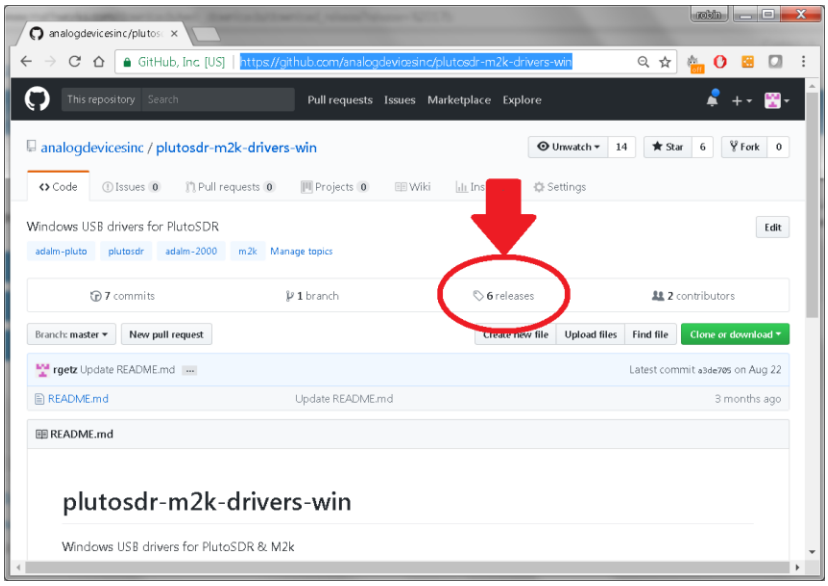
Install ADALM-PLUTO Device Driver (Windows only)

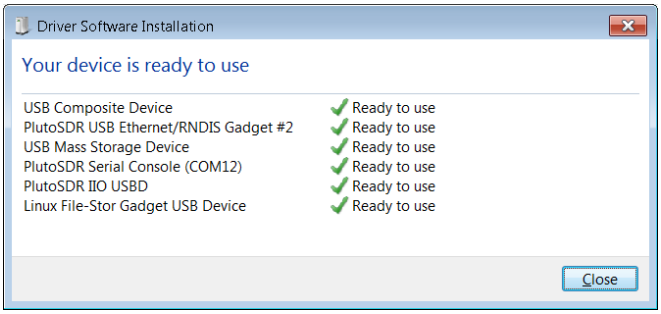
In your favourite browser, head to:

https://github.com/analogdevicesinc/plutosdr-m2k-drivers-win

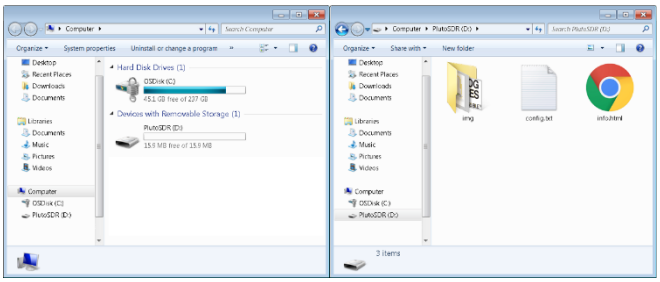
1. click on the ***releases*** section:
2. Download and install the **PlutoSDR-M2k-USB-Drivers.exe** file.
3. Follow the directions to install the driver
4. Plug in the ADALM-PLUTO



5. You should see the figure, as the PLUTO Is a multi function device.



6. In “My Computer”, explore the Mass Storage device, and double click on info.html to ensure you are using the latest version of the firmware.



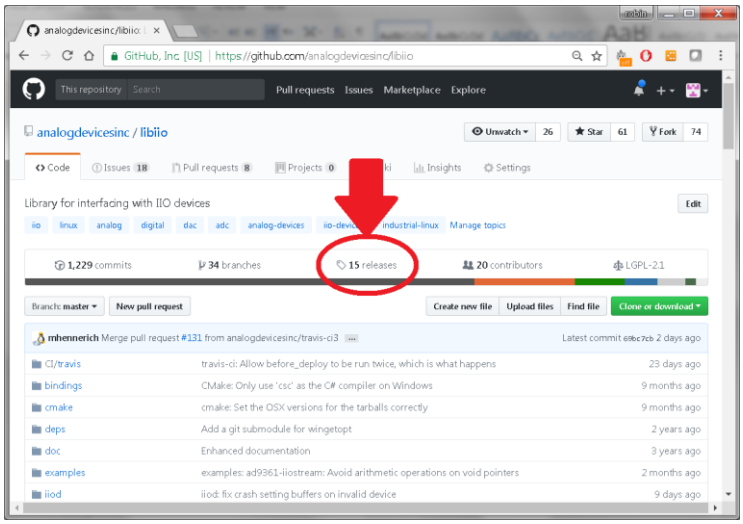
Install libiio (All operating systems only)

Libiio is an open source library to ease the development of software interfacing to Linux Industrial I/O (IIO) devices like the ADALM-PLUTO. The library abstracts the low-level details of the hardware, and provides a simple yet complete programming interface that can be used for advanced projects.

