FrDisplay

Padova-Trento Group

Outline

- FrDisplay: tool based on baudline (third party sw) to display spectrograms / spectra / waveforms and a modified version of FrDump to interface baudline with frames.

- It can be used in Cascina site, ATLAS and CIT cluster

- Description page http://www.virgo.lnl.infn.it/Wiki/index.php/FRDISPLAY with instructions and examples

www.baudline.com

baudline

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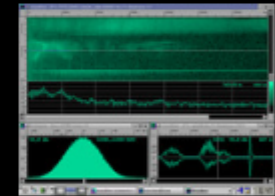**Mystery Signal**

Contact

Description

Baudline is a time-frequency browser designed for scientific visualization of the spectral domain. Signal analysis is performed by Fourier, correlation, and raster transforms that create colorful spectrograms with vibrant detail. Conduct test and measurement experiments with the built in function generator, or play back audio files with a multitude of effects and filters. The baudline signal analyzer combines fast digital signal processing, versatile high speed displays, and continuous capture tools for hunting down and studying elusive signal characteristics.
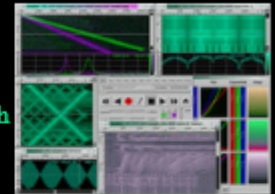
Explore, Analyze, and Discover.

Applications

- Spectrum Analyzer
- Spectrogram time / frequency browsing
- Digital Storage Oscilloscope (DSO)
- Scientific visualization
- Data Acquisition (DAQ)
- Continuous data logging
- Device under test (DUT) and measurement
- Environmental analysis
- Signal analysis and quality monitoring
- Audio file visual browsing
- Audio file playback
- Function Generator
- FFT Analyzer
- Weak Signal

http://www.baudline.com/news.html

baudline

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September 27th 2010

It was ten years ago today that baudline was released to the world. Happy 10th birthday baudline!

What a fantastic ten years it has been. I've met many wonderful people who have done amazing things with baudline. They have helped take baudline in new directions and into fields that I've never imagined such as cryptanalysis and network packet monitoring.

My hope for the next ten years is that baudline helps some smart person somewhere discover gravitational waves, dark matter, the Higgs boson, or maybe even SETI. Who knows what the future has in store? It could be you. So all you baudliners out there go forth and Explore, Analyze, and Discover.

August 14th 2000

baudline.com goes live.

AURIGA Customization / 2002

August 20th 2002

The two main achievements of the **baudline 0.92** release are the auto drift feature and some special work that was done for the AURIGA Gravitational Wave Detector project.

changes

- Automatic Doppler correction searches chirp space for weak drifting signals with the new auto drift feature.
- An extra digit of granularity was added to the drift rate control in the drift integrator window.
- Perform anti-alias filtering on the decimated spectrogram time axis with the anti-alias spectrogram zoom feature.
- An output device menu was added to the play deck window that controls automatic or specific device playback mapping.
- The new progress bar window shows the current status and allows user halting of lengthy calculations.
- Some new features have been added to the raw parameters window.
- Added some standard input floating point formats.
- Added the -psd and the -scaleby command line options.

AURIGA Customization / 2004

September 23rd 2004

The most recent **baudline 0.99** represents some special work that was done for the AURIGA Gravitational Wave Detector project.

changes

- Added power measurements that work with a user defined frequency range.
- A UTC time window which acts as an accurate clock reference display is new.
- A cursor tool called the periodicity helper bars was added which is useful for determining periodic behavior. There is also a waveform window version. Both of these are time domain variations of the harmonic helper bars concept.
- Added Hz scaling reduction algorithms.
- Unique color and title command line options now make distinguishing multiple baudline sessions easier.
- Added a reversed time axis command line option.
- New operations added to the input channel mapping window such as reciprocal, logarithm, bit reverse, xor, magnitude, and phase.
- Added arrow key fine tuning adjustment controls for both the harmonic and the periodicity helper bars.
- Added a scientific notation units option for PSD measurements.
- Added percent units to the THD measurement window.
- Many fixes to the spectro and waveform xor cursors and crosshairs.

