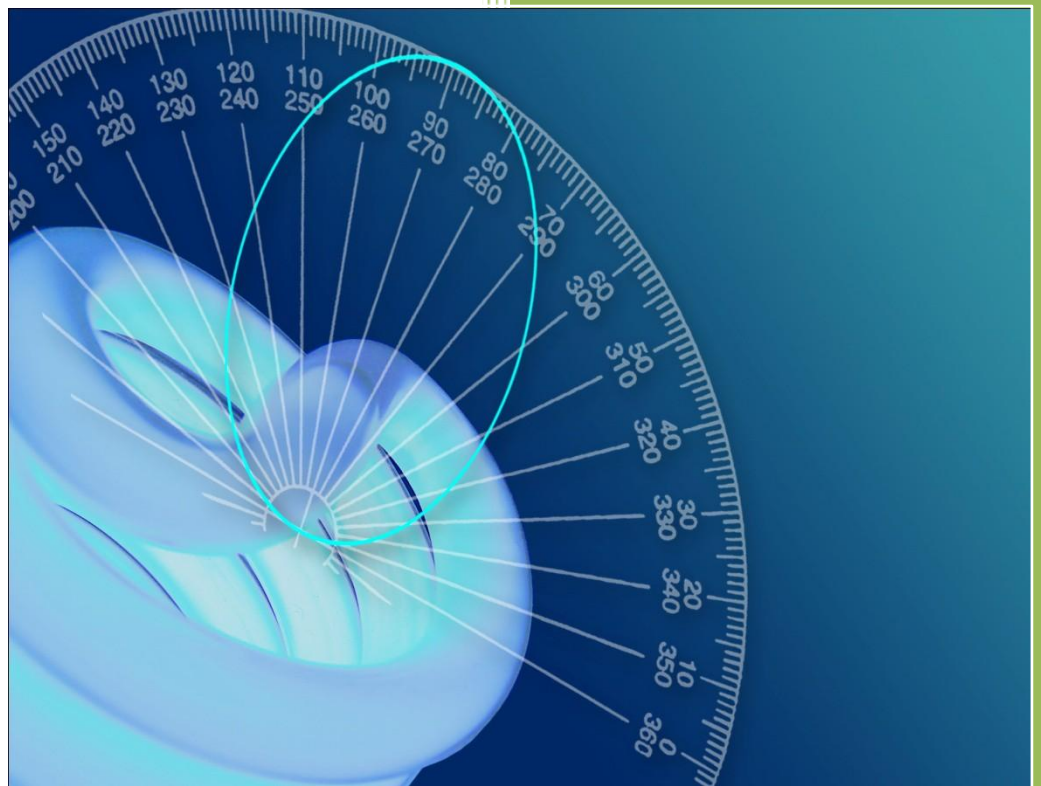


Photometric Test Report



Photometric and Optical Testing
Services
Cheltenham Film and Photographic
Studios
Hatherley Lane
Cheltenham
Gloucestershire
GL51 6PN
UK
Tel: 01242 701300

Photometric Test Report

| | | |
|--|-------------------------|---------------------|
| Report Number: POTS/GJ16022 | Report Date: 26-01-2016 | Prepared By: G JOHN |
| Test Laboratory: Photometric and Optical Testing Services, Cheltenham Film and Photographic Studios, Hatherley Lane, Cheltenham, Gloucestershire, GL51 6PN | | |
| Company Registration Number: Registered in England & Wales No. OC352911 | | |
| Registered Address: Thistle Down Barn, Holcot Lane, Sywell, Northampton, NN6 0BG | | |

Client Details

| | |
|--|--|
| Company: TLC Southern Ltd | |
| Address: The TLC Building, 5 Newton Road, Crawley, West Sussex, RH10 9TS | |

Test Method(s) Used

| | |
|------------------------------------|--------------------------------------|
| POTS Standard Operating Procedure: | INTEGRATING SPHERE PROCEDURE POTS016 |
| POTS Standard Operating Procedure: | NFMS OPERATION GUIDE |
| Standard: | LM79 08 |

Details of Product Tested

| | |
|--|---------------------------|
| Manufacturer: LEDLITE | Source Type: LED |
| Model: LTSP50WW | Luminaire Type: DOWNLIGHT |
| Power Supply Used: Kikusui PCR1000M Voltage Stabiliser S/N SM01191 | |
| Voltage(AC V) = 230 | Current (mA)= 211 |
| Power (Watts)= 49.22 | Power factor= 0.9575 |

Integrating Sphere Test

| Date of Test: 23/12/2015 | Ambient Temperature: 25°C |
|---|--|
| Measurement Filename: 50W LED WARM WHITE | |
| Instrument Used: Labsphere model 2m integrating sphere spectroradiometer AS-02949-012 | |
| Integrating Sphere Size: 2m | Measurement Geometry (2 π / 4 π): 4 π |
| Sample Orientation: Horizontal | Auxiliary Correction Applied: YES |
| Comments: | |
| | |
| Date of Last Calibration (Operating Hours): 12-11-2015 (0:59) | Spectral Flux Standard Lamp Used: SCL-600 |
| Standard Lamp Serial Number: L123 | Traceable: to NIST standards |
| Calibration Certificate Number: SCL-600-L123 | Calibration Certificate Date: 29/01/2014 |
| Calibration Lamp Uncertainty: $\pm 0.67\%$ ($k=2$) | |
| Results | |
| Flux (lumens): 4665 | |
| CIE 1931 Chromaticity Cx: 0.4311 | CIE 1931 Chromaticity Cy: 0.4070 |
| CRI (%): 72.05 | CCT (K): 3125 |

