

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: P332831-840

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

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P332831-840
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-6,
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-D
Description: DEFINE 4 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE
DOWNLIGHT 1020 LUMENS PER FOOT, DROP SATIN WHITE DIFFUSER
UPLIGHT 1560 LUMENS PER FOOT, NO LENS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10554.6 lumens
Efficiency: N/A
Efficacy: 137.8 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: Semi-Indirect

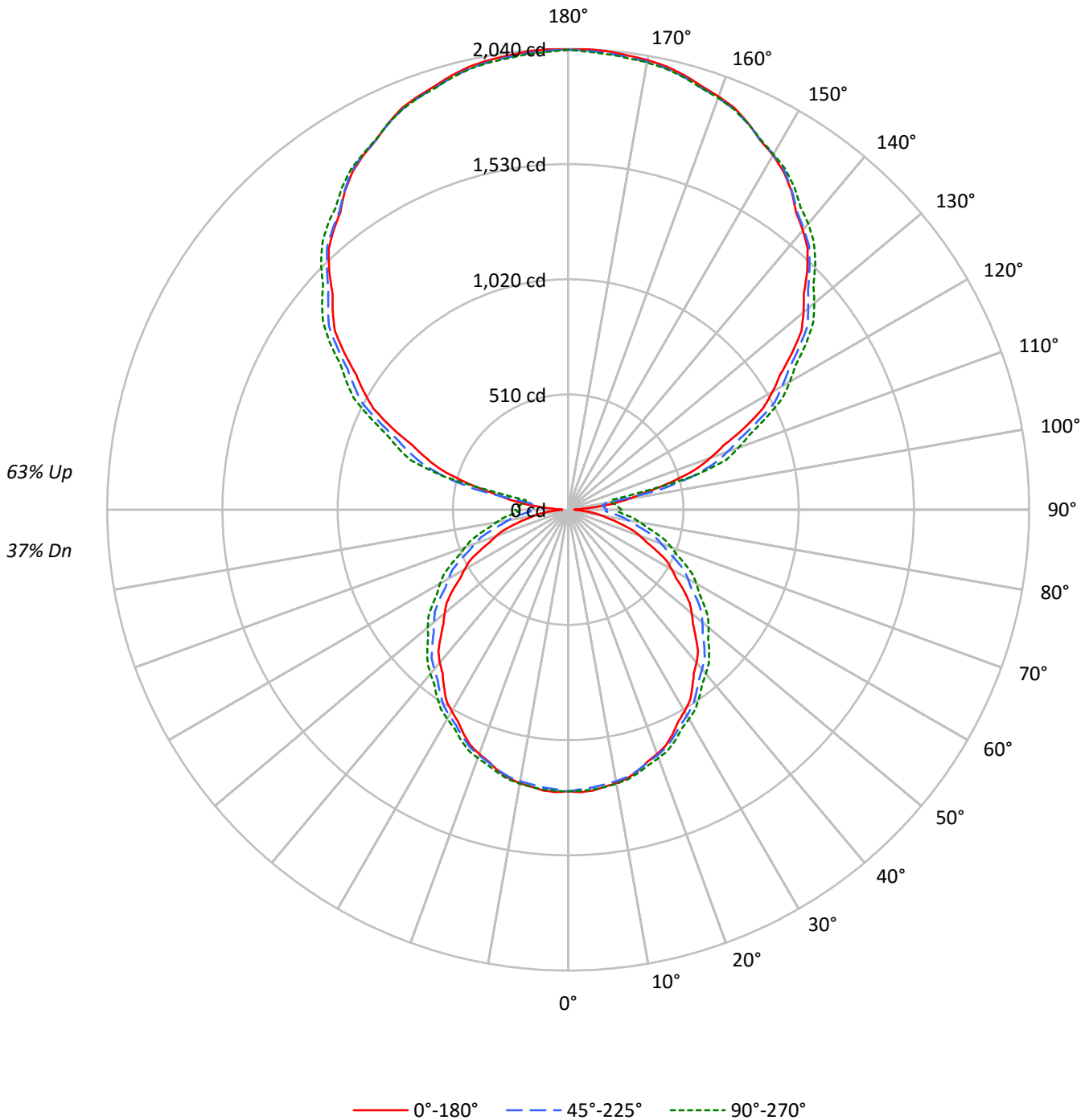
Input Watts (W): 76.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P332831-840

