LimeSuite and LimeSDR

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Lime microsystems

Suggested Connections for Examples
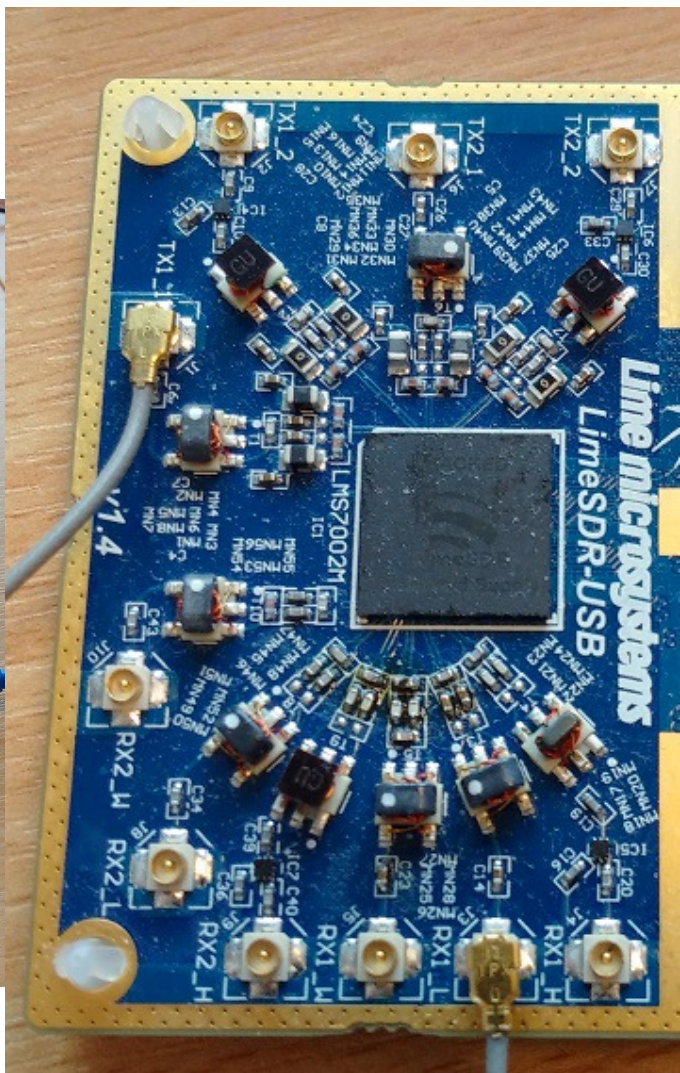
Use external RF loop back
To avoid interference.
E.g. SMA adapter

Connect to TX1_1 and RX1_L
For compatibility with
Code examples.

Lime *microsystems*

Differences between Linux and Windows

- **Linux (Built from Source)**
  - Copy lms7suite_wfm to
  - ~/LimeSuite/builddir/bin

- **Linux (Repository)**
  - Copy lms7suite_wfm to
  - ~/

- **Windows**
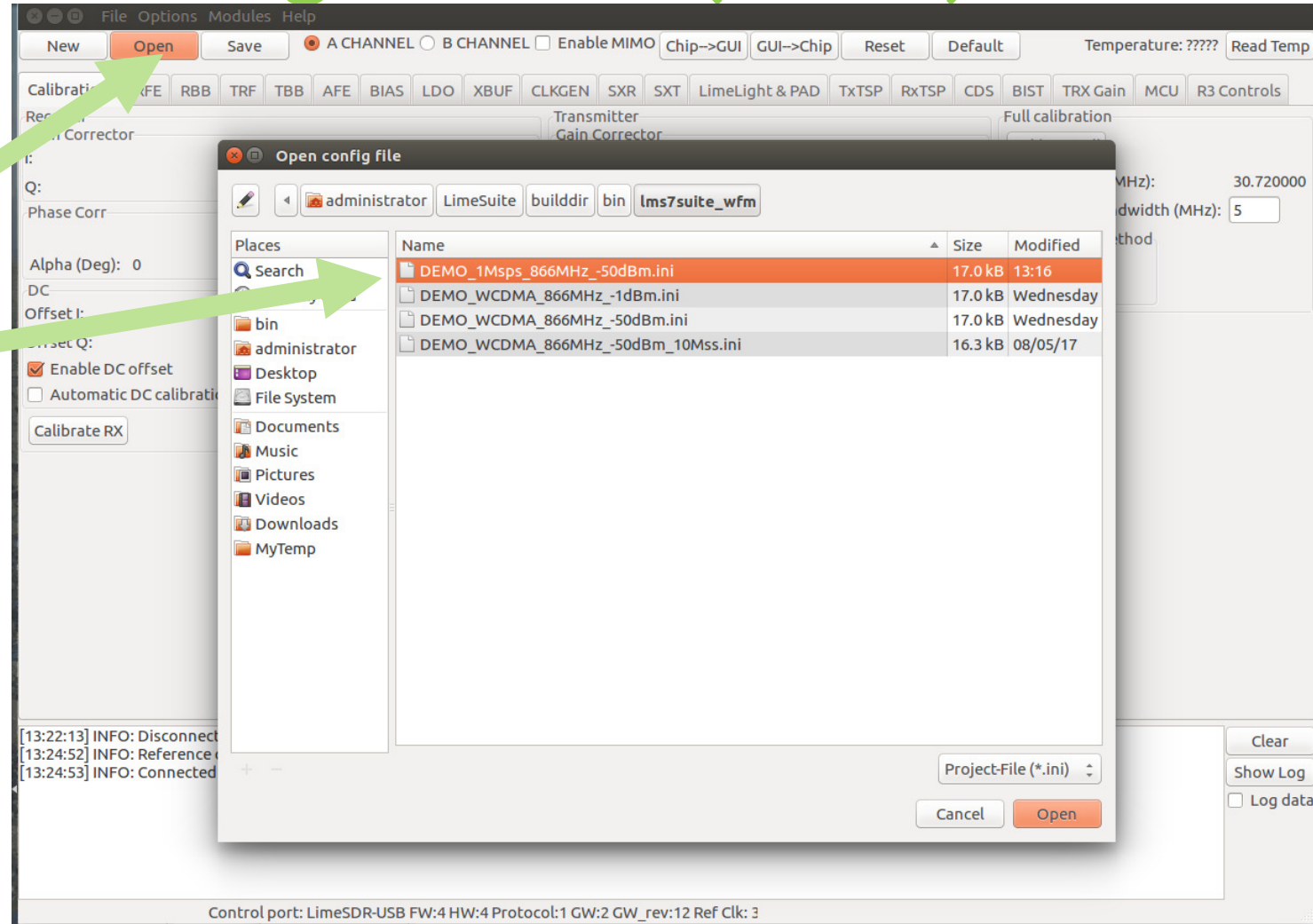 - Copy lms7suite_wfm to
  - \Documents or \Desktop

