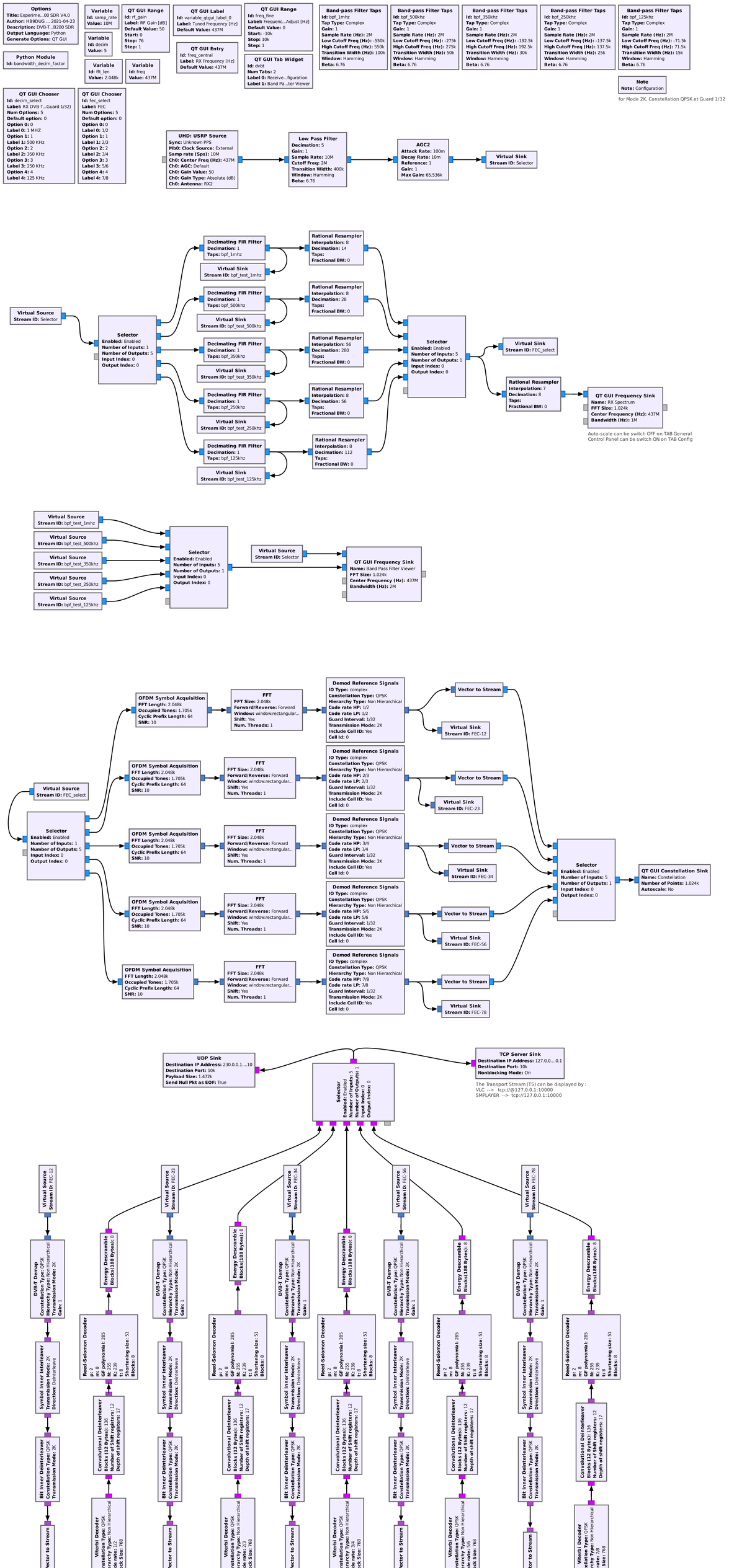
Options
Title: Experime...00 SDR V4.0
Author: HB9DUG ... 2021-04-23
Description: DVB-T...B200 SDR
Output Language: Python
Generate Options: QT GUI
Variable
Id: samp_rate
Value: 10M
Variable
Id: decim
Value: 5
Variable
Id: fft_len
Value: 2.048k
Variable
Id: freq
Value: 437M
QT GUI Range
Id: rf_gain
Label: RF Gain [dB]
Default Value: 50
Start: 0
Stop: 76
Step: 1
QT GUI Label
Id: variable_qtgui_label_0
Label: Tuned Frequency [Hz]
Default Value: 437M
QT GUI Entry
Id: freq_central
Label: RX Frequency [Hz]
Default Value: 437M
QT GUI Range
Id: freq_fine
Label: Frequenc...Adjust [Hz]
Default Value: 0
Start: -10k
Stop: 10k
Step: 1
QT GUI Tab Widget
Id: dvbt
Num Tabs: 2
Label 0: Receive...figuration
Label 1: Band Pa...ter Viewer
Band-pass Filter Taps
Id: bpf_1mhz
Tap Type: Complex
Gain: 1
Sample Rate (Hz): 2M
Low Cutoff Freq (Hz): -550k
High Cutoff Freq (Hz): 550k
Transition Width (Hz): 100k
Window: Hamming
Beta: 6.76
Band-pass Filter Taps
Id: bpf_500khz
Tap Type: Complex
Gain: 1
Sample Rate (Hz): 2M
Low Cutoff Freq (Hz): -275k
High Cutoff Freq (Hz): 275k
Transition Width (Hz): 50k
Window: Hamming
Beta: 6.76
Band-pass Filter Taps
Id: bpf_350khz
Tap Type: Complex
Gain: 1
Sample Rate (Hz): 2M
Low Cutoff Freq (Hz): -192.5k
High Cutoff Freq (Hz): 192.5k
Transition Width (Hz): 30k
Window: Hamming
Beta: 6.76
Band-pass Filter Taps
Id: bpf_250khz
Tap Type: Complex
Gain: 1
Sample Rate (Hz): 2M
Low Cutoff Freq (Hz): -137.5k
High Cutoff Freq (Hz): 137.5k
Transition Width (Hz): 25k
Window: Hamming
Beta: 6.76
Band-pass Filter Taps
Id: bpf_125khz
Tap Type: Complex
Gain: 1
Sample Rate (Hz): 2M
Low Cutoff Freq (Hz): -71.5k
High Cutoff Freq (Hz): 71.5k
Transition Width (Hz): 15k
Window: Hamming
Beta: 6.76
Python Module
Id: bandwidth_decim_factor
QT GUI Chooser
Id: decim_select
Label: RX DVB-T...Guard 1/32)
Num Options: 5
Default option: 0
Option 0: 0
Label 0: 1 MHZ
Option 1: 1
Label 1: 500 KHz
Option 2: 2
Label 2: 350 KHz
Option 3: 3
Label 3: 250 KHz
Option 4: 4
Label 4: 125 KHz
QT GUI Chooser
Id: fec_select
Label: FEC
Num Options: 5
Default option: 0
Option 0: 0
Label 0: 1/2
Option 1: 1
Label 1: 2/3
Option 2: 2
Label 2: 3/4
Option 3: 3
Label 3: 5/6
Option 4: 4
Label 4: 7/8
Note
Note: Configuration
for Mode 2K, Constellation QPSK et Guard 1/32
UHD: USRP Source
Sync: Unknown PPS
Mb0: Clock Source: External
Samp rate (Sps): 10M
Ch0: Center Freq (Hz): 437M
Ch0: AGC: Default
Ch0: Gain Value: 50
Ch0: Gain Type: Absolute (dB)
Ch0: Antenna: RX2
Low Pass Filter
Decimation: 5
Gain: 1
Sample Rate: 10M
Cutoff Freq: 2M
Transition Width: 400k
Window: Hamming
Beta: 6.76
AGC2
Attack Rate: 100m
Decay Rate: 10m
Reference: 1
Gain: 1
Max Gain: 65.536k
Virtual Sink
Stream ID: Selector
Virtual Source
Stream ID: Selector
Selector
Enabled: Enabled
Number of Inputs: 1
Number of Outputs: 5
Input Index: 0
Output Index: 0
Decimating FIR Filter
Decimation: 1
