

# QF1D512-DK

## SavFIRe™ Development Kit

### Features

- Development Tool for the QF1D512 SavFIRe chip
- Includes all the Hardware and Software necessary to design, implement, and test a complete filter design
- Circuit board features: 1 BNC signal input connector, 1 A to D converter, 2 QF1D512 devices, USB to SPI bridge for control and data, and prototyping area with 1 BNC connector for analog I/O and four expansion connectors.
- Development Kit evaluation and testing capabilities:
  - A filter design may be evaluated by introducing an analog input to the Development Kit board, either from a PC generated white noise source or from a user supplied source (signal generator or the actual signal of interest)
  - Once the analog input has been introduced, the filtered digital output data is routed back to the PC via USB and an FFT of the data is displayed, showing the results of the filter as designed
- Runs under Windows® 2000, XP or later
- No separate power supply or controller board is required

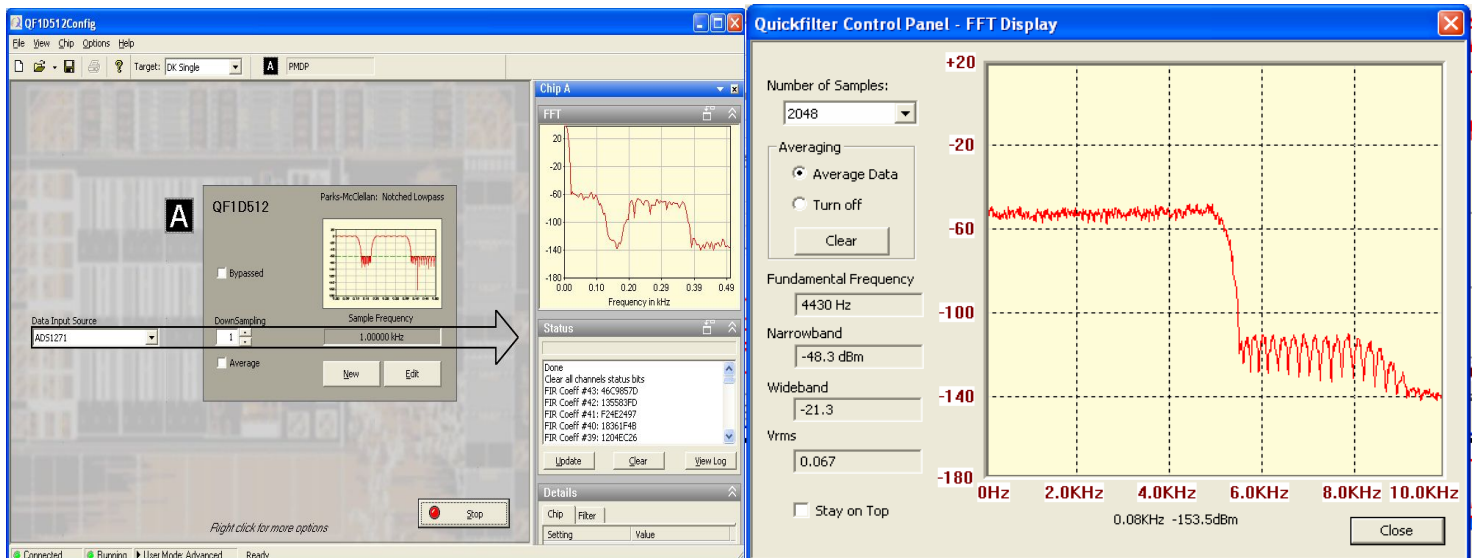


### Description

The QF1D512-DK Development Kit is a complete hardware and software solution for the QF1D512, Simple and versatile FIR engine (SavFIRe). The kit allows the user to easily set up the configuration parameters for each of the two QF1D512 devices for the specific application and evaluate the resulting device performance.

