improvements in data collection

Kelly Backes

November 2019

1 Introduction

The purpose of this document is to layout when each innovation happened to data taking. A list of these innovations include

- X gain measurements

- X IF fix

- X moving Y factor to 3 MHz from 2 MHz

- X added abg and Y factor JPA traces

- normalizing by gain every 10 ms and moving it inside

- X drift fix

2 Data Sets

- 20190903   9/3 is the first usable set - everything before that was corrupted by the improper data acquisition

- 20190907

- 20190911

    - disconnected the pump during spectrum 11   This was a vacuum pump that Steve was worried about causing ground loops. No adjustments needed in analysis.

- 20190915

    - added abg and Y factor JPA traces - it didn't work here   This refers to the AMP being off here.
    - added time stamps in par file

- 20190917

    - increased wait time to 2 mins

- 20190919

- 20190925

- This is the first data set with the IF spike problem fixed Addressed by halving the analysis band to +/- 0.95 MHz
- Moved the Y factor location to 3 MHz from 2 MHz addressed by telling the code it's at 2
- fixed added abg and Y factor JPA traces I.e. this is the first measurement where we took bandwidth measurements in the abgs This has been addressed by using the run gain from the ENA. The smart-gain function is still used. Note the run gain is now taken as the starting point for all 5 cal measurements (with center freqs moved as necessary)
- normalizing by gain every 10 ms and moving it inside We moved it to 10 kHz from 2 MHz. I fixed the input parameter, but this does not get used in the present analysis anyways. Except to remove it from the cal spectra - it is technically not in the cal spectra here, but there is no harm in removing a bin around 2 MHz, so I leave that code intact)
- added probe tone to y-factor measurements Absence has been handled by centering the h/c ratio around 1

- 20190930

- 20191002

  - lengthened wait time to 10 mins to reduce drift. Seems to be in budget as of this run

- 20191003

- 20191008

- 20191011

  - fixed amp gain kinda but not really

- 20191014

- 20191019

- 20191023

- 20191028

  - fixed amp gain!

- 20191102

- 20191107

- 20191111