Recalibration of Lowband Receiver 01
25C

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Introduction

- Here we show the calibration results for the Low Band 1 receiver at 25◦C.
- The specific calibrations considered correspond to Low-Band 1 receiver done in 2019_06.

- The Calibration coeffecients over the 50-190MHz were crossed checked with the available Ant sims
- Backend A was used (the one from the field) with an additional 6dB attenuator

- As a precaution, in order to avoid periods of instability of the calibrators, we remove ~ 5% of the data at the beginning of each period covered by the listed spectra files.

Files used:
/data5/edges/data/Receiver01_2019_06_24_040_to_200/25C

Corrected s11:
/data5/edges/data/Receiver01_2019_06_24_040_to_200/25C/
S11/corrected

Note: The s11's used in this report were the first measurement in each set.

Standards used:

Male standard - EDGES Maury - 50.166 ohm (25 degC)

Female Standard - EDGES Keysight - 50.0002 ohm (25 degC)
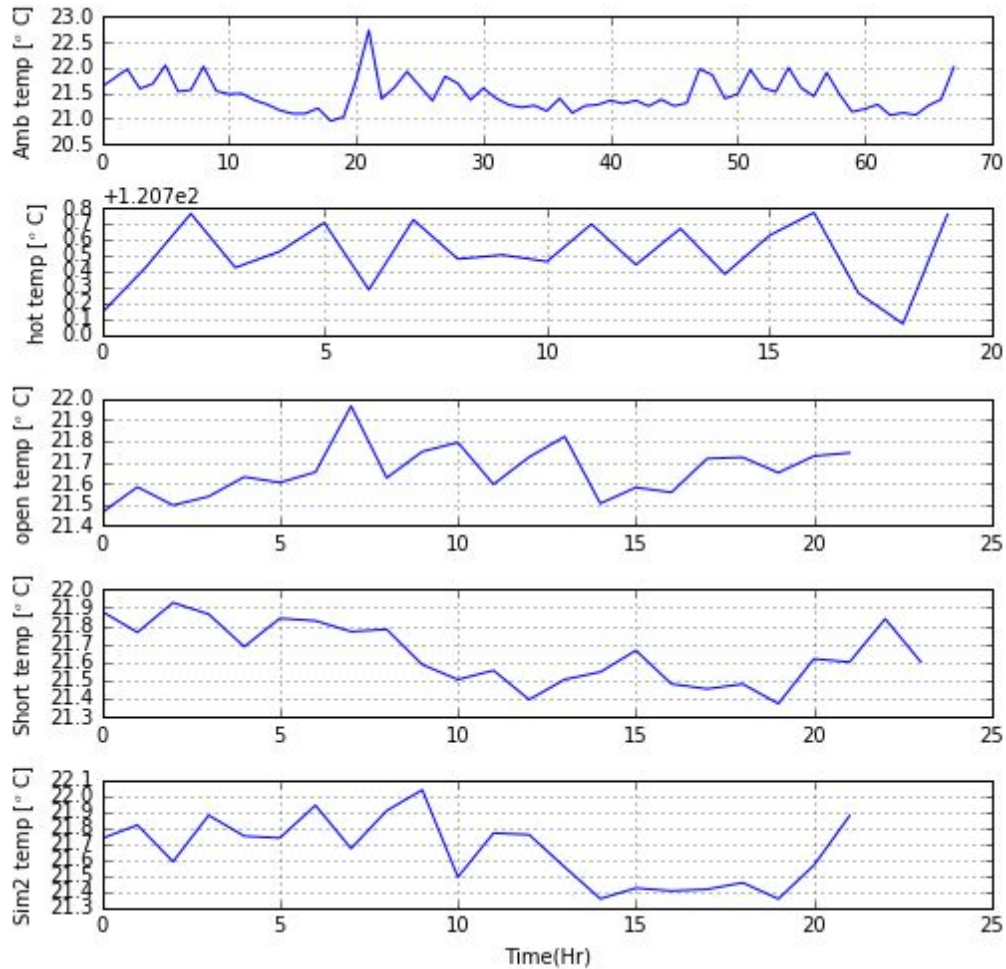
Temperature of calibration loads @ 25C

