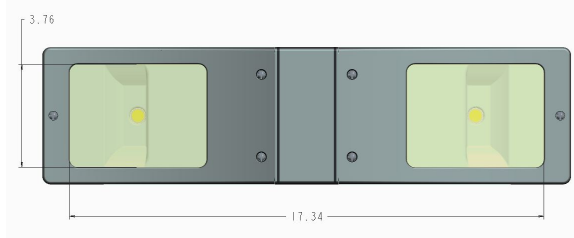


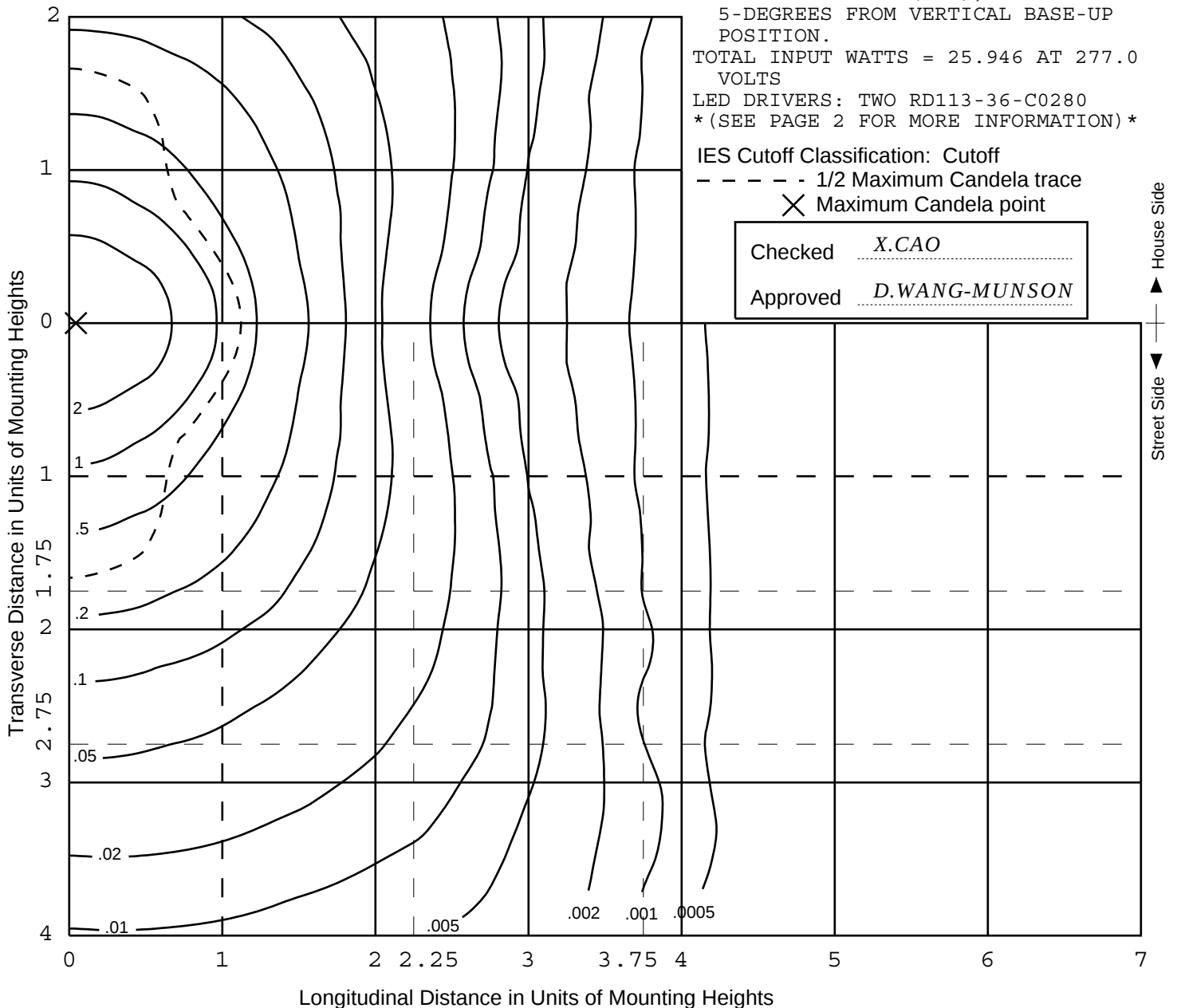
## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 15 foot mounting height.



