|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i NRC (Step 2)**  **Measurement Results - Final** | | | | | | | | |
| **BK7, 3.1 mm (Filter Identifier: --A)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Spectral Transmittance(a) | 0.91264 | 0.91432 | 0.91663 | 0.91820 | 0.91938 | 0.92016 | 0.92053 | 0.92087 |
| Number of Measurements | 4 | 5 | 5 | 6 | 5 | 5 | 4 | 4 |
| Temperature | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Type A Uncertainty(b) | 1.18E-04 | 1.08E-04 | 1.08E-04 | 8.49E-05 | 7.55E-05 | 8.62E-05 | 9.58E-05 | 1.15E-04 |
| Type B Uncertainty(c) | 9.37E-05 | 8.41E-05 | 6.93E-05 | 7.55E-05 | 7.66E-05 | 7.68E-05 | 5.66E-05 | 7.44E-05 |
| Total Uncertainty(d) | 1.51E-04 | 1.37E-04 | 1.28E-04 | 1.14E-04 | 1.08E-04 | 1.15E-04 | 1.11E-04 | 1.37E-04 |
| Eff. Degrees of Freedom | 18 | 18 | 14 | 22 | 29 | 23 | 13 | 14 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Uncertainty Results**  All uncertainties are reported as absolute uncertainties. | | | | | | | | |
| **BK7, 3.1 mm (Filter Identifier: --A)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nonlinearity | 1.20E-05 | 1.18E-05 | 1.15E-05 | 1.13E-05 | 1.11E-05 | 1.10E-05 | 1.10E-05 | 1.09E-05 |
| Temperature | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wavelength | 1.49E-06 | 5.80E-07 | 2.48E-06 | 4.93E-07 | 5.47E-07 | 6.97E-07 | 2.59E-07 | 9.00E-07 |
| Stray Light | 7.97E-06 | 7.83E-06 | 7.64E-06 | 7.51E-06 | 7.41E-06 | 7.35E-06 | 7.32E-06 | 7.29E-06 |
| Beam Size & Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inter-reflection | 9.20E-05 | 8.23E-05 | 6.72E-05 | 7.36E-05 | 7.47E-05 | 7.50E-05 | 5.42E-05 | 7.25E-05 |
| Obliquity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polarization | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 |
| Source Drift & Fluctuation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bandwidth | 8.17E-08 | 7.23E-08 | 8.08E-10 | 1.81E-09 | 4.14E-09 | 1.37E-08 | 9.28E-09 | 1.47E-08 |
| Other(b) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Type B Uncertainty | 9.37E-05 | 8.41E-05 | 6.93E-05 | 7.55E-05 | 7.66E-05 | 7.68E-05 | 5.66E-05 | 7.44E-05 |
| Degrees of Freedom |  |  |  |  |  |  |  |  |

**Signature:** \_\_\_\_\_Joanne Zwinkels\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date**:\_\_\_\_\_\_\_August 13, 2014\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Measurement Results for NRC (Step 2) Final** | | | | | | | | |
| **NG 11, 2.5 mm (Filter Identifier: --B)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Spectral Transmittance(a) | 0.40964 | 0.60978 | 0.62310 | 0.61097 | 0.63846 | 0.57810 | 0.50310 | 0.45463 |
| Number of Measurements | 4 | 4 | 4 | 5 | 6 | 5 | 4 | 4 |
| Temperature | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Type A Uncertainty(b) | 1.34E-04 | 1.15E-04 | 8.30E-05 | 5.67E-05 | 6.94E-05 | 6.04E-05 | 6.24E-05 | 5.75E-05 |
| Type B Uncertainty(c) | 1.71E-04 | 5.88E-05 | 5.77E-05 | 6.20E-05 | 6.19E-05 | 6.62E-05 | 6.07E-05 | 5.45E-05 |
