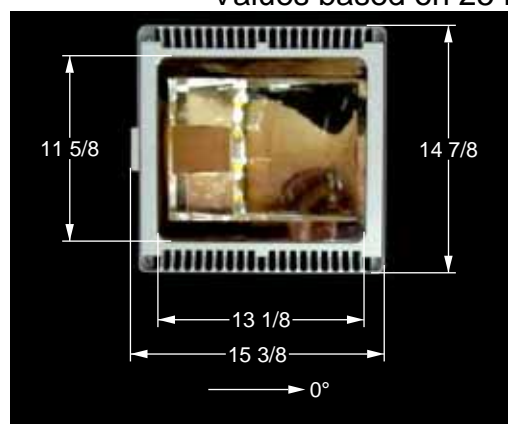
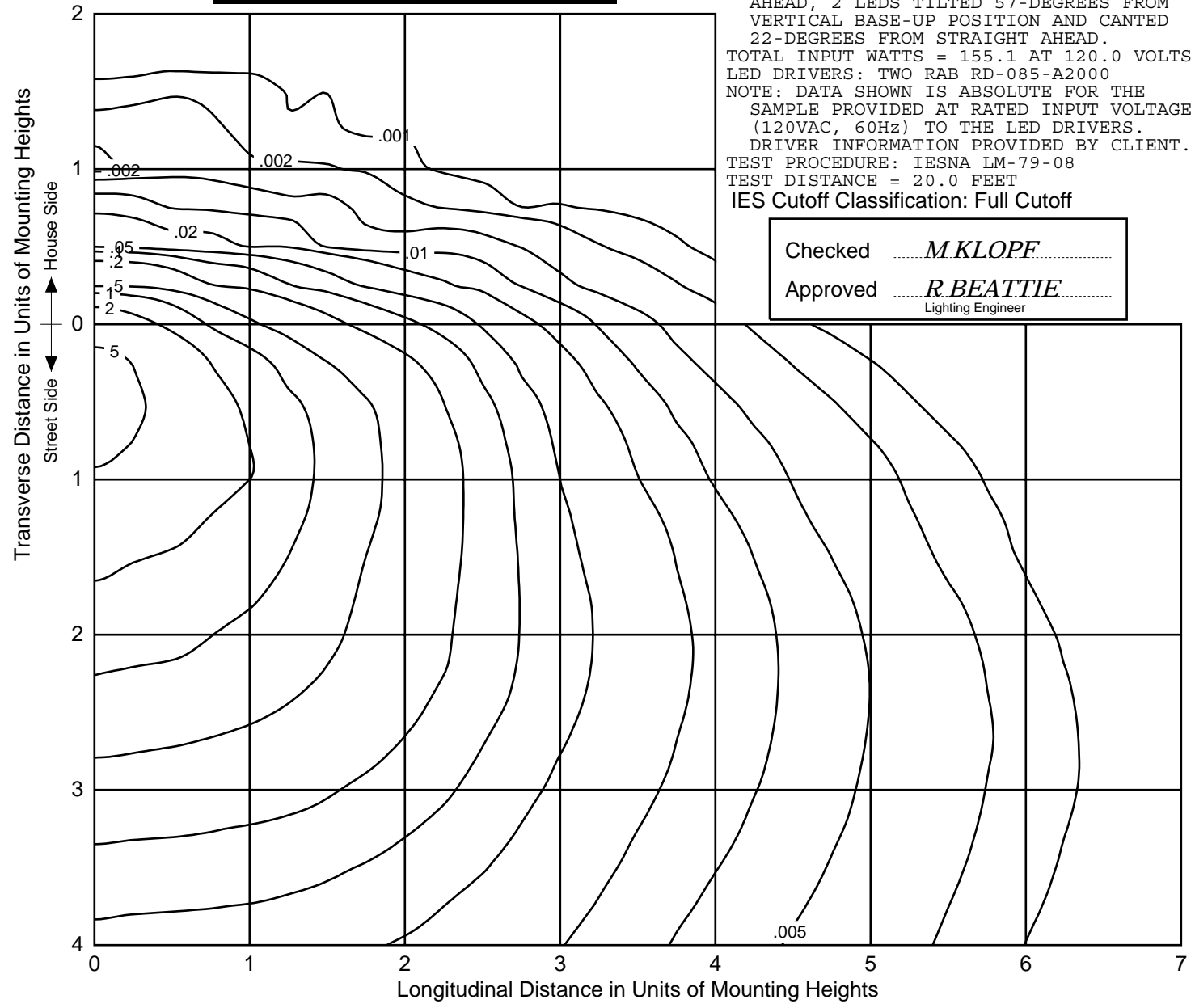


