1017.4	1023.9	1034.4	1044.9	1054.1	1062.0	1069.8	1076.4
12.5°	974.1	989.8	1005.6	1012.1	1018.7	1031.8	1043.6	1054.1	1062.0	1068.5	1072.4
15°	958.4	976.7	993.8	1001.6	1009.5	1022.6	1034.4	1043.6	1050.2	1054.1	1056.7
17.5°	938.7	958.4	976.7	985.9	995.1	1008.2	1017.4	1022.6	1026.6	1026.6	1025.2
20°	916.4	937.4	957.1	966.2	974.1	984.6	991.2	992.5	991.2	988.5	985.9
22.5°	888.9	912.5	932.2	940.0	946.6	954.4	954.4	953.1	950.5	946.6	945.3
25°	860.0	882.3	902.0	909.9	912.5	917.7	913.8	911.2	904.6	900.7	896.8
27.5°	828.6	852.2	866.6	871.8	874.5	871.8	867.9	862.7	858.7	852.2	846.9
30°	794.5	815.5	827.3	831.2	829.9	826.0	822.0	812.9	806.3	799.7	793.2
32.5°	755.2	776.1	785.3	786.6	782.7	776.1	769.6	763.0	755.2	747.3	743.4
35°	717.1	735.5	740.7	738.1	734.2	726.3	717.1	709.3	702.7	693.5	687.0
37.5°	676.5	692.2	692.2	688.3	685.7	676.5	667.3	659.5	650.3	642.4	633.2
40°	635.9	647.7	643.7	639.8	635.9	625.4	617.5	605.7	596.5	587.4	580.8
42.5°	595.2	601.8	596.5	591.3	586.0	575.6	567.7	554.6	546.7	537.5	532.3
45°	554.6	555.9	548.0	544.1	538.8	525.7	515.2	506.1	496.9	486.4	479.8
47.5°	512.6	510.0	500.8	495.6	490.3	478.5	468.0	457.6	447.1	439.2	431.3
50°	470.7	464.1	454.9	449.7	443.1	432.6	420.8	409.0	399.9	392.0	385.4
52.5°	424.8	419.5	409.0	401.2	395.9	381.5	371.0	360.5	350.1	342.2	336.9
55°	378.9	371.0	359.2	354.0	346.1	334.3	323.8	310.7	302.9	296.3	289.7
57.5°	333.0	323.8	313.3	306.8	298.9	287.1	275.3	267.5	259.6	251.7	247.8
60°	288.4	279.3	266.1	263.5	255.7	243.9	233.4	224.2	216.3	211.1	207.1
62.5°	246.5	237.3	224.2	218.9	213.7	201.9	192.7	184.9	179.6	174.4	170.4
65°	204.5	196.7	186.2	179.6	174.4	165.2	157.3	149.5	145.5	139.0	135.0
67.5°	166.5	157.3	149.5	144.2	140.3	131.1	124.5	119.3	114.1	110.1	104.9
70°	131.1	123.2	115.4	112.8	108.8	102.3	97.0	91.8	87.8	83.9	78.7
72.5°	101.0	95.7	87.8	85.2	82.6	77.4	73.4	69.5	64.2	61.6	59.0
75°	74.7	69.5	64.2	61.6	60.3	55.1	52.4	48.5	45.9	44.6	42.0
77.5°	48.5	44.6	42.0	40.6	39.3	36.7	34.1	32.8	30.2	28.8	28.8
80°	27.5	26.2	24.9	23.6	22.3	21.0	21.0	19.7	18.4	17.0	15.7
82.5°	13.1	13.1	11.8	11.8	11.8	10.5	10.5	9.2	9.2	7.9	7.9
85°	6.6	6.6	6.6	6.6	6.6	5.2	5.2	5.2	3.9	3.9	2.6
87.5°	5.2	5.2	5.2	5.2	5.2	3.9	3.9	3.9	2.6	2.6	1.3
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: P345449

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	992.5	992.5	992.5	992.5	992.5	992.5	992.5	992.5
2.5°	1025.2	1026.6	1027.9	1029.2	1029.2	1030.5	1031.8	1030.5
5°	1051.5	1055.4	1056.7	1058.0	1059.3	1060.6	1062.0	1062.0
7.5°	1071.1	1076.4	1077.7	1077.7	1081.6	1082.9	1084.2	1084.2
10°	1081.6	1084.2	1086.9	1086.9	1089.5	1089.5	1092.1	1092.1
12.5°	1076.4	1079.0	1080.3	1081.6	1081.6	1082.9	1082.9	1082.9
15°	1058.0	1056.7	1056.7	1055.4	1055.4	1054.1	1054.1	1054.1
17.5°	1023.9	1022.6	1021.3	1021.3	1018.7	1018.7	1016.1	1016.1
20°	983.3	980.7	979.4	978.0	978.0	976.7	974.1	974.1
22.5°	940.0	937.4	934.8	932.2	929.5	928.2	926.9	926.9
25°	891.5	887.6	886.3	885.0	881.0	879.7	877.1	875.8
27.5°	841.7	835.1	833.8	832.5	829.9	828.6	827.3	827.3
30°	789.3	785.3	782.7	781.4	777.5	776.1	772.2	772.2
32.5°	736.8	730.3	727.6	726.3	723.7	721.1	719.8	719.8
35°	681.7	677.8	676.5	672.6	668.6	668.6	666.0	666.0
37.5°	629.3	625.4	621.4	620.1	617.5	613.6	612.3	616.2
40°	576.9	571.6	569.0	567.7	565.1	561.1	561.1	561.1
42.5°	525.7	521.8	520.5	517.9	515.2	513.9	511.3	510.0
45°	473.3	470.7	469.4	466.7	465.4	462.8	460.2	460.2
47.5°	427.4	422.2	422.2	419.5	416.9	415.6	415.6	416.9
50°	381.5	377.6	375.0	373.6	371.0	371.0	369.7	368.4
52.5°	331.7	329.1	327.8	327.8	325.1	325.1	323.8	323.8
55°	285.8	285.8	284.5	283.2	280.6	280.6	280.6	280.6
57.5°	245.2	242.5	241.2	239.9	238.6	237.3	237.3	236.0
60°	203.2	201.9	199.3	200.6	196.7	196.7	196.7	195.3
62.5°	165.2	162.6	161.3	159.9	157.3	157.3	154.7	153.4
65°	132.4	128.5	125.9	125.9	123.2	120.6	119.3	118.0
67.5°	99.6	97.0	95.7	94.4	91.8	89.2	89.2	87.8
70°	76.0	73.4	72.1	70.8	69.5	68.2	68.2	68.2
72.5°	56.4	55.1	53.8	53.8	52.4	51.1	51.1	52.4
75°	40.6	39.3	39.3	39.3	38.0	38.0	38.0	36.7
77.5°	27.5	26.2	26.2	24.9	24.9	24.9	24.9	24.9
80°	15.7	14.4	14.4	14.4	14.4	14.4	14.4	14.4
82.5°	6.6	6.6	6.6	6.6	5.2	5.2	5.2	5.2
85°	2.6	2.6	2.6	2.6	2.6	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	0.0	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)