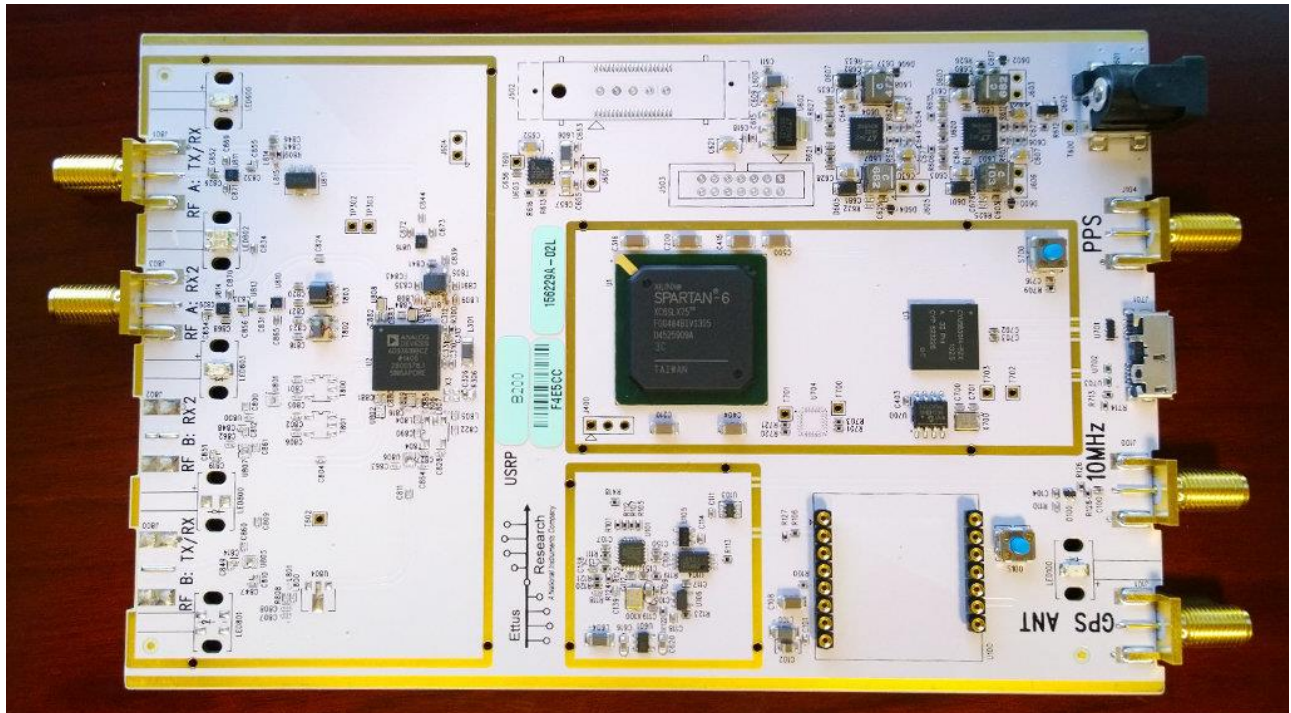


Project Ettus - P1



SDRZone Feature Article - may not be reproduced with out

permission

I have decide to approach my next review differently as I see this coming in multiple parts and actually taking months to complete.

We'll call this article the Project Ettus, I'll share what I learn in pieces and when it's all said and done, I will steal from this article to build a review.


With that said my new Ettus SDR arrived today and so it was time to start taking pictures and notes.

Ordering was simple, however, it took a while to receive and they charged me sales tax. Apparently something to do with the state of Texas. I have to fill out an exemption request and see if it's accepted to get a refund on tax.

To make it all the odder, my unit shipped from Hungary so the whole tax thing really has me shaking my head and wondering what's the deal? I was not contacted about tariffs, ect from Fedex yet. We'll see if Fedex bills me later like they did on my Anan.

Ship (P/U) date :
Fri 3/28/2014 7:32 pm

DEBRECEN HU



Delivered
Signed for by: J.FELLAN

Actual delivery :
Mon 3/31/2014 8:50 am

OLATHE, KS US

Customize Delivery
Request Notifications
Obtain Proof of Delivery
More actions ▾

Let us tell you when your shipment arrives. Sign up for delivery notifications ▶

Travel History ? Help Hide

Date/Time	Activity	Location
- 3/31/2014 - Monday		
8:50 am	Delivered	OLATHE, KS
7:14 am	On FedEx vehicle for delivery	LENEXA, KS
7:08 am	At local FedEx facility	LENEXA, KS
6:40 am	International shipment release - Import	MEMPHIS, TN
5:20 am	At destination sort facility	KANSAS CITY, MO
- 3/30/2014 - Sunday		
4:34 pm	Departed FedEx location	MEMPHIS, TN
8:53 am	International shipment release - Import	MEMPHIS, TN
3:48 am	Arrived at FedEx location	MEMPHIS, TN
1:43 am	In transit	KOELN DE
12:27 am	Departed FedEx location	KOELN DE
- 3/29/2014 - Saturday		
3:50 pm	Arrived at FedEx location	KOELN DE
- 3/28/2014 - Friday		
7:32 pm	Left FedEx origin facility	VECSES HU
8:41 am	Shipment information sent to FedEx	

Fedex Tracking

More on this later as the story unfolds!

The radio was well packed. For those not familiar with what it is I purchased, I ordered an USRP B200 SDR Board. It's a single ADC Direct Conversion 70Mhz to 6Ghz SDR with antennas and a USB Boot Image.

USRP B200 SDR Kit 1x1 (70 MHz - 6GHz) - Ettus Research

782980-01

Vert400 Vertical Antenna (144 MHz, 400 MHz, 1200 MHz) Triband

783074-01

VERT900 Vertical Antenna (824-960 MHz, 1710-1990 MHz) Dualband

782773-01

Vert2450 Vertical Antenna (2.4-2.5 and 4.9-5.9 GHz) Dualband

783075-01

LiveUSB - Bootable USB Memory Drive - Ettus Research

782780-01

I have not really explored these frequency ranges much, so other than some standard VHF and UHF this is all new to me as a ham, hence the time it will take to work through all the nuances and fun.

I think that will make this article interesting for those that are also new and I can document as I go and share. Inevitably some of this is going to change as I go, so keep checking back.

Lets look at the packing images!

It came as you can see below via Fedex, there was a box in the envelope, another box and soft antistatic packages inside both boxes. Very well packed!



Shipping Envelope



Box in Envelope



Inside Box 1



Inside Box 2 (left)



Inside Box 2 – Radio and USB Cable



The Antennas



Linux USB Boot Drive

As you can see it was all well packed and there is quite a bit of excitement ahead.

There was no physical documentation other than the packing slip & invoice included with the SDR, USB Dongle or Antenna's. As a note, a welcome letter and directions on how to easily find information on the website would be nice. I believe the thought here is you wouldn't be like me and purchasing one of these if you didn't already know what you were doing.

While I really have not talked to anyone about documentation at Ettus, I believe the assumption is you should be prepared to search and learn as you go. There is actually quite a bit of information out there.

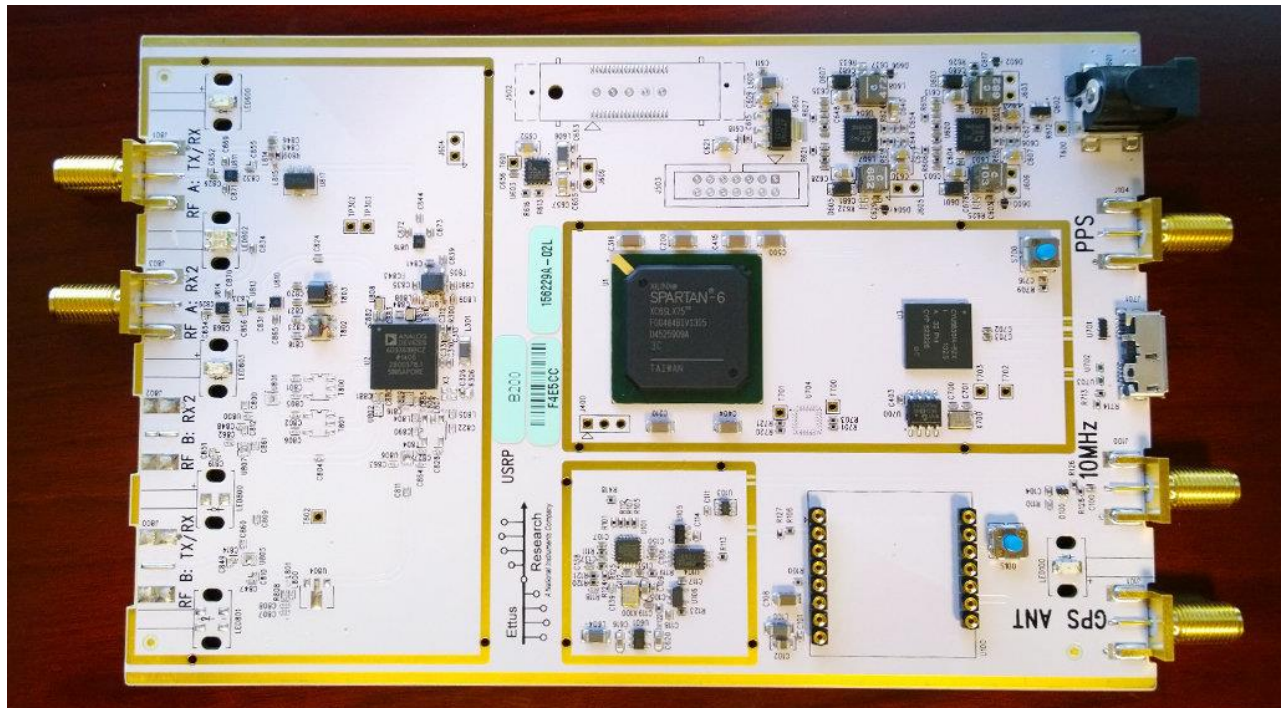
Some googling showed me these links:

http://www.files.ettus.com/uhd_docs/manual/html/usrp_b200.html

<http://www.ettus.com/kb/detail/usrp-b200-and-b210-faq>

I have not seen anyone develop an actual user's guide. Perhaps as I go I can try to document some things that boil it all down.

Let's get a more detailed look at the SDR board itself.



USR B200 SDR

Not that I am a qualified judge to say so, however, I am impressed with the board, its clean and seems very professional as compared to other SDR's I have experimented with thus far.

There is not a case, this is considered a kit. I plan to make one for it at some point. I have not decided out of what yet, I am half thinking about Legos believe it or not, or some very light wood.

So I have some more research to do at this point, as I said this will come in parts and it will take a while as I have the integration article to transform from Draft to final for mid-month and then several personal projects and commitments.

It will come in time, so just understand that it takes time to start from Zero and I do have the USB drive to explore yet which probably will greatly simplify things and might even contain more documentation. There is the Ettus website to explore and I plan to try and run this SDR on my Mac as well. Much lies ahead!

As far as updates go, look for the title on this article for changes and I'll list them right at the top as P1, then it will change to P2, ect.

Finally, please do not take my commentary as I explore as definitive, I am just sharing thoughts and my process for discovery as I go in its rawest form!

I think the net result is that you'll get more information and can explore with me bit by bit!

Project Ettus - P2



The Zone!

Welcome back to Part two! If you missed Part 1, you can click [here](#) and catch-up. This will be an ongoing series and so as the parts are published, the older parts will be updated with links to the next installment in the series so you can go back to part 1 and read through the series to get up to date.

Link to [Part 1](#)

Lots to relay to you, limited progress though, depending on how one defines progress.

I was able to boot the Ettus USB dongle on Hamzilla, however, it didn't seem to like the quad displays and networking devices. Issues were such that Ubuntu started reporting errors and so I never really did get the B200 SDR to work on Hamzilla. Hamzilla is my mega SDR PC for those new to my articles.

I have been wanting a Mac mini for some time, so now seemed to be the time to get one and set it up with dual or triple boot. This is for my upstairs office and now accompanies my MacBook Pro I revitalized recently with an SSD Drive and more memory. See article cover picture, mini sits under monitor.

I settled for the cheap i5 model which I purchased on sale and dropped 16GB of RAM in it and proceeded to try to get dual boot set up. I really had hard luck in getting things to play nicely. As usual, I made it harder in some ways than it needed to be by virtue of selecting a Mac Mini.

Ultimately attempts to use Mavericks Disk Utility and Boot Camp Utility failed to get a linux install onto a second partition on the internal drive. I have to say, I am utterly amazed at how many different issues I have experienced. Too many partitions, installing and not being found in the Mac boot menu, at one point a Windows 7 boot camp install failed and just left

me booting to a DOS prompt with no way out. This was really odd as I have never had that kind of issue installing bootcamp before!

There are a lot of nice ITX PC options out there for those who don't want to mess with a Mac. See this example on eBay. http://www.ebay.com/itm/Intel-Core-i7-3770S-Dual-LAN-Mini-ITX-PC-Q77-iAMT-Ivy-Bridge-NF9E-Q77-M350-/400308436807?pt=Desktop_PCs&hash=item5d343dff47

The Mac mini though was by far the cheapest and smallest option with reasonable specs I could find. So, even if you wipe the Mac OS and use this as a little SDR PC, you may be better off given the cost vs power ratio.

Still, given how hard this all ended up being, I would look on eBay for an ITX PC. It will be bigger as far as physical size, however, you can get a little more bang for your buck by configuring it how you want from the start. You should be able to even get a speedy i7 quad core for a decent price. Better yet, if you are so inclined, you can build one exactly to your specs! Look at NewEgg, or search ITX PC eBay and look at the specs and parts there and then you can go to New Egg and add what you want to to your shopping cart using the commercial offerings as a model.

Next up was the boot dongle on the mini. This worked, however, there are again network issues. It doesn't see the NIC in the mini and has problems with two different USB wireless dongles. On those NICs, it sees them, will work for a bit and then start dropping and reconnecting every few minutes. This effort stands with me trying to find Mac Mini Ubuntu Drivers.

Needless to say I got the B200 to work in FFT off the dongle, a Panadapter application associated with UHD and Gnuradio. See post in the GUN Radio board here if your interested! I was able to tune some local FM stations and listen to them. I suppose I could basically tune any station using this tool. So much focus has been on the computers and operating systems, play time with the radio so far is minimal.

I also was able to get the B200 to work with HDSDR, however, the sound really wouldn't work and in trying to fix it, I deleted the config and so it no longer works at all and I need to find the right settings again.

I made an image file of the dongle first off, so I will see if I can restore that to another dongle and get the defaults back. I am optimistic about this now since I have found some more information and a link to the image on the internet. I have not tried to create a new Dongle yet. I have been told the 2.3 dongle is a leap ahead of the 2.2 I am using.

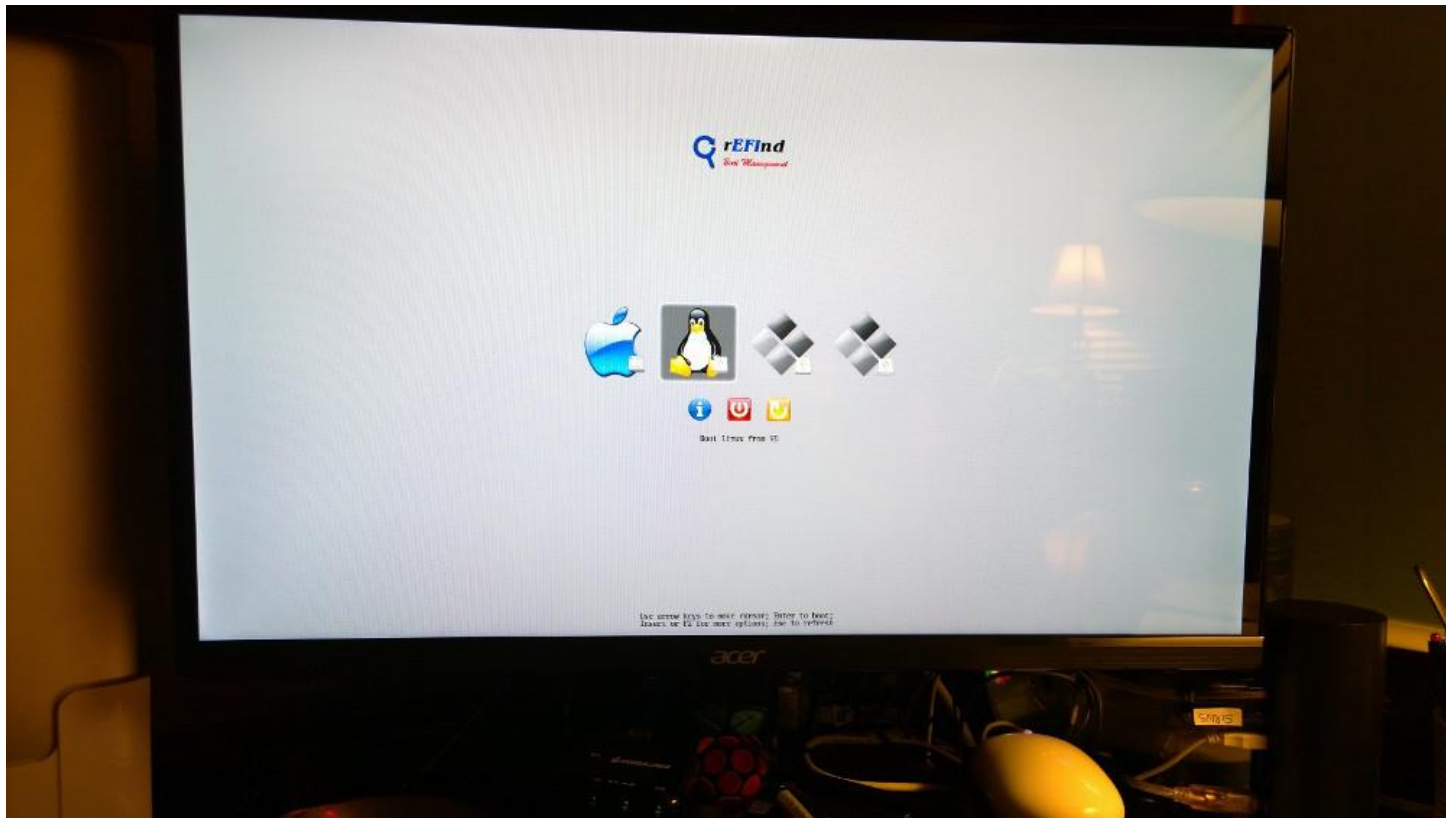
Let's talk about VMWare for a minute. Well, I tried Gnuradio on a VM, however, VMware Fusion 6 doesn't really handle the Ettus USB connection correctly, so not much luck there either. I have used my Afedri in a VM on the slower Macbook Pro with success though, however, its not nearly as resource intense as the Ettus and its USB 2 based. see SDR Radio running in Win 7 VMware Fusion 6 Pro in cover picture while the install for the developer version of Gqrx is running in a terminal window to right.

