



LTL Number: 16705

Date: 09-24-2009

Prepared For: LEDnovation

Catalog Number: LEDA-19-75-1N-I

Lamp: One VBU 75 Watt A19 LED Replacement Lamp

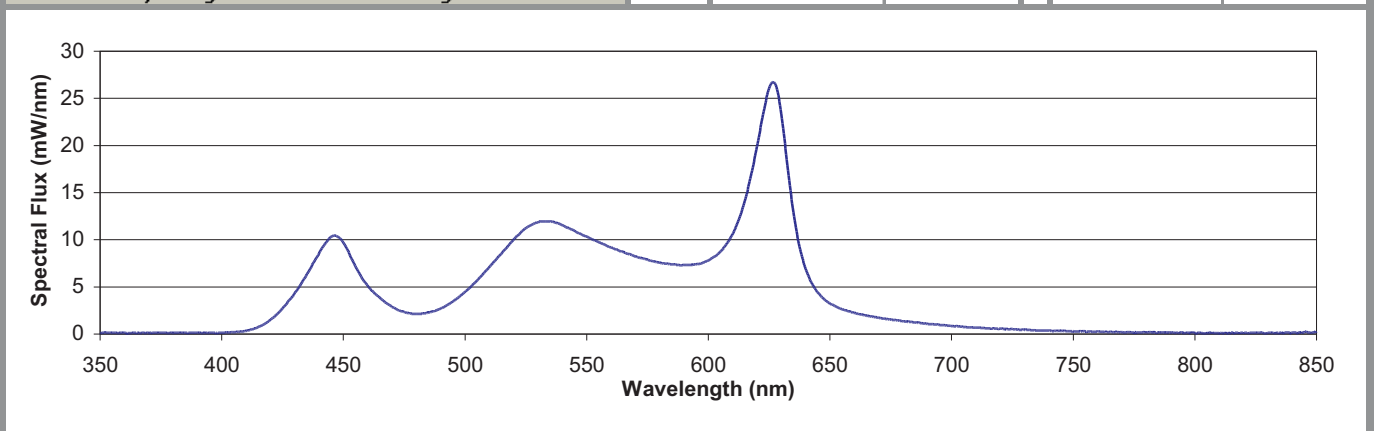
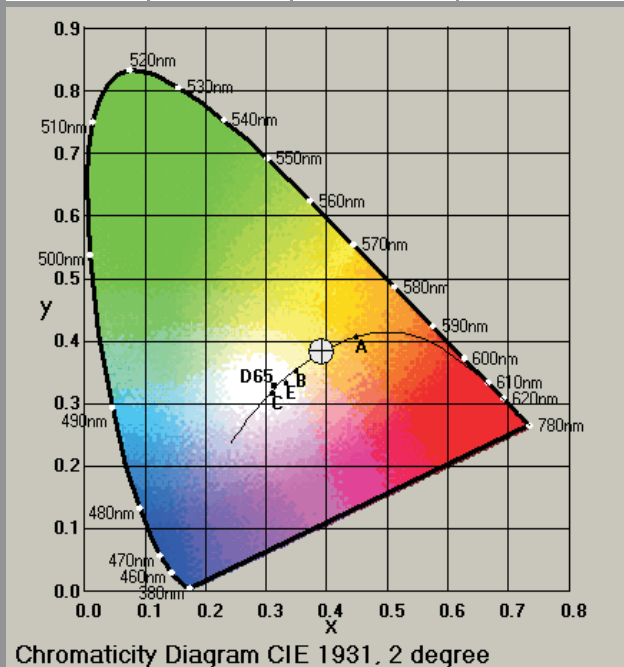
Lamp Catalog Number: LEDA-19-75-1N-I

LED Power Supply: Internal

Lamp Efficacy: 69.8 Lumens/Watt

| Lamp Input Voltage | Lamp Current | Lamp Watts | Power Factor |
|--------------------|---------------------|--------------------------|----------------------|
| 120.0VAC | 0.0885A | 9.841W | 0.927 |
| Radiant Flux mW | Luminous Flux lumen | Corr.Color Temperature K | Color Rend. Index Ra |
| 2082.952 | 687.236 | 3778 | 86.6 |
| Chroma x | Chroma y | Chroma u | Chroma v |
| 0.3913 | 0.3848 | 0.229 | 0.3378 |