Taps: bpf_1mhz
Virtual Sink
Stream ID: bpf_test_1mhz
Decimating FIR Filter
Decimation: 1
Taps: bpf_500khz
Virtual Sink
Stream ID: bpf_test_500khz
Decimating FIR Filter
Decimation: 1
Taps: bpf_350khz
Virtual Sink
Stream ID: bpf_test_350khz
Decimating FIR Filter
Decimation: 1
Taps: bpf_250khz
Virtual Sink
Stream ID: bpf_test_250khz
Decimating FIR Filter
Decimation: 1
Taps: bpf_125khz
Virtual Sink
Stream ID: bpf_test_125khz
Rational Resampler
Interpolation: 8
Decimation: 14
Taps:
Fractional BW: 0
Rational Resampler
Interpolation: 8
Decimation: 28
Taps:
Fractional BW: 0
Rational Resampler
Interpolation: 56
Decimation: 280
Taps:
Fractional BW: 0
Rational Resampler
Interpolation: 8
Decimation: 56
Taps:
Fractional BW: 0
Rational Resampler
Interpolation: 8
Decimation: 112
Taps:
Fractional BW: 0
Selector
Enabled: Enabled
Number of Inputs: 5
Number of Outputs: 1
Input Index: 0
Output Index: 0
Virtual Sink
Stream ID: FEC_select
Rational Resampler
Interpolation: 7
Decimation: 8
Taps:
Fractional BW: 0
QT GUI Frequency Sink
Name: RX Spectrum
FFT Size: 1.024k
Center Frequency (Hz): 437M
Bandwidth (Hz): 1M
Auto-scale can be switch OFF on TAB General
Control Panel can be switch ON on TAB Config
Virtual Source
Stream ID: bpf_test_1mhz
Virtual Source
Stream ID: bpf_test_500khz
Virtual Source
Stream ID: bpf_test_350khz
Virtual Source
Stream ID: bpf_test_250khz
Virtual Source
Stream ID: bpf_test_125khz
Selector
Enabled: Enabled
Number of Inputs: 5
Number of Outputs: 1
Input Index: 0
Output Index: 0
Virtual Source
Stream ID: Selector
QT GUI Frequency Sink
Name: Band Pass Filter Viewer
FFT Size: 1.024k
Center Frequency (Hz): 437M
Bandwidth (Hz): 2M
Virtual Source
Stream ID: FEC_select
Selector
Enabled: Enabled
Number of Inputs: 1
Number of Outputs: 5
Input Index: 0
Output Index: 0
OFDM Symbol Acquisition
FFT Length: 2.048k
Occupied Tones: 1.705k
Cyclic Prefix Length: 64
SNR: 10
FFT
FFT Size: 2.048k
Forward/Reverse: Forward
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
Demod Reference Signals
IO Type: complex
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate HP: 1/2
Code rate LP: 1/2
Guard Interval: 1/32
Transmission Mode: 2K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Virtual Sink
Stream ID: FEC-12
OFDM Symbol Acquisition
FFT Length: 2.048k
Occupied Tones: 1.705k
Cyclic Prefix Length: 64
SNR: 10
FFT
FFT Size: 2.048k
Forward/Reverse: Forward
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
Demod Reference Signals
IO Type: complex
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate HP: 2/3
Code rate LP: 2/3
Guard Interval: 1/32
Transmission Mode: 2K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Virtual Sink
Stream ID: FEC-23
OFDM Symbol Acquisition
FFT Length: 2.048k
Occupied Tones: 1.705k
Cyclic Prefix Length: 64
SNR: 10
FFT
FFT Size: 2.048k
Forward/Reverse: Forward
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