Lime microsystems

Connecting to LimeSDR

- **Connect LimeSDR to USB3**

- **Start LimeSuite software**

- **To select LimeSDR**

- **Top Menubar**
  - Options → Connect

- **RESET**

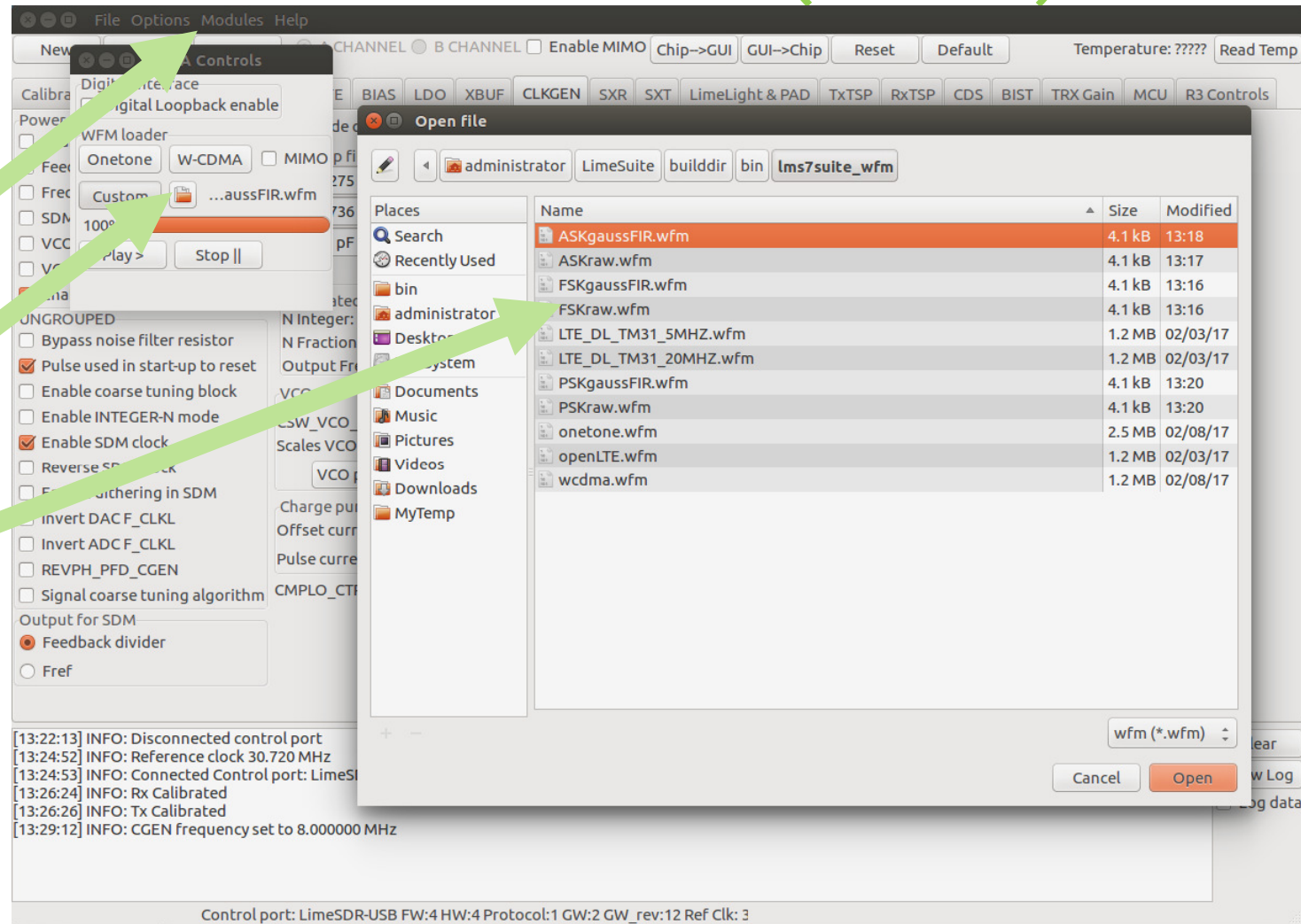*The FPRF Company – Ultra flexible RF solutions*
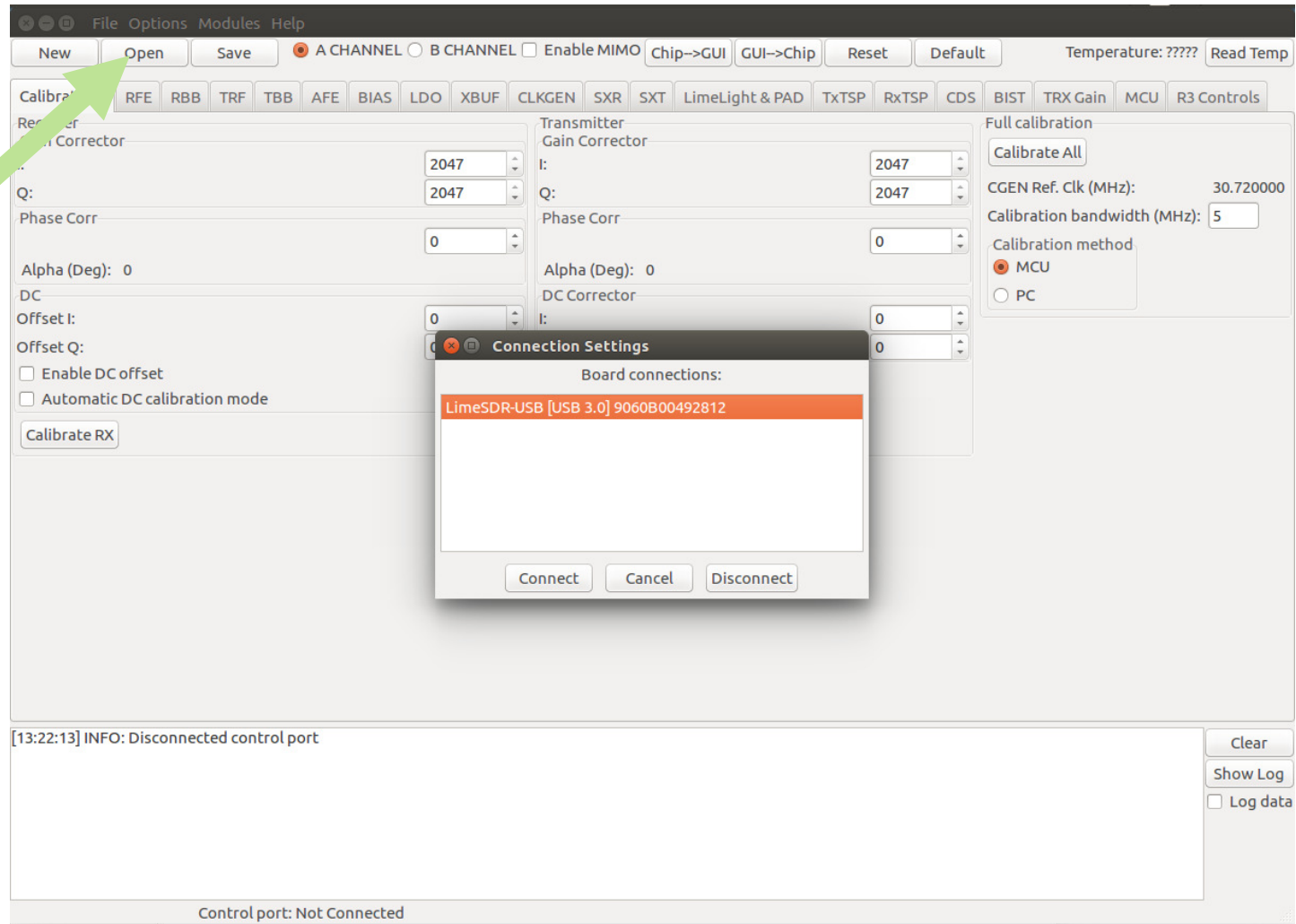
Loading a settings file (.ini)

