



REPORT
3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100639410
Client Ref. No. PH-0153

Date: May 15, 2012

REPORT NO. 100639410CRT-105

TEST OF ONE LED LUMINAIRE

FIXTURE CATALOG NO.

XENM3 SA4 2 LED 63 350 NW UE
XENM3 SA5 2 LED 63 350 NW UE
XINM3 SA4 2 LED 63 350 NW UE
XINM3 SA5 2 LED 63 350 NW UE

LED DRIVER: 350mA Electronic Driver

RENDERED TO

LSI INDUSTRIES INCORPORATED
10000 ALLIANCE ROAD
CINCINNATI, OH 45242

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number 500380383.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

IESNA TM-15-11: Luminaire Classification System for Outdoor Luminaires

DESCRIPTION OF SAMPLE: The submitted test sample was representative of a current production Sample and was received in good condition.

DATE OF TEST: May 4, 2012

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SUMMARY:

| |
|--|
| Model No.: |
| XENM3 SA4 2 LED 63 350 NW UE |
| XENM3 SA5 2 LED 63 350 NW UE |
| XINM3 SA4 2 LED 63 350 NW UE |
| XINM3 SA5 2 LED 63 350 NW UE |
| Description: 63 LED optic unit containing an integrated specular metal reflector and flat glass lens. Utilizing 350mA Output Driver. |

| Criteria | Result |
|---------------------------|--------|
| Total Lumen Output | 5396 |
| Input Voltage (V) | 120.0 |
| Total Power (W) | 69.9 |
| Luminaire Efficacy | 77.0 |
| Power Factor | 0.993 |
| Driver Output Current (A) | 0.351 |
| THD _A | 9.6% |

Additional Reporting

| | |
|------------------------------------|-------------------|
| Test Room Ambient Conditions | 24.5 C and 43% RH |
| Total Luminaire Stabilization Time | 47 Minutes |

Measurement uncertainty budgets have been determined for applicable test methods and are available upon request.

EQUIPMENT LIST

| Equipment Used | Equipment # | Cal. Due Date |
|--|-------------|---------------|
| Elgar CW1251P-V AC Power Source 0-300V | 0943A02235 | VBV |
| Yokogawa WT-230 Power Analyzer | 91KA35031 | 12/31/12 |
| High Speed Moving Mirror Goniophotometer | --- | VBV |
| Temperature/Humidity Sensor/Stopwatch | 25223-01 | 04/30/13 |

Photometric and Electrical measurements – Distribution Method

A Type C High Speed Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the test sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize per LM-79-08 requirements. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

Some graphics were created using Lighting Analysts Photometric Toolbox Professional Edition software.



RESULTS OF TESTS

Photometric and Electrical Measurements – Distribution Method

| | | | | XENM3 SA4 2 LED 63 350 NW UE | | | |
|------------------------|---------------------|---------------------------|-------------------------|------------------------------|--------------------------|--|---|
| | | | | XENM3 SA5 2 LED 63 350 NW UE | | | |
| | | | | XINM3 SA4 2 LED 63 350 NW UE | | | |
| | | | | XINM3 SA5 2 LED 63 350 NW UE | | | |
| Intertek Sample No. | Base Orientation | Input Voltage (VAC) | Input Current (A) | Input Power (Watts) | Input Power Factor | Absolute Luminous Flux (Lumens) | Lumen Efficacy (Lumens Per Watt) |
| ITK3237 | Horizontal | 120.0 | 0.586 | 69.9 | 0.993 | 5396 | 77 |

Characteristics

| | |
|------------------------------------|-------------------|
| IES Classification | Type II |
| Longitudinal Classification | Very Short |
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 5396 |
| Downward Total Efficiency | N.A. |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 77 |
| Total Luminaire Watts | 70 |
| Ballast Factor | 1.00 |
| Upward Waste Light Ratio | 0.00 |
| Max. Cd. | 2977 (55H, 42.5V) |
| Max. Cd. (<90 Vert.) | 2977 (55H, 42.5V) |
| Max. Cd. (At 90 Deg. Vert.) | 0 (0.0%Lum) |
| Max. Cd. (80 to <90 Deg. Vert.) | 303 (5.6%Lum) |
| Cutoff Classification (deprecated) | N.A. (absolute) |

