



UL Verification Services Inc.
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300



Photometric Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-2002

Prepared For
Auroralight Inc

2742 Loker Ave W
#100
Carlsbad, CA 92010-6619
United States

Catalog Number
LSW16-N-30 (15° OPTIC, 3000K)

Order Number
12043087
Test Number
12043087.16

Test Date

2018-02-14

Prepared By

Samuel DePue, Technician

Approved By

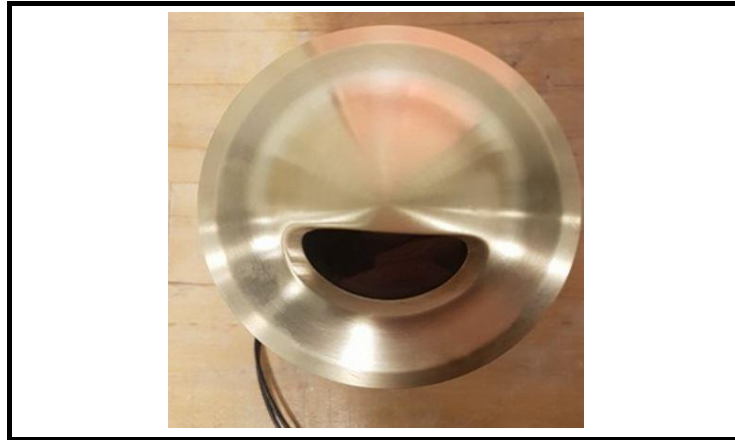
Alexa Lambert, Project Handler

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Luminaire Description: Cylindrical brass housing with circular brass domed faceplate, clear glass lens and PVC sleeve
Lamp: One (1) Cree XP-L 3000K LED with 15° narrow silicone optic
Mounting: Recessed - Wall
Ballast/Driver: Integrated

Luminaire



Luminaire Characteristics

Luminous Length: 0.75 in.
Luminous Width: 1.750 in.
Luminous Height: 0.75 in.

Summary of Results

Roadway Classification: Type I, Very Short
Cutoff Classification: Noncutoff
BUG Rating: B0 U1 G1

Test Conditions

Test Temperature: 24.7 °C
Voltage: 11.99 VAC
Current: 0.4271 A
Power: 3.077 W
Power Factor: 0.601
Frequency: 60 Hz
Current THD: 83.8 %

Tested in 30 planes left side, 30 planes right side, left and right averaged
Vertical test increments are 2.5 degrees
Test distance exceeds five times the greatest luminous opening of luminaire

Laboratory results may not be representative of field performance
Ballast factors have not been applied



Distribution - Goniophotometer

Distribution Test Conditions

| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 24.7 °C | 11.99 VAC | 0.4271 A | 3.077 W | 0.601 | 60 Hz | 83.8 % |

Summary of Results

Spacing Criteria

0-180: 0.54

90-270: 1.18

Total Lumen Output:

72.60 Lumens

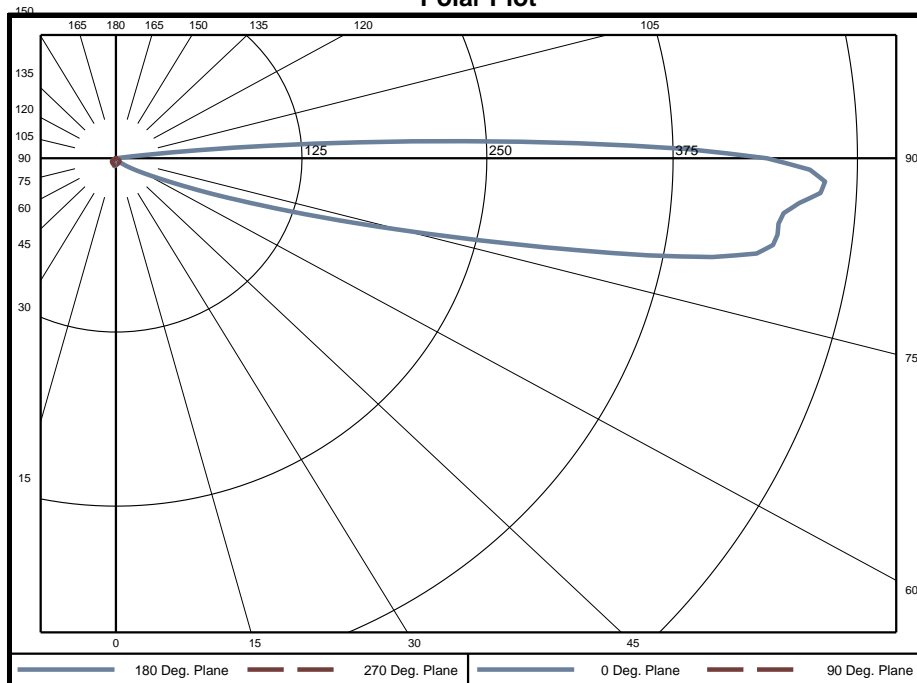
Luminaire Efficacy:

23.6 lm/w

Maximum Candela:

478 Candela

Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5 | 0.11 | 0.2% | 60-65 | 1.80 | 2.5% | 120-125 | 0.02 | 0.0% |
| 5-10 | 0.33 | 0.5% | 65-70 | 2.97 | 4.1% | 125-130 | 0.01 | 0.0% |
| 10-15 | 0.52 | 0.7% | 70-75 | 5.64 | 7.8% | 130-135 | 0.01 | 0.0% |
| 15-20 | 0.61 | 0.8% | 75-80 | 11.21 | 15.4% | 135-140 | 0.00 | 0.0% |
| 20-25 | 0.63 | 0.9% | 80-85 | 15.91 | 21.9% | 140-145 | 0.00 | 0.0% |
| 25-30 | 0.63 | 0.9% | 85-90 | 16.43 | 22.6% | 145-150 | 0.00 | 0.0% |
| 30-35 | 0.65 | 0.9% | 90-95 | 9.56 | 13.2% | 150-155 | 0.00 | 0.0% |
| 35-40 | 0.68 | 0.9% | 95-100 | 0.95 | 1.3% | 155-160 | 0.00 | 0.0% |
| 40-45 | 0.73 | 1.0% | 100-105 | 0.07 | 0.1% | 160-165 | 0.00 | 0.0% |
| 45-50 | 0.80 | 1.1% | 105-110 | 0.05 | 0.1% | 165-170 | 0.00 | 0.0% |
| 50-55 | 0.96 | 1.3% | 110-115 | 0.04 | 0.1% | 170-175 | 0.00 | 0.0% |
| 55-60 | 1.26 | 1.7% | 115-120 | 0.03 | 0.0% | 175-180 | 0.00 | 0.0% |

| Zone | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40 | 4 | 5.7% |
| 0-60 | 8 | 10.9% |
| 0-90 | 62 | 85.2% |
| 90-180 | 11 | 14.8% |



Candela Tabulation
Horizontal Angle (Degrees)

| Vertical Angle (Degrees) | 0 | 22.5 | 45 | 67.5 | 90 | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315 | 337.5 |
|--------------------------|-----|-------|------|------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| | 0 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| | 5 | 4.0 | 4.0 | 4.1 | 4.3 | 4.6 | 4.9 | 5.0 | 5.2 | 5.3 | 5.3 | 5.2 | 5.0 | 4.8 | 4.5 | 4.2 |
| | 10 | 3.3 | 3.2 | 3.4 | 3.8 | 4.4 | 4.9 | 5.3 | 5.5 | 5.7 | 5.6 | 5.5 | 5.3 | 4.8 | 4.2 | 3.7 |
| | 15 | 2.6 | 2.5 | 2.8 | 3.4 | 4.2 | 4.8 | 5.4 | 5.3 | 4.5 | 4.9 | 5.6 | 5.4 | 4.7 | 3.7 | 3.1 |
| | 20 | 2.5 | 2.2 | 2.2 | 2.9 | 4.0 | 4.8 | 4.7 | 2.6 | 1.8 | 2.2 | 4.7 | 5.4 | 4.6 | 3.3 | 2.5 |
| | 25 | 2.7 | 2.2 | 1.9 | 2.6 | 3.8 | 4.8 | 2.8 | 1.2 | 0.8 | 1.0 | 2.5 | 5.4 | 4.4 | 2.9 | 2.1 |
| | 30 | 2.8 | 2.3 | 1.8 | 2.2 | 3.7 | 4.7 | 1.4 | 0.3 | 0.0 | 0.1 | 1.2 | 5.2 | 4.2 | 2.5 | 2.0 |
| | 35 | 3.0 | 2.3 | 1.9 | 2.0 | 3.6 | 4.4 | 0.7 | 0.0 | 0.0 | 0.0 | 0.6 | 4.7 | 4.1 | 2.2 | 2.0 |
| | 40 | 3.5 | 2.6 | 1.9 | 1.7 | 3.5 | 3.9 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 3.9 | 4.0 | 1.9 | 2.0 |
| | 45 | 4.4 | 3.0 | 1.9 | 1.4 | 3.4 | 3.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 | 3.8 | 1.6 | 2.0 |
| | 50 | 7.1 | 3.8 | 1.8 | 1.2 | 3.1 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.3 | 3.5 | 1.3 | 2.0 |
| | 55 | 11.9 | 5.6 | 1.9 | 1.0 | 2.8 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 3.0 | 1.0 | 1.9 |
| | 60 | 20.6 | 8.1 | 2.0 | 0.8 | 2.2 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 2.4 | 0.8 | 1.9 |
| | 65 | 39.5 | 11.2 | 1.9 | 0.6 | 1.4 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 1.5 | 0.6 | 1.6 |
| | 70 | 87.7 | 14.3 | 1.4 | 0.4 | 0.6 | 0.3 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.8 | 0.4 | 1.3 |
| | 75 | 198.6 | 17.1 | 0.8 | 0.3 | 0.3 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.4 | 0.3 | 0.8 |
| | 80 | 408.0 | 17.0 | 0.5 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.5 |
| | 85 | 451.4 | 9.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 |
| | 90 | 438.6 | 4.8 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 4.3 |
| | 95 | 104.1 | 1.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 1.1 |
| | 100 | 1.1 | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.4 |
| | 105 | 0.7 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 |
| | 110 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 |
| | 115 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 |
| | 120 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 |
| | 125 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| | 130 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| | 135 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 140 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 145 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 150 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 155 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 160 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 165 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 170 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 175 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 180 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Average Luminance (cd/m²)