- **To select LimeSDR settings**

- **Open Button**

- **Select**
  - DEMO_1Msps_866Mhz_-50dBm .ini

Selecting a Waveform file (.wfm)

- **To select waveform to play back on LimeSDR**

- **Modules (Top Menubar)**
  - FPGA Control
  - Custom Open File
    - (Middle)
  - Custom Button (Left)
  - FSKraw.wfm

FSK Demo

- **Modules**
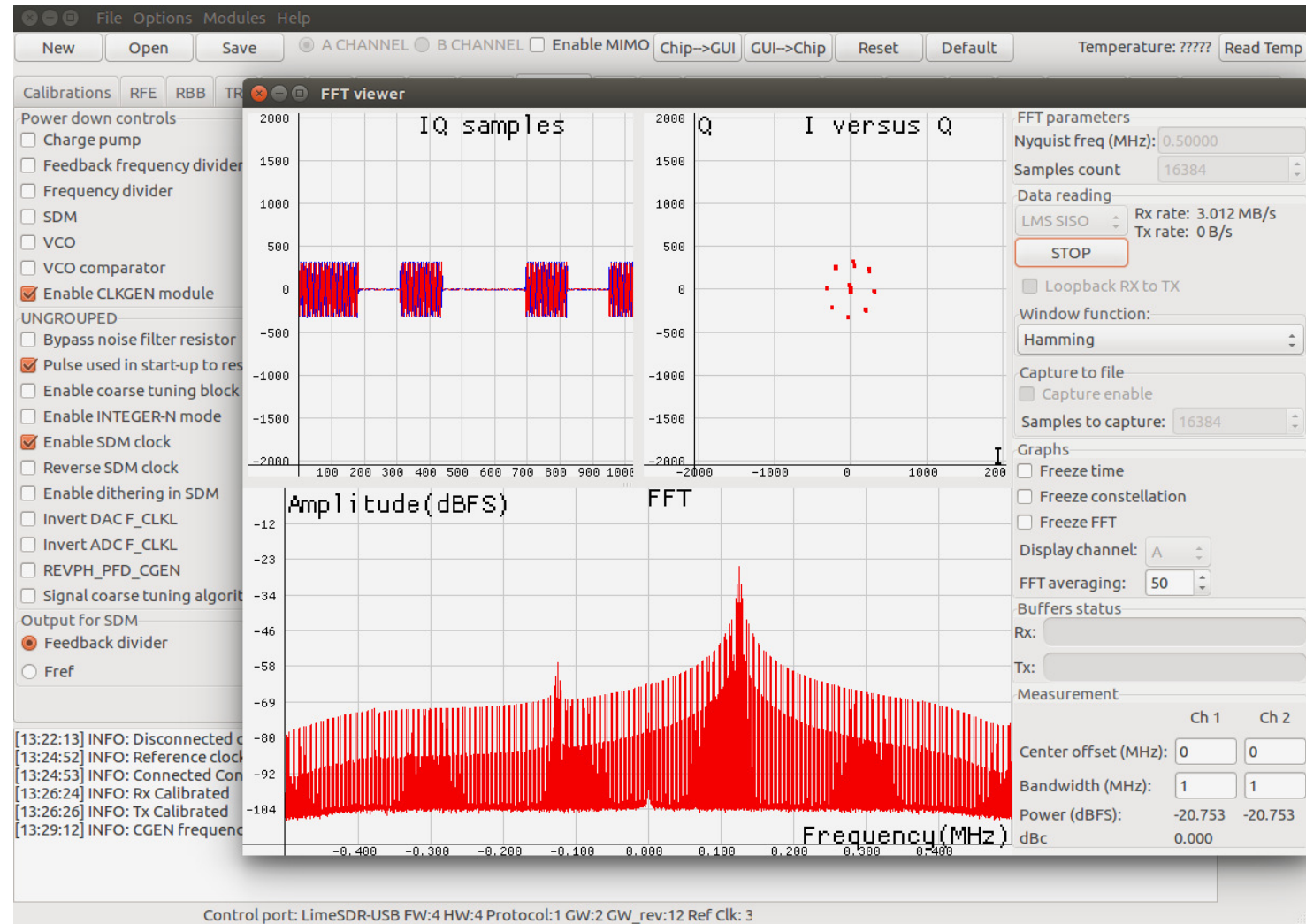 - FFT Viewer
  - Hamming or Hanning windows
- **FSKraw.wfm**
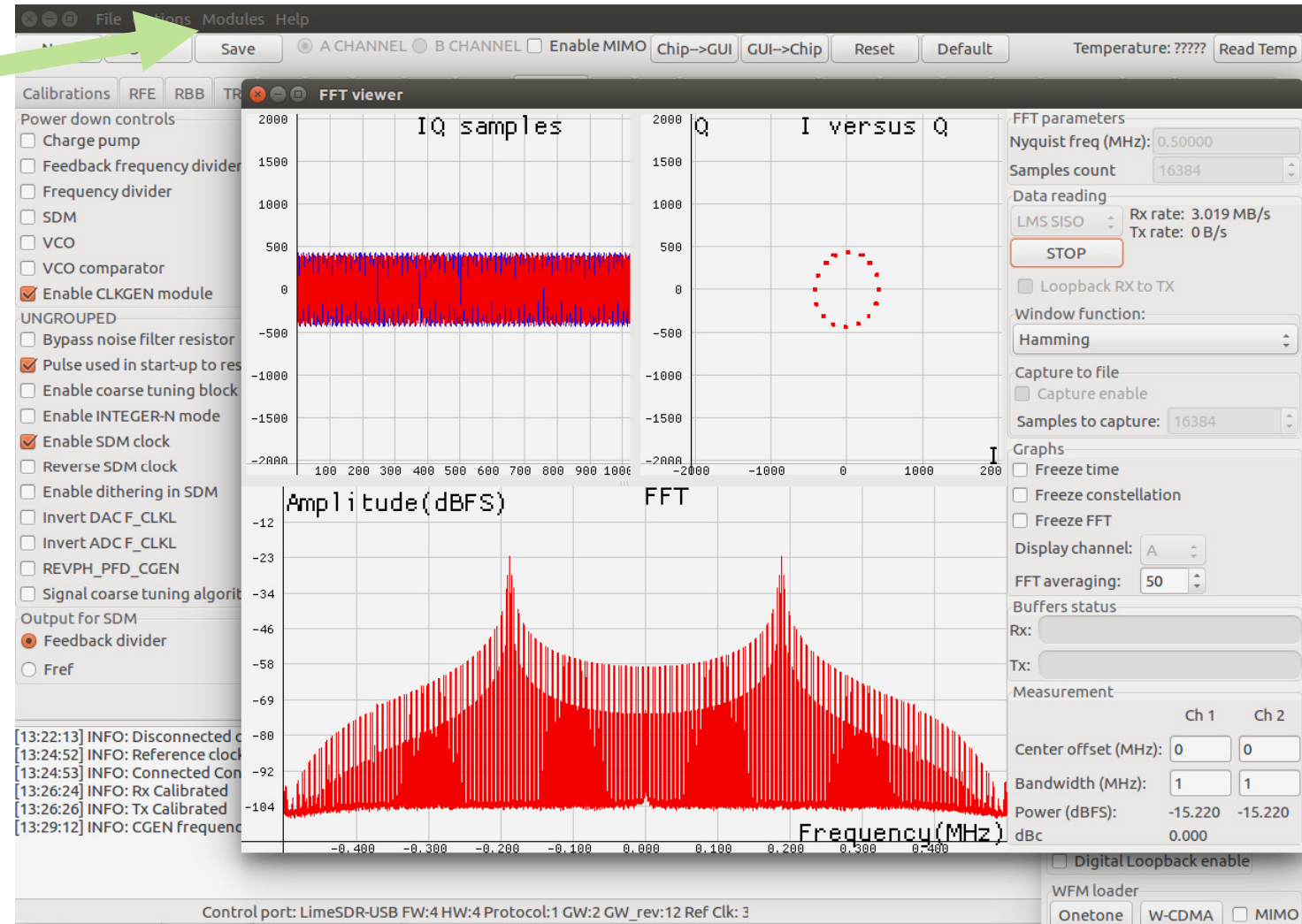
Filtered FSK Demo

- **FSKgaussFIR.wfm**

- **Less interference to adjacent channels.**

- **FFT Viewer helps you to find optimum radio settings for your signal.**

  - Phase Noise

  - Adjacent Channel Interference

  - Avoid Rx overload.