CATALOG NUMBER: S124DIW-S1020D1560U840-4F0-1E-UDD-D

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	104	104	104	104	94	94	94	94	76	76	76	60	60	60	44	44	44	37
1	94	90	85	82	85	81	78	75	66	63	61	51	50	48	38	37	36	30
2	85	78	71	66	77	71	65	61	57	53	50	45	42	39	33	31	30	24
3	78	68	61	55	70	62	55	50	50	45	41	39	36	33	29	27	25	20
4	71	60	52	46	64	55	48	42	44	39	35	35	31	28	26	23	21	17
5	65	53	45	39	58	48	41	36	39	34	30	31	27	24	23	20	18	15
6	60	48	39	34	54	43	36	31	35	30	26	28	24	21	21	18	16	13
7	55	43	35	29	50	39	32	27	32	27	23	25	21	18	19	16	14	11
8	51	39	31	26	46	35	29	24	29	24	20	23	19	16	17	15	13	10
9	47	35	28	23	43	32	26	21	26	21	18	21	17	15	16	13	11	9
10	44	32	25	20	40	29	23	19	24	19	16	19	16	13	15	12	10	8

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	1.1
10°-20°	338.3	3.2
20°-30°	511.5	4.8
30°-40°	618.9	5.9
40°-50°	654.3	6.2
50°-60°	615.8	5.8
60°-70°	510.9	4.8
70°-80°	358.9	3.4
80°-90°	208.8	2.0
90°-100°	190.1	1.8
100°-110°	533.2	5.1
110°-120°	909.3	8.6
120°-130°	1112.0	10.5
130°-140°	1168.3	11.1
140°-150°	1081.8	10.2
150°-160°	870.0	8.2
160°-170°	561.1	5.3
170°-180°	193.4	1.8
0°-30°	967.9	9.2
0°-40°	1586.8	15.0
0°-60°	2856.9	27.1
0°-90°	3935.4	37.3
90°-120°	1632.6	15.5
90°-150°	4994.6	47.3
90°-180°	6619.0	62.7
0°-180°	10554.6	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	19
95°	102	100	155	200	216	122
105°	471	509	567	611	572	494
115°	864	883	924	957	968	851
125°	1209	1215	1245	1275	1286	1079
135°	1495	1495	1510	1534	1546	1152
145°	1722	1725	1726	1735	1744	1076
155°	1887	1888	1884	1889	1885	870
165°	1990	1983	1983	1994	1981	562
175°	2036	2028	2028	2040	2024	194
180°	2036	2036	2036	2036	2036	



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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	91.5	107.6	123.6	139.7	155.7	171.8	182.8
92.5°	40.4	51.8	63.1	74.5	85.9	99.6	115.6	131.7	147.7	163.8	174.6
95°	101.9	100.7	99.4	98.2	96.8	102.7	115.8	128.9	141.9	155.0	165.4
97.5°	194.4	210.4	226.3	242.3	258.3	253.7	228.5	203.4	178.2	153.0	161.4
100°	265.1	279.2	293.5	307.6	321.7	311.5	276.9	242.4	207.7	173.1	175.7
102.5°	345.6	357.1	368.6	380.1	391.7	400.3	406.1	411.8	417.6	423.4	369.4
105°	471.0	479.2	487.5	495.6	503.9	514.6	527.8	541.0	554.1	567.3	578.1
107.5°	589.8	595.9	602.0	608.0	614.2	623.8	637.0	650.2	663.3	676.5	685.6
110°	669.0	674.4	679.7	685.2	690.5	699.6	712.6	725.4	738.3	751.2	759.0