| Vertical Angle (Degrees) | Horizontal Angle (Degrees) | | | |
|-----------------------------|----------------------------|---------|------|------|
| | 0 | 45 | 90 | |
| | 0 | 5585 | 5585 | 5585 |
| | 45 | 7393 | 3197 | 5636 |
| | 55 | 24420 | 3874 | 5674 |
| | 65 | 110300 | 5212 | 3801 |
| | 75 | 906200 | 3557 | 1567 |
| | 85 | 6117000 | 4391 | 1301 |



Utilization of Lumens - Zonal Cavity Method

| Effective Floor Cavity Reflectance 20% | | | | | | | | | | | | | | | | | | |
|--|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ceiling Cavity Reflectance | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| Wall Reflectance | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| Room Cavity Ratio (RCR) | ** Values are expressed as Lumens delivered to the task surface ** | | | | | | | | | | | | | | | | | |
| 0 | 84 | 84 | 84 | 84 | 81 | 81 | 81 | 81 | 75 | 75 | 75 | 69 | 69 | 69 | 64 | 64 | 64 | 62 |
| 1 | 63 | 53 | 45 | 38 | 59 | 50 | 43 | 36 | 45 | 38 | 33 | 40 | 34 | 29 | 35 | 31 | 27 | 23 |
| 2 | 54 | 42 | 32 | 24 | 50 | 39 | 30 | 23 | 35 | 27 | 20 | 30 | 24 | 18 | 26 | 21 | 16 | 13 |
| 3 | 48 | 35 | 25 | 17 | 45 | 33 | 24 | 16 | 29 | 21 | 15 | 25 | 18 | 13 | 21 | 16 | 11 | 8 |
| 4 | 43 | 30 | 21 | 14 | 40 | 29 | 20 | 13 | 25 | 17 | 11 | 22 | 15 | 10 | 19 | 13 | 9 | 6 |
| 5 | 40 | 27 | 18 | 11 | 37 | 25 | 17 | 11 | 22 | 15 | 9 | 19 | 13 | 8 | 17 | 11 | 7 | 5 |
| 6 | 37 | 24 | 16 | 10 | 34 | 23 | 15 | 9 | 20 | 13 | 8 | 18 | 12 | 7 | 15 | 10 | 6 | 4 |
| 7 | 34 | 22 | 14 | 8 | 32 | 21 | 13 | 8 | 18 | 12 | 7 | 16 | 11 | 6 | 14 | 9 | 5 | 3 |
| 8 | 32 | 20 | 12 | 7 | 30 | 19 | 12 | 7 | 17 | 11 | 6 | 15 | 10 | 6 | 13 | 8 | 5 | 3 |
| 9 | 30 | 18 | 11 | 7 | 28 | 17 | 11 | 6 | 16 | 10 | 6 | 14 | 9 | 5 | 13 | 8 | 4 | 3 |
| 10 | 28 | 17 | 10 | 6 | 26 | 16 | 10 | 6 | 15 | 9 | 5 | 13 | 8 | 5 | 12 | 7 | 4 | 2 |

