

PlutoSDR GNU Radio Basics

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```
sdr@sdr-Samsung-DeskTop-System:~/sw$ sudo apt-get -y install gnuradio-dev libxml2 libxml2-
dev bison flex cmake git libaio-dev libboost-all-dev swig
Reading package lists... Done
Building dependency tree
Reading state information... Done
bison is already the newest version (2:3.0.4.dfsg-1).
flex is already the newest version (2.6.0-11).
libaio-dev is already the newest version (0.3.110-2).
libboost-all-dev is already the newest version (1.58.0.1ubuntu1).
libboost-all-dev set to manually installed.
cmake is already the newest version (3.5.1-1ubuntu3).
git is already the newest version (1:2.7.4-0ubuntu1.6).
libxml2 is already the newest version (2.9.3+dfsg1-1ubuntu0.6).
libxml2-dev is already the newest version (2.9.3+dfsg1-1ubuntu0.6).
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-36 linux-headers-4.15.0-36-generic linux-headers-4.15.0-39
  linux-headers-4.15.0-39-generic linux-image-4.15.0-36-generic
  linux-image-4.15.0-39-generic linux-modules-4.15.0-36-generic
  linux-modules-4.15.0-39-generic linux-modules-extra-4.15.0-39-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  gnuradio libcodec2-0.4 libcomedi0 libcppunit-1.13-0v5 libcppunit-dev libfftw3-bin
  libfftw3-dev libfftw3-long3 libfftw3-quad3 libgnuradio-analog3.7.9
  libgnuradio-atsc3.7.9 libgnuradio-audio3.7.9 libgnuradio-blocks3.7.9
  libgnuradio-channels3.7.9 libgnuradio-comedi3.7.9 libgnuradio-digital3.7.9
  libgnuradio-dtv3.7.9 libgnuradio-fcd3.7.9 libgnuradio-fec3.7.9 libgnuradio-fft3.7.9
  libgnuradio-filter3.7.9 libgnuradio-noaa3.7.9 libgnuradio-pager3.7.9
  libgnuradio-pmt3.7.9 libgnuradio-qtgui3.7.9 libgnuradio-runtime3.7.9
  libgnuradio-trellis3.7.9 libgnuradio-uhd3.7.9 libgnuradio-video-sdl3.7.9
  libgnuradio-vocoder3.7.9 libgnuradio-wavelet3.7.9 libgnuradio-wxgui3.7.9
  libgnuradio-zeromq3.7.9 libgps22 libgsl2 liblog4cpp5-dev liblog4cpp5v5
  libqtassistantclient4 libqwt5-qt4 librtlsdr0 libuhd003 libvolk1-bin libvolk1-dev
  libvolk1.1 python-bs4 python-cheetah python-html5lib python-lxml
  python-ndg-httpsclient python-networkx python-qt4 python-qwt5-qt4 python-requests
  python-urllib3 python-zmq rtl-sdr swig3.0 uhd-host
Suggested packages:
  gr-fosphor gr-osmosdr libcppunit-doc libfftw3-doc gpsd gsl-ref-psdoc | gsl-doc-pdf
```

```
Setting up libgnuradio-vocoder3.7.9:amd64 (3.7.9.1-2ubuntu1) ...
Setting up libgnuradio-wavelet3.7.9:amd64 (3.7.9.1-2ubuntu1) ...
Setting up libgnuradio-wxgui3.7.9:amd64 (3.7.9.1-2ubuntu1) ...
Setting up libgnuradio-zeromq3.7.9:amd64 (3.7.9.1-2ubuntu1) ...
Setting up gnuradio (3.7.9.1-2ubuntu1) ...
Begin freedesktop install...
Install icon: 32x32
Install icon: 48x48
Install icon: 64x64
Install icon: 128x128
Install icon: 256x256
Install mime type
Install menu items
Done!
Setting up libcppunit-1.13-0v5:amd64 (1.13.2-2.1) ...
Setting up libcppunit-dev (1.13.2-2.1) ...
Setting up libfftw3-bin (3.3.4-2ubuntu1) ...
Setting up libfftw3-dev:amd64 (3.3.4-2ubuntu1) ...
Setting up liblog4cpp5-dev (1.0-4.1) ...
Setting up libvolk1-dev (1.2.1-1) ...
Setting up gnuradio-dev (3.7.9.1-2ubuntu1) ...
Setting up python-bs4 (4.4.1-1) ...
Setting up python-html5lib (0.999-4) ...
Setting up python-ndg-httpsclient (0.4.0-3) ...
Setting up python-networkx (1.11-1ubuntu1) ...
Setting up python-qwt5-qt4 (5.2.1~cvs20091107+dfsg-7build1) ...
Setting up python-urllib3 (1.13.1-2ubuntu0.16.04.2) ...
Setting up python-requests (2.9.1-3ubuntu0.1) ...
Setting up swig3.0 (3.0.8-0ubuntu3) ...
Setting up swig (3.0.8-0ubuntu3) ...
Setting up uhd-host (3.9.2-1) ...
Adding group `usrp' (GID 136) ...
Done.
Setting up librtlsdr0:amd64 (0.5.3-5) ...
Setting up rtl-sdr (0.5.3-5) ...
Processing triggers for libc-bin (2.23-0ubuntu10) ...
sdr@sdr-Samsung-DeskTop-System:~/sw$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw$ git clone https://github.com/analogdevicesinc/libad9361-iiio.git
Cloning into 'libad9361-iiio'...
remote: Enumerating objects: 185, done.
remote: Counting objects: 100% (185/185), done.
remote: Compressing objects: 100% (113/113), done.
remote: Total 825 (delta 86), reused 147 (delta 68), pack-reused 640
Receiving objects: 100% (825/825), 597.07 KiB | 767.00 KiB/s, done.
Resolving deltas: 100% (459/459), done.
Checking connectivity... done.
sdr@sdr-Samsung-DeskTop-System:~/sw$ cd libad9361-iiio
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-iiio$ cmake .
-- The C compiler identification is GNU 5.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Found Git: /usr/bin/git (found version "2.7.4")
-- Found Doxygen: /usr/bin/doxygen (found version "1.8.11") found components: doxygen dot
-- Using default dependencies for packaging
-- Package dependencies: libc6-dev (>= 2.19)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/sdr/sw/libad9361-iiio
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-iiio$ make
```

