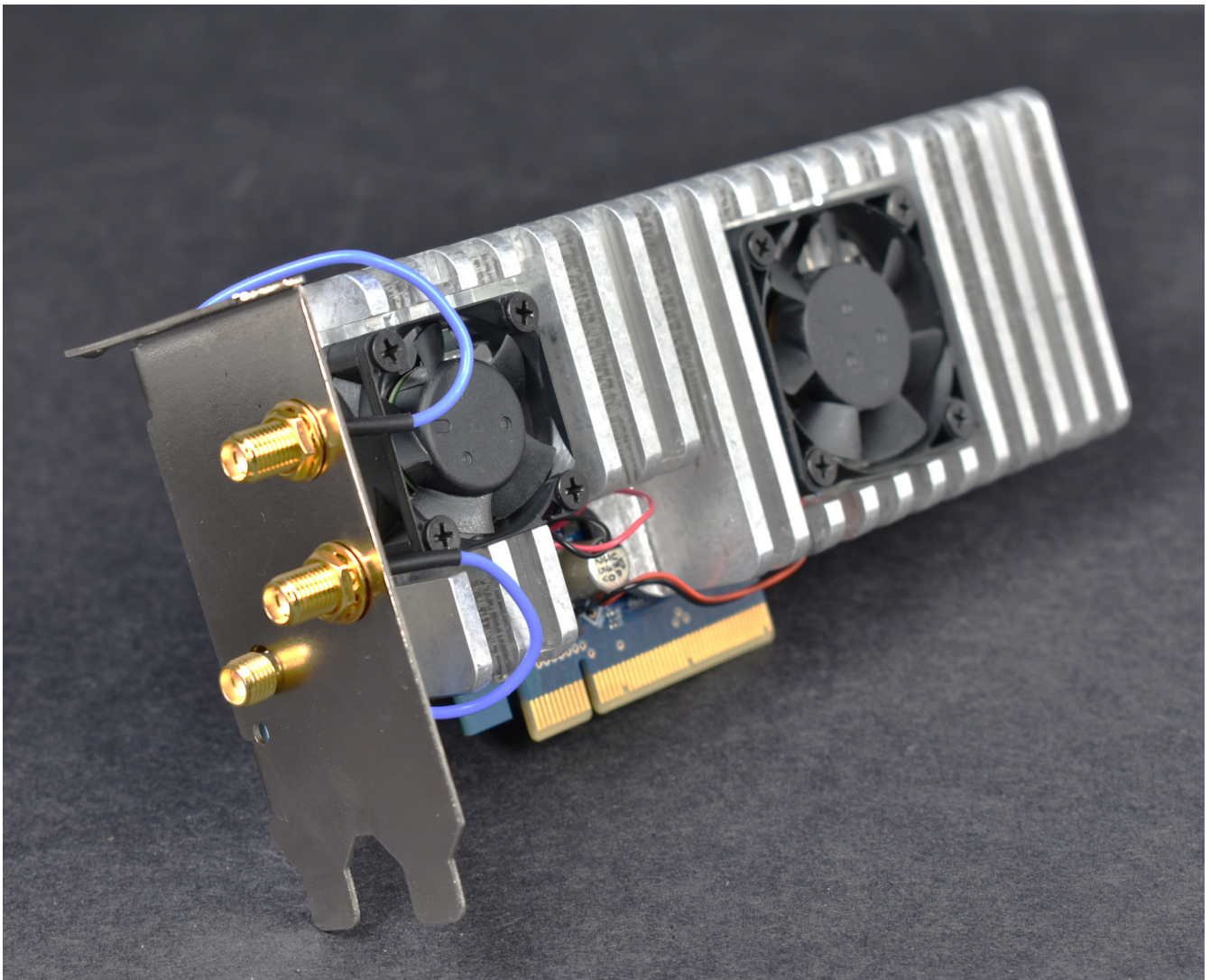


# Getting started with the RFX

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# Overview

The EDT RFX is a Software Defined Radio (SDR) designed to fit a small (half-height) PCIe form factor. It features two independent RF Input channels of 125 MHz BW that can be tuned from 400 MHz to 6 GHz. Multiple Digital Sub-Tuners can be connected to either Input, which resample selected bandwidth regions of flexible size (250 kHz to 250 MHz). [1] Advanced AGCs are built into the firmware which properly load the ADC and digital downconversion stages, achieving the best possible SNR.

[1] For the initial SoapySDR driver release, only a single Sub-Tuner is connected to each RF Input.

# Software Installation

The software support is installed under `/opt/edt/rfx`:

| Directory                          | Description                                   |
|------------------------------------|---|
| <code>/opt/edt/rfx/docs</code>     | Documentation                                 |
| <code>/opt/edt/rfx/examples</code> | C++ and Python examples of Soapy API usage    |
| <code>/opt/edt/rfx/flash</code>    | Firmware                                      |
| <code>/opt/edt/rfx/grc</code>      | GNURadio support and example GRC applications |
| <code>/opt/edt/rfx/lib</code>      | SoapySDR drivers (for both 0.7 and 0.8)       |

On Ubuntu 20+ systems, first install the edt repo config from packagecloud:

```
curl -s https://packagecloud.io/install/repositories/edt/main/script.deb.sh | sudo bash
```

Then install the RFX support package:

```
sudo apt-get install rfx_soapy
```

For a standard GNU Radio installation, we rely on the [PPA](#):

```
sudo add-apt-repository ppa:gnuradio/gnuradio-releases
```

```
sudo apt-get update
```

```
sudo apt-get install gnuradio python3-packaging
```

## Firmware

The `rfx_soapy` package includes the latest release firmware which can be installed with `pciload`:

```
/opt/EDTpcd/pciload /opt/edt/rfx/flash/rfx.bit
```

## API Documentation

Installing `rfx_soapy` will automatically install **libsoapysdr-dev** and **libsoapysdr-doc**. The latter will place API docs under: `/usr/share/doc/libsoapysdr-doc/html`

Refer to the included **agc.pdf** document for specific information on AGC/DAGC operation and control.

# Example Applications

## Soapy API usage

The `rfx_soapy` package includes examples of RFX specific Soapy API usage in C++ and Python under:

```
/opt/edt/rfx/examples
```