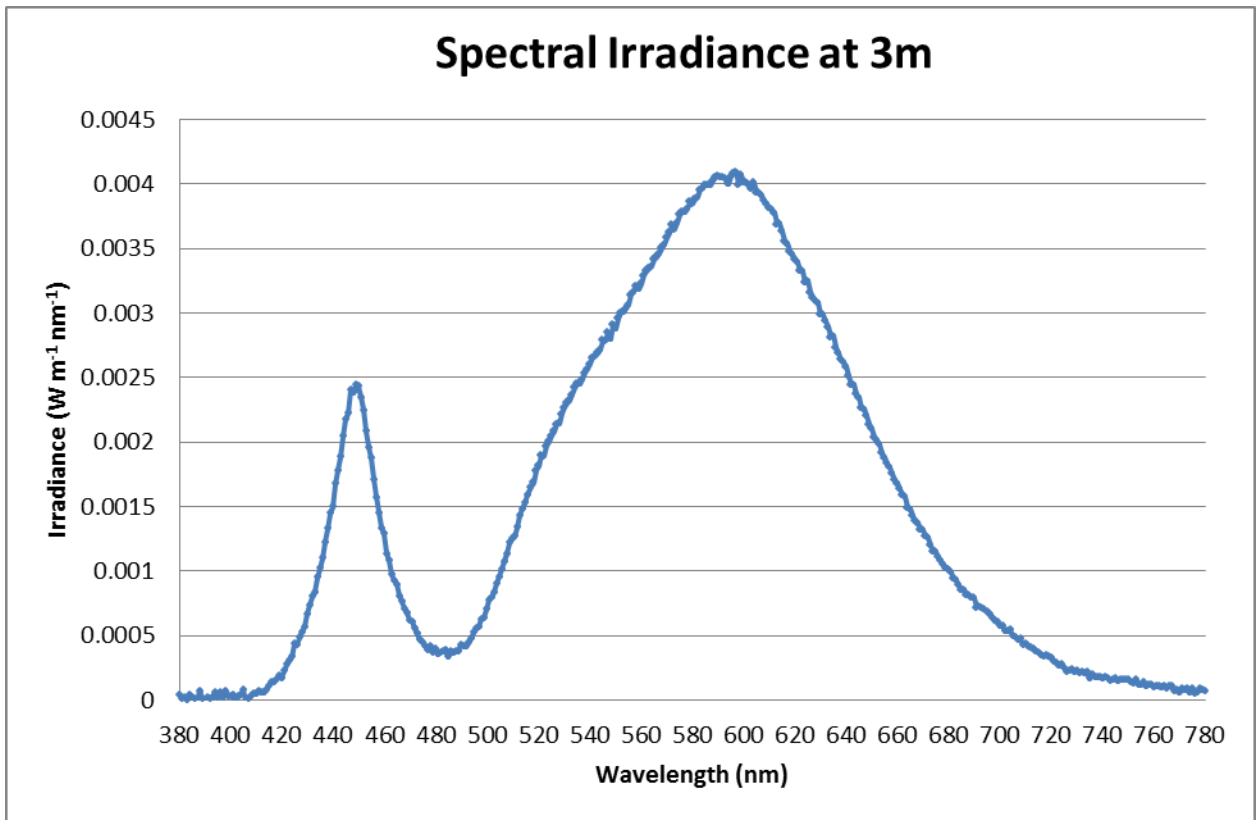


Figure 1: Spectral Irradiance at 3 metres

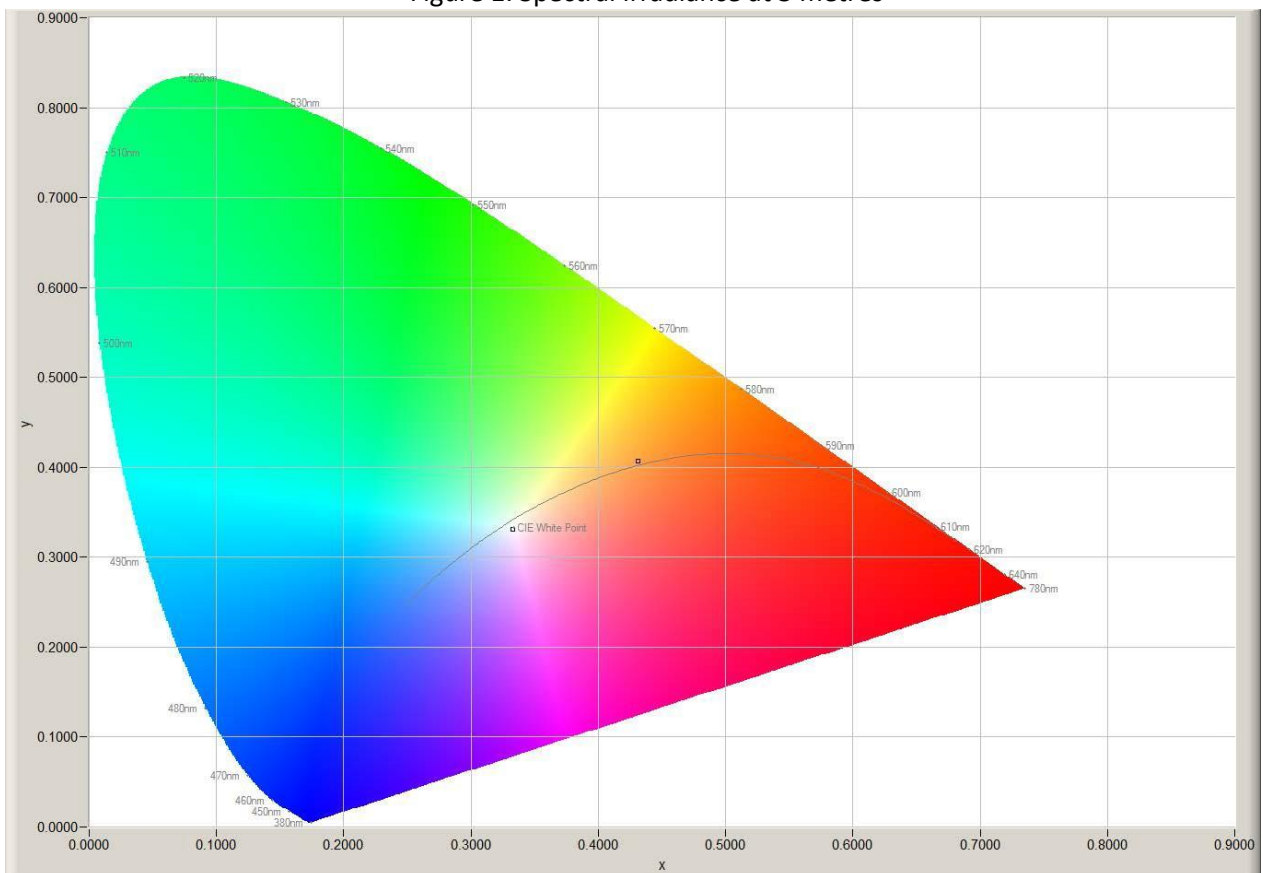


Figure 2: CIE 1931 diagram.

| Goniophotometer Test | | |
|--|---|-------------------------------|
| Date of Test: 23-12--2015 | Ambient Temperature: 25°C | |
| Measurement Filename: 50W LED WARM WHITE | | |
| Instrument Used: Radiant Imaging NFMS0800 Goniometer with ProMetric PM-1200N-1 Imaging Photometer | | |
| Photometer Working Distance: 3m | Measurement Geometry: Near-Field | |
| Comments: | | |
| Reference Photometer Used: Specbos1211 | Reference Photometer Serial Number: 2014754 | |
| Traceable: to NIST standards | | |
| Calibration Certificate Date: 18 June 2015 | Sample Stabilisation Time (minutes): 45 | |
