

Appendix E: Uncertainty Budgets for All Laboratories

Table E1a. Uncertainty budget for CENAM, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.20E-03	1.21E-03	1.21E-03	1.21E-03	1.22E-03	1.22E-03	-	-
Temperature	nc	nc	nc	nc	nc	nc	-	-
Wavelength	6.10E-06	7.40E-06	4.90E-06	5.50E-06	4.60E-06	2.04E-05	-	-
Stray Light	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	-	-
Beam Size & Position	nc	nc	nc	nc	nc	nc	-	-
Inter-reflection	nc	nc	nc	nc	nc	nc	-	-
Obliquity	nc	nc	nc	nc	nc	nc	-	-
Polarization	nc	nc	nc	nc	nc	nc	-	-
Source Drift & Fluctuation	1.12E-03	1.13E-03	1.13E-03	1.14E-03	1.14E-03	1.14E-03	-	-
Bandwidth	nc	nc	nc	nc	nc	nc	-	-
Instrument Resolution	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	-	-
Total Type B Uncertainty	1.65E-03	1.65E-03	1.66E-03	1.66E-03	1.67E-03	1.67E-03	-	-
Degrees of Freedom	64	64	64	64	64	64	-	-
Type A Uncertainty	7.44E-04	7.81E-04	8.16E-04	8.45E-04	1.09E-03	1.15E-03	-	-
Total Uncertainty	1.81E-03	1.83E-03	1.85E-03	1.87E-03	1.99E-03	2.03E-03	-	-
Degrees of Freedom	74	74	73	73	63	60	-	-

Table E1b. Uncertainty budget for CENAM, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.89E-04	7.54E-04	7.73E-04	7.57E-04	7.96E-04	7.12E-04	-	-
Temperature	nc	nc	nc	nc	nc	nc	-	-
Wavelength	6.56E-04	3.70E-05	8.80E-06	4.00E-06	1.16E-05	5.29E-05	-	-
Stray Light	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	-	-
Beam Size & Position	nc	nc	nc	nc	nc	nc	-	-
Inter-reflection	nc	nc	nc	nc	nc	nc	-	-
Obliquity	nc	nc	nc	nc	nc	nc	-	-
Polarization	nc	nc	nc	nc	nc	nc	-	-
Source Drift & Fluctuation	5.13E-04	6.73E-04	6.86E-04	6.75E-04	7.02E-04	6.45E-04	-	-
Bandwidth	nc	nc	nc	nc	nc	nc	-	-
Instrument Resolution	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	-	-
Total Type B Uncertainty	9.66E-04	1.01E-03	1.03E-03	1.01E-03	1.06E-03	9.62E-04	-	-
Degrees of Freedom	32	67	67	67	66	68	-	-
Type A Uncertainty	9.02E-05	1.54E-04	1.78E-04	1.60E-04	1.57E-04	1.75E-04	-	-
Total Uncertainty	9.70E-04	1.02E-03	1.05E-03	1.03E-03	1.07E-03	9.78E-04	-	-
Degrees of Freedom	32	69	70	70	68	72	-	-

Table E1c. Uncertainty budget for CENAM, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	3.48E-05	1.05E-04	1.01E-04	8.71E-05	1.69E-04	1.58E-04	-	-
Temperature	nc	nc	nc	nc	nc	nc	-	-
Wavelength	1.26E-04	5.20E-05	1.81E-05	1.01E-05	7.37E-05	3.12E-05	-	-
Stray Light	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	-	-
Beam Size & Position	nc	nc	nc	nc	nc	nc	-	-
Inter-reflection	nc	nc	nc	nc	nc	nc	-	-
Obliquity	nc	nc	nc	nc	nc	nc	-	-
Polarization	nc	nc	nc	nc	nc	nc	-	-
Source Drift & Fluctuation	7.48E-05	1.98E-04	1.93E-04	1.70E-04	2.88E-04	2.73E-04	-	-
Bandwidth	nc	nc	nc	nc	nc	nc	-	-
Instrument Resolution	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	-	-
Total Type B Uncertainty	1.53E-04	2.32E-04	2.21E-04	1.94E-04	3.43E-04	3.18E-04	-	-
Degrees of Freedom	17	66	61	61	69	64	-	-
Type A Uncertainty	9.90E-06	2.33E-05	2.09E-05	2.34E-05	2.69E-05	4.60E-05	-	-
Total Uncertainty	1.53E-04	2.33E-04	2.22E-04	1.95E-04	3.44E-04	3.22E-04	-	-
Degrees of Freedom	17	67	62	62	69	66	-	-

Table E1d. Uncertainty budget for CENAM, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.75E-05	2.25E-05	2.58E-05	2.57E-05	4.46E-05	5.06E-05	-	-
Temperature	nc	nc	nc	nc	nc	nc	-	-
Wavelength	3.30E-06	7.90E-06	1.40E-06	2.10E-06	1.64E-05	5.10E-06	-	-
Stray Light	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	-	-
Beam Size & Position	nc	nc	nc	nc	nc	nc	-	-
Inter-reflection	nc	nc	nc	nc	nc	nc	-	-
Obliquity	nc	nc	nc	nc	nc	nc	-	-
Polarization	nc	nc	nc	nc	nc	nc	-	-
Source Drift & Fluctuation	3.41E-05	4.31E-05	4.93E-05	4.91E-05	8.25E-05	9.26E-05	-	-
Bandwidth	nc	nc	nc	nc	nc	nc	-	-
Instrument Resolution	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	-	-
Total Type B Uncertainty	4.82E-05	5.72E-05	6.27E-05	6.26E-05	9.95E-05	1.10E-04	-	-
Degrees of Freedom	98	98	90	90	76	70	-	-
Type A Uncertainty	2.20E-06	5.20E-06	4.90E-06	4.80E-06	1.28E-05	2.47E-05	-	-
Total Uncertainty	4.83E-05	5.75E-05	6.30E-05	6.29E-05	1.00E-04	1.12E-04	-	-
Degrees of Freedom	99	100	91	91	78	76	-	-

Table E1e. Uncertainty budget for CENAM, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.72E-05	1.75E-05	1.81E-05	1.82E-05	2.24E-05	2.72E-05	-	-
Temperature	nc	nc	nc	nc	nc	nc	-	-
Wavelength	1.00E-07	7.00E-07	4.00E-07	4.00E-07	4.80E-06	4.00E-07	-	-
Stray Light	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	2.89E-05	-	-
Beam Size & Position	nc	nc	nc	nc	nc	nc	-	-
Inter-reflection	nc	nc	nc	nc	nc	nc	-	-
Obliquity	nc	nc	nc	nc	nc	nc	-	-
Polarization	nc	nc	nc	nc	nc	nc	-	-
Source Drift & Fluctuation	3.34E-05	3.40E-05	3.52E-05	3.53E-05	4.30E-05	5.17E-05	-	-
Bandwidth	nc	nc	nc	nc	nc	nc	-	-
Instrument Resolution	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.90E-06	-	-
Total Type B Uncertainty	4.75E-05	4.80E-05	4.91E-05	4.92E-05	5.67E-05	6.52E-05	-	-
Degrees of Freedom	97	98	98	98	96	88	-	-
Type A Uncertainty	2.40E-06	3.20E-06	2.10E-06	2.30E-06	5.70E-06	6.40E-06	-	-
Total Uncertainty	4.75E-05	4.81E-05	4.91E-05	4.92E-05	5.70E-05	6.56E-05	-	-
Degrees of Freedom	98	99	99	99	99	91	-	-

Table E2a. Uncertainty budget for INM, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.83E-04	4.84E-04	4.85E-04	4.86E-04	4.86E-04	4.86E-04	-	-
Temperature	4.73E-06	1.58E-05	3.84E-06	2.84E-06	1.07E-07	6.11E-06	-	-
Wavelength	1.00E-04	1.82E-05	3.06E-05	2.40E-05	6.39E-05	6.50E-04	-	-
Stray Light	1.62E-06	1.60E-06	7.24E-06	1.15E-06	1.25E-06	1.02E-05	-	-
Beam Size & Position	1.42E-04	2.18E-04	1.78E-04	1.54E-04	2.03E-04	4.04E-04	-	-
Inter-reflection	2.20E-05	9.01E-05	5.73E-05	1.14E-04	1.68E-04	9.76E-05	-	-
Obliquity	8.47E-05	7.14E-05	9.62E-05	8.62E-05	9.92E-05	1.57E-04	-	-
Polarization	6.06E-05	7.24E-05	5.34E-05	8.63E-06	3.28E-05	1.33E-04	-	-
Source Drift & Fluctuation	4.22E-04	4.33E-04	2.88E-04	2.93E-04	2.92E-04	6.83E-04	-	-
Bandwidth	1.30E-04	3.67E-05	1.78E-05	4.32E-05	4.33E-05	1.94E-04	-	-
Resolution	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	-	-
Total Type B Uncertainty	6.85E-04	6.99E-04	6.06E-04	6.07E-04	6.38E-04	1.17E-03	-	-
Degrees of Freedom	26	32	57	103	115	59	-	-
Type A Uncertainty	3.37E-04	3.21E-04	2.29E-04	1.88E-04	1.93E-04	4.46E-04	-	-
Total Uncertainty	7.64E-04	7.70E-04	6.48E-04	6.36E-04	6.67E-04	1.26E-03	-	-
Degrees of Freedom	26	32	57	103	115	59	-	-