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 ISSUE DATE: 11/10/15 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 11/10/15  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: CLED2X10/PLED2X10  
 (Ceiling Mount / Pendant Mount)  
 LUMINAIRE: ONE LUMINAIRE CONSISTING OF  
 TWO OPPOSING LIGHT HEADS, EACH  
 LIGHT HEAD CONSISTING OF: CAST METAL  
 HOUSING, ONE CIRCUIT BOARD WITH ONE  
 LED, FORMED SEMI-SPECULAR METAL  
 REFLECTOR, CLEAR FLAT GLASS LENS IN  
 CAST BROWN PAINTED METAL FRAME.  
 LAMPS: TWO WHITE MULTI-CHIP LIGHT  
 EMITTING DIODE (LED), TILTED  
 5-DEGREES FROM VERTICAL BASE-UP  
 POSITION.  
 TOTAL INPUT WATTS = 25.946 AT 277.0  
 VOLTS  
 LED DRIVERS: TWO RD113-36-C0280  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*

IES Cutoff Classification: Cutoff  
 - - - - - 1/2 Maximum Candela trace  
 X Maximum Candela point



REPORT NUMBER: RAB01426  
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PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9  
DATE SAMPLE TESTED: 11/10/15

ADDITIONAL INFORMATION

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT  
VOLTAGE TO THE LED DRIVERS.

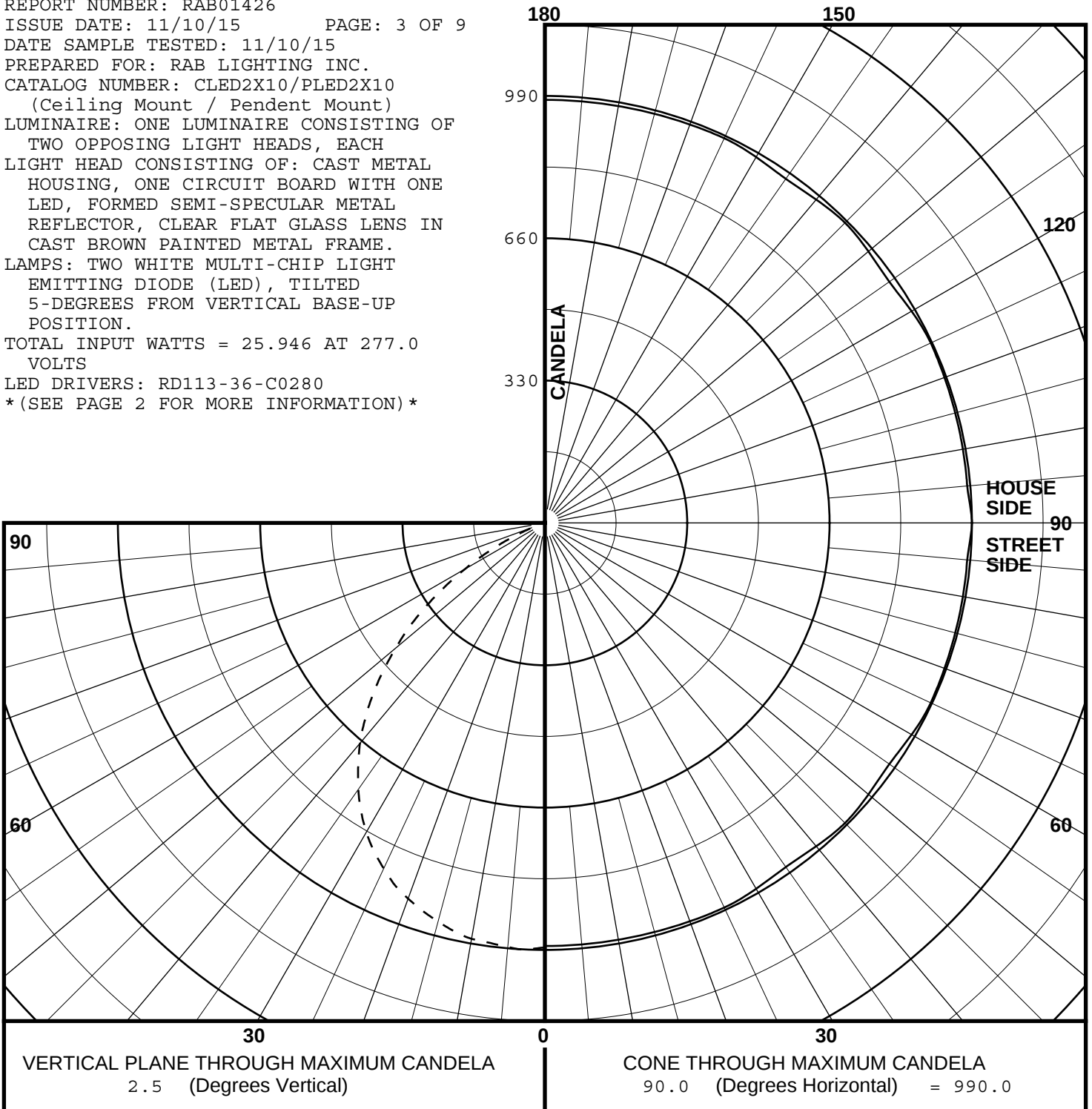
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 28.25 FEET