| Reference Photometer Calibration Uncertainty: $\pm 2.4\%$ ($k=2$, 20-200 lux, CIE illuminant A source) | | |
| Scan Set Up | | |
| Direction | Range | Increment |
| Inclination Zone 1 | 0-90° | 3° |
| Azimuth | 0-360° | 10° |
| Results | | |
| Integrated Luminous Flux (lumens):4665 | Peak Intensity (3° Spot, candelas): 1,678.3 | Efficacy (lumens/Watt): 94.78 |
| Beam Angle (50% of max intensity C0-180, degrees): 111.7 | | |
| Photometric Filename (IES LM-63-2002): 50W LED WARM WHITE | | |
| IES File – Absolute or Relative Format? ABSOLUTE | | |
| Photometric Filename (EULUMDAT): 50W LED WARM WHITE | | |
| EULUMDAT File – Absolute or Relative Format? ABSOLUTE | | |

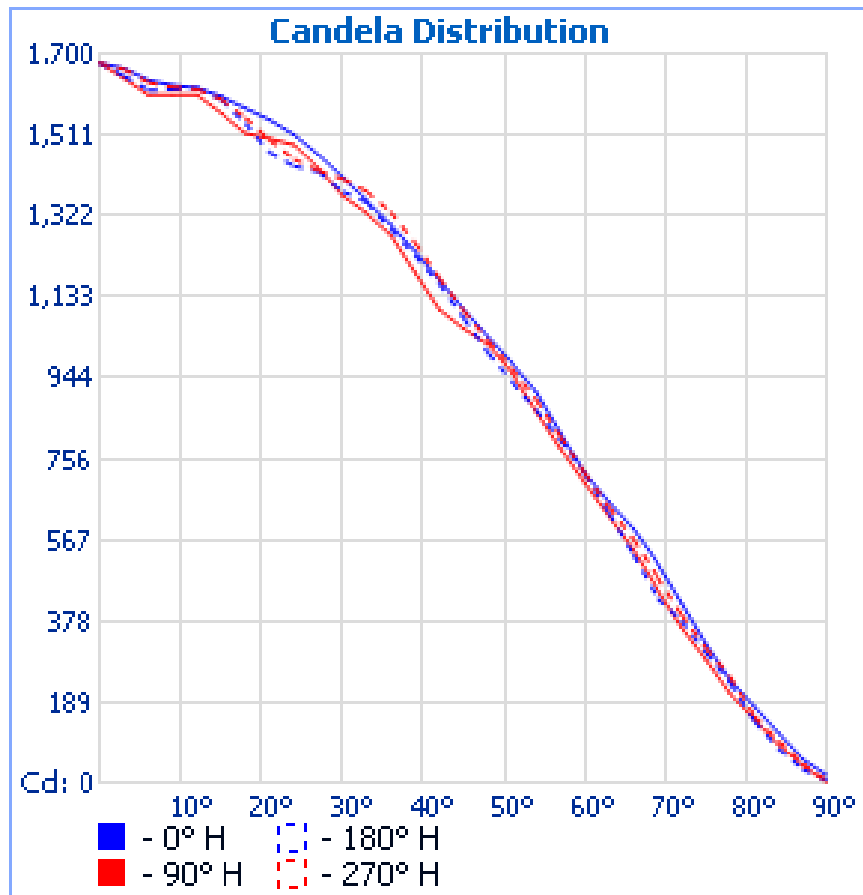


Figure 3: Far-Field Luminous Intensity (C0-180, Cartesian Coordinates)

