

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: P776321

Luminaire Tested: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

Issue Date: 2/7/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776321  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B009)  
Test Lab:  
Issue Date: 2/7/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K  
Description: 4 INCH SQUARE MEDIUM LENSED WALLWASH KIT  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3450.2 lumens  
Efficiency: N/A  
Efficacy: 89.6 lumens/watt  
Spacing Criteria (0/90/45): 1.11 / 1.14 / 1.19  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

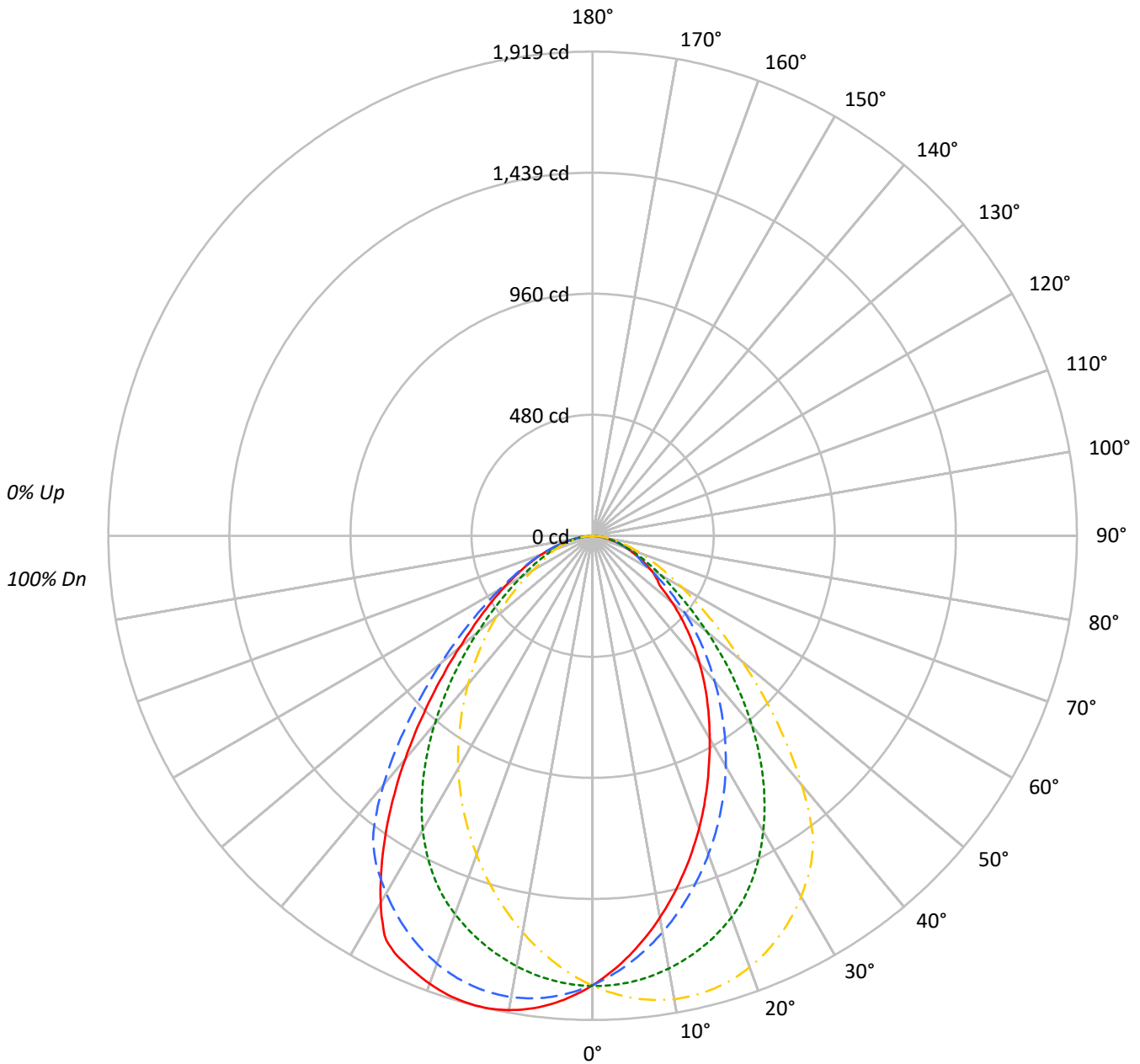
Input Watts (W): 38.5  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					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	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100				
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	89	88				88				
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76				76				
3	94	85	78	72	92	84	77	72	81	75	71	78	73	69	76	72	68	66				66				
4	87	77	69	63	85	75	68	63	73	67	62	71	65	61	69	64	60	58				58				
5	81	70	62	56	79	68	61	55	66	60	55	65	59	54	63	58	54	52				52				
6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46				46				
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42				42				
8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38				38				
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34				34				
10	58	46	38	34	57	45	38	34	44	38	33	43	37	33	43	37	33	32				32				

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	224239	224239	224239	224239
5°	210959	224211	235328	223618
10°	196287	222548	243953	221398
15°	180842	219707	249804	218026
20°	165239	215568	253001	213626
25°	149580	208234	254863	206818
30°	134870	196529	244034	195570
35°	121294	180950	219144	179629
40°	108165	161345	189519	159866
45°	94685	138983	160234	138147
50°	80390	115652	135035	116415
55°	69488	94808	115521	97309
60°	66121	78732	100680	82356
65°	59230	66436	89068	71111
70°	52986	57181	78486	62369
75°	46826	49305	67394	55189
80°	36889	41165	52181	48195
85°	18050	29890	24836	39565