http://www.baudline.com/download.html
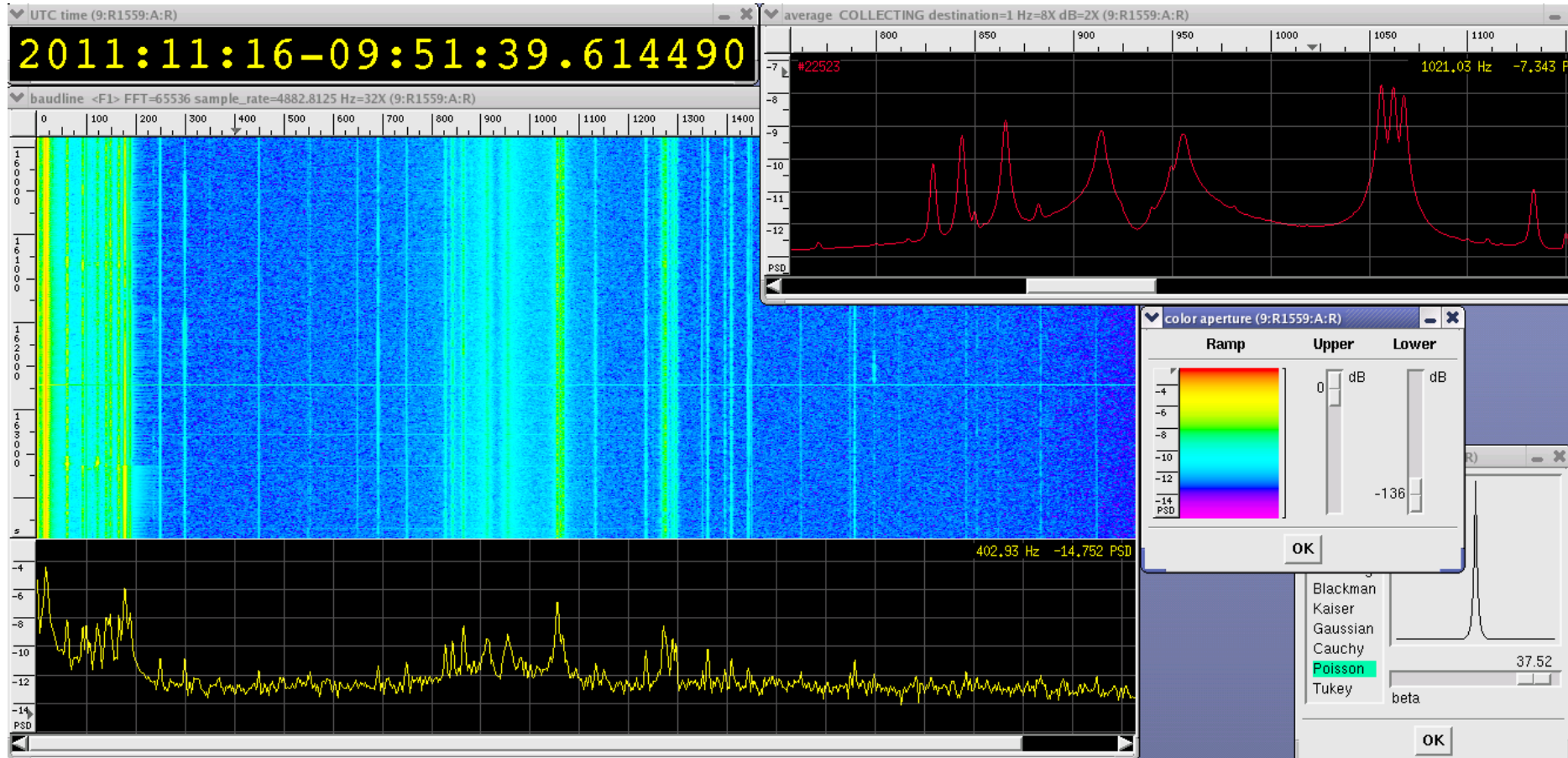## The executable is free

