

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO COMMERCIAL

Report Number: P776501

Luminaire Tested: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P776501
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2310613A001)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K
Description: 8 INCH ROUND MEDIUM MATTE BLACK TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2886.9 lumens
Efficiency: N/A
Efficacy: 75.0 lumens/watt
Spacing Criteria (0/90/45): 1.25 / 1.25 / 1.15
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

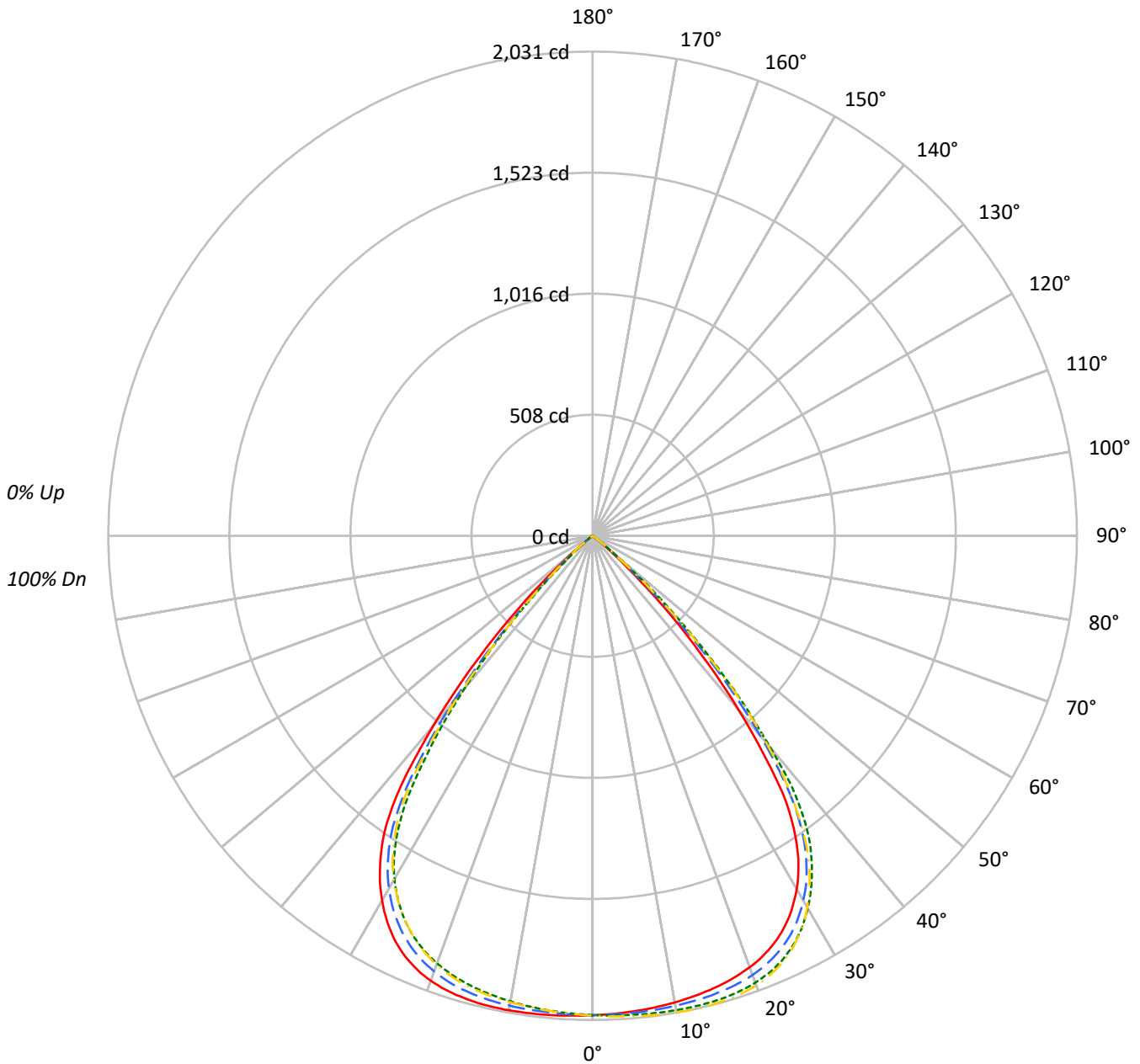
Input Watts (W): 38.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	113	110	107	105	111	108	106	103	104	102	100	100	99	97	97	95	94	93					93			
2	107	102	97	94	105	100	96	92	97	93	90	94	91	89	91	89	87	85					85			
3	101	94	88	84	99	92	87	83	90	85	82	87	84	81	85	82	79	78					78			
4	95	87	81	76	93	85	80	76	83	78	75	81	77	74	79	76	73	71					71			
5	89	80	74	69	88	79	73	69	77	72	68	76	71	67	74	70	67	65					65			
6	84	74	68	63	83	74	67	63	72	66	62	70	66	62	69	65	61	60					60			
7	79	69	62	58	78	68	62	58	67	61	57	66	61	57	65	60	57	55					55			
8	75	64	58	53	73	64	57	53	63	57	53	61	56	53	60	56	52	51					51			
9	71	60	53	49	69	59	53	49	58	53	49	57	52	49	57	52	48	47					47			
10	67	56	50	45	66	56	49	45	55	49	45	54	49	45	53	48	45	43					43			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	61409	61409	61409	61409
5°	61355	61812	61849	61297
10°	61618	62647	62660	61485
15°	62105	63749	63676	61830
20°	62578	64817	64524	62006
25°	62377	65119	64408	61309
30°	60325	63622	62257	58612
35°	54262	59342	56774	50893
40°	37977	46120	41190	33063
45°	18087	25794	21061	13657
50°	3681	6916	3923	1748
55°	165	250	144	106
60°	49	49	49	49
65°	29	29	29	29
70°	36	36	36	36
75°	0	0	0	0
80°	0	0	0	0
85°	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 25794 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	191.7	6.6
10°-20°	562.5	19.5
20°-30°	861.5	29.8
30°-40°	896.5	31.1
40°-50°	361.9	12.5
50°-60°	12.4	0.4
60°-70°	0.5	0.0
70°-80°	0.1	0.0
80°-90°	0.0	0.0
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°	1615.6	56.0
0°-40°	2512.1	87.0
0°-60°	2886.4	100.0
0°-90°	2886.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2886.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2011	2011	2011	2011	2011	
5°	2002	2017	2018	2000	2002	191
15°	1965	2017	2015	1956	1965	555