Lum. Classification System (LCS)

| LCS Zone | Lumens | %Lamp | %Lum |
|-------------------|-----------------|-------|-------|
| FL (0-30) | 511.1 | N.A. | 9.5 |
| FM (30-60) | 1999.4 | N.A. | 37.1 |
| FH (60-80) | 760.6 | N.A. | 14.1 |
| FVH (80-90) | 18.2 | N.A. | 0.3 |
| BL (0-30) | 411.6 | N.A. | 7.6 |
| BM (30-60) | 1216.2 | N.A. | 22.5 |
| BH (60-80) | 464.6 | N.A. | 8.6 |
| BVH (80-90) | 14.1 | N.A. | 0.3 |
| UL (90-100) | 0.0 | N.A. | 0.0 |
| UH (100-180) | 0.0 | N.A. | 0.0 |
| Total | 5395.8 | N.A. | 100.0 |
| BUG Rating | B2-U0-G1 | | |



RESULTS OF TESTS (cont'd)

Intensity (Candlepower) Summary

| | 0 | 5 | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 90 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 |
| 2.5 | 1001 | 994 | 994 | 998 | 1000 | 1000 | 1001 | 1001 | 995 | 999 | 995 |
| 5 | 997 | 991 | 991 | 995 | 998 | 999 | 1002 | 1003 | 998 | 1001 | 997 |
| 7.5 | 1017 | 1010 | 1009 | 1009 | 1008 | 1005 | 1005 | 1006 | 999 | 1002 | 997 |
| 10 | 1042 | 1035 | 1033 | 1032 | 1032 | 1025 | 1018 | 1016 | 1008 | 1013 | 1009 |
| 12.5 | 1080 | 1073 | 1068 | 1065 | 1060 | 1051 | 1041 | 1037 | 1032 | 1045 | 1042 |
| 15 | 1128 | 1119 | 1112 | 1106 | 1096 | 1081 | 1068 | 1066 | 1059 | 1078 | 1077 |
| 17.5 | 1181 | 1171 | 1161 | 1148 | 1134 | 1120 | 1101 | 1096 | 1086 | 1093 | 1088 |
| 20 | 1251 | 1239 | 1222 | 1201 | 1179 | 1164 | 1133 | 1127 | 1105 | 1105 | 1112 |
| 22.5 | 1363 | 1351 | 1325 | 1287 | 1254 | 1232 | 1200 | 1159 | 1123 | 1123 | 1139 |
| 25 | 1491 | 1478 | 1447 | 1397 | 1353 | 1306 | 1285 | 1223 | 1146 | 1154 | 1168 |
| 27.5 | 1596 | 1584 | 1553 | 1506 | 1463 | 1416 | 1360 | 1289 | 1199 | 1213 | 1223 |
| 30 | 1647 | 1636 | 1617 | 1584 | 1582 | 1579 | 1466 | 1419 | 1341 | 1392 | 1405 |
| 32.5 | 1561 | 1561 | 1581 | 1604 | 1715 | 1764 | 1681 | 1640 | 1653 | 1757 | 1692 |
| 35 | 1339 | 1347 | 1396 | 1513 | 1819 | 2009 | 1999 | 1994 | 2042 | 1976 | 1956 |
| 37.5 | 1177 | 1175 | 1190 | 1305 | 1790 | 2313 | 2428 | 2344 | 2225 | 2109 | 2073 |
| 40 | 1099 | 1087 | 1092 | 1161 | 1627 | 2535 | 2827 | 2547 | 2279 | 2099 | 2043 |
| 42.5 | 1019 | 1013 | 1023 | 1104 | 1569 | 2491 | 2977 | 2639 | 2261 | 2049 | 1980 |
| 43 | 995 | 994 | 1003 | 1095 | 1584 | 2439 | 2975 | 2651 | 2250 | 2025 | 1939 |
| 45 | 942 | 945 | 963 | 1077 | 1635 | 2292 | 2910 | 2665 | 2228 | 1963 | 1872 |
| 47.5 | 871 | 874 | 896 | 1077 | 1713 | 2150 | 2662 | 2657 | 2172 | 1866 | 1776 |
| 50 | 794 | 796 | 832 | 1093 | 1763 | 2050 | 2353 | 2631 | 2160 | 1838 | 1748 |
| 52.5 | 704 | 708 | 781 | 1120 | 1742 | 1918 | 2128 | 2624 | 2202 | 1895 | 1809 |
| 55 | 609 | 615 | 759 | 1173 | 1614 | 1759 | 2081 | 2582 | 2334 | 2047 | 1939 |
| 57.5 | 411 | 423 | 641 | 1181 | 1421 | 1607 | 2117 | 2562 | 2465 | 2160 | 2021 |
| 60 | 187 | 201 | 371 | 889 | 1201 | 1496 | 2130 | 2483 | 2444 | 2089 | 1955 |
| 62.5 | 85 | 96 | 183 | 399 | 851 | 1446 | 2065 | 2331 | 2276 | 1910 | 1791 |
| 65 | 49 | 57 | 124 | 186 | 467 | 1322 | 1912 | 2180 | 2077 | 1691 | 1576 |
| 67.5 | 32 | 36 | 97 | 133 | 352 | 1019 | 1653 | 1956 | 1832 | 1490 | 1396 |
| 70 | 24 | 27 | 68 | 102 | 298 | 769 | 1199 | 1606 | 1546 | 1313 | 1223 |
| 72.5 | 21 | 23 | 46 | 81 | 207 | 542 | 744 | 1193 | 1183 | 965 | 898 |
| 75 | 18 | 19 | 35 | 71 | 155 | 302 | 471 | 698 | 841 | 723 | 678 |
| 77.5 | 15 | 15 | 25 | 43 | 111 | 171 | 239 | 413 | 569 | 509 | 495 |
| 80 | 12 | 12 | 16 | 25 | 45 | 70 | 88 | 215 | 303 | 275 | 268 |
| 82.5 | 10 | 10 | 11 | 15 | 17 | 22 | 28 | 77 | 152 | 137 | 123 |
| 85 | 8 | 7 | 8 | 9 | 11 | 12 | 14 | 16 | 35 | 44 | 43 |
| 87.5 | 8 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 7 | 7 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