AURIGA Online Monitor

FrDisplay

To be implemented
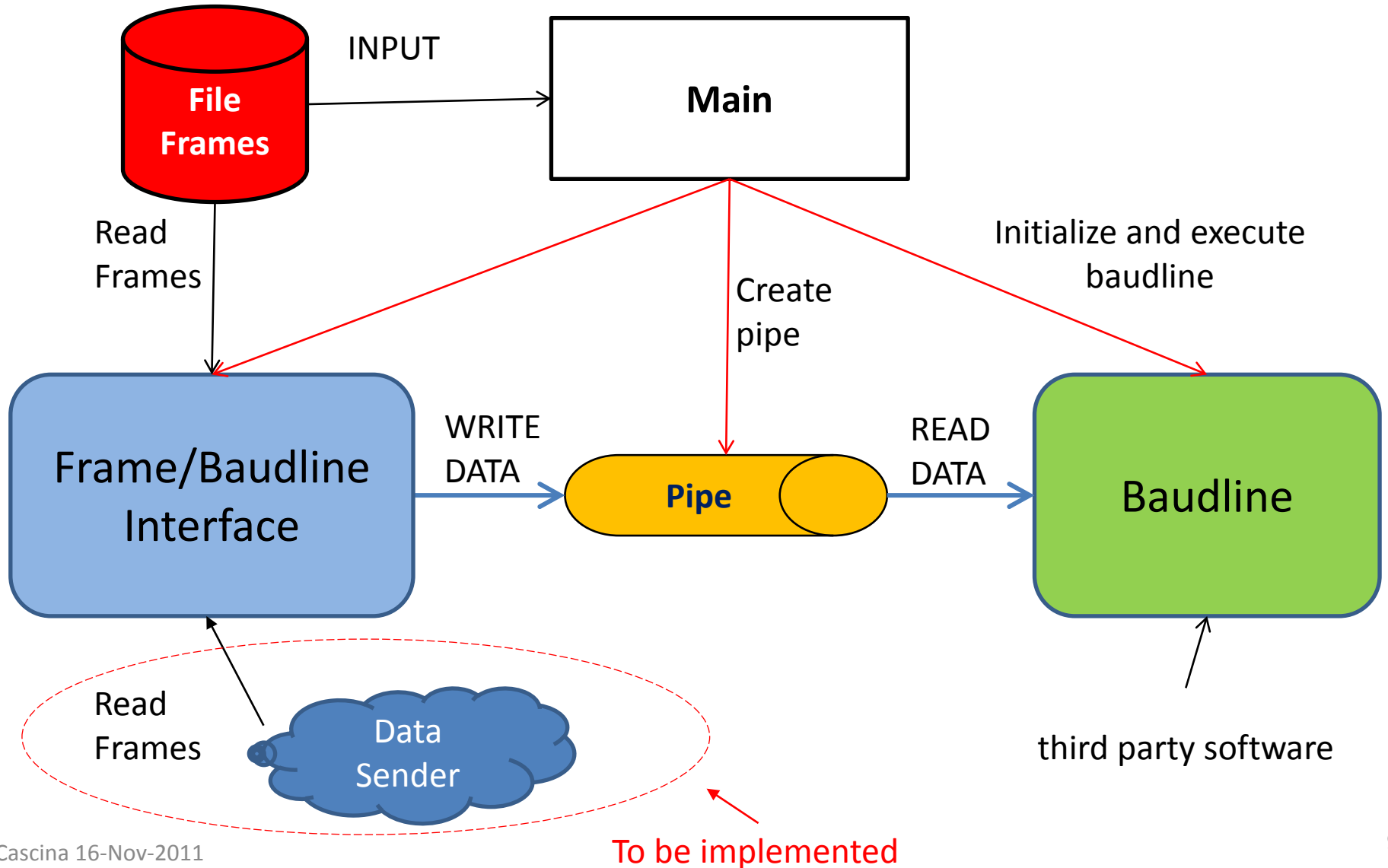
FrDisplay: How to use in Cascina

To run (only on 64-bit machine –Ex: olnode35.virgo.infn.it)

1. Set up the environment
   source /virgoDev/FrDisplay/v1r0p7/init_cascina.csh
    (or init_cascina.sh for bash shell)

2. Run (for instance)
   FrDisplayPROC –i /data/procdata/bufferv8/VSR3-HrecV2/VSR3-HrecV2-4-16k/V-HrecV2-965800000-10000.gwf –t V1:h_16384Hz –a s

- Some examples can be found in:
  /virgoDev/FrDisplay/v1r0p7/README.presentation

EXAMPLES AND SYNTAX

FrDisplay Sintax

- Options
  - Select channel type
    - PROC data : -d 5 –proc   (equivalent to alias FrDisplayPROC)
    - ADC data : -d 5 -adc   (equivalent to alias FrDisplayADC
  - File name
    - -i "File Name"
  - Start/Stop Time
    - -f start
    - -l stop
  - Access Type :
    - -a s/r (sequential/random)
  - Band Filter :
    - -k "filter options"
  - Baudline options:
    - -x "baudline options"

Baudline options

- It is possible to apply [baudline options](baudline%20options)
  - From command line write *: -x "baudline options"*

- Examples :
  - -x "-uscaleby 10"
    the gain is multiplied by a factor 10
  - -x "-decimateby 4 -downmix 600 -decimategain 48"
    data are decimated by a factor 4, starting frequency from 600 Hz, amplitude gain 48 dB
  - ...

Filter Options

- It is possible to apply <u>Filter Options</u>
  - From command Lines write : *-k "filter options"*
- Example : *-k "-Bu -Hp -o 6 -a 50"*
- Filter Options
  - Filter type:
    - -Be: Bessel
    - -Bu: Butterworth
    - -Ch r: Checysev (r: passband ripple in dB)
    - -Re Q: Resonator (Q values, Inf is an oscillator)
  - Pass type:
    - -Lp: Lowpass
    - -Hp: Highpass
    - -Bp: BandPass
  - Order of filter (-o 6)
  - Corner Frequency/ies: (-a f1 [f2])