25°	1852	1933	1912	1820	1852	849
35°	1456	1592	1523	1366	1456	876
45°	419	597	488	316	419	337
55°	3	5	3	2	3	10
65°	0	0	0	0	0	1
75°	0	0	0	0	0	0
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4
0.5°	2010.7	2009.9	2010.7	2011.0	2011.4	2013.4	2014.2	2014.2	2012.2	2011.0	2010.7
1°	2009.9	2009.9	2010.7	2011.4	2012.2	2014.6	2015.4	2015.0	2013.0	2011.4	2010.3
1.5°	2009.1	2009.1	2010.7	2011.8	2013.0	2015.4	2016.5	2016.1	2013.8	2011.4	2010.3
2°	2008.3	2008.7	2010.3	2012.2	2013.8	2016.1	2017.3	2016.9	2014.2	2011.8	2010.3
2.5°	2007.5	2007.9	2010.3	2012.6	2014.2	2016.9	2018.5	2017.7	2015.0	2012.2	2009.9
3°	2006.3	2007.5	2009.9	2012.6	2014.6	2018.1	2019.3	2018.9	2015.7	2012.6	2009.5
3.5°	2005.6	2006.7	2009.9	2012.6	2015.4	2018.5	2020.1	2019.7	2016.5	2012.6	2009.1
4°	2004.4	2006.0	2009.1	2013.0	2015.7	2019.3	2021.2	2020.4	2017.3	2012.6	2009.1
4.5°	2003.2	2005.2	2008.7	2013.0	2016.1	2020.4	2022.0	2021.2	2017.7	2013.0	2008.3
5°	2002.0	2004.4	2008.3	2013.0	2016.9	2021.2	2022.8	2022.4	2018.1	2013.0	2007.9
5.5°	2000.9	2003.2	2007.9	2013.4	2017.3	2022.0	2024.0	2023.2	2018.9	2013.0	2007.5
6°	1999.7	2002.4	2007.5	2013.4	2017.7	2022.8	2024.7	2023.6	2019.3	2013.4	2007.1
6.5°	1998.5	2001.3	2006.7	2013.4	2018.5	2023.6	2025.5	2024.4	2019.7	2013.4	2006.7
7°	1997.3	2000.1	2006.3	2013.4	2018.9	2024.0	2026.3	2025.1	2020.1	2013.0	2006.0
7.5°	1995.8	1998.9	2006.0	2013.8	2019.3	2024.7	2027.1	2025.9	2020.4	2013.0	2005.6
8°	1994.2	1997.7	2005.2	2013.4	2019.7	2025.5	2027.9	2026.3	2020.8	2013.4	2004.8
8.5°	1992.6	1996.2	2004.4	2013.8	2020.1	2025.9	2028.3	2027.1	2020.8	2013.0	2004.0
9°	1991.1	1995.0	2003.6	2013.4	2020.4	2026.3	2029.1	2027.5	2021.2	2012.6	2003.6
9.5°	1989.1	1993.4	2002.8	2013.4	2020.4	2026.7	2029.4	2027.9	2021.2	2012.6	2002.4
10°	1987.6	1991.9	2002.0	2013.0	2020.8	2027.1	2029.8	2028.3	2021.2	2012.2	2001.7
10.5°	1985.6	1990.3	2001.3	2013.0	2020.8	2027.5	2030.2	2028.3	2021.2	2011.8	2000.5
11°	1983.6	1988.7	2000.1	2012.6	2020.8	2027.9	2030.6	2028.7	2020.8	2011.0	1999.3
11.5°	1981.7	1986.8	1998.9	2012.2	2020.8	2027.9	2030.6	2028.7	2020.8	2010.3	1998.1
12°	1979.7	1984.8	1998.1	2011.8	2020.8	2027.9	2031.0	2028.7	2020.4	2009.5	1996.6
12.5°	1977.4	1983.3	1997.0	2011.4	2020.4	2027.9	2031.0	2028.3	2019.7	2008.7	1995.4
13°	1975.0	1980.9	1995.4	2010.7	2020.1	2027.9	2030.6	2028.3	2019.3	2007.5	1993.4
13.5°	1972.7	1978.9	1994.2	2009.9	2019.3	2027.9	2030.2	2027.9	2018.5	2006.0	1991.9