```
[ 4%] Building C object CMakeFiles/ad9361.dir/ad9361_multichip_sync.c.o
[ 9%] Building C object CMakeFiles/ad9361.dir/ad9361_baseband_auto_rate.c.o
[ 14%] Building C object CMakeFiles/ad9361.dir/ad9361_design_taps.c.o
[ 19%] Building C object CMakeFiles/ad9361.dir/ad9361_calculate_rf_clock_chain.c.o
[ 23%] Building C object CMakeFiles/ad9361.dir/ad9361_fmcomms5_phase_sync.c.o
[ 28%] Building C object CMakeFiles/ad9361.dir/filterdesigner/internal_design_filter_cg.c.o
[ 33%] Building C object CMakeFiles/ad9361.dir/filterdesigner/internal_design_filter_cg_em
xutil.c.o
[ 38%] Building C object CMakeFiles/ad9361.dir/filterdesigner/rtGetInf.c.o
[ 42%] Building C object CMakeFiles/ad9361.dir/filterdesigner/rtGetNaN.c.o
[ 47%] Building C object CMakeFiles/ad9361.dir/filterdesigner/rt_nonfinite.c.o
[ 52%] Linking C shared library libad9361.so
Generating API documentation with Doxygen
[ 52%] Built target ad9361
Scanning dependencies of target FMComms5SyncTest
[ 57%] Building C object test/CMakeFiles/FMComms5SyncTest.dir/fmcomms5_sync_test.c.o
[ 61%] Linking C executable FMComms5SyncTest
[ 61%] Built target FMComms5SyncTest
Scanning dependencies of target FilterDesignerHardwareTest
[ 66%] Building C object test/CMakeFiles/FilterDesignerHardwareTest.dir/filter_designer_hw
.c.o
[ 71%] Linking C executable FilterDesignerHardwareTest
[ 71%] Built target FilterDesignerHardwareTest
Scanning dependencies of target GenerateRatesTest
[ 76%] Building C object test/CMakeFiles/GenerateRatesTest.dir/gen_rates_test.c.o
[ 80%] Linking C executable GenerateRatesTest
[ 80%] Built target GenerateRatesTest
Scanning dependencies of target FilterDesignerTest
[ 85%] Building C object test/CMakeFiles/FilterDesignerTest.dir/filter_designer_test.c.o
[ 90%] Linking C executable FilterDesignerTest
[ 90%] Built target FilterDesignerTest
Scanning dependencies of target AutoRateTest
[ 95%] Building C object test/CMakeFiles/AutoRateTest.dir/auto_rate_test_hw.c.o
[100%] Linking C executable AutoRateTest
[100%] Built target AutoRateTest
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-lio$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-iiio$ sudo make install
```

```
[sudo] password for sdr:
```

```
[ 52%] Built target ad9361
```

```
[ 61%] Built target FMComms5SyncTest
```

```
[ 71%] Built target FilterDesignerHardwareTest
```

```
[ 80%] Built target GenerateRatesTest
```

```
[ 90%] Built target FilterDesignerTest
```

```
[100%] Built target AutoRateTest
```

```
Install the project...
```

```
-- Install configuration: ""
```

```
-- Installing: /usr/local/lib/pkgconfig/libad9361.pc
```

```
-- Installing: /usr/local/lib/libad9361.so.0.2
```

```
-- Installing: /usr/local/lib/libad9361.so.0
```

```
-- Installing: /usr/local/lib/libad9361.so
```

```
-- Installing: /usr/local/include/ad9361.h
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/tab_b.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/jquery.js
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/bc_s.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/globals_func.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/modules.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/closed.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/annotated.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/doxygen.css
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/nav_f.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/files.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/tabs.css
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/tab_h.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/ad9361_8h_source.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/structfilter__design__parameters.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/classes.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/index.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/ad9361_8h.html
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/arrowright.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/sync_on.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/splitbar.png
```