| Total Uncertainty(d) | 2.17E-04 | 1.29E-04 | 1.01E-04 | 8.41E-05 | 9.29E-05 | 8.96E-05 | 8.70E-05 | 7.92E-05 |
| Eff. Degrees of Freedom | 48 | 11 | 15 | 34 | 23 | 34 | 27 | 25 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Uncertainty Results**  All uncertainties are reported as absolute uncertainties. | | | | | | | | |
| **NG 11, 2.5 mm (Filter Identifier: --B)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nonlinearity | 3.63E-05 | 3.57E-05 | 3.52E-05 | 3.57E-05 | 3.46E-05 | 3.66E-05 | 3.75E-05 | 3.72E-05 |
| Temperature | 3.33E-06 | 2.11E-06 | 2.13E-06 | 2.65E-06 | 1.60E-06 | 1.69E-06 | 2.89E-06 | 3.19E-06 |
| Wavelength | 1.17E-04 | 6.87E-06 | 1.42E-05 | 3.82E-06 | 1.13E-05 | 4.78E-05 | 3.86E-05 | 2.24E-05 |
| Stray Light | 2.42E-05 | 2.38E-05 | 2.35E-05 | 2.38E-05 | 2.31E-05 | 2.44E-05 | 2.50E-05 | 2.48E-05 |
| Beam Size & Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inter-reflection | 8.69E-06 | 3.27E-05 | 3.51E-05 | 4.35E-05 | 4.31E-05 | 7.71E-06 | 6.87E-06 | 1.88E-05 |
| Obliquity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polarization | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 | 1.00E-05 |
| Source Drift & Fluctuation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bandwidth | 1.16E-04 | 1.99E-05 | 5.93E-07 | 1.04E-07 | 1.59E-06 | 1.04E-07 | 1.14E-07 | 2.19E-06 |
| Other(b) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Type B Uncertainty | 1.71E-04 | 5.88E-05 | 5.77E-05 | 6.20E-05 | 6.19E-05 | 6.62E-05 | 6.07E-05 | 5.45E-05 |
| Degrees of Freedom |  |  |  |  |  |  |  |  |

**Signature:** \_\_\_\_Joanne Zwinkels\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date**:\_\_\_August 13, 2014\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Measurement Results for NRC (Step 2) Final** | | | | | | | | |
| **NG 5, 3.9 mm (Filter Identifier: --C)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Spectral Transmittance(a) | 0.02165 | 0.09641 | 0.09290 | 0.07785 | 0.16254 | 0.15130 | 0.10374 | 0.07726 |
| Number of Measurements | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 |
| Temperature | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Type A Uncertainty(b) | 4.84E-05 | 3.75E-05 | 1.35E-05 | 8.37E-06 | 1.64E-05 | 2.03E-05 | 1.08E-05 | 6.76E-06 |
| Type B Uncertainty(c) | 8.32E-05 | 7.72E-05 | 5.96E-05 | 2.11E-05 | 8.48E-05 | 4.22E-05 | 2.89E-05 | 1.69E-05 |
| Total Uncertainty(d) | 9.62E-05 | 8.58E-05 | 6.11E-05 | 2.27E-05 | 8.63E-05 | 4.69E-05 | 3.09E-05 | 1.82E-05 |
| Eff. Degrees of Freedom | 110 | 192 | 2903 | 378 | 5422 | 200 | 463 | 368 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Uncertainty Results**  All uncertainties are reported as absolute uncertainties. | | | | | | | | |
| **NG 5, 3.9 mm (Filter Identifier: --C)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nonlinearity | 3.18E-06 | 1.31E-05 | 1.26E-05 | 1.08E-05 | 2.04E-05 | 1.93E-05 | 1.39E-05 | 1.07E-05 |