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	745.9	751.6	757.3	763.0	768.6	777.1	788.4	799.7	811.0	822.3	829.1
115°	864.2	868.1	871.9	875.7	879.5	886.2	895.8	905.3	914.9	924.5	932.0
117.5°	972.1	975.1	978.2	981.2	984.2	990.8	1000.7	1010.7	1020.7	1030.7	1037.0
120°	1044.1	1046.4	1048.6	1051.0	1053.2	1058.7	1067.3	1076.0	1084.7	1093.4	1100.2
122.5°	1112.3	1113.3	1114.3	1115.3	1116.3	1121.3	1130.2	1139.2	1148.2	1157.2	1163.8
125°	1208.7	1209.7	1210.7	1211.8	1212.8	1216.9	1224.0	1231.1	1238.2	1245.3	1252.1
127.5°	1301.0	1301.0	1301.0	1301.1	1301.1	1304.8	1312.4	1319.9	1327.5	1334.9	1340.3
130°	1359.6	1359.6	1359.7	1359.7	1359.7	1362.7	1368.7	1374.6	1380.7	1386.6	1392.5
132.5°	1414.4	1414.7	1415.0	1415.3	1415.6	1418.4	1423.6	1428.9	1434.1	1439.5	1445.1
135°	1495.2	1494.9	1494.6	1494.2	1493.9	1495.5	1499.0	1502.6	1506.1	1509.5	1515.2
137.5°	1568.0	1567.9	1567.7	1567.5	1567.3	1568.5	1571.0	1573.6	1576.2	1578.7	1584.0
140°	1615.6	1615.9	1616.3	1616.7	1617.0	1617.7	1618.7	1619.7	1620.6	1621.6	1626.7
142.5°	1657.1	1658.2	1659.4	1660.5	1661.7	1662.4	1662.6	1662.8	1663.0	1663.2	1667.6
145°	1722.3	1723.0	1723.7	1724.4	1725.2	1725.5	1725.5	1725.5	1725.5	1725.5	1727.7
147.5°	1774.3	1775.9	1777.6	1779.2	1780.7	1781.3	1781.0	1780.7	1780.3	1780.0	1780.5
150°	1812.1	1813.2	1814.2	1815.2	1816.3	1816.6	1816.3	1816.0	1815.6	1815.3	1815.3
152.5°	1842.7	1843.7	1844.7	1845.7	1846.7	1847.0	1846.3	1845.7	1845.1	1844.5	1845.1
155°	1886.9	1887.2	1887.5	1887.9	1888.2	1887.9	1886.9	1885.9	1884.9	1883.8	1885.2
157.5°	1924.4	1924.2	1924.0	1923.8	1923.6	1922.9	1921.7	1920.6	1919.5	1918.2	1920.1
160°	1946.3	1945.3	1944.3	1943.3	1942.3	1941.6	1941.2	1940.9	1940.6	1940.2	1942.3
162.5°	1965.8	1964.5	1963.2	1962.0	1960.7	1959.8	1959.4	1959.1	1958.8	1958.4	1960.5
165°	1990.4	1988.7	1987.1	1985.4	1983.7	1982.9	1982.9	1982.9	1982.9	1982.9	1985.5
167.5°	2009.9	2008.2	2006.4	2004.7	2002.9	2002.0	2001.8	2001.6	2001.4	2001.1	2004.1
170°	2020.9	2018.9	2016.8	2014.8	2012.8	2012.0	2012.3	2012.7	2013.0	2013.3	2016.0
172.5°	2028.2	2026.2	2024.2	2022.2	2020.1	2019.2	2019.6	2019.9	2020.2	2020.6	2023.3
175°	2036.1	2034.1	2032.1	2030.0	2028.0	2027.2	2027.5	2027.8	2028.2	2028.5	2031.5
177.5°	2039.8	2037.9	2036.0	2034.1	2032.3	2031.5	2032.1	2032.7	2033.2	2033.7	2035.9
180°	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1