Demod Reference Signals
IO Type: complex
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate HP: 3/4
Code rate LP: 3/4
Guard Interval: 1/32
Transmission Mode: 2K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Virtual Sink
Stream ID: FEC-34
OFDM Symbol Acquisition
FFT Length: 2.048k
Occupied Tones: 1.705k
Cyclic Prefix Length: 64
SNR: 10
FFT
FFT Size: 2.048k
Forward/Reverse: Forward
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
Demod Reference Signals
IO Type: complex
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate HP: 5/6
Code rate LP: 5/6
Guard Interval: 1/32
Transmission Mode: 2K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Virtual Sink
Stream ID: FEC-56
OFDM Symbol Acquisition
FFT Length: 2.048k
Occupied Tones: 1.705k
Cyclic Prefix Length: 64
SNR: 10
FFT
FFT Size: 2.048k
Forward/Reverse: Forward
Window: window.rectangular...
Shift: Yes
Num. Threads: 1
Demod Reference Signals
IO Type: complex
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate HP: 7/8
Code rate LP: 7/8
Guard Interval: 1/32
Transmission Mode: 2K
Include Cell ID: Yes
Cell Id: 0
Vector to Stream
Virtual Sink
Stream ID: FEC-78
Selector
Enabled: Enabled
Number of Inputs: 5
Number of Outputs: 1
Input Index: 0
Output Index: 0
QT GUI Constellation Sink
Name: Constellation
Number of Points: 1.024k
Autoscale: No
UDP Sink
Destination IP Address: 230.0.0.1...10
Destination Port: 10k
Payload Size: 1.472k
Send Null Pkt as EOF: True
Selector
Enabled: Enabled
Number of Inputs: 5
Number of Outputs: 1
Input Index: 0
Output Index: 0
TCP Server Sink
Destination IP Address: 127.0.0....0.1
Destination Port: 10k
Nonblocking Mode: On
The Transport Stream (TS) can be displayed by :
VLC --> tcp://@127.0.0.1:10000
SMPLAYER --> tcp://127.0.0.1:10000
Virtual Source
Stream ID: FEC-12
Virtual Source
Stream ID: FEC-23
Virtual Source
Stream ID: FEC-34
Virtual Source
Stream ID: FEC-56
Virtual Source
Stream ID: FEC-78
DVB-T Demap
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Transmission Mode: 2K
Gain: 1
Energy Descramble
Blocks(188 Bytes): 8
Reed-Solomon Decoder
p: 2
m: 8
GF polynomial: 285
N: 255
K: 239
t: 8
Shortening size: 51
Blocks: 8
Symbol Inner Interleaver
Transmission Mode: 2K
Direction: Deinterleave
Convolutional Deinterleaver
Blocks (12 Bytes): 136
Number of Shift registers: 12
Depth of shift registers: 17
Bit Inner Deinterleaver
Constellation Type: QPSK
Transmission Mode: 2K
Viterbi Decoder
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate: 1/2
Block Size: 768
Viterbi Decoder
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate: 2/3
Block Size: 768
Viterbi Decoder
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate: 3/4
Block Size: 768
Viterbi Decoder
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate: 5/6
Block Size: 768
Viterbi Decoder
Constellation Type: QPSK
Hierarchy Type: Non Hierarchical
Code rate: 7/8
Block Size: 768
Vector to Stream