```
-- Installing: /usr/local/share/doc/ad93610-doc/html/search
```



```
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/groups_0.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/search_r.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_6.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_7.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/files_0.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_2.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_9.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/classes_0.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_5.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/functions_0.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/all_9.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/all_1.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_4.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/search/variables_7.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/group__FLAGS.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/bdwn.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/dynsections.js
-- Installing: /usr/local/share/doc/ad93610-doc/html/globals_defs.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/doc
-- Installing: /usr/local/share/doc/ad93610-doc/html/doc/AD9361.svg
-- Installing: /usr/local/share/doc/ad93610-doc/html/tab_a.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/doc.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/open.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/globals.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/functions.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/folderclosed.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/tab_s.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/nav_g.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/sync_off.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/arrowdown.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/nav_h.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/folderopen.png
-- Installing: /usr/local/share/doc/ad93610-doc/html/group__TopLevel.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/functions_vars.html
-- Installing: /usr/local/share/doc/ad93610-doc/html/doxygen.png
-- Installing: /usr/local/include/ad9361-wrapper.h
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-ii0$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw/libad9361-iiio$ cd ..
sdr@sdr-Samsung-DeskTop-System:~/sw$ git clone https://github.com/analogdevicesinc/gr-iiio.
git
Cloning into 'gr-iiio'...
remote: Enumerating objects: 1743, done.
remote: Total 1743 (delta 0), reused 0 (delta 0), pack-reused 1743
Receiving objects: 100% (1743/1743), 343.06 KiB | 599.00 KiB/s, done.
Resolving deltas: 100% (1206/1206), done.
Checking connectivity... done.
sdr@sdr-Samsung-DeskTop-System:~/sw$ cd gr-iiio
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-iiio$ cmake .
-- The CXX compiler identification is GNU 5.4.0
-- The C compiler identification is GNU 5.4.0
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Build type not specified: defaulting to release.
-- Looking for pthread.h
-- Looking for pthread.h - found
-- Looking for pthread_create
-- Looking for pthread_create - not found
-- Looking for pthread_create in pthreads
-- Looking for pthread_create in pthreads - not found
-- Looking for pthread_create in pthread
-- Looking for pthread_create in pthread - found
-- Found Threads: TRUE
-- Boost version: 1.58.0
-- Found the following Boost libraries:
```



```

dio-runtime.so;/usr/lib/x86_64-linux-gnu/libgnuradio-pmt.so
-- Found GNURADIO_BLOCKS: /usr/lib/x86_64-linux-gnu/libgnuradio-blocks.so;/usr/lib/x86_64-
linux-gnu/libgnuradio-runtime.so;/usr/lib/x86_64-linux-gnu/libgnuradio-pmt.so
GNURADIO_BLOCKS_FOUND = TRUE
Checking for GNU Radio Module: PMT
-- Checking for module 'gnuradio-runtime'
-- Found gnuradio-runtime, version 3.7.9
* INCLUDES=/usr/include
* LIBS=/usr/lib/x86_64-linux-gnu/libgnuradio-runtime.so;/usr/lib/x86_64-linux-gnu/libgnur
adio-pmt.so
-- Found GNURADIO_PMT: /usr/lib/x86_64-linux-gnu/libgnuradio-runtime.so;/usr/lib/x86_64-li
nux-gnu/libgnuradio-pmt.so
GNURADIO_PMT_FOUND = TRUE
Checking for GNU Radio Module: VOLK
-- Checking for module 'volk'
-- Found volk, version 1.1
* INCLUDES=/usr/include
* LIBS=/usr/lib/x86_64-linux-gnu/libvolk.so
-- Found GNURADIO_VOLK: /usr/lib/x86_64-linux-gnu/libvolk.so
GNURADIO_VOLK_FOUND = TRUE
-- Found FLEX: /usr/bin/flex (found version "2.6.0")
-- Found BISON: /usr/bin/bison (found suitable version "3.0.4", minimum required is "3.0.2
")
--
-- Checking for module SWIG
-- Found SWIG version 3.0.8.
-- Found SWIG: /usr/bin/swig3.0
-- Found PythonLibs: /usr/lib/x86_64-linux-gnu/libpython2.7.so (found suitable version "2.
7.12", minimum required is "2")
-- Found PythonInterp: /usr/bin/python2 (found suitable version "2.7.12", minimum required
is "2")
-- Performing Test HAVE_WNO_UNUSED_BUT_SET_VARIABLE
-- Performing Test HAVE_WNO_UNUSED_BUT_SET_VARIABLE - Success
-- Configuring done
-- Generating done
-- Build files have been written to: /home/sdr/sw/gr-ii
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-ii$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-iiio$ make
[ 1%] [BISON][parser] Building parser with bison 3.0.4
[ 3%] [FLEX][lexer] Building scanner with flex 2.6.0
Scanning dependencies of target gnuradio-iiio
[ 5%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/device_source_impl.cc.o
[ 6%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/device_sink_impl.cc.o
[ 8%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/fmcomms2_source_impl.cc.o
[ 10%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/fmcomms2_sink_impl.cc.o
[ 11%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/fmcomms5_source_impl.cc.o
[ 13%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/fmcomms5_sink_impl.cc.o
[ 15%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/pluto_source_impl.cc.o
[ 16%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/pluto_sink_impl.cc.o
[ 18%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/attr_sink_impl.cc.o
[ 20%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/attr_source_impl.cc.o
[ 22%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/converter_ss_impl.cc.o
[ 23%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/iiio_math_impl.cc.o
[ 25%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/iiio_math_gen_impl.cc.o
[ 27%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/iiio_power_ff_impl.cc.o
[ 28%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/iiio_modulo_ff_impl.cc.o
[ 30%] Building CXX object lib/CMakeFiles/gnuradio-iiio.dir/iiio_modulo_const_ff_impl.cc.o
[ 32%] Building C object lib/CMakeFiles/gnuradio-iiio.dir/lexer.c.o
[ 33%] Building C object lib/CMakeFiles/gnuradio-iiio.dir/parser.c.o
[ 35%] Linking CXX shared library libgnuradio-iiio.so
[ 35%] Built target gnuradio-iiio
Scanning dependencies of target _iiio_pluto_sink_swig_swig_tag
[ 37%] Building CXX object swig/CMakeFiles/_iiio_pluto_sink_swig_swig_tag.dir/_iiio_pluto_si
nk_swig_swig_tag.cpp.o
[ 38%] Linking CXX executable _iiio_pluto_sink_swig_swig_tag
[ 38%] Built target _iiio_pluto_sink_swig_swig_tag
[ 40%] Generating iiio_pluto_sink_swig.tag
Scanning dependencies of target iiio_pluto_sink_swig_swig_2d0df
[ 42%] Building CXX object swig/CMakeFiles/iiio_pluto_sink_swig_swig_2d0df.dir/iiio_pluto_si
nk_swig_swig_2d0df.cpp.o
[ 44%] Linking CXX executable iiio_pluto_sink_swig_swig_2d0df
Swig source
[ 44%] Built target iiio_pluto_sink_swig_swig_2d0df
Scanning dependencies of target pygen_swig_201ea
```