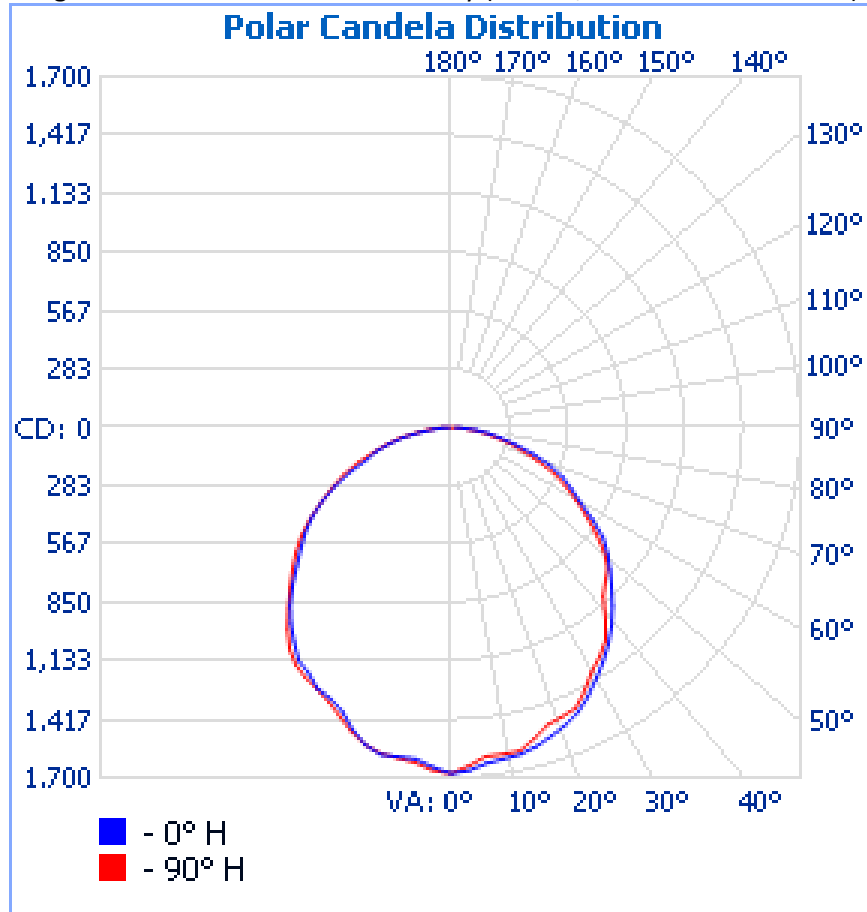


Figure 4: Far-Field Luminous Intensity (C0-180, C90-270, Polar Coordinates)

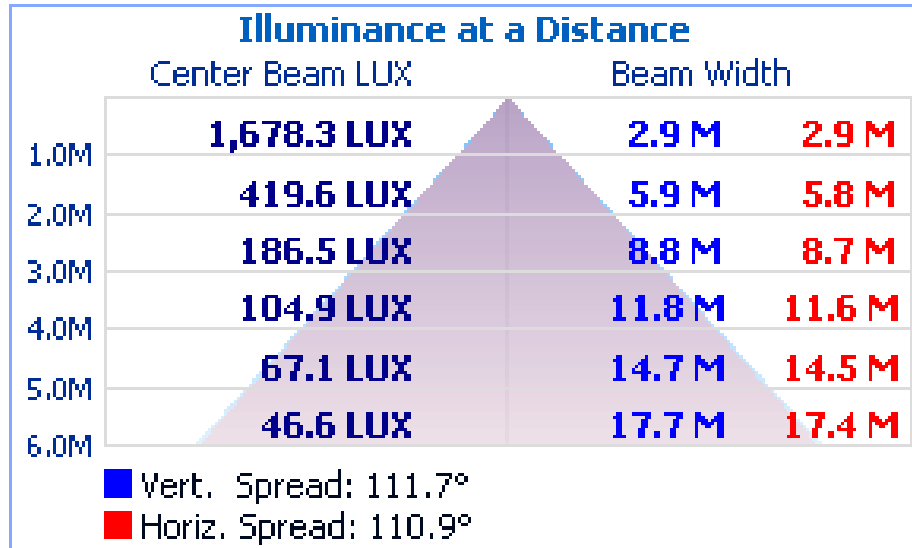


Figure 5. Cone diagram for mounting height of 6 metres.

| Reflectance of | | | | | | | | | | |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ceiling | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| Wall | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Floor Cavity | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