14°	1969.9	1977.0	1992.6	2009.1	2018.5	2027.1	2029.8	2027.5	2017.3	2004.8	1989.5
14.5°	1967.6	1974.6	1991.1	2007.9	2018.1	2026.7	2029.4	2026.7	2016.1	2003.2	1987.6
15°	1964.9	1972.3	1989.1	2006.7	2016.9	2025.9	2028.7	2025.9	2014.6	2001.3	1985.2
15.5°	1961.7	1969.9	1987.2	2005.2	2016.1	2025.1	2027.5	2024.7	2013.0	1999.3	1982.5
16°	1958.6	1967.2	1985.2	2003.6	2014.6	2024.0	2026.3	2023.2	2011.0	1997.0	1979.7
16.5°	1955.5	1964.5	1982.9	2002.0	2013.0	2022.4	2025.1	2021.6	2009.1	1994.2	1976.6
17°	1951.9	1961.3	1980.5	1999.7	2011.4	2020.8	2023.2	2019.3	2006.7	1991.5	1973.1
17.5°	1948.0	1958.2	1977.8	1997.3	2009.5	2018.9	2021.2	2017.3	2004.4	1988.3	1969.2
18°	1944.1	1955.1	1974.6	1994.6	2007.1	2016.5	2019.3	2014.6	2001.3	1984.8	1964.9
18.5°	1940.2	1951.2	1971.9	1991.9	2004.8	2013.8	2016.5	2011.4	1998.1	1980.9	1960.5
19°	1935.5	1947.6	1968.4	1988.7	2001.7	2010.7	2013.8	2008.3	1994.2	1976.6	1955.8
19.5°	1930.8	1943.3	1964.5	1984.8	1998.5	2007.5	2010.7	2004.4	1990.3	1971.9	1950.4
20°	1926.1	1939.0	1960.5	1980.9	1995.0	2004.0	2006.7	2000.5	1986.0	1966.8	1944.5
20.5°	1920.6	1934.3	1955.8	1976.6	1991.1	1999.7	2002.8	1995.8	1980.9	1961.3	1938.2
21°	1914.7	1929.2	1951.2	1971.9	1986.4	1995.0	1998.1	1991.1	1975.8	1955.1	1932.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	1895.2	1912.0	1933.9	1955.1	1971.1	1978.2	1980.9	1972.7	1956.2	1934.3	1908.9
23°	1887.7	1905.3	1927.3	1948.4	1964.9	1971.5	1974.2	1965.6	1948.8	1926.1	1900.3
23.5°	1879.5	1898.3	1920.2	1941.0	1957.4	1964.1	1966.8	1957.4	1940.6	1917.1	1891.3
24°	1870.9	1890.5	1912.4	1933.5	1950.8	1956.2	1959.0	1949.2	1932.0	1908.1	1881.5
24.5°	1861.9	1882.6	1904.2	1924.9	1942.9	1947.6	1949.6	1940.2	1922.2	1897.9	1870.9
25°	1851.7	1873.6	1895.6	1915.9	1933.1	1938.6	1940.6	1930.4	1912.0	1887.3	1859.9
25.5°	1841.5	1864.2	1885.8	1906.5	1924.1	1928.4	1930.0	1919.8	1901.0	1876.0	1848.6
26°	1830.2	1853.7	1875.6	1896.3	1914.4	1917.9	1919.0	1908.5	1889.3	1863.8	1836.1
26.5°	1818.4	1843.1	1865.0	1885.4	1903.4	1905.7	1906.9	1896.3	1876.8	1850.9	1822.7
27°	1805.5	1831.0	1853.3	1874.0	1890.9	1893.6	1894.0	1883.4	1863.5	1837.6	1809.0
27.5°	1791.8	1818.8	1840.8	1861.9	1879.1	1880.7	1880.7	1869.7	1849.4	1823.1	1793.8
28°	1777.3	1805.1	1827.4	1848.6	1865.8	1866.2	1866.6	1854.8	1834.5	1807.9	1778.5
28.5°	1762.1	1790.6	1813.7	1835.3	1851.7	1851.3	1850.9	1839.2	1818.4	1791.4	1762.5
