Mini RF Jammer & FM Radio Receiver

CSE 310 | 2020 Fall

https://github.com/timkim0713/RFJamming-FMRadio-SDR

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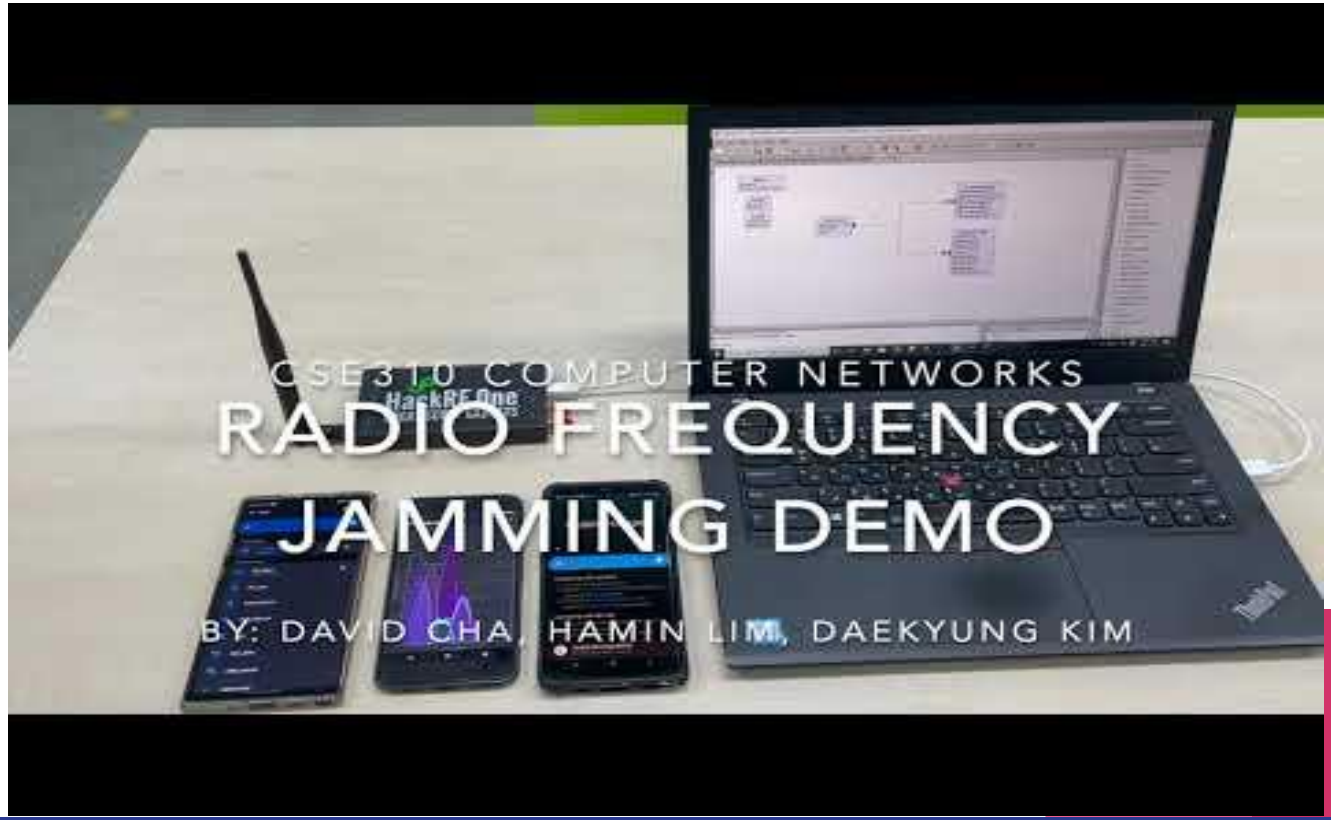
I. Mini RF Jammer

Difficulties	Future Implementation
Finding out the correct GNURadio version and environment setting that is compatible with our project. (v3.7.11)	In jamming LTE connection, our mobile devices use LTE Band A, a dual band. Because we only have one SDR device, it is not possible to jam . We can improve it by having another device that can transmit different frequencies at the same time so that it can jam the LTE successfully. Also, we can create the software to jam specific jamming ranges for the future implementation.
Configuring and setting up correct GRC Flowgraph in GNURadio.	
LTE cannot be jammed due to dual band in mobile devices. Whenever one frequency is jammed, the mobile device automatically uses the other one.	