Table E2b. Uncertainty budget for INM, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	3.62E-04	3.61E-04	3.58E-04	3.61E-04	3.54E-04	3.69E-04	3.87E-04	-
Temperature	2.50E-05	1.40E-05	1.20E-05	1.40E-05	1.20E-05	1.40E-05	1.80E-05	-
Wavelength	1.71E-04	1.44E-05	5.79E-05	2.48E-05	1.75E-04	3.07E-04	1.95E-03	-
Stray Light	1.65E-06	1.31E-06	8.04E-06	1.13E-06	1.69E-06	1.22E-05	7.03E-06	-
Beam Size & Position	6.12E-05	2.08E-05	2.36E-05	5.87E-05	7.05E-05	7.12E-05	7.93E-04	-
Inter-reflection	2.53E-05	6.85E-05	3.19E-05	2.05E-05	8.69E-05	1.34E-04	2.53E-03	-
Obliquity	7.27E-05	1.46E-04	1.49E-04	1.59E-04	1.50E-04	1.44E-04	5.00E-04	-
Polarization	4.75E-05	1.39E-04	1.07E-04	1.04E-04	4.43E-05	5.21E-05	2.69E-04	-
Source Drift & Fluctuation	2.81E-04	2.97E-04	2.00E-04	2.25E-04	1.91E-04	4.38E-04	7.49E-03	-
Bandwidth	5.59E-05	9.57E-05	2.37E-05	2.77E-05	4.95E-05	2.81E-05	4.90E-04	-
Resolution	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	-
Total Type B Uncertainty	5.04E-04	5.23E-04	4.55E-04	4.72E-04	4.81E-04	6.86E-04	8.22E-03	-
Degrees of Freedom	36	62	61	62	116	47	11	-
Type A Uncertainty	2.23E-04	1.95E-04	1.69E-04	1.75E-04	1.47E-04	2.79E-04	5.32E-03	-
Total Uncertainty	5.51E-04	5.58E-04	4.86E-04	5.03E-04	5.03E-04	7.41E-04	9.79E-03	-
Degrees of Freedom	36	62	61	62	116	47	11	-

Table E2c. Uncertainty budget for INM, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.22E-04	2.42E-04	2.44E-04	2.53E-04	1.75E-04	1.91E-04	2.38E-04	-
Temperature	1.10E-04	7.20E-05	7.00E-05	7.90E-05	5.40E-05	5.50E-05	6.60E-05	-
Wavelength	4.02E-05	8.34E-06	1.28E-05	6.65E-07	4.41E-05	7.12E-05	8.89E-04	-
Stray Light	1.96E-06	1.61E-06	5.44E-06	1.48E-06	1.45E-06	1.25E-05	1.78E-05	-
Beam Size & Position	3.26E-05	7.03E-05	2.72E-05	1.43E-05	6.11E-05	5.28E-06	7.52E-04	-
Inter-reflection	2.83E-05	1.07E-04	1.62E-05	5.72E-06	2.23E-05	7.72E-05	5.43E-04	-
Obliquity	1.71E-05	5.94E-05	3.30E-05	2.74E-05	6.53E-05	7.45E-05	7.33E-05	-
Polarization	3.26E-05	1.04E-04	6.26E-05	4.84E-05	6.98E-05	4.40E-05	2.33E-04	-
Source Drift & Fluctuation	6.48E-05	1.15E-04	6.33E-05	6.63E-05	8.91E-05	2.08E-04	2.84E-03	-
Bandwidth	2.39E-05	8.59E-05	3.58E-05	5.20E-05	1.19E-05	3.80E-05	8.12E-04	-
Resolution	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	-
Total Type B Uncertainty	1.91E-04	3.39E-04	2.76E-04	2.84E-04	2.38E-04	3.21E-04	3.24E-03	-
Degrees of Freedom	64	266	224	234	163	40	16	-
Type A Uncertainty	5.02E-05	7.53E-05	5.14E-05	4.55E-05	6.37E-05	1.38E-04	1.85E-03	-
Total Uncertainty	1.98E-04	3.48E-04	2.80E-04	2.88E-04	2.47E-04	3.49E-04	3.73E-03	-
Degrees of Freedom	64	266	224	234	163	40	16	-

Table E2d. Uncertainty budget for INM, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	9.41E-06	9.41E-06	9.41E-06	1.50E-04	1.73E-04	-	-
Temperature	-	1.60E-04	1.40E-04	1.50E-04	1.10E-04	1.00E-04	-	-
Wavelength	-	8.87E-07	1.43E-06	7.89E-07	5.94E-06	2.60E-05	-	-
Stray Light	-	1.42E-06	6.12E-06	1.15E-06	7.33E-07	1.11E-05	-	-
Beam Size & Position	-	1.20E-05	5.87E-06	7.09E-06	1.59E-05	1.37E-05	-	-
Inter-reflection	-	7.14E-06	2.58E-06	4.34E-06	7.22E-06	2.17E-05	-	-
Obliquity	-	4.77E-06	3.84E-06	2.52E-06	8.64E-06	1.81E-05	-	-
Polarization	-	5.37E-06	8.11E-06	4.81E-06	1.13E-05	1.24E-05	-	-
Source Drift & Fluctuation	-	2.00E-05	1.45E-05	1.72E-05	3.07E-05	8.20E-05	-	-
Bandwidth	-	6.96E-06	1.39E-06	6.86E-06	9.34E-06	1.92E-05	-	-
Resolution	-	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	-	-
Total Type B Uncertainty	-	1.62E-04	1.42E-04	1.52E-04	1.90E-04	2.21E-04	-	-
Degrees of Freedom	-	10	10	10	70	114	-	-
Type A Uncertainty	-	1.31E-05	1.05E-05	1.32E-05	2.23E-05	5.24E-05	-	-
Total Uncertainty	-	1.63E-04	1.42E-04	1.52E-04	1.91E-04	2.27E-04	-	-
Degrees of Freedom	-	10	10	10	70	114	-	-

Table E2e. Uncertainty budget for INM, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	-	9.41E-06	9.41E-06	9.41E-06	9.41E-06	-	-
Temperature	-	-	2.10E-04	2.30E-04	1.60E-04	1.40E-04	-	-
Wavelength	-	-	3.55E-07	8.58E-08	2.50E-06	1.29E-05	-	-
Stray Light	-	-	5.95E-06	1.42E-06	3.49E-07	9.66E-06	-	-
Beam Size & Position	-	-	1.55E-06	1.28E-06	6.46E-06	9.35E-06	-	-
Inter-reflection	-	-	1.61E-06	1.01E-06	4.29E-06	8.19E-06	-	-
Obliquity	-	-	2.77E-07	3.04E-07	1.06E-06	3.79E-06	-	-
Polarization	-	-	9.89E-07	7.74E-07	2.72E-06	5.66E-06	-	-
Source Drift & Fluctuation	-	-	5.21E-06	5.74E-06	1.26E-05	4.29E-05	-	-
Bandwidth	-	-	2.17E-06	1.25E-06	5.87E-06	7.43E-06	-	-
Resolution	-	-	2.89E-07	2.89E-07	2.89E-07	2.89E-07	-	-
Total Type B Uncertainty	-	-	2.10E-04	2.30E-04	1.61E-04	1.48E-04	-	-
Degrees of Freedom	-	-	9	9	9	12	-	-
Type A Uncertainty	-	-	4.30E-06	4.32E-06	8.41E-06	3.04E-05	-	-
Total Uncertainty	-	-	2.10E-04	2.30E-04	1.61E-04	1.52E-04	-	-
Degrees of Freedom	-	-	9	9	9	12	-	-

Table E3a. Uncertainty budget for INMETRO, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	2.4E-05	2.4E-05	2.4E-05	2.4E-05	2.4E-05	2.4E-05	2.4E-05
Temperature	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wavelength	-	6.4E-06	6.0E-06	5.6E-06	5.5E-06	1.4E-05	2.8E-05	1.7E-05
Stray Light	-	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06
Beam Size & Position	-	2.4E-06	2.4E-06	2.4E-06	2.4E-06	2.4E-06	2.4E-06	2.4E-06
Inter-reflection	-	6.1E-06	8.9E-08	5.1E-08	5.1E-08	5.1E-08	5.3E-08	1.2E-07
Obliquity	-	7.8E-06	7.8E-06	7.8E-06	7.8E-06	7.9E-06	7.9E-06	7.9E-06
Polarization	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	-	1.7E-05	1.2E-05	1.1E-05	1.0E-05	9.1E-06	8.9E-06	1.5E-05
Bandwidth	-	3.5E-06	2.0E-06	2.4E-06	2.5E-06	1.1E-05	1.2E-05	1.5E-05
System Fluctuation	-	2.0E-05	1.2E-05	1.1E-05	1.0E-05	1.0E-05	1.3E-05	1.1E-05
Total Type B Uncertainty	-	3.8E-05	3.1E-05	3.1E-05	3.0E-05	3.4E-05	4.3E-05	3.9E-05
Degrees of Freedom	-	8.2E+03	1.7E+04	2.5E+04	2.9E+04	7.2E+04	1.9E+05	1.8E+04
Type A Uncertainty	-	1.3E-03	9.5E-04	9.2E-04	8.7E-04	8.4E-04	8.5E-04	9.5E-04
Total Uncertainty	-	1.3E-03	9.5E-04	9.2E-04	8.7E-04	8.4E-04	8.5E-04	9.5E-04
Degrees of Freedom	-	901	901	901	901	902	904	902

Table E3b. Uncertainty budget for INMETRO, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	1.8E-05	1.8E-05	1.8E-05	1.8E-05	1.7E-05	1.5E-05	1.3E-05
Temperature	-	6.7E-06	3.8E-06	6.8E-06	4.4E-06	3.6E-06	3.8E-06	4.5E-06
Wavelength	-	1.5E-05	1.0E-05	1.6E-06	4.6E-06	1.5E-05	1.4E-05	8.2E-06
Stray Light	-	3.9E-06	3.9E-06	3.9E-06	4.0E-06	3.7E-06	3.2E-06	2.9E-06
Beam Size & Position	-	1.8E-06	1.8E-06	1.8E-06	1.8E-06	1.7E-06	1.5E-06	1.3E-06
Inter-reflection	-	3.1E-06	1.5E-07	5.3E-08	1.5E-07	5.8E-08	1.3E-07	1.3E-07
Obliquity	-	5.8E-06	5.9E-06	5.8E-06	6.1E-06	5.5E-06	4.8E-06	4.3E-06
Polarization	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	-	1.5E-05	8.6E-06	9.0E-06	7.0E-06	6.5E-06	5.6E-06	4.9E-06
Bandwidth	-	3.0E-06	8.6E-07	1.5E-06	6.5E-07	1.1E-06	1.1E-06	8.2E-07
System Fluctuation	-	1.7E-05	8.6E-06	8.6E-06	8.5E-06	7.4E-06	6.0E-06	5.8E-06
Total Type B Uncertainty	-	3.4E-05	2.5E-05	2.4E-05	2.4E-05	2.5E-05	2.3E-05	1.9E-05
Degrees of Freedom	-	9.6E+03	2.8E+04	1.7E+04	4.5E+04	8.4E+04	9.9E+04	7.4E+04
Type A Uncertainty	-	5.5E-04	4.3E-04	4.1E-04	4.1E-04	3.2E-04	2.8E-04	2.8E-04
Total Uncertainty	-	5.6E-04	4.3E-04	4.1E-04	4.1E-04	3.3E-04	2.8E-04	2.8E-04
Degrees of Freedom	-	906	905	905	905	910	912	907