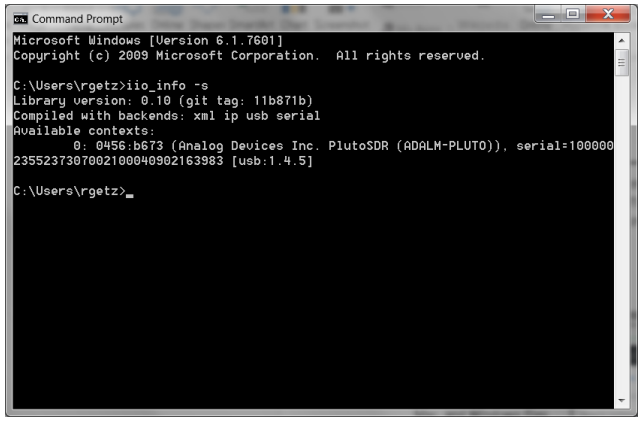
In your favourite browser, head to:

https://github.com/analogdevicesinc/libiio

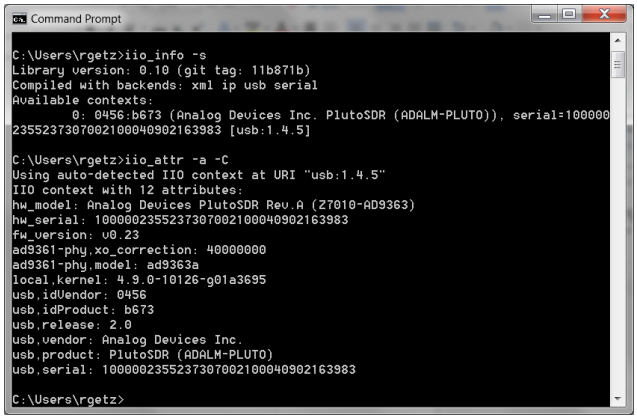
1. click on the ***releases*** section:
2. Download and install the latest release for your operating system. Linux, Mac, and Windows files are there.
3. Follow the directions to install the library, and userspace tools.
4. There are a few low level debug and command line utilities you can use to see if your computer can properly communicate with attached IIO devices



5. Open a command window, and type "**`iio_info -s`**". It should find the ADALM-PLUTO



6. Examine the IIO context attributes by using iio_attr. This is a small command line utility that allows you to read/write context, device and debug attributes. Try "**`iio_attr -a -C`**". "-a" attaches to the first IIO device, and –C dumps the context attributes