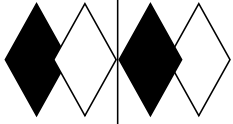
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION
Values based on 25 foot mounting height.



REPORT NUMBER: ITL79628
 ISSUE DATE: 11/14/13 PAGE: 1 OF 8
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: ALED4T150N - RWLED4T150N
 - RWLED4T150SFN - WPLED4T150N (TYPE IV)
 LUMINAIRE: CAST FINNED METAL HOUSING, 6
 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED
 2-PIECE PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 APERTURE PER
 LED, CLEAR FLAT GLASS LENS IN CAST
 GRAY PAINTED METAL LENS FRAME.
 LAMPS: SIX WHITE MULTI-CHIP LIGHT
 EMITTING DIODES (LEDs), 2 LEDS TILTED
 56-DEGREES FROM VERTICAL BASE-UP
 POSITION AND CANTED 18-DEGREES FROM
 STRAIGHT AHEAD, 2 LEDS TILTED 57-
 DEGREES FROM VERTICAL BASE-UP POSITION
 AND CANTED 16-DEGREES FROM STRAIGHT
 AHEAD, 2 LEDS TILTED 57-DEGREES FROM
 VERTICAL BASE-UP POSITION AND CANTED
 22-DEGREES FROM STRAIGHT AHEAD.
 TOTAL INPUT WATTS = 155.1 AT 120.0 VOLTS
 LED DRIVERS: TWO RAB RD-085-A2000
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED AT RATED INPUT VOLTAGE
 (120VAC, 60Hz) TO THE LED DRIVERS.
 DRIVER INFORMATION PROVIDED BY CLIENT.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE = 20.0 FEET
 IES Cutoff Classification: Full Cutoff



Checked *M.KLOPF*
 Approved *R.BEATTIE*
 Lighting Engineer



REPORT NUMBER: ITL79628
 ISSUE DATE: 11/14/13 PAGE: 2 OF 8
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: ALED4T150N - RWLED4T150N
 - RWLED4T150SFN - WPLED4T150N (TYPE IV)

LUMINAIRE: CAST FINNED METAL HOUSING, 6
 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED
 2-PIECE PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 APERTURE PER
 LED, CLEAR FLAT GLASS LENS IN CAST
 GRAY PAINTED METAL LENS FRAME.

LAMPS: SIX WHITE MULTI-CHIP LIGHT
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 AHEAD, 2 LEDES TILTED 57-DEGREES FROM
 VERTICAL BASE-UP POSITION AND CANTED
 22-DEGREES FROM STRAIGHT AHEAD.

