

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: NEO-RAY

Report Number: P332832-840

Luminaire Tested: **S124DIW-S1020D1560U840-4F0-1E-UDD-D1**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P332832-840
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-10,
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DIW-S1020D1560U840-4F0-1E-UDD-D1
Description: DEFINE 4 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE
DOWNLIGHT 1020 LUMENS PER FOOT, DROP SATIN WHITE DIFFUSER
UPLIGHT 1560 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9718.7 lumens
Efficiency: N/A
Efficacy: 126.9 lumens/watt
Spacing Criteria (0/90/45): 1.23 / 1.28 / 1.39
Luminous Opening: Rectangular w/ Sides (W: 0.33' x L: 4' x H: 0.08')
CIE Type: General Diffuse

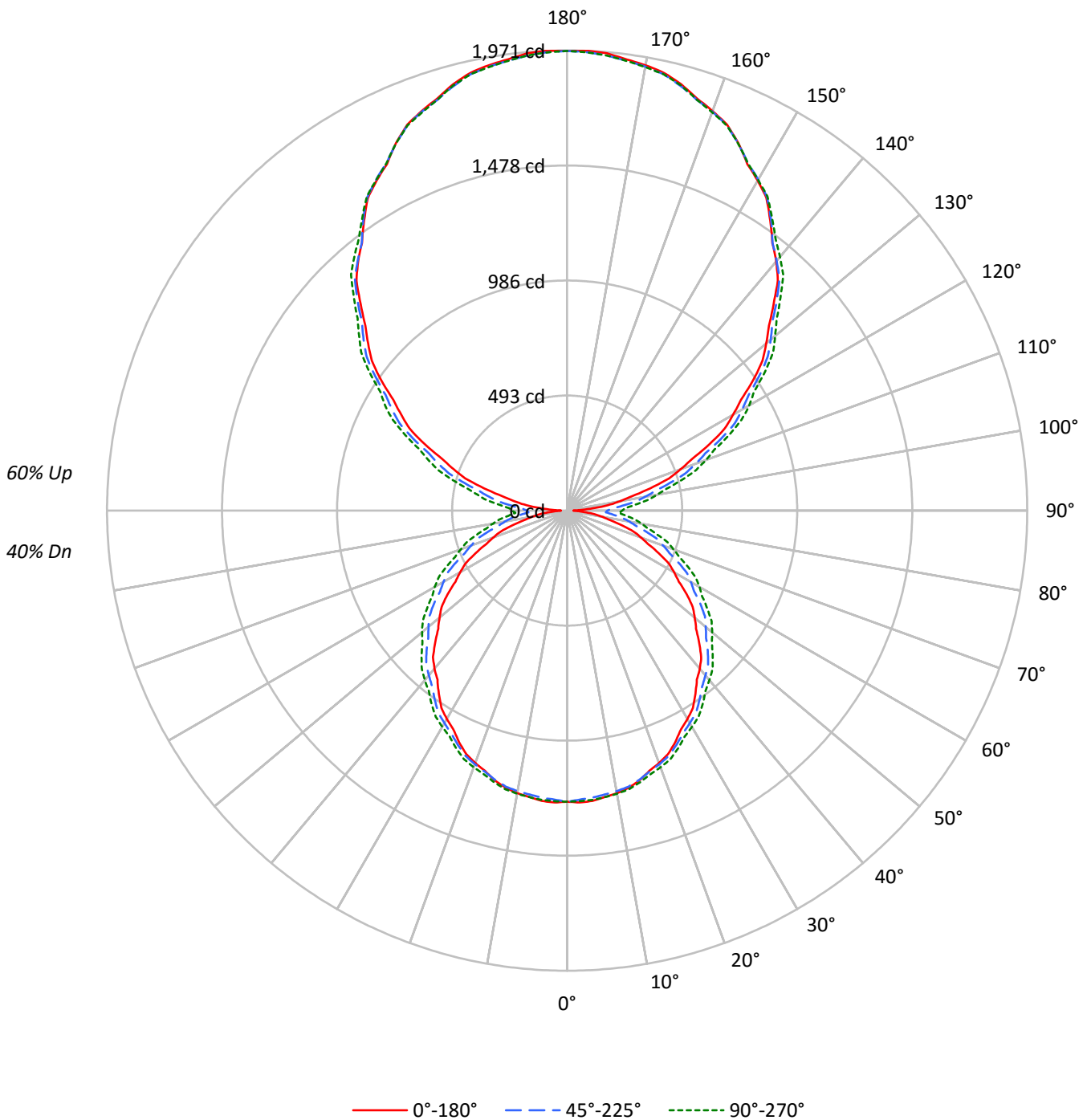
Input Watts (W): 76.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	105	105	105	105	96	96	96	96	78	78	78	62	62	62	47	47	47	40
1	95	90	86	82	86	82	79	75	67	65	62	53	52	50	41	39	38	32
2	86	78	72	66	78	71	66	61	58	54	51	46	43	41	35	33	32	26
3	78	68	61	55	71	62	56	51	51	46	42	41	37	34	31	29	27	22
4	71	60	52	46	65	55	48	43	45	40	36	36	32	29	27	25	23	19
5	65	54	45	39	59	49	42	36	40	35	31	32	28	25	25	22	20	16
6	60	48	40	34	54	44	37	31	36	31	26	29	25	22	22	19	17	14
7	55	43	35	29	50	39	32	27	33	27	23	26	22	19	20	17	15	12
8	51	39	31	26	47	36	29	24	30	24	20	24	20	17	19	16	13	11
9	48	35	28	23	43	33	26	21	27	22	18	22	18	15	17	14	12	10
10	45	32	25	20	40	30	23	19	25	20	16	20	16	14	16	13	11	9

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	10066	10066	10066
5°	10097	9838	9866
10°	10035	9677	9669
15°	9945	9490	9439
20°	9810	9285	9213
25°	9657	9054	8967
30°	9492	8825	8712
35°	9305	8591	8490
40°	9154	8367	8259
45°	8931	8161	8059
50°	8744	7924	7849
55°	8549	7700	7603
60°	8247	7415	7378
65°	7914	7109	7102
70°	7513	6760	6779
75°	6949	6374	6488
80°	6328	6004	6203
85°	5536	5679	6037



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.1	1.2
10°-20°	338.3	3.5
20°-30°	511.5	5.3
30°-40°	618.9	6.4
40°-50°	654.3	6.7
50°-60°	615.8	6.3
60°-70°	510.9	5.3
70°-80°	358.9	3.7
80°-90°	208.8	2.1
90°-100°	250.3	2.6
100°-110°	473.9	4.9
110°-120°	712.8	7.3
120°-130°	894.7	9.2