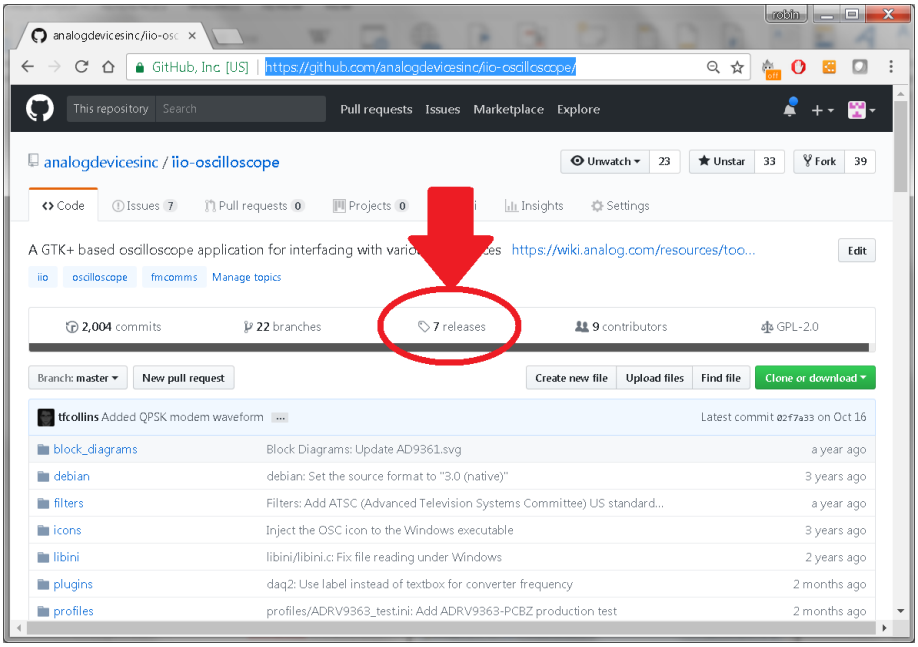


Install the iio oscilloscope (All operating systems only)

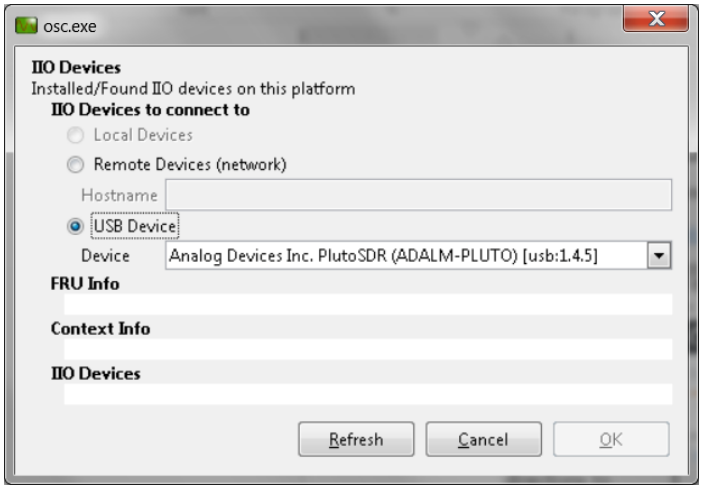
In your favourite browser, head to:

https://github.com/analogdevicesinc/iio-oscilloscope/

click on the ***releases*** section:



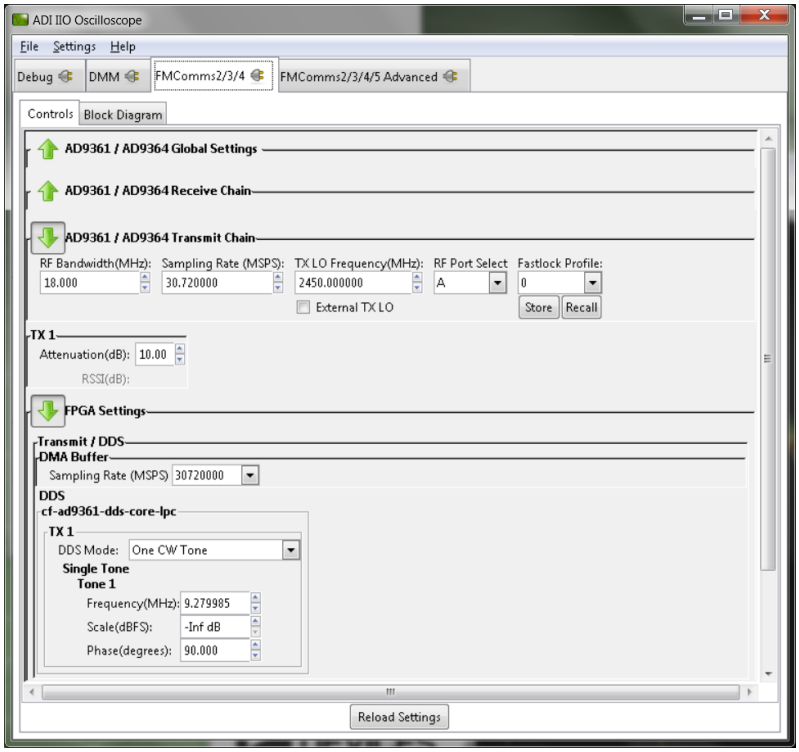
1. Download and install the latest release for your operating system.
2. Follow the directions to install the userspace tools.
3. Run the 'osc' tool.



