



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

Photometric Indoor Test Report

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

Prepared For
Renova Lighting Systems Inc
Rick Edwards
20 Middlesex Road
Mansfield, MA 02048

Catalog Number
L-KVN14-WN-L15-UNV-30DM-W12-104-C40-AF
Project Number
10551935
Test Number
803983

Test Date

2014-11-03

Prepared By

A handwritten signature in black ink, appearing to read 'Todd Heiland'.

Todd Heiland, Technician

Approved By

A handwritten signature in black ink, appearing to read 'Jeff A. Smith Jr.'.

Jeff Smith Jr., Project Handler

The results contained in this report pertain only to the tested sample.
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Luminaire Description: Retrofit kit tested in Lithonia GT8 reference troffer. Formed white enamel steel housing, white enamel steel reflector, plastic frosted lens
Catalog Number: L-KVN14-WN-L15-UNV-30DM-W12-104-C40-AF
Lamp: 104 white LEDs
Mounting: Recessed
Ballast/Driver: One Osram Optotronic OT30W/PRG1050C/UNV/DIM/L

Luminaire

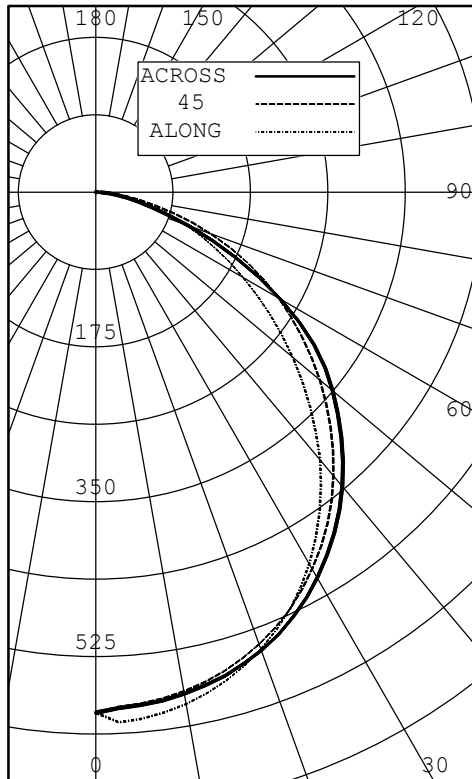


Test Conditions

| | |
|-------------------|-----------|
| Test Temperature: | 24.8 °C |
| Voltage: | 120.0 VAC |
| Current: | 0.1095 A |
| Power: | 12.97 W |
| Power Factor: | 0.987 |
| Frequency: | 60 Hz |
| Current THD: | 5.49 % |



INTENSITY (CANDLEPOWER) SUMMARY OUTPUT LUMENS



| ANGLE | ALONG | 22.5 | 45 | 67.5 | ACROSS | OUTPUT LUMENS |
|-------|-------|------|-----|------|--------|---------------|
| 0 | 588 | 588 | 588 | 588 | 588 | |
| 5 | 598 | 587 | 581 | 581 | 582 | 56 |
| 10 | 588 | 578 | 573 | 575 | 576 | |
| 15 | 572 | 563 | 561 | 564 | 566 | 159 |
| 20 | 549 | 542 | 543 | 548 | 550 | |
| 25 | 520 | 515 | 520 | 527 | 529 | 240 |
| 30 | 484 | 483 | 491 | 499 | 502 | |
| 35 | 441 | 444 | 457 | 467 | 470 | 284 |
| 40 | 395 | 400 | 418 | 431 | 434 | |
| 45 | 342 | 353 | 376 | 390 | 393 | 286 |
| 50 | 291 | 303 | 331 | 346 | 350 | |
| 55 | 240 | 255 | 284 | 301 | 302 | 247 |
| 60 | 192 | 208 | 239 | 246 | 241 | |
| 65 | 148 | 165 | 190 | 184 | 174 | 173 |
| 70 | 109 | 124 | 140 | 125 | 113 | |
| 75 | 74 | 88 | 91 | 74 | 66 | 87 |
| 80 | 43 | 53 | 50 | 39 | 36 | |
| 85 | 17 | 21 | 19 | 17 | 16 | 22 |
| 90 | 0 | 0 | 0 | 0 | 0 | |