I. Mini RF Jammer



II. FM Radio Receiver

Difficulties	Future Implementation
Finding out the correct GNURadio version and environment setting that is compatible to our project. (v3.7.11)	Currently, we have only implemented receiving radio signals. One of the extensions to this project is transmitting radio signals by using SDR Transceivers. If we have multiple transceivers, communication between two devices under a certain frequency can be done.

II. FM Radio Receiver

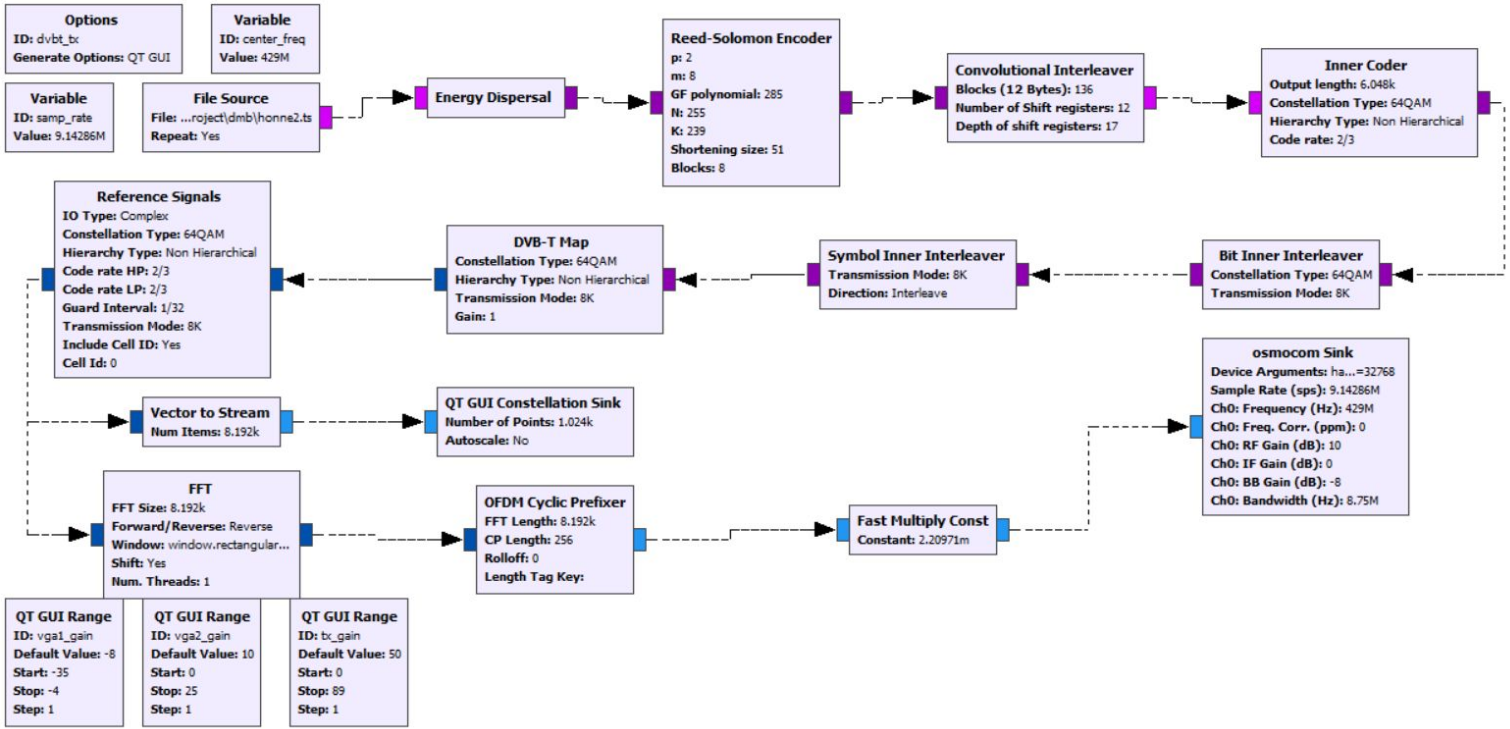
DMB Receiver

There are two different DMB standards which are DVB-T and DVB-S.