Figure2: Temperature of the calibration loads and antenna simulator 2

Spectra data @ 25C for the loads
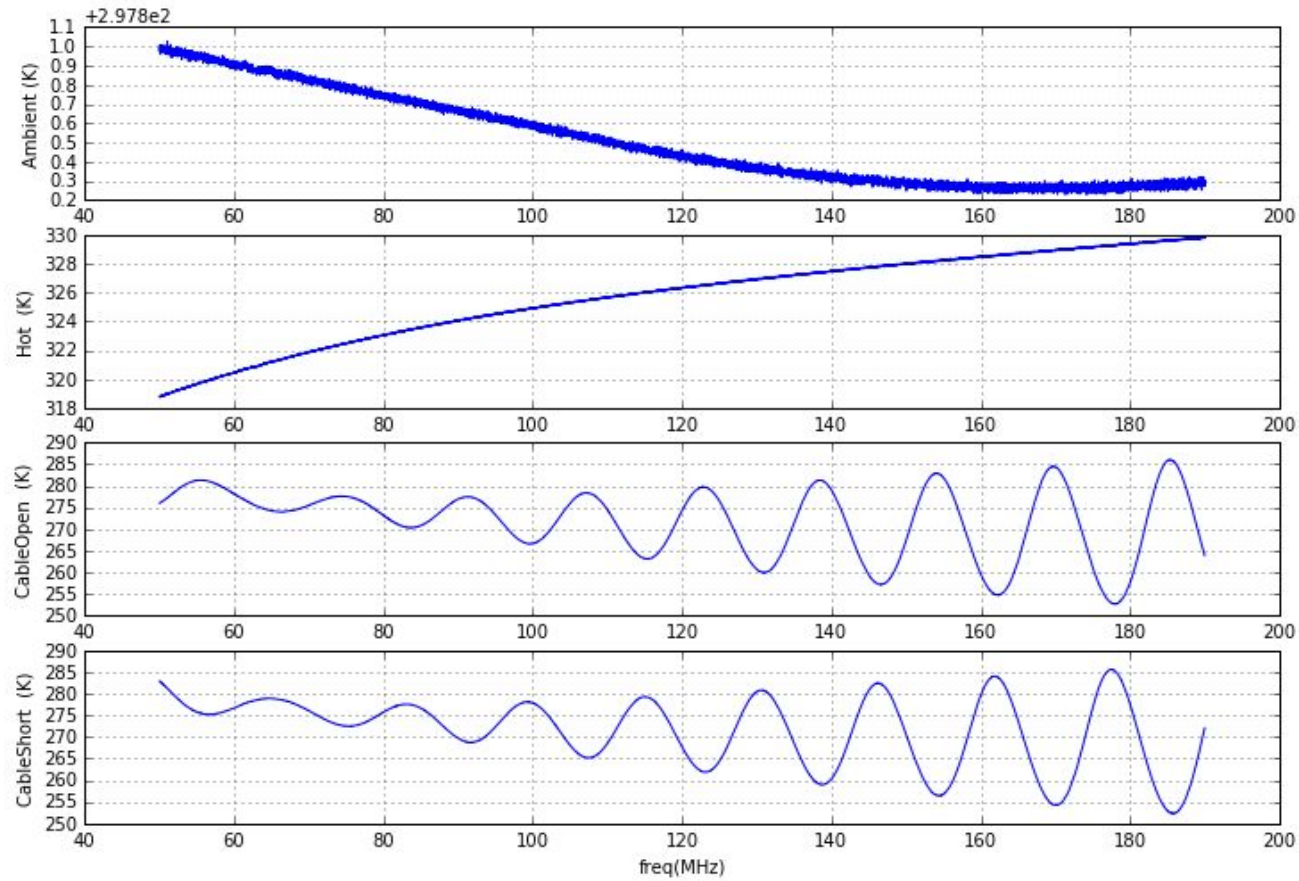
Figure1: Raw spectra of the calibration