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 225°  
 Vertical Angle: 45°  
 Luminance: 182659 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	167.5	4.9
10°-20°	468.6	13.6
20°-30°	676.8	19.6
30°-40°	728.1	21.1
40°-50°	604.3	17.5
50°-60°	406.6	11.8
60°-70°	246.0	7.1
70°-80°	124.4	3.6
80°-90°	27.9	0.8
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°	1313.0	38.1
0°-40°	2041.1	59.2
0°-60°	3051.9	88.5
0°-90°	3450.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3450.2	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1782	1782	1782	1782	1782	
5°	1670	1775	1863	1770	1670	155
15°	1388	1686	1917	1673	1388	389
25°	1077	1500	1835	1489	1077	495
35°	790	1178	1426	1169	790	493
45°	532	781	900	776	532	410
55°	317	432	526	444	317	289
65°	199	223	299	239	199	198
75°	96	101	139	114	96	102
85°	12	21	17	27	12	19
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°	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8
0.5°	1771.3	1771.3	1773.2	1777.1	1784.6	1787.3	1789.7	1790.8	1790.8	1789.3	1786.9
1°	1761.1	1761.9	1766.2	1773.2	1784.6	1790.8	1796.3	1799.4	1800.2	1797.9	1793.2
1.5°	1750.5	1752.1	1758.7	1768.9	1784.2	1794.0	1802.6	1807.7	1809.2	1805.7	1799.0
2°	1739.9	1742.3	1750.9	1764.2	1783.4	1797.1	1808.4	1815.9	1817.8	1813.5	1805.3
2.5°	1728.6	1731.7	1742.7	1759.5	1782.6	1799.8	1814.3	1823.3	1826.1	1821.4	1810.8
3°	1717.6	1721.5	1734.8	1754.4	1781.4	1802.6	1819.8	1830.8	1834.3	1828.4	1815.9
3.5°	1705.9	1710.6	1726.2	1749.3	1780.3	1804.5	1824.9	1838.2	1841.7	1835.4	1821.0
4°	1694.1	1700.0	1717.2	1743.9	1778.3	1806.9	1830.0	1844.8	1849.1	1842.1	1825.7
4.5°	1682.0	1688.3	1708.2	1738.0	1776.7	1808.4	1834.7	1851.1	1856.2	1848.4	1829.6
5°	1669.9	1677.3	1699.2	1732.1	1774.8	1810.0	1839.0	1857.4	1862.8	1854.2	1833.9
5.5°	1657.0	1665.6	1689.4	1725.8	1772.4	1811.2	1842.9	1863.2	1869.1	1859.7	1837.4
6°	1644.4	1653.4	1680.0	1719.6	1770.1	1812.4	1846.4	1868.7	1875.0	1865.2	1840.9
6.5°	1631.9	1640.9	1670.3	1712.9	1767.3	1812.7	1849.9	1873.4	1880.5	1869.9	1844.1
7°	1618.6	1629.2	1660.1	1706.7	1764.2	1813.1	1853.1	1878.1	1885.9	1874.2	1846.8
7.5°	1604.9	1616.2	1649.5	1699.2	1761.1	1813.1	1855.8	1882.4	1890.6	1878.5	1849.1
8°	1592.0	1603.7	1639.3	1692.2	1757.6	1813.1	1858.2	1886.7	1894.9	1882.4	1851.1
8.5°	1578.3	1590.8	1628.8	1684.7	1753.6	1812.7	1860.1	1890.2	1899.3	1885.6	1852.7
9°	1564.2	1577.9	1617.8	1677.3	1749.7	1812.0	1862.1	1893.4	1902.8	1888.7	1854.2
9.5°	1550.1	1564.2	1606.5	1669.1	1745.8	1810.8	1863.6	1896.1	1905.9	1891.4	1855.4
10°	1536.0	1550.9	1595.5	1661.3	1741.5	1809.6	1864.8	1898.9	1909.0	1893.8	1856.2
10.5°	1521.5	1537.6	1584.1	1653.0	1736.8	1808.0	1865.6	1901.2	1911.4	1895.7	1857.0
11°	1507.4	1523.9	1572.8	1644.8	1732.1	1806.5	1866.0	1902.8	1913.7	1897.3	1857.0
11.5°	1492.9	1510.2	1561.1	1635.8	1727.0	1804.5	1866.0	1904.3	1915.3	1898.5	1856.6
12°	1477.7	1496.5	1548.9	1627.2	1721.9	1802.2	1866.0	1905.5	1916.9	1899.3	1856.2
12.5°	1463.2	1482.0	1537.2	1618.2	1716.5	1799.8	1865.6	1905.9	1918.0	1900.0	1855.4
13°	1448.7	1467.9	1525.0	1609.2	1711.0	1797.1	1864.4	1906.3	1918.4	1900.0	1854.2
13.5°	1433.4	1453.8	1512.9	1600.2	1705.1	1794.0	1863.2	1906.3	1918.8	1899.6	1852.7
14°	1418.6	1439.7	1500.0	1590.8	1699.2	1790.4	1861.7	1905.9	1918.8	1898.9	1850.7
14.5°	1403.3	1425.2	1487.5	1581.0	1693.0	1787.3	1860.1	1905.1	1918.0	1897.7	1848.4
15°	1388.0	1410.0	1474.9	1571.2	1686.3	1783.4	1857.8	1903.9	1917.3	1896.5	1846.0
15.5°	1372.8	1395.5	1462.4	1561.4	1679.7	1779.5	1855.4	1902.4	1916.1	1894.9	1843.3
16°	1357.5	1381.0	1449.5	1551.7	1673.0	1774.8	1852.7	1900.4	1914.5	1893.0	1840.1
16.5°	1342.6	1366.1	1436.2	1541.5	1666.0	1770.5	1849.5	1898.5	1912.6	1890.6	1836.6
17°	1327.0	1351.6	1423.3	1530.9	1658.5	1765.4	1846.4	1896.1	1910.2	1887.5	1833.1
17.5°	1311.7	1336.0	1410.0	1520.3	1650.7	1760.3	1842.5	1893.0	1907.5	1884.4	1828.8
18°	1296.0	1321.1	1397.0	1509.8	1642.9	1754.4	1838.6	1889.5	1904.3	1880.9	1824.5
18.5°	1280.8	1306.2	1383.7	1498.8	1635.0	1748.9	1834.3	1885.9	1900.8	1876.9	1819.8
19°	1265.1	1291.0	1370.0	1487.5	1626.8	1743.1	1829.6	1882.0	1897.3	1873.0	1815.1
19.5°	1249.1	1275.7	1356.7	1476.5	1618.2	1736.4	1824.5	1877.7	1893.4	1868.3	1810.0
20°	1233.8	1260.8	1342.6	1465.1	1609.6	1730.2	1819.4	1873.0	1889.1	1863.6	1804.5
20.5°	1218.2	1245.6	1329.3	1453.4	1600.6	1723.1	1813.9	1867.9	1884.4	1858.5	1798.3
21°	1202.5	1230.3	1315.6	1441.7	1591.2	1716.1	1808.0	1862.8	1879.7	1853.1	1792.4