FrDisplay Examples

- Display a single PROC frame file
  - FrDisplayPROC -i /data/rawdata/v146/V-raw-998277900-150.gwf -t V1:h_16384Hz
- Display a list of PROC frames files (using *)
  - FrDisplayPROC -i /data/rawdata/v146/V-raw-998277* -t V1:h_16384Hz
- Display a list of PROC frame files (using ffl list file)
  - FrDisplayPROC -i /virgoData/ffl/VSR3/VSR3-HrecV2-4-16k.ffl -f 965800000 -t V1:h_16384Hz -a s
- Display a single channel a from a single frame file
  - FrDisplayADC -i /data/rawdata/v146/V-raw-998277900-150.gwf -t V1:Pr_B5_Alim_m15 -x "-uscaleby 20" -k "-Bu -Hp -o 6 -a 50"
- Display 3 channels from a list of frame files
  - FrDisplayADC -i /data/rawdata/v146/V-raw-99827* -t "V1:Sc_OB_Gr_Coil1 V1:Sc_OB_tyCorr V1:Pr_B2_DC" -k "-Bu -Hp -o 6 -a 50"
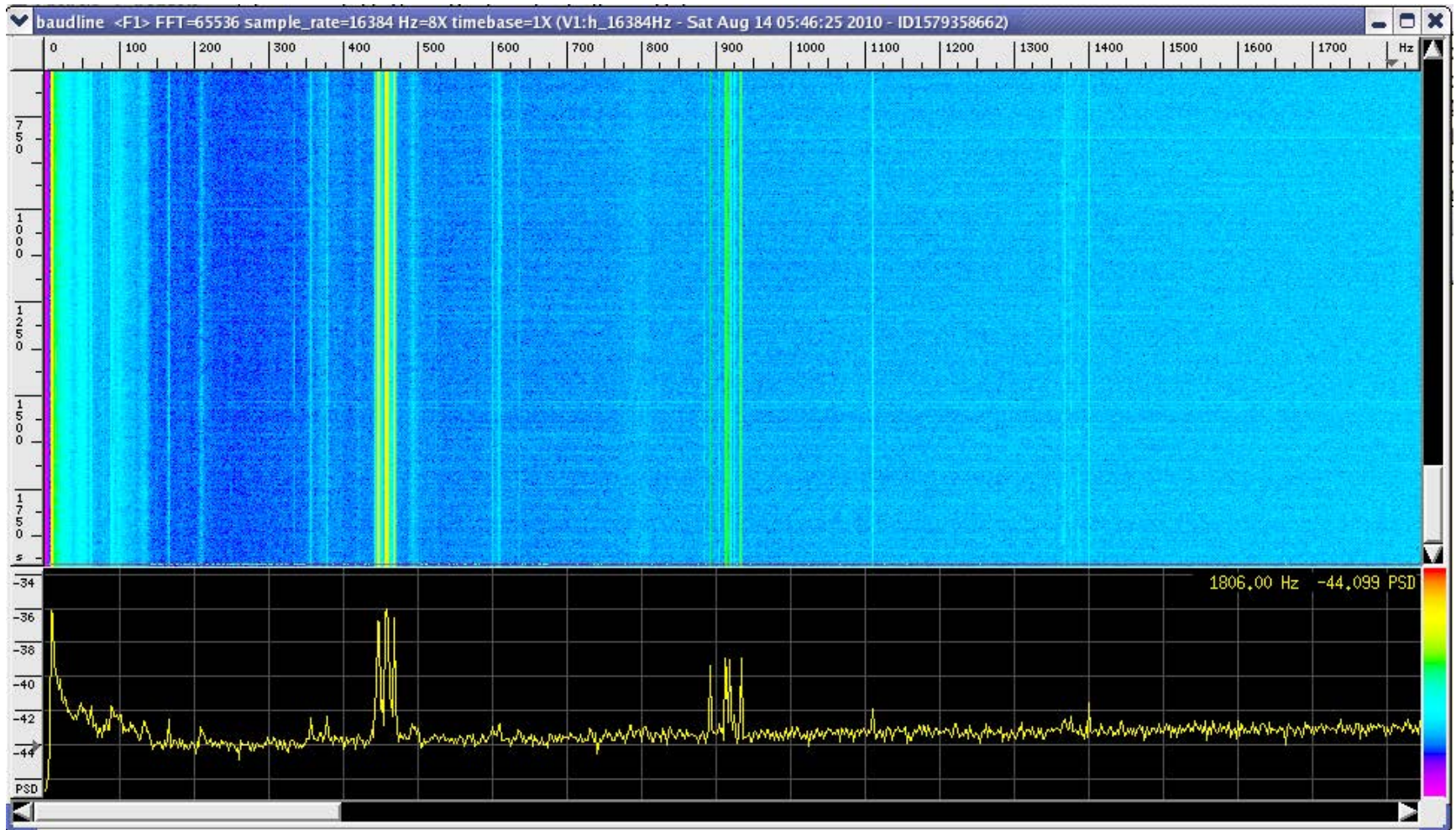
FrDisplayPROC
-i /virgoData/ffl/VSR3/VSR3-HrecV2-4-16k.ffl
-f 965800000
-t V1:h_16384Hz
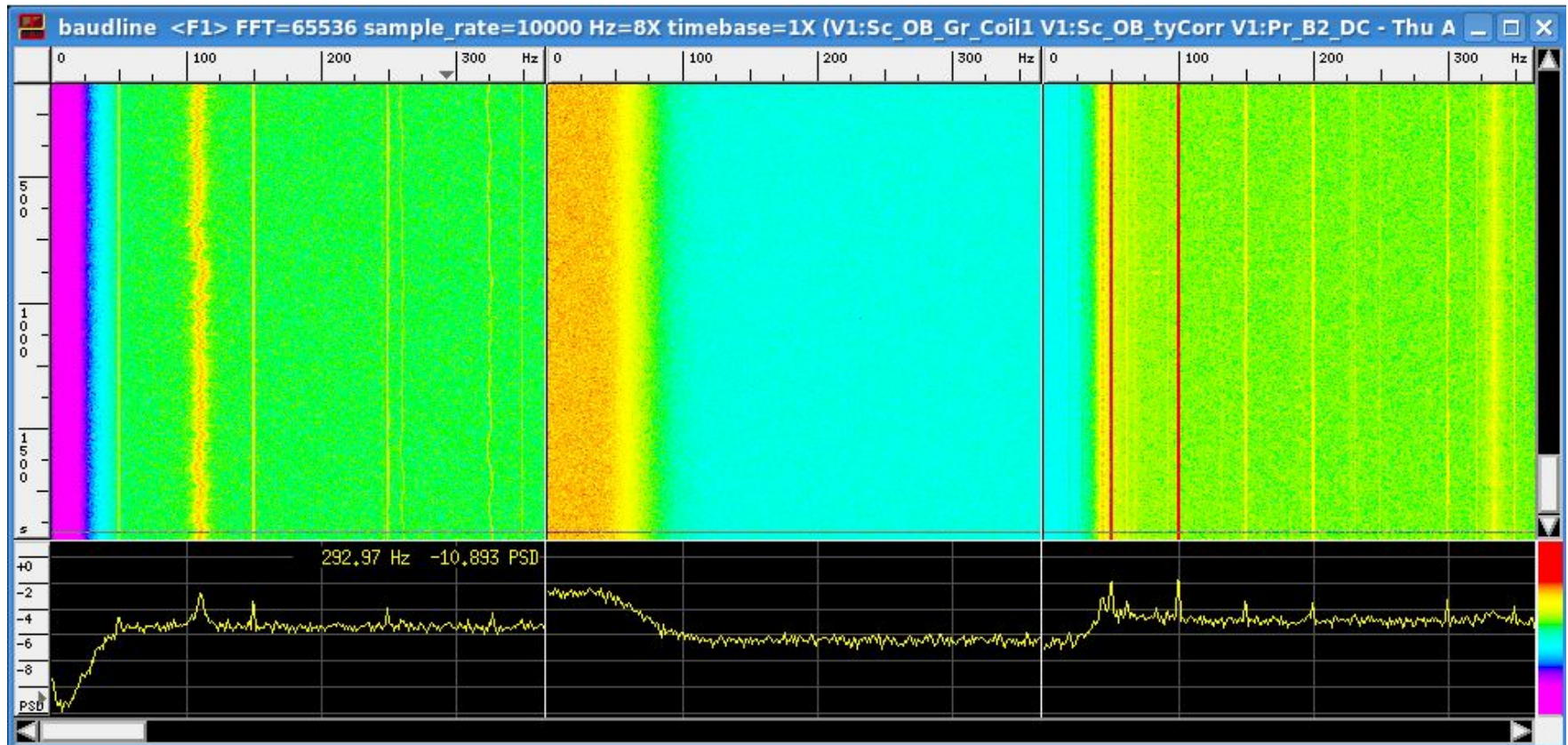-a s