I can't even tell you how many hours I spent messing with all this, and regrettably I am not a Mac OS expert, which made it all the more complicated trying to get Ubuntu to load on a mini partition.

Lots and lots of frustration with trying to partition for a Linux install. Don't get me wrong, its very easy to make the partitions in Disk Utility, however, something about the way the mini does them that hangs the Ubuntu installer. Things are such that even the BootCamp install attempt for Windows 7 fails miserably. I thought I might trick my way into things by installing windows and then installing Linux Ubuntu or Mint over it.

Needless to say I am not too thrilled about my Mac mini right now. This is all fixable, however, it's seeming like its going to be very painful as I have now had to install an external drive and rEFInd boot manager.

The second external drive hit the mark and allowed a clean bootable version of Ubuntu 12.10 to be installed from the Dongle. rEFInd now lets me easily select which drive I want to boot from without having to hold the Option key which has been rather inconsistent using the wireless keyboard. Warning here, rEFInd updates your Macs NVRam to inster the boot manager, make sure you make a backup like I did using Time Capsule or simular backup Software.



You can learn more about rEFind here: <http://www.rodsbooks.com/refind/>

I managed to get things installed and to fire up UHD FFT on the mini under OS Mavericks, however, I appear to have a python hanging issue. My guess at first was that it was running the Python that installed in the GNUradio script instead of the version bundled with Mavericks. Actually, that all didnt work out, I upgraded Python to 3.2.2 and still had the same issue after checking that all the environment variables were pointing correctly to the 3.2.2 version of Python.

Since then, I received a nice tip to uninstall it all and install using this command to get the developer setup. `sudo port install uhd-devel gnuradio-devel gqrx-devel`

Its a very lengthy install process, you need to plan an hour to get through it! You dont need to do anything other than keep your Mac from falling asleep, the script does all the work.

You'll need some other tools on the Mac before running this. MacPorts, Xcode, Xquartz. See this link for setup instructions. http://code.ettus.com/redmine/ettus/projects/uhd/wiki/GNURadio_OS_X

The hang issue with the Panadaptor display Python hang was resolved with the developer version and I was able to run Gqrx and launch without a hang. Regretably though, trying to use Gqrx results in hangs if I try to change any controls, so on the Mac Mini I have more work to do to get that all working correctly. I have begun to wonder how this will actually turn out as it could take quite some time to sort something like this out without being more of an expert.

I'll be working on sorting this all out over the next few weeks and have several avenues I will be working.

- [Creating the latest Dongle Image 2.3 to a new dongle](#)
- [Installing Mint in place of Ubuntu to see if it plays better with mini, I will then follow the Linux install process for Mint for GNU.](#)
- [Try and debug the Mac mavericks install and Gqrx.](#)
- [Get a third boot OS setup so I can load Windows and see what I can accomplish there on the Mini.](#)
- [Resolve Mac Mini network and sound card driver issues under Linux.](#)

As you can see, really my goal is a triple boot machine on the Mini, Windows 7, a good Linux (likely Mint) and then Mac OS X Mavericks. This will allow me to have a nice test bed for receive only SDRs since my antenna options for this location will be limited.

So, I admit, this project is eating my lunch right now. I like a good challenge though and I will have to get fresh on some skills again to move forward. Mainly getting back up to speed on Linux and then also on Mac OS.

I also will fashion some sort of holder for my Ettus B200 Board. Probably something crude out of lightweight hobby wood is what I will do now short term. I realized I can do this with a few blocks of wood and a skill saw to cut a small channel to hold the card in and then a cross bar to keep them together. We are talking super crude here, however, it will allow me to

have the card on a stand and access all its antenna ports as well as having the USB 3 cable plugged in.

I dropped Ettus support a note the other night on the dongle image, and they responded quickly the next day with a link to the image so I can refresh it. Great support there!

So far, real ruff going. This is a real experimenters SDR, lots of promise and lots of learning and exploring for Joe Ham. Not for the faint of heart or those that are not computer experienced, however, many of my fellow hams I write offline that are comfortable programming would likely feel right at home with this puppy.

I really this is a really rough update, literally almost a blow by blow update of Joe Ham struggling through setting up and using the Ettus B200 SDR. Hopefully some will enjoy this while others will likely shake their head. Listen, if your shaking your head, please, post to the USRP Forum here and share. I wont mind the help, especially on making this work on a mini and or Mac OS on the mini. :)

Not sure what my next update will be on Project Ettus, or when it will occur as time is at a premium these days. Look for something in a few weeks, perhaps I will have a better update at that time and hope to have some pictures of my cheapo holder, screen shots of Gqrx, UHD, HDSDR, ect!

Project Ettus - P3



The Zone!

New Beginnings, that is the theme for part 3. Sometimes when you fail so many times, things get all messed up, and there is a point of foolish continuation verses smart new beginnings. I opted for new beginnings.

Below are my attempts at simplified instructions for setting up GQRx on a Mac Mini.

We will explore the Windows setup in **Part 4** and the Ettus Live USB Dongles in **Part 5**.

What is GQRX? In my own layman's terms it is a graphical SDR interface based off GnuRadio that provides basic SDR functions such as tuning, listening to AM & FM Wide/Narrow as well as other frequencies depending on the hardware attached to the computer.

I chose this program because it will work on a Mac and I was able to get an expert to help me get through the install, thanks: Michael Dickens from Ettus Research. In turn I have attempted to provide you this documentation via part of the Project Ettus series. You can learn more about GQRX at <http://ggrx.dk> While you are there, you may find the program architecture interesting as it lays out how the program approaches software designed radio.

While we are specifically looking at the Ettus B200, others of you with FunCube and RTL Dongles may be interested as well since it supports those devices as well.

GQRX supports FFT and Waterfall views of the spectrum you are working with and SDR users should feel somewhat at home when using this tool.

I felt getting the Ettus B200 up as a normal basic SDR would help us build knowledge to some of the more advance uses and running it under Linux. Certainly this would serve as a primer for installing GQRX under Ubuntu as well.

If I am successful then I will also try it with a [Ham it Up](#) up-converter to see if I can listen to some HF as well. Remember, the native frequency range of the B200 is around 64Mhz to 6.2Ghz give or take.

The Computer Used

I am using a 2012 Mac Mini i5 that has had its ram upgrade to 16GB. We are running OS X Mavericks 10.9.2.



With that said, I backed up what I needed and wiped the Mac Mini Clean and started anew!

If you don't want to wipe your Mac (not required for this to work) and don't need any of the details on the Mac Mini Cleaning and setup, skip to *Installing GQRX (Xquartz, XCode & Macports)*.