ACCREDITED LABORATORY CODE 201058-0

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

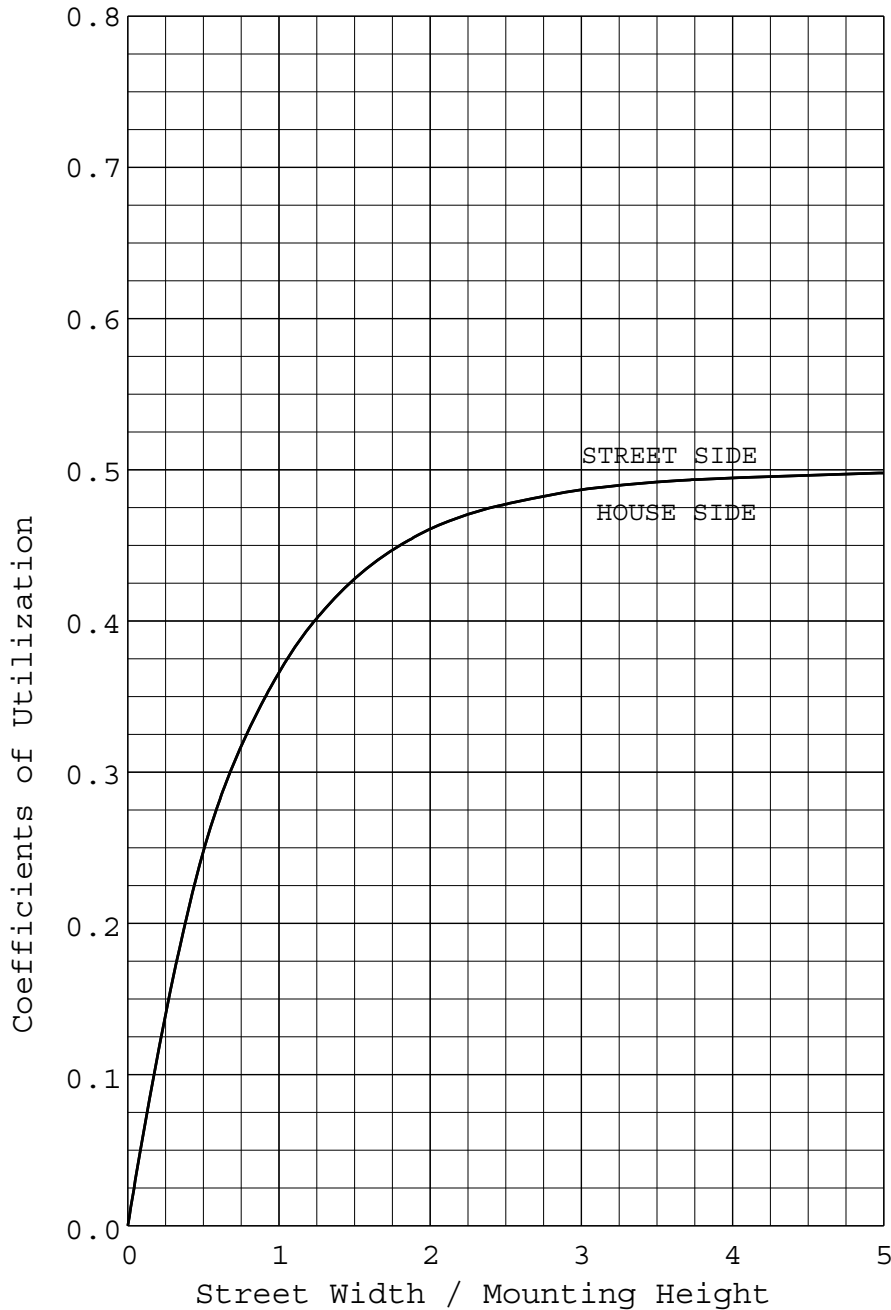
REPORT NUMBER: RAB01426  
 ISSUE DATE: 11/10/15      PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 11/10/15  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: CLED2X10/PLED2X10  
 (Ceiling Mount / Pendant Mount)  
 LUMINAIRE: ONE LUMINAIRE CONSISTING OF  
 TWO OPPOSING LIGHT HEADS, EACH  
 LIGHT HEAD CONSISTING OF: CAST METAL  
 HOUSING, ONE CIRCUIT BOARD WITH ONE  
 LED, FORMED SEMI-SPECULAR METAL  
 REFLECTOR, CLEAR FLAT GLASS LENS IN  
 CAST BROWN PAINTED METAL FRAME.  
 LAMPS: TWO WHITE MULTI-CHIP LIGHT  
 EMITTING DIODE (LED), TILTED  
 5-DEGREES FROM VERTICAL BASE-UP  
 POSITION.  
 TOTAL INPUT WATTS = 25.946 AT 277.0  
 VOLTS  
 LED DRIVERS: RD113-36-C0280  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB01426  
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DATE SAMPLE TESTED: 11/10/15