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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°	1155.5	1184.5	1273.7	1405.7	1560.3	1693.0	1788.9	1845.2	1863.6	1835.1	1772.0
23°	1139.5	1168.8	1259.3	1392.7	1549.3	1684.0	1781.8	1839.0	1858.2	1828.8	1765.0
23.5°	1124.2	1154.0	1245.6	1380.2	1537.2	1675.0	1774.4	1832.3	1852.3	1822.1	1757.6
24°	1108.5	1138.3	1231.1	1366.1	1525.0	1665.2	1766.2	1826.1	1846.8	1815.5	1749.7
24.5°	1092.5	1123.0	1217.0	1352.8	1512.5	1654.6	1758.3	1819.0	1841.3	1808.0	1741.5
25°	1077.2	1107.8	1202.1	1338.7	1499.6	1643.6	1750.1	1812.0	1835.4	1801.0	1733.3
25.5°	1062.0	1092.1	1188.0	1324.6	1486.7	1632.3	1741.9	1805.3	1827.6	1794.0	1724.3
26°	1046.7	1076.8	1173.5	1309.7	1473.0	1620.9	1732.9	1798.7	1819.0	1787.3	1715.7
26.5°	1031.4	1062.0	1159.0	1295.7	1458.9	1608.4	1723.9	1791.6	1810.0	1779.9	1706.3
27°	1016.2	1046.3	1144.6	1280.8	1444.4	1595.5	1714.5	1784.2	1800.6	1772.4	1696.9
27.5°	1001.3	1031.4	1130.1	1265.9	1429.5	1582.6	1705.1	1774.4	1785.7	1762.6	1687.5
28°	986.0	1016.2	1115.2	1250.6	1414.7	1568.9	1695.3	1764.6	1765.4	1752.5	1677.7
28.5°	971.5	1001.3	1100.7	1235.4	1399.4	1554.8	1685.1	1754.8	1744.6	1742.3	1667.5
29°	957.1	986.0	1085.5	1219.7	1384.1	1540.3	1674.6	1743.9	1725.5	1731.3	1657.0
29.5°	942.2	971.9	1070.6	1204.5	1368.1	1525.0	1663.6	1727.0	1702.4	1714.5	1646.4
30°	928.1	957.5	1055.3	1188.4	1352.4	1509.4	1652.6	1705.9	1679.3	1694.1	1635.8
30.5°	913.6	942.6	1040.0	1172.7	1335.6	1494.1	1640.9	1685.5	1656.2	1673.4	1624.9
31°	899.5	926.9	1024.8	1156.7	1319.5	1478.5	1628.8	1666.0	1632.7	1653.4	1613.9
31.5°	885.4	913.6	1009.1	1140.6	1302.3	1461.6	1616.2	1642.9	1606.8	1631.1	1602.5
32°	871.3	899.1	993.9	1124.6	1285.5	1445.2	1604.1	1619.8	1582.2	1608.4	1591.2
32.5°	857.6	885.4	978.6	1108.5	1268.3	1428.0	1592.0	1596.3	1557.5	1586.1	1579.8
33°	843.9	871.3	963.3	1092.1	1250.6	1410.7	1579.1	1573.6	1531.7	1562.6	1568.1
33.5°	830.2	857.6	948.1	1076.1	1232.2	1393.1	1565.7	1548.9	1505.5	1539.1	1556.0
34°	816.9	843.9	932.4	1059.2	1215.0	1375.1	1551.7	1524.6	1478.8	1514.1	1542.3
34.5°	802.8	829.8	916.7	1042.8	1196.2	1355.9	1536.0	1499.2	1452.6	1490.2	1527.4
35°	789.5	815.4	901.5	1026.0	1177.8	1337.9	1520.3	1474.9	1426.4	1465.5	1511.7
35.5°	776.2	802.8	886.2	1009.5	1159.0	1318.4	1503.5	1449.1	1399.4	1441.3	1496.5
36°	763.3	789.1	871.3	992.7	1139.5	1299.2	1486.3	1423.7	1372.0	1415.8	1480.4
36.5°	750.0	775.8	855.7	976.2	1120.3	1279.6	1465.1	1397.4	1345.8	1390.4	1460.8
37°	736.7	762.5	840.8	959.4	1101.5	1259.3	1440.5	1372.0	1318.4	1365.7	1437.0
37.5°	723.4	748.8	825.5	942.2	1081.5	1238.5	1415.8	1345.8	1290.6	1340.3	1413.9
38°	710.1	735.5	810.7	925.4	1061.6	1217.8	1392.0	1319.5	1262.4	1314.4	1390.4
38.5°	697.1	722.2	796.2	908.1	1041.6	1197.0	1367.3	1292.1	1236.5	1288.2	1366.9
39°	684.6	709.3	781.3	891.3	1022.0	1175.9	1341.1	1267.5	1209.5	1263.6	1341.1
39.5°	671.3	696.4	766.4	874.1	1002.1	1154.3	1314.8	1240.5	1181.7	1238.1	1315.6
40°	658.4	682.7	752.0	856.9	982.1	1132.4	1288.6	1213.5	1153.6	1211.9	1289.4
40.5°	645.5	669.7	737.5	840.0	961.4	1110.9	1262.4	1186.8	1129.3	1185.3	1263.6
41°	632.6	656.8	723.4	822.8	941.4	1089.0	1235.4	1162.2	1103.1	1161.4	1237.7
41.5°	620.0	643.9	708.9	806.0	921.1	1067.1	1208.8	1136.0	1075.3	1136.0	1210.3
42°	607.1	631.0	694.8	788.7	901.1	1045.1	1181.7	1108.5	1049.8	1109.3	1184.1
42.5°	594.6	618.1	680.7	772.3	881.1	1022.4	1155.5	1083.9	1025.6	1085.1	1157.1
43°	582.1	605.2	666.6	755.5	860.8	1000.5	1128.9	1059.2	1000.1	1060.8	1131.3
43.5°	569.1	592.6	652.5	738.6	840.4	978.2	1102.3	1032.6	971.9	1035.4	1104.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	532.0	554.7	611.4	688.9	780.9	911.3	1022.8	959.4	900.3	964.1	1026.3
45.5°	519.4	542.1	597.7	672.5	761.0	889.3	995.8	932.4	877.2	938.3	1000.5
46°	507.7	530.0	584.4	656.4	741.4	867.4	969.6	909.3	856.5	914.0	974.7
46.5°	494.8	517.5	570.7	640.0	721.8	845.1	944.5	887.4	833.0	894.0	950.4
47°	482.6	505.0	557.4	624.3	702.2	823.2	919.1	862.7	807.5	870.6	925.0
47.5°	470.5	492.4	543.7	608.3	683.1	801.3	893.3	836.9	789.5	845.1	900.3
48°	458.8	480.3	531.2	592.6	663.9	779.7	867.4	817.7	770.0	825.1	875.6
48.5°	446.2	467.8	517.9	577.0	645.5	758.6	844.3	795.8	746.9	805.2	853.3
49°	434.5	456.0	505.0	562.1	627.1	737.5	820.5	771.1	726.5	782.1	829.5
49.5°	422.8	443.9	492.0	546.8	609.1	716.7	795.8	749.6	709.3	759.4	806.0
50°	410.6	431.8	479.1	531.6	590.7	695.2	771.9	730.4	689.7	741.4	782.5
50.5°	398.5	419.6	466.6	516.7	573.5	675.2	750.4	708.9	667.8	721.4	762.1
51°	387.1	407.9	454.1	502.6	556.2	654.5	727.3	685.8	652.9	697.5	739.8
51.5°	375.4	396.1	441.5	488.1	539.8	635.3	704.6	669.7	636.9	681.5	717.9
52°	364.0	384.4	429.4	474.0	523.0	614.9	684.6	651.0	616.1	663.5	696.8
52.5°	352.7	372.6	417.3	460.3	506.5	596.2	663.9	628.6	601.2	643.1	678.8
53°	342.1	360.9	405.5	446.6	490.9	576.6	642.0	612.6	586.8	624.0	656.8
53.5°	331.9	349.6	393.4	433.3	476.0	558.2	622.0	596.6	569.9	609.1	636.5
54°	325.7	338.6	381.7	420.0	460.7	539.4	603.2	577.8	553.5	591.1	618.5
54.5°	321.4	327.6	370.3	407.1	446.2	521.4	584.0	560.5	541.0	571.9	600.9
55°	316.7	317.5	358.9	395.0	432.1	504.2	564.5	546.4	526.5	558.6	581.3
55.5°	312.4	307.7	348.0	382.8	418.4	486.6	548.0	530.4	510.4	543.3	563.7
56°	307.3	302.6	336.6	371.1	405.1	470.1	530.0	513.6	499.1	524.9	547.2
56.5°	302.2	298.3	325.7	359.3	392.2	454.5	512.0	500.6	486.2	512.0	530.0
57°	297.5	293.6	315.1	348.0	379.3	438.8	496.3	486.2	471.3	498.7	512.8
57.5°	292.0	288.9	304.5	336.6	367.6	423.5	480.7	470.5	460.7	482.6	498.7
58°	286.9	283.8	294.8	326.1	355.4	409.4	463.9	459.2	449.0	469.7	482.6
58.5°	281.1	279.1	284.6	315.9	344.5	395.4	449.8	446.2	435.3	458.0	467.0
59°	274.8	273.6	274.8	305.7	333.9	382.0	435.3	431.4	423.9	443.9	453.3
59.5°	268.9	268.5	265.0	295.5	323.3	368.7	420.4	420.8	411.8	431.4	439.2
60°	262.7	263.0	256.0	286.1	312.8	356.2	407.1	409.1	400.0	420.4	424.3
60.5°	256.0	257.2	246.6	276.4	302.2	344.1	394.2	395.7	389.1	407.1	411.8
61°	249.7	251.3	238.0	267.7	291.6	332.7	380.5	385.6	377.7	395.4	399.3
61.5°	243.5	245.4	230.6	258.7	282.2	321.8	368.7	373.8	367.2	384.4	386.0
62°	236.8	239.2	223.1	250.1	273.2	310.4	357.0	361.7	356.6	372.3	374.2
62.5°	230.6	232.9	218.8	241.9	264.2	299.1	344.5	351.5	346.8	361.7	362.9
63°	224.3	227.0	214.1	233.7	255.2	289.3	333.9	340.9	337.4	351.5	350.3
63.5°	218.0	220.8	209.8	225.9	247.0	279.5	323.3	330.4	327.6	339.8	340.2
64°	211.4	214.9	205.5	218.4	238.8	270.1	313.1	320.2	318.2	330.0	330.0
64.5°	205.1	208.6	200.8	210.6	230.6	260.7	302.6	310.0	308.5	320.2	319.4
65°	198.9	202.8	196.1	203.5	223.1	252.1	292.0	299.8	299.1	310.4	309.2
65.5°	192.6	196.5	191.4	196.9	215.3	243.5	282.2	291.6	289.7	300.6	298.7
66°	186.3	190.6	186.7	189.8	207.9	234.9	272.8	281.4	280.7	291.2	288.9



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	169.9	172.6	171.4	170.7	187.1	211.0	245.0	255.2	254.4	264.2	261.1
68°	164.4	167.1	166.0	164.8	180.5	203.5	236.4	246.6	246.2	255.2	252.1
68.5°	159.3	161.7	160.9	158.9	173.8	196.5	227.8	238.0	237.6	246.6	243.1
69°	154.2	156.2	156.2	153.1	167.5	189.5	219.2	229.8	229.8	238.0	234.5
69.5°	149.1	151.1	151.1	147.6	161.3	182.0	211.4	221.6	221.6	229.8	225.9
70°	144.0	146.0	145.6	142.5	155.4	175.4	203.2	213.3	213.3	221.6	218.0
70.5°	139.4	140.1	140.9	137.4	149.1	168.7	195.3	205.9	205.9	213.3	209.8
71°	134.7	135.8	136.2	132.7	143.7	162.4	187.9	197.7	198.1	205.9	202.0
71.5°	130.0	131.1	131.1	127.6	137.8	155.8	180.1	190.2	190.2	197.7	194.2
72°	124.9	126.4	126.0	122.9	132.3	149.5	172.6	182.4	182.4	189.8	186.7
72.5°	120.2	121.7	121.3	117.8	126.8	143.7	165.6	175.0	175.0	182.0	178.9
73°	115.5	117.0	116.3	113.5	121.7	137.4	158.5	167.9	167.5	175.0	171.8
73.5°	110.4	112.3	111.6	109.2	116.3	131.5	151.5	160.5	160.1	167.1	164.4
74°	105.7	107.3	106.5	105.3	111.2	126.0	144.4	153.1	152.7	159.7	157.4
74.5°	101.0	102.6	102.2	101.8	106.1	120.2	137.8	146.0	145.6	152.7	150.3
75°	96.3	97.9	97.9	97.9	101.4	114.7	131.1	139.4	138.6	145.6	143.7
75.5°	91.6	93.2	93.2	93.9	96.3	109.6	124.5	132.3	131.5	138.2	136.6
76°	86.9	88.5	88.5	89.6	91.6	104.1	118.6	125.3	124.5	131.5	130.0
76.5°	82.2	83.8	84.2	85.7	86.9	98.6	112.0	118.2	117.4	124.5	123.3
77°	77.9	79.1	79.9	81.8	82.6	93.6	106.1	112.0	111.2	117.8	117.0
77.5°	73.2	74.4	75.5	77.5	77.9	88.5	99.8	105.3	104.1	110.8	110.8
78°	68.9	69.7	71.2	73.6	73.6	83.4	93.9	99.0	97.5	104.5	104.5
78.5°	64.2	65.4	66.9	69.7	69.3	78.3	88.1	92.4	91.2	97.9	98.6
79°	59.9	60.7	63.0	65.4	65.0	73.6	82.6	86.1	84.6	91.2	92.4
79.5°	55.2	56.0	58.7	61.5	61.1	68.9	77.1	79.5	78.3	84.9	86.5
80°	50.9	51.3	54.4	57.5	56.8	64.2	71.6	73.2	72.0	78.7	81.0
80.5°	46.6	47.0	50.5	53.6	52.8	59.5	66.2	67.3	65.8	72.4	75.2
81°	42.3	42.3	46.6	49.7	48.9	55.2	61.1	61.1	59.5	66.2	69.7
81.5°	38.0	38.0	42.7	45.8	45.4	50.9	56.0	55.2	53.6	60.3	64.6
82°	33.7	33.7	39.1	42.3	41.5	46.6	50.9	50.1	47.8	54.4	59.1
82.5°	29.4	30.1	35.2	38.4	38.0	42.7	46.2	44.6	42.3	48.9	54.4
83°	25.4	26.2	31.7	34.8	34.4	38.4	41.9	39.9	36.8	43.4	49.3
83.5°	21.1	22.7	28.6	31.3	30.9	34.8	37.6	35.6	31.3	39.1	44.6
84°	17.2	19.6	25.1	27.4	27.4	30.9	33.7	30.9	25.8	34.4	40.3
84.5°	14.1	16.4	21.9	23.9	23.9	27.0	29.4	26.2	20.4	30.1	36.4
85°	12.5	14.1	18.8	20.4	20.7	23.1	25.4	21.5	17.2	25.8	32.1
85.5°	10.6	12.1	15.7	16.8	17.2	19.2	21.1	18.4	14.9	21.1	28.2
86°	8.6	9.8	12.9	13.3	14.1	15.7	17.6	15.3	12.5	18.0	23.9
86.5°	7.0	7.8	9.8	10.2	11.0	12.1	13.7	12.5	10.6	15.3	20.0
87°	5.1	5.5	7.0	7.0	7.8	8.6	10.2	9.4	8.2	12.5	16.0
87.5°	3.5	3.5	3.9	4.3	4.7	5.5	6.7	6.7	6.3	9.4	12.5
88°	2.0	1.6	1.6	1.2	2.0	2.7	3.5	4.3	4.3	6.7	9.0
88.5°	0.8	0.4	0.4	0.4	0.4	0.8	1.2	2.0	2.0	3.9	5.5



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1781.8	1781.8	1781.8	1781.8	1781.8	1781.8
0.5°	1784.6	1783.8	1779.5	1775.6	1772.8	1771.3
1°	1787.7	1783.4	1775.2	1768.1	1763.4	1761.1
1.5°	1790.8	1782.6	1770.9	1760.3	1753.6	1750.5
2°	1793.6	1781.4	1765.8	1752.9	1743.5	1739.9
2.5°	1795.9	1780.3	1760.7	1744.2	1732.9	1728.6
3°	1798.3	1778.7	1755.6	1736.0	1722.7	1717.6
3.5°	1800.2	1776.7	1750.1	1727.4	1712.1	1705.9
4°	1801.8	1774.8	1744.2	1718.8	1700.8	1694.1
4.5°	1803.0	1772.4	1738.4	1709.0	1689.4	1682.0
5°	1804.1	1770.1	1732.5	1700.0	1677.7	1669.9
5.5°	1804.9	1766.9	1726.2	1690.2	1666.3	1657.0
6°	1805.7	1764.2	1719.6	1680.4	1654.2	1644.4
6.5°	1806.1	1761.1	1712.5	1670.3	1642.1	1631.9
7°	1806.1	1757.6	1705.5	1660.9	1629.9	1618.6
7.5°	1805.7	1754.0	1698.4	1650.3	1617.4	1604.9
8°	1805.3	1750.1	1691.0	1639.7	1604.5	1592.0
8.5°	1804.5	1745.8	1683.6	1629.2	1591.6	1578.3
9°	1803.4	1741.5	1675.7	1618.2	1578.3	1564.2
9.5°	1802.2	1737.2	1667.5	1606.8	1565.4	1550.1
10°	1800.6	1732.5	1659.3	1595.5	1552.0	1536.0
10.5°	1798.7	1727.4	1651.1	1584.5	1538.7	1521.5
11°	1796.7	1722.3	1642.5	1572.8	1525.0	1507.4
11.5°	1794.3	1716.8	1633.9	1561.1	1510.9	1492.9
12°	1791.6	1711.0	1624.9	1549.3	1497.2	1477.7
12.5°	1788.9	1705.5	1615.9	1537.2	1483.2	1463.2
13°	1785.7	1699.6	1606.8	1525.0	1469.1	1448.7
13.5°	1781.8	1693.4	1597.5	1512.9	1455.0	1433.4
14°	1778.7	1687.1	1588.5	1500.8	1440.5	1418.6
14.5°	1774.8	1680.4	1578.7	1488.2	1426.0	1403.3
15°	1770.5	1673.4	1568.9	1475.3	1411.5	1388.0
15.5°	1766.2	1666.7	1559.1	1462.8	1396.6	1372.8
16°	1761.5	1659.7	1549.3	1449.9	1382.2	1357.5
16.5°	1756.8	1652.3	1539.1	1437.4	1367.7	1342.6
17°	1751.3	1644.8	1529.0	1424.4	1352.8	1327.0
17.5°	1745.8	1637.0	1518.4	1411.1	1337.9	1311.7
18°	1740.3	1629.2	1508.2	1397.8	1323.1	1296.0
18.5°	1734.5	1620.9	1497.2	1384.9	1307.8	1280.8
19°	1728.2	1612.3	1486.3	1371.2	1292.9	1265.1
19.5°	1721.9	1604.1	1475.3	1358.3	1278.4	1249.1
20°	1715.3	1595.1	1464.4	1345.0	1263.2	1233.8
20.5°	1707.8	1586.1	1453.0	1331.3	1248.3	1218.2
21°	1700.8	1576.7	1441.3	1317.6	1233.0	1202.5

TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1677.3	1547.4	1406.0	1276.9	1187.6	1155.5
23°	1669.1	1536.8	1393.5	1263.2	1172.0	1139.5
23.5°	1660.1	1525.8	1381.8	1249.5	1157.5	1124.2
24°	1651.1	1513.7	1369.2	1235.4	1142.2	1108.5
24.5°	1641.7	1502.3	1356.3	1221.7	1126.9	1092.5
25°	1631.9	1489.4	1343.0	1207.6	1111.3	1077.2
25.5°	1621.7	1476.9	1330.1	1193.5	1096.8	1062.0
26°	1610.8	1463.2	1316.4	1179.4	1081.5	1046.7
26.5°	1599.4	1449.9	1302.3	1165.3	1066.3	1031.4
27°	1587.7	1436.6	1288.2	1151.2	1051.4	1016.2
27.5°	1575.1	1422.1	1273.7	1136.7	1036.5	1001.3
28°	1561.8	1406.8	1258.9	1122.3	1021.3	986.0
28.5°	1548.5	1392.7	1244.4	1108.2	1006.4	971.5
29°	1534.8	1377.5	1229.5	1094.1	991.9	957.1
29.5°	1520.3	1361.8	1214.6	1079.6	977.4	942.2
30°	1506.2	1345.8	1199.0	1064.7	962.9	928.1
30.5°	1491.4	1329.3	1184.1	1050.2	948.5	913.6
31°	1475.7	1312.5	1168.0	1035.4	934.0	899.5
31.5°	1459.3	1295.3	1152.4	1020.5	919.5	885.4
32°	1442.8	1278.4	1136.3	1006.0	905.8	871.3
32.5°	1426.0	1260.8	1120.7	990.7	891.7	857.6
33°	1408.4	1242.4	1104.2	975.9	877.6	843.9
33.5°	1390.8	1224.4	1087.8	961.0	863.9	830.2
34°	1372.0	1206.4	1071.4	945.7	850.2	816.9
34.5°	1353.6	1187.6	1054.9	930.4	836.9	802.8
35°	1334.8	1169.2	1038.1	915.2	823.2	789.5
35.5°	1315.6	1149.7	1021.7	900.3	809.9	776.2
36°	1296.0	1131.3	1004.8	885.8	796.2	763.3
36.5°	1275.7	1112.1	988.0	870.9	783.3	750.0
37°	1255.7	1092.1	971.2	856.1	770.0	736.7
37.5°	1235.4	1072.9	954.3	840.8	757.0	723.4
38°	1214.6	1052.6	937.5	825.9	743.3	710.1
38.5°	1193.5	1033.0	920.3	811.4	730.4	697.1
39°	1172.7	1013.0	903.4	797.0	717.9	684.6
39.5°	1151.6	993.5	886.6	782.9	705.0	671.3
40°	1130.1	973.1	869.8	768.0	691.3	658.4
40.5°	1108.2	953.1	852.5	753.5	678.8	645.5
41°	1086.2	933.2	835.7	739.4	666.2	632.6
41.5°	1064.7	913.2	818.5	724.9	652.9	620.0
42°	1042.4	893.7	801.7	710.8	640.4	607.1
42.5°	1021.3	873.7	784.8	696.8	627.5	594.6
43°	998.9	853.7	768.4	682.7	615.3	582.1
43.5°	976.6	834.2	751.6	668.6	602.0	569.1



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	911.7	776.2	702.6	627.5	565.2	532.0
45.5°	890.1	757.0	686.2	614.2	552.3	519.4
46°	868.2	738.3	670.9	600.9	540.6	507.7
46.5°	847.1	719.5	654.5	587.2	528.0	494.8
47°	825.5	701.1	638.8	573.8	515.9	482.6
47.5°	804.8	682.7	623.2	560.5	503.4	470.5
48°	783.7	664.7	608.3	547.6	491.6	458.8
48.5°	763.3	646.7	593.0	534.7	479.5	446.2
49°	742.6	629.4	577.8	521.8	467.4	434.5
49.5°	722.6	612.2	562.9	508.9	455.2	422.8
50°	702.2	594.6	548.8	496.0	443.5	410.6
50.5°	682.7	578.2	533.9	483.4	431.8	398.5
51°	663.5	561.7	519.8	470.9	419.6	387.1
51.5°	644.7	545.7	505.7	458.8	407.9	375.4
52°	625.5	530.0	492.0	446.2	396.5	364.0
52.5°	606.3	514.3	478.3	434.5	385.2	352.7
53°	587.9	499.5	465.4	422.4	373.4	342.1
53.5°	570.3	485.0	451.7	410.6	361.7	331.9
54°	552.3	470.5	438.8	398.9	350.7	325.7
54.5°	535.5	456.8	426.7	387.5	339.8	321.4
55°	519.0	443.5	414.1	376.2	329.2	316.7
55.5°	502.6	430.2	402.4	365.2	318.6	312.4
56°	486.9	417.7	390.3	354.3	308.8	307.3
56.5°	471.7	405.1	378.9	343.3	303.4	302.2
57°	457.2	393.0	367.6	332.7	299.1	297.5
57.5°	442.7	381.3	357.0	322.2	294.4	292.0
58°	429.0	369.9	346.4	312.0	289.7	286.9
58.5°	415.7	358.9	335.9	302.2	284.6	281.1
59°	402.4	348.4	325.7	292.4	279.5	274.8
59.5°	389.9	337.8	315.9	282.6	274.8	268.9
60°	377.7	327.2	306.1	273.2	269.3	262.7
60.5°	366.0	317.5	296.7	264.2	263.8	256.0
61°	354.6	307.7	287.3	255.2	258.3	249.7
61.5°	343.3	298.7	278.7	247.0	252.5	243.5
62°	333.1	289.3	270.1	238.8	246.2	236.8
62.5°	322.9	280.3	261.9	230.9	240.3	230.6
63°	312.8	271.7	253.3	223.9	234.5	224.3
63.5°	302.6	263.0	245.4	218.4	228.6	218.0
64°	292.4	254.4	237.2	214.1	222.3	211.4
64.5°	282.6	246.6	229.8	209.8	216.5	205.1
65°	273.6	238.8	222.3	205.5	210.6	198.9
65.5°	264.6	231.3	215.3	200.8	204.7	192.6
66°	256.0	223.5	208.2	196.1	198.5	186.3



