

TABLE 3.1.1 -- Radiance Calibration Uncertainties

TABLE 3.1.1 Concluded -- Radiance Calibration Uncertainties

Radiance Calibration Uncertainties (%)										
Uncertainty Source	Band 15	Band 2	Band 16	Band 17	Band 18	Band 19	Band 5	Band 26	Band 6	Band 7
	748 nm	858 nm	870 nm	905 nm	936 nm	940 nm	1240 nm	1375 nm	1640 nm	2130 nm
NIST to SIS(100) Transfer (per GSFC experience)	1.28	1.28	1.20	1.30	1.31	1.31	1.46	1.58	1.81	2.40
Transfer to MODIS	1.50	1.50	1.50	1.50	1.77	1.66	1.50	3.07	1.50	1.50
Signal Noise (1/SNR at the typical radiance for Earth observations)	0.17	0.50	0.19	0.60	1.75	0.40	1.35	0.67	0.36	0.91
Sample Timing Errors (Estimated)	0.00	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10
Electronics-A/D Nonlinearity	0.10	0.13	0.10	0.16	0.25	0.14	0.16	0.13	0.13	0.17
FPA Temperature Correction	0.06	0.23	0.06	0.32	0.61	0.24	0.34	0.21	0.20	0.35
Scan Angle Reflectance Correction	0.09	0.31	0.09	0.43	0.82	0.33	0.46	0.28	0.27	0.48
Mirror Side Correction	0.05	0.16	0.05	0.22	0.41	0.17	0.23	0.14	0.14	0.24
Polarization (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Crosstalk (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Scatter (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
RSS Total	1.99%	2.08%	1.94%	2.16%	3.03%	2.20%	2.57%	3.54%	2.41%	3.05%

TABLE 3.1.2 -- Reflectance Calibration Uncertainties

Reflectance Calibration Uncertainties (%)										
Uncertainty Source	Band 8	Band 9	Band 3	Band 10	Band 11	Band 12	Band 4	Band 1	Band 13	Band 14
	412 nm	443 nm	469 nm	488 nm	531 nm	551 nm	555 nm	645 nm	667 nm	678 nm
SD BRDF Variation and Uncertainty	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
SD Degradation Outside SDSM	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
SD Screen Transmittance Error	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
SD Port Scatter	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Signal Noise (1/SNR at the typical radiance for Earth observations)	0.11	0.12	0.41	0.12	0.13	0.13	0.44	0.78	0.11	0.09
Sample Timing Errors (Estimated)	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.10	0.00	0.00
Electronics-A/D Nonlinearity	0.10	0.13	0.10	0.16	0.25	0.14	0.16	0.13	0.13	0.17
FPA Temperature Correction	0.09	0.08	0.30	0.08	0.07	0.07	0.31	0.43	0.08	0.09
Scan Angle Reflectance Correction	0.13	0.10	0.40	0.10	0.10	0.10	0.42	0.58	0.11	0.12
Mirror Side Correction	0.07	0.05	0.20	0.05	0.05	0.05	0.21	0.29	0.06	0.06
Polarization (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Crosstalk (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Scatter (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
RSS Total	2.14%	2.13%	2.24%	2.13%	2.13%	2.13%	2.25%	2.40%	2.13%	2.13%

TABLE 3.1.2 Concluded-- Reflectance Calibration Uncertainties

Reflectance Calibration Uncertainties (%)										
Uncertainty Source	Band 15	Band 2	Band 16	Band 17	Band 18	Band 19	Band 5	Band 26	Band 6	Band 7
	748 nm	858 nm	870 nm	905 nm	936 nm	940 nm	1240 nm	1375 nm	1640 nm	2130 nm
SD BRDF Variation and Uncertainty	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
SD Degradation Outside SDSM	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
SD Screen Transmittance Error	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
SD Port Scatter	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Signal Noise (1/SNR at the typical radiance for Earth observations)	0.17	0.50	0.19	0.60	1.75	0.40	1.35	0.67	0.36	0.91
Sample Timing Errors (Estimated)	0.00	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10
Electronics-A/D Nonlinearity	0.10	0.13	0.10	0.16	0.25	0.14	0.16	0.13	0.13	0.17
FPA Temperature Correction	0.06	0.23	0.06	0.32	0.61	0.24	0.34	0.21	0.20	0.35
Scan Angle Reflectance Correction	0.09	0.31	0.09	0.43	0.82	0.33	0.46	0.28	0.27	0.48
Mirror Side Correction	0.05	0.16	0.05	0.22	0.41	0.17	0.23	0.14	0.14	0.24
Polarization (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Crosstalk (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Scatter (Scene Dependent)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
RSS Total	2.14%	2.23%	2.14%	2.29%	2.97%	2.21%	2.60%	2.26%	2.19%	2.41%

Table 3.2.2 Typical Radiance Uncertainty Contributions and RSS Total for PV Bands