FrDisplayADC
-i /data/rawdata/v146/V-raw-99827*
-k "-Bu -Hp -o 6 -a 50"
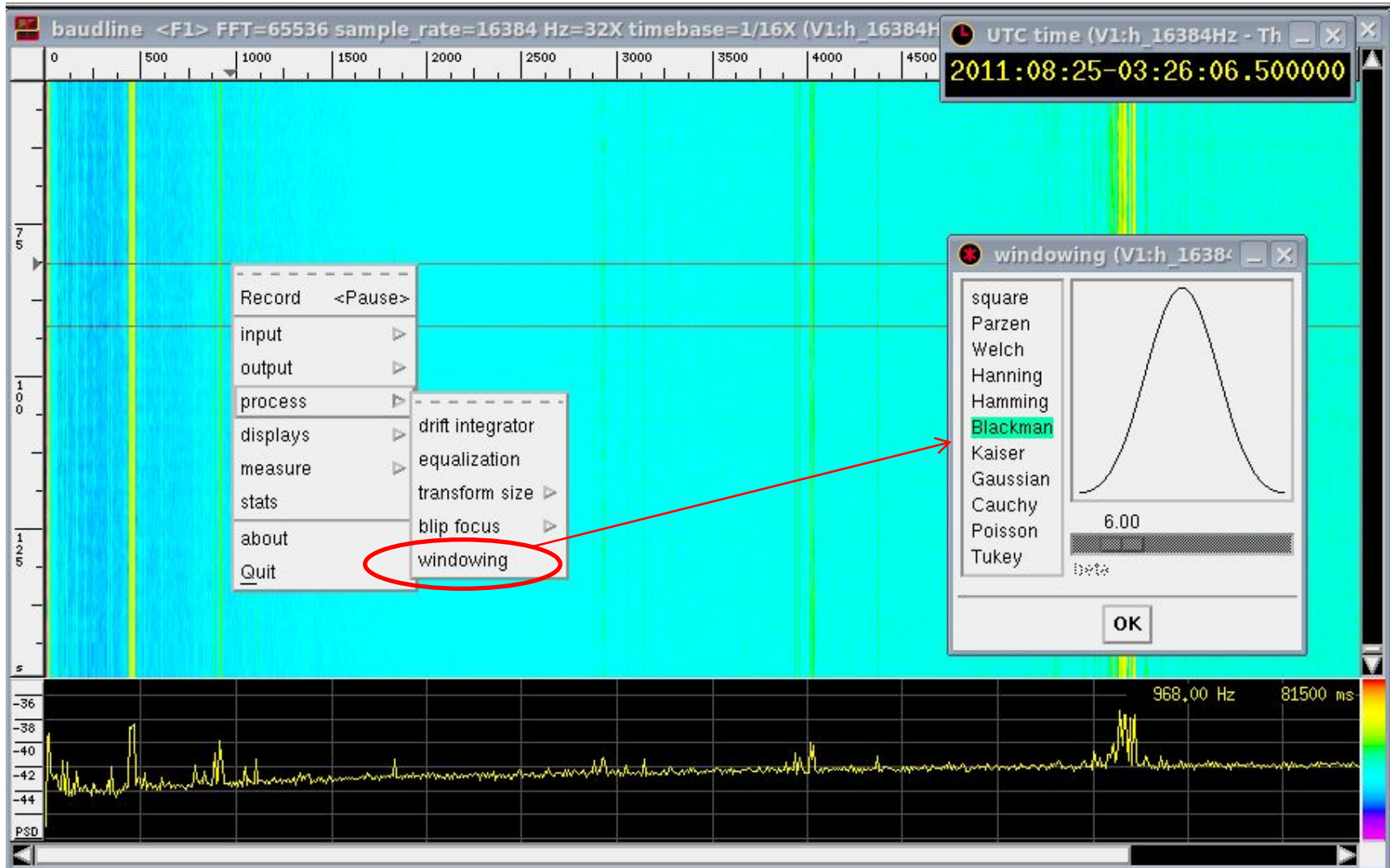-t "V1:Sc_OB_Gr_Coil1   V1:Sc_OB_tyCorr   V1:Pr_B2_DC"