130°-140°	981.5	10.1
140°-150°	953.1	9.8
150°-160°	799.2	8.2
160°-170°	531.7	5.5
170°-180°	186.2	1.9
0°-30°	967.9	10.0
0°-40°	1586.8	16.3
0°-60°	2856.9	29.4
0°-90°	3935.4	40.5
90°-120°	1437.0	14.8
90°-150°	4266.3	43.9
90°-180°	5783.0	59.5
0°-180°	9718.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1247	1247	1247	1247	1247	
5°	1248	1244	1234	1245	1244	118
15°	1197	1198	1194	1206	1205	337
25°	1095	1103	1107	1122	1124	504
35°	958	974	989	1007	1012	600
45°	799	825	852	875	882	617
55°	626	656	697	724	733	557
65°	433	478	525	559	571	429
75°	240	292	350	388	402	255
85°	74	133	196	236	251	79
90°	27	100	172	219	236	21
95°	110	170	237	278	292	116
105°	367	398	454	493	510	391
115°	672	686	726	755	764	663
125°	972	973	1004	1027	1033	867
135°	1250	1259	1269	1287	1292	967
145°	1516	1521	1523	1529	1531	949
155°	1736	1736	1734	1740	1734	798
165°	1890	1885	1882	1890	1885	532
175°	1966	1958	1957	1966	1957	187
180°	1969	1969	1969	1969	1969	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9
2.5°	1251.3	1250.6	1249.8	1249.1	1248.3	1247.0	1245.0	1243.0	1241.0	1239.0	1240.7
5°	1248.2	1247.3	1246.4	1245.5	1244.6	1242.9	1240.8	1238.6	1236.5	1234.3	1236.8
7.5°	1237.6	1237.1	1236.5	1236.0	1235.4	1234.3	1232.4	1230.6	1228.8	1227.0	1229.8
10°	1228.7	1228.4	1228.1	1227.8	1227.5	1226.5	1225.0	1223.5	1221.8	1220.3	1223.1
12.5°	1216.4	1216.4	1216.3	1216.2	1216.2	1215.6	1214.6	1213.5	1212.4	1211.3	1214.0
15°	1196.6	1196.9	1197.2	1197.5	1197.8	1197.5	1196.6	1195.7	1194.7	1193.8	1196.6
17.5°	1169.5	1170.4	1171.3	1172.3	1173.3	1173.6	1173.4	1173.3	1173.1	1172.9	1175.7
20°	1150.5	1151.4	1152.4	1153.3	1154.3	1154.9	1155.2	1155.5	1155.8	1156.1	1159.2
22.5°	1129.2	1130.4	1131.7	1132.9	1134.0	1134.9	1135.4	1136.0	1136.5	1137.1	1140.2
25°	1094.7	1096.5	1098.3	1100.2	1102.1	1103.5	1104.4	1105.4	1106.3	1107.2	1110.6
27.5°	1056.1	1058.8	1061.6	1064.3	1067.0	1069.1	1070.6	1072.0	1073.4	1074.8	1078.0
30°	1030.5	1032.9	1035.4	1037.8	1040.4	1042.7	1044.8	1047.0	1049.1	1051.4	1054.8
32.5°	1002.5	1005.5	1008.5	1011.5	1014.4	1017.1	1019.6	1022.0	1024.4	1026.8	1030.7
35°	957.9	961.6	965.2	969.0	972.7	976.1	979.3	982.3	985.4	988.6	992.9