loads. Spectra looks clean without any RFI
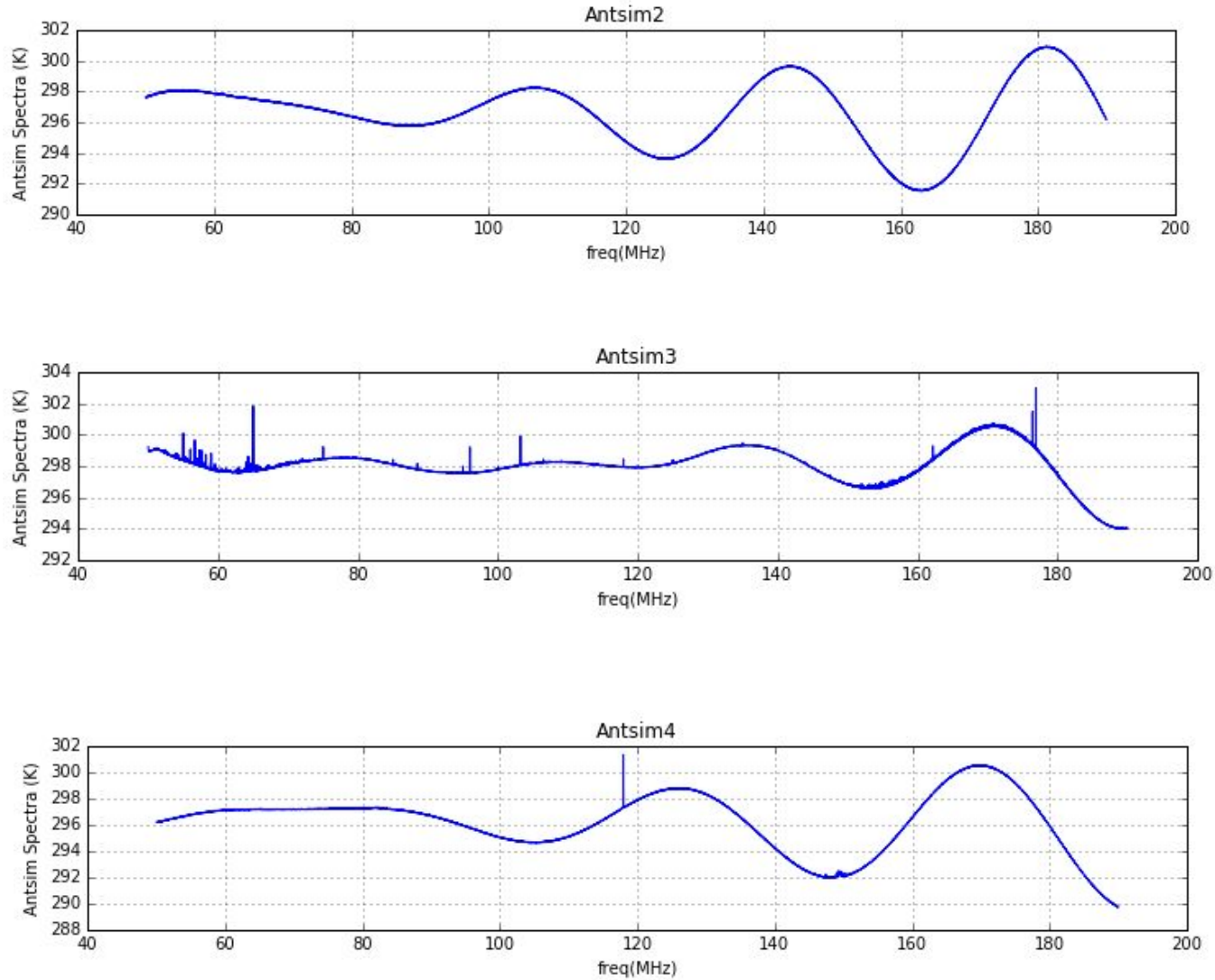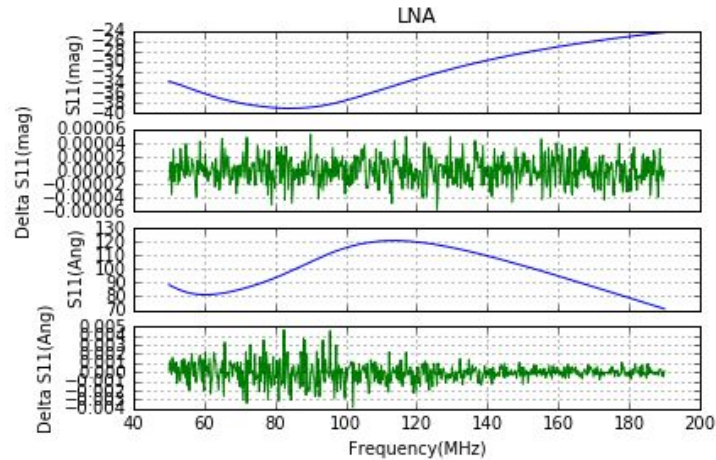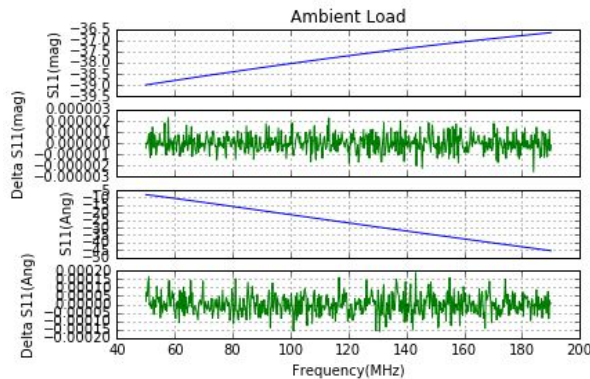
Spectra data @ 25C for the loads