Mac Mini Clean & Reinstall Mac OS X Mavericks

Before you attempt to wipe your Mac as well, make sure you have a way to reinstall your operating system and have backed up any data you may want to keep.

In my case I downloaded the Mavericks install file from the Mac App Store and created an emergency recovery USB dongle.

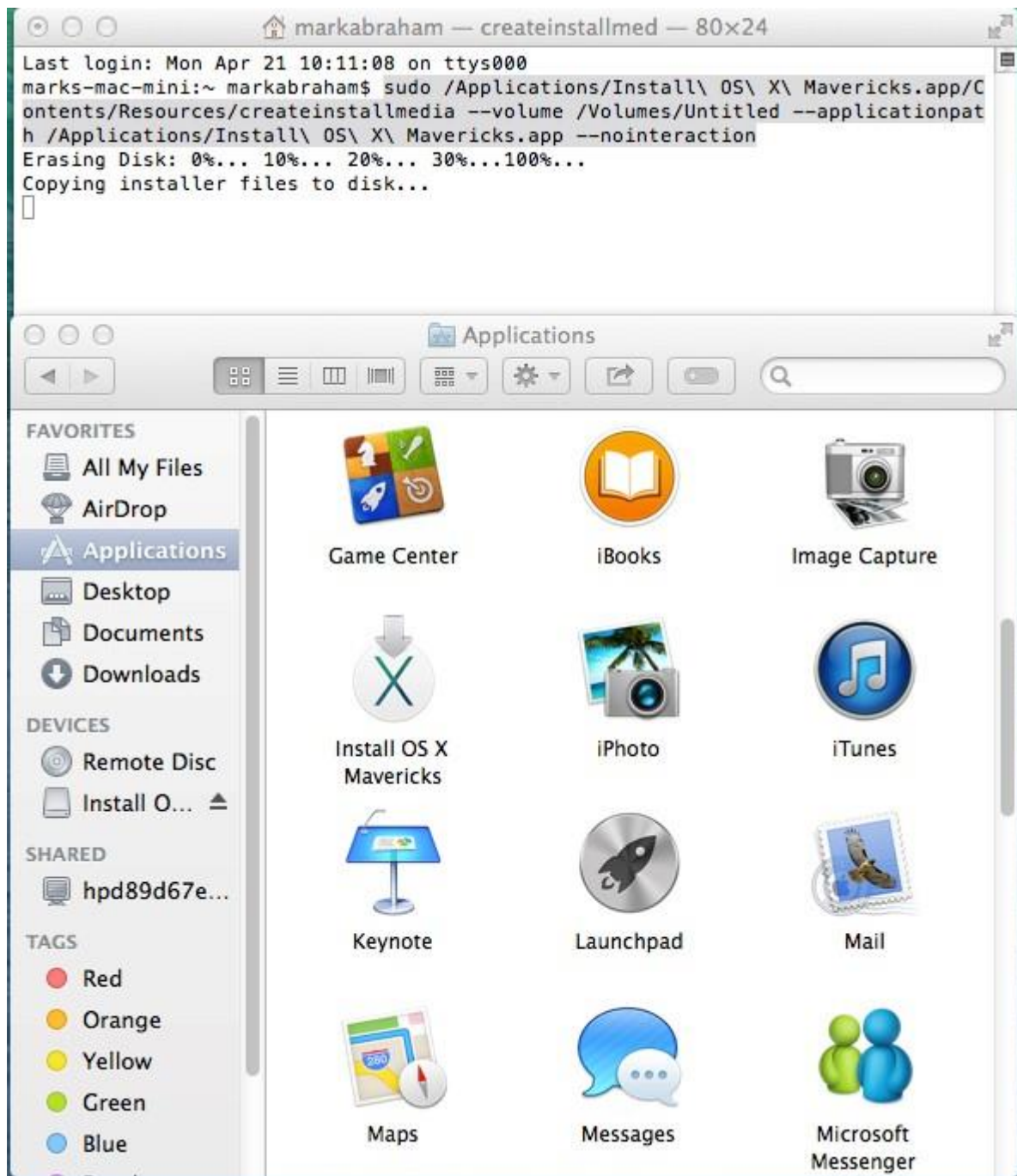
Once you have downloaded the Mavericks install file, you can copy it to your Applications folder, insert a USB making sure its titled UNTITLED. At a terminal prompt assuming you have followed these abbreviated instructions, you can open a terminal and create the image with the following command.

```
sudo /Applications/Install\ OS\ X\  
Mavericks.app/Contents/Resources/createinstallmedia --volume
```

```
/Volumes/Untitled --applicationpath /Applications/Install\ OS\ X\ Mavericks.app --nointeraction
```

Here is the instructions I have followed to create my USB image:

<http://www.macworld.com/article/2056561/how-to-make-a-bootable-mavericks-install-drive.html>



Screenshot of Creating USB Installer and Mavericks in Applications

Note, in my case I did an internet reload of Mavericks. Command + R and It went well!

Installing GQRX (Xquartz, XCode & Macports)

With some help I started the process of installing MacPorts again, then the packages needed for GQrx.

This is a high-level walkthrough of the process you can follow using these short version notes.

If you want the details you can access this URL for the steps to get Xquartz, Xcode and MacPorts installed.

http://code.ettus.com/redmine/ettus/projects/uhd/wiki/GNURadio_OS_X

Short Notes Xquartz, XCode & Macports

Its important that you follow this sequence:

Download and install Xquartz :


<http://xquartz.macosforge.org/landing/>



A version of the X.Org X Window System that runs on OS X

The XQuartz project is an open-source effort to develop a version of the X.Org X Window System that runs on OS X. Together with supporting libraries and applications, it forms the X11.app that Apple has shipped with OS X since version 10.5.

Quick Download

Download	Version	Released	Info
 XQuartz-2.7.5.dmg	2.7.5	2013-11-10	For OS X 10.6 or later (including Mavericks)

A list of all available XQuartz releases can be found [here](#).
(Development "beta" releases, if available, are [here](#).)

More Info

- [Report A Bug](#)
- [XQuartz wiki](#)
- [XQuartz developer information](#)
- [quartz-wm \(the XQuartz window manager\) wiki](#)
- [The X.Org Foundation](#)

License Info

An XQuartz installation consists of many individual pieces of software which have various licenses. The X.Org software components' licenses are discussed on the [X.Org Foundation Licenses page](#). The [quartz-wm](#) window manager included with the XQuartz distribution uses the [Apple Public Source License Version 2](#).

Web page design by Kyle J. McKay for the XQuartz project.

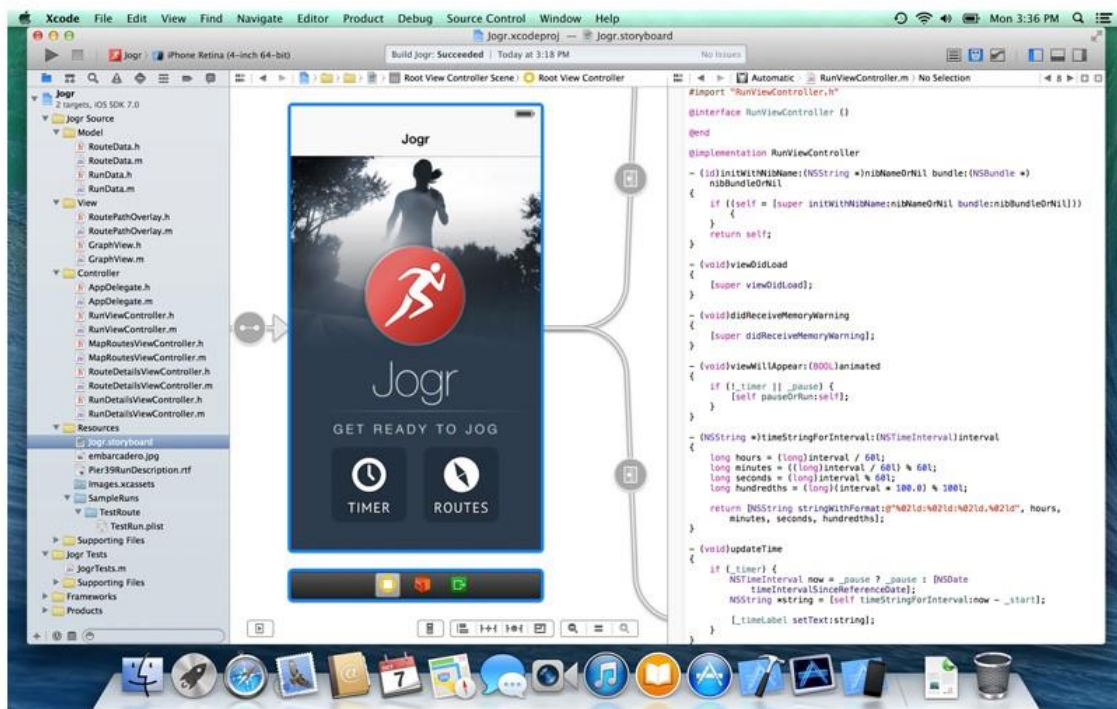
Screenshot of X Quartz Webpage

Find and install the latest Xcode package:

<https://guide.macports.org/chunked/installing.xcode.html>

What's new in Xcode 5.