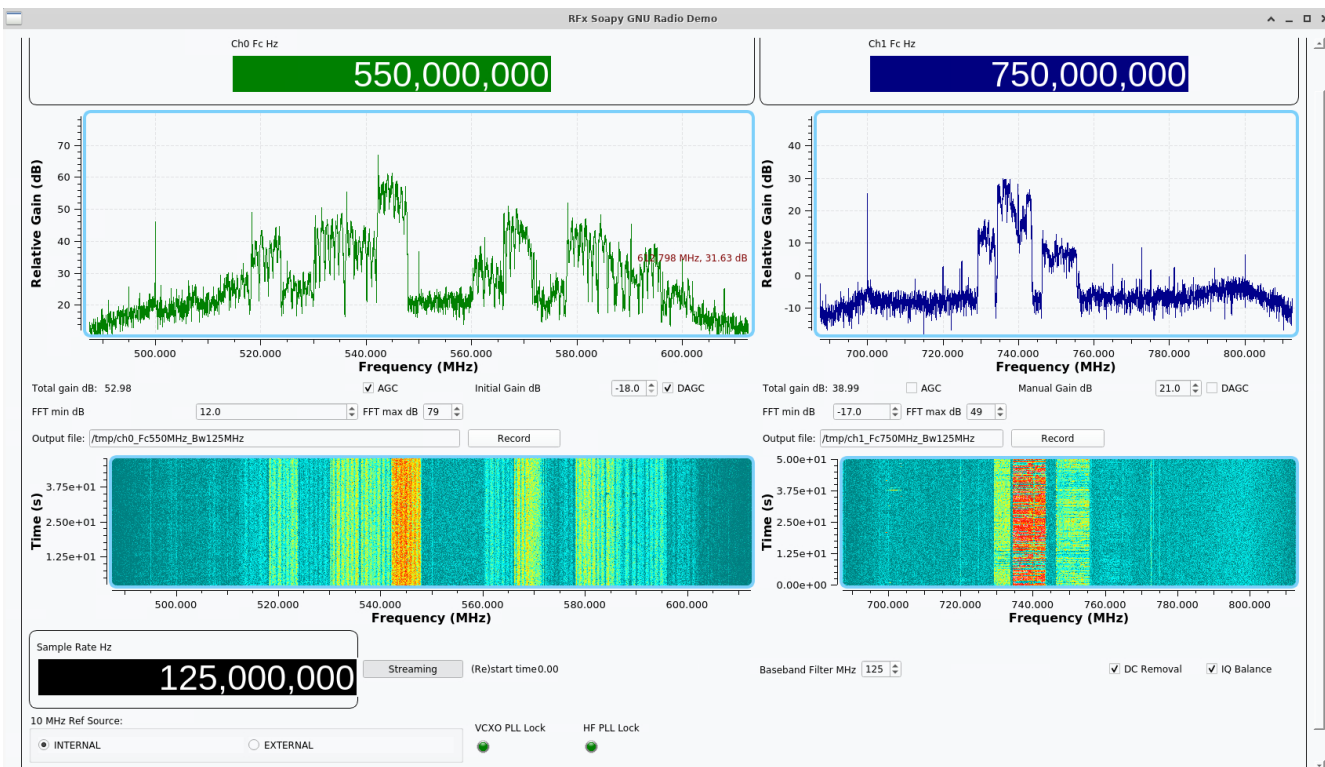
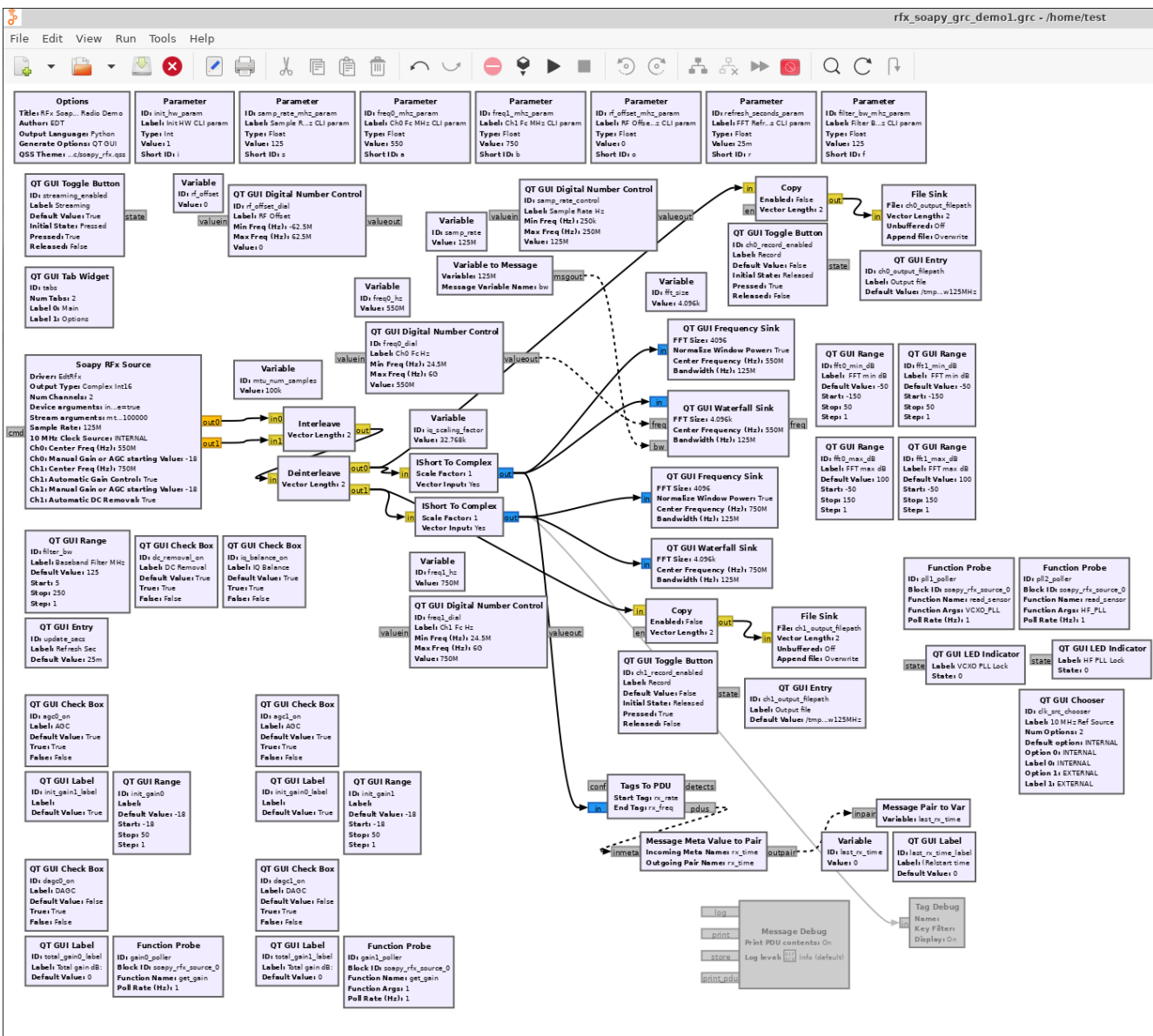
## GNURadio usage

### Dual channel Spectrum Analyzer / Recorder

1. Open the application via GRC:

```
gnuradio-companion /opt/edt/rfx/grc/rfx_soapy_grc_demo1.grc
```

2. Start the application by clicking on the play button.
3. Adjust the control values as needed.



## Python

By default the above GRC steps will generate the python code for the app when the play button is clicked. This python code is installed as a part of the package:

```
python /opt/edt/rfx/grc/rfx_soapy_grc_demo1.py --help
```

```
python /opt/edt/rfx/grc/rfx_soapy_grc_demo1.py
```

# Feedback

Send any feedback or questions to:

Engineering Design Team, Inc. 3423 NE John Olsen Avenue Hillsboro, Oregon 97124 U.S.A.

Telephone: +1-503-690-1234 Fax: +1-503-690-1243 Email: [info@edt.com](mailto:info@edt.com)

Web: [www.edt.com](http://www.edt.com)