37.5°	912.8	917.2	921.4	925.7	930.0	934.0	937.9	941.7	945.6	949.5	953.8
40°	883.8	887.9	891.9	896.0	900.0	904.1	908.5	912.8	917.2	921.5	926.1
42.5°	850.3	854.9	859.4	863.9	868.4	873.2	878.3	883.4	888.5	893.6	898.8
45°	798.6	804.6	810.4	816.4	822.2	828.1	834.0	839.9	845.8	851.7	857.0
47.5°	749.2	755.3	761.3	767.5	773.6	780.0	786.8	793.7	800.5	807.3	812.7
50°	713.5	720.3	727.1	734.0	740.7	747.6	754.5	761.2	768.1	774.9	781.1
52.5°	677.7	684.6	691.4	698.2	705.1	712.4	720.1	728.0	735.8	743.7	749.8
55°	625.5	632.1	638.5	645.1	651.6	659.4	668.8	678.1	687.4	696.7	703.0
57.5°	567.1	575.2	583.3	591.4	599.5	608.0	617.3	626.6	635.8	645.1	652.5
60°	529.2	537.2	545.3	553.4	561.5	570.6	580.9	591.1	601.3	611.6	618.6
62.5°	492.3	501.1	510.0	518.8	527.6	537.0	547.3	557.5	567.8	578.0	585.2
65°	432.8	442.7	452.7	462.6	472.5	482.8	493.3	503.9	514.4	525.0	532.7
67.5°	375.6	386.2	396.7	407.3	417.8	428.7	440.0	451.3	462.6	473.9	481.8
70°	336.5	347.1	357.6	368.1	378.7	389.9	401.6	413.4	425.3	437.1	445.5
72.5°	298.5	309.3	320.1	330.9	341.7	353.4	365.9	378.4	391.0	403.5	411.6
75°	240.1	251.7	263.1	274.6	286.1	298.3	311.3	324.4	337.4	350.4	359.1
77.5°	185.7	197.8	210.1	222.2	234.4	247.2	260.9	274.6	288.2	301.8	310.6
80°	152.2	164.6	177.0	189.5	201.9	214.9	228.5	242.2	255.8	269.4	278.8
82.5°	118.7	131.6	144.5	157.4	170.3	183.6	197.2	210.9	224.6	238.2	247.7
85°	74.0	87.1	100.1	113.1	126.1	139.7	153.6	167.5	181.5	195.5	204.8
87.5°	42.2	55.6	69.1	82.4	95.8	109.7	123.7	137.8	152.0	166.1	175.5
90°	26.9	43.0	59.2	75.3	91.4	107.6	123.6	139.7	155.7	171.8	182.8
92.5°	53.8	69.3	84.6	100.1	115.5	130.9	146.1	161.4	176.6	191.9	201.8
95°	109.5	122.8	136.1	149.4	162.7	176.8	192.0	207.0	222.1	237.2	246.6
97.5°	176.0	187.3	198.5	209.8	221.1	234.4	249.7	265.1	280.4	295.9	305.2
100°	228.5	237.9	247.4	256.8	266.2	278.5	293.7	308.8	324.0	339.1	348.1
102.5°	284.6	292.2	299.8	307.4	315.1	326.2	340.8	355.4	370.0	384.7	393.7
105°	367.4	373.9	380.4	387.0	393.5	403.2	416.1	428.9	441.7	454.5	463.3
107.5°	457.0	462.4	467.9	473.4	478.9	487.2	498.3	509.3	520.4	531.4	540.0
110°	516.7	521.7	526.7	531.8	536.7	544.5	555.1	565.6	576.1	586.6	593.1



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	579.0	582.9	586.9	590.9	594.9	601.8	611.5	621.3	631.0	640.8	647.5
