Error propagation in SMOS calibration subsystem

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Ground characterization of Calibration Subsystem (CAS) of MIRAS (Microwave Imaging Radiometer using Aperture Synthesis):
- CAS essential for overall performance of the payload
- Ground calibration of CAS enables calibration of receiver gains, \( T_{\text{sys}} \) and phase imbalance
- The propagation and accumulation of errors in ground calibration to MIRAS calibration plane is simulated
- An analytical method of calculating error propagation is introduced

Calibrated gains, \( T_{\text{sys}} \) of receiver \( k \): 6 NIR readings used for \( T_{\text{sys}} \)

Amplitude change over temperature

Phase change over temperature

Phase calibration

Uncertainty of \( C_{\text{CAS}} \)

Ground calibration of CAS

Calculated propagation of errors on MIRAS baseline chart

Standard deviation of error in alias-free zone:
- 0.5 K for CAS amplitude errors
- 0.9 K for CAS phase errors
- Combined effect in MIRAS image 1.0 K

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