| Temperature | 7.74E-07 | 1.71E-06 | 1.85E-06 | 1.90E-06 | 1.84E-06 | 1.74E-06 | 2.18E-06 | 1.85E-06 |
| Wavelength | 2.30E-05 | 1.06E-05 | 4.08E-05 | 1.08E-05 | 7.57E-05 | 3.07E-05 | 2.27E-05 | 9.41E-06 |
| Stray Light | 2.12E-06 | 8.71E-06 | 8.43E-06 | 7.18E-06 | 1.36E-05 | 1.28E-05 | 9.30E-06 | 7.13E-06 |
| Beam Size & Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inter-reflection | 7.98E-05 | 7.48E-05 | 4.07E-05 | 1.24E-05 | 2.89E-05 | 1.71E-05 | 5.39E-06 | 3.58E-06 |
| Obliquity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polarization | 2.00E-06 | 2.00E-06 | 2.00E-06 | 2.00E-06 | 3.00E-06 | 3.00E-06 | 3.00E-06 | 4.00E-06 |
| Source Drift & Fluctuation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bandwidth | 2.63E-05 | 1.10E-05 | 7.42E-07 | 3.49E-07 | 2.64E-06 | 4.83E-08 | 4.28E-08 | 1.46E-07 |
| Other(b) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Type B Uncertainty | 8.32E-05 | 7.72E-05 | 5.96E-05 | 2.11E-05 | 8.48E-05 | 4.22E-05 | 2.89E-05 | 1.69E-05 |
| Degrees of Freedom |  |  |  |  |  |  |  |  |

**Signature:** \_\_Joanne Zwinkels\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date**:\_\_\_\_August 13, 2014\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Measurement Results for NRC (Step 2) Final** | | | | | | | | |
| **NG 4, 3.9 mm (Filter Identifier: --D)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Spectral Transmittance(a) | 0.0003524 | 0.005146 | 0.008373 | 0.008282 | 0.02636 | 0.03209 | 0.02244 | 0.01660 |
| Number of Measurements | 5 | 4 | 5 | 5 | 6 | 6 | 6 | 6 |
| Temperature | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Type A Uncertainty(b) | 8.56E-07 | 1.93E-06 | 1.41E-06 | 1.26E-06 | 3.68E-06 | 6.03E-06 | 3.87E-06 | 2.44E-06 |
| Type B Uncertainty(c) | 1.35E-06 | 8.49E-06 | 6.20E-06 | 5.07E-06 | 1.90E-05 | 7.21E-06 | 6.61E-06 | 3.89E-06 |
| Total Uncertainty(d) | 1.60E-06 | 8.71E-06 | 6.36E-06 | 5.22E-06 | 1.93E-05 | 9.39E-06 | 7.66E-06 | 4.59E-06 |
| Eff. Degrees of Freedom | 85 | 2879 | 2892 | 2053 | 5361 | 41 | 107 | 88 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Uncertainty Results**  All uncertainties are reported as absolute uncertainties. | | | | | | | | |
| **NG 4, 3.9 mm (Filter Identifier: --D)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nonlinearity | 1.13E-09 | 7.68E-07 | 1.25E-06 | 1.23E-06 | 3.85E-06 | 4.66E-06 | 3.29E-06 | 2.45E-06 |
| Temperature | 2.94E-08 | 3.55E-07 | 5.05E-07 | 5.46E-07 | 9.98E-07 | 1.05E-06 | 1.25E-06 | 1.02E-06 |
| Wavelength | 7.24E-07 | 1.57E-06 | 2.70E-06 | 2.44E-06 | 1.74E-05 | 4.39E-06 | 4.14E-06 | 5.61E-07 |
| Stray Light | 7.50E-10 | 5.12E-07 | 8.30E-07 | 8.21E-07 | 2.57E-06 | 3.11E-06 | 2.19E-06 | 1.63E-06 |
| Beam Size & Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inter-reflection | 7.51E-07 | 8.24E-06 | 5.36E-06 | 4.15E-06 | 5.89E-06 | 4.59E-07 | 3.07E-06 | 2.26E-06 |