TOTAL INPUT WATTS = 155.1 AT 120.0 VOLTS
 LED DRIVERS: TWO RAB RD-085-A2000

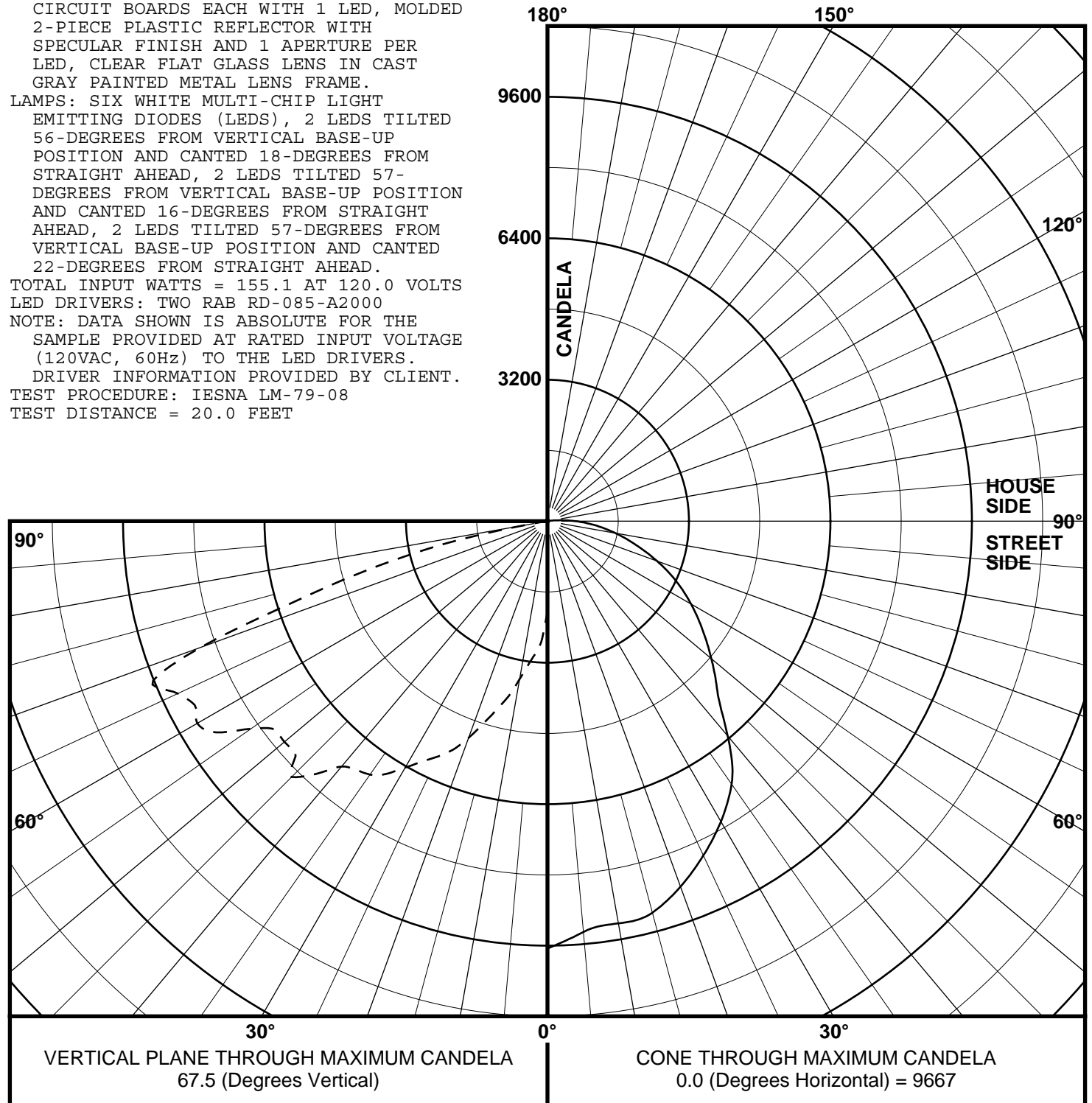
NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED AT RATED INPUT VOLTAGE
 (120VAC, 60Hz) TO THE LED DRIVERS.

