

| Model Number<br>Smart Part Number                                   | USLR-S20F-NNSN<br>S5NN-SNNN-NNSL-NS00-0000 | USLR-S12F-NNSN<br>S3NN-SNNN-NNSL-NS00-0000 | USLR-S08F-NNSN<br>S1NN-SNNN-NNSL-NS00-0000 |
|---|--|--|--|
| <b>OPTICAL PERFORMANCE SPECIFICATIONS</b>                           |  |  |  |
| Spatial Luminance Uniformity over Exit Port (f/4) - All Lamps On    | +/-1%                                      | +/-1%                                      | +/-1%                                      |
| Angular Uniform FOV (Full Angle) - Degrees / F# / NA - All Lamps On | +/-2.0% - 35° / 0.85 / 0.6                 | +/-2.0% - 35° / 0.85 / 0.6                 | +/-2.0% - 35° / 0.85 / 0.6                 |
| All (4) Lamps - Expected Maximum Luminance Output: cd/m2            | 21,300                                     | 28,700                                     | 34,000                                     |
| All (4) Lamps - Expected Maximum Illuminance at Port: lux           | 66,800                                     | 90,000                                     | 106,000                                    |
| Lamp #1 - Expected Maximum Luminance Output: cd/m2                  | 10   | 20   | 25   |
| Lamp #1 - Expected Maximum Illuminance at Port: lux                 | 280  | 75   | 75   |
| Lamp #2 - Expected Maximum Luminance Output: cd/m2                  | 900  | 1,200                                      | 5,500                                      |
| Lamp #2 - Expected Maximum Illuminance at Port: lux                 | 2,800                                      | 3,750                                      | 17,250                                     |
| Lamp #3 - Expected Maximum Luminance Output: cd/m2                  | 6,700                                      | 8,700                                      | 28,300                                     |
| Lamp #3 - Expected Maximum Illuminance at Port: lux                 | 21,000                                     | 27,300                                     | 88,500                                     |
| Lamp #4 - Expected Maximum Luminance Output: cd/m2                  | 13,500                                     | 18,600                                     | None                                       |
| Lamp #4 - Expected Maximum Illuminance at Port: lux                 | 42,000                                     | 58,400                                     | None                                       |
| Number of System Levels via Lamp Combinations                       | 14   | 14   | 7  |
| Peak Radiance: W/m2-sr-um @ 0.95 um                                 | 330  | 460  | 700  |
| Peak Irradiance @ Port: Photons/s-m2-um @ 0.95um                    | 1.41E+21                                   | 1.97E+21                                   | 3.00E+21                                   |
| Dynamic Range/Bits/dB   | 4.2E+03/12/72                              | 2.92E+03/11/69                             | 3.54E+03/11/70                             |
| Approximate Correlated Color Temperature (QTH)                      | 3000K +/-50K                               | 3000K +/-50K                               | 3000K +/-50K                               |
| Typical Lamp Lifetimes (hrs)  | >500                                       | >500                                       | >500                                       |
| Est. Lamp Degradation Over Lifetime (% & CCT Shift)                 | -10% & +/-200K                             | -10% & +/-200K                             | -10% & +/-200K                             |
| Est. Output Degradation over 50hrs (% & CCT Shift)                  | -1.0% & +/-20K                             | -1.0% & +/-20K                             | -1.0% & +/-20K                             |
| <b>INTEGRATING SPHERE</b>   |  |  |  |
| Coating / Material  | Spectrafect                                | Spectrafect                                | Spectrafect                                |
| Sphere Internal Diameter: Inches (Meters)                           | 20 (0.5)                                   | 12 (0.3)                                   | 8 (0.2)                                    |
| Frame Type  | 20 in Cage                                 | 12 in Cage                                 | 8 in Cage                                  |
| Output Port Size: Inches (Meters)                                   | 8 (0.2)                                    | 4 (0.1)                                    | 2 (0.05)                                   |
| <b>SYSTEM COMPONENTS</b>  |  |  |  |
| QTH Lamps Internal (# , Wattage)                                    | (1) 5, (1) 10, (1) 75, (1) 150             | (1) 5, (1) 10, (1) 35, (1) 75              | (1) 5, (1) 10, (1) 50                      |
| QTH Lamps External (#, Wattage)                                     | None                                       | None                                       | None                                       |
| Power Supplies (# - Wattages)                                       | (4) - LPS-400                              | (4) - LPS-400                              | (3) - LPS-400                              |
| Variable Attenuator   | None                                       | None                                       | None                                       |