115°	672.3	675.1	677.8	680.6	683.5	689.4	698.7	708.0	717.2	726.5	733.0
117.5°	761.5	763.5	765.5	767.4	769.3	774.7	783.5	792.2	801.0	809.8	815.1
120°	820.1	822.4	824.7	827.0	829.2	834.4	842.3	850.3	858.3	866.3	870.8
122.5°	882.2	882.9	883.7	884.4	885.1	889.5	897.6	905.5	913.6	921.6	926.7
125°	972.5	972.2	971.9	971.6	971.3	974.8	982.2	989.7	997.0	1004.5	1009.7
127.5°	1055.4	1056.1	1056.8	1057.5	1058.2	1061.3	1066.6	1072.1	1077.5	1082.9	1087.8
130°	1112.8	1113.5	1114.2	1114.8	1115.5	1118.4	1123.4	1128.3	1133.3	1138.2	1143.2
132.5°	1172.5	1172.9	1173.3	1173.8	1174.2	1176.2	1179.9	1183.7	1187.3	1191.0	1195.7
135°	1249.9	1251.9	1253.9	1256.0	1258.0	1260.1	1262.3	1264.5	1266.7	1268.8	1273.1
137.5°	1335.7	1336.5	1337.1	1337.7	1338.4	1339.5	1341.0	1342.6	1344.2	1345.8	1349.5
140°	1393.0	1393.4	1393.7	1394.1	1394.5	1394.8	1395.1	1395.4	1395.7	1396.0	1399.8
142.5°	1444.3	1444.9	1445.5	1446.1	1446.7	1446.8	1446.3	1445.9	1445.4	1445.0	1448.4
145°	1516.5	1517.5	1518.5	1519.6	1520.7	1521.4	1521.7	1522.1	1522.4	1522.7	1524.2
147.5°	1588.4	1589.7	1591.0	1592.4	1593.7	1594.2	1593.9	1593.6	1593.4	1593.1	1593.1
150°	1632.2	1633.3	1634.3	1635.4	1636.4	1636.9	1636.9	1636.9	1636.9	1636.9	1636.9
152.5°	1672.5	1673.2	1674.1	1674.8	1675.6	1676.1	1676.3	1676.6	1676.9	1677.1	1677.9
155°	1735.9	1735.9	1735.9	1735.9	1735.9	1735.8	1735.4	1735.0	1734.7	1734.3	1735.8
157.5°	1789.5	1788.9	1788.3	1787.7	1787.1	1786.8	1786.7	1786.6	1786.6	1786.5	1787.5
160°	1821.2	1820.8	1820.5	1820.2	1819.8	1819.5	1819.2	1818.8	1818.5	1818.2	1819.2
162.5°	1850.4	1849.6	1848.7	1847.8	1846.8	1846.2	1845.9	1845.6	1845.2	1844.9	1846.7
165°	1889.7	1888.6	1887.6	1886.6	1885.6	1884.8	1884.1	1883.4	1882.8	1882.1	1884.1
167.5°	1919.9	1918.4	1917.0	1915.6	1914.2	1913.5	1913.6	1913.6	1913.7	1913.8	1915.8
170°	1936.9	1935.2	1933.5	1931.8	1930.2	1929.4	1929.8	1930.2	1930.5	1930.8	1932.8
172.5°	1949.0	1947.6	1946.2	1944.8	1943.4	1942.7	1942.8	1942.9	1942.9	1943.0	1945.3
175°	1965.8	1964.1	1962.5	1960.8	1959.0	1958.0	1957.7	1957.3	1957.0	1956.7	1959.0
177.5°	1971.3	1969.9	1968.6	1967.2	1965.9	1965.2	1965.2	1965.2	1965.2	1965.2	1967.1