29°	1745.6	1775.4	1798.9	1820.8	1836.8	1835.7	1835.3	1822.7	1802.0	1775.0	1745.2
29.5°	1729.2	1759.7	1783.6	1805.5	1821.6	1818.8	1818.0	1805.5	1784.4	1757.4	1727.2
30°	1711.2	1742.5	1767.2	1789.9	1804.7	1801.2	1800.0	1787.5	1766.0	1739.4	1708.4
30.5°	1692.8	1724.5	1749.9	1773.0	1787.9	1782.8	1781.2	1768.3	1746.8	1720.2	1688.9
31°	1672.4	1704.9	1731.9	1755.0	1769.5	1762.8	1760.9	1748.0	1726.8	1699.8	1667.7
31.5°	1651.3	1684.9	1713.1	1736.6	1750.3	1742.9	1740.5	1726.8	1706.1	1678.7	1645.4
32°	1629.0	1663.0	1692.4	1717.8	1730.7	1721.7	1717.4	1704.5	1683.8	1656.8	1621.5
32.5°	1605.1	1639.5	1670.5	1697.1	1710.8	1698.6	1693.6	1680.6	1660.3	1633.7	1595.3
33°	1578.9	1614.9	1647.4	1675.9	1688.5	1674.8	1668.9	1655.2	1636.0	1609.0	1568.7
33.5°	1551.8	1587.9	1622.3	1653.6	1666.2	1650.1	1642.3	1629.0	1611.0	1583.2	1540.1
34°	1521.7	1560.5	1597.2	1630.1	1642.7	1624.3	1614.5	1600.8	1583.9	1555.4	1509.6
34.5°	1490.0	1530.3	1569.1	1605.5	1618.0	1596.1	1584.3	1571.0	1554.6	1524.8	1476.3
35°	1455.9	1497.4	1540.1	1578.5	1592.2	1565.9	1551.8	1538.9	1523.3	1490.8	1437.9
35.5°	1420.7	1461.8	1508.0	1549.5	1563.6	1532.3	1517.8	1504.1	1488.8	1452.8	1397.6
36°	1381.9	1423.8	1474.7	1517.8	1533.4	1497.8	1481.8	1466.9	1451.2	1412.9	1354.5
36.5°	1336.5	1382.7	1437.1	1481.8	1500.2	1459.1	1443.0	1428.1	1410.5	1368.6	1306.8
37°	1284.5	1335.0	1396.0	1444.6	1462.6	1420.7	1403.9	1387.4	1366.3	1320.9	1256.7
37.5°	1228.5	1281.7	1351.8	1403.1	1423.4	1378.0	1363.1	1345.5	1316.9	1266.8	1202.6
38°	1172.9	1227.7	1304.8	1362.0	1381.9	1334.2	1322.0	1301.3	1262.9	1209.3	1148.6
38.5°	1115.7	1174.8	1255.1	1313.8	1336.5	1286.4	1279.0	1255.9	1205.8	1150.6	1091.8
39°	1060.9	1124.7	1203.0	1266.1	1281.7	1237.9	1233.6	1207.7	1147.4	1089.1	1032.7
39.5°	1006.9	1073.4	1148.2	1212.8	1219.5	1185.4	1182.7	1156.8	1089.1	1028.8	972.4
40°	952.9	1023.3	1091.8	1158.8	1157.2	1131.0	1132.6	1102.8	1033.5	969.3	912.5
40.5°	896.9	968.1	1035.9	1098.5	1097.7	1073.4	1083.6	1048.4	979.5	910.6	848.7
41°	840.1	910.6	979.5	1037.4	1043.3	1017.1	1029.6	992.8	924.7	853.4	786.9
41.5°	784.9	851.1	921.6	976.0	989.3	958.3	974.4	934.9	869.1	795.1	726.6
42°	729.3	794.7	864.4	913.3	934.1	903.5	917.6	877.3	811.5	737.6	671.4
42.5°	675.7	739.1	806.8	850.3	878.5	848.3	859.3	820.2	756.0	680.0	611.9
43°	624.0	683.9	748.5	790.4	818.6	793.5	798.6	761.0	698.8	622.1	557.9
43.5°	571.2	629.9	688.6	729.3	760.3	737.6	740.3	703.9	645.2	567.3	503.8



