7826 East Evans Road
Scottsdale, AZ 85260
480-991-9260

# Photometric Indoor Test Report

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

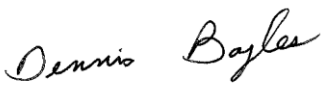
Prepared For
Environmental Lights
11235 W. Bernardo Court, Suite 102
San Diego, CA 92127

Catalog Number
vww3528-240-10-reel
Project Number
10345709
Test Number
33069

Test Date

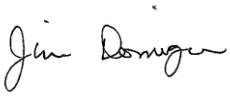
2014-06-10

Prepared By



Dennis Boyles, Technician

Approved By



Jim Domigan, Laboratory Team Leader

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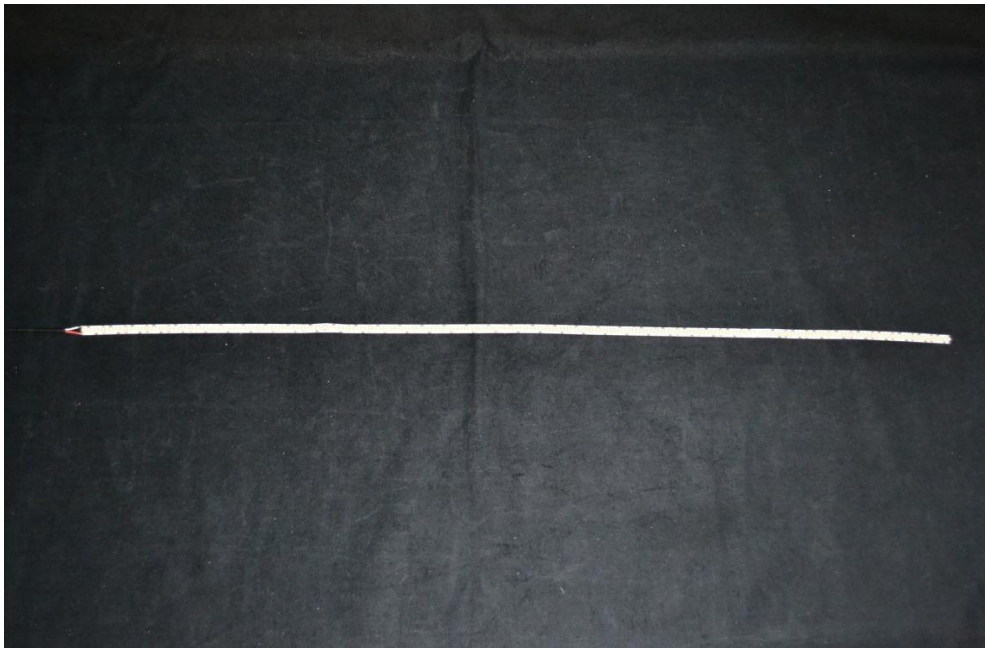
| | |
|---|---|
| Luminaire Description: | LED Strip Light |
| Catalog Number: | vww3528-240-10-reel |
| Lamp: | LED Array |
| Ballast/Driver: | One Mean Well SP-320-24 Driver |

Luminaire



Test Conditions

| | |
|---|---|
| Test Temperature: | 24.7 °C |
| Voltage: | 24.0 VDC |

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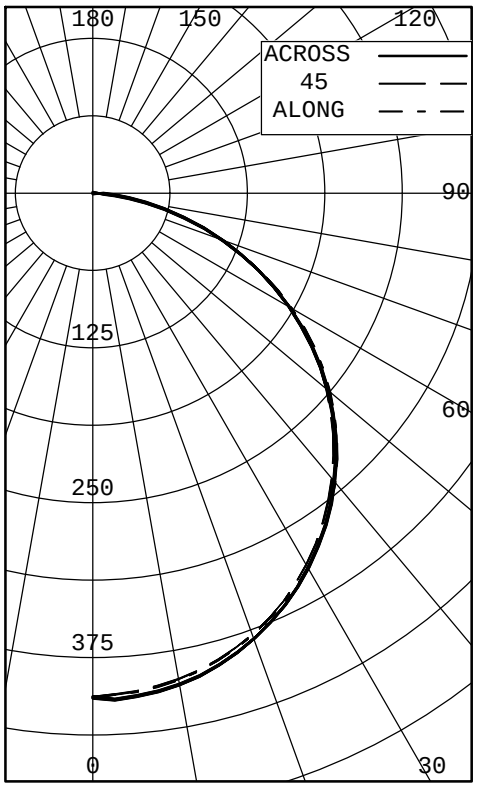