180°	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9	1246.9
2.5°	1242.5	1244.3	1246.0	1246.7	1246.5	1246.2	1246.0	1245.8
5°	1239.2	1241.7	1244.3	1245.3	1245.0	1244.7	1244.4	1244.1
7.5°	1232.6	1235.4	1238.2	1239.4	1239.1	1238.8	1238.5	1238.2
10°	1225.9	1228.7	1231.5	1232.7	1232.4	1232.1	1231.8	1231.5
12.5°	1216.5	1219.0	1221.5	1222.8	1222.7	1222.6	1222.6	1222.5
15°	1199.4	1202.1	1205.0	1206.2	1205.9	1205.6	1205.3	1205.0
17.5°	1178.5	1181.4	1184.3	1185.6	1185.3	1185.1	1184.8	1184.6
20°	1162.3	1165.4	1168.5	1170.0	1170.0	1170.0	1170.0	1170.0
22.5°	1143.3	1146.4	1149.5	1151.3	1151.9	1152.3	1152.8	1153.3
25°	1114.1	1117.4	1120.8	1122.8	1123.1	1123.4	1123.7	1124.0
27.5°	1081.2	1084.3	1087.5	1089.2	1089.6	1090.0	1090.4	1090.8
30°	1058.2	1061.6	1065.0	1067.0	1067.6	1068.2	1068.9	1069.5
32.5°	1034.6	1038.5	1042.5	1044.7	1045.3	1045.9	1046.5	1047.2
35°	997.2	1001.6	1005.9	1008.6	1009.5	1010.4	1011.4	1012.3
37.5°	958.3	962.7	967.0	969.8	970.8	971.8	972.7	973.7
40°	930.8	935.4	940.2	943.1	944.3	945.5	946.8	948.1
42.5°	903.9	909.1	914.2	917.3	918.3	919.3	920.3	921.2
45°	862.2	867.6	872.8	876.3	877.8	879.3	880.9	882.4
47.5°	818.2	823.6	829.2	832.8	834.7	836.6	838.4	840.3
50°	787.3	793.6	799.7	803.8	805.7	807.5	809.3	811.2
52.5°	756.1	762.2	768.5	772.4	774.4	776.2	778.1	779.9
55°	709.1	715.4	721.5	725.6	727.4	729.3	731.1	733.1
57.5°	659.8	667.2	674.6	679.1	680.9	682.7	684.4	686.1
60°	625.8	633.0	640.1	644.9	647.4	649.8	652.4	654.8
62.5°	592.3	599.5	606.6	611.4	613.9	616.3	618.8	621.4
65°	540.5	548.3	556.0	561.2	563.6	566.1	568.6	571.1
67.5°	489.7	497.6	505.4	510.6	513.0	515.4	517.9	520.3
70°	453.7	462.1	470.5	475.8	478.0	480.2	482.3	484.5
72.5°	419.8	427.9	436.1	441.3	443.7	446.2	448.6	451.0
75°	367.8	376.5	385.2	390.9	393.7	396.6	399.3	402.1
77.5°	319.5	328.3	337.1	343.1	346.0	349.0	351.9	355.0
80°	288.1	297.4	306.7	312.6	315.1	317.6	320.0	322.6
82.5°	257.3	266.9	276.4	282.6	285.3	288.0	290.7	293.5
85°	214.1	223.4	232.7	238.9	242.1	245.1	248.2	251.4
87.5°	185.0	194.4	203.8	210.0	212.8	215.6	218.5	221.4
90°	193.8	204.8	215.8	223.0	226.1	229.2	232.4	235.6
92.5°	211.8	221.8	231.7	238.1	241.1	243.9	246.8	249.6
95°	256.0	265.4	274.8	280.8	283.7	286.4	289.2	292.1