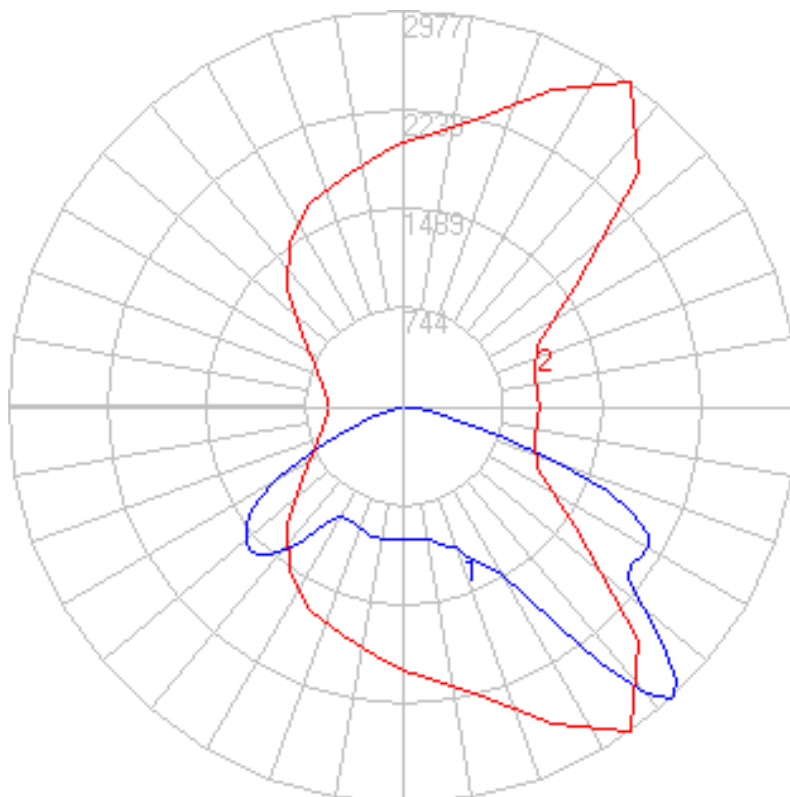


RESULTS OF TESTS (cont'd)