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



|                          | LUMENS | PERCENT<br>OF FIXTURE |
|--------------------------|--------|-----------------------|
| DOWNWARD<br>STREET SIDE  | 1172.  | 50.0                  |
| DOWNWARD<br>HOUSE SIDE   | 1172.  | 50.0                  |
| DOWNWARD<br>TOTAL        | 2344.  | 100.0                 |
| UPWARD<br>STREET SIDE    | 0.     | 0.0                   |
| UPWARD<br>HOUSE SIDE     | 0.     | 0.0                   |
| UPWARD<br>TOTAL          | 0.     | 0.0                   |
| TOTAL<br>FLUX            | 2344.  | 100.0                 |
| TOTAL INPUT WATTS = 25.9 |        |                       |
| EFFICACY = 90.5 Lm/W     |        |                       |

ALL CANDELA AND LUMENS IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY.  
THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE  
LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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 PREPARED FOR: RAB LIGHTING INC.

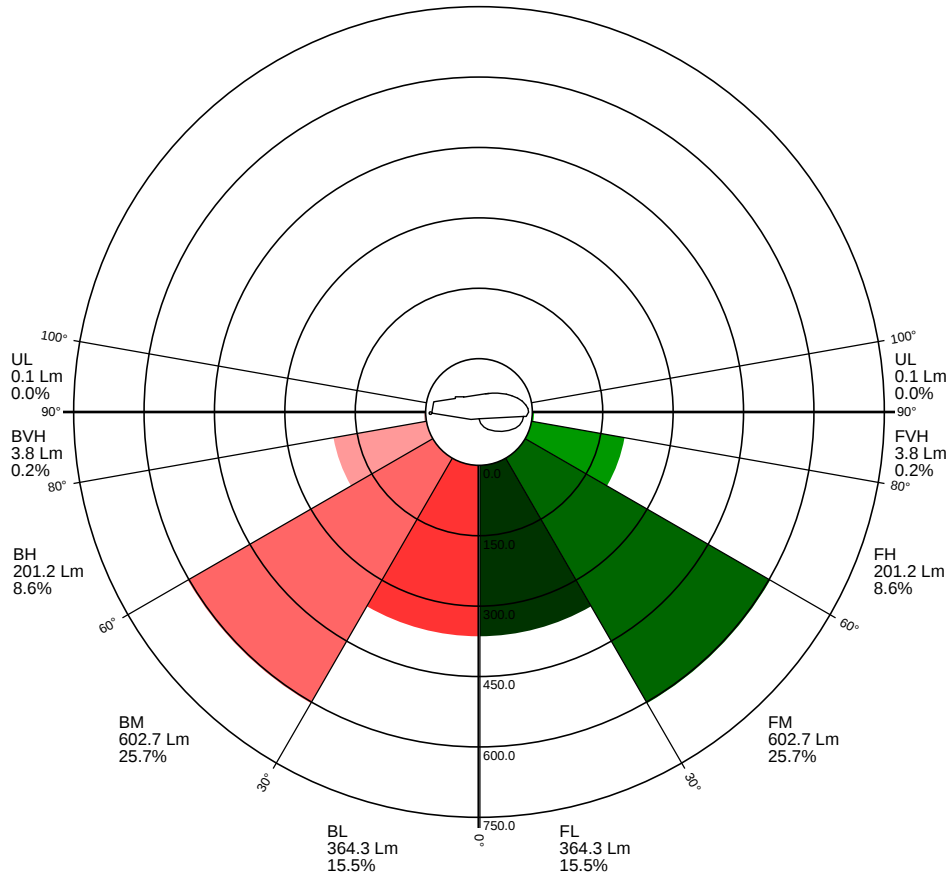
PAGE: 5 OF 9  
 DATE SAMPLE TESTED: 11/10/15