Table E3c. Uncertainty budget for INMETRO, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	2.0E-06	1.9E-06	1.6E-06	3.3E-06	3.1E-06	2.1E-06	1.6E-06
Temperature	-	3.5E-06	2.1E-06	3.1E-06	3.2E-06	2.4E-06	1.8E-06	1.7E-06
Wavelength	-	1.5E-05	1.1E-05	3.6E-06	2.2E-05	7.0E-06	5.9E-06	2.4E-06
Stray Light	-	4.4E-07	4.2E-07	3.5E-07	7.3E-07	6.8E-07	4.7E-07	3.5E-07
Beam Size & Position	-	2.0E-07	1.9E-07	1.6E-07	3.3E-07	3.1E-07	2.1E-07	1.6E-07
Inter-reflection	-	4.1E-06	8.3E-08	4.5E-08	5.2E-08	4.4E-08	4.9E-08	2.7E-07
Obliquity	-	6.6E-07	6.3E-07	5.3E-07	1.1E-06	1.0E-06	7.0E-07	5.2E-07
Polarization	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	-	2.1E-06	1.2E-06	7.1E-07	9.3E-07	1.2E-06	7.0E-07	5.5E-07
Bandwidth	-	3.3E-07	3.2E-07	2.4E-07	8.8E-07	2.1E-07	1.3E-07	8.2E-08
System Fluctuation	-	2.7E-06	1.2E-06	7.5E-07	1.2E-06	1.3E-06	8.2E-07	6.3E-07
Total Type B Uncertainty	-	1.7E-05	1.2E-05	5.2E-06	2.3E-05	8.3E-06	6.7E-06	3.5E-06
Degrees of Freedom	-	2.6E+04	3.6E+06	1.0E+06	1.3E+08	7.5E+05	2.9E+06	5.1E+05
Type A Uncertainty	-	7.2E-05	7.1E-05	5.9E-05	1.9E-04	1.1E-04	7.2E-05	5.8E-05
Total Uncertainty	-	7.4E-05	7.2E-05	5.9E-05	1.9E-04	1.1E-04	7.2E-05	5.8E-05
Degrees of Freedom	-	1.6E+03	1.5E+03	1.5E+03	1.5E+03	1.5E+03	1.5E+03	1.4E+03

Table E3d. Uncertainty budget for INMETRO, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	1.4E-07	1.7E-07	1.6E-07	5.1E-07	6.2E-07	4.3E-07	3.2E-07
Temperature	-	5.6E-07	3.7E-07	6.2E-07	1.0E-06	9.6E-07	7.0E-07	2.4E-07
Wavelength	-	1.2E-06	6.9E-07	7.5E-07	4.7E-06	1.0E-06	1.3E-06	4.1E-07
Stray Light	-	3.0E-08	3.6E-08	3.5E-08	1.1E-07	1.4E-07	9.5E-08	7.1E-08
Beam Size & Position	-	1.4E-08	1.7E-08	1.6E-08	5.1E-08	6.2E-08	4.3E-08	3.2E-08
Inter-reflection	-	5.4E-06	7.0E-08	4.2E-08	5.0E-08	4.8E-08	4.9E-08	9.1E-08
Obliquity	-	4.6E-08	5.5E-08	5.3E-08	1.7E-07	2.0E-07	1.4E-07	1.1E-07
Polarization	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	-	1.8E-07	1.6E-07	1.2E-07	1.8E-07	4.9E-07	2.6E-07	2.2E-07
Bandwidth	-	2.4E-07	4.2E-08	2.8E-08	1.5E-07	8.0E-08	4.9E-08	5.1E-08
System Fluctuation	-	1.1E-06	2.0E-07	1.4E-07	3.2E-07	4.1E-07	2.8E-07	2.4E-07
Total Type B Uncertainty	-	5.7E-06	8.5E-07	1.0E-06	4.8E-06	1.7E-06	1.6E-06	6.8E-07
Degrees of Freedom	-	109	2.6E+05	1.8E+06	1.9E+08	5.0E+04	4.4E+05	3.0E+04
Type A Uncertainty	-	7.7E-05	1.4E-05	1.2E-05	1.2E-05	8.6E-06	7.2E-06	9.2E-06
Total Uncertainty	-	7.7E-05	1.4E-05	1.2E-05	1.3E-05	8.8E-06	7.4E-06	9.2E-06
Degrees of Freedom	-	1.6E+03	1.6E+03	1.6E+03	2.2E+03	1.7E+03	1.8E+03	1.6E+03

Table E3e. Uncertainty budget for INMETRO, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	-	-	2.0E-08	1.8E-08	8.8E-08	1.7E-07	1.5E-07	1.3E-07
Temperature	-	-	7.0E-08	1.1E-07	2.7E-07	3.6E-07	2.9E-07	1.4E-06
Wavelength	-	-	1.7E-07	1.1E-07	1.1E-06	1.1E-07	3.2E-07	2.6E-07
Stray Light	-	-	4.3E-09	4.0E-09	1.9E-08	3.7E-08	3.2E-08	2.8E-08
Beam Size & Position	-	-	2.0E-09	1.8E-09	8.8E-09	1.7E-08	1.5E-08	1.3E-08
Inter-reflection	-	-	8.4E-08	3.8E-08	9.1E-08	1.2E-07	7.3E-08	1.5E-07
Obliquity	-	-	6.5E-09	6.1E-09	2.9E-08	5.6E-08	4.9E-08	4.2E-08
Polarization	-	-	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	-	-	1.4E-08	9.3E-09	5.1E-08	6.7E-08	7.3E-08	5.7E-08
Bandwidth	-	-	6.7E-08	3.6E-08	2.7E-08	2.3E-08	2.0E-08	5.6E-08
System Fluctuation	-	-	9.0E-08	4.0E-08	6.5E-08	9.2E-08	1.0E-07	2.0E-07
Total Type B Uncertainty	-	-	2.3E-07	1.7E-07	1.2E-06	4.5E-07	4.8E-07	1.5E-06
Degrees of Freedom	-	-	5.4E+03	3.8E+04	2.3E+06	1.5E+04	1.4E+05	8.2E+05
Type A Uncertainty	-	-	6.5E-06	3.0E-06	5.1E-06	3.5E-06	3.8E-06	8.1E-06
Total Uncertainty	-	-	6.5E-06	3.0E-06	5.2E-06	3.5E-06	3.8E-06	8.2E-06
Degrees of Freedom	-	-	1.8E+03	1.8E+03	2.0E+03	1.9E+03	1.9E+03	1.9E+03

Table E4a. Uncertainty budget for CMS/ITRI, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Temperature	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Wavelength	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Stray Light	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Beam Size & Position	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04
Inter-reflection	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Obliquity	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Polarization	5.00E-04	5.00E-04	5.00E-04	5.00E-04	5.00E-04	5.00E-04	5.00E-04	5.00E-04
Source Drift & Fluctuation	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04
Bandwidth	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04
Total Type B Uncertainty	8.78E-04	8.78E-04	8.78E-04	8.78E-04	8.78E-04	8.78E-04	8.78E-04	8.78E-04
Degrees of Freedom	215	215	215	215	215	215	215	215
Type A Uncertainty	7.43E-05	1.58E-04	8.74E-05	1.08E-04	7.27E-05	2.11E-04	2.06E-04	2.55E-04
Total Uncertainty	8.82E-04	8.93E-04	8.83E-04	8.85E-04	8.82E-04	9.03E-04	9.02E-04	9.15E-04
Degrees of Freedom	219	220	219	220	219	211	212	194

Table E4b. Uncertainty budget for CMS/ITRI, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Temperature	4.01E-05	8.78E-05	3.45E-05	9.07E-05	4.70E-05	2.22E-05	8.35E-06	2.86E-05
Wavelength	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Stray Light	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Beam Size & Position	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04
Inter-reflection	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Obliquity	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Polarization	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04
Source Drift & Fluctuation	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04	4.23E-04
Bandwidth	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04	4.27E-04
Total Type B Uncertainty	8.20E-04	8.24E-04	8.20E-04	8.24E-04	8.20E-04	8.19E-04	8.19E-04	8.19E-04
Degrees of Freedom	224	228	224	228	224	223	223	223
Type A Uncertainty	6.91E-05	8.13E-05	7.92E-05	6.04E-05	5.44E-05	3.34E-04	1.18E-04	8.34E-05
Total Uncertainty	8.23E-04	8.29E-04	8.24E-04	8.27E-04	8.22E-04	8.85E-04	8.28E-04	8.24E-04
Degrees of Freedom	226	232	227	231	226	136	228	227

Table E4c. Uncertainty budget for CMS/ITRI, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05
Temperature	9.52E-06	7.37E-05	2.94E-05	6.74E-05	5.54E-05	2.21E-05	6.12E-06	9.97E-06
Wavelength	1.00E-05	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Stray Light	1.00E-05	5.00E-05	5.00E-05	5.00E-05	5.00E-05	5.00E-05	5.00E-05	5.00E-05
Beam Size & Position	8.50E-05	2.00E-04	2.00E-04	2.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04
Inter-reflection	5.00E-05	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Obliquity	5.00E-05	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Polarization	1.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04
Source Drift & Fluctuation	8.50E-05	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04
Bandwidth	7.00E-05	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Total Type B Uncertainty	1.87E-04	4.10E-04	4.05E-04	4.09E-04	5.35E-04	5.33E-04	5.32E-04	5.32E-04
Degrees of Freedom	254	270	258	268	140	138	137	137
Type A Uncertainty	9.29E-06	1.52E-05	1.29E-05	1.40E-05	2.12E-05	2.26E-04	2.23E-05	1.05E-05
Total Uncertainty	1.88E-04	4.11E-04	4.06E-04	4.10E-04	5.36E-04	5.80E-04	5.33E-04	5.33E-04
Degrees of Freedom	259	272	261	270	141	102	138	138