| | 95 | 105 | 115 | 125 | 135 | 145 | 155 | 165 | 175 | 180 |
|------|------|------|------|------|------|------|-----|-----|-----|-----|
| 0 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 |
| 2.5 | 997 | 996 | 999 | 1002 | 998 | 997 | 994 | 994 | 988 | 990 |
| 5 | 999 | 997 | 999 | 1002 | 995 | 995 | 990 | 988 | 983 | 984 |
| 7.5 | 999 | 996 | 998 | 1000 | 993 | 992 | 985 | 982 | 977 | 978 |
| 10 | 1009 | 1006 | 1008 | 1005 | 992 | 987 | 979 | 974 | 969 | 971 |
| 12.5 | 1042 | 1032 | 1023 | 1013 | 989 | 978 | 968 | 960 | 955 | 957 |
| 15 | 1080 | 1064 | 1035 | 1010 | 980 | 967 | 949 | 937 | 929 | 931 |
| 17.5 | 1092 | 1076 | 1042 | 994 | 966 | 949 | 922 | 909 | 901 | 902 |
| 20 | 1125 | 1088 | 1021 | 978 | 953 | 934 | 903 | 890 | 881 | 883 |
| 22.5 | 1144 | 1092 | 999 | 961 | 951 | 912 | 889 | 877 | 866 | 868 |
| 25 | 1163 | 1093 | 999 | 956 | 918 | 900 | 875 | 862 | 852 | 855 |
| 27.5 | 1230 | 1138 | 1032 | 958 | 901 | 891 | 866 | 844 | 836 | 838 |
| 30 | 1372 | 1247 | 1091 | 961 | 891 | 872 | 844 | 831 | 819 | 821 |
| 32.5 | 1633 | 1452 | 1222 | 1010 | 895 | 851 | 827 | 820 | 806 | 808 |
| 35 | 1884 | 1665 | 1393 | 1128 | 920 | 842 | 825 | 808 | 789 | 791 |
| 37.5 | 1983 | 1776 | 1538 | 1273 | 993 | 867 | 818 | 784 | 768 | 770 |
| 40 | 1965 | 1806 | 1634 | 1409 | 1111 | 897 | 792 | 749 | 724 | 725 |
| 42.5 | 1913 | 1780 | 1694 | 1503 | 1240 | 935 | 749 | 646 | 587 | 584 |
| 43 | 1875 | 1762 | 1701 | 1524 | 1272 | 931 | 721 | 594 | 531 | 525 |
| 45 | 1808 | 1719 | 1712 | 1566 | 1341 | 1000 | 636 | 473 | 406 | 399 |
| 47.5 | 1718 | 1655 | 1669 | 1585 | 1414 | 990 | 494 | 301 | 237 | 229 |
| 50 | 1694 | 1598 | 1627 | 1543 | 1378 | 839 | 351 | 171 | 124 | 119 |
| 52.5 | 1750 | 1608 | 1596 | 1496 | 1139 | 568 | 233 | 141 | 100 | 96 |
| 55 | 1858 | 1703 | 1607 | 1425 | 791 | 320 | 165 | 131 | 95 | 96 |
| 57.5 | 1908 | 1825 | 1686 | 1285 | 451 | 199 | 141 | 138 | 96 | 97 |
| 60 | 1847 | 1858 | 1777 | 1101 | 282 | 168 | 144 | 142 | 99 | 103 |
| 62.5 | 1697 | 1761 | 1754 | 914 | 262 | 160 | 145 | 108 | 102 | 109 |
| 65 | 1499 | 1588 | 1512 | 731 | 255 | 166 | 161 | 106 | 103 | 108 |
| 67.5 | 1325 | 1383 | 1112 | 553 | 223 | 183 | 191 | 118 | 87 | 89 |
| 70 | 1167 | 1193 | 761 | 353 | 182 | 183 | 173 | 135 | 53 | 52 |
| 72.5 | 854 | 877 | 527 | 220 | 142 | 130 | 137 | 141 | 32 | 31 |
| 75 | 654 | 603 | 333 | 155 | 97 | 96 | 92 | 89 | 24 | 23 |
| 77.5 | 496 | 403 | 189 | 93 | 56 | 93 | 52 | 33 | 17 | 14 |
| 80 | 268 | 179 | 83 | 51 | 41 | 69 | 40 | 29 | 12 | 9 |
| 82.5 | 110 | 54 | 37 | 35 | 27 | 33 | 21 | 14 | 9 | 8 |
| 85 | 44 | 16 | 18 | 17 | 13 | 17 | 9 | 8 | 7 | 6 |
| 87.5 | 7 | 6 | 7 | 6 | 7 | 7 | 6 | 7 | 5 | 6 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