```
[ 59%] Generating iio_pluto_source_swig.pyc
[ 61%] Generating iio_pluto_source_swig.pyo
[ 62%] Built target pygen_swig_aad98
Scanning dependencies of target _iio_swig_swig_tag
[ 64%] Building CXX object swig/CMakeFiles/_iio_swig_swig_tag.dir/_iio_swig_swig_tag.cpp.o
[ 66%] Linking CXX executable _iio_swig_swig_tag
[ 66%] Built target _iio_swig_swig_tag
[ 67%] Generating iio_swig.tag
Scanning dependencies of target iio_swig_swig_2d0df
[ 69%] Building CXX object swig/CMakeFiles/iio_swig_swig_2d0df.dir/iio_swig_swig_2d0df.cpp.o
[ 71%] Linking CXX executable iio_swig_swig_2d0df
Swig source
[ 71%] Built target iio_swig_swig_2d0df
Scanning dependencies of target _iio_swig
[ 72%] Building CXX object swig/CMakeFiles/_iio_swig.dir/iio_swigPYTHON_wrap.cxx.o
[ 74%] Linking CXX shared module _iio_swig.so
[ 77%] Built target _iio_swig
Scanning dependencies of target _iio_pluto_sink_swig
[ 79%] Building CXX object swig/CMakeFiles/_iio_pluto_sink_swig.dir/iio_pluto_sink_swigPYTHON_wrap.cxx.o
[ 81%] Linking CXX shared module _iio_pluto_sink_swig.so
[ 84%] Built target _iio_pluto_sink_swig
Scanning dependencies of target _iio_pluto_source_swig
[ 86%] Building CXX object swig/CMakeFiles/_iio_pluto_source_swig.dir/iio_pluto_source_swigPYTHON_wrap.cxx.o
[ 88%] Linking CXX shared module _iio_pluto_source_swig.so
[ 91%] Built target _iio_pluto_source_swig
Scanning dependencies of target pygen_swig_7f783
[ 93%] Generating iio_swig.pyc
[ 94%] Generating iio_swig.pyo
[ 96%] Built target pygen_swig_7f783
Scanning dependencies of target pygen_python_iio_a1afc
[ 98%] Generating __init__.pyc, attr_updater.pyc
[100%] Generating __init__.pyo, attr_updater.pyo
[100%] Built target pygen_python_iio_a1afc
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-iio$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-io$ sudo make install
```