| Room dimension | | View endwise (C0) | | | | | View crosswise (C90) | | | | |
|----------------|------|-------------------|------|------|------|------|----------------------|------|------|------|------|
| x | y | | | | | | | | | | |
| 2H | 2H | 17.6 | 19.2 | 17.9 | 19.5 | 19.8 | 17.5 | 19.2 | 17.9 | 19.5 | 19.8 |
| | 3H | 19.2 | 20.7 | 19.6 | 21.0 | 21.4 | 19.1 | 20.6 | 19.5 | 21.0 | 21.3 |
| | 4H | 19.9 | 21.3 | 20.3 | 21.6 | 22.0 | 19.8 | 21.2 | 20.2 | 21.5 | 21.9 |
| | 6H | 20.4 | 21.7 | 20.8 | 22.0 | 22.4 | 20.3 | 21.6 | 20.7 | 21.9 | 22.3 |
| | 8H | 20.5 | 21.8 | 20.9 | 22.1 | 22.5 | 20.4 | 21.6 | 20.8 | 22.0 | 22.4 |
| 12H | 20.6 | 21.8 | 21.0 | 22.2 | 22.6 | 20.4 | 21.6 | 20.8 | 22.0 | 22.4 | |
| 4H | 2H | 18.3 | 19.7 | 18.7 | 20.0 | 20.4 | 18.3 | 19.7 | 18.7 | 20.0 | 20.4 |
| | 3H | 20.1 | 21.3 | 20.5 | 21.7 | 22.1 | 20.0 | 21.2 | 20.4 | 21.6 | 22.0 |
| | 4H | 20.9 | 22.0 | 21.4 | 22.4 | 22.8 | 20.8 | 21.9 | 21.3 | 22.3 | 22.8 |
| | 6H | 21.5 | 22.5 | 22.0 | 22.9 | 23.4 | 21.4 | 22.3 | 21.8 | 22.8 | 23.2 |
| | 8H | 21.8 | 22.7 | 22.2 | 23.1 | 23.6 | 21.6 | 22.4 | 22.0 | 22.9 | 23.3 |
| 12H | 22.0 | 22.8 | 22.5 | 23.2 | 23.7 | 21.7 | 22.5 | 22.2 | 22.9 | 23.4 | |
| 8H | 4H | 21.2 | 22.1 | 21.7 | 22.5 | 23.0 | 21.1 | 22.0 | 21.6 | 22.5 | 22.9 |
| | 6H | 21.9 | 22.7 | 22.4 | 23.2 | 23.7 | 21.8 | 22.5 | 22.3 | 23.0 | 23.5 |
| | 8H | 22.4 | 23.0 | 22.9 | 23.5 | 24.0 | 22.1 | 22.7 | 22.6 | 23.2 | 23.7 |
| | 12H | 22.7 | 23.2 | 23.2 | 23.7 | 24.2 | 22.3 | 22.8 | 22.8 | 23.3 | 23.8 |
| 12H | 4H | 21.3 | 22.1 | 21.7 | 22.5 | 23.0 | 21.2 | 22.0 | 21.7 | 22.4 | 22.9 |
| | 6H | 22.1 | 22.7 | 22.6 | 23.2 | 23.7 | 21.9 | 22.6 | 22.4 | 23.1 | 23.6 |
| | 8H | 22.5 | 23.0 | 23.0 | 23.5 | 24.0 | 22.2 | 22.7 | 22.7 | 23.3 | 23.8 |

Distance between luminaires: 0.25

Due to missing symmetry characteristics the values apply only to the indicated line of sight.