ASK Demo

- **ASKraw.wfm**

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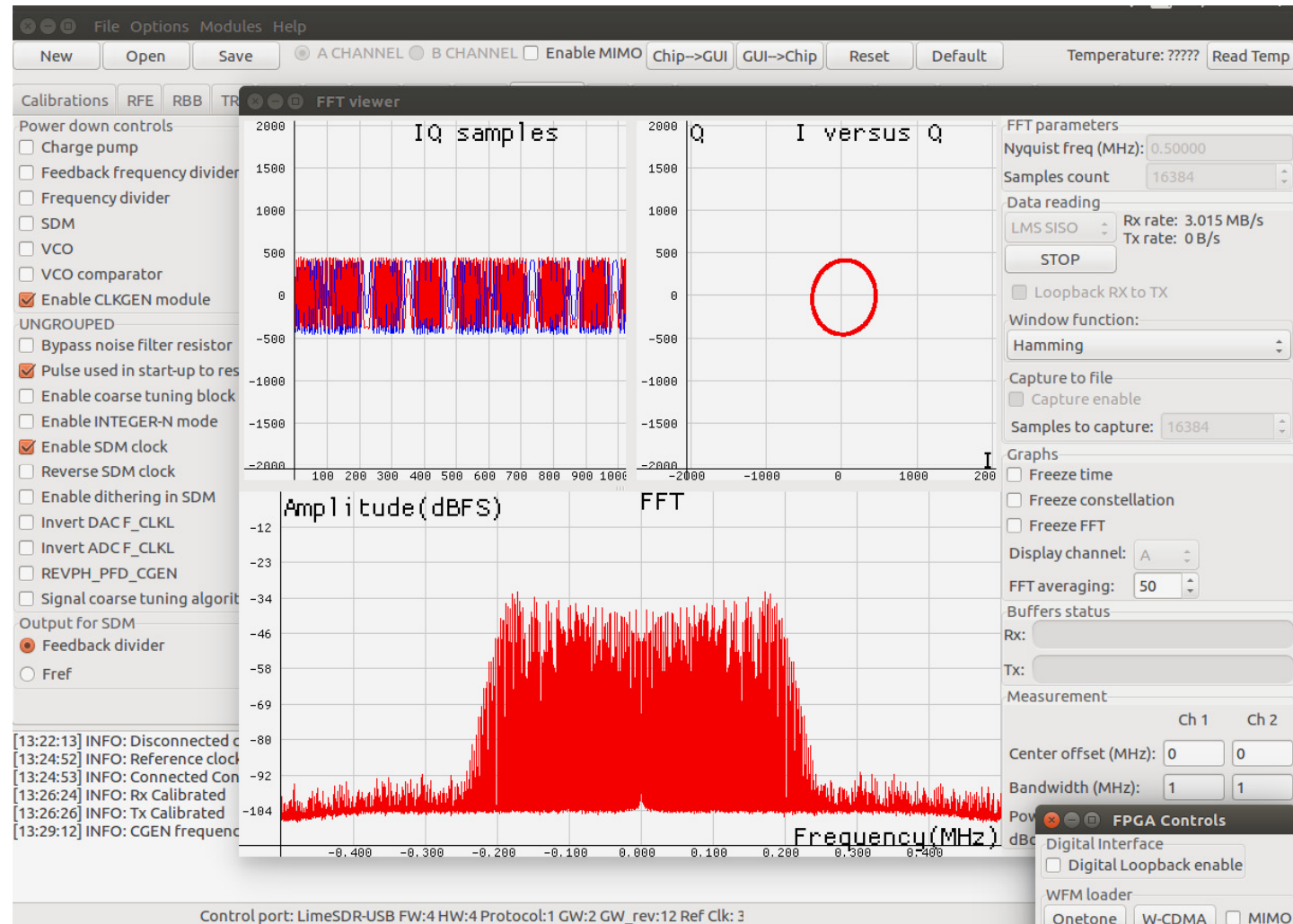
Filtered ASK Demo

- **ASKgaussFIR.wfm**

- **Less interference to adjacent channels.**
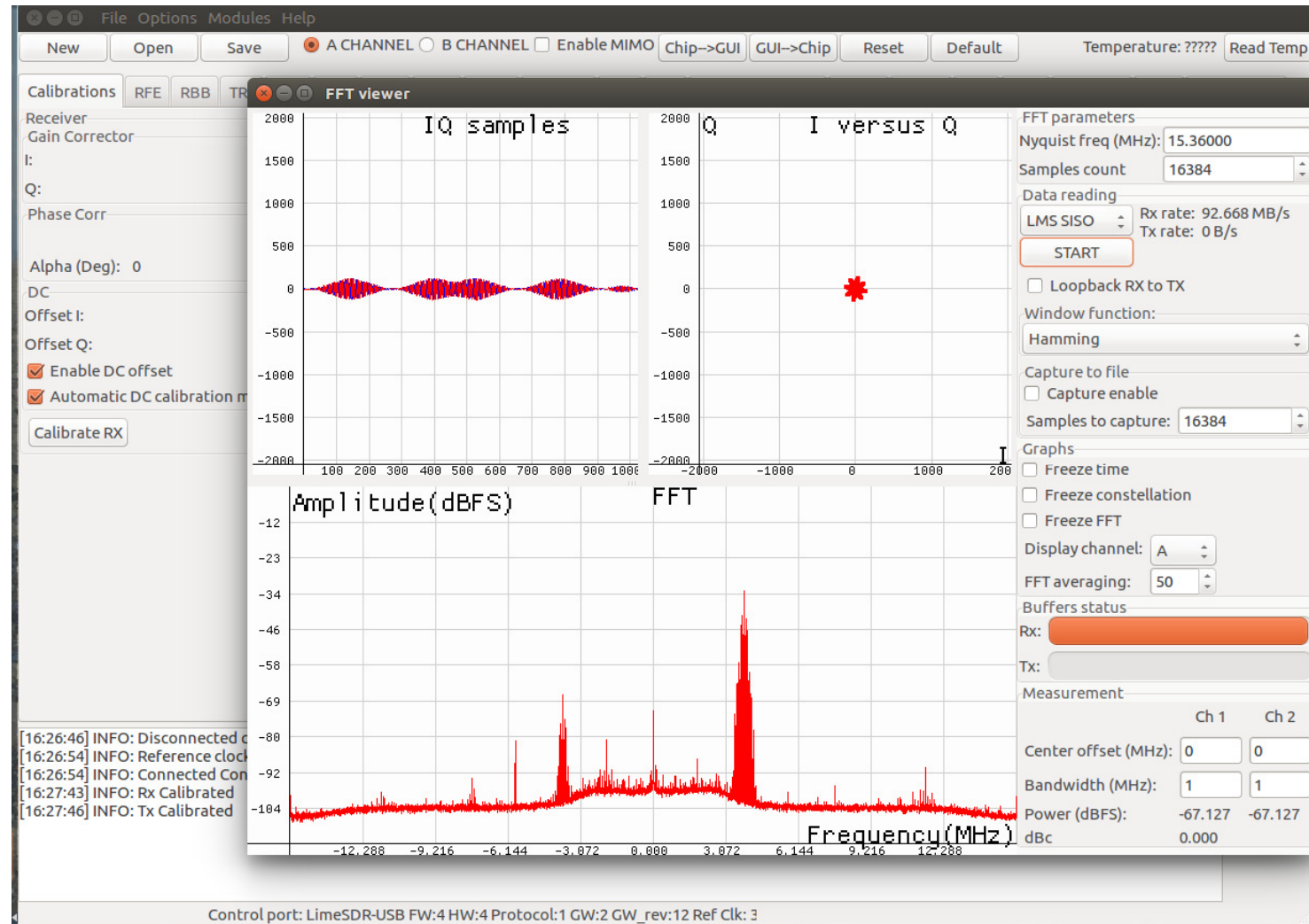
PSK Demo