Xcode 5 does more than ever to help you create high-quality apps. It automatically configures your apps to use the latest Apple services, manages images in a unified asset catalog, and helps you design stunning interfaces for iOS 7 and OS X. It also makes it easy to analyze your code, monitor performance, and test your apps, and with access to continuous integration built right in, your team can create better apps than ever before.



Screenshot of Xcode

Once these are installed and you have restarted your Mac, then you need to open a terminal and enter in this command to get the rest of the tools installed.

```
xcodeselect --install
```

You must also launch Xcode from the Utilities Folder under Applications and accept the license, let it install the additional tools and finish. Then close it before continuing or your UHD install will fail.



Make sure you launch Xcode and accept the license

Next up is to download and install the MacPorts package. Use the package as it will auto update your environment variables so all works correctly. <https://www.macports.org/install.php>

A screenshot of the MacPorts website. The top left features the "Mac Ports" logo. The top right has a "Download" button. The main content area is divided into a sidebar and a main section. The sidebar includes "Getting Started" (Home, Installing MacPorts, Available Ports, Documentation, Support & Development, Contact Us, News) and "Shortcuts" (Available Downloads, MacPorts FAQ, Report a Bug, Bug reporting Guidelines, Subversion Repository, MacPorts Team, Becoming a Member, Mac OS Forge). The main section has a "Quickstart" header with three numbered steps: 1. Install Xcode and the Xcode Command Line Tools; 2. Agree to Xcode license in Terminal: `sudo xcodebuild -license`; 3. Install MacPorts for your version of OS X:

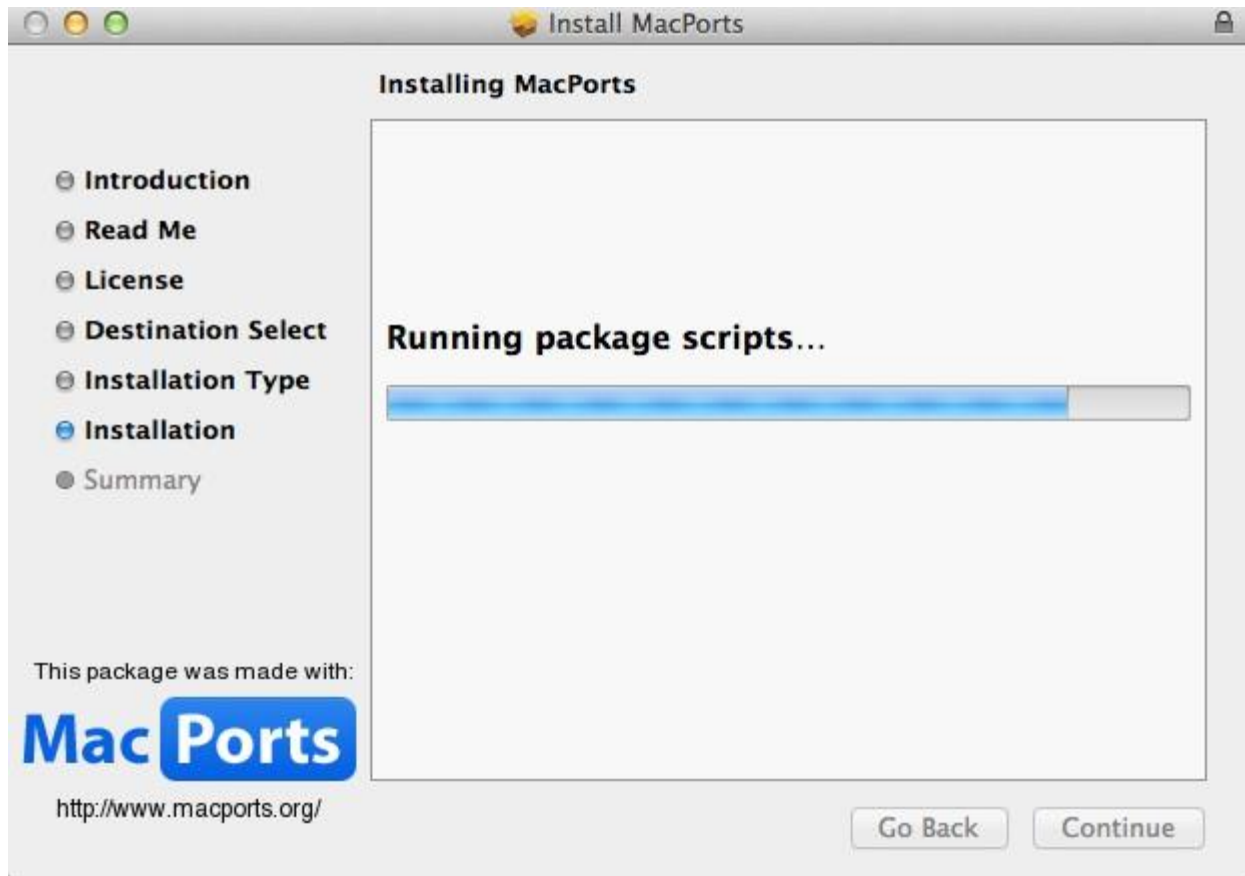
- OS X 10.9 Mavericks
- OS X 10.8 Mountain Lion
- OS X 10.7 Lion
- Older OS? See here.

 Below this is the "Installing MacPorts" header, followed by text stating "MacPorts version 2.2.1 is available in various formats for download and installation (note, if you are upgrading your Mac OS X to a new major release, see the migration info page):" and a bulleted list of installation options:

- "pkg" installers for Mavericks, Mountain Lion and Lion, for use with the Mac OS X Installer. This is the simplest installation procedure that most users should follow after meeting the requirements listed below. Installers for legacy platforms Snow Leopard, Leopard and Tiger are also available.
- In source form as either a tar.bz2 package or a tar.gz one for manual compilation, if you intend to customize your installation in any way.
- SVN checkout of the unpackaged sources, if you wish to follow MacPorts development.
- The selfupdate target of the port (1) command, for users who already have MacPorts installed and wish to upgrade to a newer release.

 At the bottom, it says "Checksums for our packaged downloads are contained in the corresponding checksums file."

Screenshot MacPorts Page – Assuming Mavericks 10.02 install



MacPorts installer

You can update MacPorts by typing the following command in a terminal:

```
sudo port -v selfupdate
```

```
markabraham — bash — 80x49
Last login: Mon Apr 21 08:26:30 on console
marks-mac-mini:~ markabraham$ sudo port -v selfupdate

WARNING: Improper use of the sudo command could lead to data loss
or the deletion of important system files. Please double-check your
typing when using sudo. Type "man sudo" for more information.

To proceed, enter your password, or type Ctrl-C to abort.

Password:
---> Updating MacPorts base sources using rsync
receiving file list ... done

sent 36 bytes  received 69 bytes  70.00 bytes/sec
total size is 4925440  speedup is 46908.95
receiving file list ... done

sent 36 bytes  received 76 bytes  74.67 bytes/sec
total size is 512  speedup is 4.57
MacPorts base version 2.2.1 installed,
MacPorts base version 2.2.1 downloaded.
---> Updating the ports tree
Synchronizing local ports tree from rsync://rsync.macports.org/release/tarballs/
ports.tar
receiving file list ... done

sent 36 bytes  received 70 bytes  212.00 bytes/sec
total size is 60323840  speedup is 569092.83
receiving file list ... done

sent 36 bytes  received 77 bytes  75.33 bytes/sec
total size is 512  speedup is 4.53
Creating port index in /opt/local/var/macports/sources/rsync.macports.org/releas
e/tarballs/ports

Total number of ports parsed:  0
Ports successfully parsed:    0
Ports failed:                 0
Up-to-date ports skipped:     18439

---> MacPorts base is already the latest version

The ports tree has been updated. To upgrade your installed ports, you should run
port upgrade outdated
```

Screenshot of Macports update.

Once you have done this its time to start installing UHD, Gnuradio and Gqrx. Restart your Mac before proceeding and then open a terminal window.