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	418.9	466.6	510.1	561.4	597.4	570.4	561.8	538.7	487.8	423.2	362.9
45.5°	369.6	414.6	455.3	508.1	544.6	516.8	507.4	483.9	438.1	378.6	317.9
46°	324.5	364.9	404.0	459.6	492.5	464.3	451.8	431.8	391.1	334.3	272.9
46.5°	280.3	317.1	355.5	411.4	439.2	416.5	405.6	384.4	344.1	290.1	228.2
47°	238.4	272.1	309.7	365.3	393.8	368.4	359.4	337.5	297.1	245.5	193.4
47.5°	199.3	228.2	268.2	320.6	348.4	320.2	313.2	290.5	250.2	207.1	161.7
48°	164.8	189.1	229.0	276.8	303.0	272.1	267.0	243.1	209.8	171.9	133.5
48.5°	133.9	153.9	193.8	236.5	257.6	223.9	220.8	203.2	172.6	139.8	108.0
49°	115.1	125.3	162.5	199.7	218.4	182.8	184.8	165.2	138.6	110.8	86.5
49.5°	96.3	105.7	133.1	166.4	180.5	148.0	149.5	132.3	108.8	85.7	67.3
50°	77.5	86.1	113.5	135.8	145.6	117.4	117.4	103.4	82.6	71.2	55.6
50.5°	58.3	66.6	94.3	115.1	113.9	90.0	90.0	77.5	68.1	56.4	44.2
51°	39.9	47.4	75.2	94.7	86.1	74.4	74.0	63.8	53.6	41.9	32.5
51.5°	29.0	35.6	56.0	74.4	71.2	58.3	58.3	50.1	39.1	27.0	20.7
52°	20.0	25.4	36.8	54.0	56.4	42.7	42.3	36.4	24.7	12.1	9.4
52.5°	12.5	16.8	25.1	33.7	41.1	27.0	26.2	22.7	10.6	7.8	6.3
53°	10.6	14.5	15.7	21.5	26.2	11.7	10.6	8.6	7.0	5.9	5.1
53.5°	8.2	11.7	12.9	12.5	11.7	7.4	7.0	6.3	5.5	4.7	3.9
54°	5.9	9.0	9.8	10.2	7.4	5.9	5.5	5.1	4.3	3.5	3.1
54.5°	3.9	6.3	7.0	7.8	5.9	4.7	4.3	3.9	3.1	2.7	2.3
55°	3.1	3.5	4.3	5.9	4.7	3.5	3.5	3.1	2.7	2.3	2.0
55.5°	2.3	2.7	3.1	3.5	3.5	2.7	2.7	2.3	2.0	2.0	1.6
56°	2.0	2.3	2.7	2.7	2.7	2.0	2.0	2.0	1.6	1.6	1.6
56.5°	1.6	2.0	2.0	2.3	2.0	1.6	1.6	1.6	1.6	1.2	1.2
57°	1.6	1.6	1.6	2.0	1.6	1.6	1.6	1.6	1.2	1.2	1.2
57.5°	1.2	1.2	1.6	1.6	1.6	1.2	1.2	1.2	1.2	1.2	1.2
58°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.8
58.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.8	0.8	0.8
59°	0.8	1.2	1.2	1.2	1.2	0.8	0.8	0.8	0.8	0.8	0.8
59.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
60°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
60.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
61°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
61.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
62°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.4	0.4	0.4
62.5°	0.8	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4	0.4
63°	0.4	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4
63.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
64°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
64.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
65°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
65.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
66°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
68°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
68.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
69°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
69.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
71°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0
71.5°	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
72°	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	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	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
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: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2011.4	2011.4	2011.4	2011.4	2011.4	2011.4
0.5°	2010.3	2009.9	2011.4	2012.2	2012.2	2010.7
1°	2009.9	2009.1	2010.3	2011.0	2011.0	2009.9
1.5°	2009.1	2007.9	2009.1	2009.9	2009.9	2009.1
2°	2008.3	2007.1	2007.9	2008.7	2008.7	2008.3
2.5°	2007.9	2006.0	2007.1	2007.5	2007.9	2007.5
3°	2007.1	2005.2	2006.0	2006.3	2006.3	2006.3
3.5°	2006.0	2004.0	2004.4	2005.2	2005.2	2005.6
4°	2005.6	2002.8	2003.2	2004.0	2004.0	2004.4
4.5°	2004.4	2001.3	2002.0	2002.8	2002.8	2003.2
5°	2003.6	2000.1	2000.5	2001.3	2002.0	2002.0
5.5°	2002.4	1998.9	1999.3	2000.1	2000.5	2000.9
6°	2001.7	1997.3	1997.7	1998.9	1999.3	1999.7
6.5°	2000.5	1995.8	1996.6	1997.3	1998.1	1998.5
7°	1998.9	1994.2	1995.0	1996.2	1997.0	1997.3
7.5°	1997.7	1992.6	1993.4	1994.6	1995.4	1995.8
8°	1996.6	1991.1	1991.9	1993.4	1994.2	1994.2
8.5°	1995.0	1989.1	1989.9	1991.9	1992.6	1992.6
9°	1993.4	1987.2	1988.3	1990.3	1991.1	1991.1
9.5°	1992.3	1985.2	1986.4	1988.7	1989.5	1989.1
10°	1990.3	1983.3	1984.4	1987.2	1987.9	1987.6
10.5°	1988.7	1980.9	1982.5	1985.2	1986.0	1985.6
11°	1986.8	1978.9	1980.5	1983.6	1984.4	1983.6
11.5°	1984.8	1976.2	1978.2	1981.7	1982.5	1981.7
12°	1982.9	1973.9	1975.8	1979.7	1980.5	1979.7
12.5°	1980.5	1971.5	1973.1	1977.4	1978.6	1977.4
13°	1978.2	1968.8	1970.3	1975.0	1976.2	1975.0
13.5°	1975.4	1966.0	1968.0	1972.7	1973.5	1972.7
14°	1973.1	1962.9	1964.9	1969.9	1971.1	1969.9
14.5°	1969.9	1959.8	1961.7	1966.8	1968.4	1967.6
15°	1967.2	1956.2	1958.6	1963.7	1965.2	1964.9
15.5°	1964.1	1952.7	1954.7	1960.5	1962.1	1961.7
16°	1960.2	1948.8	1951.2	1956.6	1958.6	1958.6
16.5°	1956.6	1944.9	1947.2	1952.7	1955.1	1955.5
17°	1952.7	1940.6	1942.5	1948.4	1951.2	1951.9
17.5°	1948.4	1935.9	1938.2	1943.7	1946.8	1948.0
18°	1943.7	1930.8	1933.1	1938.6	1942.1	1944.1
18.5°	1938.6	1926.1	1928.1	1933.1	1937.1	1940.2
19°	1933.5	1920.6	1922.6	1927.3	1932.0	1935.5
19.5°	1928.1	1914.4	1916.7	1921.0	1926.1	1930.8
20°	1921.8	1908.5	1910.4	1914.4	1919.8	1926.1
20.5°	1915.5	1901.8	1903.8	1907.3	1913.2	1920.6
21°	1908.5	1894.8	1896.7	1899.5	1906.5	1914.7