DRIVER INFORMATION PROVIDED BY CLIENT.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

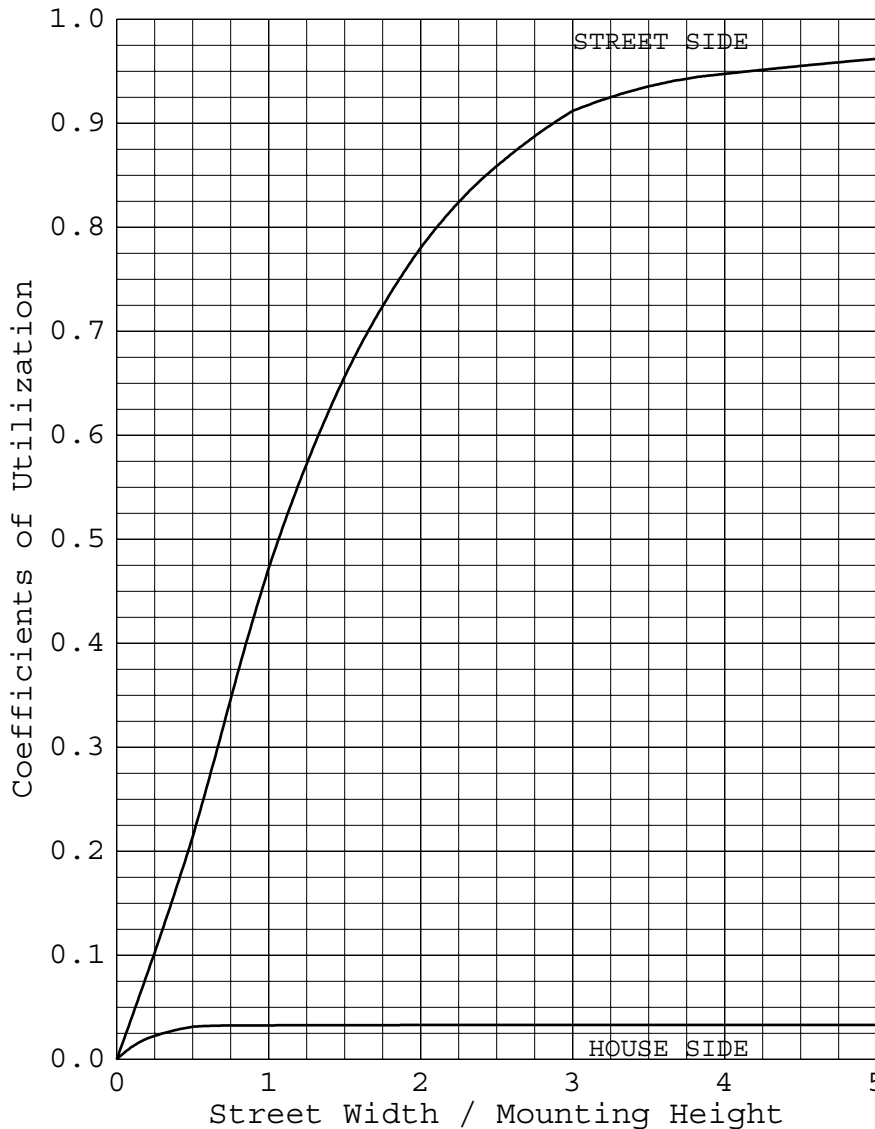
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



REPORT NUMBER: ITL79628
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PREPARED FOR: RAB LIGHTING, INC.

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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



| | LUMENS | PERCENT OF FIXTURE |
|----------------------|--------|--------------------|
| DOWNWARD STREET SIDE | 11389 | 96.6 |
| DOWNWARD HOUSE SIDE | 397 | 3.4 |
| DOWNWARD TOTAL | 11786 | 100.0 |
| UPWARD STREET SIDE | 0 | 0.0 |
| UPWARD HOUSE SIDE | 0 | 0.0 |
| UPWARD TOTAL | 0 | 0.0 |
| TOTAL FLUX | 11786 | 100.0 |

EFFICACY = 76.0 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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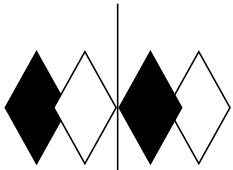
FLUX DISTRIBUTION BY SOLID ANGLE