Figure1b: Raw spectra of the antenna simulators. Ant sim3 & 4 spectra are seen to have RFI

Reflection coefficients of the loads @25C; Freq: 50-190MHz
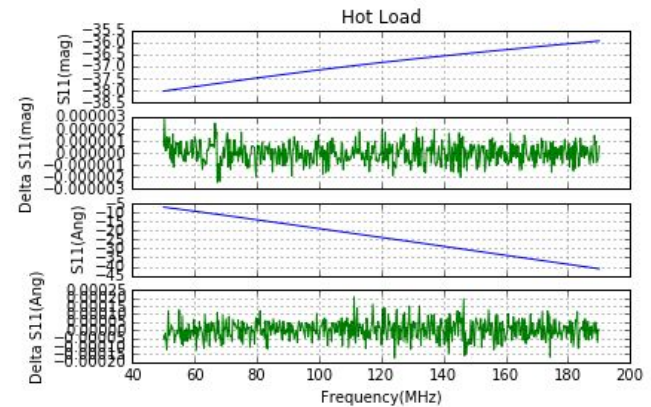
Figure2a: Reflection coefficients of the LNA and the calibration loads. Blue is the fit to the S11s (mag & phase). Green is the difference between the fits and the actual measurements for each respective case.
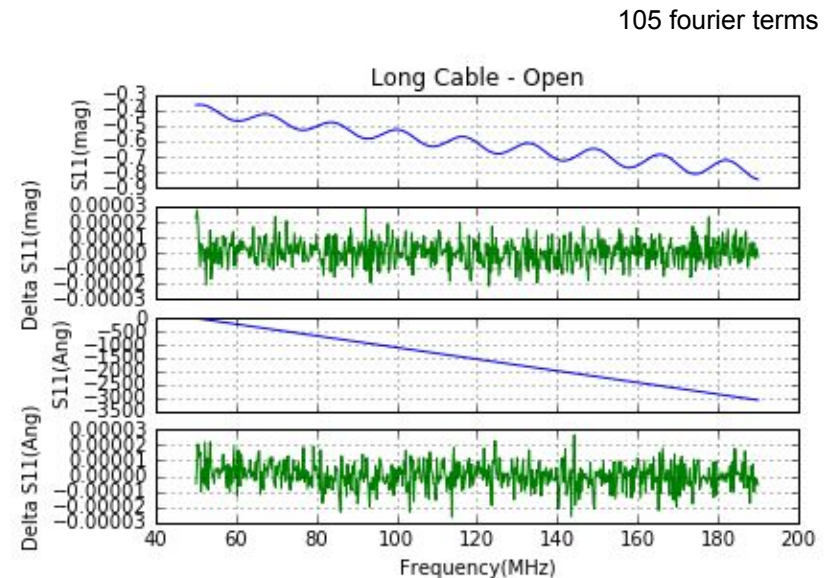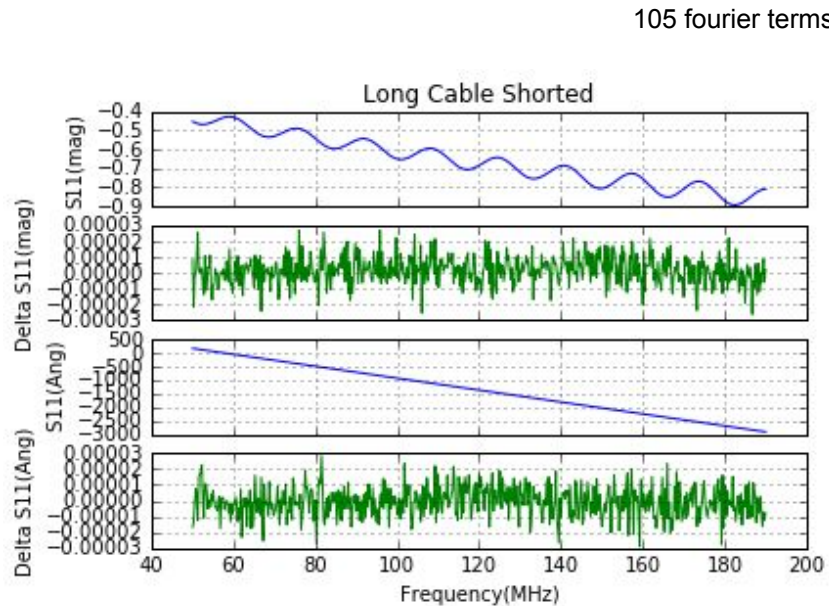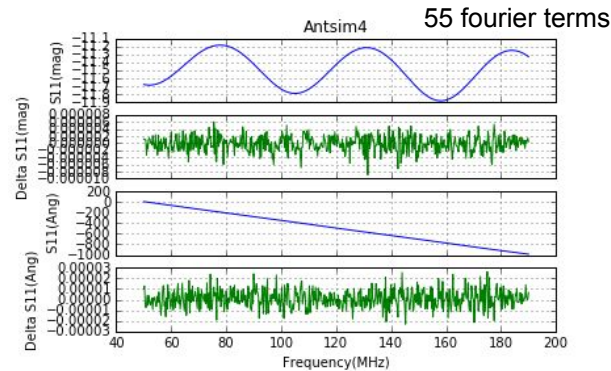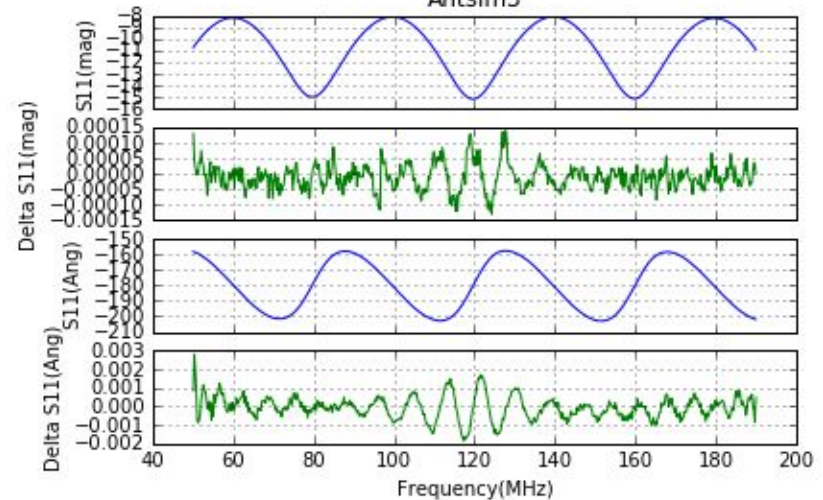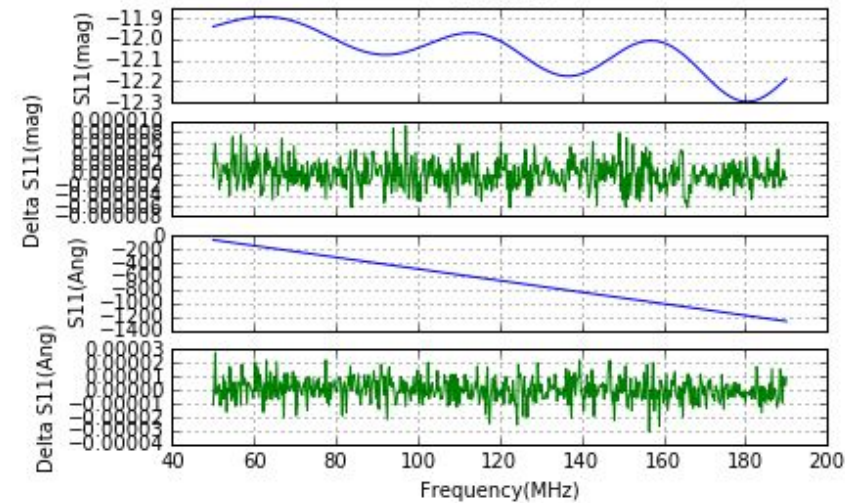
Reflection coefficients of the loads @25C

Figure2b: Reflection coefficients of the long cables. Blue is the fit to the S11s (mag & phase). Green is the difference between the fits and the actual measurements for each respective case.

