2025 02 25

IQ Data from from test track notes

# Notes

The test data for 2025-02-25(this doc) is nearly identical to the test data from 2025-02-20. The differences are:

* Moved location to the north side of the test track, near the shack, but on the edge of the parking lot.
* Collected longer iq.bin (truncated to an iq\_short.bin as well)
* Collected with the same antenna, via splitter on EB79 and PP78. P3-09 used its own antenna.

# Data Files

The \*\_cmr.csv files were collected with unpack\_cmr.py from the [judo-radio-utils repo](https://bitbucket.trimble.tools/projects/JUDO/repos/judo-radio-utils/browse). It basically time stamps packets and decodes the message types and lengths. Both Judos were time synced to their GNSS receivers, so the timestamp should line up well between these files.

eb79\_iq.bin and pp78\_iq.bin came from running “nc localhost 6666 > /tmp/eb79\_iq.bin” on the judo.

# Setup

P3-09 was used for the Mikimoto data collection

EB79 was used for the SUHF data collection. EB79 was running build #1336. It is using an older FPGA image, as can be seen in the opening lines printed by suhf\_driver:

[ DEVELOP ] root@mp1010-6419R35079:~# suhf\_driver -m 450 -f 464550000 -r -d 0 -q

MP1010 Soft UHF 450MHz/900MHz Driver

SPI device opened:

spi device: /dev/spidev/by-name/suhf\_fpga

spi mode: 0

bits per word: 16

max speed: 12000000 Hz (12000 KHz)

Soft UHF FPGA Version:

Git Hash: 4a23221e0a93fa85

Git Branch: master

For comparison, this is the result from EB93, which is running build #1534

[ DEVELOP ] root@mp1010-6419R35093:~# stdbuf -oL suhf\_driver -m 450 -f 464550000 -r

MP1010 Soft UHF 450MHz/900MHz Driver

SPI device opened:

spi device: /dev/spidev/by-name/suhf\_fpga

spi mode: 0

bits per word: 16

max speed: 12000000 Hz (12000 KHz)

Soft UHF FPGA Version:

Git Hash: 9a6561b22f2f1562

Git Branch: master

The SUHF RSSI were around -34dB.

Both the P3-09 and EB79 were running off the **separate** whip antennas. But they were only about 1 foot apart.

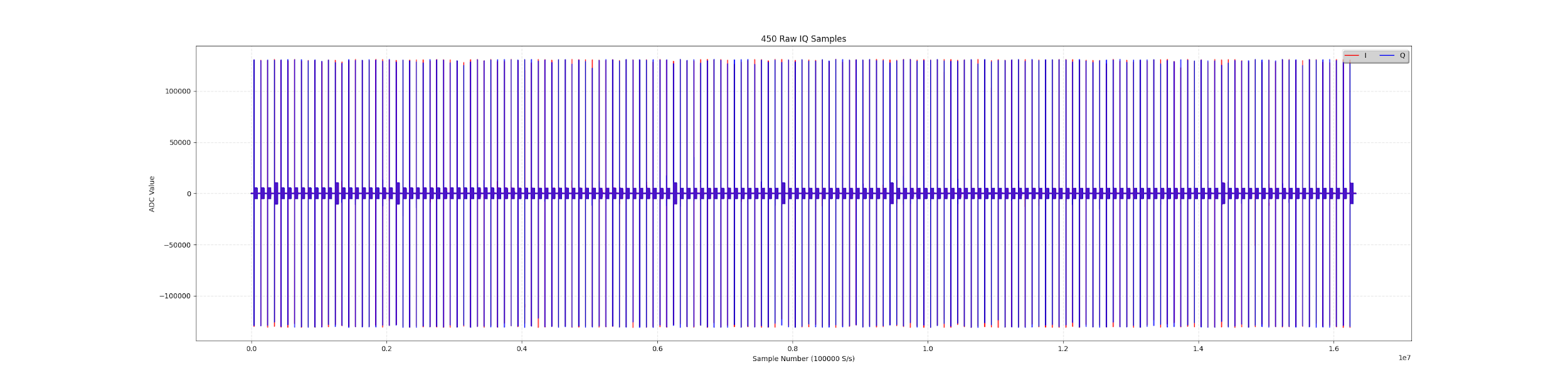
# 

# Results

The unpack\_cmr.py logs of the CMRs look like both receivers are OK (no time gaps greater than 1 second).

This data was collected with separate antennas on the SUHF and Mikimoto Judos. But I was seeing the same results when using a splitter from the same antenna.

Here are the results from plotiq.py



Here are the results from plotiqgl.py using the truncated iq\_short.bin data