| BUG Rating:   |               |       |       | Zone Ratings |    |    |
|---------------|---------------|-------|-------|--------------|----|----|
| Zonal Summary |               |       |       | B            | U  | G  |
|               |               |       |       |              |    |    |
| Forward       |               | 1172  | 50.0  |              |    |    |
| FL            | (0° - 30°)    | 364.3 | 15.5  |              |    |    |
| FM            | (30° - 60°)   | 602.7 | 25.7  |              |    |    |
| FH            | (60° - 80°)   | 201.2 | 8.6   |              |    | G0 |
| FVH           | (80° - 90°)   | 3.8   | 0.2   |              |    | G0 |
| Backward      |               | 1172  | 50.0  |              |    |    |
| BL            | (0° - 30°)    | 364.3 | 15.5  | B1           |    |    |
| BM            | (30° - 60°)   | 602.7 | 25.7  | B1           |    |    |
| BH            | (60° - 80°)   | 201.2 | 8.6   | B1           |    | G0 |
| BVH           | (80° - 90°)   | 3.8   | 0.2   |              |    | G0 |
| Upward        |               | 0     | 0.0   |              |    |    |
| UL            | (90° - 100°)  | 0.1   | 0.0   |              | U1 |    |
| UH            | (100° - 180°) | 0.0   | 0.0   |              | U0 |    |
| Trapped Light |               | 0     | 0.0   |              |    |    |
| Total Flux    |               | 2344  | 100.0 |              |    |    |

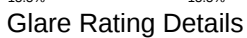
### Zonal Lumen Summary

(Linear scale)

UH  
0.0 Lm  
0.0%



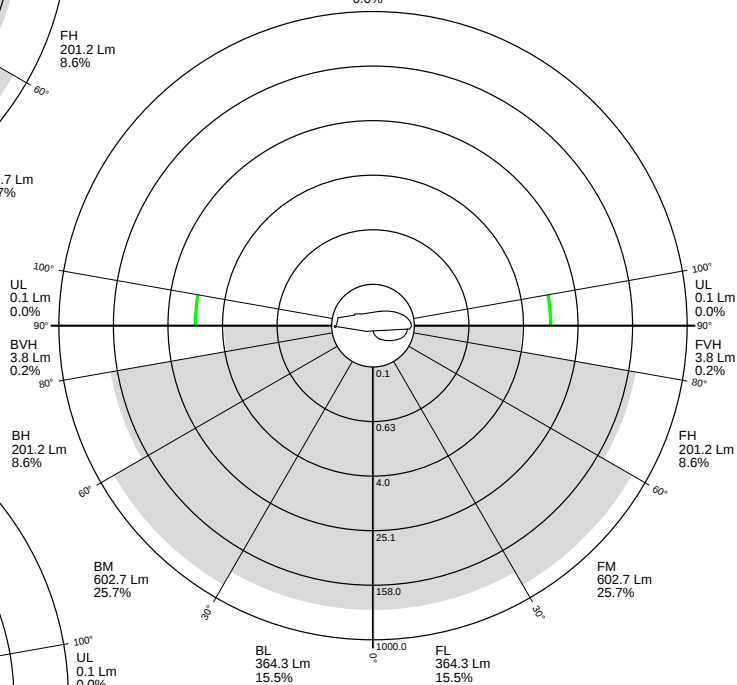
UH  
0.0 Lm  
0.0%



UH  
0.0 Lm  
0.0%



UH  
0.0 Lm  
0.0%



REPORT NUMBER: RAB01426  
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 DATE SAMPLE TESTED: 11/10/15