(PER IESNA TM-15-11, LUMINAIRE CLASSIFICATION SYSTEM FOR OUTDOOR LUMINAIRES)

| | LUMENS | PERCENT OF FIXTURE | BUG ZONE RATINGS |
|---------------|--------|--------------------|------------------|
| FORWARD LIGHT | 11389. | 96.6 | |
| FL (0- 30) | 1513.2 | 12.8 | |
| FM (30- 60) | 5622.9 | 47.7 | |
| FH (60- 80) | 4181.8 | 35.5 | G2 |
| FVH(80- 90) | 71.2 | 0.6 | G1 |
| BACK LIGHT | 397. | 3.4 | |
| BL (0- 30) | 224.3 | 1.9 | B1 |
| BM (30- 60) | 142.3 | 1.2 | B0 |
| BH (60- 80) | 29.7 | 0.3 | B0 G0 |
| BVH(80- 90) | 0.3 | 0.0 | G0 |
| UPLIGHT | 0. | 0.0 | |
| UL (90-100) | 0.0 | 0.0 | U0 |
| UH (100-180) | 0.0 | 0.0 | U0 |
| TRAPPED LIGHT | 0. | 0.0 | |
| TOTAL FLUX | 11786. | 100.0 | |

BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS
(PER ADDENDUM A FOR IESNA TM-15-11)

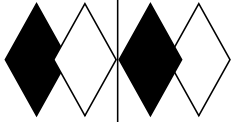
BUG RATING: B1 U0 G2



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CANDELA TABULATION

Table with columns: STREET SIDE, LATERAL ANGLE (0.0 to 90.0), and rows of candela values for various angles (180.0 to 0.0). Includes labels V, E, R, T, I, C, A, L, A, N, G, L, E and notes on PLANE OF MAXIMUM CANDELA and CONE OF MAXIMUM CANDELA.



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CANDELA TABULATION

| | HOUSE SIDE | | LATERAL ANGLE | | | | | | | |
|----------|------------|-------|---------------|-------|-------|-------|-------|-------|-------|-------|
| | 95.0 | 105.0 | 115.0 | 125.0 | 135.0 | 145.0 | 155.0 | 165.0 | 175.0 | 180.0 |
| 180.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 175.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 165.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 155.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 145.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 135.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 125.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 115.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 105.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 95.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 92.5 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 90.0 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 87.5 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 85.0 | 1. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| V 82.5 | 4. | 2. | 1. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| E 80.0 | 9. | 4. | 2. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| R 77.5 | 19. | 7. | 3. | 1. | 0. | 0. | 0. | 0. | 0. | 0. |
| T 75.0 | 57. | 9. | 6. | 2. | 1. | 0. | 0. | 0. | 0. | 0. |
| I 72.5 | 83. | 14. | 7. | 3. | 2. | 1. | 0. | 0. | 0. | 0. |
| C 70.0 | 159. | 19. | 7. | 4. | 2. | 1. | 0. | 0. | 0. | 0. |
| A 67.5<< | 221. | 27. | 9. | 11. | 4. | 2. | 1. | 0. | 0. | 0. |
| L 65.0 | 245. | 27. | 13. | 7. | 8. | 2. | 1. | 1. | 0. | 0. |
| 62.5 | 259. | 33. | 22. | 7. | 8. | 5. | 2. | 1. | 0. | 0. |
| A 60.0 | 350. | 38. | 36. | 10. | 5. | 12. | 5. | 1. | 0. | 0. |
| N 57.5 | 436. | 43. | 29. | 12. | 6. | 6. | 12. | 6. | 3. | 3. |
| G 55.0 | 458. | 79. | 30. | 17. | 7. | 7. | 9. | 11. | 8. | 8. |
| L 52.5 | 484. | 134. | 29. | 20. | 10. | 8. | 8. | 7. | 8. | 8. |
| E 50.0 | 499. | 202. | 38. | 26. | 12. | 9. | 10. | 8. | 6. | 5. |
| 47.5 | 523. | 248. | 46. | 27. | 16. | 8. | 7. | 5. | 3. | 3. |
| 45.0 | 559. | 294. | 47. | 32. | 20. | 10. | 6. | 4. | 2. | 2. |
| 42.5 | 599. | 329. | 52. | 38. | 27. | 15. | 9. | 5. | 3. | 3. |
| 40.0 | 661. | 324. | 77. | 34. | 35. | 18. | 18. | 9. | 7. | 7. |
| 37.5 | 725. | 351. | 141. | 29. | 33. | 30. | 25. | 18. | 15. | 15. |
| 35.0 | 795. | 382. | 232. | 36. | 31. | 42. | 40. | 26. | 26. | 29. |
| 32.5 | 848. | 420. | 286. | 56. | 36. | 38. | 48. | 42. | 42. | 51. |
| 30.0 | 923. | 478. | 317. | 111. | 41. | 35. | 38. | 44. | 53. | 65. |
| 25.0 | 1141. | 662. | 443. | 332. | 122. | 50. | 38. | 34. | 36. | 39. |
| 20.0 | 1281. | 865. | 550. | 443. | 313. | 206. | 110. | 82. | 65. | 66. |
| 15.0 | 1454. | 1164. | 765. | 555. | 455. | 387. | 321. | 283. | 259. | 254. |
| 10.0 | 1649. | 1383. | 1192. | 911. | 757. | 656. | 591. | 550. | 538. | 538. |
| 5.0 | 1823. | 1638. | 1498. | 1413. | 1371. | 1318. | 1252. | 1193. | 1172. | 1161. |
| 0.0 | 2014. | 2014. | 2014. | 2014. | 2014. | 2014. | 2014. | 2014. | 2014. | 2014. |