Reflection coefficients of the loads @25C

Figure2c: Reflection coefficients of the Antenna simulators. Blue is the fit to the S11s (mag & phase). Green is the difference between the fits and the actual measurements for each respective case. The S11 plot of Antsim3 looks incorrect (it was tested with both repetitions)

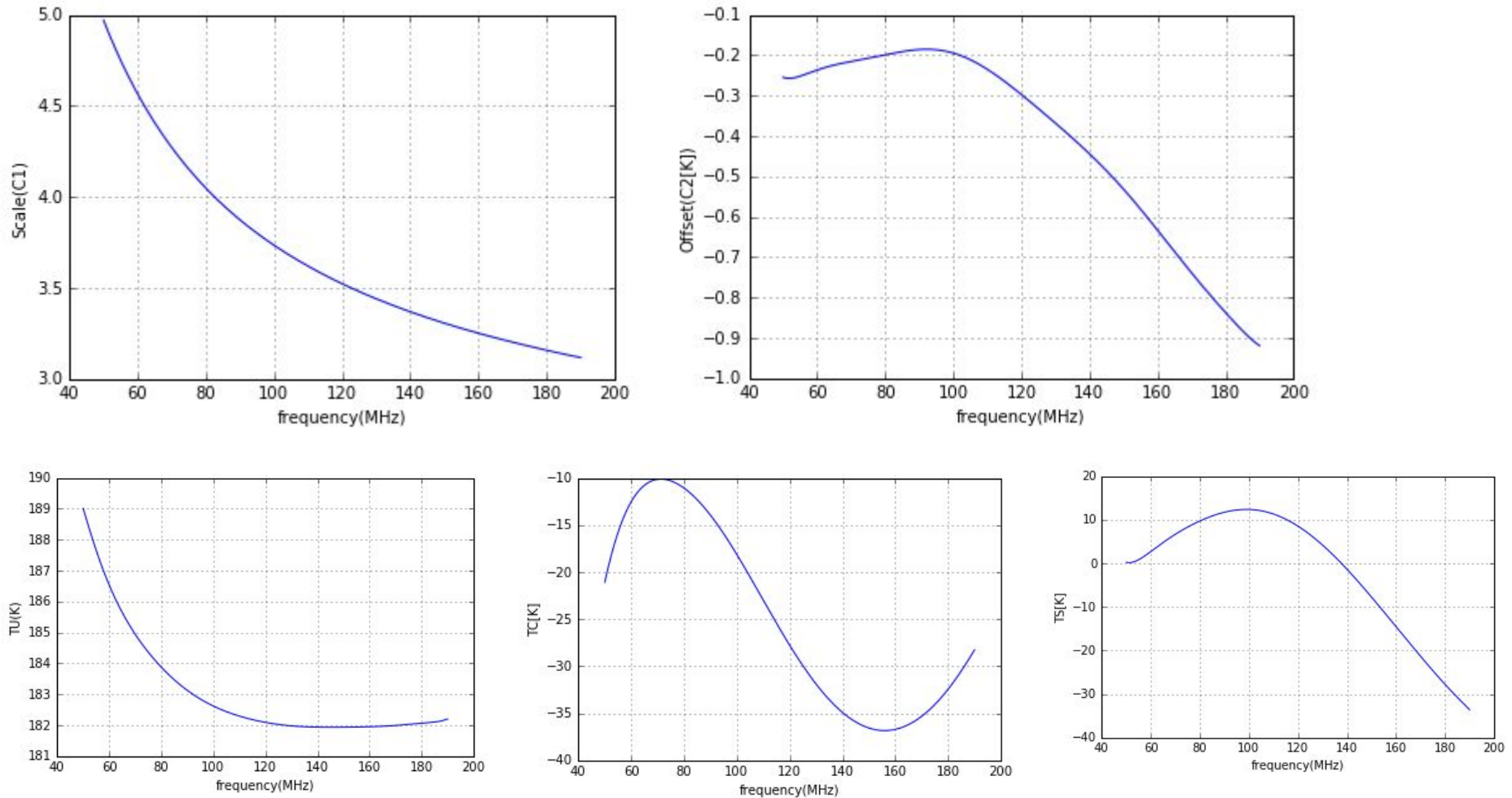# Cal coefficients derived from 25C; Freq: 50-190MHz

Figure4: Calibration parameters for the Low-Band 1 receiver. Over 50-190 MHz, we use 11 terms to model C1 & C2 and 12 terms to model Tu,Tc,Ts.