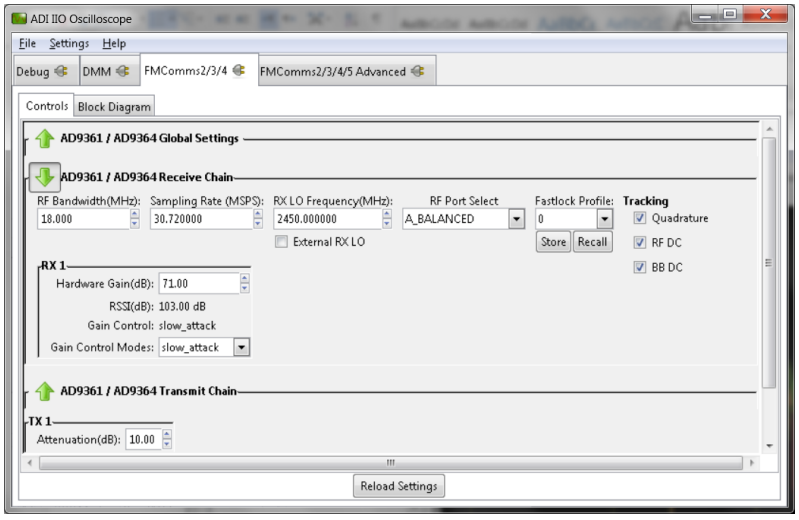
4. Select the USB device, and the Pluto SDR.
5. Click the refresh button, and then OK.

6. Explore IIO oscilloscope, and the control tabs. This lets you control the high to the low levels of the device, and visualize the signals that are going in/out of the device. Some specific parts to look at are shown below:

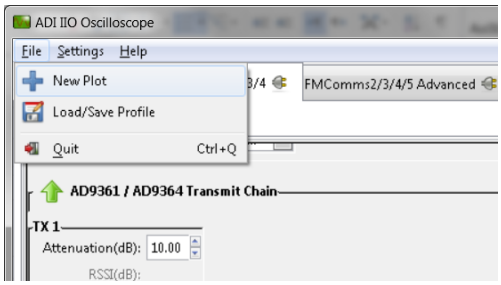
7. Controlling the output. From this window, you can examine and change the the RF bandwidth, the DAC sample rate, the Tx LO Frequency, and the signals that are being sent from the FPGA to the AD9363 inside the ADALM-PLUTO SDR.
8. For now, set things to a single tone at -3dB scale, at 30.72 MSPS, with a 18 MHz bandwidth, at a TX LO of 2450 MHz.



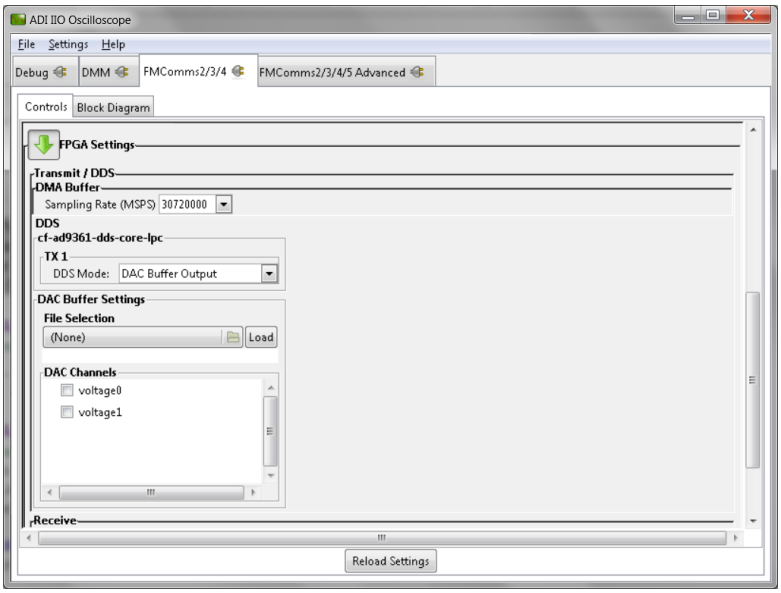
9. The same tab can set the RX side of the device as well. RF bandwidth, Sample Rate, RX LO frequency, and ACG mode.
10. Set things to 18 MHz bandwidth, at a RX LO of 2450 MHz, in slow attack mode.