`sudo port install uhd-devel`

`sudo port install gnuradio-devel`

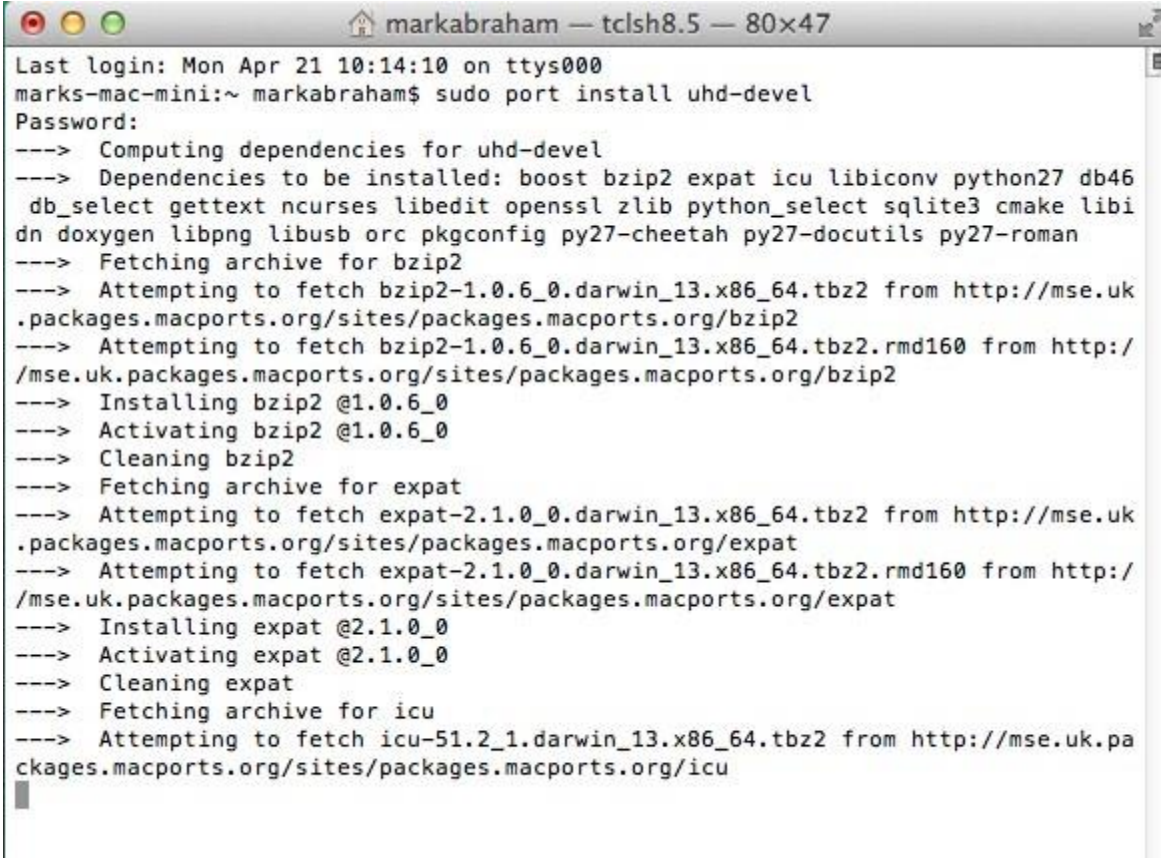
`sudo port install gqrx-devel`

Below are some terminal screenshots to show you some of the activity:

Installing UHD

In a terminal window type:

`sudo port install uhd-devel`

A terminal window titled 'markabraham — tcsh8.5 — 80x47' showing the output of the command 'sudo port install uhd-devel'. The terminal displays the following text:

```
Last login: Mon Apr 21 10:14:10 on ttys000
marks-mac-mini:~ markabraham$ sudo port install uhd-devel
Password:
----> Computing dependencies for uhd-devel
----> Dependencies to be installed: boost bzip2 expat icu libiconv python27 db46
db_select gettext ncurses libedit openssl zlib python_select sqlite3 cmake libi
dn doxygen libpng libusb orc pkgconfig py27-cheetah py27-docutils py27-roman
----> Fetching archive for bzip2
----> Attempting to fetch bzip2-1.0.6_0.darwin_13.x86_64.tbz2 from http://mse.uk
.packages.macports.org/sites/packages.macports.org/bzip2
----> Attempting to fetch bzip2-1.0.6_0.darwin_13.x86_64.tbz2.rmd160 from http:/
/mse.uk.packages.macports.org/sites/packages.macports.org/bzip2
----> Installing bzip2 @1.0.6_0
----> Activating bzip2 @1.0.6_0
----> Cleaning bzip2
----> Fetching archive for expat
----> Attempting to fetch expat-2.1.0_0.darwin_13.x86_64.tbz2 from http://mse.uk
.packages.macports.org/sites/packages.macports.org/expat
----> Attempting to fetch expat-2.1.0_0.darwin_13.x86_64.tbz2.rmd160 from http:/
/mse.uk.packages.macports.org/sites/packages.macports.org/expat
----> Installing expat @2.1.0_0
----> Activating expat @2.1.0_0
----> Cleaning expat
----> Fetching archive for icu
----> Attempting to fetch icu-51.2.1.darwin_13.x86_64.tbz2 from http://mse.uk.pa
ckages.macports.org/sites/packages.macports.org/icu
```

Screenshot of UHD installing

If this fails then do not continue until you work to resolve the issue and get a successful install.

Next we will install Gnuradio

In a Terminal Window type:

`sudo port install gnuradio-devel`

```
markabraham — tcsh8.5 — 84x49
----> Activating uhd-devel @3.7.0_20140415_0+docs+examples+libusb+manual+orc+python2
7+test
----> Cleaning uhd-devel
----> Updating database of binaries: 100.0%
----> Scanning binaries for linking errors: 100.0%
----> No broken files found.
marks-mac-mini:~ markabraham$ sudo port install gnuradio-devel
Password:
----> Computing dependencies for gnuradio-devel
----> Dependencies to be installed: cppunit fftw-3-single fftw-3 graphviz autoconf m
4 perl5 perl5.16 gdbm automake fontconfig freetype gd2 jpeg libvpx tiff xz xpm xorg-
libXext xorg-libX11 xorg-kbproto xorg-libXau xorg-xproto xorg-libXdmcp xorg-libxcb x
org-libpthread-stubs xorg-xcb-proto libxml2 xorg-xextproto xorg-libXt xorg-libsm xor
g-libice gts glib2 libffi netpbm jasper jbigkit libLASi pango Xft2 xrender xorg-rend
erproto cairo libpixmap xorg-xcb-util gobject-introspection libtool harfbuzz graphit
e2 poppler curl curl-ca-bundle lcms2 openjpeg15 poppler-data urw-fonts webp xorg-lib
Xaw xorg-libXmu gsl jack libsamplerate libsndfile flac libogg libvorbis libxslt read
line libSDL xorg-libXrandr xorg-randrproto log4cpp portaudio py27-lxml py27-numpy py
27-nose nosetests_select py27-setuptools py27-opengl py27-opengl-accelerate py27-pil
lcms py27-tkinter tk tcl py27-pygtk atk gtk2 gdk-pixbuf2 hicolor-icon-theme shared-
mime-info xorg-libXcomposite xorg-compositeproto xorg-libXfixes xorg-fixesproto xorg
-libXcursor xorg-libXdamage xorg-damageproto xorg-libXi xorg-inputproto xorg-libXine
rama xorg-xineramaproto libglade2 py27-cairo py27-gobject py27-pyqt4 dbus-python27 d
bus dbus-glib py27-sip qt4-mac libmng py27-pyqt qwt52 py27-scipy SuiteSparse libgcc
cctools cctools-headers llvm-3.3 llvm_select cloog gmp isl gcc_select ld64 libmpc m
pfr swig-python swig pcre py27-sphinx py27-jinja2 py27-markupsafe py27-pygments sphi
nx_select py27-wxpython-3.0 wxPython-3.0 wxWidgets_select qwtplot3d xmlto coreutils
docbook-xml docbook-xml-4.1.2 docbook-xml-4.2 xmlcatmgr docbook-xml-4.3 docbook-xml-
4.4 docbook-xml-4.5 docbook-xml-5.0 docbook-xsl findutils fop getopt libpaper
----> Fetching archive for cppunit
----> Attempting to fetch cppunit-1.12.1_0.darwin_13.x86_64.tbz2 from http://mse.uk.
packages.macports.org/sites/packages.macports.org/cppunit
----> Attempting to fetch cppunit-1.12.1_0.darwin_13.x86_64.tbz2.rmd160 from http://
mse.uk.packages.macports.org/sites/packages.macports.org/cppunit
----> Installing cppunit @1.12.1_0
----> Activating cppunit @1.12.1_0
```

You can see UHD Completion and then start of Gnuradio in highlight

Say yes to the Java Install request when prompted.