Table E4d. Uncertainty budget for CMS/ITRI, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-05	1.00E-05	1.00E-05	1.00E-05
Temperature	3.05E-07	8.67E-06	5.25E-06	1.33E-05	1.80E-05	8.53E-06	2.19E-06	5.71E-06
Wavelength	1.00E-06	5.00E-06	5.00E-06	5.00E-06	1.00E-05	1.00E-05	1.00E-05	1.00E-05
Stray Light	1.00E-06	3.00E-06	3.00E-06	3.00E-06	1.00E-05	1.00E-05	1.00E-05	1.00E-05
Beam Size & Position	7.00E-07	1.00E-05	1.00E-05	1.00E-05	8.50E-05	8.50E-05	8.50E-05	8.50E-05
Inter-reflection	3.00E-06	5.00E-06	5.00E-06	5.00E-06	5.00E-05	5.00E-05	5.00E-05	5.00E-05
Obliquity	1.50E-06	3.00E-05	3.00E-05	3.00E-05	5.00E-05	5.00E-05	5.00E-05	5.00E-05
Polarization	7.50E-06	7.50E-05	7.50E-05	7.50E-05	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Source Drift & Fluctuation	3.00E-06	3.00E-06	3.00E-06	3.00E-06	8.50E-05	8.50E-05	8.50E-05	8.50E-05
Bandwidth	1.50E-06	1.00E-05	2.00E-05	2.00E-05	7.00E-05	7.00E-05	7.00E-05	7.00E-05
Total Type B Uncertainty	9.08E-06	8.29E-05	8.44E-05	8.53E-05	1.88E-04	1.87E-04	1.87E-04	1.87E-04
Degrees of Freedom	102	73	78	81	259	254	254	254
Type A Uncertainty	1.18E-06	1.53E-06	3.60E-06	3.97E-06	1.31E-05	8.82E-06	1.39E-06	1.16E-06
Total Uncertainty	9.16E-06	8.30E-05	8.45E-05	8.54E-05	1.89E-04	1.88E-04	1.88E-04	1.88E-04
Degrees of Freedom	105	73	78	81	264	259	259	259

Table E4e. Uncertainty budget for CMS/ITRI, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.00E-07	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
Temperature	1.19E-08	9.08E-07	9.04E-07	2.46E-06	5.32E-06	3.67E-06	1.10E-06	4.96E-06
Wavelength	1.00E-07	1.00E-06	1.00E-06	1.00E-06	5.00E-06	5.00E-06	5.00E-06	5.00E-06
Stray Light	2.00E-07	1.00E-06	1.00E-06	1.00E-06	3.00E-06	3.00E-06	3.00E-06	3.00E-06
Beam Size & Position	7.00E-07	7.00E-07	7.00E-07	1.00E-06	1.00E-06	1.00E-05	1.00E-05	1.00E-05
Inter-reflection	5.00E-07	1.00E-06	3.00E-06	3.00E-06	5.00E-06	5.00E-06	5.00E-06	5.00E-06
Obliquity	5.00E-07	1.50E-06	1.50E-06	1.50E-06	3.00E-05	3.00E-05	3.00E-05	3.00E-05
Polarization	1.00E-06	7.50E-06	7.50E-06	7.50E-06	7.50E-05	7.50E-05	7.50E-05	7.50E-05
Source Drift & Fluctuation	7.00E-07	1.00E-06	1.00E-06	3.00E-06	3.00E-06	3.00E-06	3.00E-06	3.00E-06
Bandwidth	1.50E-06	1.50E-06	1.50E-06	1.50E-06	1.00E-05	2.00E-05	2.00E-05	2.00E-05
Total Type B Uncertainty	2.19E-06	8.19E-06	8.67E-06	9.43E-06	8.20E-05	8.44E-05	8.43E-05	8.44E-05
Degrees of Freedom	172	71	87	117	70	78	77	78
Type A Uncertainty	2.59E-07	1.23E-07	1.17E-06	1.66E-06	4.57E-06	1.82E-05	1.17E-06	2.34E-06
Total Uncertainty	2.21E-06	8.20E-06	8.75E-06	9.58E-06	8.22E-05	8.64E-05	8.44E-05	8.45E-05
Degrees of Freedom	178	71	89	122	70	83	78	78

Table E5a. Uncertainty budget for NIM, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.31E-05	3.29E-05	9.83E-06	1.81E-05	2.55E-05	7.66E-05	4.27E-05	1.10E-04
Temperature	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wavelength	7.00E-06	3.89E-06	1.44E-06	4.81E-09	9.16E-07	8.96E-07	2.52E-07	1.34E-06
Stray Light	1.91E-04	1.31E-04	1.32E-04	2.78E-04	1.30E-04	1.40E-04	1.79E-04	7.78E-05
Beam Size & Position	1.37E-04	1.16E-04	1.02E-04	1.40E-04	7.58E-05	4.16E-05	1.21E-04	1.31E-04
Inter-reflection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Obliquity	1.91E-05	2.54E-05	6.35E-06	1.02E-04	3.23E-05	3.12E-05	8.54E-05	2.60E-05
Polarization	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7
Source Drift & Fluctuation	7.51E-05	8.08E-06	3.81E-05	1.05E-04	5.83E-05	5.20E-06	9.18E-05	6.47E-05
Bandwidth	6.99E-08	3.85E-08	1.44E-08	5.93E-09	9.16E-09	8.96E-09	2.51E-09	1.26E-08
Total Type B Uncertainty	2.48E-04	1.80E-04	1.71E-04	3.45E-04	1.67E-04	1.68E-04	2.54E-04	2.00E-04
Degrees of Freedom	14	18	14	12	13	10	20	220
Type A Uncertainty	1.92E-04	1.32E-04	1.32E-04	2.78E-04	1.32E-04	1.40E-04	1.80E-04	7.79E-05
Total Uncertainty	3.13E-04	2.24E-04	2.16E-04	4.43E-04	2.13E-04	2.18E-04	3.11E-04	2.15E-04
Degrees of Freedom	18	21	18	16	18	15	23	146

Table E5b. Uncertainty budget for NIM, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	3.66E-05	1.37E-04	4.16E-05	7.49E-05	1.10E-04	2.99E-04	1.45E-04	3.38E-04
Temperature	2.18E-04	2.27E-04	9.87E-05	1.07E-04	1.30E-04	1.29E-04	1.12E-04	1.21E-04
Wavelength	7.58E-04	2.35E-05	1.61E-05	2.71E-06	1.27E-05	5.04E-05	1.66E-05	1.61E-05
Stray Light	2.18E-04	2.27E-04	9.84E-05	1.07E-04	1.30E-04	1.29E-04	1.11E-04	1.20E-04
Beam Size & Position	2.39E-04	1.46E-04	1.51E-04	1.70E-04	1.68E-04	2.17E-04	2.51E-04	2.77E-04
Inter-reflection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Obliquity	6.47E-05	6.12E-05	6.35E-06	1.21E-05	1.91E-05	3.46E-05	1.05E-04	1.93E-04
Polarization	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7
Source Drift & Fluctuation	1.15E-05	5.77E-07	2.02E-05	5.77E-05	4.73E-05	8.14E-05	4.04E-06	8.08E-06
Bandwidth	7.58E-06	3.54E-07	1.60E-07	1.77E-07	1.27E-07	5.04E-07	4.18E-07	1.62E-07
Total Type B Uncertainty	8.55E-04	3.84E-04	2.12E-04	2.47E-04	2.78E-04	4.25E-04	3.47E-04	5.08E-04
Degrees of Freedom	21	26	68	91	67	373	300	1.02E+03
Type A Uncertainty	2.18E-04	2.27E-04	9.87E-05	1.07E-04	1.31E-04	1.29E-04	1.12E-04	1.20E-04
Total Uncertainty	8.83E-04	4.46E-04	2.33E-04	2.69E-04	3.07E-04	4.44E-04	3.64E-04	5.22E-04
Degrees of Freedom	16	29	62	79	61	271	223	693

Table E5c. Uncertainty budget for NIM, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	8.68E-06	7.19E-05	4.59E-05	4.10E-05	1.71E-04	1.69E-04	1.16E-04	1.40E-04
Temperature	1.00E-04	1.50E-04	3.87E-05	9.46E-05	5.62E-05	6.15E-05	4.23E-05	1.19E-05
Wavelength	1.43E-04	6.13E-05	2.14E-05	5.83E-06	4.31E-05	2.79E-05	2.38E-05	8.64E-06
Stray Light	1.00E-04	1.50E-04	3.82E-05	9.45E-05	5.55E-05	6.10E-05	4.17E-05	1.04E-05
Beam Size & Position	4.40E-05	1.17E-04	1.42E-04	1.51E-04	1.73E-04	1.54E-04	1.22E-04	1.02E-04
Inter-reflection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Obliquity	4.85E-06	1.03E-05	2.16E-05	3.38E-05	2.54E-05	2.54E-05	2.08E-05	1.84E-05
Polarization	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7
Source Drift & Fluctuation	1.75E-05	1.98E-05	9.99E-06	1.76E-05	9.81E-06	1.62E-05	5.77E-06	6.18E-06
Bandwidth	1.43E-06	6.13E-07	2.14E-07	1.21E-07	8.57E-07	2.79E-07	2.38E-07	1.46E-07
Total Type B Uncertainty	2.07E-04	2.61E-04	1.62E-04	2.09E-04	2.61E-04	2.48E-04	1.82E-04	1.76E-04
Degrees of Freedom	29	29	992	77	1.42E+03	857	1.11E+03	1.91E+05
Type A Uncertainty	1.00E-04	1.50E-04	3.83E-05	9.46E-05	5.55E-05	6.10E-05	4.18E-05	1.37E-05
Total Uncertainty	2.30E-04	3.01E-04	1.66E-04	2.29E-04	2.67E-04	2.55E-04	1.87E-04	1.76E-04
Degrees of Freedom	29	32	681	68	962	591	755	1.09E+05