| Wavelength in nm | Spectral Flux in mW/nm | Wavelength in nm | Spectral Flux in mW/nm |
|------------------|------------------------|------------------|------------------------|
| 350 | 0.1331 | 610 | 10.6080 |
| 360 | 0.1451 | 620 | 19.8760 |
| 370 | 0.0948 | 630 | 23.3420 |
| 380 | 0.1046 | 640 | 6.9358 |
| 390 | 0.1198 | 650 | 3.2386 |
| 400 | 0.1481 | 660 | 2.2401 |
| 410 | 0.3299 | 670 | 1.7144 |
| 420 | 1.5149 | 680 | 1.3647 |
| 430 | 4.3274 | 690 | 1.0820 |
| 440 | 8.5267 | 700 | 0.8484 |
| 450 | 9.7189 | 710 | 0.6822 |
| 460 | 5.1100 | 720 | 0.5602 |
| 470 | 2.8954 | 730 | 0.4349 |
| 480 | 2.1228 | 740 | 0.3570 |
| 490 | 2.7155 | 750 | 0.3032 |
| 500 | 4.4738 | 760 | 0.2640 |
| 510 | 7.1162 | 770 | 0.1892 |
| 520 | 10.0310 | 780 | 0.1496 |
| 530 | 11.8560 | 790 | 0.1309 |
| 540 | 11.5470 | 800 | 0.0976 |
| 550 | 10.3400 | 810 | 0.1111 |
| 560 | 9.1857 | 820 | 0.0734 |
| 570 | 8.2286 | 830 | 0.1446 |
| 580 | 7.5523 | 840 | 0.1625 |
| 590 | 7.3223 | 850 | 0.2207 |
| 600 | 7.8061 | | |





LUMINAIRE TESTING LABORATORY, INC.

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905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 16701

DATE: 09-24-2009

PREPARED FOR: LEDNOVATION

CATALOG NUMBER: LEDA-19-75-1N-I

LUMINAIRE: CAST ALUMINUM HOUSING, TRANSLUCENT WHITE ENCLOSURE.

LAMP: ONE VBU 75 WATT A19 LED REPLACEMENT LAMP

LAMP CATALOG NUMBER: LEDNOVATION LEDA-19-75-1N-I

BALLAST: LED POWER SUPPLY: INTERNAL

ELECTRICAL VALUES: 120.0VAC, 0.0886A, 9.854W, PF=0.926

NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED
PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.*

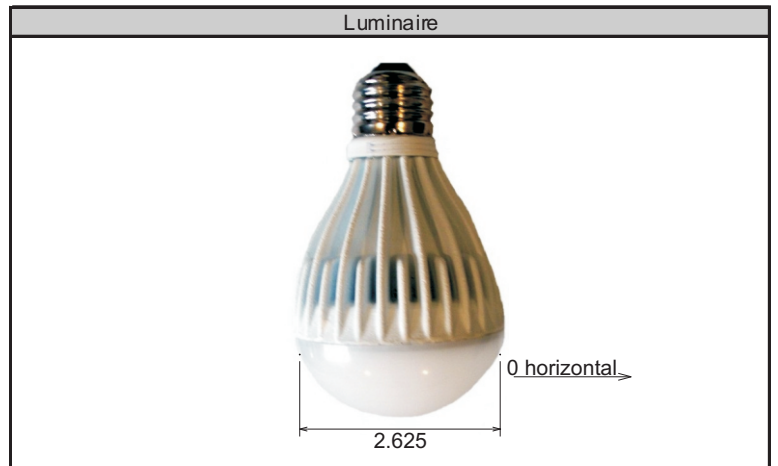
Candela Distribution

| | 0 | 22.5 | 45 | 67.5 | 90 | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315 | 337.5 | Flux |
|-----|-----|------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|------|
| 0 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | |
| 5 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 12.7 |
| 15 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 36.7 |
| 25 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 57.0 |
| 35 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 71.9 |
| 45 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 80.4 |
| 55 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 82.5 |
| 65 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 78.6 |
| 75 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 70.0 |
| 85 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 58.2 |
| 90 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | |
| 95 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 45.4 |
| 105 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 32.8 |
| 115 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 21.6 |
| 125 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 12.7 |
| 135 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6.3 |
| 145 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2.4 |
| 155 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 |
| 165 | 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 |
| 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Zonal Lumen Summary

| Zone | Lumens | % of Lamp | % of Luminaire |
|--------|--------|-----------|----------------|
| 0-30 | 106.4 | N/A | 15.9% |
| 0-40 | 178.3 | N/A | 26.6% |
| 0-60 | 341.2 | N/A | 51.0% |
| 0-90 | 548.1 | N/A | 81.8% |
| 90-180 | 121.6 | N/A | 18.2% |
| 0-180 | 669.7 | N/A | 100.0% |