| Monitor Detector(s)   | SD-S1                                      | SD-S1                                      | SD-S1                                      |
| Detector Filters (in Filter Holder)                                 | Photopic                                   | Photopic                                   | Photopic                                   |
| System Software   | HELIOsense                                 | HELIOsense                                 | HELIOsense                                 |
| Cube Computer   | Optional                                   | Optional                                   | Optional                                   |
| <b>STANDARD SYSTEM CALIBRATIONS (NIST Traceable)</b>                |  |  |  |
| Luminance   | Yes  | Yes  | Yes  |
| Correlated Color Temp (All lamps matched & w/VA position)           | Yes  | Yes  | Yes  |
| Spectral Radiance (350-2400nm)                                      | Yes  | Yes  | Yes  |
| Exit Port Spatial Uniformity  | Yes  | Yes  | Yes  |
| Exit Port Angular Uniformity  | Yes  | Yes  | Yes  |
| Operational Duration of Calibration                                 | 50 hrs                                     | 50 hrs                                     | 50 hrs                                     |

| Model Number   | USLR-S08F-NN3N             | USLR-S08F-NN7N             |
|--|----------------------------|----------------------------|
| Smart Part Number  | S1NN-3NNN-NNSL-NS00-0000   | S1NN-7NNN-NNSL-NS00-0000   |
| <b>OPTICAL PERFORMANCE SPECIFICATIONS</b>                        |                            |                            |
| Spatial Luminance Uniformity over Exit Port (f/4) - All Lamps    | +/-1%                      | +/-1%                      |
| Angular Uniform FOV (Full Angle) - Degrees / F# / NA - All Lamps | +/-2.0% - 35° / 0.85 / 0.6 | +/-2.0% - 35° / 0.85 / 0.6 |
| Expected Maximum Luminance Output: cd/m2                         | 31,000                     | 56,000                     |
| Expected Maximum Illuminance at Port: lux                        | 97,000                     | 175,000                    |
| Peak Radiance: W/m2-sr-um @ 0.95 um                              | 246                        | 445                        |
| Peak Irradiance @ Port: Photons/s-m2-um @ 0.95um                 | 1.05E+21                   | 1.89E+21                   |
| Minimum Resolution: lux  | Fixed Level                | Fixed Level                |
| Number of Steps in System Range                                  | One                        | One                        |
| Dynamic Range/Bits/dB  | n/a                        | n/a                        |
| Approximate Correlated Color Temperature (QTH)                   | 3000K +/-50K               | 3000K +/-50K               |
| Typical Lamp Lifetimes (hrs)                                     | >500                       | >500                       |
| Est. Lamp Degradation Over Lifetime (% & CCT Shift)              | -10% & +/-200K             | -10% & +/-200K             |
| Est. Output Degradation over 100hrs (% & CCT Shift)              | -1.0% & +/-20K             | -1.0% & +/-20K             |
| <b>INTEGRATING SPHERE</b>  |                            |                            |
| Coating / Material   | Spectrafect                | Spectrafect                |
| Sphere Internal Diameter: Inches (Meters)                        | 8 (0.2)                    | 8 (0.2)                    |
| Frame Type   | 8 in Cage                  | 8 in Cage                  |
| Output Port Size: Inches (Meters)                                | 2 (0.05)                   | 2 (0.05)                   |
| <b>SYSTEM COMPONENTS</b>   |                            |                            |
| QTH Lamps Internal (# , Wattage)                                 | (1) 35                     | (1) 75                     |
| QTH Lamps External (#, Wattage)                                  | None                       | None                       |
| Power Supplies (# - Model)                                       | (1) - LPS-400              | (1) - LPS-400              |
| Variable Attenuator  | None                       | None                       |
| Monitor Detector(s)  | SD-S1                      | SD-S1                      |
| Detector Filters (in Filter Holder)                              | Photopic                   | Photopic                   |
| System Software  | HELIOsense                 | HELIOsense                 |
| Cube Computer  | Optional                   | Optional                   |
| <b>STANDARD SYSTEM CALIBRATIONS (NIST Traceable)</b>             |                            |                            |
| Luminance  | Yes                        | Yes                        |
| Correlated Color Temp (All lamps matched & w/VA position)        | Yes                        | Yes                        |
| Spectral Radiance (350-2400nm)                                   | Yes                        | Yes                        |
| Exit Port Spatial Uniformity                                     | Yes                        | Yes                        |
| Exit Port Angular Uniformity                                     | Yes                        | Yes                        |
| Operational Duration of Calibration                              | 50 hrs                     | 50 hrs                     |