INTENSITY(CANDLEPOWER) SUMMARY

| ANGLE | ALONG | 22.5 | 45 | 67.5 | ACROSS | OUTPUT LUMENS |
|---|---|---|---|---|---|---|
| 0 | 407 | 407 | 407 | 407 | 407 | |
| 5 | 404 | 402 | 404 | 408 | 408 | 39 |
| 10 | 399 | 397 | 399 | 403 | 403 | |
| 15 | 391 | 389 | 390 | 395 | 395 | 110 |
| 20 | 380 | 378 | 378 | 382 | 382 | |
| 25 | 365 | 363 | 364 | 367 | 367 | 168 |
| 30 | 348 | 346 | 346 | 349 | 349 | |
| 35 | 327 | 325 | 324 | 328 | 328 | 204 |
| 40 | 304 | 302 | 301 | 304 | 303 | |
| 45 | 279 | 276 | 275 | 278 | 277 | 213 |
| 50 | 250 | 247 | 246 | 249 | 248 | |
| 55 | 219 | 216 | 216 | 217 | 216 | 193 |
| 60 | 186 | 182 | 182 | 183 | 183 | |
| 65 | 151 | 147 | 148 | 149 | 148 | 146 |
| 70 | 114 | 112 | 112 | 113 | 112 | |
| 75 | 76 | 76 | 77 | 77 | 77 | 81 |
| 80 | 42 | 42 | 44 | 44 | 44 | |
| 85 | 15 | 16 | 17 | 18 | 18 | 20 |
| 90 | 0 | 0 | 0 | 0 | 0 | |

ZONAL LUMENS AND PERCENTAGES

| ZONE | LUMENS | % LUMINAIRE |
|---|---|---|
| 0-30 | 317 | 27.02 |
| 0-40 | 521 | 44.36 |
| 0-60 | 927 | 78.90 |
| 0-90 | 1175 | 100.00 |
| 40-90 | 654 | 55.64 |
| 60-90 | 248 | 21.10 |
| 90-180 | 0 | 0.00 |
| 0-180 | 1175 | 100.00 |

*** THIS IS AN ABSOLUTE TEST ***

LUMINOUS LENGTH: 39.370 INS
WIDTH: 0.125 INS

LUMINANCE SUMMARY CD./SQ.M.

S/MH: 1.3
SC: 1.3

| ANGLE | ALONG | 45 | ACROSS |
|---|---|---|---|
| 45 | 124138 | 122846 | 123897 |
| 55 | 120503 | 118814 | 119227 |
| 65 | 112310 | 110799 | 110607 |
| 75 | 92668 | 93571 | 93511 |
| 85 | 53666 | 62499 | 65661 |

TESTED IN ACCORDANCE WITH IES PROCEDURES.

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INTENSITY(CANDLEPOWER) DATA
IN 2.5 DEGREE STEPS

| ANGLE | PLANE | | | | | | OUTPUT |
|---|---|---|---|---|---|---|---|
| | ALONG | 22.5 | 45 | 67.5 | ACROSS | AVERAGE | LUMENS |
| 0.0 | 407 | 407 | 407 | 407 | 407 | 407 | |
| 2.5 | 405 | 404 | 405 | 409 | 410 | 406 | |
| 5.0 | 404 | 402 | 404 | 408 | 408 | 405 | 39 |
| 7.5 | 402 | 400 | 402 | 406 | 406 | 403 | |
| 10.0 | 399 | 397 | 399 | 403 | 403 | 400 | |
| 12.5 | 396 | 393 | 395 | 399 | 399 | 396 | |
| 15.0 | 391 | 389 | 390 | 395 | 395 | 392 | 110 |
| 17.5 | 386 | 383 | 385 | 389 | 389 | 386 | |
| 20.0 | 380 | 378 | 378 | 382 | 382 | 380 | |
| 22.5 | 373 | 371 | 372 | 375 | 375 | 373 | |
| 25.0 | 365 | 363 | 364 | 367 | 367 | 365 | 168 |
| 27.5 | 357 | 355 | 355 | 359 | 358 | 357 | |
| 30.0 | 348 | 346 | 346 | 349 | 349 | 347 | |
| 32.5 | 338 | 336 | 335 | 339 | 339 | 337 | |
| 35.0 | 327 | 325 | 324 | 328 | 328 | 326 | 204 |
| 37.5 | 316 | 314 | 313 | 316 | 316 | 315 | |
| 40.0 | 304 | 302 | 301 | 304 | 303 | 303 | |
| 42.5 | 292 | 289 | 288 | 291 | 291 | 290 | |
| 45.0 | 279 | 276 | 275 | 278 | 277 | 276 | 213 |
| 47.5 | 265 | 261 | 261 | 263 | 263 | 262 | |
| 50.0 | 250 | 247 | 246 | 249 | 248 | 248 | |
| 52.5 | 235 | 232 | 231 | 233 | 232 | 232 | |
| 55.0 | 219 | 216 | 216 | 217 | 216 | 217 | 193 |
| 57.5 | 203 | 199 | 199 | 201 | 200 | 200 | |
| 60.0 | 186 | 182 | 182 | 183 | 183 | 183 | |
| 62.5 | 168 | 165 | 166 | 166 | 166 | 166 | |
| 65.0 | 151 | 147 | 148 | 149 | 148 | 148 | 146 |
| 67.5 | 133 | 130 | 130 | 131 | 130 | 131 | |
| 70.0 | 114 | 112 | 112 | 113 | 112 | 113 | |
| 72.5 | 95 | 94 | 95 | 95 | 94 | 94 | |
| 75.0 | 76 | 76 | 77 | 77 | 77 | 77 | 81 |
| 77.5 | 59 | 59 | 60 | 60 | 60 | 59 | |
| 80.0 | 42 | 42 | 44 | 44 | 44 | 43 | |
| 82.5 | 27 | 28 | 29 | 30 | 30 | 29 | |
| 85.0 | 15 | 16 | 17 | 18 | 18 | 17 | 20 |
| 87.5 | 5 | 6 | 8 | 9 | 9 | 8 | |
| 90.0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

