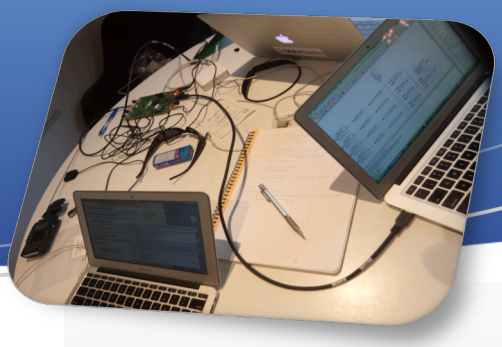
Hello World!

Get your USRP off the ground!

Need to set up your Groundsat (Phase 4 satellite simulator) and ARAP (Amateur Radio Access Point) USRPs? This tutorial will help you get started!



Here's what we did:

Get a USRP B210. We referred to the following website:

gnuradio.org/redmine/projects/gnuradio/wiki/MacInstall

sudo port install gnuradio

sudo port install uhd

Plug in GPSDO, hook up GPS antenna. Inside is OK.

Plug in wall wart to USRP.

Plug in USB to Mac (or other lesser computer).

xterm

uhd_find_devices

gnuradio_companion

file => flowgraph

FDMtoTDM_USRP.grc

Press "play" button

Error can't find a file. We fixed the pathname.

Various crashes may occur. Just restart. Again. And again.

What next? There are some screens? What should happen?

The upper left display shows the entire received spectrum over the 100 kHz band, at the input of the polyphase filter.

The upper center display shows the spectrum for a single 25 kHz channel within that band, at the output of the polyphase filter, and the selector above it lets you choose which channel.

The lower left display shows the spectrum of the downlink signal as it would be transmitted over the air, after the four channels of digital data are multiplexed with the preamble.

The lower center display shows either the baseband spectrum of the received voice audio for the channel selected at the bottom of the screen, or the output of the correlator that detects the preambles within the downlink data.

The two displays on the right are supposed to show the multiplexed data stream as transmitted (upper) and as received (lower), but the visual result is just a gray rectangle.

You'll need something like a handheld FM radio to duplicate the demo

Above, Paul KB5MU transmits on an HT. The FM signal is received and processed by the B210, and displayed on the GUI screens. See below for a screenshot and left for an explanation of what each screen means.

Make the channels match up on the display, and then transmit on the right frequency, and you will see your signal processed into "uplink" and "downlink" signals by the B210.

This is a simple demonstration but shows the basic functionality of Phase 4, and starts us in the direction of having a working ARAP.