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1885.4	1870.9	1872.5	1873.6	1882.2	1895.2
23°	1876.8	1861.9	1863.5	1863.8	1873.2	1887.7
23.5°	1867.0	1852.5	1853.7	1854.1	1863.5	1879.5
24°	1857.2	1842.3	1843.9	1843.5	1853.3	1870.9
24.5°	1846.6	1831.4	1832.9	1832.1	1842.7	1861.9
25°	1835.3	1820.0	1821.6	1820.0	1831.4	1851.7
25.5°	1823.5	1807.9	1809.0	1807.9	1819.2	1841.5
26°	1810.6	1795.3	1796.1	1794.6	1807.1	1830.2
26.5°	1797.3	1781.6	1782.8	1781.2	1793.8	1818.4
27°	1783.2	1766.8	1768.7	1766.8	1780.1	1805.5
27.5°	1767.9	1751.5	1753.8	1751.9	1765.2	1791.8
28°	1751.9	1735.4	1738.2	1735.4	1749.9	1777.3
28.5°	1735.1	1718.2	1721.7	1719.8	1733.5	1762.1
29°	1717.8	1700.6	1704.5	1702.2	1716.7	1745.6
29.5°	1699.4	1681.8	1686.9	1684.9	1699.8	1729.2
30°	1679.9	1662.6	1667.7	1666.2	1681.8	1711.2
30.5°	1658.7	1641.1	1648.5	1647.8	1663.0	1692.8
31°	1635.6	1619.2	1627.4	1627.0	1643.1	1672.4
31.5°	1611.3	1594.5	1605.1	1605.9	1621.5	1651.3
32°	1585.5	1569.1	1580.4	1581.6	1598.0	1629.0
32.5°	1557.3	1540.9	1555.0	1556.5	1573.0	1605.1
33°	1528.7	1511.5	1526.8	1529.1	1546.4	1578.9
33.5°	1496.6	1479.8	1499.0	1502.1	1519.7	1551.8
34°	1463.8	1444.6	1468.8	1472.8	1490.8	1521.7
34.5°	1427.7	1407.0	1436.4	1440.3	1459.4	1490.0
35°	1388.2	1365.5	1401.1	1404.6	1425.0	1455.9
35.5°	1343.6	1319.7	1360.8	1366.3	1387.4	1420.7
36°	1296.6	1268.8	1315.8	1322.8	1346.3	1381.9
36.5°	1243.7	1215.6	1265.3	1275.1	1299.7	1336.5
37°	1190.5	1163.9	1210.1	1223.0	1248.0	1284.5
37.5°	1134.5	1113.8	1150.6	1169.0	1192.1	1228.5
38°	1081.7	1062.1	1090.3	1111.0	1135.3	1172.9
38.5°	1027.3	1010.8	1033.1	1053.1	1077.8	1115.7
39°	974.8	950.9	977.9	991.2	1019.4	1060.9
39.5°	920.8	890.6	925.1	932.1	960.3	1006.9
40°	865.2	829.6	869.9	872.6	899.6	952.9
40.5°	807.2	776.7	812.3	812.7	842.1	896.9
41°	747.7	724.2	755.6	753.2	786.1	840.1
41.5°	687.8	673.4	700.0	693.7	730.1	784.9
42°	630.3	619.7	645.9	637.7	674.5	729.3
42.5°	572.3	565.7	593.5	584.5	617.8	675.7
43°	515.6	512.5	542.6	532.8	563.7	624.0
43.5°	461.2	459.6	492.1	483.1	511.3	571.2



