

**IQ processing program - IQ_Process.
Quick Guide.**

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Purpose of the program.

IQ_Process program is designed to:

1. Display of recorded data IQ (IQ itself, amplitude signal, the signal phase).
2. Display signals in the spectrum recorded IQ data (specified length, starting at the point specified by the user with the cursor).
3. Digital shift of source data IQ (digital shift) at a predetermined frequency.
4. Filtering source IQ data using pre-defined or user-defined filters (calculated in the program).
5. Decimates original IQ data to a predetermined sampling frequency.
6. Saving processed IQ data.

The functionality of the program.

1. Analyze source IQ data in time and spectral domain.
2. Select and save a separate IQ signal recorded together with other signals using wide band of IQ.

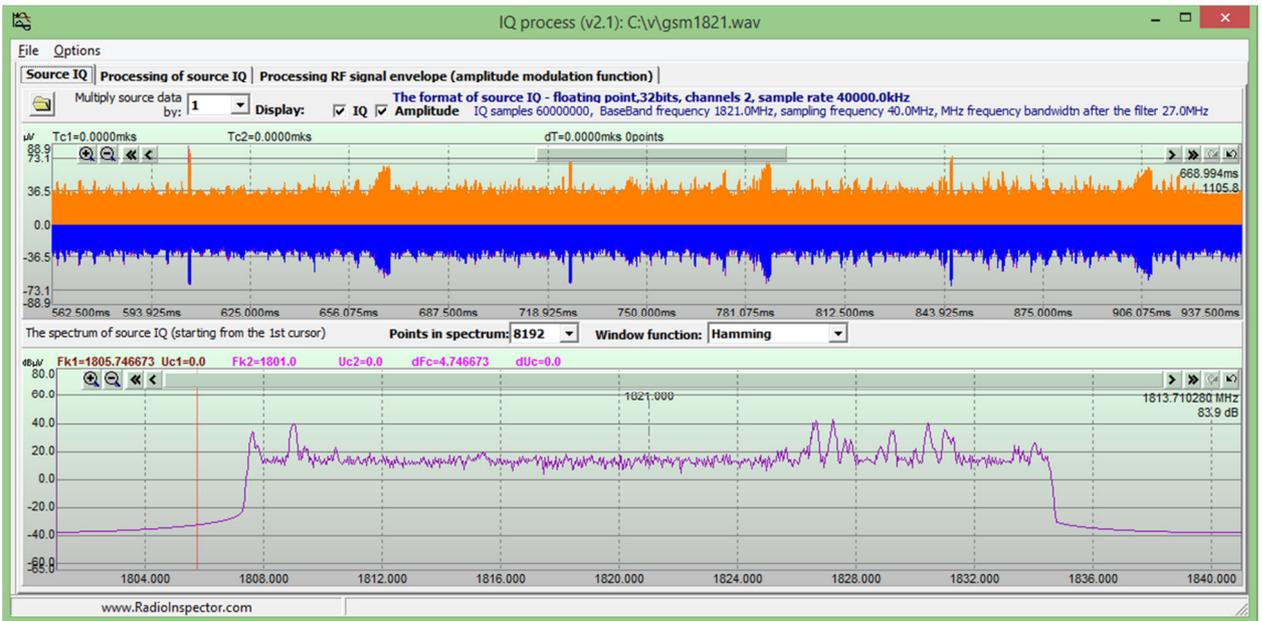
Restrictions:

1. Source IQ - wav file format.
2. Source IQ data may be recorded in 16-bit format Integer or 32 bits Float.
3. The maximum amount of data - 100.000.000 IQ pairs. If the file contains a greater number of pairs of IQ, then only the first IQ pairs 100,000,000 are used to work.
4. The data is not calibrated for the amplitude axis.

The program's interface.

The interface of the program consist of 3 pages, which displays the source IQ data, the data after the digital shift, filtering and decimation (the processed data), and page analysis of the envelope of the processed signal (for the analysis of AM modulated signals and digital packets analyzing).