The Quickfilter software design tool allows all the necessary parameters to be generated in a quick and user-friendly manner. The user enters the desired characteristics (e.g. sampling rates, type of filter, cut-off frequencies etc.) and the software generates a configuration file for the device. The configuration files can be immediately downloaded into the QF1D512 devices on the development board, and the *actual hardware performance* can be monitored - either in response to a PC-generated noise source or to a user-applied signal. Device configuration parameters can be further adjusted, if necessary, until the optimum system performance is reached.

Once satisfied with the performance, a configuration file can be saved for future use, for example to program devices in bulk prior to volume board manufacturing.



Filter Design Screen

Actual filter output from QF1D512

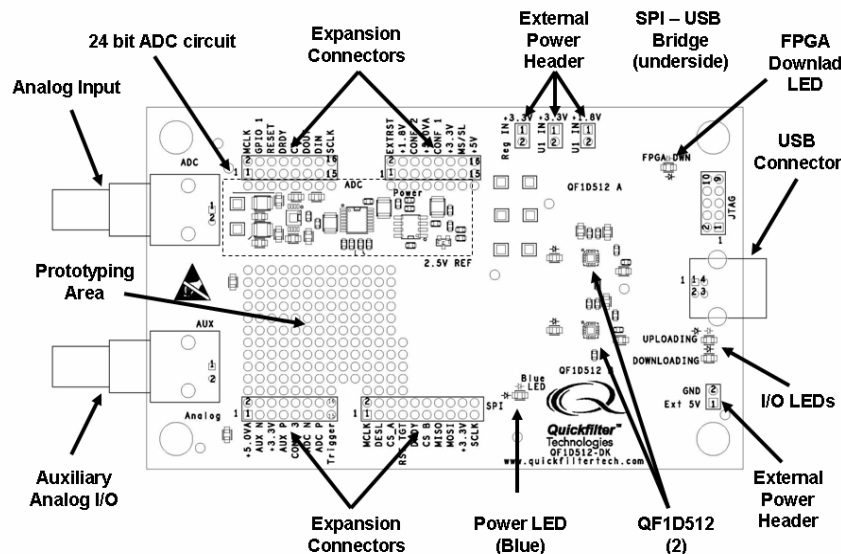
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### Hardware

The development board interfaces to a host PC via a USB connection. This connection supplies power to the board, although there is also provision to supply power from an external 5 – 9V source. A bridge circuit on the board converts from the native SPI interface of the QF1D512 to USB. Through configuration software, the QF1D512 devices can receive input from the ADC circuit, the expansion interface, or from data loaded from the PC. Either or both QF1D512 devices can be run on the incoming data.

The analog input connects to the supplied ADC converter circuit, allowing the user to provide an analog sensor input. With the expansion connectors and the prototyping area, alternative ADC devices, custom user circuits, and processors can be connected to the QF1D512 devices, as well as other third party emulation platforms, allowing for full system emulation without a custom board design.



### Software

There are three main software functions provided by the included Quickfilter software:

1. Filter design. A variety of different filter types can be designed and simulated, including low-pass, notched low-pass, high-pass, band-pass, dual band-pass, band-stop, and dual band-stop. Currently available filter algorithms include Parks-McLellan and Windows Sync. Desired frequencies, slope and attenuation can be input and the theoretical results observed. Completed designs can be saved as filter files for future use.
2. Chip configuration. Various filter types can be assigned to the two QF1D512 devices available. Custom ADC interface formats, pin configurations, and averaging / decimation are programmed individually for each device. When complete, the configurations are downloaded to the devices on the development board. It is also possible to interrogate the various on-chip control registers and save configurations for future use.
3. Evaluation. Once the QF1D512 devices has been configured, analog signals can be introduced to the board, with the digital data routed to the devices, and the software will produce and display an FFT of the filter response. A white noise source file is provided as a convenient method to drive the input from a PC and observe the filter characteristics.

### Development Kit Contents expansion

- Development Board
- CD containing Quickfilter software, documentation and install files.
- USB cable (board to PC)
- Signal cable (BNC to 3.5mm phone plug)
- Quickstart Guide

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