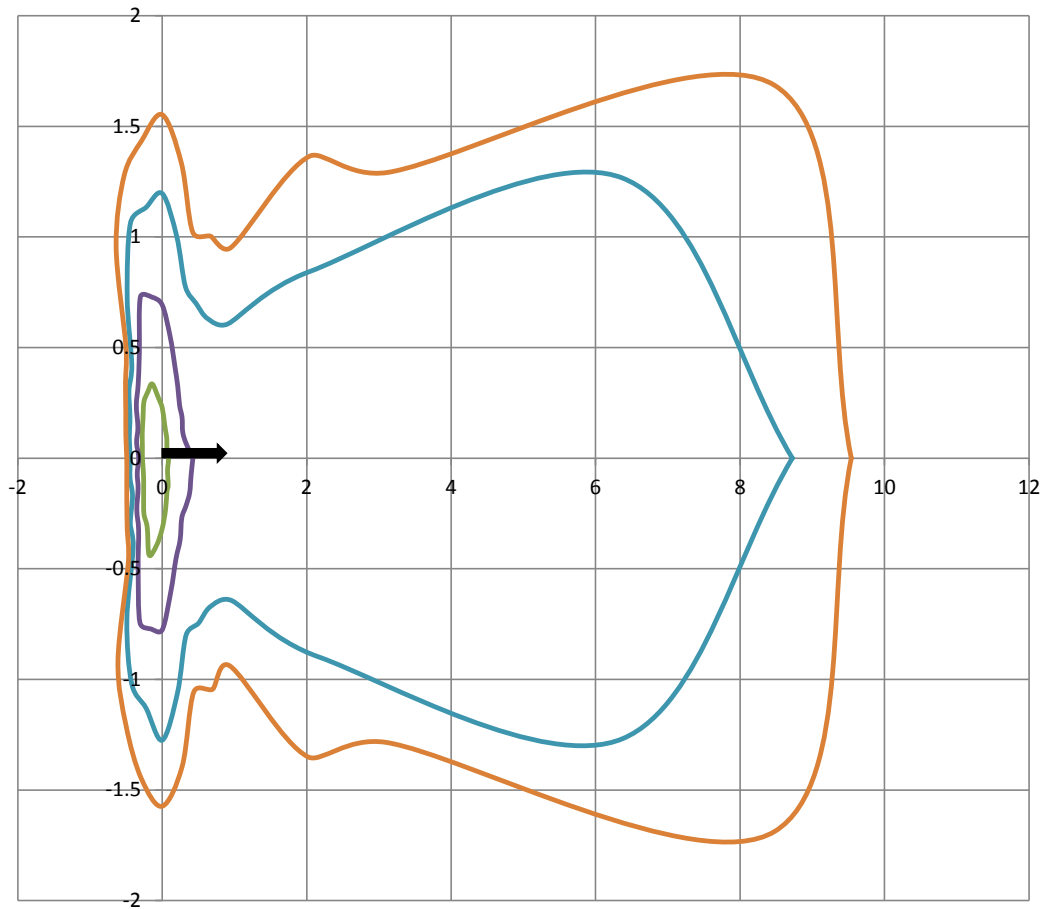
| Beam and Field Information | |
|----------------------------|---------------|
| CIE Type: | Semi-Direct |
| Center Beam Intensity: | 4.7 Candela |
| Central Cone Intensity: | 5 Candela |
| Beam Flux: | 69.7 Lumens |
| Beam Angle (0-180): | 116.4 Degrees |
| Beam Angle (90-270): | 118.8 Degrees |
| Field Angle (0-180): | 137.2 Degrees |
| Field Angle (90-270): | 145.5 Degrees |

| Cone of Light Tabulation | | | |
|--------------------------|--|----------------------|-----------------|
| Mounting Height (Feet) | | Footcandles at Nadir | Diameter (Feet) |
| 4.00 | | 0.296 | 3.31 |
| 6.00 | | 0.131 | 4.96 |
| 8.00 | | 0.0739 | 6.61 |
| 10.0 | | 0.0473 | 8.27 |
| 12.0 | | 0.0328 | 9.92 |
| 14.0 | | 0.0241 | 11.6 |
| 16.0 | | 0.0185 | 13.2 |

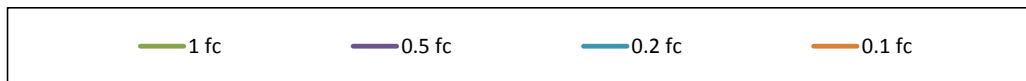


ISOFootcandle Plot

Mounting Height - 2 Feet



Grid Lines in Units of Mounting Height





IES "BUG" Rating
(Back Light, Uplight, Glare)
Per IES TM-15-11



Luminaire Classification System (LCS)

| LCS | Zone | Lumens | Luminaire % |
|-------------------|-----------------|--------|-------------|
| FL | (0-30) | 1.2 | 2.1% |
| FM | (30-60) | 3.6 | 6.3% |
| FH | (60-80) | 19.8 | 34.0% |
| FVH | (80-90) | 23.4 | 40.2% |
| BL | (0-30) | 1.6 | 2.7% |
| BM | (30-60) | 1.4 | 2.5% |
| BH | (60-80) | 0.2 | 0.4% |
| BVH | (80-90) | 0.0 | 0.0% |
| UL | (90-100) | 6.6 | 11.3% |
| UH | (100-180) | 0.2 | 0.4% |
| Total | | 58.1 | 100.0% |
| BUG Rating | B0 U1 G1 | | |