- **PSKraw.wfm**
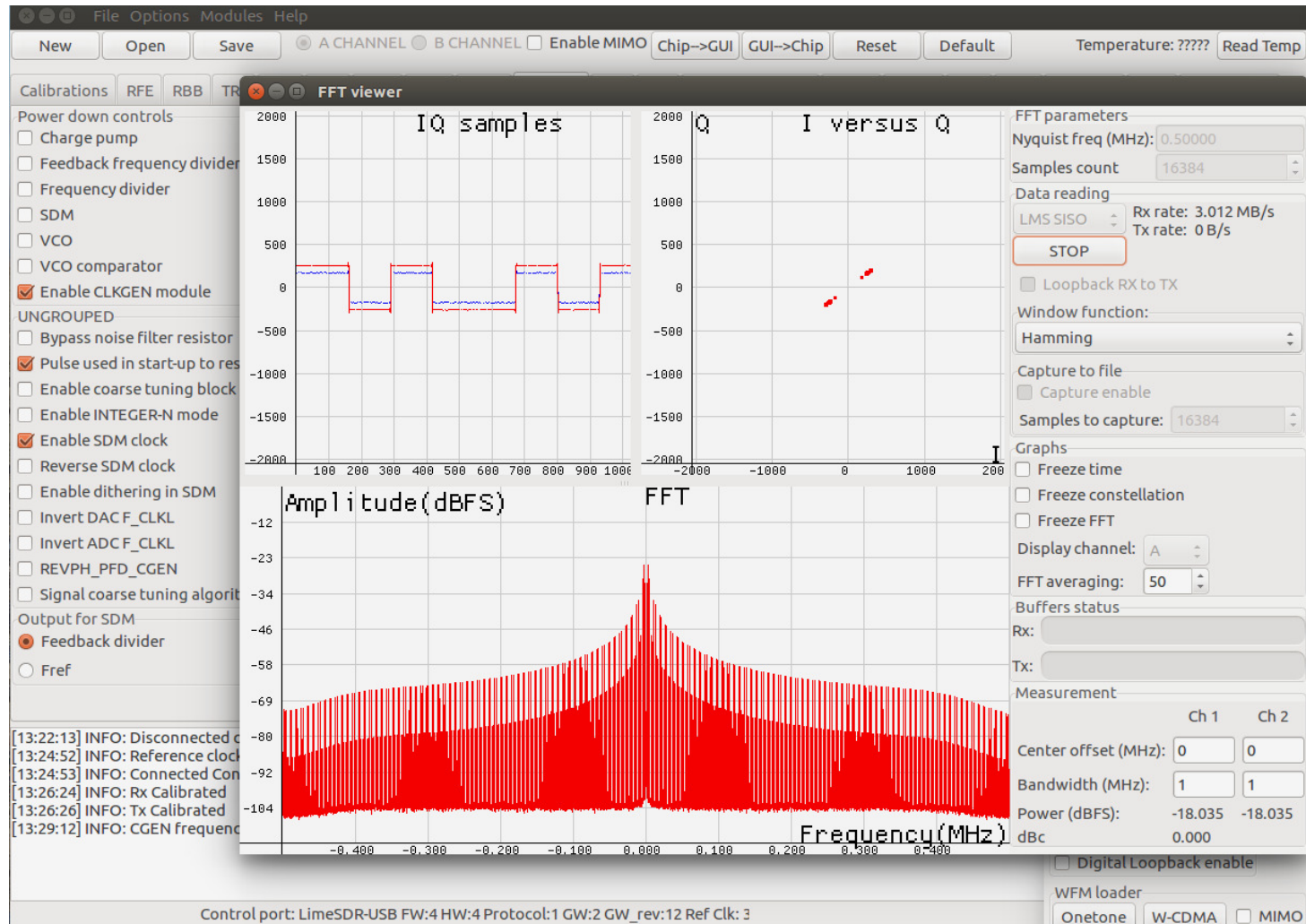
Filtered PSK Demo

- **PSKgaussFIR.wfm**

- **Less interference to adjacent channels.**
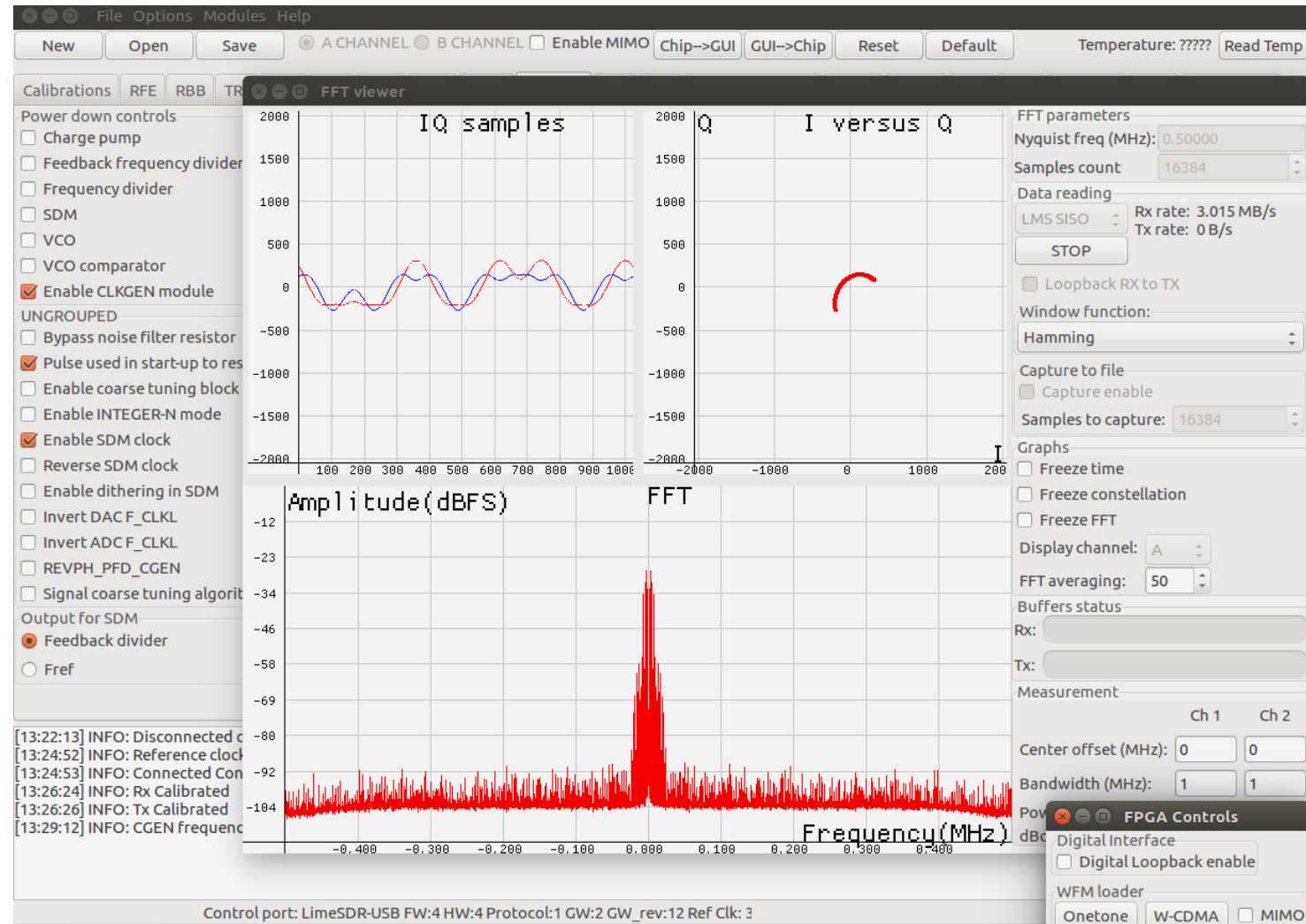
Automatic Calibration