Again, make sure you are successful before continuing to the next step.

If the install fails make note of what it failed on. For example, mine failed on py27-scipy, by issuing the commands below I was able to cleanup the progress and then try to run a new install of that package only.

```
sudo port clean py27-scipy
```

```
sudo port install py27-scipy
```

Since the scripts check dependencies, it will leave off where it left off and install the remaining dependencies by starting the main script again at the command prompt in Terminal.

```
sudo port install gnuradio-devel
```

Note, this is a very long long script so plan on having time and make sure your computer doesn't go to sleep during then install. Also, make sure you have a stable internet connection as this script will be using it frequently to fetch packages for the install.

Installing GQRX

In a Terminal Window type:

```
sudo port install gqrx-devel
```

```
markabraham — tcsh8.5 — 80x37
----> Cleaning gnuradio-devel
----> Updating database of binaries: 100.0%
----> Scanning binaries for linking errors: 100.0%
----> No broken files found.
Marks-Mac-mini:~ markabraham$ sudo port install gqrx-devel
Password:
----> Computing dependencies for gqrx-devel
----> Dependencies to be installed: gr-osmosdr bladeRF tecla gr-fcdproplus hackrf rtl-sdr
----> Fetching archive for tecla
----> Attempting to fetch tecla-1.6.2_0.darwin_13.x86_64.tbz2 from http://mse.uk.packages.macports.org/sites/packages.macports.org/tecla
----> Attempting to fetch tecla-1.6.2_0.darwin_13.x86_64.tbz2.rmd160 from http://mse.uk.packages.macports.org/sites/packages.macports.org/tecla
----> Installing tecla @1.6.2_0
----> Activating tecla @1.6.2_0
----> Cleaning tecla
----> Fetching archive for bladeRF
----> Attempting to fetch bladeRF-20140420_0+tecla.darwin_13.x86_64.tbz2 from http://mse.uk.packages.macports.org/sites/packages.macports.org/bladeRF
----> Attempting to fetch bladeRF-20140420_0+tecla.darwin_13.x86_64.tbz2.rmd160 from http://mse.uk.packages.macports.org/sites/packages.macports.org/bladeRF
----> Installing bladeRF @20140420_0+tecla
----> Activating bladeRF @20140420_0+tecla
----> Cleaning bladeRF
----> Fetching archive for gr-fcdproplus
----> Attempting to fetch gr-fcdproplus-20140121_1+python27.darwin_13.x86_64.tbz2 from http://mse.uk.packages.macports.org/sites/packages.macports.org/gr-fcdproplus
----> Attempting to fetch gr-fcdproplus-20140121_1+python27.darwin_13.x86_64.tbz2 from http://lil.fr.packages.macports.org/gr-fcdproplus
----> Attempting to fetch gr-fcdproplus-20140121_1+python27.darwin_13.x86_64.tbz2 from http://nue.de.packages.macports.org/macports/packages/gr-fcdproplus
----> Fetching distfiles for gr-fcdproplus
----> Attempting to fetch gr-fcdproplus-457ab712f331fc086952036bd889d58a99b2c9ae.tar.gz from http://sea.us.distfiles.macports.org/macports/distfiles/gr-fcdproplus
```

You can see Gnuradio Completion and then start of GQRX

Again, you want to follow the same methodology as before making sure this script completes successfully before moving on.

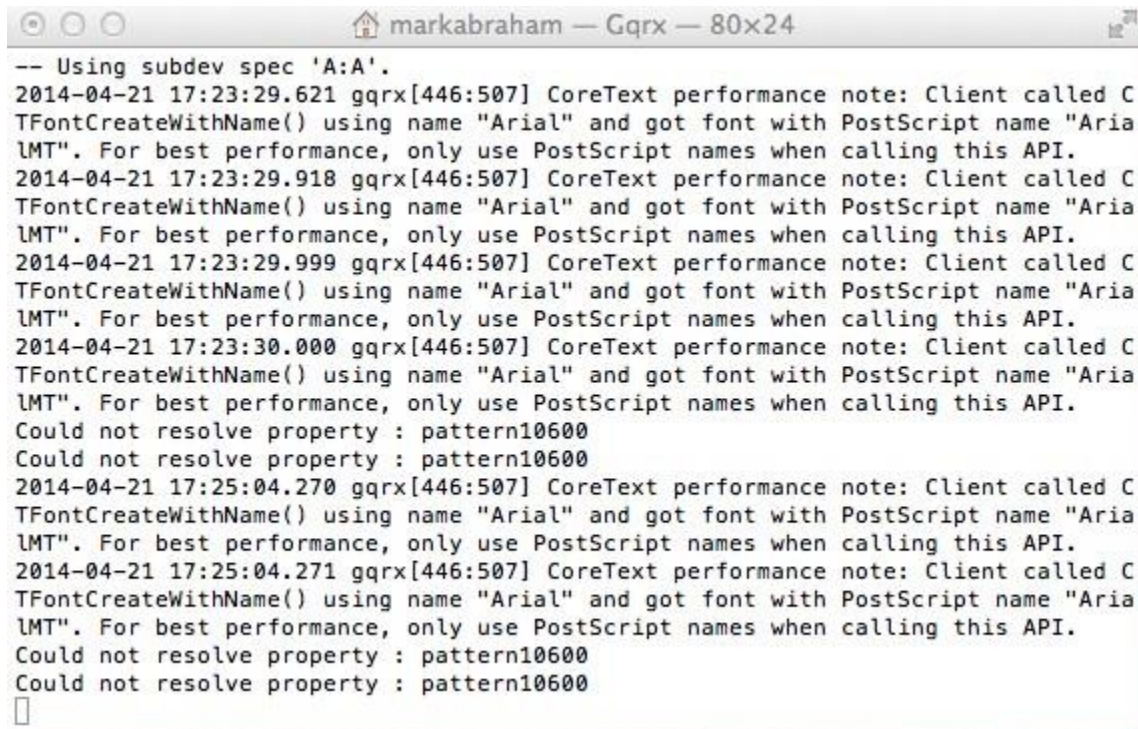
Once you have completed all these activities, you are ready to try GQRX!

Running GQRX

Once everything is installed, try executing "Gqrx" (/opt/local/bin/Gqrx) and see if that brings up the Gqrx app and window.

Gqrx

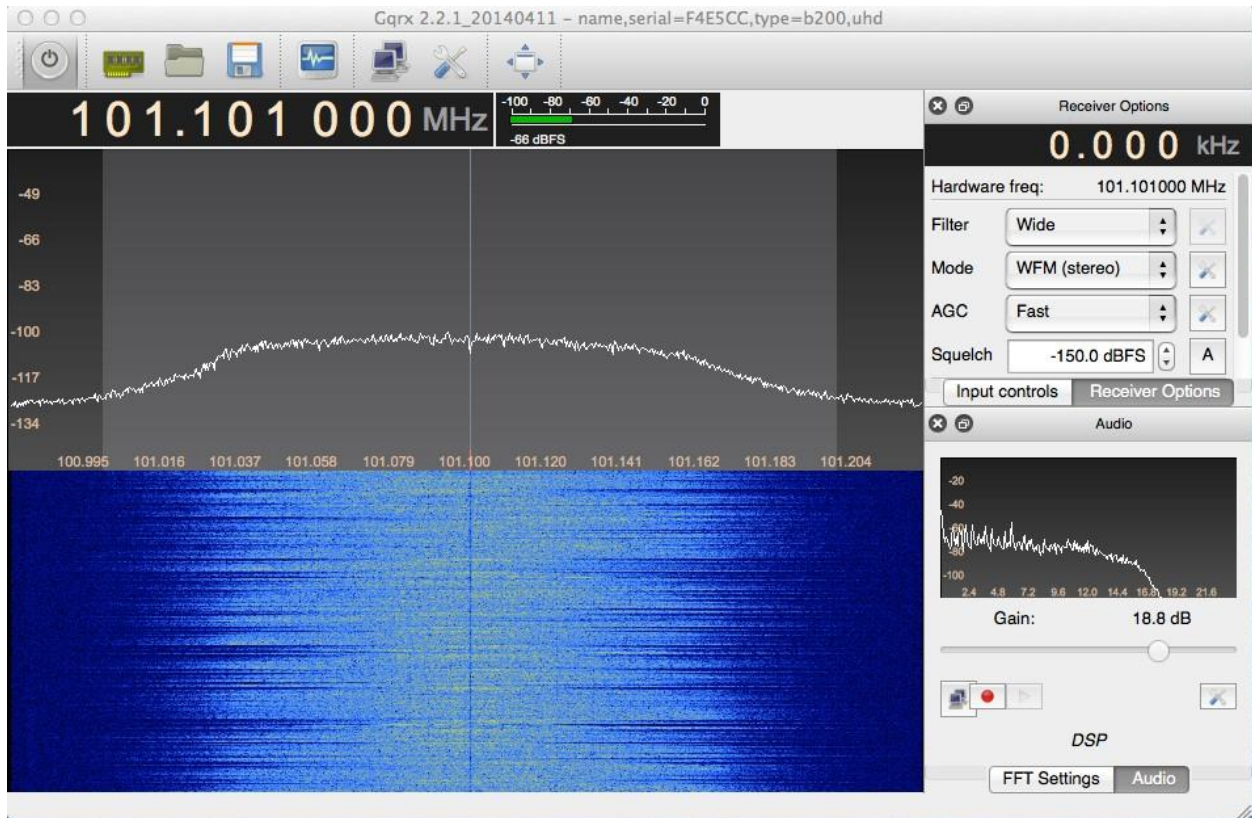
Finally the moment of truth! Previously I had arrived to the point of GQRX firing up, however, using it resulted in the program hanging.