Table E5d. Uncertainty budget for NIM, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	3.45E-07	5.90E-06	1.09E-05	1.16E-05	4.72E-05	6.21E-05	4.62E-05	4.50E-05
Temperature	3.57E-05	2.78E-05	8.37E-06	1.86E-05	2.18E-05	6.74E-06	7.65E-06	1.05E-05
Wavelength	4.37E-06	9.64E-06	9.14E-07	2.56E-06	2.00E-05	4.70E-06	7.80E-06	2.28E-06
Stray Light	3.57E-05	2.78E-05	8.29E-06	1.86E-05	2.16E-05	5.88E-06	7.22E-06	1.03E-05
Beam Size & Position	1.31E-05	3.66E-05	5.11E-05	5.38E-05	1.33E-04	1.47E-04	1.13E-04	8.44E-05
Inter-reflection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Obliquity	1.24E-05	4.40E-06	8.08E-08	1.56E-06	4.50E-06	8.72E-06	3.12E-06	6.70E-06
Polarization	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7
Source Drift & Fluctuation	4.54E-06	2.40E-06	1.54E-06	8.66E-07	3.58E-06	4.62E-07	6.00E-06	3.70E-06
Bandwidth	4.37E-08	9.64E-08	9.18E-09	2.56E-08	2.00E-07	4.70E-08	7.80E-08	1.56E-07
Total Type B Uncertainty	5.40E-05	5.51E-05	5.36E-05	6.10E-05	1.46E-04	1.60E-04	1.23E-04	9.71E-05
Degrees of Freedom	17	49	5.55E+03	371	5.62E+03	1.30E+06	1.88E+05	2.49E+04
Type A Uncertainty	3.59E-05	2.79E-05	8.31E-06	1.86E-05	2.17E-05	6.10E-06	7.30E-06	1.03E-05
Total Uncertainty	6.48E-05	6.18E-05	5.42E-05	6.38E-05	1.48E-04	1.60E-04	1.23E-04	9.77E-05
Degrees of Freedom	21	48	3.56E+03	270	3.66E+03	8.67E+05	1.22E+05	1.57E+04

Table E5e. Uncertainty budget for NIM, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	3.97E-08	9.86E-07	2.94E-06	1.64E-06	1.15E-05	1.97E-05	1.85E-05	2.13E-05
Temperature	9.23E-07	2.01E-05	6.52E-06	3.25E-06	4.59E-06	4.09E-06	4.33E-06	9.47E-06
Wavelength	2.61E-07	8.44E-07	1.56E-07	4.36E-07	4.94E-06	7.14E-07	1.16E-06	2.01E-07
Stray Light	9.23E-07	2.01E-05	6.53E-06	3.25E-06	4.55E-06	3.89E-06	4.19E-06	9.41E-06
Beam Size & Position	1.80E-06	6.68E-06	8.50E-06	8.58E-06	3.46E-05	5.94E-05	5.34E-05	4.73E-05
Inter-reflection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Obliquity	1.25E-06	3.20E-07	1.50E-06	9.24E-07	5.14E-06	9.23E-06	8.13E-06	6.60E-06
Polarization	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7	<1E-7
Source Drift & Fluctuation	5.14E-07	2.70E-06	4.94E-07	2.89E-09	1.15E-07	1.13E-06	1.10E-07	8.08E-08
Bandwidth	2.63E-09	8.43E-09	1.56E-09	4.36E-09	4.94E-08	7.14E-09	1.98E-08	2.07E-09
Total Type B Uncertainty	2.62E-06	2.94E-05	1.30E-05	9.93E-06	3.77E-05	6.36E-05	5.75E-05	5.40E-05
Degrees of Freedom	207	15	50	279	1.12E+04	2.12E+05	1.08E+05	3.44E+03
Type A Uncertainty	1.11E-06	2.03E-05	6.59E-06	3.37E-06	4.54E-06	3.94E-06	4.21E-06	9.42E-06
Total Uncertainty	2.84E-06	3.57E-05	1.46E-05	1.05E-05	3.79E-05	6.37E-05	5.76E-05	5.48E-05
Degrees of Freedom	163	19	49	211	7.26E+03	1.34E+05	6.76E+04	2.23E+03

Table E6a. Uncertainty budget for NIMT, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	4.00E-04	4.00E-04
Temperature	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Wavelength	1.13E-05	4.77E-06	4.19E-06	1.22E-06	1.50E-06	4.10E-06	8.31E-06	5.83E-06
Stray Light	nc	nc	nc	nc	nc	nc	nc	nc
Beam Size & Position	6.86E-04	6.88E-04	6.90E-04	6.91E-04	6.91E-04	6.92E-04	6.92E-04	6.93E-04
Inter-reflection	nc	nc	nc	nc	nc	nc	nc	nc
Obliquity	nc	nc	nc	nc	nc	nc	nc	nc
Polarization	nc	nc	nc	nc	nc	nc	nc	nc
Source Drift & Fluctuation	1.93E-04	1.77E-04	5.41E-04	5.38E-04	5.36E-04	5.36E-04	5.37E-04	5.38E-04
Bandwidth	nc	nc	nc	nc	nc	nc	nc	nc
Scale Bias	2.91E-03	2.91E-03	2.91E-03	2.91E-03	2.91E-03	2.91E-03	2.91E-03	2.91E-03
Total Type B Uncertainty	3.06E-03	3.06E-03	3.10E-03	3.10E-03	3.10E-03	3.10E-03	3.07E-03	3.07E-03
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	4.17E-04	4.05E-04	3.55E-04	3.67E-04	3.46E-04	3.22E-04	3.35E-04	3.59E-04
Total Uncertainty	3.10E-03	3.10E-03	3.20E-03	3.20E-03	3.20E-03	3.20E-03	3.10E-03	3.10E-03
Degrees of Freedom	3.36E+04	3.78E+04	7.26E+04	6.36E+04	8.05E+04	1.07E+05	8.07E+04	6.12E+04

Table E6b. Uncertainty budget for NIMT, Filter B

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	4.00E-04	4.00E-04
Temperature	7.04E-05	9.74E-05	3.90E-05	1.00E-04	5.07E-05	2.94E-05	2.12E-05	4.76E-05
Wavelength	8.80E-04	8.61E-05	1.07E-05	6.88E-06	2.19E-05	2.09E-04	1.72E-04	9.06E-05
Stray Light	nc	nc	nc	nc	nc	nc	nc	nc
Beam Size & Position	5.40E-04	7.92E-04	8.11E-04	7.95E-04	8.30E-04	7.51E-04	6.51E-04	5.88E-04
Inter-reflection	nc	nc	nc	nc	nc	nc	nc	nc
Obliquity	nc	nc	nc	nc	nc	nc	nc	nc
Polarization	nc	nc	nc	nc	nc	nc	nc	nc
Source Drift & Fluctuation	1.52E-04	1.62E-04	5.37E-04	5.28E-04	5.31E-04	5.31E-04	5.29E-04	5.28E-04
Bandwidth	nc	nc	nc	nc	nc	nc	nc	nc
Scale Bias	1.79E-03	2.25E-03	2.25E-03	2.25E-03	2.25E-03	2.15E-03	1.97E-03	1.88E-03
Total Type B Uncertainty	2.16E-03	2.47E-03	2.52E-03	2.52E-03	2.53E-03	2.43E-03	2.18E-03	2.08E-03
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	5.71E-04	1.75E-04	1.80E-04	1.70E-04	1.63E-04	1.39E-04	1.32E-04	1.07E-04
Total Uncertainty	2.30E-03	2.50E-03	2.60E-03	2.60E-03	2.60E-03	2.50E-03	2.20E-03	2.10E-03
Degrees of Freedom	2.90E+03	4.58E+05	4.79E+05	6.02E+05	7.12E+05	1.15E+06	8.49E+05	1.63E+06

Table E6c. Uncertainty budget for NIMT, Filter C

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	4.00E-04	4.00E-04
Temperature	3.21E-04	5.25E-04	2.26E-04	5.94E-04	2.37E-04	1.14E-04	7.72E-05	1.65E-04
Wavelength	2.22E-04	1.02E-04	3.34E-05	1.94E-05	1.41E-04	1.33E-04	1.07E-04	4.04E-05
Stray Light	nc	nc	nc	nc	nc	nc	nc	nc
Beam Size & Position	1.60E-05	6.68E-05	6.49E-05	5.44E-05	1.13E-04	1.06E-04	7.17E-05	5.35E-05
Inter-reflection	nc	nc	nc	nc	nc	nc	nc	nc
Obliquity	nc	nc	nc	nc	nc	nc	nc	nc
Polarization	nc	nc	nc	nc	nc	nc	nc	nc
Source Drift & Fluctuation	1.29E-04	1.30E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04	5.25E-04	5.24E-04
Bandwidth	nc	nc	nc	nc	nc	nc	nc	nc
Scale Bias	1.06E-03	1.20E-03	1.20E-03	1.20E-03	1.36E-03	1.28E-03	1.20E-03	1.20E-03
Total Type B Uncertainty	1.29E-03	1.45E-03	1.46E-03	1.56E-03	1.60E-03	1.52E-03	1.38E-03	1.38E-03
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	1.12E-04	8.70E-05	5.20E-05	6.30E-05	1.07E-04	7.00E-05	7.80E-05	6.00E-05
Total Uncertainty	1.30E-03	1.50E-03	1.50E-03	1.60E-03	1.70E-03	1.60E-03	1.40E-03	1.40E-03
Degrees of Freedom	2.00E+05	9.72E+05	7.62E+06	4.58E+06	7.01E+05	3.00E+06	1.14E+06	3.26E+06