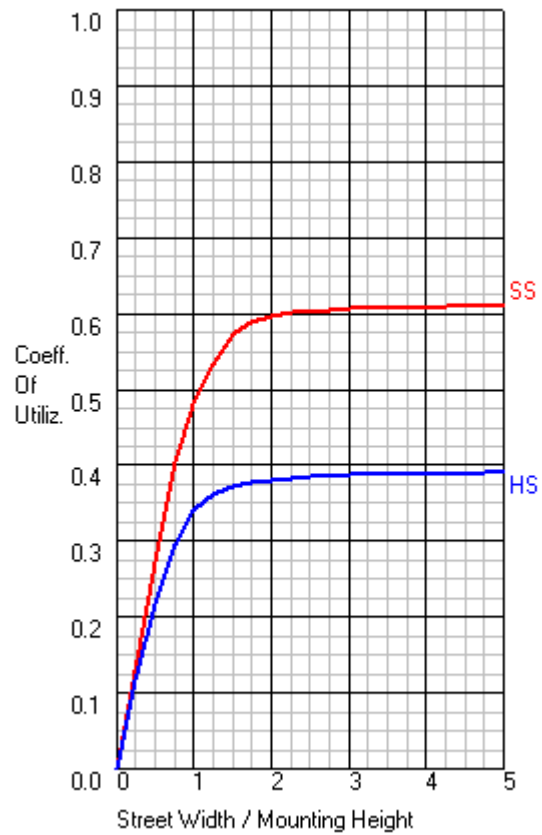
RESULTS OF TESTS (cont'd)

Polar Candela Distribution:



RESULTS OF TESTS (cont'd)

CU Graph:

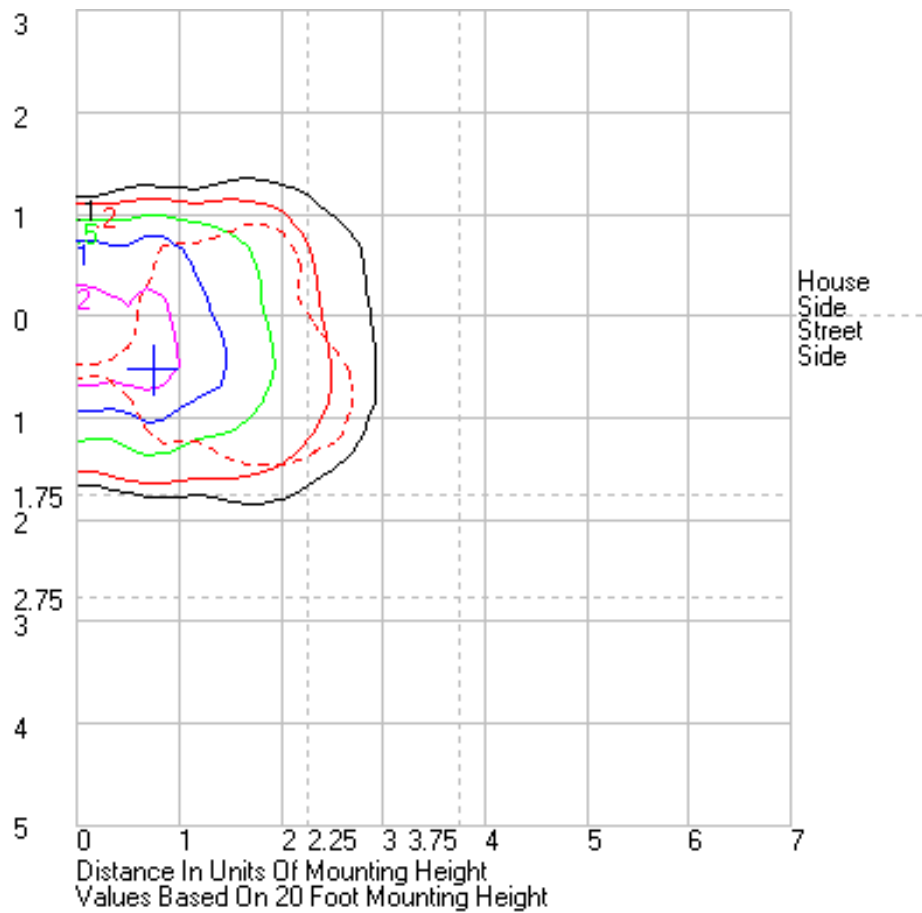


Flux Distribution

| | Lumens | Percent Of Luminaire |
|-------------------------|--------|-------------------------|
| Downward Street Side | 3289.3 | 61.0 |
| Downward House Side | 2106.5 | 39.0 |
| Downward Total | 5395.8 | 100.0 |
| Upward Street Side | 0.0 | 0.0 |
| Upward House Side | 0.0 | 0.0 |
| Upward Total | 0.0 | 0.0 |
| Total Flux | 5395.8 | 100.0 |

RESULTS OF TESTS (cont'd)

Isolines:





Tested By:

Kyle McAllister

Report Reviewed By:

Jeffrey Davis

Senior Associate Engineer
Commercial & Electrical

David Ellis

Senior Project Engineer
Lighting Division

Attachment: None