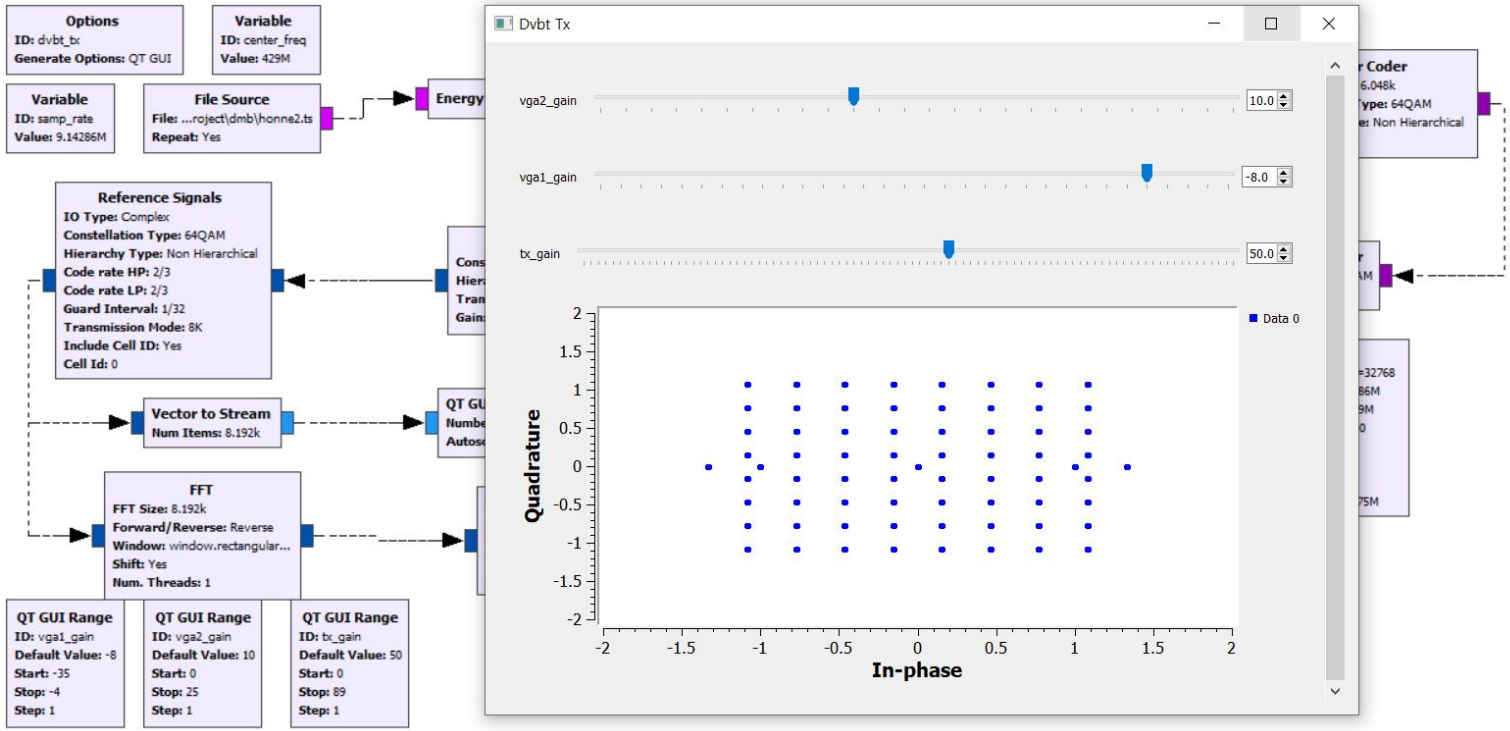
We tried to receive the DMB signal with DVB-T but we were not able to receive the frequency.

We made a call to 과학기술정보통신부(MSIT) for the frequency of the DVB-T, but they changed the protocol of the DMB transmission by self-development call TDMB. Therefore, we were not able to either receive the DMB or transmit.

DVB-T Flowgraph



DVB-T Graph


Options
ID: dvbt_tx
Generate Options: QT GUI
Variable
ID: center_freq
Value: 429M
Variable
ID: samp_rate
Value: 9.14286M
File Source
File: ...roject\dmb\honne2.ts
Repeat: Yes
Energy
Reference Signals
IO Type: Complex
Constellation Type: 64QAM
Hierarchy Type: Non Hierarchical
Code rate HP: 2/3
Code rate LP: 2/3
Guard Interval: 1/32
Transmission Mode: 8K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Num Items: 8.192k
FFT
FFT Size: 8.192k
Forward/Reverse: Reverse
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
QT GUI Range
ID: vga1_gain
Default Value: -8
Start: -35
Stop: -4
Step: 1
QT GUI Range
ID: vga2_gain
Default Value: 10
Start: 0
Stop: 25
Step: 1
QT GUI Range
ID: tx_gain
Default Value: 50
Start: 0
Stop: 89
Step: 1
Dvbt Tx
vga2_gain
10.0
vga1_gain
-8.0
tx_gain
50.0
Data 0
Quadrature
In-phase
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2