### CANDELA TABULATION

|   | STREET SIDE | LATERAL ANGLE |      |      |      |      |      |      |      |           |
|---|-------------|---------------|------|------|------|------|------|------|------|-----------|
|   |             | 0.0           | 5.0  | 15.0 | 25.0 | 35.0 | 45.0 | 55.0 | 65.0 | 75.0 85.0 |
|   | 180.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 175.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 165.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 155.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 145.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 135.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 125.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 115.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 105.0       | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 95.0        | 0.            | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.   | 0.        |
|   | 90.0        | 1.            | 1.   | 1.   | 1.   | 1.   | 0.   | 0.   | 0.   | 0.        |
|   | 87.5        | 3.            | 3.   | 3.   | 3.   | 2.   | 2.   | 1.   | 1.   | 0.        |
|   | 85.0        | 8.            | 8.   | 8.   | 7.   | 6.   | 3.   | 3.   | 2.   | 2.        |
|   | 82.5        | 13.           | 13.  | 13.  | 13.  | 14.  | 8.   | 5.   | 4.   | 3.        |
| V | 80.0        | 35.           | 35.  | 41.  | 49.  | 60.  | 19.  | 10.  | 7.   | 6.        |
| E | 77.5        | 99.           | 99.  | 110. | 119. | 134. | 74.  | 20.  | 12.  | 8.        |
| R | 75.0        | 176.          | 185. | 194. | 198. | 194. | 154. | 64.  | 23.  | 14.       |
| T | 72.5        | 262.          | 270. | 272. | 257. | 233. | 199. | 131. | 61.  | 27.       |
| I | 70.0        | 317.          | 318. | 313. | 297. | 273. | 237. | 187. | 119. | 62.       |
| C | 67.5        | 353.          | 355. | 349. | 339. | 326. | 277. | 222. | 168. | 111.      |
| A | 65.0        | 399.          | 402. | 397. | 387. | 370. | 315. | 254. | 203. | 148.      |
| L | 62.5        | 442.          | 440. | 439. | 427. | 405. | 348. | 286. | 238. | 184.      |
|   | 60.0        | 483.          | 481. | 475. | 460. | 427. | 377. | 316. | 272. | 227.      |
| A | 57.5        | 516.          | 514. | 502. | 481. | 445. | 402. | 348. | 306. | 277.      |
| N | 55.0        | 535.          | 533. | 521. | 494. | 460. | 420. | 380. | 342. | 331.      |
| G | 52.5        | 540.          | 538. | 530. | 508. | 473. | 441. | 409. | 386. | 387.      |
| L | 50.0        | 543.          | 540. | 535. | 518. | 489. | 462. | 433. | 429. | 439.      |
| E | 47.5        | 545.          | 542. | 538. | 527. | 507. | 483. | 468. | 478. | 494.      |
|   | 45.0        | 549.          | 545. | 543. | 537. | 526. | 502. | 510. | 529. | 549.      |
|   | 42.5        | 555.          | 552. | 551. | 549. | 543. | 527. | 554. | 579. | 602.      |
|   | 40.0        | 565.          | 563. | 561. | 560. | 557. | 563. | 596. | 628. | 652.      |
|   | 37.5        | 581.          | 578. | 574. | 572. | 586. | 606. | 643. | 676. | 700.      |
|   | 35.0        | 593.          | 591. | 589. | 596. | 620. | 648. | 685. | 722. | 743.      |
|   | 30.0        | 660.          | 659. | 664. | 678. | 701. | 735. | 768. | 803. | 819.      |
|   | 25.0        | 747.          | 747. | 754. | 765. | 782. | 814. | 837. | 869. | 878.      |
|   | 20.0        | 827.          | 827. | 836. | 848. | 851. | 883. | 893. | 919. | 922.      |
|   | 15.0        | 899.          | 899. | 907. | 918. | 911. | 937. | 936. | 954. | 953.      |
|   | 10.0        | 952.          | 952. | 955. | 964. | 954. | 971. | 962. | 975. | 974.      |
|   | 5.0         | 979.          | 978. | 979. | 983. | 972. | 983. | 973. | 984. | 983.      |
|   | 2.5<<       | 981.          | 981. | 982. | 984. | 974. | 984. | 975. | 987. | 985.      |
|   | 0.0         | 984.          | 984. | 984. | 984. | 984. | 984. | 984. | 984. | 984.      |

CONE OF MAXIMUM CANDELA

PAGE: 8 OF 9  
DATE SAMPLE TESTED: 11/10/15

[illegible]

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01426  
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 PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9  
 DATE SAMPLE TESTED: 11/10/15

### 5-DEGREE ZONAL LUMEN SUMMARY

|         |     |
|---------|-----|
| 0- 5    | 23  |
| 5- 10   | 70  |
| 10- 15  | 112 |
| 15- 20  | 149 |
| 20- 25  | 177 |
| 25- 30  | 197 |
| 30- 35  | 206 |
| 35- 40  | 209 |
| 40- 45  | 209 |
| 45- 50  | 204 |
| 50- 55  | 196 |
| 55- 60  | 182 |
| 60- 65  | 158 |
| 65- 70  | 124 |
| 70- 75  | 84  |
| 75- 80  | 36  |
| 80- 85  | 6   |
| 85- 90  | 1   |
| 90- 95  | 0   |
| 95-100  | 0   |
| 100-105 | 0   |
| 105-110 | 0   |
| 110-115 | 0   |
| 115-120 | 0   |
| 120-125 | 0   |
| 125-130 | 0   |
| 130-135 | 0   |
| 135-140 | 0   |
| 140-145 | 0   |
| 145-150 | 0   |
| 150-155 | 0   |
| 155-160 | 0   |
| 160-165 | 0   |
| 165-170 | 0   |
| 170-175 | 0   |
| 175-180 | 0   |

### 10-DEGREE ZONAL LUMEN SUMMARY

|       |      |
|-------|------|
| 0- 10 | 93   |
| 0- 20 | 354  |
| 0- 30 | 729  |
| 0- 40 | 1144 |
| 0- 50 | 1556 |
| 0- 60 | 1934 |
| 0- 70 | 2216 |
| 0- 80 | 2336 |
| 0- 90 | 2344 |
| 0-100 | 2344 |
| 0-110 | 2344 |
| 0-120 | 2344 |
| 0-130 | 2344 |
| 0-140 | 2344 |
| 0-150 | 2344 |
| 0-160 | 2344 |
| 0-170 | 2344 |
| 0-180 | 2344 |