Calibration Cross check for 25 C; Freq: 50-190 MHz
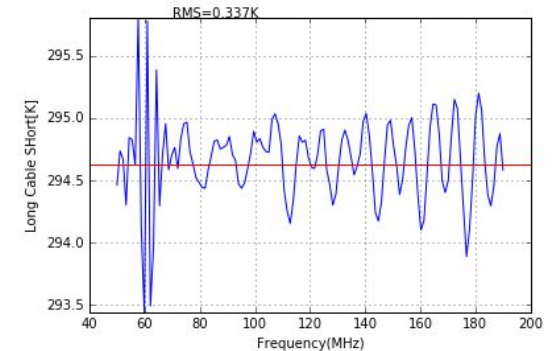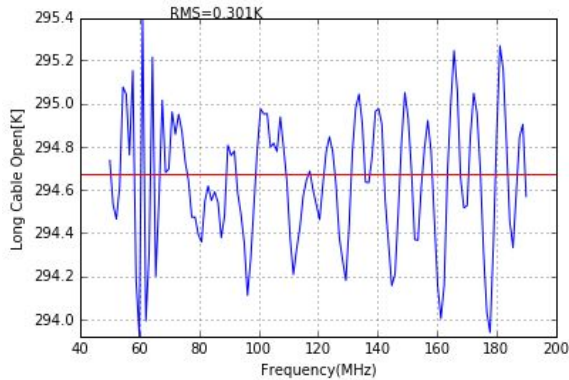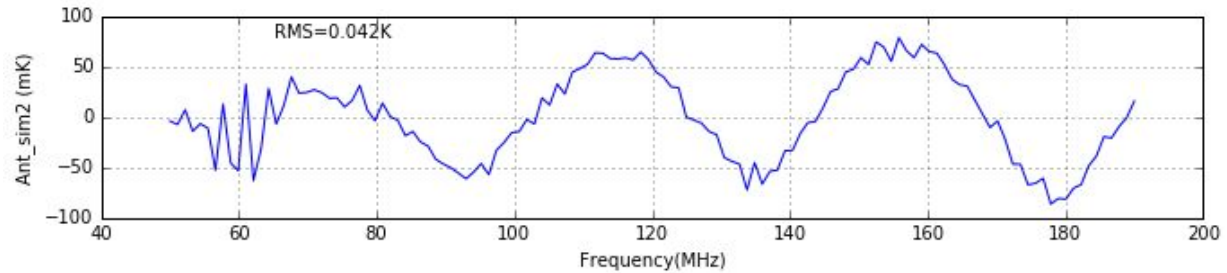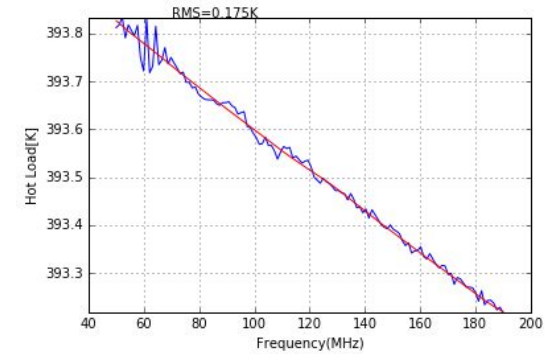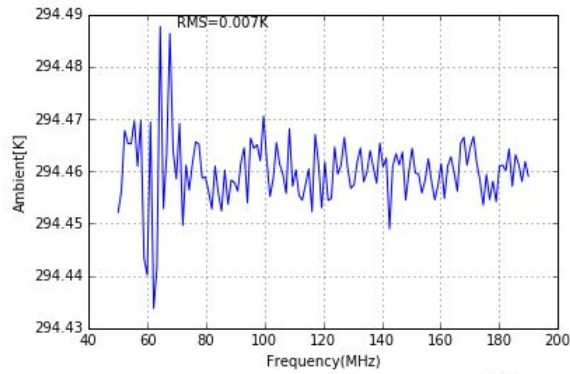Case1 - 11 terms for constants and 12 terms for noise wave parameters

