

Summary

1. Default parameters (tx and rx):

Samp_rate: 2MHz
Freq: 2.45GHz
RF gain: 14dB
IF gain: 30dB
BB gain: 20dB

2. Additional library: gr-correctiq:

We use this library to remove the DC spike generated by our HackRF devices. Detailed information can be found here:

<https://github.com/ghostop14/gr-correctiq>.

<https://www.rtl-sdr.com/tag/correctiq>.

3. File format: SigMF.

We save signal files in SigMF format. Detailed information about SigMF can be found in <https://github.com/gnuradio/SigMF>.

Following is the sample code we could use to read the sigmf files.

```
import json
import numpy as np

with open("test.sigmf-meta", "r") as f:
    md = json.loads(f.read())
if md["_metadata"]["global"]["core:datatype"] == "cf32":
    samples = np.memmap("test.bin", mode="r", dtype=np.complex64)
    print()
elif md["global"]["dtype"] == "ci16_le":
    samples = np.memmap("test.bin", mode="r", dtype=np.int16)
```

4. Beacon:

Interval: 102.4ms.

Size: 150 to 300 bytes per beacon

Initial results:

Our dataset (symbols)

Model (Same day acc / day 2 acc)	[tune training samples, tune test samples] fine-tuning acc							
	[40,10]	[80,20]	[120,30]	[160,40]	[200,50]	[320,80]	[640,160]	[1280,320]
Homegrown (60.0 / 29.06)	33.20	45.70	42.93	49.35	49.72	54.40	63.75	75.35
Baseline (61.48 / 29.9)	52.30	56.00	57.80	56.75	58.55	59.60	58.85	61.99
Resnet (60.03 / 37.46)	30.00	35.00	37.33	36.25	37.38	31.50	28.60	22.89

NEU dataset (symbols)

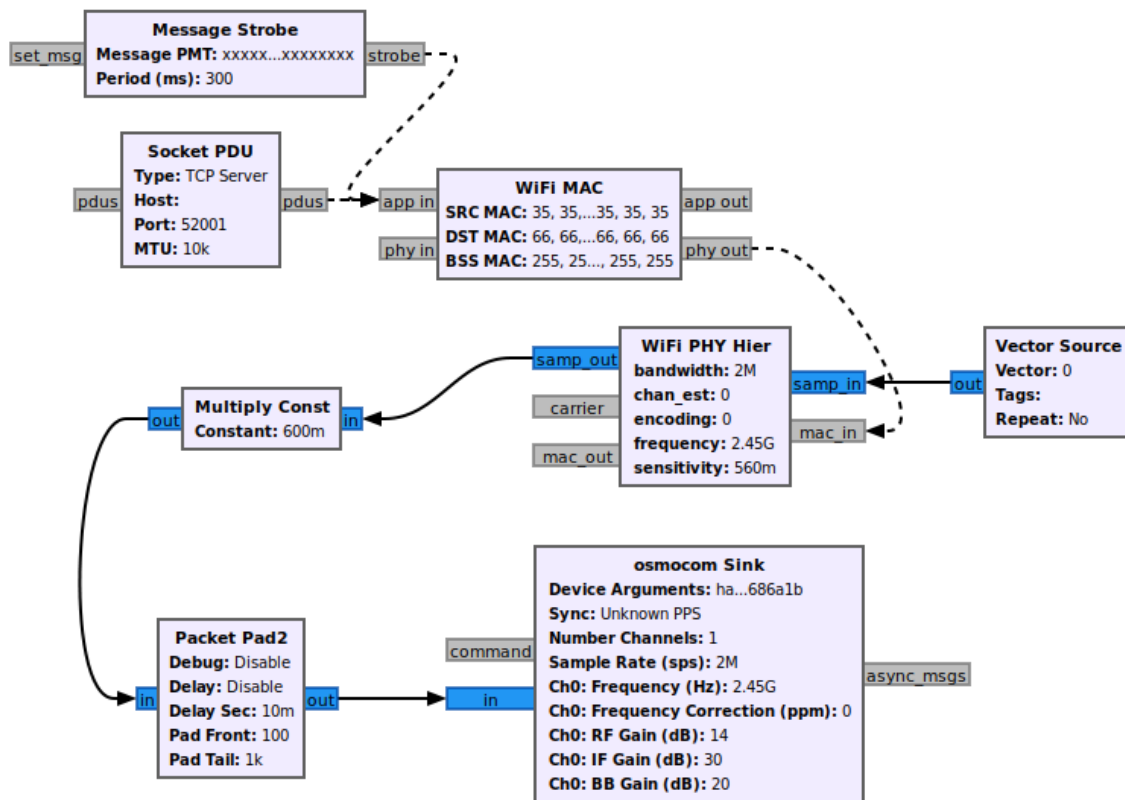
Model (Same day acc / day 2 acc)	[tune training samples, tune test samples] fine-tuning acc							
	[40,10]	[80,20]	[120,30]	[160,40]	[200,50]	[320,80]	[640,160]	[1280,320]
Homegrown (73.8 /15.06)	29.60	27.40	31.47	34.70	37.68	45.25	54.35	64.59
Baseline (53.6 / 21.03)	35.00	39.50	38.30	42.75	33.80	39.30	40.83	42.43
Resnet (69.8 / 22.09)	30.00	29.50	24.33	26.50	26.20	25.50	24.48	24.37

Complex_model acc: reim reim2x

Same day, symbols: 100%

Another day, symbols: 41.41%

WiFi_tx:



WiFi_rx:

