



UL LLC
 1075 W Lambert Rd Suite B
 Brea, CA 92821

Photometric Test Report

Relevant Standards
 IES LM-79-2008, IES LM-35-2002 (Withdrawn)
 ANSI C78.377-2011, ANSI C82.77-2002
 CIE 13.3-1995, CIE 15-2004, IES TM-30-15

Prepared For
B-K LIGHTING INC

Chris McCarthy
 40429 Brickyard Dr
 Madera, CA 93636-9515
 United States

Catalog Number

DE-LED-x63-SP-9 SN-DE-LED-x63-SP-9 ST-DE-LED-x63-SP-9 SM-DE-LED-x63-SP-9
UL-DE-LED-x63-SP-9 CK-LED-x63-SP-9 OL-LED-x63-SP-9

Order Number
 11353040
 Test Number
 11353040.24

Test Date

2016-09-08 - 2016-09-09

Prepared By

Khang Nguyen, Technician

Approved By

Eric Gaudreau, Senior Engineering Associate

The results contained in this report pertain only to the tested sample.
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Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: Circular black aluminum housing, semi-specular linear reflector and glass lens
Lamp: One (1) White LED
Mounting: VBU
Ballast/Driver: PowerSelect PS60U700C21T

Luminaire



Luminaire Characteristics
Luminous Diameter: 2.75 in.

Summary of Results

Integrating Sphere

Luminous Flux: 1454 Lumens
Efficacy: 66.8 lm/w
CCT: 3990 K
CRI (Ra): 79.6

Distribution

Total Luminaire Output: 1435 Lumens
Luminaire Efficacy: 65.6 lm/w
Maximum Candela: 7800 Candela

Electrical Data at 120 VAC

Test Temperature: 25.4 °C
Voltage: 120.0 VAC
Current: 0.1837 A
Power: 21.76 W
Power Factor: 0.987
Frequency: 60 Hz
Current THD: 11.2 %



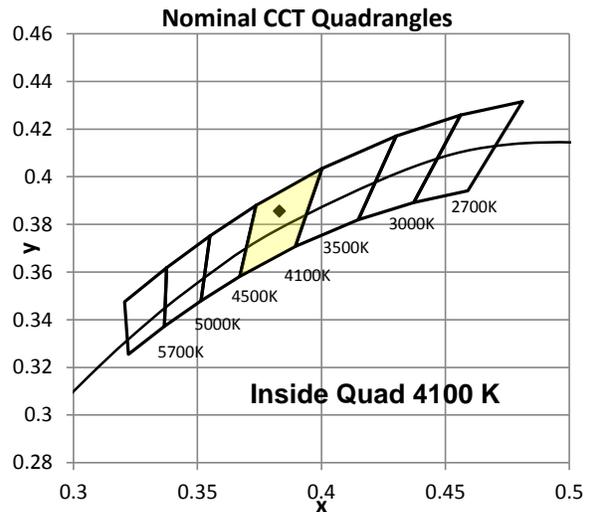
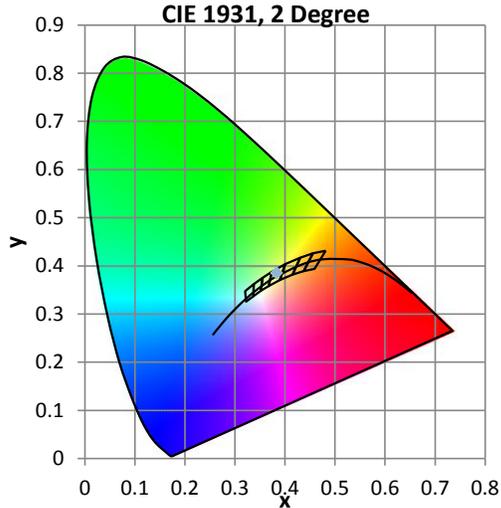
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.4 °C | 120.0 VAC | 0.1837 A | 21.76 W | 0.987 | 60 Hz | 11.2 % |

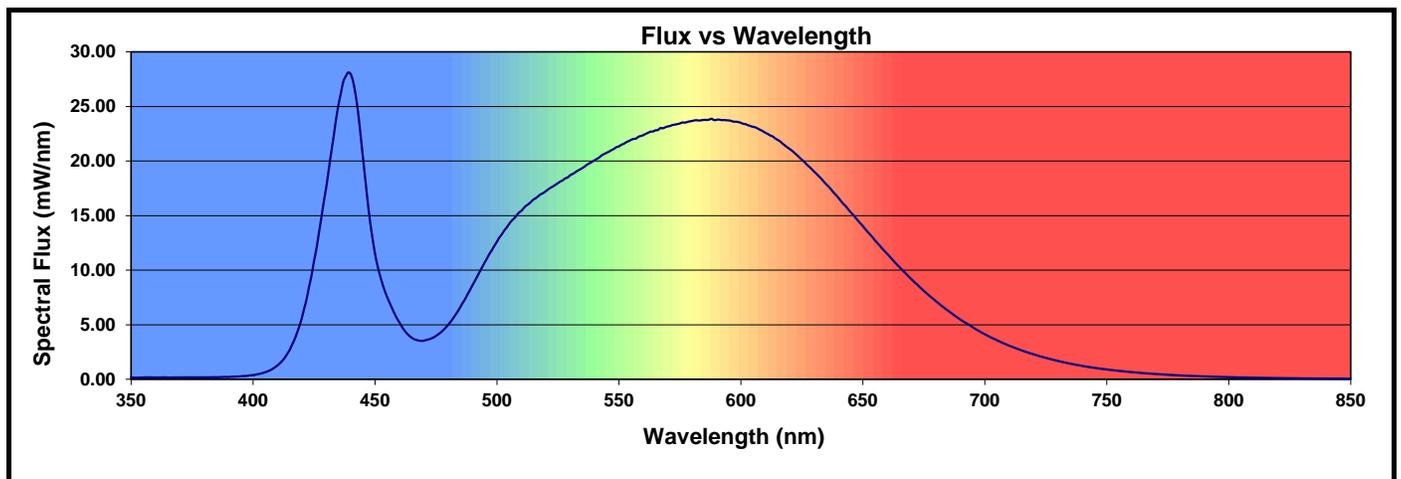
Summary of Results

| | | | |
|-----------------------------|-------------|-----------------------------|--------|
| Total Output: | 1454 Lumens | Chromaticity (x): | 0.3831 |
| Efficacy: | 66.8 lm/w | Chromaticity (y): | 0.3855 |
| CCT: | 3990 K | Chromaticity (u'): | 0.2234 |
| CRI (Ra): | 79.6 | Chromaticity (v'): | 0.5058 |
| CRI (R9): | 9.7 | TM-30 R_f: | 77.9 |
| Peak Wavelength: | 439.1 nm | TM-30 R_g: | 99.5 |
| Dominant Wavelength: | 577.5 nm | Duv: | 0.0033 |
| S/P Ratio: | 1.59 | | |



Color Rendering Index Detail

| Ra (CRI) | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 |
|----------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|
| 79.6 | 78.3 | 82.5 | 87.4 | 81.3 | 78.7 | 77.7 | 84.0 | 66.8 | 9.7 | 60.4 | 82.1 | 63.1 | 78.1 | 92.8 |





Distribution - Goniophotometer

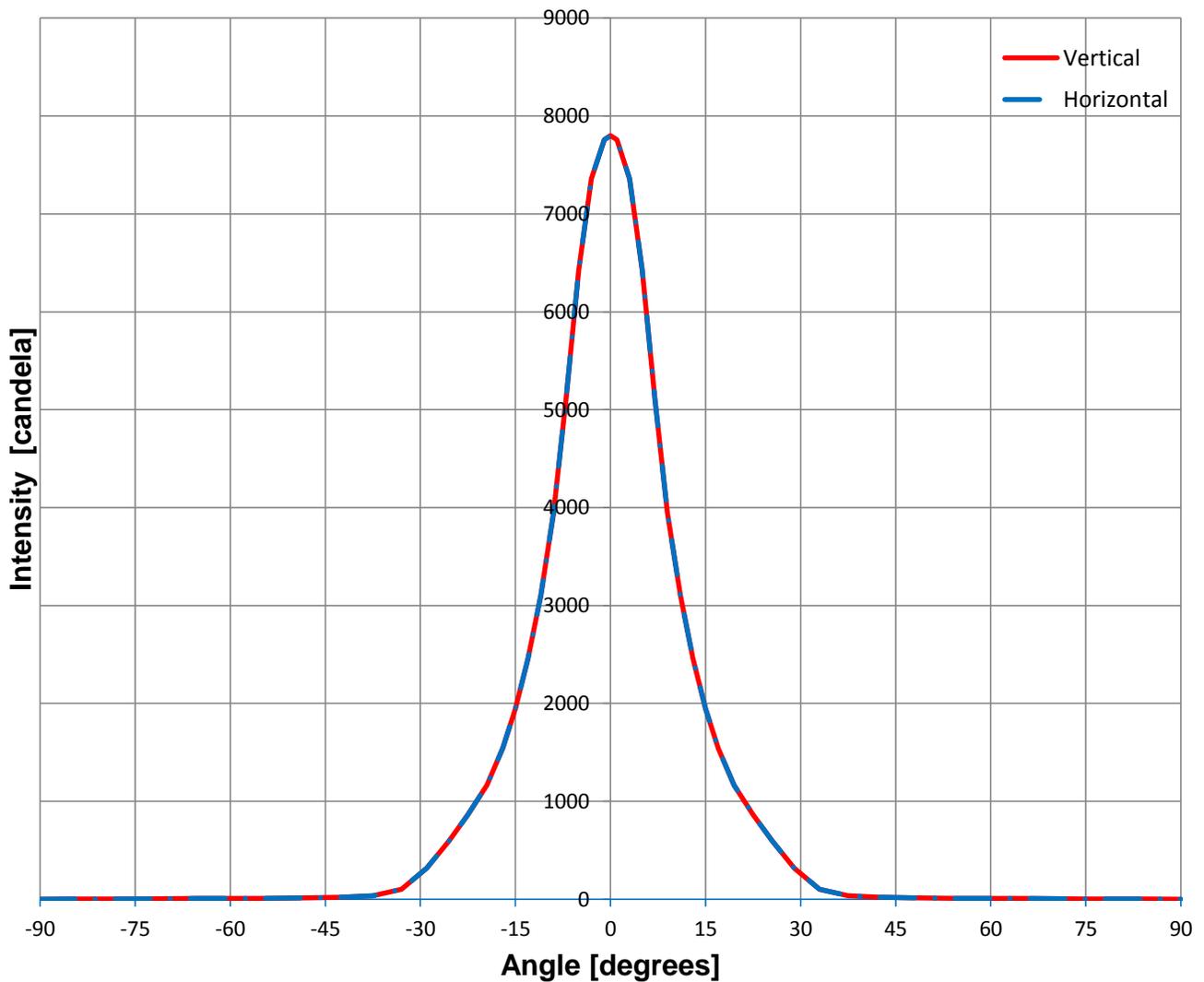
Distribution Test Conditions

| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.1 °C | 120.1 VAC | 0.1845 A | 21.86 W | 0.987 | 60 Hz | 11.1 % |

Summary of Results

| | | | |
|----------------------------|------------------|-------------------------|---------------------|
| Total Lumen Output: | 1434.7 Lumens | Maximum Candela: | 7799.9 Candela |
| Luminaire Efficacy: | 65.6 Lumens/Watt | Maximum Angle: | 0 H 0 V |
| Field Lumens: | 1192.9 Lumens | Field Angle : | 46.8 H X 46.8 V |
| Beam Lumens: | 459.8 Lumens | Beam Angle : | 18.2 H X 18.2 V |
| Spill Light Lumens: | 241.8 Lumens | IESNA Type: | 4 H X 4 V |

Maximum Candlepower Plot





Candela Tabulation
Lateral Angle (Degrees)

| | 0 | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19.5 |
|-------|------|------|------|------|------|------|------|------|------|------|------|
| 85.0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 75.0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 65.0 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 55.0 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 47.5 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 12 | 12 | 11 |
| 42.5 | 21 | 21 | 21 | 21 | 20 | 20 | 19 | 18 | 18 | 17 | 16 |
| 37.5 | 36 | 36 | 36 | 35 | 34 | 33 | 31 | 29 | 27 | 25 | 23 |
| 33.0 | 100 | 100 | 96 | 90 | 81 | 69 | 60 | 51 | 44 | 40 | 35 |
| 29.0 | 318 | 317 | 308 | 292 | 268 | 237 | 202 | 165 | 127 | 93 | 62 |
| 25.5 | 596 | 595 | 582 | 557 | 521 | 474 | 420 | 360 | 296 | 233 | 157 |
| 22.5 | 861 | 859 | 844 | 815 | 771 | 715 | 647 | 569 | 484 | 396 | 289 |
| 19.5 | 1166 | 1163 | 1138 | 1092 | 1033 | 961 | 881 | 790 | 691 | 583 | 445 |
| 17.0 | 1542 | 1537 | 1499 | 1425 | 1325 | 1207 | 1087 | 972 | 859 | 740 | 583 |
| 15.0 | 1943 | 1936 | 1881 | 1774 | 1632 | 1469 | 1298 | 1135 | 990 | 859 | 691 |
| 13.0 | 2458 | 2448 | 2366 | 2209 | 2007 | 1779 | 1548 | 1331 | 1135 | 972 | 790 |
| 11.0 | 3107 | 3092 | 2971 | 2743 | 2454 | 2142 | 1835 | 1548 | 1298 | 1087 | 881 |
| 9.0 | 3942 | 3917 | 3724 | 3381 | 2976 | 2550 | 2142 | 1779 | 1469 | 1207 | 961 |
| 7.0 | 5118 | 5073 | 4730 | 4161 | 3542 | 2976 | 2454 | 2007 | 1632 | 1325 | 1033 |
| 5.0 | 6429 | 6366 | 5901 | 5076 | 4161 | 3381 | 2743 | 2209 | 1774 | 1425 | 1092 |
| 3.0 | 7359 | 7295 | 6834 | 5901 | 4730 | 3724 | 2971 | 2366 | 1881 | 1499 | 1138 |
| 1.0 | 7756 | 7698 | 7295 | 6366 | 5073 | 3917 | 3092 | 2448 | 1936 | 1537 | 1163 |
| 0.0 | 7800 | 7756 | 7359 | 6429 | 5118 | 3942 | 3107 | 2458 | 1943 | 1542 | 1166 |
| -1.0 | 7756 | 7698 | 7295 | 6366 | 5073 | 3917 | 3092 | 2448 | 1936 | 1537 | 1163 |
| -3.0 | 7359 | 7295 | 6834 | 5901 | 4730 | 3724 | 2971 | 2366 | 1881 | 1499 | 1138 |
| -5.0 | 6429 | 6366 | 5901 | 5076 | 4161 | 3381 | 2743 | 2209 | 1774 | 1425 | 1092 |
| -7.0 | 5118 | 5073 | 4730 | 4161 | 3542 | 2976 | 2454 | 2007 | 1632 | 1325 | 1033 |
| -9.0 | 3942 | 3917 | 3724 | 3381 | 2976 | 2550 | 2142 | 1779 | 1469 | 1207 | 961 |
| -11.0 | 3107 | 3092 | 2971 | 2743 | 2454 | 2142 | 1835 | 1548 | 1298 | 1087 | 881 |
| -13.0 | 2458 | 2448 | 2366 | 2209 | 2007 | 1779 | 1548 | 1331 | 1135 | 972 | 790 |
| -15.0 | 1943 | 1936 | 1881 | 1774 | 1632 | 1469 | 1298 | 1135 | 990 | 859 | 691 |
| -17.0 | 1542 | 1537 | 1499 | 1425 | 1325 | 1207 | 1087 | 972 | 859 | 740 | 583 |
| -19.5 | 1166 | 1163 | 1138 | 1092 | 1033 | 961 | 881 | 790 | 691 | 583 | 445 |
| -22.5 | 861 | 859 | 844 | 815 | 771 | 715 | 647 | 569 | 484 | 396 | 289 |
| -25.5 | 596 | 595 | 582 | 557 | 521 | 474 | 420 | 360 | 296 | 233 | 157 |
| -29.0 | 318 | 317 | 308 | 292 | 268 | 237 | 202 | 165 | 127 | 93 | 62 |
| -33.0 | 100 | 100 | 96 | 90 | 81 | 69 | 60 | 51 | 44 | 40 | 35 |
| -37.5 | 36 | 36 | 36 | 35 | 34 | 33 | 31 | 29 | 27 | 25 | 23 |
| -42.5 | 21 | 21 | 21 | 21 | 20 | 20 | 19 | 18 | 18 | 17 | 16 |
| -47.5 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 12 | 12 | 11 |
| -55.0 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| -65.0 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| -75.0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| -85.0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Vertical Angle (Degrees)



Candela Tabulation

Lateral Angle (Degrees)

| | 22.5 | 25.5 | 29 | 33 | 37.5 | 42.5 | 47.5 | 55 | 65 | 75 | 85 |
|-------|------|------|-----|-----|------|------|------|----|----|----|----|
| 85.0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 75.0 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 0 |
| 65.0 | 7 | 7 | 7 | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 0 |
| 55.0 | 10 | 10 | 9 | 9 | 9 | 8 | 7 | 5 | 4 | 2 | 1 |
| 47.5 | 11 | 10 | 10 | 10 | 10 | 9 | 9 | 7 | 4 | 2 | 1 |
| 42.5 | 14 | 13 | 12 | 11 | 10 | 10 | 9 | 8 | 5 | 3 | 1 |
| 37.5 | 21 | 18 | 16 | 13 | 11 | 10 | 10 | 9 | 5 | 3 | 1 |
| 33.0 | 30 | 25 | 21 | 17 | 13 | 11 | 10 | 9 | 6 | 3 | 1 |
| 29.0 | 43 | 35 | 27 | 21 | 16 | 12 | 10 | 9 | 7 | 3 | 1 |
| 25.5 | 85 | 48 | 35 | 25 | 18 | 13 | 10 | 10 | 7 | 3 | 1 |
| 22.5 | 173 | 85 | 43 | 30 | 21 | 14 | 11 | 10 | 7 | 4 | 1 |
| 19.5 | 289 | 157 | 62 | 35 | 23 | 16 | 11 | 10 | 8 | 4 | 1 |
| 17.0 | 396 | 233 | 93 | 40 | 25 | 17 | 12 | 10 | 8 | 4 | 1 |
| 15.0 | 484 | 296 | 127 | 44 | 27 | 18 | 12 | 10 | 8 | 4 | 1 |
| 13.0 | 569 | 360 | 165 | 51 | 29 | 18 | 13 | 10 | 8 | 4 | 1 |
| 11.0 | 647 | 420 | 202 | 60 | 31 | 19 | 13 | 10 | 8 | 4 | 1 |
| 9.0 | 715 | 474 | 237 | 69 | 33 | 20 | 13 | 10 | 8 | 4 | 1 |
| 7.0 | 771 | 521 | 268 | 81 | 34 | 20 | 13 | 10 | 8 | 4 | 1 |
| 5.0 | 815 | 557 | 292 | 90 | 35 | 21 | 14 | 10 | 8 | 4 | 1 |
| 3.0 | 844 | 582 | 308 | 96 | 36 | 21 | 14 | 10 | 8 | 4 | 1 |
| 1.0 | 859 | 595 | 317 | 100 | 36 | 21 | 14 | 10 | 8 | 4 | 1 |
| 0.0 | 861 | 596 | 318 | 100 | 36 | 21 | 14 | 10 | 8 | 4 | 1 |
| -1.0 | 859 | 595 | 317 | 100 | 36 | 21 | 14 | 10 | 8 | 4 | 1 |
| -3.0 | 844 | 582 | 308 | 96 | 36 | 21 | 14 | 10 | 8 | 4 | 1 |
| -5.0 | 815 | 557 | 292 | 90 | 35 | 21 | 14 | 10 | 8 | 4 | 1 |
| -7.0 | 771 | 521 | 268 | 81 | 34 | 20 | 13 | 10 | 8 | 4 | 1 |
| -9.0 | 715 | 474 | 237 | 69 | 33 | 20 | 13 | 10 | 8 | 4 | 1 |
| -11.0 | 647 | 420 | 202 | 60 | 31 | 19 | 13 | 10 | 8 | 4 | 1 |
| -13.0 | 569 | 360 | 165 | 51 | 29 | 18 | 13 | 10 | 8 | 4 | 1 |
| -15.0 | 484 | 296 | 127 | 44 | 27 | 18 | 12 | 10 | 8 | 4 | 1 |
| -17.0 | 396 | 233 | 93 | 40 | 25 | 17 | 12 | 10 | 8 | 4 | 1 |
| -19.5 | 289 | 157 | 62 | 35 | 23 | 16 | 11 | 10 | 8 | 4 | 1 |
| -22.5 | 173 | 85 | 43 | 30 | 21 | 14 | 11 | 10 | 7 | 4 | 1 |
| -25.5 | 85 | 48 | 35 | 25 | 18 | 13 | 10 | 10 | 7 | 3 | 1 |
| -29.0 | 43 | 35 | 27 | 21 | 16 | 12 | 10 | 9 | 7 | 3 | 1 |
| -33.0 | 30 | 25 | 21 | 17 | 13 | 11 | 10 | 9 | 6 | 3 | 1 |
| -37.5 | 21 | 18 | 16 | 13 | 11 | 10 | 10 | 9 | 5 | 3 | 1 |
| 42.5 | 14 | 13 | 12 | 11 | 10 | 10 | 9 | 8 | 5 | 3 | 1 |
| -47.5 | 11 | 10 | 10 | 10 | 10 | 9 | 9 | 7 | 4 | 2 | 1 |
| -55.0 | 10 | 10 | 9 | 9 | 9 | 8 | 7 | 5 | 4 | 2 | 1 |
| -65.0 | 7 | 7 | 7 | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 0 |
| -75.0 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 0 |
| -85.0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |

Vertical Angle (Degrees)



Isocandela Diagram (Percent of Maximum Intensity)