	Symbol	Nominal	Perturb.	Band 20 375 nm	Band 21 396 nm	Band 22 396 nm	Band 23 405 nm	Band 24 447 nm	Band 25 452 nm	Band 27 673 nm	Band 28 733 nm	Band 29 855 nm	Band 30 973 nm
Scan Mirror Temp	T_{mir}	285 K	1 K	0.01%	0.01%	0.01%	0.01%	0.05%	0.01%	0.02%	0.02%	0.02%	0.05%
BB Temp	T_{bb}	300 K	0.1 K	0.42%	0.40%	0.40%	0.39%	0.34%	0.35%	0.23%	0.22%	0.19%	0.17%
Scan Cavity Temp	T_{cav}	290 K	10 K	0.21%	0.21%	0.21%	0.21%	0.19%	0.19%	0.08%	0.06%	0.04%	0.05%
SAM Temp (SV Surround)	T_{sam}	290 K	10 K	0.00%	0.27%	0.00%	0.00%	2.38%	0.49%	0.59%	0.21%	0.00%	0.06%
BB Earthshine Eff. Temp	T_{swath}	250 K	50 K	0.19%	0.19%	0.19%	0.19%	0.18%	0.18%	0.10%	0.07%	0.06%	0.06%
Fraction BB Refl. Rad from Cavity	W_{cav}	0.75	-0.25	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
BCS Transfer to BB Eff. Emiss.	e_{bb}	Band Dep.	0.004	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Fraction of SV Rad from SAM	W_{sv}	Band Dep.	0.001	0.01%	0.06%	0.01%	0.01%	0.51%	0.10%	0.37%	0.20%	0.01%	0.13%
On-Orbit Rel.Refl.Adj.(EV/BB)	D_{ev}	1	0.001	0.10%	0.17%	0.09%	0.09%	0.77%	0.10%	0.61%	0.32%	0.05%	0.21%
On-Orbit Rel.Refl.Adj.(SV/BB)	D_{sv}	1	0.001	0.04%	0.11%	0.04%	0.04%	0.82%	0.15%	0.65%	0.36%	0.01%	0.25%
DN(L_{typ})	DN	Band Dep.	Band Dep.	0.03%	0.31%	0.03%	0.03%	0.12%	0.04%	0.07%	0.04%	0.02%	0.03%
Alpha(2.5% nonlinearity)	a	Band Dep.	Band Dep.	0.00%	0.00%	0.00%	0.00%	0.25%	0.20%	0.48%	0.50%	0.00%	0.64%
Center Wavelength	l	Band Dep.	1 Wave No.	0.29%	0.33%	0.33%	0.33%	0.25%	0.26%	0.14%	0.10%	0.60%	0.00%
NEdL (Spec.)	NEdL	Band Dep.		0.21%	0.63%	0.28%	0.28%	1.29%	1.05%	0.93%	0.79	0.09%	0.59%
NIST Transfer to BCS (est.)	N/A	N/A	N/A	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
ADC Nonlinearity (est.)	N/A	N/A	N/A	0.01%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
Cross Talk (Scene Dependent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scatter (Scene Dependent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RSS				1.18%	1.40%	1.20%	1.20%	3.19%	1.64%	1.87%	1.51%	1.19%	1.39%

Table 3.2.3 Typical Radiance Uncertainty Contributions and RSS Total for PC Bands

	Symbol	Nominal	Perturb.	Band 31 1103 nm	Band 32 1202 nm	Band 33 1334 nm	Band 34 1364 nm	Band 35 1394 nm	Band 36 1424 nm	Band 31hi 1103 nm	Band 32hi 1202 nm
Scan Mirror Temp	T_{mir}	285 K	1 K	0.01%	0.01%	0.03%	0.03%	0.04%	0.07%	0.00%	0.00%
BB Temp	T_{bb}	300 K	0.1 K	0.15%	0.14%	0.13%	0.12%	0.12%	0.12%	0.15%	0.14%
Scan Cavity Temp	T_{cav}	290 K	10 K	0.05%	0.06%	0.08%	0.09%	0.10%	0.11%	0.05%	0.06%
SAM Temp (SV Surround)	T_{sam}	290 K	10 K	0.00%	0.00%	0.01%	0.02%	0.02%	0.03%	0.01%	0.01%
BB Earthshine Eff. Temp	T_{swath}	250 K	50 K	0.07%	0.09%	0.12%	0.13%	0.14%	0.15%	0.07%	0.09%
Fraction BB Refl. Rad from Cavity	W_{cav}	0.75	-0.25	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
BCS Transfer to BB Eff. Emiss.	e_{bb}	Band Dep.	0.004	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Fraction of SV Rad from SAM	W_{sv}	Band Dep.	0.001	0.01%	0.01%	0.06%	0.08%	0.12%	0.21%	0.07%	0.07%
On-Orbit Rel.Refl.Adj.(EV/BB)	D_{ev}	1	0.001	0.04%	0.04%	0.09%	0.14%	0.20%	0.38%	0.15%	0.14%
On-Orbit Rel.Refl.Adj.(SV/BB)	D_{sv}	1	0.001	0.01%	0.01%	0.12%	0.17%	0.23%	0.41%	0.12%	0.11%
DN(L_{typ})	DN	Band Dep.	Band Dep.	0.02%	0.02%	0.02%	0.02%	0.03%	0.04%	0.01%	0.01%
Alpha(2.5% nonlinearity)	a	Band Dep.	Band Dep.	0.00%	0.00%	0.64%	0.74%	0.83%	0.98%	0.29%	0.31%
Center Wavelength	1	Band Dep.	1 Wave Nb	0.09%	0.13%	0.20%	0.22%	0.22%	0.22%	0.09%	0.13%
NEdL (Spec.)	NEdL	Band Dep.		0.07%	0.07%	0.40%	0.43%	0.45%	0.74%	0.64%	0.54%
NIST Transfer to BCS (est.)	N/A	N/A	N/A	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
ADC Nonlinearity (est.)	N/A	N/A	N/A	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
Cross Talk (Scene Dependent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scatter (Scene Dependent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RSS				1.03%	1.03%	1.30%	1.37%	1.45%	1.73%	1.26%	1.22%