```
[ 35%] Built target gnuradio-io  
[ 38%] Built target _iio_pluto_sink_swig_swig_tag  
[ 44%] Built target iio_pluto_sink_swig_swig_2d0df  
[ 49%] Built target pygen_swig_201ea  
[ 52%] Built target _iio_pluto_source_swig_swig_tag  
[ 57%] Built target iio_pluto_source_swig_swig_2d0df  
[ 62%] Built target pygen_swig_aad98  
[ 66%] Built target _iio_swig_swig_tag  
[ 71%] Built target iio_swig_swig_2d0df  
[ 77%] Built target _iio_swig  
[ 84%] Built target _iio_pluto_sink_swig  
[ 91%] Built target _iio_pluto_source_swig  
[ 96%] Built target pygen_swig_7f783  
[100%] Built target pygen_python_iio_a1afc
```

```
Install the project...
```

```
-- Install configuration: "Release"  
-- Installing: /usr/local/lib/pkgconfig/gnuradio-iio.pc  
-- Installing: /usr/local/lib/cmake/iio/iioConfig.cmake  
-- Installing: /usr/local/include/gnuradio/iio/api.h  
-- Installing: /usr/local/include/gnuradio/iio/device_source.h  
-- Installing: /usr/local/include/gnuradio/iio/device_sink.h  
-- Installing: /usr/local/include/gnuradio/iio/fmcomms2_source.h  
-- Installing: /usr/local/include/gnuradio/iio/fmcomms2_sink.h  
-- Installing: /usr/local/include/gnuradio/iio/fmcomms5_source.h  
-- Installing: /usr/local/include/gnuradio/iio/fmcomms5_sink.h  
-- Installing: /usr/local/include/gnuradio/iio/pluto_source.h  
-- Installing: /usr/local/include/gnuradio/iio/pluto_sink.h  
-- Installing: /usr/local/include/gnuradio/iio/converter_ss.h  
-- Installing: /usr/local/include/gnuradio/iio/math.h  
-- Installing: /usr/local/include/gnuradio/iio/power_ff.h  
-- Installing: /usr/local/include/gnuradio/iio/attr_sink.h  
-- Installing: /usr/local/include/gnuradio/iio/attr_source.h  
-- Installing: /usr/local/include/gnuradio/iio/modulo_ff.h  
-- Installing: /usr/local/include/gnuradio/iio/modulo_const_ff.h  
-- Installing: /usr/local/lib/libgnuradio-iio.so.0.3  
-- Installing: /usr/local/lib/libgnuradio-iio.so.0
```



```
y
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/iio_pluto_source_swig.p
yc
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/iio_pluto_source_swig.p
yo
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/_iio_pluto_sink_swig.so
-- Set runtime path of "/usr/local/lib/python2.7/dist-packages/gnuradio/iio/_iio_pluto_sin
k_swig.so" to ""
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/iio_pluto_sink_swig.py
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/iio_pluto_sink_swig.pyc
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/iio_pluto_sink_swig.pyo
-- Installing: /usr/local/include/swig/iio_swig.i
-- Installing: /usr/local/include/swig/iio_pluto_source_swig.i
-- Installing: /usr/local/include/swig/iio_pluto_sink_swig.i
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/__init__.py
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/attr_updater.py
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/__init__.pyc
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/attr_updater.pyc
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/__init__.pyo
-- Installing: /usr/local/lib/python2.7/dist-packages/gnuradio/iio/attr_updater.pyo
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_device_source.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_device_sink.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_fmcomms2_source.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_fmcomms2_sink.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_fmcomms5_source.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_fmcomms5_sink.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_pluto_source.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_pluto_sink.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_math.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_math_gen.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_power_ff.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_modulo_ff.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_modulo_const_ff.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_attr_sink.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_attr_source.xml
-- Installing: /usr/local/share/gnuradio/grc/blocks/iio_attr_updater.xml
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-iio$
```

```
sdr@sdr-Samsung-DeskTop-System:~/sw/gr-rio$ cd ..
sdr@sdr-Samsung-DeskTop-System:~/sw$ sudo ldconfig
sdr@sdr-Samsung-DeskTop-System:~/sw$ /usr/local/lib${type}/python${PYVER}/site-packages/gnuradio
bash: /usr/local/lib/python/site-packages/gnuradio: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~/sw$ /usr/local/lib${type}/python${PYVER}/dist-packages/gnuradio
bash: /usr/local/lib/python/dist-packages/gnuradio: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~/sw$ gnuradio-co
gnuradio-companion    gnuradio-config-info
sdr@sdr-Samsung-DeskTop-System:~/sw$ gnuradio-companion
<<< Welcome to GNU Radio Companion 3.7.9 >>>