Table E6d. Uncertainty budget for NIMT, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	4.00E-04	4.00E-04
Temperature	6.74E-04	1.19E-03	4.59E-04	1.13E-03	4.82E-04	2.09E-04	1.29E-04	2.65E-04
Wavelength	8.44E-06	1.52E-05	2.13E-06	5.05E-06	3.29E-05	1.79E-05	2.15E-05	6.13E-06
Stray Light	nc	nc	nc	nc	nc	nc	nc	nc
Beam Size & Position	1.00E-06	4.53E-06	7.55E-06	7.36E-06	2.31E-05	2.80E-05	1.90E-05	1.42E-05
Inter-reflection	nc	nc	nc	nc	nc	nc	nc	nc
Obliquity	nc	nc	nc	nc	nc	nc	nc	nc
Polarization	nc	nc	nc	nc	nc	nc	nc	nc
Source Drift & Fluctuation	1.28E-04	1.28E-04	5.23E-04	5.23E-04	5.23E-04	5.24E-04	5.25E-04	5.24E-04
Bandwidth	nc	nc	nc	nc	nc	nc	nc	nc
Scale Bias	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.13E-03	1.06E-03	1.06E-03
Total Type B Uncertainty	1.40E-03	1.71E-03	1.41E-03	1.74E-03	1.41E-03	1.40E-03	1.26E-03	1.28E-03
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	6.00E-06	7.00E-06	1.00E-05	1.20E-05	1.30E-05	2.00E-05	6.50E-05	5.90E-05
Total Uncertainty	1.50E-03	1.80E-03	1.50E-03	1.80E-03	1.50E-03	1.50E-03	1.30E-03	1.30E-03
Degrees of Freedom	4.30E+10	4.81E+10	5.57E+09	5.57E+09	1.95E+09	3.48E+08	1.76E+06	2.59E+06

Table E6e. Uncertainty budget for NIMT, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	6.00E-04	4.00E-04	4.00E-04
Temperature	9.77E-04	1.84E-03	6.80E-04	1.66E-03	7.17E-04	2.88E-04	1.65E-04	4.86E-04
Wavelength	5.47E-07	1.56E-06	5.97E-07	1.36E-06	8.79E-06	4.22E-06	1.80E-05	6.74E-06
Stray Light	nc	nc	nc	nc	nc	nc	nc	nc
Beam Size & Position	1.00E-06	1.00E-06	9.66E-07	8.88E-07	4.49E-06	8.57E-06	6.92E-06	5.96E-06
Inter-reflection	nc	nc	nc	nc	nc	nc	nc	nc
Obliquity	nc	nc	nc	nc	nc	nc	nc	nc
Polarization	nc	nc	nc	nc	nc	nc	nc	nc
Source Drift & Fluctuation	1.28E-04	1.28E-04	5.23E-04	5.23E-04	5.23E-04	5.23E-04	5.27E-04	5.24E-04
Bandwidth	nc	nc	nc	nc	nc	nc	nc	nc
Scale Bias	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03
Total Type B Uncertainty	1.57E-03	2.21E-03	1.49E-03	2.12E-03	1.51E-03	1.36E-03	1.26E-03	1.34E-03
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	1.10E-05	1.20E-05	1.10E-05	1.20E-05	1.80E-05	1.30E-05	5.10E-05	3.60E-05
Total Uncertainty	1.60E-03	2.30E-03	1.50E-03	2.20E-03	1.60E-03	1.40E-03	1.30E-03	1.40E-03
Degrees of Freedom	4.92E+09	1.48E+10	3.80E+09	1.24E+10	6.87E+08	1.48E+09	4.64E+06	2.52E+07

Table E7a. Uncertainty budget for NRC, Filter A

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.21E-05	1.19E-05	1.16E-05	1.14E-05	1.12E-05	1.11E-05	1.11E-05	1.10E-05
Temperature	0.0	0.0	0.0	0.0	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	8.05E-06	7.91E-06	7.71E-06	7.57E-06	7.48E-06	7.40E-06	7.37E-06	7.34E-06
Beam Size & Position	0.0	0.0	0.0	0.0	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	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	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
Total Type B Uncertainty	9.37E-05	8.41E-05	6.94E-05	7.55E-05	7.66E-05	7.68E-05	5.67E-05	7.44E-05
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	2.03E-04	1.43E-04	1.37E-04	1.30E-04	1.36E-04	1.54E-04	1.08E-04	9.55E-05
Total Uncertainty	2.23E-04	1.66E-04	1.53E-04	1.50E-04	1.56E-04	1.72E-04	1.22E-04	1.21E-04
Degrees of Freedom	10	13	11	13	12	11	11	11

Table E7b. Uncertainty budget for NRC, Filter B

Uncertainty Component	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	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	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	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
Total Type B Uncertainty	1.71E-04	5.88E-05	5.77E-05	6.21E-05	6.18E-05	6.62E-05	6.06E-05	5.45E-05
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	7.08E-05	4.65E-05	4.80E-05	3.61E-05	7.24E-05	6.40E-05	3.58E-05	4.79E-05
Total Uncertainty	1.85E-04	7.50E-05	7.51E-05	7.18E-05	9.52E-05	9.21E-05	7.04E-05	7.26E-05
Degrees of Freedom	328	47	42	110	21	30	104	37

Table E7c. Uncertainty budget for NRC, Filter C

Uncertainty Component	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	9.29E-06	7.13E-06
Beam Size & Position	0.0	0.0	0.0	0.0	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	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	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
Total Type B Uncertainty	8.72E-05	7.80E-05	5.97E-05	2.11E-05	8.48E-05	4.22E-05	2.89E-05	1.69E-05
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	8.80E-06	1.48E-05	8.96E-06	7.22E-06	9.33E-06	1.05E-05	1.08E-05	4.88E-06
Total Uncertainty	8.76E-05	7.94E-05	6.04E-05	2.23E-05	8.53E-05	4.35E-05	3.09E-05	1.76E-05
Degrees of Freedom	694	5.83E+03	1.44E+04	6.39E+02	4.89E+04	2.05E+03	463	1.18E+03

Table E7d. Uncertainty budget for NRC, Filter D

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	1.13E-09	7.04E-08	1.06E-07	8.64E-08	5.38E-07	5.73E-07	2.73E-07	1.51E-07
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	7.52E-10	4.69E-08	7.07E-08	5.76E-08	3.59E-07	3.82E-07	1.82E-07	1.01E-07
Beam Size & Position	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	8.57E-07	8.85E-07	7.27E-08	5.18E-08	3.64E-08	3.43E-08	2.87E-08	4.61E-08
Total Type B Uncertainty	1.35E-06	8.44E-06	6.02E-06	4.85E-06	1.84E-05	4.59E-06	5.31E-06	2.55E-06
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	6.65E-07	1.87E-06	1.41E-06	1.38E-06	3.28E-06	4.14E-06	5.38E-06	2.53E-06
Total Uncertainty	1.50E-06	8.64E-06	6.18E-06	5.04E-06	1.87E-05	6.18E-06	7.56E-06	3.59E-06
Degrees of Freedom	184	3.20E+03	2.59E+03	1.25E+03	7.38E+03	35	27	28

Table E7e. Uncertainty budget for NRC, Filter E

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	6.38E-13	2.41E-10	1.04E-09	1.09E-09	1.60E-08	3.24E-08	1.77E-08	1.01E-08
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	4.25E-13	1.60E-10	6.92E-10	7.24E-10	1.07E-08	2.16E-08	8.35E-07	7.06E-07
Beam Size & Position	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inter-reflection	0.0	0.0	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	0.0	0.0	0.0	0.0
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	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	9.09E-09	7.17E-08
Total Type B Uncertainty	2.91E-08	1.82E-07	3.80E-07	4.81E-07	5.05E-06	4.53E-06	2.98E-06	1.87E-06
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	4.53E-08	5.12E-07	3.52E-07	2.65E-07	9.13E-07	1.72E-06	9.23E-07	1.07E-06
Total Uncertainty	5.38E-08	5.43E-07	5.18E-07	5.49E-07	5.13E-06	4.85E-06	3.12E-06	2.16E-06
Degrees of Freedom	14	9	33	129	6.99E+03	441	914	114

Table E8a. Uncertainty budget for NIST, Filter A, Round 1

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.56E-05	4.57E-05	4.58E-05	4.59E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05
Temperature Correction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wavelength	1.38E-05	9.76E-06	1.95E-06	2.32E-06	1.25E-06	8.68E-07	7.36E-07	8.68E-07
Stray Light	1.28E-05	5.85E-06	4.24E-07	4.49E-08	2.74E-08	6.61E-08	1.97E-07	2.66E-07
Beam Size & Position	6.11E-05	6.13E-05	6.15E-05	6.16E-05	6.16E-05	6.17E-05	6.17E-05	6.18E-05
Inter-reflection	4.68E-04	4.69E-04	4.71E-04	4.71E-04	4.72E-04	4.72E-04	4.73E-04	4.73E-04
Obliquity	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	3.65E-06	3.65E-06	3.67E-06	3.67E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06
Detector range ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	3.19E-04	3.20E-04	3.21E-04	3.21E-04	3.22E-04	3.22E-04	3.22E-04	3.22E-04
Total Type B Uncertainty	5.72E-04	5.73E-04	5.75E-04	5.76E-04	5.76E-04	5.77E-04	5.77E-04	5.77E-04
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	6.58E-05	6.58E-05	6.58E-05	6.58E-05	6.58E-05	6.58E-05	6.58E-05	6.58E-05
Total Uncertainty	5.76E-04	5.77E-04	5.78E-04	5.79E-04	5.80E-04	5.81E-04	5.81E-04	5.81E-04
Degrees of Freedom	2.34E+04	2.36E+04	2.39E+04	2.40E+04	2.42E+04	2.42E+04	2.43E+04	2.43E+04