Page source data

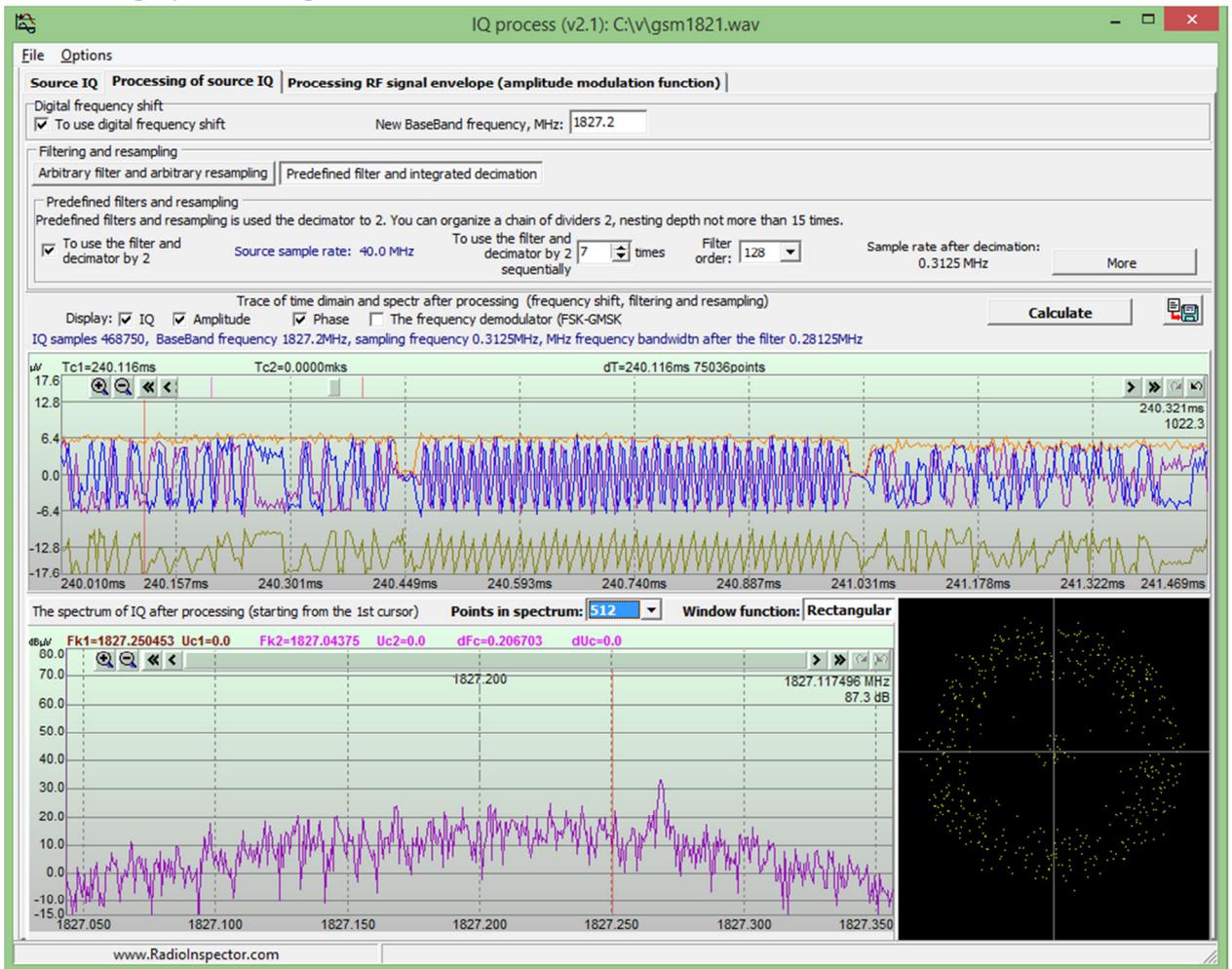


Source data file can be opened by pressing the button  or using the "Open" menu item.

Field is used to multiply the source data to a predetermined constant if source data has low amplitude.

