
CALIBRATION REPORT THE SNPP AND NOAA-20 CRIS INSTRUMENTS

Flavio Iturbide-Sanchez
NOAA/NESDIS/STAR



Calibration Report of the JPSS CrIS Instruments: Summary

- The SNPP and NOAA-20 CrIS instruments are healthy and operating nominally.
- The SNPP CrIS instrument was successfully recovered after the side switch performed in June 24, 2019. The side switch was required due to an anomaly identified in the instrument mid-wave band. The root source of the anomaly was associated to the failure of the Mid-wave (MW) IR Signal Processor Field Programmable Gate Array (FPGA).
- The long-term performance of the SNPP/CrIS SDR Product After the Switch to Side-2 electronics has been demonstrated during the JPSS Validate Review held on February 6, 2020.
- The CrIS SDR data products hold radiometric FOV2FOV consistency within 0.1 K, spectral uncertainty within 2ppm and a geolocation within 250 meters.
- The radiometric differences between SNPP and NOAA-20 are within ± 0.1 K for the majority of channels.



SNPP and NOAA20 CrIS SDR Overall Performance

SNPP/CrIS FSR SDR Side-2 uncertainties (**blue**) vs. specifications (black)

Band	Spectral Range (cm ⁻¹)	Resolution (cm ⁻¹)	Number of Channels	NEdN* (mW/m ² /sr/cm ⁻¹)	Frequency Uncertainty (ppm)	Geolocation Uncertainty (km)	Radiometric Uncertainty @287K BB (%)	Radiometric Stability @287K BB (%)
LWIR	650-1095	0.625	713	0.099 (0.14)	2 (10)	0.25 (5)	0.16 (0.45)	0.17 (0.40)
MWIR	1210-1750	0.625	865	0.0536 (0.084)	2 (10)	0.25 (5)	0.19 (0.58)	0.21 (0.50)
SWIR	2155-2550	0.625	633	0.00752 (0.014)	2 (10)	0.25 (5)	0.40 (0.77)	0.28 (0.64)

NOAA-20/CrIS FSR SDR uncertainties (**blue**) vs. specifications (black)

Band	Spectral Range (cm ⁻¹)	Resolution (cm ⁻¹)	Number of Channels	NEdN* (mW/m ² /sr/cm ⁻¹)	Frequency Uncertainty (ppm)	Geolocation Uncertainty (km)	Radiometric Uncertainty @287K BB (%)	Radiometric Stability @287K BB (%)
LWIR	650-1095	0.625	713	0.086 (0.14)	2 (10)	0.25 (1.5)	0.19 (0.45)	0.27 (0.40)
MWIR	1210-1750	0.625	865	0.0315 (0.084)	2 (10)	0.25 (1.5)	0.21 (0.58)	0.30 (0.50)
SWIR	2155-2550	0.625	633	0.00766 (0.014)	2 (10)	0.25 (1.5)	0.37 (0.77)	0.52 (0.64)

* Mean value averaged over 9 FOVs and over entire band.