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	320.6	316.3	348.0	346.9	369.6	418.9
45.5°	273.6	271.3	304.2	307.7	326.9	369.6
46°	226.7	226.7	263.9	270.9	287.7	324.5
46.5°	190.3	187.1	226.7	236.1	251.3	280.3
47°	158.6	150.7	191.8	204.0	216.9	238.4
47.5°	130.0	130.0	159.7	173.8	185.6	199.3
48°	105.7	109.6	131.1	147.6	157.0	164.8
48.5°	84.2	89.3	111.2	127.2	130.8	133.9
49°	66.6	68.9	91.6	107.3	111.2	115.1
49.5°	55.2	48.5	72.4	87.7	91.6	96.3
50°	44.2	36.8	52.9	67.7	71.6	77.5
50.5°	33.3	27.0	39.1	47.8	52.5	58.3
51°	22.3	18.8	28.6	34.8	38.4	39.9
51.5°	11.4	11.7	19.2	23.5	26.6	29.0
52°	7.4	9.4	12.1	14.5	17.2	20.0
52.5°	5.5	7.4	9.8	11.7	14.5	12.5
53°	4.7	5.9	7.8	9.0	11.7	10.6
53.5°	3.5	3.9	5.9	6.7	9.0	8.2
54°	2.7	3.1	3.9	3.9	6.3	5.9
54.5°	2.3	2.3	3.1	3.1	3.5	3.9
55°	2.0	2.0	2.3	2.3	2.7	3.1
55.5°	1.6	1.6	2.0	2.0	2.3	2.3
56°	1.6	1.6	1.6	1.6	2.0	2.0
56.5°	1.2	1.2	1.6	1.6	1.6	1.6
57°	1.2	1.2	1.2	1.2	1.2	1.6
57.5°	1.2	1.2	1.2	1.2	1.2	1.2
58°	0.8	0.8	1.2	1.2	1.2	1.2
58.5°	0.8	0.8	0.8	1.2	1.2	1.2
59°	0.8	0.8	0.8	0.8	0.8	0.8
59.5°	0.8	0.8	0.8	0.8	0.8	0.8
60°	0.8	0.8	0.8	0.8	0.8	0.8
60.5°	0.8	0.8	0.8	0.8	0.8	0.8
61°	0.8	0.8	0.8	0.8	0.8	0.8
61.5°	0.8	0.8	0.8	0.8	0.8	0.8
62°	0.4	0.8	0.8	0.8	0.8	0.8
62.5°	0.4	0.4	0.8	0.8	0.8	0.8
63°	0.4	0.4	0.4	0.4	0.4	0.4
63.5°	0.4	0.4	0.4	0.4	0.4	0.4
64°	0.4	0.4	0.4	0.4	0.4	0.4
64.5°	0.4	0.4	0.4	0.4	0.4	0.4
65°	0.4	0.4	0.4	0.4	0.4	0.4
65.5°	0.4	0.4	0.4	0.4	0.4	0.4
66°	0.4	0.4	0.4	0.4	0.4	0.4