| CC WALL | 90 | | | | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCR | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| 0 | 1.22 | 1.22 | 1.22 | 1.22 | 1.19 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1.16 | 1.11 | 1.11 | 1.11 | 1.06 | 1.06 | 1.06 | 1.02 | 1.02 | 1.02 | 1.00 |
| 1 | 1.12 | 1.07 | 1.03 | 0.99 | 1.10 | 1.05 | 1.01 | 0.97 | 1.07 | 1.03 | 0.99 | 0.96 | 0.98 | 0.96 | 0.93 | 0.95 | 0.92 | 0.90 | 0.91 | 0.89 | 0.87 | 0.85 |
| 2 | 1.03 | 0.95 | 0.88 | 0.82 | 1.00 | 0.93 | 0.87 | 0.81 | 0.98 | 0.91 | 0.85 | 0.80 | 0.87 | 0.82 | 0.78 | 0.84 | 0.80 | 0.76 | 0.81 | 0.78 | 0.75 | 0.73 |
| 3 | 0.94 | 0.83 | 0.75 | 0.69 | 0.92 | 0.82 | 0.74 | 0.68 | 0.89 | 0.80 | 0.73 | 0.68 | 0.78 | 0.71 | 0.66 | 0.75 | 0.70 | 0.65 | 0.72 | 0.68 | 0.64 | 0.62 |
| 4 | 0.87 | 0.75 | 0.66 | 0.59 | 0.85 | 0.73 | 0.65 | 0.59 | 0.83 | 0.72 | 0.65 | 0.58 | 0.70 | 0.63 | 0.58 | 0.67 | 0.61 | 0.57 | 0.65 | 0.60 | 0.56 | 0.54 |
| 5 | 0.80 | 0.67 | 0.58 | 0.51 | 0.78 | 0.66 | 0.57 | 0.50 | 0.76 | 0.64 | 0.56 | 0.50 | 0.62 | 0.55 | 0.50 | 0.60 | 0.54 | 0.49 | 0.58 | 0.53 | 0.49 | 0.47 |
| 6 | 0.74 | 0.60 | 0.51 | 0.44 | 0.72 | 0.59 | 0.50 | 0.44 | 0.70 | 0.58 | 0.49 | 0.43 | 0.56 | 0.49 | 0.43 | 0.54 | 0.48 | 0.43 | 0.53 | 0.47 | 0.42 | 0.40 |
| 7 | 0.67 | 0.53 | 0.44 | 0.39 | 0.66 | 0.52 | 0.44 | 0.38 | 0.64 | 0.52 | 0.43 | 0.38 | 0.50 | 0.43 | 0.37 | 0.49 | 0.42 | 0.37 | 0.47 | 0.41 | 0.37 | 0.35 |
| 8 | 0.62 | 0.48 | 0.40 | 0.34 | 0.61 | 0.47 | 0.39 | 0.33 | 0.60 | 0.47 | 0.39 | 0.33 | 0.45 | 0.38 | 0.33 | 0.44 | 0.38 | 0.33 | 0.43 | 0.37 | 0.33 | 0.31 |
| 9 | 0.58 | 0.44 | 0.35 | 0.29 | 0.56 | 0.43 | 0.35 | 0.29 | 0.55 | 0.43 | 0.35 | 0.29 | 0.41 | 0.34 | 0.29 | 0.40 | 0.34 | 0.29 | 0.39 | 0.33 | 0.29 | 0.27 |
| 10 | 0.54 | 0.40 | 0.31 | 0.26 | 0.52 | 0.39 | 0.31 | 0.26 | 0.51 | 0.39 | 0.31 | 0.26 | 0.38 | 0.31 | 0.26 | 0.37 | 0.30 | 0.26 | 0.36 | 0.30 | 0.25 | 0.24 |

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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**All testing was conducted in accordance with LM-79-08,**
Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products as published by the Illuminating Engineering Society of North America (IESNA).

The condition of the item tested was new. Stabilization time before testing meets the stabilization requirements of LM-79-08.

The test results (luminous distribution and flux) were obtained by using a Lighting Sciences series 6000 Type C Moving Mirror Goniophotometer

- The photometric reference standard used is a set of three incandescent luminous intensity standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.

Power measurements were obtained with a Xitron 2801 power analyzer.

Ambient temperature during testing was 25° C ± 1° C, measured using an Omega model DP460.

Calibration certificates are on file at the laboratory

The results in this report apply to the test sample(s) mentioned in this report at the time of the testing period only and are not to be used to indicate applicability to other similar products.