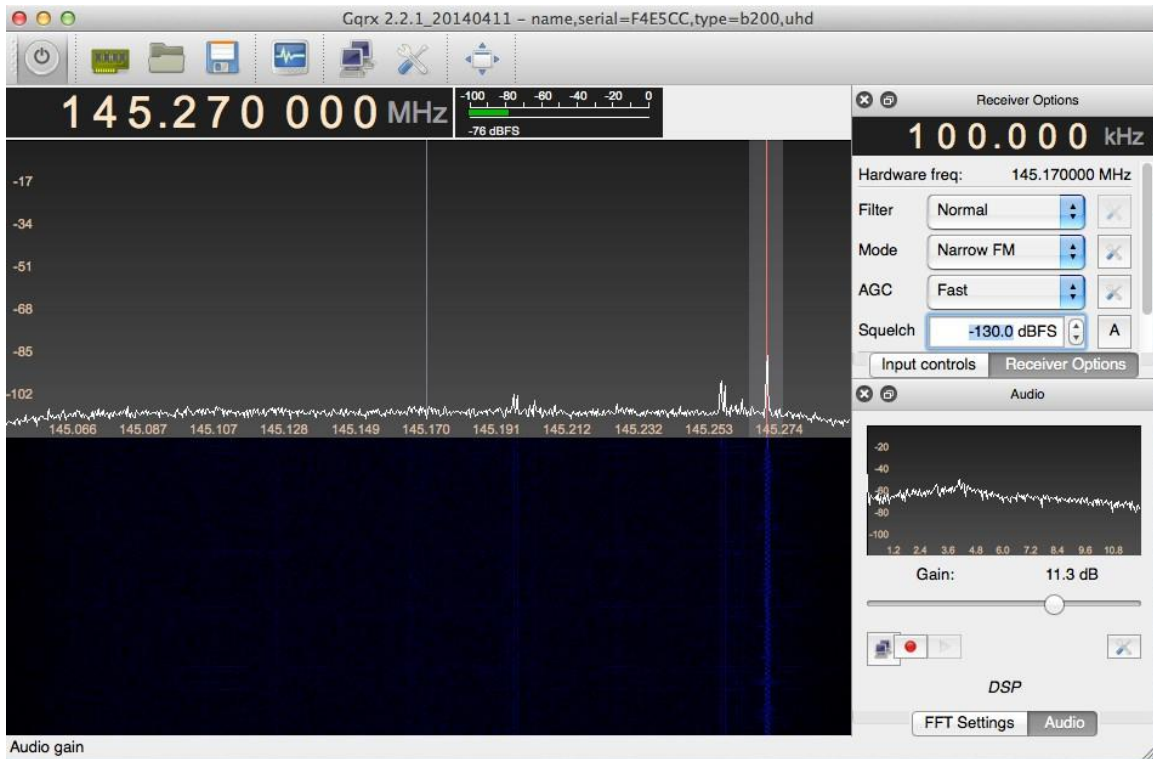
```
markabraham — Gqrx — 80x24
-- Using subdev spec 'A:A'.
2014-04-21 17:23:29.621 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
2014-04-21 17:23:29.918 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
2014-04-21 17:23:29.999 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
2014-04-21 17:23:30.000 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
Could not resolve property : pattern10600
Could not resolve property : pattern10600
2014-04-21 17:25:04.270 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
2014-04-21 17:25:04.271 gqrx[446:507] CoreText performance note: Client called C
TFontCreateWithName() using name "Arial" and got font with PostScript name "Aria
LMT". For best performance, only use PostScript names when calling this API.
Could not resolve property : pattern10600
Could not resolve property : pattern10600
█
```

Terminal Screenshot of GQRX launching

The result was positive, GQRX works better than before! Its not perfect, however, nobody has claimed it would be and I am able to use it and the B200 as a basic SDR.



Local FM Station – first test



Local VHF

The screenshot shows the "Configure I/O devices" dialog box. It is divided into two sections: "I/Q input" and "Audio output".

I/Q input section:

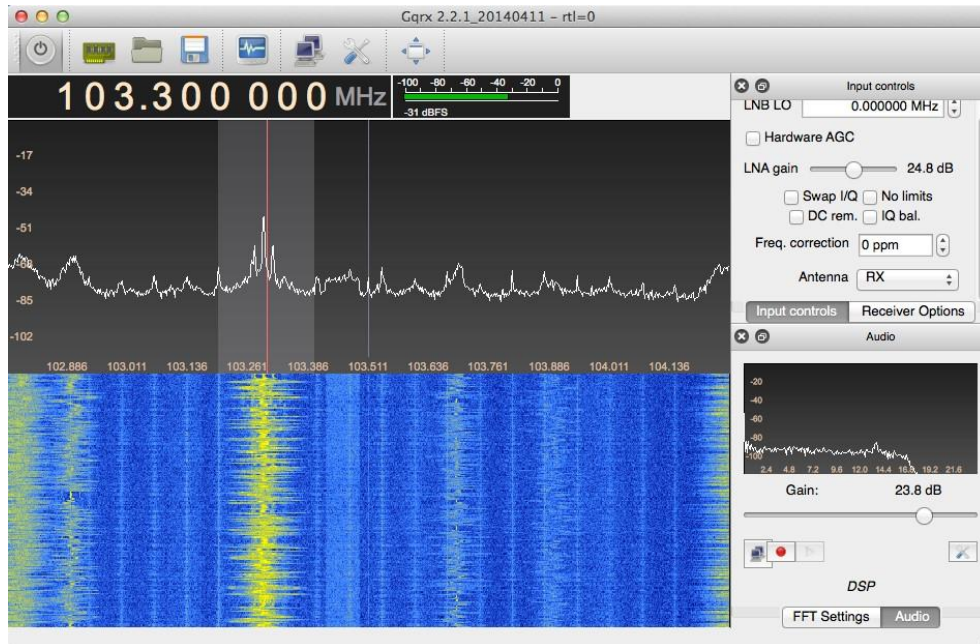
- Device: Ettus B200 F4E5CC
- Device string: serial=F4E5CC,type=b200,uhd
- Sample rate: 250000
- Bandwidth: 0.000000 MHz
- LNB LO: 0.000000 MHz

Audio output section:

- Device: Default
- Sample rate: 48 kHz

At the bottom of the dialog, there are "Cancel" and "OK" buttons.

Device String for my B200 - B200 String -
name,serial=F4E5CC,type=b200,uhd



RTL Dongle running same code

As of this installment I have only had a few hours to play with the B200 on the Mac. GQRX is a bit unstable right now. It can crash for a variety of reasons after using it for a bit. I suspect some sort of leak that causes it to eventually crash.

Updated 5/4/2014

Updates were made to stabilize the GQRX application and should be included when installing or updating.

Its very evident I will need better antenna connections to get the most out of the tools. I was able to listen very lightly to some Shortwave Signals using the Ham It Up-converter. Honestly though, given the same antenna connection, the Afedri seemed to blow it away in this department. Of course, the Afedri doesn't require the up-converter either.

This all may be a matter of settings, ect so that's the beauty of approaching this in installments. I'll learn more and then as I said when I started, I'll collect the knowledge into a final review. I'd like to thank the person

anonymously who helped me get this working. This installment hopefully will help others who follow be able to get their own mac setup with greater ease.

Next up will be Windows 7. I'll be looking at an EXTio setup with HDSDR and Studio 1 if I can get them working! This will also be done on the Mac Mini under bootcamp.

73!

NI0Z

Mark