REPORT NUMBER: RAB01427  
DATE: 11/10/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: CLED2X10/PLED2X10 (Ceiling Mount / Pendent Mount)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO OPPOSING LIGHT HEADS, EACH LIGHT HEAD CONSISTING OF: CAST METAL HOUSING, ONE CIRCUIT BOARD WITH ONE LED, FORMED SEMI-SPECULAR METAL REFLECTOR, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

LAMP: TWO WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), TILTED 5-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: TWO RD113-36-C0280

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 VAC, 60Hz) TO THE TEST SAMPLE.

|              |                                                         |                      |
|--------------|---------------------------------------------------------|----------------------|
| INSTRUMENTS: | CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61602         | Calibration Due: N/A |
|              | CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202     | 3/9/16               |
|              | OCEAN OPTICS QE65PRO Spectroradiometer                  | 11/10/16             |
|              | RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry | 11/10/16             |

OBJECT OF TEST: Measure the Absolute Flux in lumens\*, Total Radiant Flux\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI<sub>a</sub>,1-14), Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, and electrical data including ANSI C82.77-2002 Power Factor (PF), and Total Harmonic Distortion (THD) to the test sample. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All data are traceable to the National Institute of Standards and Technology. Off-State Power was reported with no voltage applied to the sample.

\*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

RESULTS: (continued subsequent pages)

Checked X.CAO

Approved D.WANG-MUNSON  
Lighting Engineer

REPORT NUMBER: RAB01427  
 DATE: 11/10/2015  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: CLED2X10/PLED2X10 (Ceiling Mount / Pendent Mount)

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### RESULTS:

| PHOTOMETRIC                     |                   |
|---------------------------------|-------------------|
| Total Integrated Flux (lumens)  | 2344 *            |
| SPECTRORADIOMETRIC              |                   |
| Observer                        | CIE 1931 2 degree |
| Chromaticity Ordinate x         | 0.3462            |
| Chromaticity Ordinate y         | 0.3788            |
| Observer                        | CIE 1976 2 degree |
| Chromaticity Ordinate u'        | 0.2021            |
| Chromaticity Ordinate v'        | 0.4975            |
| Correlated Color Temp CCT (K)   | 5043              |
| ANSI C78.377-2008 Duv           | 0.013             |
| Total Radiant Flux (milliWatts) | 6659 *            |
| ELECTRICAL                      |                   |
| Input Voltage (Volts AC)        | 120.0             |
| Input Current (Amps AC)         | 0.201             |
| Input Power (Watts)             | 23.9              |
| Input Power Factor (%)          | 99.3              |
| Input Current THD (%)           | 9.4               |
| Input Voltage THD (%)           | 0.2               |
| EFFICACY (Lumens/Watt)          |                   |
|                                 | 98.1              |
| ELECTRICAL AT MAX NONIMAL INPUT |                   |
| Input Voltage (Volts AC)        | 277.0             |
| Input Current (Amps AC)         | 0.099             |
| Input Power (Watts)             | 25.9              |
| Input Power Factor (%)          | 94.7              |
| Input Current THD (%)           | 14.2              |
| Input Voltage THD (%)           | 0.2               |
| Off-State Power (Watts)         | 0.0               |

| COLOR RENDERING INDICES         | CRI |
|---------------------------------|-----|
| Ra (Average 1-8)                | 68  |
| R1 Light greyish red            | 63  |
| R2 Dark greyish yellow          | 73  |
| R3 Strong yellowish green       | 81  |
| R4 Moderate yellowish green     | 67  |
| R5 Light bluish green           | 63  |
| R6 Light blue                   | 63  |
| R7 Light violet                 | 82  |
| R8 Light reddish purple         | 52  |
| R9 Strong red                   | -48 |
| R10 Strong yellow               | 36  |
| R11 Strong green                | 60  |
| R12 Strong blue                 | 30  |
| R13 Light yellowish pink (skin) | 64  |
| R14 Moderate olive green (leaf) | 89  |