CONE OF MAXIMUM CANDELA



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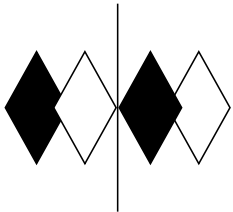
PAGE: 7 OF 8

5-DEGREE
 ZONAL LUMEN SUMMARY

| | |
|---------|------|
| 0- 5 | 48 |
| 5- 10 | 141 |
| 10- 15 | 233 |
| 15- 20 | 331 |
| 20- 25 | 438 |
| 25- 30 | 546 |
| 30- 35 | 657 |
| 35- 40 | 773 |
| 40- 45 | 894 |
| 45- 50 | 1019 |
| 50- 55 | 1138 |
| 55- 60 | 1284 |
| 60- 65 | 1378 |
| 65- 70 | 1382 |
| 70- 75 | 1008 |
| 75- 80 | 443 |
| 80- 85 | 69 |
| 85- 90 | 3 |
| 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 | 189 |
| 0- 20 | 753 |
| 0- 30 | 1737 |
| 0- 40 | 3168 |
| 0- 50 | 5081 |
| 0- 60 | 7503 |
| 0- 70 | 10263 |
| 0- 80 | 11714 |
| 0- 90 | 11786 |
| 0-100 | 11786 |
| 0-110 | 11786 |
| 0-120 | 11786 |
| 0-130 | 11786 |
| 0-140 | 11786 |
| 0-150 | 11786 |
| 0-160 | 11786 |
| 0-170 | 11786 |
| 0-180 | 11786 |



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PAGE: 8 OF 8

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL79631
DATE: 11/22/13
Page 1 of 4

PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: ALED4T150N - RWLED4T150N - RWLED4T150SFN - WPLED4T150N (TYPE IV)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 6 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED 2-PIECE PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST GRAY PAINTED METAL LENS FRAME.

LAMP: SIX WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), 2 LEDES TILTED 56-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 18-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 57-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 16-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 57-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 22-DEGREES FROM STRAIGHT AHEAD.

DRIVERS: TWO RAB RD-085-A2000

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE LED DRIVERS. DRIVER INFORMATION PROVIDED BY CLIENT.