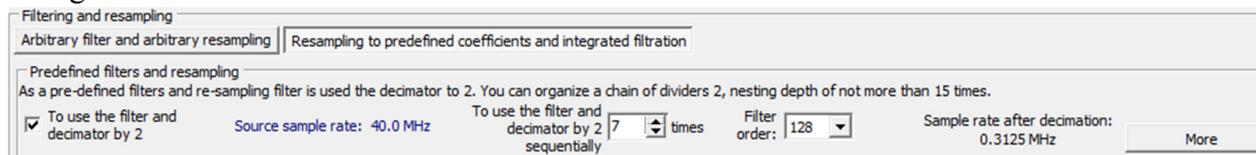
Working with charts in the time and spectral domain is described in the documentation for the program «RadioInspector»

Page processing of source IQ



On this page at the field **Digital frequency shift** you can to install a new center frequency (frequency shift is performed digitally). The frequency can be set manually or automatically entered in the field **New BaseBand frequency, MHz: 1827.20879** when you change the first cursor position on the chart of spectrum of source IQ (frequency in this field corresponds to the frequency of the first cursor).

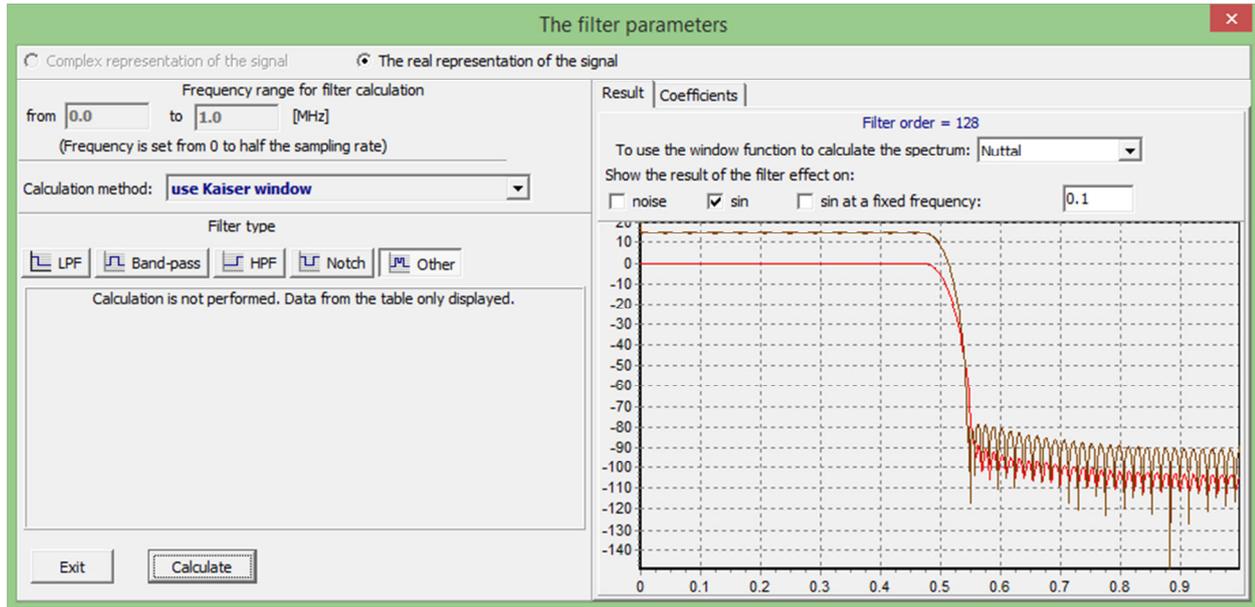
Using the field



you can create a digital filter for filtering the source signal and set the source signal decimation conditions.

Page **Predefined filter and integrated decimation** It used to work with pre-defined filters and resampling to 2. You can build a filter chain of LPF by 2 (no more than 15 filters) for

more deep filtering (box To use the filter and decimator by 2 times sequentially). The order of the filters specified in the field Filter order: . Frequency response of the filter can be viewed by clicking on the button More.