Figure6: Cross checks for calibration of Low-Band 1, 2019-06

Calibration Cross check for 25 C; Freq: 50-190 MHz
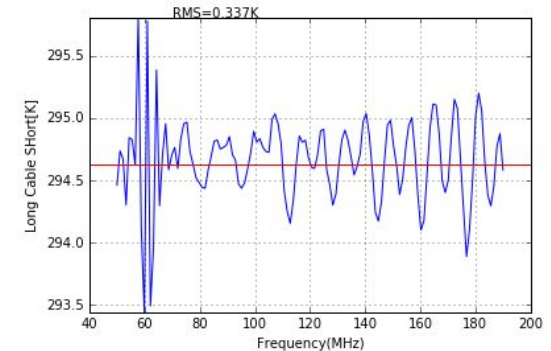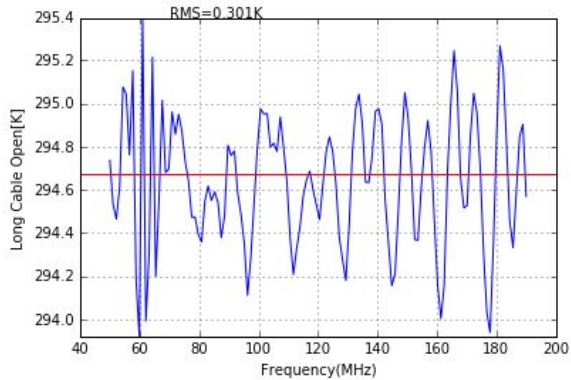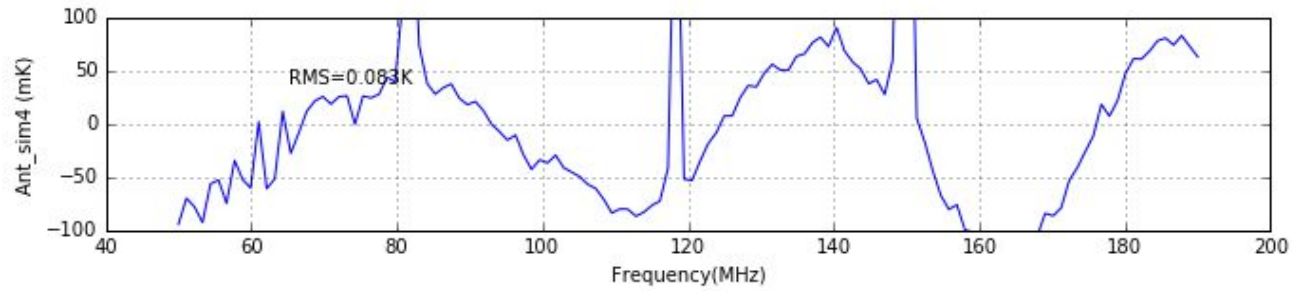## Case1 - 11 terms for constants and 12 terms for noise wave parameters
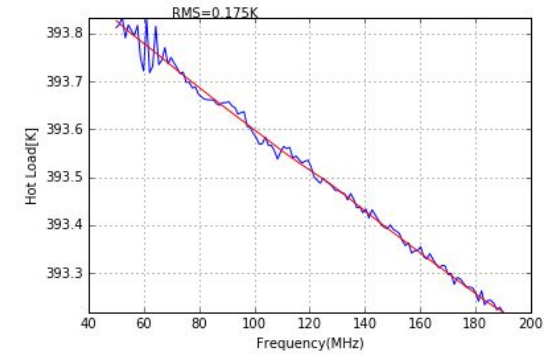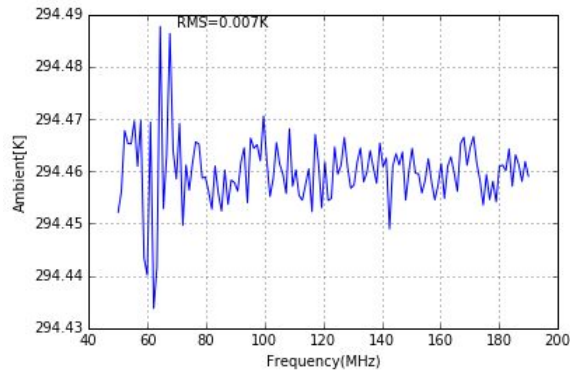

Figure6b: Cross checks for calibration of Low-Band 1, 2019-06