Proposed Software to Control UHFLI Lock-in Amplifier

HDice-DSG meeting

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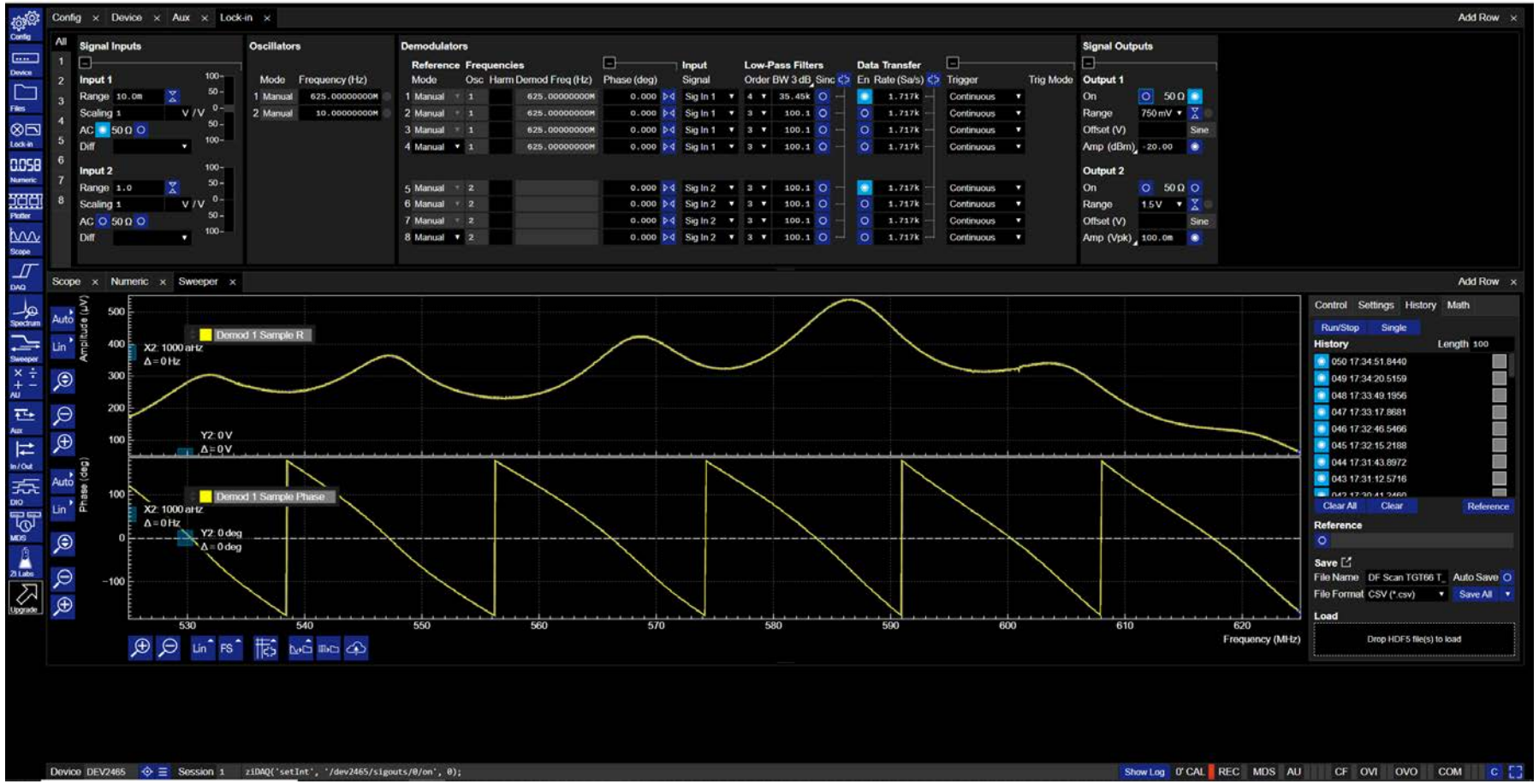
What we have

- UHFLI, the Zurich Instruments 600 MHz Lock-in Amplifier
  - Up to 600MHz
  - 2 Independent Lock-in Amplifiers in 1 case
  - 2 Built in RF Synthesizers
  - Control software, LabOne toolset
  - ….

What we know so far

- We can use the Frequency Sweep in LabOne to measure NMR signal
  - Manually trigger frequency sweeping for:
    - Setting running parameters
    - Recalling background data
    - Running background subtraction and data normalization
    - Recording data
    - Displaying individual traces selectively
  - But without further programming, one can not
    - Average data
    - Recall background
  - We haven’t explored the built-in simple math function yet.
  - The RF (power) setting can easily be altered unintentionally.
  - ….

Sample Screenshot



What we want

- A control program to add the missing functions so we can use an user setup file (or a GUI) to:
  - Setup RF conditions
  - Setup data path
  - Setup background files
  - Run data aquization
  - Subtract background and normalize data
  - Average the results
  - Display live and averaged signals
  - Save data file and final screen image
  - ….
- Basically, an overall later to add the missing functions for measuring NMR signals with frequency-scan mode at separately set magnetic field.