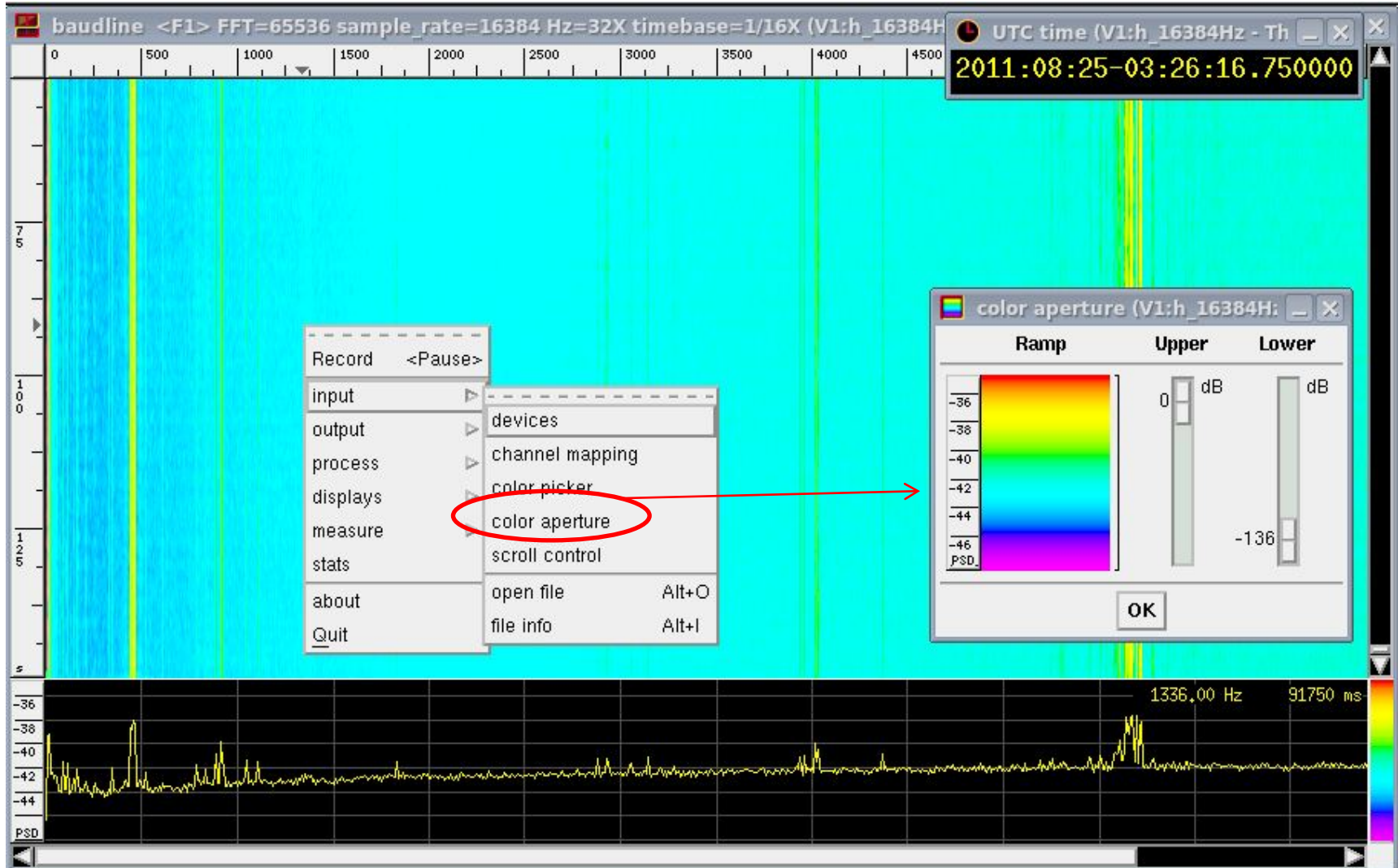V1:Sc_OB_Gr_Coil1   V1:Sc_OB_tyCorr   V1:Pr_B2_DC
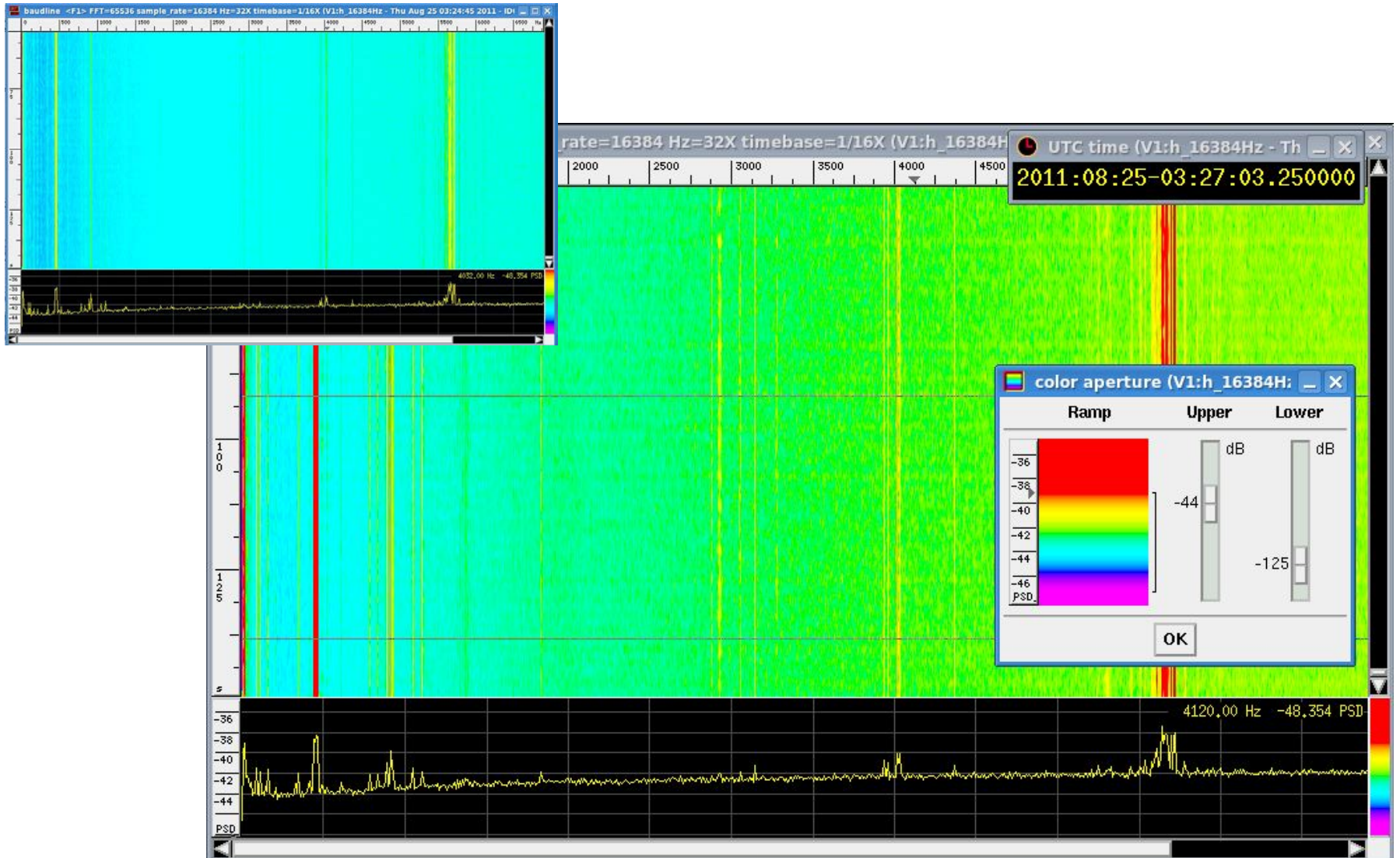
BAUDLINE DISPLAY OPTIONS
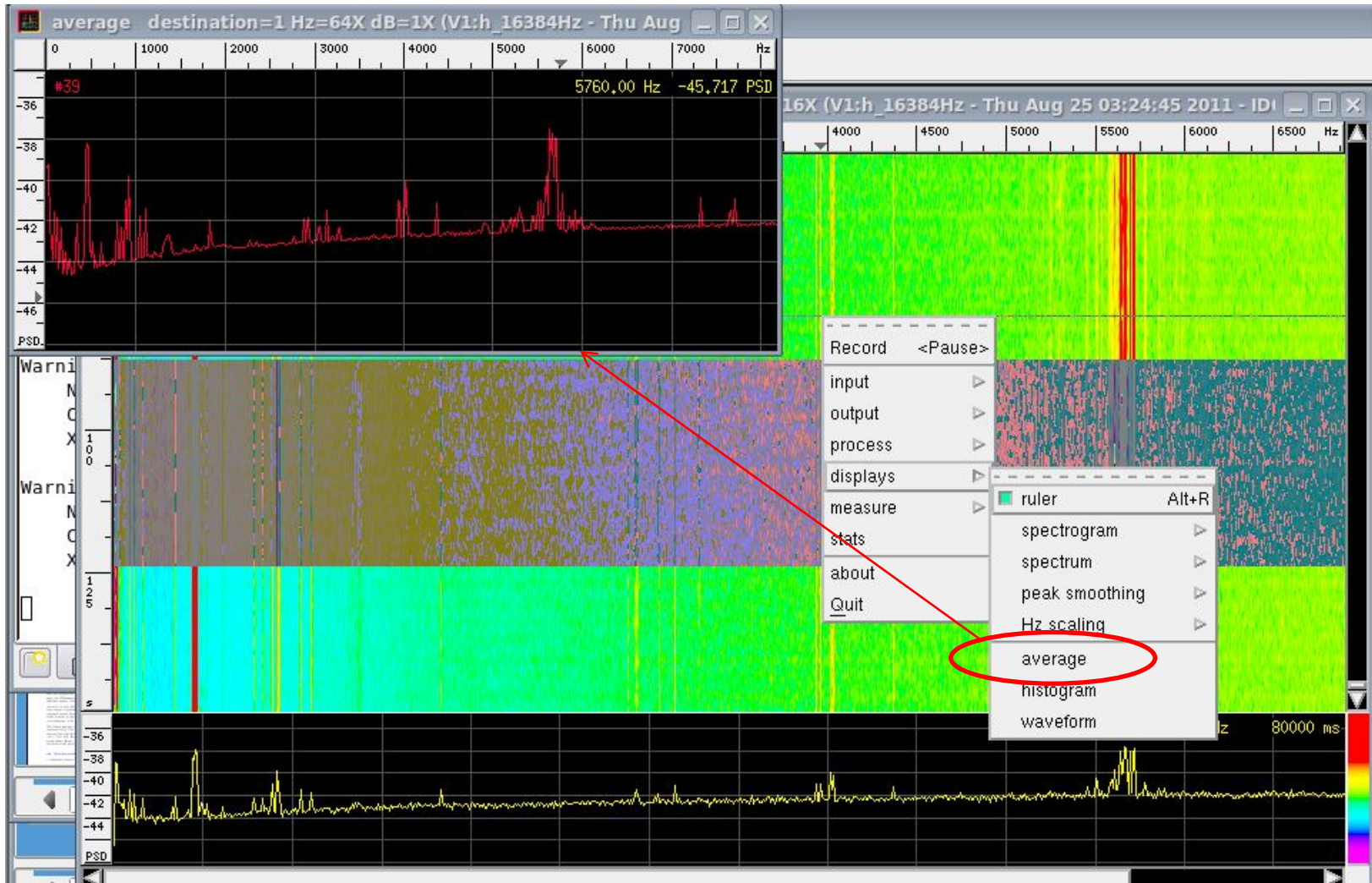
Fourier Windowing

Color options

Modified Colors

Average Spectrum Window

Select a Time-Frequency region and clicl LEFT + RIGHT button on Average window

More Channels in the same window

Select Channel, change color and click