

Options

Title: semanticCom

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Output Language: Python

Generate Options: QT GUI

QT GUI Tab Widget

ID: tab_qt

Num Tabs: 3

Label 0: Frequency Domain

Label 1: Time Domain

Label 2: Constellation Plot

Variable

ID: payload_length

Value: 256

Variable

ID: samp_rate

Value: 1M

Variable

ID: barker11

Value: (1,1,1,0,0,0,1,0,0,...

Variable

ID: sps

Value: 8

QT GUI Range

ID: freqs

Label: Frequency Shift

Default Value: 1

Start: 999m

Stop: 1.001

Step: 10u

QT GUI Range

ID: channel_noise

Label: Channel Noise Voltage

Default Value: 100m

Start: 0

Stop: 3

Step: 1m

QT GUI Range

ID: channel_time

Label: Channel Time Shift

Default Value: 1

Start: 999m

Stop: 1.001

Step: 10u

RRC Filter Taps

ID: rrc_taps

Gain: 1

Sample Rate (Hz): 1M

Symbol Rate (Hz): 125k

Excess BW: 500m

Num Taps: 88

```
graph LR
    subgraph Transmitter
        VS[Vector Source  
Vector: barker11  
Tags: None  
Repeat: Yes] -- out --> T1[Throttle  
Sample Rate: 1M  
Limit: None]
        T1 -- out --> STS1[Stream to Tagged Stream  
Packet Length: 11  
Length Tag Key: packet_len]
        RUS[Random Uniform Source  
Minimum: 0  
Maximum: 2  
Seed: 123] -- out --> T2[Throttle  
Sample Rate: 1M  
Limit: None]
        T2 -- out --> STS2[Stream to Tagged Stream  
Packet Length: 256  
Length Tag Key: packet_len]
        STS1 -- out --> TSM[Tagged Stream Mux  
Length tag names: packet_len]
        STS2 -- out --> TSM
        TSM -- out --> UTP[Unpacked to Packed  
Bits per Chunk: 8  
Endianness: MSB]
        UTP -- out --> CM[Constellation Modulator  
Constellation: <gnu...3D29B0>  
Differential Encoding: Yes  
Samples/Symbol: 8  
Excess BW: 500m  
Truncate Filter Transient: Yes]
        CM -- out --> VSink[Virtual Sink  
Stream ID: seq]
    end

    subgraph Receiver
        VSource[Virtual Source  
Stream ID: seq] -- out --> CM1[Channel Model  
Noise Voltage: 100m  
Frequency Offset: 1  
Epsilon: 1  
Taps: 1  
Seed: 213  
Block Tag Propagation: No]
        CM1 -- out --> RRCF[Root Raised Cosine Filter  
Decimation: 1  
Gain: 1  
Sample Rate: 1M  
Symbol Rate: 125k  
Alpha: 500m  
Num Taps: 1k]
        RRCF -- out --> CE[Correlation Estimator  
Symbols: (1,1,1,-1,-1,-1,1,...  
Samples per Symbol: 8  
Tag marking delay: 1  
Threshold: 4  
Threshold Method: Absolute]
        CE -- out --> PPS[Polyphase Clock Sync  
Samples/Symbol: 8  
Loop Bandwidth: 62.8m  
Taps: rrc_taps  
Filter Size: 32  
Initial Phase: 16  
Maximum Rate Deviation: 1.5  
Output SPS: 4]
        CE -- corr --> CTF[Complex To Float]
        PPS -- out --> CL[Costas Loop  
Loop Bandwidth: 65m  
Order: 2]
        CL -- frequency --> QFSS[QT GUI Frequency Sink  
FFT Size: 16384  
Center Frequency (Hz): 0  
Bandwidth (Hz): 1M]
        CL -- phase --> QCS[QT GUI Constellation Sink  
Name: Constellation  
Number of Points: 2.048k  
Autoscale: No]
        CL -- error --> CD[Constellation Decoder  
Constellation Object: ...9B0>]
        CTF -- re --> QTS1[QT GUI Time Sink  
Number of Points: 10k  
Sample Rate: 1M  
Autoscale: No]
        CTF -- im --> NS[Null Sink]
        CD -- out --> DD[Differential Decoder  
Coding: Differential  
Modulus: 2]
        DD -- out --> PU[Packed to Unpacked  
Bits per Chunk: 1  
Endianness: MSB]
        PU -- out --> UTF[UChar To Float]
        UTF -- out --> QTS2[QT GUI Time Sink  
Number of Points: 16.384k  
Sample Rate: 1M  
Autoscale: No]
    end
```