Table 1. UGR values

| | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 |
| 3 | 1666 | 1664 | 1661 | 1660 | 1656 | 1652 | 1649 | 1647 | 1644 | 1643 | 1642 | 1642 | 1642 | 1641 | 1642 | 1645 | 1642 | 1646 | 1649 |
| 6 | 1639 | 1638 | 1639 | 1637 | 1632 | 1626 | 1618 | 1609 | 1605 | 1604 | 1608 | 1614 | 1619 | 1620 | 1619 | 1615 | 1612 | 1610 | 1616 |
| 9 | 1627 | 1633 | 1638 | 1640 | 1635 | 1627 | 1615 | 1605 | 1601 | 1605 | 1618 | 1634 | 1644 | 1639 | 1625 | 1610 | 1605 | 1608 | 1617 |
| 12 | 1621 | 1626 | 1630 | 1634 | 1624 | 1624 | 1614 | 1603 | 1598 | 1604 | 1627 | 1653 | 1663 | 1645 | 1617 | 1593 | 1592 | 1607 | 1622 |
| 15 | 1601 | 1582 | 1578 | 1592 | 1601 | 1597 | 1588 | 1575 | 1560 | 1562 | 1586 | 1619 | 1633 | 1614 | 1582 | 1564 | 1568 | 1581 | 1593 |
| 18 | 1574 | 1531 | 1508 | 1544 | 1561 | 1558 | 1553 | 1535 | 1518 | 1516 | 1531 | 1550 | 1556 | 1553 | 1546 | 1545 | 1543 | 1544 | 1539 |
| 21 | 1547 | 1507 | 1484 | 1519 | 1519 | 1509 | 1526 | 1504 | 1489 | 1503 | 1505 | 1501 | 1496 | 1500 | 1516 | 1528 | 1519 | 1496 | 1470 |
| 24 | 1513 | 1502 | 1481 | 1487 | 1455 | 1449 | 1504 | 1478 | 1463 | 1488 | 1484 | 1471 | 1461 | 1464 | 1476 | 1491 | 1487 | 1455 | 1437 |
| 27 | 1465 | 1474 | 1444 | 1444 | 1403 | 1401 | 1468 | 1443 | 1433 | 1433 | 1430 | 1433 | 1430 | 1434 | 1426 | 1437 | 1439 | 1432 | 1424 |
| 30 | 1411 | 1420 | 1378 | 1409 | 1387 | 1371 | 1402 | 1378 | 1397 | 1368 | 1369 | 1385 | 1375 | 1402 | 1385 | 1376 | 1377 | 1404 | 1378 |
| 33 | 1357 | 1359 | 1321 | 1386 | 1360 | 1334 | 1334 | 1313 | 1343 | 1327 | 1322 | 1324 | 1299 | 1357 | 1356 | 1326 | 1316 | 1353 | 1353 |
| 36 | 1302 | 1300 | 1274 | 1333 | 1283 | 1248 | 1278 | 1287 | 1274 | 1278 | 1277 | 1267 | 1236 | 1295 | 1301 | 1276 | 1263 | 1287 | 1291 |
| 39 | 1239 | 1246 | 1217 | 1194 | 1209 | 1181 | 1214 | 1245 | 1204 | 1190 | 1225 | 1216 | 1191 | 1220 | 1213 | 1197 | 1221 | 1214 | 1230 |
| 42 | 1173 | 1187 | 1174 | 1167 | 1170 | 1142 | 1168 | 1161 | 1133 | 1104 | 1165 | 1145 | 1138 | 1144 | 1138 | 1128 | 1170 | 1143 | 1164 |
| 45 | 1104 | 1123 | 1089 | 1115 | 1108 | 1072 | 1109 | 1083 | 1071 | 1060 | 1093 | 1058 | 1083 | 1066 | 1069 | 1069 | 1098 | 1082 | 1084 |
| 48 | 1041 | 1056 | 1032 | 1046 | 1016 | 981 | 1026 | 1019 | 1012 | 1023 | 980 | 988 | 1022 | 1000 | 1008 | 1016 | 1009 | 1027 | 1003 |
| 51 | 980 | 979 | 954 | 967 | 940 | 943 | 942 | 943 | 942 | 955 | 942 | 930 | 950 | 940 | 941 | 968 | 919 | 936 | 935 |
| 54 | 914 | 892 | 885 | 882 | 880 | 866 | 858 | 862 | 856 | 868 | 878 | 855 | 854 | 873 | 862 | 889 | 856 | 890 | 872 |
| 57 | 818 | 815 | 805 | 794 | 819 | 799 | 785 | 782 | 780 | 781 | 813 | 768 | 767 | 787 | 782 | 794 | 787 | 812 | 802 |
| 60 | 722 | 744 | 719 | 708 | 733 | 711 | 711 | 713 | 708 | 699 | 685 | 698 | 688 | 696 | 696 | 706 | 693 | 720 | 720 |
| 63 | 654 | 661 | 643 | 635 | 638 | 615 | 629 | 648 | 630 | 622 | 610 | 637 | 622 | 611 | 610 | 629 | 612 | 622 | 629 |
| 66 | 593 | 573 | 561 | 565 | 555 | 535 | 520 | 558 | 540 | 544 | 550 | 567 | 532 | 532 | 545 | 547 | 542 | 535 | 532 |
| 69 | 513 | 483 | 499 | 472 | 467 | 462 | 458 | 453 | 444 | 451 | 473 | 456 | 440 | 445 | 466 | 451 | 467 | 449 | 432 |
| 72 | 421 | 395 | 421 | 385 | 385 | 384 | 412 | 369 | 357 | 364 | 383 | 369 | 357 | 359 | 377 | 348 | 364 | 372 | 380 |
| 75 | 326 | 310 | 321 | 310 | 299 | 318 | 302 | 295 | 284 | 289 | 292 | 295 | 281 | 277 | 291 | 305 | 305 | 301 | 306 |
| 78 | 241 | 237 | 244 | 231 | 201 | 246 | 250 | 231 | 201 | 209 | 222 | 224 | 230 | 201 | 224 | 224 | 228 | 234 | 234 |
| 81 | 179 | 171 | 179 | 180 | 167 | 178 | 158 | 155 | 151 | 150 | 148 | 163 | 156 | 148 | 154 | 160 | 155 | 149 | 146 |
| 84 | 118 | 129 | 108 | 101 | 87 | 100 | 93 | 85 | 105 | 89 | 89 | 89 | 100 | 85 | 79 | 96 | 81 | 84 | 80 |
| 87 | 56 | 50 | 43 | 41 | 31 | 49 | 37 | 33 | 44 | 41 | 34 | 32 | 39 | 48 | 34 | 28 | 30 | 31 | 32 |
| 90 | 19 | 1 | 9 | 10 | 3 | 4 | 2 | 2 | 3 | 2 | 0 | 2 | 3 | 1 | 5 | 5 | 7 | 4 | 6 |