Table E8b. Uncertainty budget for NIST, Filter B, Round 1

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.16E-05	0.0	6.21E-05	6.09E-05	6.36E-05	5.75E-05	5.00E-05	4.52E-05
Temperature Correction	1.09E-05	8.92E-06	7.82E-06	8.95E-06	8.02E-06	8.46E-06	9.45E-06	1.04E-05
Temperature Fluctuation	1.01E-05	2.16E-05	8.50E-06	2.23E-05	1.16E-05	5.48E-06	2.06E-06	7.04E-06
Wavelength	1.66E-03	9.48E-04	2.56E-04	8.59E-05	9.51E-05	1.04E-04	8.60E-05	3.45E-05
Stray Light	2.44E-04	1.89E-05	5.18E-06	1.85E-06	3.48E-06	9.10E-07	8.25E-06	1.92E-05
Beam Size & Position	7.27E-05	1.06E-04	1.08E-04	1.06E-04	1.11E-04	1.00E-04	8.73E-05	7.89E-05
Inter-reflection	7.27E-05	1.06E-04	1.08E-04	1.06E-04	1.11E-04	1.00E-04	8.73E-05	7.88E-05
Obliquity	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	5.00E-06	7.28E-06	7.45E-06	7.31E-06	7.64E-06	6.90E-06	6.00E-06	5.42E-06
Detector range ratio	0.0	1.21E-04	0.0	0.0	0.0	0.0	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	1.46E-04	2.12E-04	2.17E-04	2.13E-04	2.23E-04	2.01E-04	1.75E-04	1.58E-04
Total Type B Uncertainty	1.69E-03	9.91E-04	3.75E-04	2.82E-04	2.96E-04	2.74E-04	2.37E-04	2.03E-04
Degrees of Freedom	5.00E+09	6.36E+08	4.54E+07	3.88E+06	1.46E+07	9.85E+06	3.54E+06	1.28E+06
Type A Uncertainty	5.64E-04	3.98E-05	3.98E-05	3.98E-05	3.98E-05	3.98E-05	3.98E-05	3.98E-05
Total Uncertainty	2.10E-03*	9.92E-04	3.77E-04	2.85E-04	2.99E-04	2.77E-04	2.66E-04*	3.71E-04*
Degrees of Freedom	769	1.54E+06	3.22E+04	1.05E+04	1.27E+04	9.37E+03	7.97E+03	3.01E+04

Table E8c. Uncertainty budget for NIST, Filter C, Round 1

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	1.61E-05	0.0	0.0	0.0
Temperature Correction	2.71E-06	7.21E-06	6.76E-06	6.40E-06	9.15E-06	8.67E-06	7.12E-06	6.02E-06
Temperature Fluctuation	2.61E-06	1.83E-05	7.29E-06	1.68E-05	1.38E-05	5.50E-06	1.52E-06	4.16E-06
Wavelength	6.11E-04	3.49E-04	1.25E-04	8.23E-05	6.53E-05	5.90E-05	5.57E-05	4.69E-06
Stray Light	1.38E-04	1.68E-05	3.24E-06	2.80E-06	3.05E-06	3.86E-06	1.23E-06	5.64E-06
Beam Size & Position	3.75E-06	1.53E-05	1.47E-05	1.23E-05	2.58E-05	2.40E-05	1.64E-05	1.22E-05
Inter-reflection	4.46E-06	1.82E-05	1.75E-05	1.47E-05	3.07E-05	2.86E-05	1.96E-05	1.46E-05
Obliquity	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	2.16E-06	8.78E-06	8.46E-06	7.09E-06	1.48E-05	1.38E-05	9.45E-06	7.04E-06
Detector range ratio	0.0	1.91E-05	0.0	0.0	0.0	4.50E-06	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	8.21E-06	3.34E-05	3.22E-05	2.70E-05	5.65E-05	5.25E-05	3.60E-05	2.68E-05
Total Type B Uncertainty	6.27E-04	3.53E-04	1.32E-04	9.08E-05	9.91E-05	8.92E-05	7.21E-05	3.52E-05
Degrees of Freedom	2.52E+10	2.17E+07	1.25E+06	1.41E+05	1.06E+05	1.01E+05	9.45E+04	1.04E+04
Type A Uncertainty	1.32E-04	5.26E-05	1.04E-05	1.04E-05	1.04E-05	1.04E-05	1.04E-05	1.04E-05
Total Uncertainty	6.41E-04	3.57E-04	1.32E-04	9.14E-05	1.04E-04*	8.98E-05	7.28E-05	7.88E-05*
Degrees of Freedom	2.24E+03	8.53E+03	9.67E+04	2.04E+04	2.99E+04	1.82E+04	8.72E+03	1.25E+04

Table E8d. Uncertainty budget for NIST, Filter D, Round 1

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Correction	1.11E-07	8.84E-07	1.25E-06	1.33E-06	3.09E-06	3.41E-06	2.63E-06	2.12E-06
Temperature Fluctuation	1.02E-07	2.30E-06	1.38E-06	3.49E-06	4.64E-06	2.20E-06	5.67E-07	1.47E-06
Wavelength	3.75E-05	2.45E-05	6.48E-06	1.39E-05	2.11E-05	5.42E-06	1.50E-05	4.46E-06
Stray Light	3.12E-05	1.18E-05	1.52E-06	8.08E-07	4.85E-07	1.45E-06	3.28E-07	3.85E-07
Beam Size & Position	6.33E-07	7.59E-06	1.23E-05	1.22E-05	3.85E-05	4.68E-05	3.28E-05	2.43E-05
Inter-reflection	1.55E-07	1.86E-06	3.00E-06	2.97E-06	9.41E-06	1.14E-05	8.01E-06	5.93E-06
Obliquity	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	4.62E-08	5.54E-07	8.96E-07	8.87E-07	2.81E-06	3.41E-06	2.39E-06	1.77E-06
Detector range ratio	8.79E-08	1.05E-06	1.71E-06	1.69E-06	5.35E-06	6.50E-06	4.55E-06	3.37E-06
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	1.54E-07	1.85E-06	2.99E-06	2.96E-06	9.36E-06	1.14E-05	7.96E-06	5.90E-06
Total Type B Uncertainty	4.88E-05	2.85E-05	1.48E-05	1.95E-05	4.66E-05	5.05E-05	3.82E-05	2.65E-05
Degrees of Freedom	3.33E+11	3.80E+06	1.68E+05	1.58E+05	3.97E+05	4.30E+05	4.01E+05	2.16E+05
Type A Uncertainty	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06
Total Uncertainty	4.89E-05	2.86E-05	1.52E-05	1.97E-05	4.67E-05	5.06E-05	3.83E-05	2.67E-05
Degrees of Freedom	2.70E+05	3.15E+04	2.46E+03	6.80E+03	1.44E+05	1.80E+05	8.13E+04	2.15E+04

Table E8e. Uncertainty budget for NIST, Filter E, Round 1

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Correction	7.67E-09	9.22E-08	2.04E-07	2.40E-07	8.37E-07	1.40E-06	1.22E-06	1.11E-06
Temperature Fluctuation	7.05E-09	2.28E-07	2.20E-07	5.99E-07	1.28E-06	8.87E-07	2.66E-07	1.20E-06
Wavelength	2.48E-06	2.02E-06	4.12E-07	2.39E-06	7.53E-06	2.44E-06	3.75E-06	2.27E-06
Stray Light	4.45E-06	3.93E-06	5.32E-07	2.74E-07	1.11E-08	5.22E-07	3.44E-07	3.18E-07
Beam Size & Position	7.97E-08	1.29E-06	3.52E-06	3.77E-06	1.90E-05	3.64E-05	3.17E-05	2.68E-05
Inter-reflection	2.13E-08	3.46E-07	9.42E-07	1.01E-06	5.08E-06	9.74E-06	8.49E-06	7.18E-06
Obliquity	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	2.72E-09	4.40E-08	1.20E-07	1.29E-07	6.47E-07	1.24E-06	1.08E-06	9.14E-07
Detector range ratio	4.18E-09	6.78E-08	1.85E-07	1.98E-07	9.96E-07	1.91E-06	1.66E-06	1.41E-06
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	7.32E-09	1.19E-07	3.23E-07	3.46E-07	1.74E-06	3.34E-06	2.91E-06	2.46E-06
Total Type B Uncertainty	5.09E-06	4.63E-06	3.74E-06	4.65E-06	2.12E-05	3.80E-05	3.32E-05	2.80E-05
Degrees of Freedom	1.70E+12	2.53E+07	9.73E+05	5.52E+05	3.11E+06	4.80E+06	4.91E+06	3.54E+06
Type A Uncertainty	3.21E-06	8.66E-07	8.66E-07	8.66E-07	8.66E-07	8.66E-07	8.66E-07	8.66E-07
Total Uncertainty	6.02E-06	4.71E-06	3.84E-06	4.73E-06	2.12E-05	3.80E-05	3.32E-05	2.80E-05
Degrees of Freedom	50	3.50E+03	1.54E+03	3.53E+03	9.84E+05	3.63E+06	3.14E+06	1.96E+06

Table E9a. Uncertainty budget for NIST, Filter A, Round 3

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.56E-05	4.57E-05	4.58E-05	4.59E-05	4.59E-05	4.60E-05	4.60E-05	4.60E-05
Temperature Correction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wavelength	1.38E-05	9.76E-06	1.95E-06	2.32E-06	1.25E-06	8.68E-07	7.36E-07	8.68E-07
Stray Light	1.28E-05	5.84E-06	4.24E-07	4.49E-08	2.74E-08	6.60E-08	1.97E-07	2.66E-07
Beam Size & Position	6.11E-05	6.12E-05	6.14E-05	6.16E-05	6.16E-05	6.17E-05	6.17E-05	6.17E-05
Inter-reflection	4.68E-04	4.69E-04	4.70E-04	4.71E-04	4.72E-04	4.72E-04	4.73E-04	4.73E-04
Obliquity	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	3.65E-06	3.65E-06	3.66E-06	3.67E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06
Detector range ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	3.19E-04	3.20E-04	3.21E-04	3.21E-04	3.22E-04	3.22E-04	3.22E-04	3.22E-04
Total Type B Uncertainty	5.72E-04	5.73E-04	5.74E-04	5.76E-04	5.76E-04	5.77E-04	5.77E-04	5.77E-04
Degrees of Freedom	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
Type A Uncertainty	1.78E-05	1.78E-05	1.78E-05	1.78E-05	1.78E-05	1.78E-05	1.78E-05	1.78E-05
Total Uncertainty	5.72E-04	5.73E-04	5.75E-04	5.76E-04	5.76E-04	5.77E-04	5.77E-04	5.78E-04
Degrees of Freedom	4.28E+06	4.30E+06	4.35E+06	4.39E+06	4.41E+06	4.42E+06	4.43E+06	4.44E+06

