EEE-B-5
Electrical and Electronics Engineering
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Mobile Electronic Warfare System

Introduction:

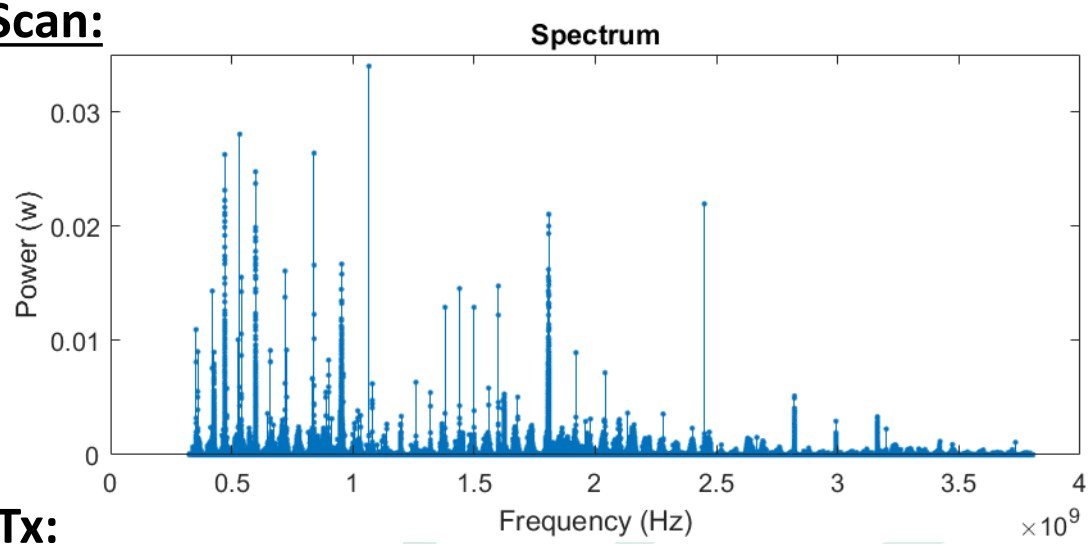
- Communication systems are essential for operational success.
- The enemy uses tactical radio networks to gain battlefield advantage.
- The transmissions are difficult to detect, monitor, or disrupt.
- An SDR-based system has been developed to counter this threat.
- The system targets common tactical radios in operational environments.

Goals:

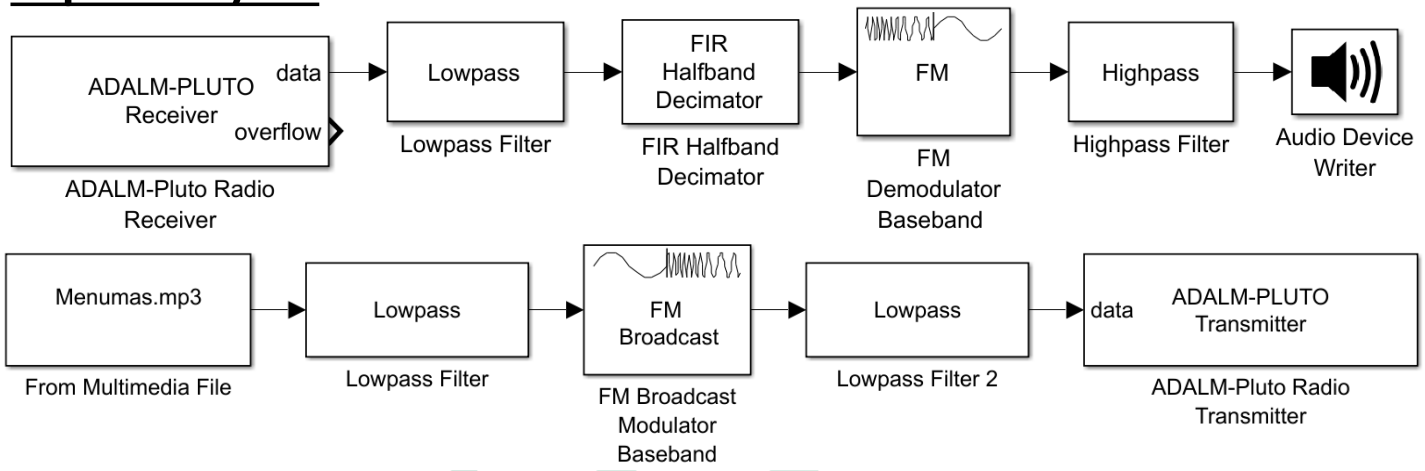
- Understanding communication in walkie-talkie systems.
- Deepening knowledge of SDR devices and how to use them.
- Receiving signals through the SDR.
- Transmitting data/noise on the identified frequencies.
- Thorough investigation of scenarios and drawing conclusions from the experiments conducted.

The overarching goal of the project is to build a system for combating mobile communication systems.

Full Range Scan:



Exp for Rx/Tx:



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Mobile Electronic Warfare System

Continuous noise/audio transmission

Walkie talkie received Continuous noise/audio

Transmission of noise/signal in short time pulses

Walkie talkie received noise/audio in short time pulses

Transmission Voice from 2 SDR

Play both sounds together
Or the “stronger” Voice

The two-way radio is encrypted or assigned to a channel with a room

Record-

Transmit the Recorded signal-

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Mobile Electronic Warfare System

Results:

					
Constant noise	00:00	04:40	09:20	11:00	12:40
Noise in pulse time	00:00	04:35	09:00	10:40	12:20
Noise diff F(Hz) same CH	00:00	04:35	09:00	10:40	12:20
Voice pulse time (W-T coded)	00:00	07:40	---	---	---
Voice in pulse time	00:00	03:20	07:10	08:45	10:20

Send Voice in Parallel = Listen both together / The stronger voice

Walkie talkie played the recorded voice with CTCSS DCS codes

Conclusion:

- Integrating the ADALM-Pluto with MATLAB provides an efficient and user-friendly platform.
- The walkie-talkie showed accelerated battery drain, failing sooner than its expected 18-hour runtime.
- Despite its low 5mW power, the SDR caused loud and clicks noises in the Walkie-Talkie.
- The experiment proves SDR tools can impact communication devices, though effectiveness depends on factors like power, multiple channel use, and target device quality.

The next generation of tactical electronic warfare - combining technological power with engineering precision.