Table 2a. Luminous intensity values, azimuth 0-180°

| | 190 | 200 | 210 | 220 | 230 | 240 | 250 | 260 | 270 | 280 | 290 | 300 | 310 | 320 | 330 | 340 | 350 |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 | 1678 |
| 3 | 1652 | 1654 | 1661 | 1660 | 1663 | 1665 | 1665 | 1665 | 1664 | 1664 | 1664 | 1665 | 1665 | 1666 | 1668 | 1666 | 1667 |
| 6 | 1625 | 1639 | 1652 | 1660 | 1662 | 1658 | 1649 | 1641 | 1633 | 1630 | 1631 | 1634 | 1637 | 1640 | 1641 | 1640 | 1638 |
| 9 | 1624 | 1645 | 1659 | 1669 | 1668 | 1658 | 1644 | 1632 | 1623 | 1618 | 1615 | 1612 | 1618 | 1618 | 1616 | 1618 | 1621 |
| 12 | 1628 | 1631 | 1635 | 1640 | 1635 | 1626 | 1620 | 1619 | 1618 | 1610 | 1601 | 1598 | 1597 | 1595 | 1592 | 1598 | 1610 |
| 15 | 1592 | 1592 | 1591 | 1587 | 1583 | 1577 | 1578 | 1587 | 1594 | 1586 | 1579 | 1583 | 1585 | 1579 | 1579 | 1590 | 1602 |
| 18 | 1547 | 1554 | 1565 | 1561 | 1555 | 1550 | 1542 | 1547 | 1552 | 1556 | 1565 | 1594 | 1599 | 1580 | 1578 | 1583 | 1590 |
| 21 | 1506 | 1534 | 1551 | 1542 | 1536 | 1539 | 1527 | 1509 | 1500 | 1532 | 1555 | 1586 | 1584 | 1558 | 1556 | 1547 | 1550 |
| 24 | 1471 | 1507 | 1517 | 1504 | 1497 | 1510 | 1508 | 1478 | 1454 | 1508 | 1513 | 1499 | 1509 | 1491 | 1492 | 1481 | 1491 |
| 27 | 1422 | 1449 | 1473 | 1463 | 1451 | 1463 | 1455 | 1441 | 1427 | 1467 | 1450 | 1409 | 1434 | 1444 | 1442 | 1423 | 1439 |
| 30 | 1363 | 1386 | 1419 | 1413 | 1397 | 1403 | 1385 | 1401 | 1407 | 1418 | 1422 | 1381 | 1398 | 1416 | 1410 | 1392 | 1400 |
| 33 | 1327 | 1328 | 1349 | 1338 | 1327 | 1341 | 1317 | 1379 | 1379 | 1378 | 1388 | 1365 | 1364 | 1373 | 1371 | 1370 | 1362 |
| 36 | 1296 | 1270 | 1285 | 1260 | 1261 | 1296 | 1265 | 1343 | 1331 | 1327 | 1302 | 1315 | 1317 | 1305 | 1313 | 1338 | 1318 |
| 39 | 1237 | 1219 | 1239 | 1214 | 1226 | 1267 | 1202 | 1263 | 1259 | 1255 | 1227 | 1247 | 1264 | 1237 | 1235 | 1281 | 1257 |
| 42 | 1164 | 1161 | 1183 | 1185 | 1190 | 1225 | 1184 | 1171 | 1177 | 1179 | 1180 | 1180 | 1207 | 1184 | 1173 | 1196 | 1180 |
| 45 | 1104 | 1092 | 1111 | 1115 | 1102 | 1128 | 1066 | 1107 | 1101 | 1116 | 1122 | 1110 | 1141 | 1120 | 1118 | 1116 | 1104 |
| 48 | 1044 | 1026 | 1031 | 1031 | 1006 | 1020 | 1035 | 1051 | 1032 | 1051 | 1045 | 1044 | 1064 | 1052 | 1066 | 1051 | 1036 |
| 51 | 966 | 961 | 965 | 962 | 953 | 948 | 966 | 978 | 967 | 982 | 966 | 981 | 991 | 992 | 1002 | 986 | 975 |
| 54 | 885 | 905 | 883 | 887 | 903 | 882 | 910 | 888 | 895 | 907 | 895 | 911 | 932 | 925 | 898 | 935 | 906 |
| 57 | 789 | 831 | 800 | 815 | 826 | 808 | 835 | 813 | 809 | 831 | 821 | 828 | 850 | 848 | 807 | 862 | 833 |
| 60 | 714 | 738 | 719 | 741 | 732 | 734 | 734 | 737 | 722 | 754 | 744 | 726 | 754 | 755 | 738 | 764 | 755 |
| 63 | 649 | 650 | 650 | 653 | 647 | 660 | 667 | 653 | 642 | 673 | 652 | 642 | 674 | 658 | 671 | 679 | 675 |
| 66 | 579 | 555 | 571 | 560 | 567 | 564 | 582 | 596 | 568 | 595 | 566 | 571 | 592 | 579 | 598 | 581 | 590 |
| 69 | 490 | 480 | 458 | 471 | 480 | 468 | 472 | 511 | 481 | 492 | 476 | 489 | 470 | 504 | 519 | 490 | 501 |
| 72 | 392 | 413 | 396 | 401 | 391 | 395 | 385 | 408 | 393 | 390 | 390 | 410 | 427 | 432 | 442 | 409 | 427 |
| 75 | 309 | 318 | 331 | 316 | 320 | 308 | 317 | 345 | 316 | 303 | 330 | 326 | 329 | 334 | 353 | 330 | 336 |
| 78 | 236 | 234 | 280 | 229 | 249 | 213 | 240 | 244 | 249 | 222 | 242 | 244 | 252 | 257 | 273 | 261 | 263 |
| 81 | 156 | 158 | 175 | 151 | 162 | 146 | 149 | 159 | 157 | 156 | 172 | 175 | 180 | 182 | 198 | 209 | 193 |
| 84 | 101 | 96 | 100 | 97 | 92 | 81 | 88 | 89 | 99 | 99 | 97 | 107 | 103 | 116 | 124 | 141 | 131 |
| 87 | 45 | 40 | 31 | 31 | 21 | 30 | 41 | 25 | 46 | 35 | 40 | 37 | 37 | 65 | 49 | 67 | 71 |
| 90 | 3 | 13 | 10 | 4 | 3 | 0 | 0 | 3 | 5 | 4 | 9 | 4 | 1 | 12 | 13 | 9 | 11 |

Table 2b. Luminous intensity values, azimuth 190-350°

| Zone | Lumens | % Total |
|-------|--------|---------|
| 0-5 | 39.7 | 0.80% |
| 05-10 | 116.1 | 2.50% |
| 10-15 | 191.1 | 4.10% |
| 15-20 | 257.6 | 5.50% |
| 20-25 | 314.1 | 6.70% |
| 25-30 | 362.5 | 7.70% |
| 30-35 | 399.7 | 8.50% |
| 35-40 | 418.3 | 8.90% |
| 40-45 | 427.3 | 9.10% |
| 45-50 | 421.4 | 8.90% |
| 50-55 | 399.7 | 8.50% |
| 55-60 | 365.9 | 7.80% |
| 60-65 | 320.7 | 6.80% |
| 65-70 | 260.9 | 5.50% |
| 70-75 | 196.9 | 4.20% |
| 75-80 | 134.8 | 2.90% |
| 80-85 | 71.2 | 1.50% |
| 85-90 | 19.6 | 0.40% |