### \*NOTE:

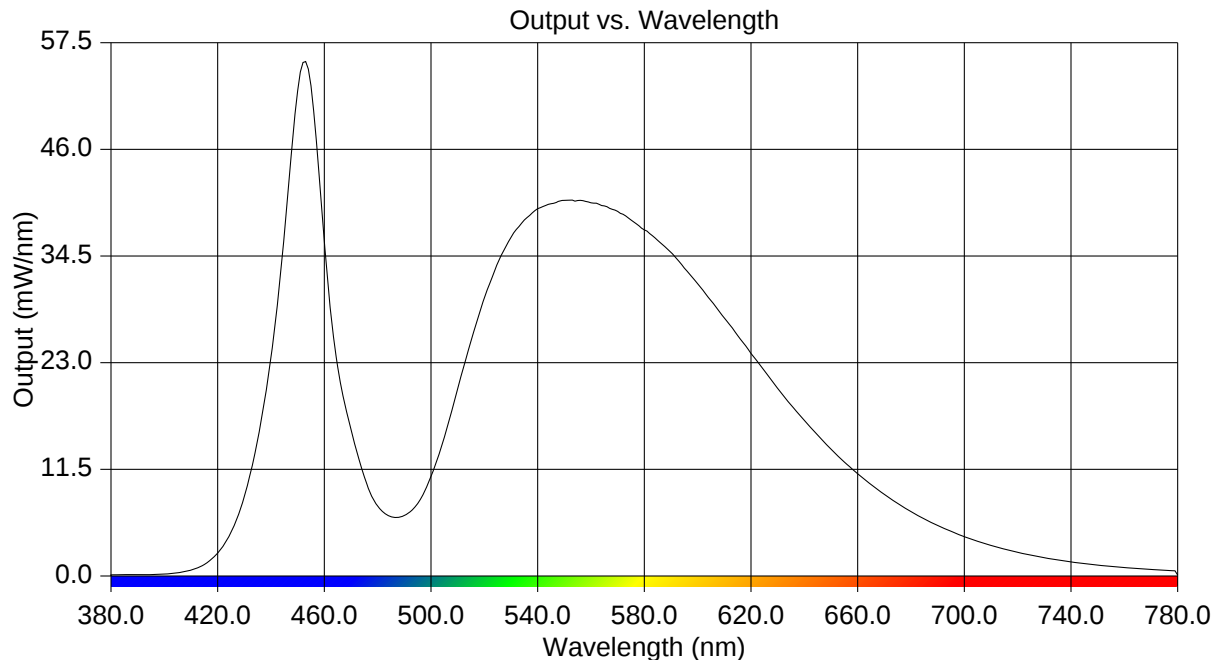
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

REPORT NUMBER: RAB01427  
 DATE: 11/10/2015  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: CLED2X10/PLED2X10 (Ceiling Mount / Pendant Mount)

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### RESULTS:

| Wavelength | mW per nm | Wavelength | mW per nm | Wavelength | mW per nm |
|------------|-----------|------------|-----------|------------|-----------|
| 380        | 0.121     | 515        | 25.332    | 650        | 13.687    |
| 385        | 0.136     | 520        | 29.994    | 655        | 12.285    |
| 390        | 0.137     | 525        | 33.748    | 660        | 11.059    |
| 395        | 0.161     | 530        | 36.511    | 665        | 9.850     |
| 400        | 0.214     | 535        | 38.383    | 670        | 8.795     |
| 405        | 0.342     | 540        | 39.604    | 675        | 7.812     |
| 410        | 0.629     | 545        | 40.133    | 680        | 6.945     |
| 415        | 1.238     | 550        | 40.494    | 685        | 6.147     |
| 420        | 2.449     | 555        | 40.480    | 690        | 5.432     |
| 425        | 4.698     | 560        | 40.234    | 695        | 4.826     |
| 430        | 8.552     | 565        | 39.900    | 700        | 4.239     |
| 435        | 14.675    | 570        | 39.310    | 705        | 3.734     |
| 440        | 23.602    | 575        | 38.383    | 710        | 3.301     |
| 445        | 36.904    | 580        | 37.317    | 715        | 2.890     |
| 450        | 52.316    | 585        | 36.187    | 720        | 2.560     |
| 455        | 52.850    | 590        | 34.883    | 725        | 2.240     |
| 460        | 36.097    | 595        | 33.195    | 730        | 1.965     |
| 465        | 22.557    | 600        | 31.505    | 735        | 1.732     |
| 470        | 15.750    | 605        | 29.668    | 740        | 1.509     |
| 475        | 10.695    | 610        | 27.822    | 745        | 1.334     |
| 480        | 7.497     | 615        | 25.927    | 750        | 1.178     |
| 485        | 6.424     | 620        | 23.992    | 755        | 1.031     |
| 490        | 6.510     | 625        | 22.135    | 760        | 0.912     |
| 495        | 7.804     | 630        | 20.235    | 765        | 0.799     |
| 500        | 10.676    | 635        | 18.444    | 770        | 0.707     |
| 505        | 15.039    | 640        | 16.790    | 775        | 0.619     |
| 510        | 20.158    | 645        | 15.189    | 780        | 0.095     |



REPORT NUMBER: RAB01427  
DATE: 11/10/2015  
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CATALOG NUMBER: CLED2X10/PLED2X10 (Ceiling Mount / Pendant Mount)

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## CIE Chromaticity Diagram