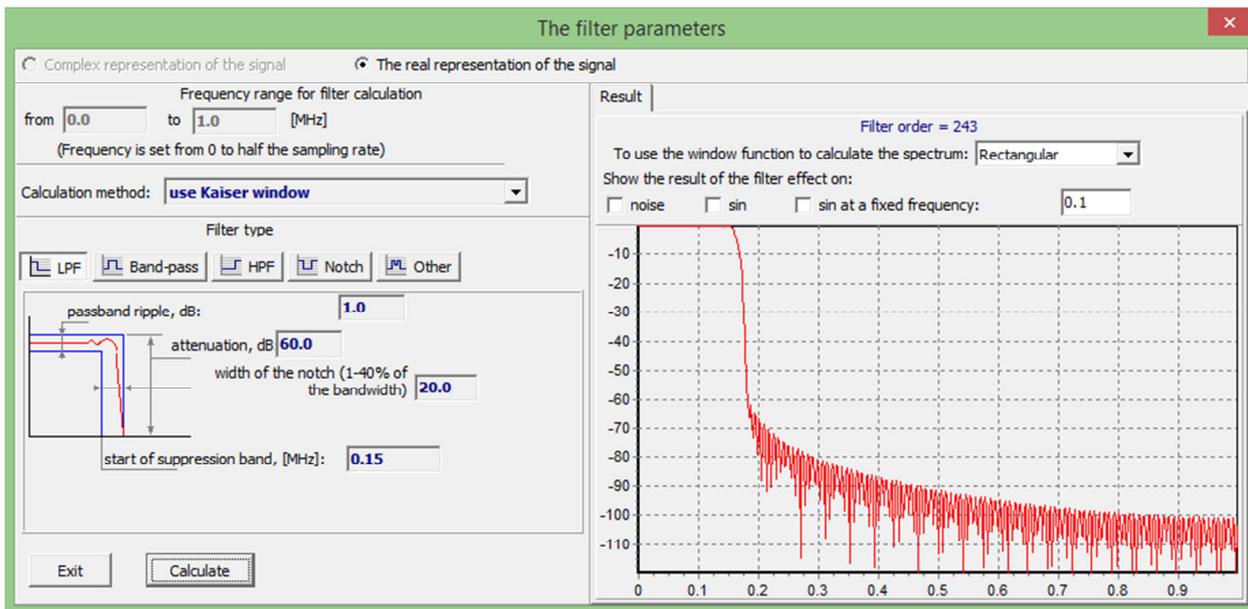


Other fields of predefined filters are clear from their names.

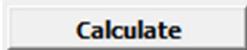
Page Arbitrary filter and arbitrary resampling is used to create a filter with the user required parameters and interpolation after filtration to an arbitrary frequency.

Assigning of parameters of page is clear from their names.

For the filter calculation you can use the button More. In the new window filter parameters are entered and displayed the result of the filter calculation.