Table E9b. Uncertainty budget for NIST, Filter B, Round 3

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	4.15E-05	0.0	6.21E-05	6.09E-05	6.36E-05	5.75E-05	5.00E-05	4.51E-05
Temperature Correction	1.13E-05	9.23E-06	8.10E-06	9.27E-06	8.30E-06	8.75E-06	9.78E-06	1.08E-05
Temperature Fluctuation	8.32E-06	1.78E-05	7.00E-06	1.84E-05	9.55E-06	4.52E-06	1.70E-06	5.80E-06
Wavelength	1.66E-03	9.48E-04	2.56E-04	8.59E-05	9.51E-05	1.04E-04	8.60E-05	3.45E-05
Stray Light	2.43E-04	1.89E-05	5.18E-06	1.85E-06	3.48E-06	9.11E-07	8.25E-06	1.92E-05
Beam Size & Position	7.25E-05	1.06E-04	1.08E-04	1.06E-04	1.11E-04	1.00E-04	8.73E-05	7.88E-05
Inter-reflection	7.25E-05	1.06E-04	1.08E-04	1.06E-04	1.11E-04	1.00E-04	8.73E-05	7.88E-05
Obliquity	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	4.98E-06	7.28E-06	7.45E-06	7.31E-06	7.63E-06	6.90E-06	6.00E-06	5.42E-06
Detector range ratio	0.0	1.21E-04	0.0	0.0	0.0	0.0	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	1.45E-04	2.12E-04	2.17E-04	2.13E-04	2.23E-04	2.01E-04	1.75E-04	1.58E-04
Total Type B Uncertainty	1.69E-03	9.91E-04	3.75E-04	2.82E-04	2.96E-04	2.74E-04	2.37E-04	2.03E-04
Degrees of Freedom	4.46E+09	8.16E+08	4.06E+07	5.08E+06	1.37E+07	8.60E+06	3.08E+06	1.12E+06
Type A Uncertainty	9.29E-04	1.53E-05	1.53E-05	1.53E-05	1.53E-05	1.53E-05	1.53E-05	1.53E-05
Total Uncertainty	2.25E-03*	9.91E-04	3.75E-04	2.82E-04	2.96E-04	2.74E-04	2.63E-04*	3.68E-04*
Degrees of Freedom	137	6.50E+07	1.40E+06	4.27E+05	5.43E+05	3.96E+05	3.26E+05	1.20E+06

Table E9c. Uncertainty budget for NIST, Filter C, Round 3

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	1.61E-05	0.0	0.0	0.0
Temperature Correction	2.77E-06	7.44E-06	6.99E-06	6.62E-06	9.46E-06	8.97E-06	7.37E-06	6.23E-06
Temperature Fluctuation	2.13E-06	1.51E-05	6.01E-06	1.38E-05	1.13E-05	4.54E-06	1.25E-06	3.43E-06
Wavelength	6.11E-04	3.49E-04	1.25E-04	8.23E-05	6.53E-05	5.90E-05	5.57E-05	4.69E-06
Stray Light	1.37E-04	1.67E-05	3.24E-06	2.79E-06	3.04E-06	3.86E-06	1.23E-06	5.64E-06
Beam Size & Position	3.71E-06	1.52E-05	1.47E-05	1.23E-05	2.57E-05	2.40E-05	1.64E-05	1.22E-05
Inter-reflection	4.42E-06	1.81E-05	1.75E-05	1.47E-05	3.07E-05	2.86E-05	1.96E-05	1.46E-05
Obliquity	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07	8.95E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	2.13E-06	8.75E-06	8.45E-06	7.08E-06	1.48E-05	1.38E-05	9.45E-06	7.04E-06
Detector range ratio	0.0	1.90E-05	0.0	0.0	0.0	4.50E-06	0.0	0.0
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	8.12E-06	3.33E-05	3.22E-05	2.69E-05	5.64E-05	5.25E-05	3.60E-05	2.68E-05
Total Type B Uncertainty	6.27E-04	3.53E-04	1.32E-04	9.03E-05	9.87E-05	8.92E-05	7.21E-05	3.51E-05
Degrees of Freedom	2.32E+10	2.93E+07	1.12E+06	1.91E+05	1.00E+05	8.79E+04	8.24E+04	9.03E+03
Type A Uncertainty	2.00E-04	6.68E-05	7.07E-06	7.07E-06	7.07E-06	7.07E-06	7.07E-06	7.07E-06
Total Uncertainty	6.58E-04	3.60E-04	1.32E-04	9.06E-05	1.03E-04*	8.95E-05	7.24E-05	7.79E-05*
Degrees of Freedom	467	3.35E+03	3.41E+05	6.92E+04	7.14E+04	4.77E+04	2.89E+04	4.65E+04

Table E9d. Uncertainty budget for NIST, Filter D, Round 3

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Correction	1.14E-07	9.11E-07	1.30E-06	1.38E-06	3.19E-06	3.53E-06	2.72E-06	2.20E-06
Temperature Fluctuation	8.36E-08	1.89E-06	1.14E-06	2.88E-06	3.81E-06	1.81E-06	4.68E-07	1.22E-06
Wavelength	3.75E-05	2.45E-05	6.48E-06	1.39E-05	2.11E-05	5.42E-06	1.50E-05	4.46E-06
Stray Light	3.10E-05	1.18E-05	1.52E-06	8.07E-07	4.84E-07	1.45E-06	3.28E-07	3.85E-07
Beam Size & Position	6.28E-07	7.56E-06	1.23E-05	1.21E-05	3.84E-05	4.68E-05	3.28E-05	2.43E-05
Inter-reflection	1.53E-07	1.85E-06	3.00E-06	2.97E-06	9.39E-06	1.14E-05	8.00E-06	5.93E-06
Obliquity	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07	3.37E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	4.58E-08	5.51E-07	8.95E-07	8.86E-07	2.80E-06	3.41E-06	2.39E-06	1.77E-06
Detector range ratio	8.72E-08	1.05E-06	1.71E-06	1.69E-06	5.34E-06	6.50E-06	4.55E-06	3.37E-06
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	1.53E-07	1.84E-06	2.98E-06	2.95E-06	9.34E-06	1.14E-05	7.96E-06	5.90E-06
Total Type B Uncertainty	4.87E-05	2.84E-05	1.48E-05	1.93E-05	4.65E-05	5.05E-05	3.82E-05	2.65E-05
Degrees of Freedom	2.99E+11	5.25E+06	1.50E+05	2.13E+05	3.77E+05	3.75E+05	3.50E+05	1.89E+05
Type A Uncertainty	3.31E-06	3.31E-06	3.31E-06	3.31E-06	3.31E-06	3.31E-06	3.31E-06	3.31E-06
Total Uncertainty	4.88E-05	2.86E-05	1.52E-05	1.96E-05	4.66E-05	5.06E-05	3.83E-05	2.67E-05
Degrees of Freedom	1.88E+05	2.22E+04	1.75E+03	4.83E+03	1.11E+05	1.38E+05	5.98E+04	1.55E+04

Table E9e. Uncertainty budget for NIST, Filter E, Round 3

Uncertainty Component	Wavelength (nm)							
	380	400	500	600	700	800	900	1000
Nonlinearity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature Correction	9.10E-09	9.44E-08	2.10E-07	2.47E-07	8.64E-07	1.45E-06	1.27E-06	1.14E-06
Temperature Fluctuation	6.65E-09	1.86E-07	1.81E-07	4.92E-07	1.06E-06	7.31E-07	2.19E-07	9.88E-07
Wavelength	2.48E-06	2.02E-06	4.12E-07	2.39E-06	7.53E-06	2.44E-06	3.75E-06	2.27E-06
Stray Light	5.09E-06	3.89E-06	5.30E-07	2.73E-07	1.10E-08	5.22E-07	3.44E-07	3.18E-07
Beam Size & Position	9.12E-08	1.28E-06	3.51E-06	3.75E-06	1.89E-05	3.63E-05	3.17E-05	2.68E-05
Inter-reflection	2.44E-08	3.42E-07	9.39E-07	1.00E-06	5.06E-06	9.73E-06	8.48E-06	7.17E-06
Obliquity	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07	1.41E-07
Polarization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Source Drift & Fluctuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bandwidth	3.11E-09	4.36E-08	1.20E-07	1.28E-07	6.45E-07	1.24E-06	1.08E-06	9.14E-07
Detector range ratio	4.79E-09	6.70E-08	1.84E-07	1.97E-07	9.92E-07	1.91E-06	1.66E-06	1.41E-06
Detector gain ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector reproducibility	8.38E-09	1.17E-07	3.22E-07	3.45E-07	1.74E-06	3.34E-06	2.91E-06	2.46E-06
Total Type B Uncertainty	5.66E-06	4.59E-06	3.73E-06	4.62E-06	2.11E-05	3.80E-05	3.32E-05	2.80E-05
Degrees of Freedom	1.34E+12	3.33E+07	8.69E+05	7.22E+05	2.99E+06	4.19E+06	4.27E+06	3.16E+06
Type A Uncertainty	6.44E-06	6.44E-06	7.15E-07	7.15E-07	7.15E-07	7.15E-07	7.15E-07	7.15E-07
Total Uncertainty	8.58E-06	7.91E-06	3.79E-06	4.68E-06	2.11E-05	3.80E-05	3.32E-05	2.80E-05
Degrees of Freedom	13	9	3.17E+03	7.26E+03	1.51E+06	3.70E+06	3.48E+06	2.37E+06

Notes:

- Columns with dashes indicate that transmittance values at these wavelengths were either not measured or not reported.
- Uncertainty contributions labeled as “nc” indicates that this uncertainty contribution was not individually characterized.
- Uncertainties listed as 0.0 are considered by the participant as negligible.
- Values shown for NIST are representative of the average transmittance for all filter sets.
- A few of NIST values for Total Uncertainty, as denoted with asterisks (*), have been expanded to achieve consistency with NIST’s Calibration and Measurement Capability (CMC) claims. The expansion is based on NIST’s results in CCPR-K6.2010 and follows the guidance provided in CCPR-G8, Guidelines for the evaluation of CMC claims in light of comparison results (<https://www.bipm.org/utis/common/pdf/CC/CCPR/CCPR-G8.pdf>).