Preferences file: /home/sdr/.gnuradio/grc.conf
Block paths:
    /usr/local/share/gnuradio/grc/blocks
    /usr/share/gnuradio/grc/blocks
    /home/sdr/.grc_gnuradio
```

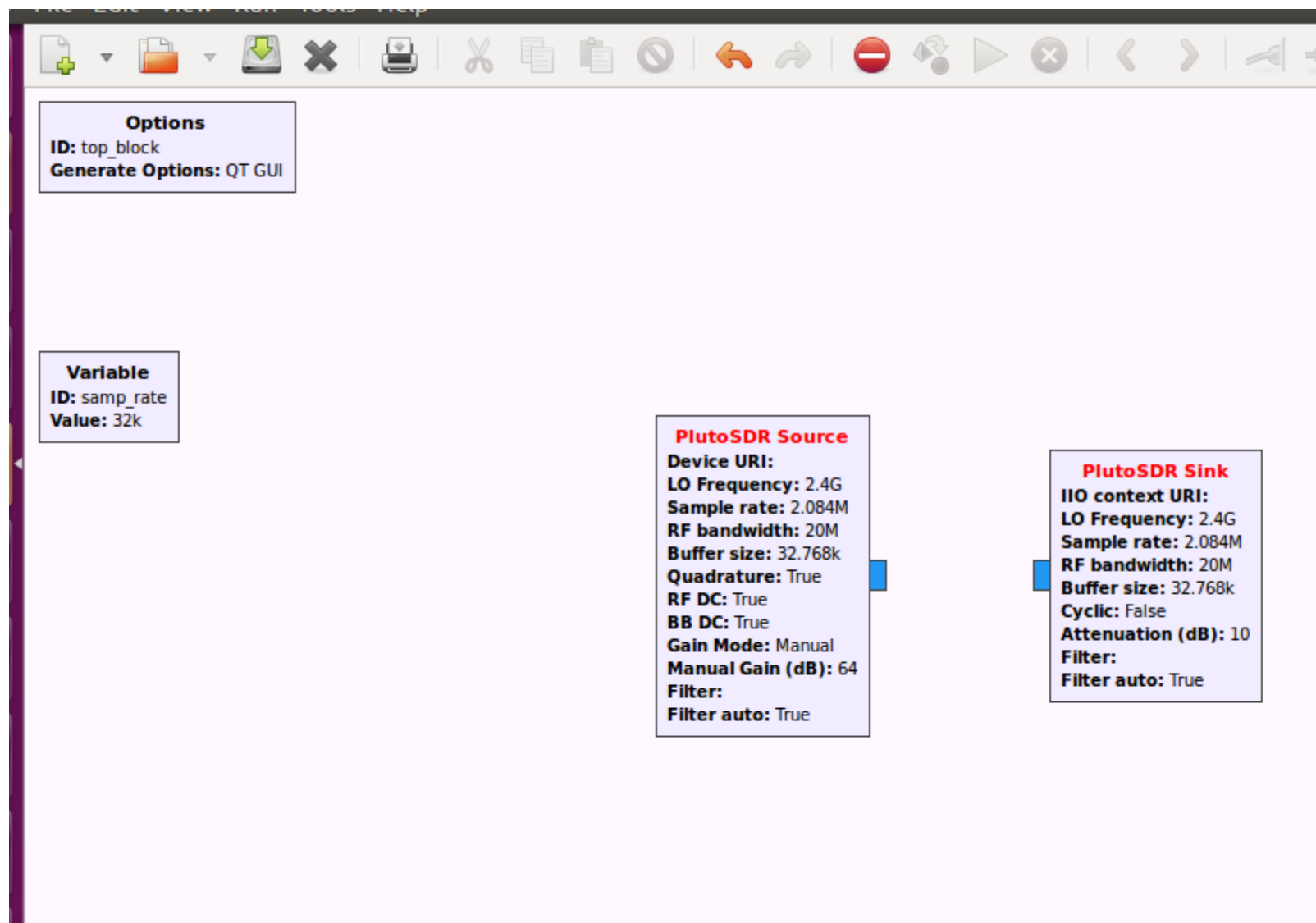
Showing: ""

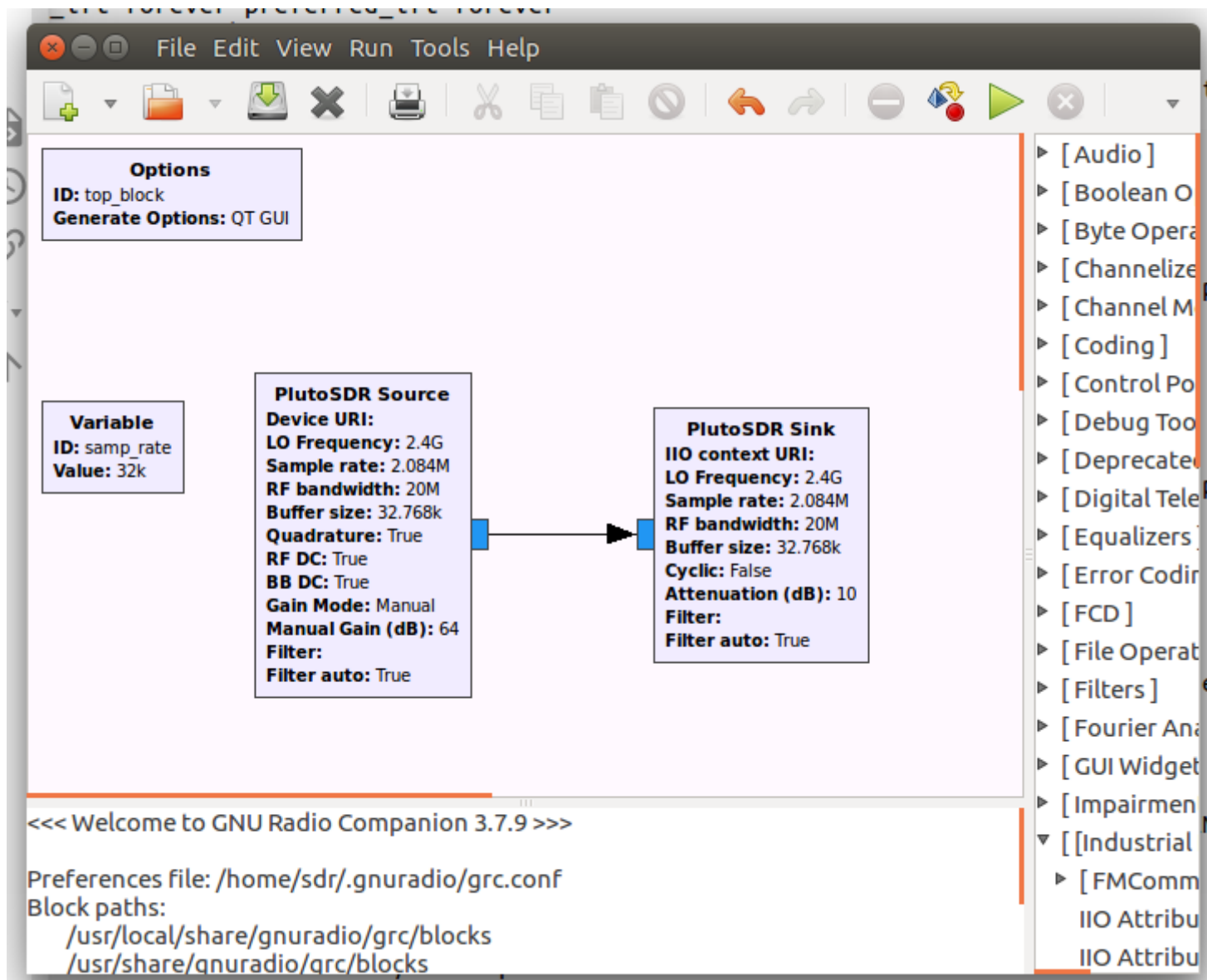
Options
ID: top_block
Generate Options: QT GUI

Variable
ID: samp_rate
Value: 32k

- ▶ [Audio]
- ▶ [Boolean O
- ▶ [Byte Opera
- ▶ [Channelize
- ▶ [Channel M
- ▶ [Coding]
- ▶ [Control Po
- ▶ [Debug Too
- ▶ [Deprecate
- ▶ [Digital Tele
- ▶ [Equalizers

- ▶ [Audio]
- ▶ [Boolean Operators]
- ▶ [Byte Operators]
- ▶ [Channelizers]
- ▶ [Channel Models]
- ▶ [Coding]
- ▶ [Control Port]
- ▶ [Debug Tools]
- ▶ [Deprecated]
- ▶ [Digital Television]
- ▶ [Equalizers]
- ▶ [Error Coding]
- ▶ [FCD]
- ▶ [File Operators]
- ▶ [Filters]
- ▶ [Fourier Analysis]
- ▶ [GUI Widgets]
- ▶ [Impairment Models]
- ▼ [[Industrial IO]]
 - ▶ [FMComms]
 - IIO Attribute Sink
 - IIO Attribute Source
 - IIO Attribute Updater
 - IIO Device Sink
 - IIO Device Source
- ▶ [Math Operators]
- ▼ [PlutoSDR]
 - PlutoSDR Sink
 - PlutoSDR Source
- ▶ [Waveform Generators]





- ▶ [Audio]
- ▶ [Boolean Operators]
- ▶ [Byte Operators]
- ▶ [Channelizers]
- ▶ [Channel Models]
- ▶ [Coding]
- ▶ [Control Port]
- ▶ [Debug Tools]
- ▶ [Deprecated]
- ▶ [Digital Television]
- ▶ [Equalizers]
- ▶ [Error Coding]
- ▶ [FCD]
- ▶ [File Operators]
- ▶ [Filters]
- ▶ [Fourier Analysis]
- ▶ [GUI Widgets]
- ▶ [Impairment Models]
- ▶ [[Industrial IO]]
- ▼ [Instrumentation]
 - ▼ [QT]
 - QT GUI Bercurve Sink
 - QT GUI Constellation Sink
 - QT GUI Frequency Sink
 - QT GUI Histogram Sink
 - QT GUI Number Sink

File Edit View Run Tools Help

Options
ID: top_block
Generate Options: QT GUI

Variable
ID: samp_rate
Value: 32k

PlutoSDR Source
Device URI:
LO Frequency: 2.4G
Sample rate: 2.084M
RF bandwidth: 20M
Buffer size: 32.768k
Quadrature: True