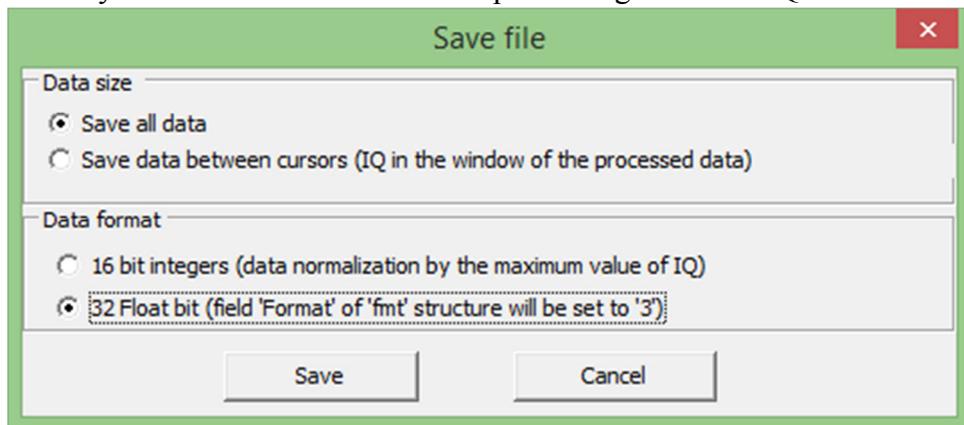


Processing IQ of source data is performed after clicking on the button



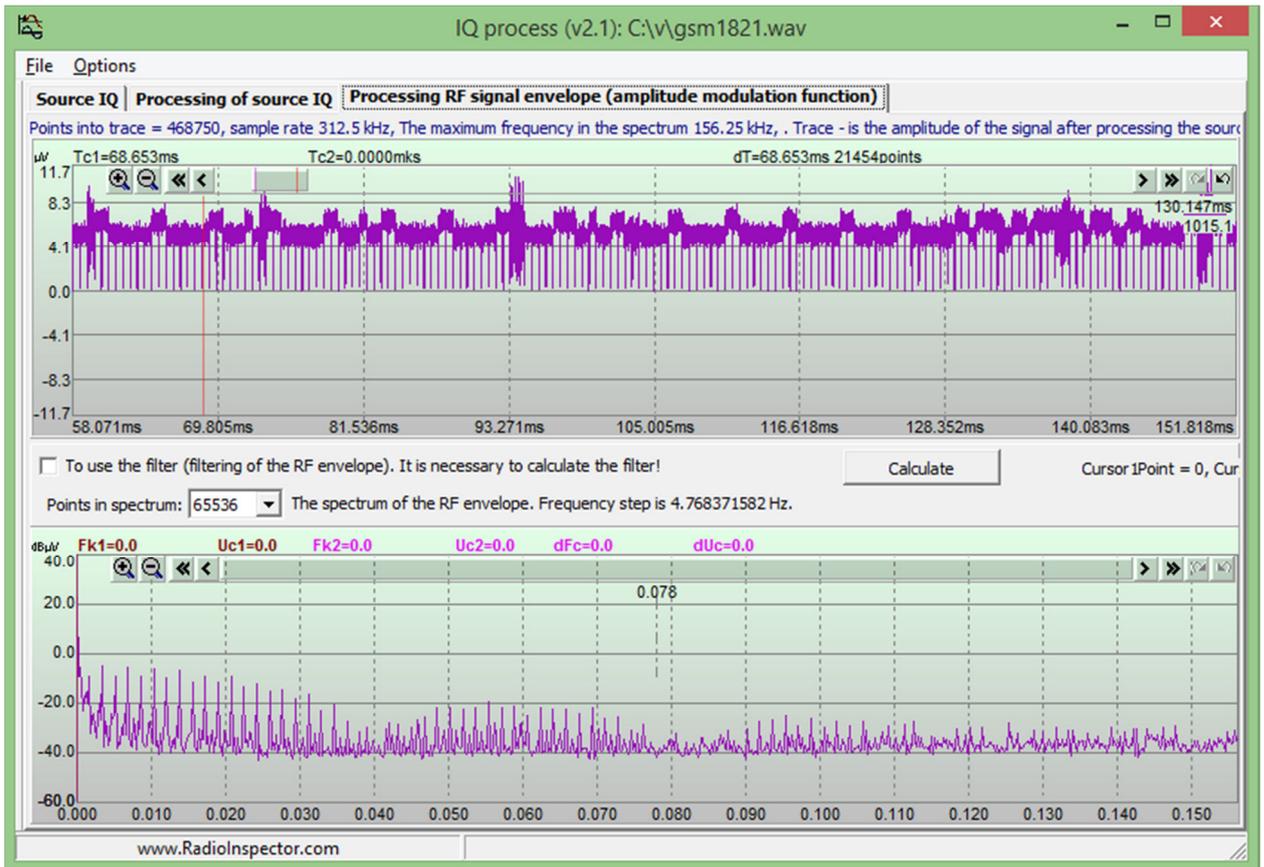
The result of processing the source data is displayed in the time and spectral domain. Diagram of "constellations" does not show the true location of the characters as the sequence of IQ is not synchronized to the symbol rate.

Use the  you can save the results of the processing of source IQ in a wav file.



Page processing RF signal envelope

Page **Processing RF signal envelope (amplitude modulation function)** the main window is for



This page can analyze the time and spectral characteristics of the low-frequency modulation function (envelope of radio signal) in the time and spectral domain, such as the time characteristics of digital data packets.