Table 3. Zonal Flux Table

| Effective Floor Cavity Reflectance: 20% | | | | | | | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RCC %: | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RW %: | 70 | 50 | 30 | 0 | 70 | 50 | 30 | 0 | 50 | 30 | 20 | 50 | 30 | 20 | 50 | 30 | 20 | 0 |
| RCR: 0 | 1.19 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1 | 1.11 | 1.11 | 1.11 | 1.06 | 1.06 | 1.06 | 1.02 | 1.02 | 1.02 | 1 |
| 1 | 1.09 | 1.04 | 1 | 0.96 | 1.06 | 1.02 | 0.98 | 0.84 | 0.97 | 0.94 | 0.91 | 0.93 | 0.91 | 0.88 | 0.9 | 0.88 | 0.86 | 0.84 |
| 2 | 0.99 | 0.9 | 0.84 | 0.78 | 0.96 | 0.89 | 0.82 | 0.71 | 0.85 | 0.8 | 0.75 | 0.82 | 0.77 | 0.73 | 0.79 | 0.75 | 0.72 | 0.69 |
| 3 | 0.9 | 0.79 | 0.71 | 0.65 | 0.87 | 0.78 | 0.7 | 0.6 | 0.75 | 0.68 | 0.63 | 0.72 | 0.66 | 0.62 | 0.69 | 0.65 | 0.61 | 0.58 |
| 4 | 0.82 | 0.7 | 0.61 | 0.55 | 0.8 | 0.69 | 0.61 | 0.52 | 0.66 | 0.59 | 0.53 | 0.64 | 0.58 | 0.53 | 0.62 | 0.56 | 0.52 | 0.5 |
| 5 | 0.76 | 0.63 | 0.54 | 0.47 | 0.74 | 0.62 | 0.53 | 0.45 | 0.59 | 0.52 | 0.46 | 0.57 | 0.51 | 0.46 | 0.56 | 0.5 | 0.45 | 0.43 |
| 6 | 0.7 | 0.56 | 0.47 | 0.41 | 0.68 | 0.55 | 0.47 | 0.39 | 0.54 | 0.46 | 0.4 | 0.52 | 0.45 | 0.4 | 0.5 | 0.44 | 0.4 | 0.38 |
| 7 | 0.65 | 0.51 | 0.42 | 0.36 | 0.63 | 0.5 | 0.42 | 0.35 | 0.49 | 0.41 | 0.36 | 0.47 | 0.4 | 0.35 | 0.46 | 0.4 | 0.35 | 0.33 |
| 8 | 0.6 | 0.47 | 0.38 | 0.32 | 0.59 | 0.46 | 0.38 | 0.31 | 0.45 | 0.37 | 0.32 | 0.43 | 0.37 | 0.32 | 0.42 | 0.36 | 0.31 | 0.3 |
| 9 | 0.56 | 0.43 | 0.35 | 0.29 | 0.55 | 0.42 | 0.34 | 0.28 | 0.41 | 0.34 | 0.29 | 0.4 | 0.33 | 0.29 | 0.39 | 0.33 | 0.28 | 0.27 |
| 10 | 0.53 | 0.39 | 0.32 | 0.26 | 0.51 | 0.39 | 0.31 | 0.26 | 0.38 | 0.31 | 0.26 | 0.37 | 0.3 | 0.26 | 0.36 | 0.3 | 0.26 | 0.24 |

Table 4. Utilisation Factor Table

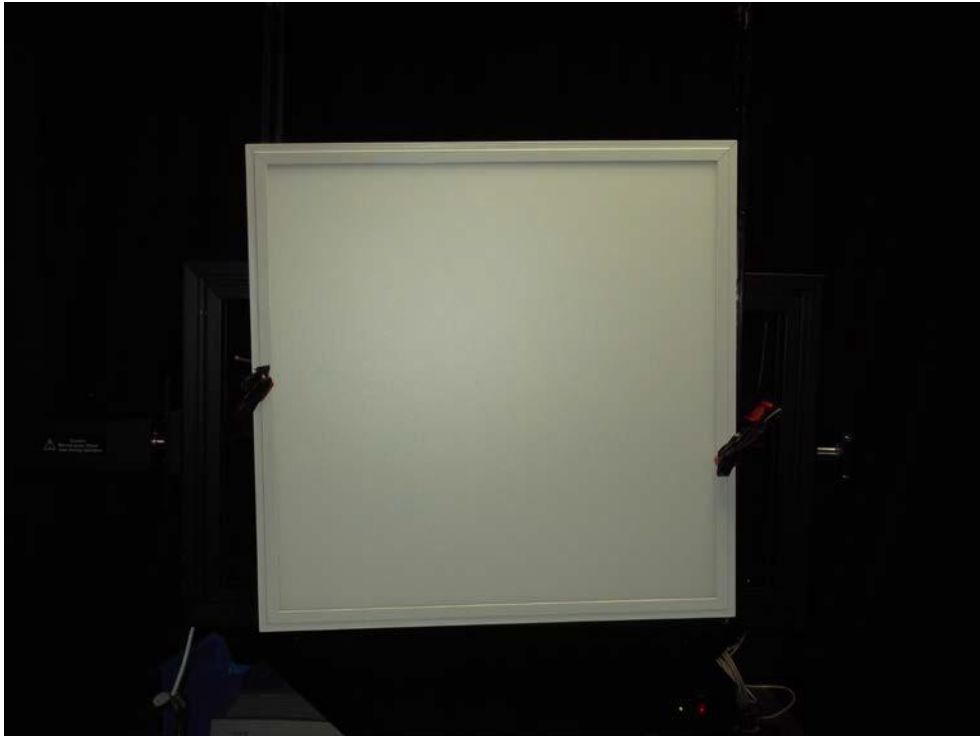


Photo 1: Luminaire on goniometer mount

Checked by:

Signature:

GK John

Print Name:

G John

Date: 26-1-2016

Technical Director

Duly authorised to sign on behalf of:

Photometric and Optical Testing Services LLP