Total lumen Output: 669.7 Lumens
 Luminaire efficacy: 68.0 Lumens per Watt
 CIE Type: Semi-Direct
 Spacing Criterion: 1.33



Approved By: MG

*DATA WAS ACQUIRED USING THE CALIBRATED PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY. A UDT MODEL #211 PHOTODETECTOR AND UDT MODEL #S370 OPTOMETER COMBINATION WERE USED AS A STANDARD. A SPECTRAL MISMATCH CORRECTION FACTOR WAS EMPLOYED BASED ON THE SPECTRAL RESPONSIVITY OF THE PHOTODETECTOR AND THE SPECTRAL POWER DISTRIBUTION OF THE TEST SUBJECT.

TESTING WAS PERFORMED IN ACCORDANCE WITH IES LM-79-08.

TEST ANGULAR INCREMENTS AND REPORT FORMATTING WAS BASED ON IES LM-41-98 AND LM-46-04.



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Candela Tabulation (5 degree Vertical Increments)

| | 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 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 |
| 5 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 |
| 10 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 |
| 15 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 20 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 |
| 25 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 123 |
| 30 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 |
| 35 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 |
| 40 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| 45 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |
| 50 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 |
| 55 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| 60 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| 65 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| 70 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| 75 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 80 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| 85 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| 90 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| 95 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| 100 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| 105 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| 110 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 115 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| 120 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| 125 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 130 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| 135 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 140 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 145 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 150 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 155 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 160 | 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 |
| 170 | 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 |
| 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Zonal Lumen Tabulation (5 degree zones)

| Zone | Lumens | Zone | Lumens | Zone | Lumens | Zone | Lumens |
|-------|--------|-------|--------|---------|--------|---------|--------|
| 0-5 | 3.2 | 45-50 | 40.9 | 90-95 | 24.3 | 135-140 | 2.5 |
| 5-10 | 9.5 | 50-55 | 41.4 | 95-100 | 21.1 | 140-145 | 1.5 |
| 10-15 | 15.5 | 55-60 | 41.1 | 100-105 | 17.9 | 145-150 | 0.8 |
| 15-20 | 21.2 | 60-65 | 40.1 | 105-110 | 14.9 | 150-155 | 0.4 |
| 20-25 | 26.3 | 65-70 | 38.5 | 110-115 | 12.1 | 155-160 | 0.1 |
| 25-30 | 30.7 | 70-75 | 36.3 | 115-120 | 9.6 | 160-165 | 0.0 |
| 30-35 | 34.5 | 75-80 | 33.7 | 120-125 | 7.3 | 165-170 | 0.0 |
| 35-40 | 37.4 | 80-85 | 30.7 | 125-130 | 5.4 | 170-175 | 0.0 |
| 40-45 | 39.6 | 85-90 | 27.5 | 130-135 | 3.8 | 175-180 | 0.0 |