- **Callibrate RX**

- **Callibrate TX**

Before Calibration

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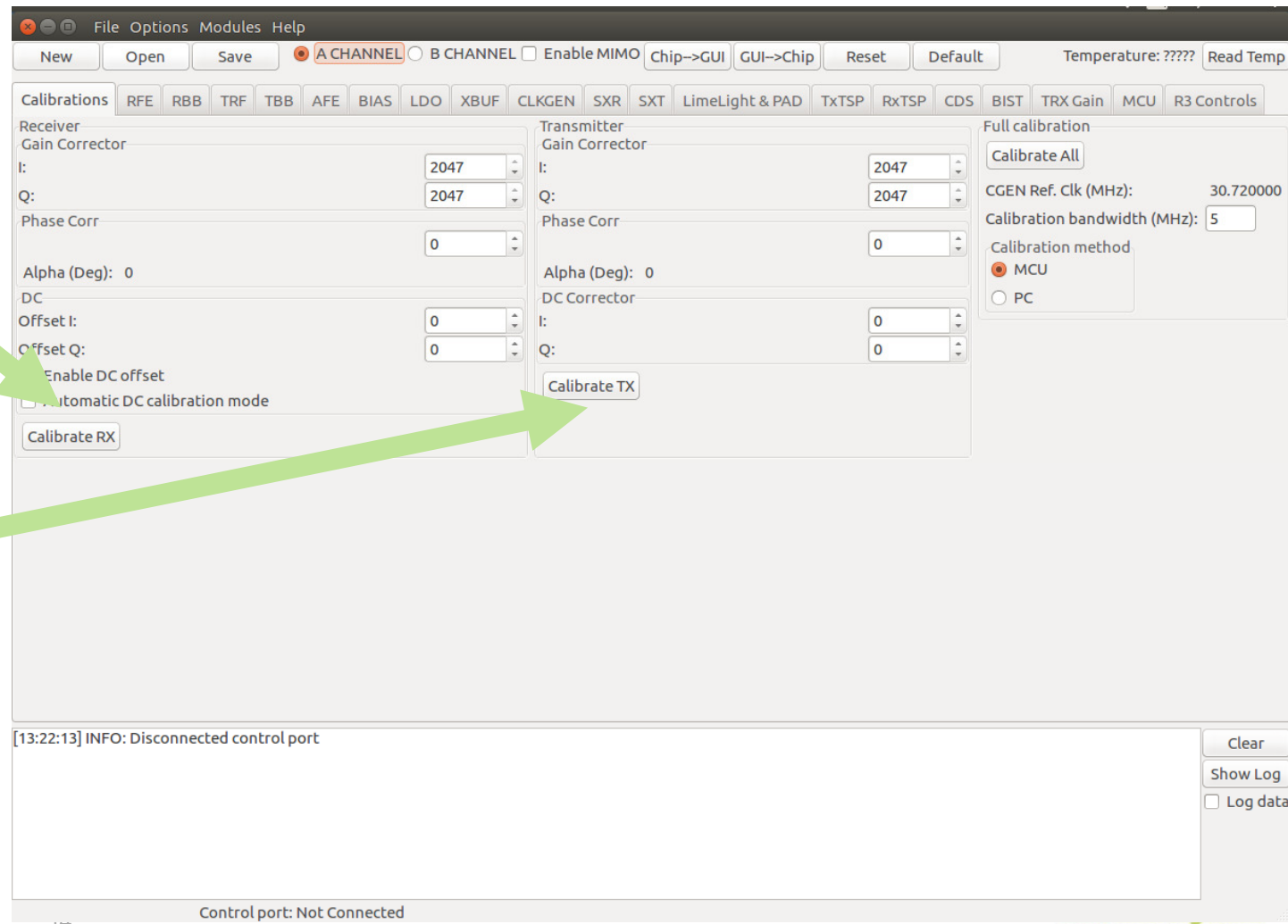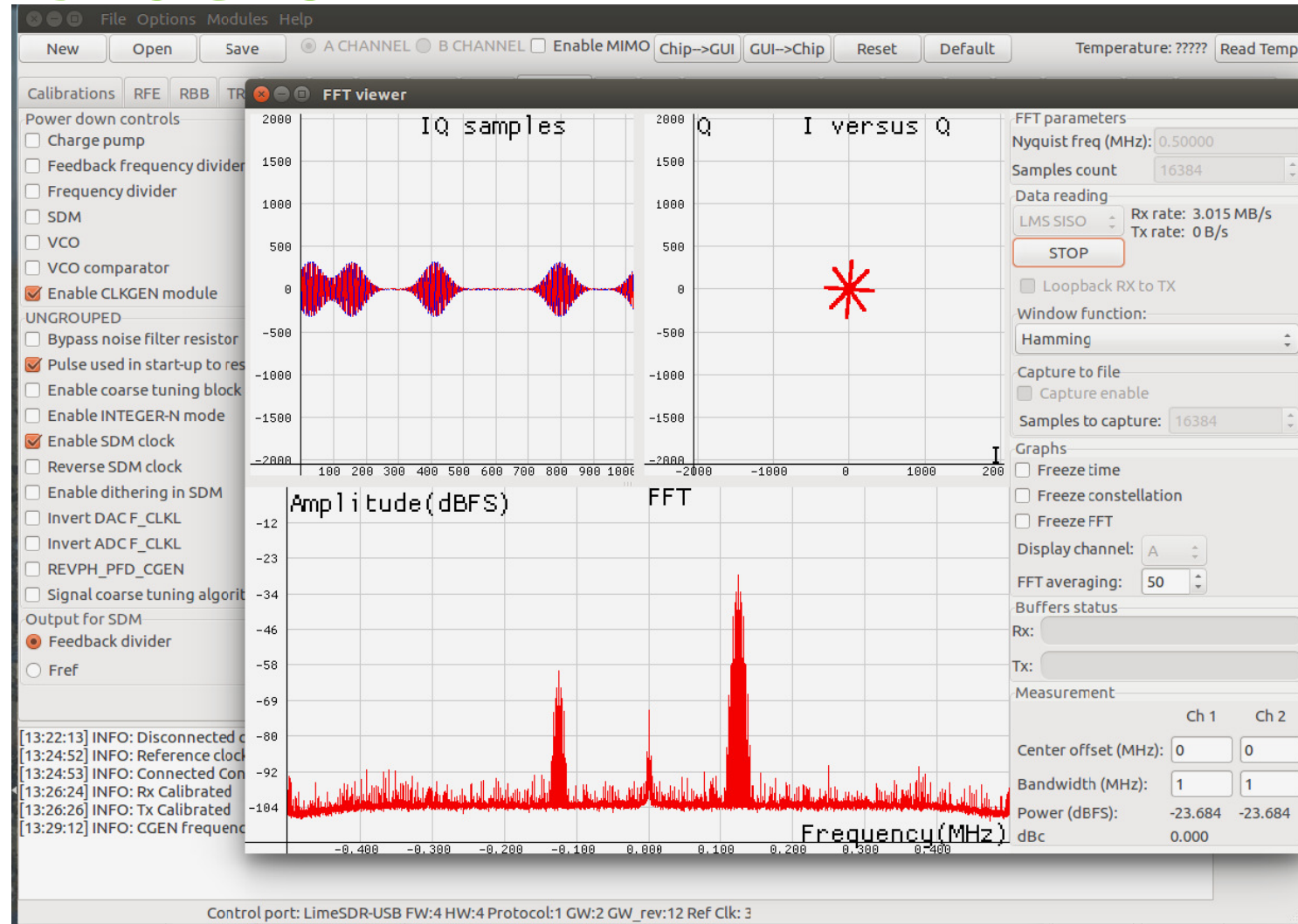
After Calibration