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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°	185.4	196.1	206.9	213.6	216.2	218.8	221.5	224.1
95°	175.8	186.2	196.6	203.4	206.5	209.6	212.8	215.9
97.5°	169.7	178.0	186.3	192.0	195.0	198.0	201.1	204.1
100°	178.3	181.0	183.6	186.2	188.7	191.2	193.7	196.2
102.5°	315.5	261.6	207.6	181.9	184.4	186.9	189.3	191.9
105°	589.0	599.8	610.5	611.1	601.4	591.7	582.0	572.3
107.5°	694.7	703.9	713.0	719.3	722.8	726.3	729.8	733.4
110°	766.8	774.7	782.4	788.1	791.6	795.1	798.6	802.1



TEST NUMBER: P332831-840

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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	835.9	842.6	849.4	854.6	858.4	862.1	866.0	869.7
115°	939.6	947.1	954.5	959.4	961.6	963.7	965.9	968.1
117.5°	1043.3	1049.7	1056.0	1060.3	1062.7	1065.0	1067.3	1069.6
120°	1107.1	1114.0	1120.8	1125.2	1127.0	1128.8	1130.6	1132.5
122.5°	1170.4	1177.0	1183.7	1187.7	1189.3	1190.8	1192.3	1194.0
125°	1259.1	1266.0	1272.9	1277.5	1279.6	1281.8	1284.0	1286.3
127.5°	1345.7	1351.1	1356.5	1360.1	1361.9	1363.7	1365.6	1367.5
130°	1398.5	1404.4	1410.3	1414.2	1416.0	1418.0	1419.8	1421.7
132.5°	1450.8	1456.4	1462.1	1465.7	1467.3	1468.9	1470.6	1472.1
135°	1520.9	1526.5	1532.2	1536.2	1538.8	1541.4	1543.9	1546.4
137.5°	1589.2	1594.6	1599.8	1603.2	1604.5	1605.8	1607.2	1608.5
140°	1631.7	1636.8	1641.8	1645.3	1647.2	1649.1	1651.0	1652.8
142.5°	1671.8	1676.2	1680.4	1683.2	1684.6	1686.0	1687.4	1688.7
145°	1729.9	1732.0	1734.2	1736.4	1738.3	1740.2	1742.1	1744.0
147.5°	1781.0	1781.5	1782.1	1783.0	1784.3	1785.6	1787.0	1788.3
150°	1815.3	1815.3	1815.3	1815.5	1815.8	1816.1	1816.5	1816.8
152.5°	1845.6	1846.1	1846.7	1846.8	1846.6	1846.4	1846.2	1846.0
155°	1886.5	1887.9	1889.3	1889.5	1888.4	1887.4	1886.4	1885.4
157.5°	1921.8	1923.6	1925.3	1925.3	1923.6	1921.8	1920.1	1918.2
160°	1944.3	1946.3	1948.3	1948.3	1946.3	1944.3	1942.3	1940.2
162.5°	1962.6	1964.6	1966.6	1966.4	1964.2	1961.9	1959.5	1957.2
165°	1988.2	1990.9	1993.7	1993.5	1990.4	1987.4	1984.4	1981.4
167.5°	2007.1	2010.0	2013.1	2012.9	2009.4	2006.1	2002.7	1999.3
170°	2018.7	2021.4	2024.2	2023.8	2020.4	2017.0	2013.7	2010.2
172.5°	2026.0	2028.7	2031.4	2030.9	2027.3	2023.7	2020.0	2016.3
175°	2034.6	2037.7	2040.7	2040.2	2036.1	2032.1	2028.0	2024.0
177.5°	2038.0	2040.2	2042.4	2041.8	2038.6	2035.3	2032.1	2028.8
180°	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1	2036.1

(END OF REPORT)