| Utilization of Lumens - Zonal Cavity Method | | | | | | | | | | | | |
|---|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Effective Floor Cavity Reflectance 20% | | | | | | | | | | | | |
| Ceiling Cavity Reflectance | 90 | | | | 80 | | | | 70 | | | |
| Wall Reflectance | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 |
| Room Cavity Ratio (RCR) | ** Values are expressed as Lumens delivered to the task surface ** | | | | | | | | | | | |
| 0 | 801.9 | 801.9 | 801.9 | 801.9 | 768.3 | 768.3 | 768.3 | 768.3 | 736.3 | 736.3 | 736.3 | 736.3 |
| 1 | 709.2 | 662.4 | 620.7 | 583.4 | 675.6 | 633.5 | 595.9 | 561.9 | 643.6 | 605.9 | 572 | 541.2 |
| 2 | 636.9 | 563.6 | 503.7 | 453.8 | 604.9 | 539 | 484.5 | 438.6 | 574.6 | 515.4 | 465.9 | 423.8 |
| 3 | 575.9 | 487 | 419.2 | 365.8 | 546.2 | 465.9 | 403.8 | 354.4 | 518 | 445.7 | 388.9 | 343.2 |
| 4 | 524.1 | 426.3 | 355.9 | 302.7 | 496.7 | 408.2 | 343.4 | 293.8 | 470.9 | 390.8 | 331.2 | 285.1 |
| 5 | 479.5 | 377.1 | 306.9 | 255.8 | 454.6 | 361.6 | 296.6 | 248.6 | 431.1 | 346.6 | 286.5 | 241.5 |
| 6 | 440.8 | 336.8 | 268.3 | 219.8 | 418.2 | 323.3 | 259.6 | 213.9 | 396.8 | 310.2 | 251.1 | 208 |
| 7 | 407.1 | 303.1 | 237.1 | 191.4 | 386.5 | 291.4 | 229.7 | 186.5 | 367.1 | 280 | 222.4 | 181.6 |
| 8 | 377.5 | 274.8 | 211.5 | 168.6 | 358.8 | 264.5 | 205.2 | 164.4 | 341.2 | 254.5 | 198.9 | 160.3 |
| 9 | 351.5 | 250.8 | 190.3 | 150 | 334.5 | 241.7 | 184.8 | 146.4 | 318.4 | 232.8 | 179.4 | 142.8 |
| 10 | 328.4 | 230.1 | 172.5 | 134.6 | 312.9 | 222 | 167.6 | 131.4 | 298.3 | 214.2 | 162.9 | 128.3 |

| Ceiling Cavity Reflectance | 50 | | | | 30 | | | 10 | | | 0 |
|----------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Wall Reflectance | 70 | 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 | 676.5 | 676.5 | 676.5 | 676.5 | 621.9 | 621.9 | 621.9 | 571.7 | 571.7 | 571.7 | 548.1 |
| 1 | 584.4 | 554.3 | 526.8 | 501.6 | 506.8 | 484.8 | 464.4 | 463.1 | 445.7 | 429.5 | 406 |
| 2 | 518.7 | 471.1 | 430.4 | 395.3 | 430.2 | 397.1 | 368 | 392.4 | 365.8 | 342 | 319.5 |
| 3 | 466.3 | 407.6 | 360.3 | 321.4 | 372.4 | 333.3 | 300.4 | 339.7 | 307.6 | 280.1 | 259 |
| 4 | 423.5 | 358 | 307.7 | 267.9 | 327.6 | 285.4 | 251.2 | 299.2 | 264 | 234.9 | 215.2 |
| 5 | 387.9 | 318.2 | 266.9 | 227.6 | 291.8 | 248.2 | 214 | 267.1 | 230.3 | 200.8 | 182.4 |
| 6 | 357.5 | 285.5 | 234.6 | 196.5 | 262.5 | 218.7 | 185.2 | 240.9 | 203.4 | 174.2 | 157.1 |
| 7 | 331.4 | 258.4 | 208.3 | 171.9 | 238.1 | 194.7 | 162.4 | 219.1 | 181.6 | 153 | 137.1 |
| 8 | 308.7 | 235.5 | 186.8 | 152 | 217.6 | 175 | 143.9 | 200.8 | 163.6 | 135.9 | 121 |
| 9 | 288.7 | 216 | 168.8 | 135.7 | 200.1 | 158.5 | 128.7 | 185.1 | 148.6 | 121.8 | 107.9 |
| 10 | 271.2 | 199.2 | 153.6 | 122.2 | 185 | 144.6 | 116.1 | 171.6 | 135.8 | 110 | 97.1 |

Average Luminance Table (cd/m²)

| | 0 | 45 | 90 |
|----|-------|-------|-------|
| 0 | 38373 | 38373 | 38373 |
| 45 | 42125 | 42125 | 42125 |
| 55 | 47460 | 47460 | 47460 |
| 65 | 44720 | 44720 | 44720 |
| 75 | 42364 | 42364 | 42364 |
| 85 | 41150 | 41150 | 41150 |

THIS TEST WAS CONDUCTED USING PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IES PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) THIS TEST WAS CONDUCTED IN A CONTROLLED LABORATORY ENVIRONMENT WHERE THE AMBIENT TEMPERATURE WAS HELD AT 25°C ±1°C. FIELD PERFORMANCE MAY DIFFER PARTICULARLY IN REGARDS TO CHANGE IN LUMINOUS OUTPUT AS A RESULT OF DIFFERENCE IN AMBIENT TEMPERATURE AND METHOD OF MOUNTING THE LUMINAIRE.