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	0.4	0.4	0.4	0.4	0.4	0.4
68°	0.4	0.4	0.4	0.4	0.4	0.4
68.5°	0.4	0.4	0.4	0.4	0.4	0.4
69°	0.4	0.4	0.4	0.4	0.4	0.4
69.5°	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.4	0.4	0.4	0.4	0.4	0.4
70.5°	0.4	0.4	0.4	0.4	0.4	0.4
71°	0.4	0.4	0.4	0.4	0.4	0.4
71.5°	0.0	0.4	0.4	0.4	0.4	0.4
72°	0.0	0.0	0.4	0.4	0.4	0.0
72.5°	0.0	0.0	0.0	0.0	0.0	0.0
73°	0.0	0.0	0.0	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0
81°	0.0	0.0	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	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
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776501

CATALOG NUMBER: HCDJBL3040CSD-HCD8TRMB-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - - 90°-270° - · - · 135°-315°

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21.5°	1908.9	1924.1	1946.1	1966.8	1981.7	1989.9	1993.0	1985.2	1969.9	1948.8	1924.9
22°	1902.2	1918.3	1940.2	1960.9	1977.0	1984.4	1987.2	1979.3	1963.3	1941.8	1917.5



44°	519.1	576.3	627.5	671.8	703.9	681.6	678.4	649.1	592.3	515.6	452.6
44.5°	468.2	521.5	567.3	614.6	649.1	625.6	621.7	593.5	540.6	467.4	407.5



66.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
67°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4



89°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89.5°	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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21.5°	1901.4	1887.3	1889.3	1891.6	1898.7	1908.9
22°	1893.6	1879.5	1881.1	1883.0	1890.9	1902.2



44°	414.2	409.5	443.2	434.2	461.2	519.1
44.5°	367.6	362.5	394.2	389.1	414.2	468.2

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66.5°	0.4	0.4	0.4	0.4	0.4	0.4
67°	0.4	0.4	0.4	0.4	0.4	0.4

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89°	0.0	0.0	0.0	0.0	0.0	0.0
89.5°	0.0	0.0	0.0	0.0	0.0	0.0

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(END OF REPORT)