- **DC Leakage redued in RX**

- **Unwanted sideband rejection improved**
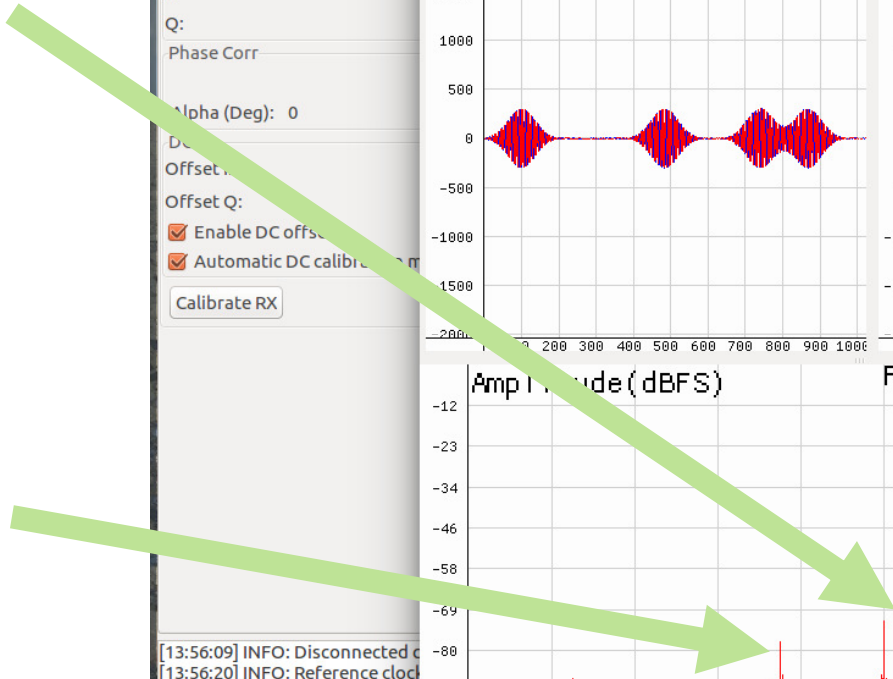
Changing RF gain (Rx RF)

- **Change LNA gain to improve signal to noise.**

- **Too much gain can sometimes overload receiver or make it vulnerable to interference.**

Changing analogue gain (Rx IF)

- **Change PGA gain to optimise level at ADC.**

- **Too much gain can overload receiver.**

- **Too little gain can give poor signal to noise ratio.**

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Changing RF gain (Tx RF)

- **Change TX gain to change output signal level.**

- **Change both TXPAD gain controls to same value.**

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Changing analogue gain (Tx IF)

- **Change TX IF gain to change to minimise adjacent channel interference.**

- **(Needed after filter bandwidth changed)**

- **(Recalibration needed after filter and gain change)**

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Changing RF frequency (SXT and SXR)

- **Change Tx and Rx frequency using SXT and SXR.**

- **Redo calibrations if above 1GHz.**

- **Advanced settings can be used to optimise phase noise.**

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Changing sample rate (CLKGEN)

- **Change CLKGEN Frequency**

- **ADC rate=CLKGEN/4**

- **DAC rate=CLKGEN/1,2,4**

- **Calculate**

- **Tune**

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Changing signal processing (TSP)

- **Change signal processing option**
  - DC Corrector
  - Gain/Phase Corrector
  - Inverse Sinc
  - NCO Frequency/Phase
    - (Enable CMIX)
  - Interpolation Ratio
  - FIR Filters

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Changing signal processing (RSP)

- **Change signal processing option**
  - Gain/Phase Corrector
  - Auto DC Corrector
  - NCO Frequency/Phase
    - (Enable CMIX)
  - AGC
  - Decimation Ratio
  - FIR Filters

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