ZONAL LUMENS AND PERCENTAGES

| ZONE | LUMENS | % LUMINAIRE |
|--------|--------|-------------|
| 0-30 | 455 | 29.28 |
| 0-40 | 739 | 47.58 |
| 0-60 | 1273 | 81.89 |
| 0-90 | 1554 | 100.00 |
| 40-90 | 815 | 52.42 |
| 60-90 | 281 | 18.11 |
| 90-180 | 0 | 0.00 |
| 0-180 | 1554 | 100.00 |

EFFICACY (LUMENS PER WATT): 119.5

*** THIS IS AN ABSOLUTE TEST ***

LUMINOUS LENGTH: 44.750 INS
 WIDTH: 9.250 INS

LUMINANCE SUMMARY CD./SQ.M.

S/MH: 1.3
 SC (ALONG): 1.2, SC (ACROSS): 1.3

| ANGLE | ALONG | 45 | ACROSS |
|-------|-------|------|--------|
| 45 | 1813 | 1996 | 2087 |
| 55 | 1566 | 1861 | 1975 |
| 65 | 1315 | 1692 | 1550 |
| 75 | 1068 | 1323 | 956 |
| 85 | 723 | 824 | 687 |

TESTED IN ACCORDANCE WITH IES PROCEDURES.



INTENSITY (CANDLEPOWER) DATA
IN 2.5 DEGREE STEPS

| ANGLE | PLANE | | | | | | OUTPUT LUMENS |
|-------|-------|------|-----|------|--------|---------|------------------|
| | ALONG | 22.5 | 45 | 67.5 | ACROSS | AVERAGE | |
| 0.0 | 588 | 588 | 588 | 588 | 588 | 588 | |
| 2.5 | 600 | 589 | 583 | 583 | 584 | 587 | |
| 5.0 | 598 | 587 | 581 | 581 | 582 | 585 | 56 |
| 7.5 | 594 | 583 | 578 | 579 | 580 | 581 | |
| 10.0 | 588 | 578 | 573 | 575 | 576 | 577 | |
| 12.5 | 581 | 571 | 568 | 570 | 572 | 571 | |
| 15.0 | 572 | 563 | 561 | 564 | 566 | 564 | 159 |
| 17.5 | 561 | 553 | 552 | 557 | 559 | 556 | |
| 20.0 | 549 | 542 | 543 | 548 | 550 | 546 | |
| 22.5 | 535 | 530 | 532 | 538 | 541 | 534 | |
| 25.0 | 520 | 515 | 520 | 527 | 529 | 522 | 240 |
| 27.5 | 503 | 500 | 506 | 514 | 516 | 507 | |
| 30.0 | 484 | 483 | 491 | 499 | 502 | 491 | |
| 32.5 | 463 | 464 | 474 | 484 | 487 | 474 | |
| 35.0 | 441 | 444 | 457 | 467 | 470 | 456 | 284 |
| 37.5 | 418 | 423 | 438 | 450 | 453 | 436 | |
| 40.0 | 395 | 400 | 418 | 431 | 434 | 416 | |
| 42.5 | 368 | 377 | 397 | 411 | 414 | 394 | |
| 45.0 | 342 | 353 | 376 | 390 | 393 | 371 | 286 |
| 47.5 | 317 | 328 | 353 | 368 | 371 | 348 | |
| 50.0 | 291 | 303 | 331 | 346 | 350 | 325 | |
| 52.5 | 265 | 279 | 307 | 324 | 328 | 302 | |
| 55.0 | 240 | 255 | 284 | 301 | 302 | 278 | 247 |
| 57.5 | 216 | 231 | 261 | 275 | 273 | 253 | |
| 60.0 | 192 | 208 | 239 | 246 | 241 | 227 | |
| 62.5 | 170 | 186 | 215 | 216 | 208 | 201 | |
| 65.0 | 148 | 165 | 190 | 184 | 174 | 175 | 173 |
| 67.5 | 128 | 144 | 165 | 153 | 143 | 150 | |
| 70.0 | 109 | 124 | 140 | 125 | 113 | 125 | |
| 72.5 | 91 | 106 | 115 | 97 | 87 | 102 | |
| 75.0 | 74 | 88 | 91 | 74 | 66 | 81 | 87 |
| 77.5 | 58 | 70 | 69 | 54 | 49 | 62 | |
| 80.0 | 43 | 53 | 50 | 39 | 36 | 45 | |
| 82.5 | 29 | 37 | 33 | 27 | 26 | 31 | |
| 85.0 | 17 | 21 | 19 | 17 | 16 | 18 | 22 |
| 87.5 | 6 | 8 | 7 | 7 | 7 | 7 | |
| 90.0 | 0 | 0 | 0 | 0 | 0 | 0 | |



COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

| CC WALL | 90 | | | | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | | | | 0 | |
|------------|----|-------|------|------|-----|-------|------|------|-----|-------|------|------|-----|-------|------|------|-------|-------|------|-------|------|-------|------|------|-----|------|
| | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | |
| RCR | 0 | 1.221 | .221 | .221 | .22 | 1.191 | .191 | .191 | .19 | 1.161 | .161 | .161 | .16 | 1.111 | .111 | .111 | .11 | 1.061 | .061 | .061 | .06 | 1.021 | .021 | .021 | .02 | 1.00 |
| | 1 | 1.131 | .081 | .041 | .00 | 1.101 | .061 | .020 | .99 | 1.071 | .041 | .000 | .97 | 0.990 | .960 | .94 | 0.950 | .930 | .91 | 0.920 | .900 | .88 | 0.86 | | | |
| | 2 | 1.040 | .960 | .900 | .84 | 1.010 | .940 | .880 | .83 | 0.990 | .920 | .870 | .82 | 0.890 | .840 | .80 | 0.860 | .820 | .78 | 0.830 | .790 | .77 | 0.75 | | | |
| | 3 | 0.950 | .850 | .770 | .71 | 0.930 | .830 | .760 | .70 | 0.910 | .820 | .750 | .70 | 0.790 | .730 | .69 | 0.770 | .720 | .67 | 0.740 | .700 | .66 | 0.64 | | | |
| | 4 | 0.880 | .760 | .680 | .62 | 0.860 | .750 | .670 | .61 | 0.840 | .740 | .670 | .61 | 0.710 | .650 | .60 | 0.690 | .640 | .59 | 0.670 | .620 | .58 | 0.56 | | | |
| | 5 | 0.820 | .690 | .600 | .53 | 0.790 | .670 | .590 | .53 | 0.770 | .660 | .580 | .53 | 0.640 | .570 | .52 | 0.620 | .560 | .51 | 0.600 | .550 | .51 | 0.49 | | | |
| | 6 | 0.750 | .620 | .530 | .47 | 0.730 | .610 | .520 | .46 | 0.710 | .600 | .520 | .46 | 0.580 | .510 | .45 | 0.560 | .500 | .45 | 0.550 | .490 | .45 | 0.43 | | | |
| | 7 | 0.690 | .550 | .460 | .41 | 0.670 | .540 | .460 | .40 | 0.660 | .540 | .460 | .40 | 0.520 | .450 | .40 | 0.500 | .440 | .39 | 0.490 | .430 | .39 | 0.37 | | | |
| | 8 | 0.640 | .500 | .420 | .36 | 0.620 | .490 | .410 | .36 | 0.610 | .490 | .410 | .35 | 0.470 | .400 | .35 | 0.460 | .400 | .35 | 0.450 | .390 | .35 | 0.33 | | | |
| | 9 | 0.590 | .460 | .370 | .31 | 0.580 | .450 | .370 | .31 | 0.570 | .440 | .370 | .31 | 0.430 | .360 | .31 | 0.420 | .350 | .31 | 0.410 | .350 | .31 | 0.29 | | | |
| | 10 | 0.550 | .420 | .330 | .28 | 0.540 | .410 | .330 | .28 | 0.530 | .400 | .330 | .28 | 0.390 | .320 | .28 | 0.380 | .320 | .27 | 0.380 | .320 | .27 | 0.26 | | | |