RF DC: True
BB DC: True
Gain Mode: Manual
Manual Gain (dB): 64
Filter:
Filter auto: True

QT GUI Frequency Sink
FFT Size: 1.024k
Center Frequency (Hz): 0
Bandwidth (Hz): 32k

PlutoSDR Sink
IIO context URI:
LO Frequency: 2.4G
Sample rate: 2.084M
RF bandwidth: 20M
Buffer size: 32.768k
Cyclic: False
Attenuation (dB): 10
Filter:
Filter auto: True

<<< Welcome to GNU Radio Companion 3.7.9 >>>

Preferences file: /home/sdr/.gnuradio/grc.conf
Block paths:
/usr/local/share/gnuradio/grc/blocks
/usr/share/gnuradio/grc/blocks

- [Audio]
- [Boolean Operators]
- [Byte Operators]
- [Channelizers]
- [Channel Models]
- [Coding]
- [Control Panels]
- [Debug Tools]
- [Deprecated]
- [Digital Telephony]
- [Equalizers]
- [Error Coding]
- [FCD]
- [File Operations]
- [Filters]
- [Fourier Analysis]
- [GUI Widgets]
- [Impairments]
- [Industrial]
- [Instrumentation]
- [QT]
 - QT GUI Blocks

Properties: PlutoSDR Source

General Advanced Documentation

ID	pluto_source_0
Device URI	ip:pluto.local
LO Frequency	2400000000
Sample rate	2084000
RF bandwidth	20000000
Buffer size	0x8000
Quadrature	True
RF DC	True
BB DC	True
Gain Mode	Manual
Manual Gain (dB)	64.0
Filter	
Filter auto	True

OK Cancel Apply

(Bus /usr/local/share/

768k

File Edit

Properties: PlutoSDR Sink

General Advanced Documentation

ID	pluto_sink_0
IIO context URI	ip:pluto.local
LO Frequency	2400000000
Sample rate	2084000
RF bandwidth	20000000
Buffer size	0x8000
Cyclic	False
Attenuation (dB)	10.0
Filter	
Filter auto	True

OK Cancel Apply

Manual Gain (dB) 44.0 /usr/local/share/

Save a Flow Graph to a File...

Name: test.grc

Save in folder:



sw

grc_proj

Create Folder

Places

Search

Recently Used

sw

sdr

Desktop

File System

PlutoSDR

새 볼륨

새 볼륨

로컬 디스크

126 GB Volume

Documents

Music

Pictures

Videos

Downloads

Name



Size

Modified

Flow Graph Files

Cancel

Save