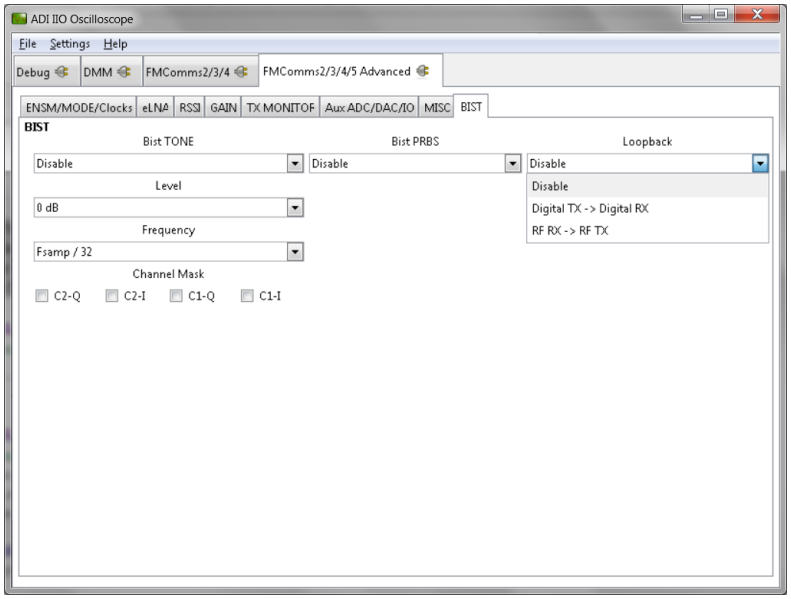
11. Create a plot, and explore things in the various domains. Time, Frequency and constellation.



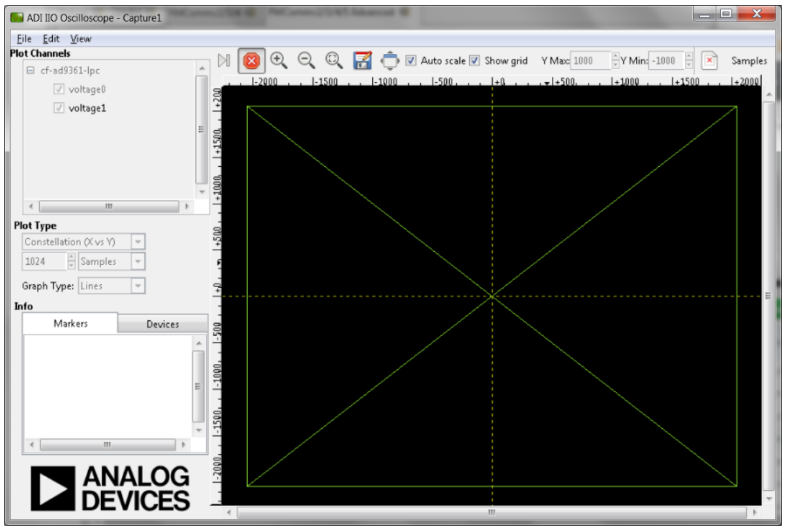
12. Play back a file, and see how that looks. A few files which might be interesting are the QPSKnofilt. File.



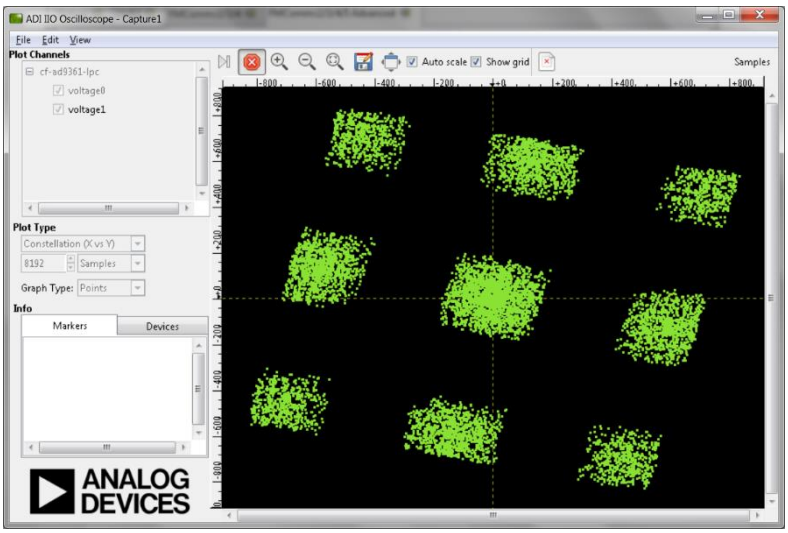
13. To look at the file, put things in digital loopback. This will provide a digital loopback, everything that is sent is looped back to the receive side.



14. Have a look at the constellation of the qpsk waveform



15. Turn digital loopback off, and look at things again. Try things with points, rather than lines. Increase the number of points to 8192, or 16384. Why are things rotated?



16. By rotating the Rx data, you make things square.