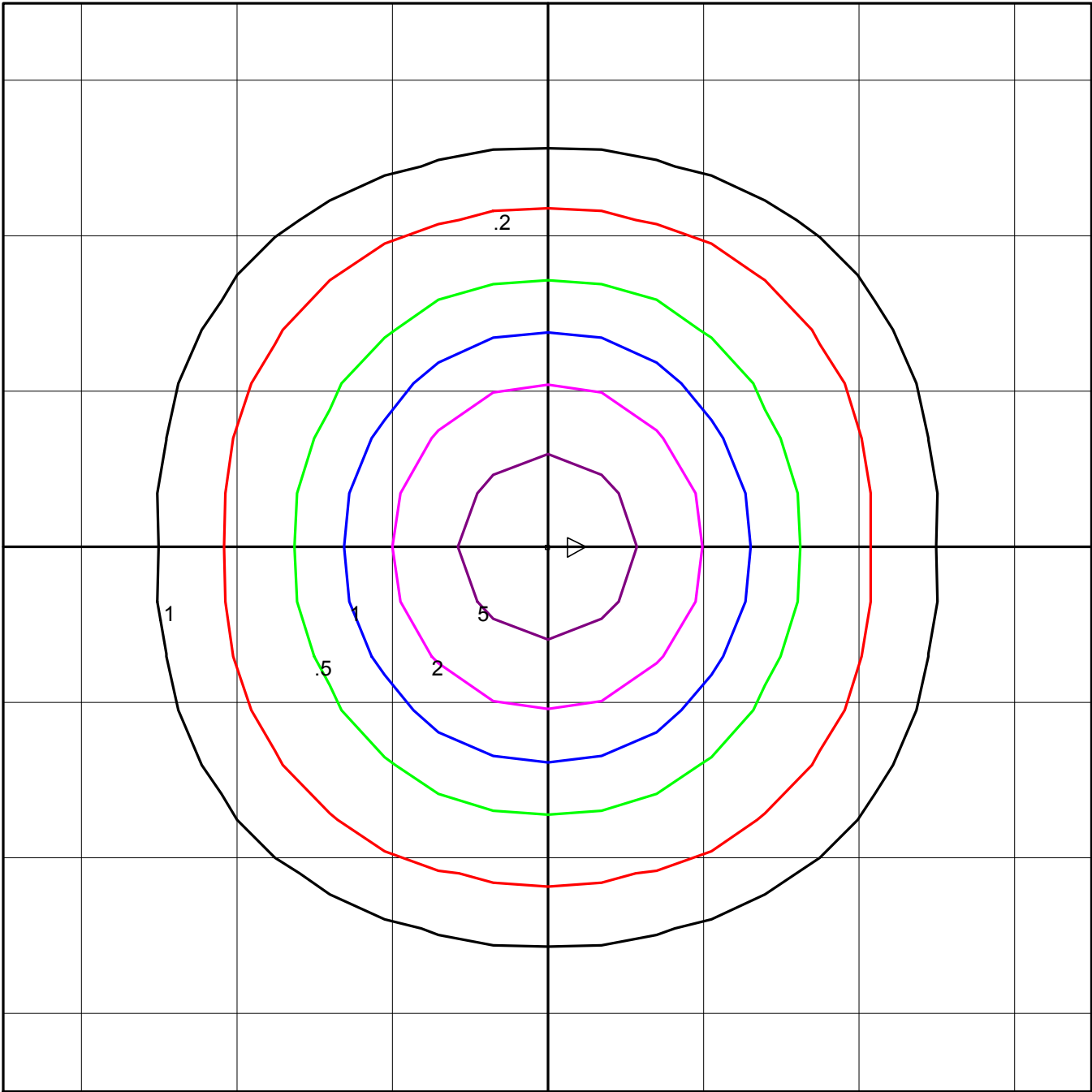
THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS
 BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.
 LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD
 THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.
 BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST
 LUMINOUS OPENING OF LUMINAIRE.



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Horizontal Footcandles
Scale: 1 Inch = 8 Ft.
Mounting Height = 8.00 Ft.
Maximum Calculated Value = 9.19 Fc



Cone of Light

Cone of Light Tabulation

| Mounting Height (Feet) | Footcandles at Nadir | Diameter (Feet) |
|------------------------|----------------------|-----------------|
| 4.00 | 36.7 | 4.97 |
| 6.00 | 16.3 | 7.46 |
| 8.00 | 9.19 | 9.94 |
| 10.0 | 5.88 | 12.4 |
| 12.0 | 4.08 | 14.9 |
| 14.0 | 3.00 | 17.4 |
| 16.0 | 2.30 | 19.9 |

Cone of Light Plot