```

sdr@sdr-Samsung-DeskTop-System:~/sw$ vi ~/.bashrc
sdr@sdr-Samsung-DeskTop-System:~/sw$ python
Python 2.7.12 (default, Nov 12 2018, 14:36:49)
[GCC 5.4.0 20160609] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> from gnuradio import iio
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ImportError: cannot import name iio
>>> quit()
sdr@sdr-Samsung-DeskTop-System:~/sw$ ls /usr/lib/python2.7/dist
dist-packages/ distutils/
sdr@sdr-Samsung-DeskTop-System:~/sw$ ls /usr/lib/python2.7/dist-packages/gnuradio/
analog          eng_arg.pyc      grc              pager            pyqt_plot.pyc
atsc            eng_notation.py  gru             plot_data.py    qtgui
audio           eng_notation.pyc gr_unittest.py   plot_data.pyc   trellis
blocks         eng_option.py    gr_unittest.pyc plot_fft_base.py uhd
channels       eng_option.pyc   gr_xmlrunner.py plot_fft_base.pyc video_sdl
comedi         fcd              gr_xmlrunner.pyc plot_psd_base.py vocoder
ctrlport       fec              __init__.py     plot_psd_base.pyc wavelet
digital        fft              __init__.pyc    pyqt_filter.py  wxgui
dtv            filter           modtool         pyqt_filter.pyc zeromq
eng_arg.py     gr              noaa            pyqt_plot.py
sdr@sdr-Samsung-DeskTop-System:~/sw$ ls /usr/local/lib/python2.7/dist-packages/gnuradio/iio
/
attr_updater.py      _iio_pluto_sink_swig.so  iio_swig.pyc
attr_updater.pyc     iio_pluto_source_swig.py iio_swig.pyo
attr_updater.pyo     iio_pluto_source_swig.pyc _iio_swig.so
iio_pluto_sink_swig.py iio_pluto_source_swig.pyo __init__.py
iio_pluto_sink_swig.pyc _iio_pluto_source_swig.so __init__.pyc
iio_pluto_sink_swig.pyo iio_swig.py              __init__.pyo
sdr@sdr-Samsung-DeskTop-System:~/sw$ cp -r /usr/local/lib/python2.7/dist-packages/gnuradio/
iio /usr/lib/python2.7/dist-packages/gnuradio/
cp: cannot create directory '/usr/lib/python2.7/dist-packages/gnuradio/iio': Permission den
ied
sdr@sdr-Samsung-DeskTop-System:~/sw$ sudo cp -r /usr/local/lib/python2.7/dist-packages/gnur
adio/iio /usr/lib/python2.7/dist-packages/gnuradio/
[sudo] password for sdr:
sdr@sdr-Samsung-DeskTop-System:~/sw$

```