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	231.3	202.4	188.3	182.0	180.8	169.9
68°	223.1	195.3	182.0	176.9	175.0	164.4
68.5°	215.7	188.7	176.1	172.2	169.5	159.3
69°	208.2	182.0	169.9	167.1	164.0	154.2
69.5°	200.8	175.8	164.0	162.1	158.5	149.1
70°	193.8	169.5	158.5	157.0	153.4	144.0
70.5°	186.7	163.6	153.1	151.9	148.4	139.4
71°	180.1	157.4	147.2	146.8	143.3	134.7
71.5°	173.0	151.5	142.5	141.7	138.6	130.0
72°	166.8	145.6	137.4	137.0	133.5	124.9
72.5°	160.1	140.9	132.3	131.9	128.8	120.2
73°	153.8	135.4	127.6	127.2	123.7	115.5
73.5°	147.6	130.0	122.5	122.1	119.0	110.4
74°	141.7	124.1	117.8	117.4	113.9	105.7
74.5°	135.4	118.6	113.1	112.7	109.2	101.0
75°	129.6	113.5	108.8	108.0	104.1	96.3
75.5°	124.1	108.4	104.5	103.7	99.4	91.6
76°	118.2	103.3	100.6	99.0	94.3	86.9
76.5°	112.7	98.6	96.7	94.3	89.6	82.2
77°	107.3	93.6	92.8	90.0	84.9	77.9
77.5°	101.8	88.9	88.9	85.3	80.2	73.2
78°	96.7	84.2	84.6	81.0	75.5	68.9
78.5°	91.2	79.9	80.6	76.7	70.9	64.2
79°	86.1	75.2	76.3	72.4	66.2	59.9
79.5°	81.0	70.9	72.4	68.1	61.5	55.2
80°	75.9	66.5	68.1	63.8	56.8	50.9
80.5°	71.2	62.2	64.2	59.5	52.5	46.6
81°	66.5	57.9	59.9	55.6	47.8	42.3
81.5°	61.8	54.0	56.0	51.3	43.4	38.0
82°	57.1	50.1	52.1	47.4	39.5	33.7
82.5°	52.8	46.2	48.1	43.4	35.2	29.4
83°	48.5	42.3	44.2	39.9	31.3	25.4
83.5°	44.2	38.4	40.3	36.0	27.4	21.1
84°	39.9	34.8	36.8	32.5	23.9	17.2
84.5°	36.0	30.9	32.9	29.0	20.7	14.1
85°	32.1	27.4	29.0	25.4	17.6	12.5
85.5°	28.2	23.9	25.4	21.9	15.3	10.6
86°	24.3	20.7	21.5	18.8	12.9	8.6
86.5°	20.0	17.2	18.0	15.3	10.6	7.0
87°	16.4	14.1	14.5	12.1	8.2	5.1
87.5°	12.9	11.0	11.0	9.4	5.9	3.5
88°	9.4	7.8	7.8	6.3	3.9	2.0
88.5°	5.9	4.7	4.7	3.1	2.0	0.8



TEST NUMBER: P776321

CATALOG NUMBER: HCDJBL3040CSD-HCD4TQSH-HCD4TSQLWW-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.4	0.0



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Scaled Data Report





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

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Scaled Data Report



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Scaled Data Report





21.5°	1186.4	1215.0	1301.5	1429.9	1581.4	1708.6	1801.8	1857.0	1874.6	1847.2	1785.7
22°	1171.2	1199.8	1287.4	1417.8	1571.2	1700.8	1795.5	1851.5	1869.1	1841.3	1779.5



44°	557.0	580.1	638.8	722.2	820.5	955.9	1074.5	1006.0	950.0	1008.7	1077.2
44.5°	544.5	567.6	625.1	705.4	800.5	934.0	1048.7	983.7	926.5	987.2	1051.4



66.5°	180.8	184.8	181.2	183.2	200.8	226.6	263.0	272.8	271.7	281.8	279.5
67°	175.0	178.5	176.1	176.9	193.8	218.8	254.0	263.8	263.0	273.2	269.7



89°	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.4	0.4	1.6	2.3
89.5°	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.8



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21.5°	1693.4	1567.3	1429.5	1304.3	1217.8	1186.4
22°	1685.5	1557.1	1417.8	1290.6	1202.5	1171.2



44°	954.7	815.0	735.1	654.9	590.3	557.0
44.5°	933.6	795.4	718.7	641.2	577.4	544.5

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66.5°	247.4	216.5	201.6	191.8	192.6	180.8
67°	239.2	209.0	194.9	187.1	186.7	175.0

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89°	2.7	1.6	1.6	1.2	0.4	0.0
89.5°	0.8	0.4	0.4	0.4	0.4	0.0

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Scaled Data Report



(END OF REPORT)