| Obliquity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polarization | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Source Drift & Fluctuation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bandwidth | 8.57E-07 | 8.85E-07 | 7.27E-08 | 5.18E-08 | 3.64E-07 | 3.43E-08 | 2.87E-08 | 4.61E-08 |
| Other(b) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Type B Uncertainty | 1.35E-06 | 8.49E-06 | 6.20E-06 | 5.07E-06 | 1.90E-05 | 7.21E-06 | 6.61E-06 | 3.89E-06 |
| Degrees of Freedom |  |  |  |  |  |  |  |  |

**Signature:** \_\_\_\_\_Joanne Zwinkels\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date**:\_\_\_\_\_August 13, 2014\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Measurement Results for NRC (Step 2) Final** | | | | | | | | |
| **NG 3, 3.1 mm (Filter Identifier: --E)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Spectral Transmittance(a) | 0.00001240 | 0.0003348 | 0.0009304 | 0.0009949 | 0.005018 | 0.009640 | 0.008419 | 0.007111 |
| Number of Measurements | 4 | 4 | 4 | 4 | 6 | 6 | 4 | 4 |
| Temperature | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Type A Uncertainty(b) | 1.23E-07 | 3.76E-07 | 4.80E-07 | 3.07E-07 | 1.29E-06 | 2.26E-06 | 4.71E-06 | 2.86E-06 |
| Type B Uncertainty(c) | 2.91E-08 | 1.82E-07 | 3.81E-07 | 4.81E-07 | 5.05E-06 | 4.53E-06 | 3.23E-06 | 2.15E-06 |
| Total Uncertainty(d) | 1.27E-07 | 4.17E-07 | 6.13E-07 | 5.71E-07 | 5.21E-06 | 5.07E-06 | 5.71E-06 | 3.57E-06 |
| Eff. Degrees of Freedom | 8 | 11 | 19 | 83 | 1873 | 177 | 15 | 17 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table A-2i Uncertainty Results**  All uncertainties are reported as absolute uncertainties. | | | | | | | | |
| **NG 3, 3.1 mm (Filter Identifier: --E)** | | | | | | | | |
| Wavelength  (nm) | 380 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nonlinearity | 6.32E-13 | 2.42E-10 | 1.04E-09 | 1.09E-09 | 1.61E-08 | 3.25E-08 | 1.25E-06 | 1.06E-06 |
| Temperature | 1.07E-09 | 3.98E-08 | 1.58E-07 | 1.69E-07 | 4.19E-07 | 5.19E-07 | 5.89E-07 | 4.96E-07 |
| Wavelength | 2.73E-08 | 1.72E-07 | 3.46E-07 | 4.50E-07 | 4.69E-06 | 5.52E-07 | 9.18E-07 | 5.92E-07 |
| Stray Light | 4.21E-13 | 1.61E-10 | 6.92E-10 | 7.25E-10 | 1.07E-08 | 2.16E-08 | 8.35E-07 | 7.06E-07 |
| Beam Size & Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inter-reflection | 0 | 0 | 0 | 0 | 1.83E-06 | 4.47E-06 | 2.64E-06 | 1.55E-06 |
| Obliquity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polarization | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Source Drift & Fluctuation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bandwidth | 1.00E-08 | 4.45E-08 | 8.48E-09 | 1.05E-08 | 4.31E-08 | 1.95E-08 | 9.10E-09 | 7.17E-08 |
| Other(b) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Type B Uncertainty | 2.91E-08 | 1.82E-07 | 3.81E-07 | 4.81E-07 | 5.05E-06 | 4.53E-06 | 3.23E-06 | 2.15E-06 |
| Degrees of Freedom |  |  |  |  |  |  |  |  |

**Signature:** \_\_\_\_\_\_\_Joanne Zwinkels\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date**:\_\_\_\_August 13, 2014\_\_\_\_\_\_\_\_\_