97.5°	314.6	323.9	333.3	339.2	341.9	344.6	347.3	349.9
100°	357.2	366.3	375.3	380.9	383.0	385.3	387.5	389.6
102.5°	402.8	411.9	421.0	426.9	429.6	432.2	434.9	437.6
105°	472.1	480.9	489.7	495.7	499.3	502.8	506.2	509.8
107.5°	548.6	557.1	565.7	571.1	573.3	575.4	577.6	579.8
110°	599.6	606.0	612.5	617.4	621.0	624.5	627.9	631.5



TEST NUMBER: P332832-840

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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	654.3	661.1	667.7	672.5	675.2	677.8	680.5	683.3
115°	739.4	746.0	752.5	756.6	758.4	760.2	762.0	764.0
117.5°	820.4	825.7	831.0	834.6	836.4	838.2	839.9	841.7
120°	875.4	879.9	884.3	888.2	891.4	894.5	897.7	900.8
122.5°	931.7	936.8	941.9	944.9	945.9	947.0	948.0	949.0
125°	1014.9	1020.2	1025.4	1028.5	1029.8	1031.0	1032.1	1033.3
127.5°	1092.8	1097.6	1102.6	1105.8	1107.3	1108.9	1110.4	1112.1
130°	1148.0	1153.0	1157.9	1160.5	1161.0	1161.5	1162.1	1162.7
132.5°	1200.3	1205.0	1209.6	1212.6	1214.0	1215.3	1216.6	1217.9
135°	1277.4	1281.6	1286.0	1288.5	1289.4	1290.2	1291.0	1291.9
137.5°	1353.1	1356.8	1360.4	1363.1	1364.9	1366.7	1368.4	1370.2
140°	1403.5	1407.1	1410.9	1413.3	1414.5	1415.7	1416.9	1418.2
142.5°	1452.0	1455.4	1458.9	1461.3	1462.5	1463.7	1464.9	1466.2
145°	1525.8	1527.3	1528.8	1529.6	1529.9	1530.1	1530.3	1530.6
147.5°	1593.1	1593.0	1593.0	1593.3	1594.0	1594.6	1595.3	1595.9
150°	1636.9	1636.9	1636.9	1636.8	1636.4	1636.1	1635.8	1635.4
152.5°	1678.7	1679.5	1680.3	1680.3	1679.4	1678.6	1677.7	1676.8
155°	1737.1	1738.4	1739.8	1739.8	1738.4	1737.1	1735.8	1734.3
157.5°	1788.5	1789.5	1790.5	1790.4	1789.3	1788.2	1787.0	1785.8
160°	1820.2	1821.2	1822.2	1821.8	1820.2	1818.5	1816.7	1815.0
162.5°	1848.6	1850.4	1852.2	1852.3	1850.6	1849.0	1847.2	1845.5
165°	1886.1	1888.1	1890.2	1890.6	1889.2	1887.8	1886.4	1885.1
167.5°	1917.8	1919.9	1921.9	1921.9	1919.8	1917.6	1915.5	1913.4
170°	1934.9	1936.9	1938.9	1938.7	1936.4	1934.0	1931.7	1929.2
172.5°	1947.6	1949.8	1952.2	1952.2	1949.7	1947.4	1945.0	1942.7
175°	1961.5	1963.8	1966.2	1966.2	1963.8	1961.5	1959.0	1956.7
177.5°	1969.0	1970.9	1972.8	1972.7	1970.4	1968.3	1966.2	1964.0
180°	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8	1968.8

(END OF REPORT)