INSTRUMENTS: Associated Power Technologies APT5040 AC Power Source Calibration Due: N/A
Yokogawa WT210 Digital Power Meter #9 02/28/14
Ocean Optics QE65000 Spectroradiometer 10/16/14
ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry 10/16/14

OBJECT OF TEST: Measure the Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,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. Report Off-State Power. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

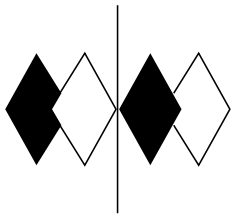
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 120.0 VAC input. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All testing performed in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. 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)

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Checked P O'CONNOR
Approved L GRABA
Lighting Engineer



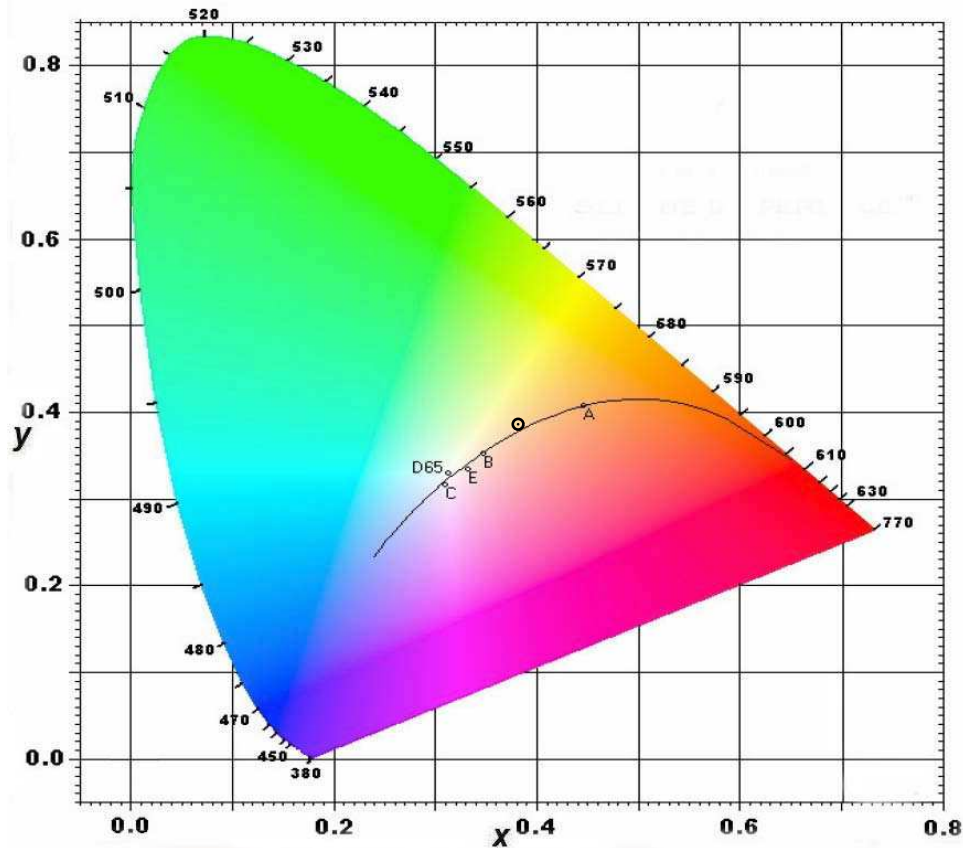
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CIE Chromaticity Diagram





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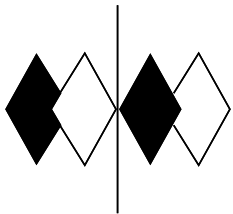
RESULTS:

| SPECTRORADIOMETRIC | |
|---------------------------------|-------------------|
| Observer | CIE 1931 2 degree |
| Chromaticity Ordinate x | 0.3813 |
| Chromaticity Ordinate y | 0.3858 |
| Observer | CIE 1976 2 degree |
| Chromaticity Ordinate u' | 0.2221 |
| Chromaticity Ordinate v' | 0.5056 |
| Correlated Color Temp CCT (K) | 4041 |
| ANSI C78.377-2008 Duv | 0.004 |
| Total Radiant Flux (milliWatts) | 35217 * |
| ELECTRICAL | |
| Input Voltage (Volts AC) | 120.0 |
| Input Current (Amps AC) | 1.30 |
| Input Power (Watts) | 155.3 |
| Input Power Factor (%) | 99.6 |
| Input Current THD (%) | 5.9 |
| Input Voltage THD (%) | 0.2 |
| Off-State Power (Watts) | 0.0 |
| ELECTRICAL AT MAX NONIMAL INPUT | |
| Input Voltage (Volts AC) | 277.0 |
| Input Current (Amps AC) | 0.610 |
| Input Power (Watts) | 152.6 |
| Input Power Factor (%) | 90.3 |
| Input Current THD (%) | 11.1 |
| Input Voltage THD (%) | 0.1 |

| COLOR RENDERING INDICES | CRI |
|---------------------------------|-----|
| Ra (Average 1-8) | 82 |
| R1 Light greyish red | 80 |
| R2 Dark greyish yellow | 86 |
| R3 Strong yellowish green | 92 |
| R4 Moderate yellowish green | 83 |
| R5 Light bluish green | 81 |
| R6 Light blue | 83 |
| R7 Light violet | 87 |
| R8 Light reddish purple | 65 |
| R9 Strong red | 5 |
| R10 Strong yellow | 68 |
| R11 Strong green | 83 |
| R12 Strong blue | 61 |
| R13 Light yellowish pink (skin) | 81 |
| R14 Moderate olive green (leaf) | 96 |

*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.



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CATALOG NUMBER:

ITL79631
11/22/13
RAB LIGHTING, INC.
ALED4T150N - RWLED4T150N - RWLED4T150SFN - WPLED4T150N (TYPE IV)

RESULTS:

| Wavelength | mW per nm | Wavelength | mW per nm | Wavelength | mW per nm |
|------------|-----------|------------|-----------|------------|-----------|
| 380 | 0.819 | 515 | 139.652 | 650 | 101.133 |
| 385 | 0.813 | 520 | 148.326 | 655 | 90.039 |
| 390 | 0.931 | 525 | 154.235 | 660 | 79.575 |
| 395 | 1.103 | 530 | 158.050 | 665 | 69.963 |
| 400 | 1.495 | 535 | 160.035 | 670 | 61.217 |
| 405 | 2.278 | 540 | 161.338 | 675 | 53.377 |
| 410 | 3.977 | 545 | 162.522 | 680 | 46.381 |
| 415 | 7.343 | 550 | 164.451 | 685 | 40.191 |
| 420 | 14.009 | 555 | 167.095 | 690 | 34.734 |
| 425 | 26.619 | 560 | 170.664 | 695 | 29.946 |
| 430 | 47.805 | 565 | 175.680 | 700 | 25.741 |
| 435 | 78.588 | 570 | 181.100 | 705 | 22.136 |
| 440 | 123.879 | 575 | 186.817 | 710 | 19.002 |
| 445 | 180.903 | 580 | 192.385 | 715 | 16.299 |
| 450 | 199.330 | 585 | 196.839 | 720 | 13.959 |
| 455 | 155.325 | 590 | 199.865 | 725 | 11.944 |
| 460 | 107.954 | 595 | 200.754 | 730 | 10.228 |
| 465 | 79.925 | 600 | 199.628 | 735 | 8.738 |
| 470 | 60.060 | 605 | 196.204 | 740 | 7.491 |
| 475 | 48.803 | 610 | 190.577 | 745 | 6.433 |
| 480 | 47.077 | 615 | 182.597 | 750 | 5.541 |
| 485 | 52.210 | 620 | 172.897 | 755 | 4.757 |
| 490 | 62.779 | 625 | 161.982 | 760 | 4.093 |
| 495 | 77.805 | 630 | 149.980 | 765 | 3.516 |
| 500 | 95.296 | 635 | 137.709 | 770 | 3.040 |
| 505 | 112.282 | 640 | 125.388 | 775 | 2.624 |
| 510 | 127.531 | 645 | 113.092 | 780 | 2.260 |

