

# 16-QAM Receiver Implementation

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This project implements a functional radio receiver in Python that processes a received RF signal and decodes an ASCII message by using 16-QAM modulation.

Video Demo: [https://psu.mediaspace.kaltura.com/media/MP1%20Video%20Demo/1\\_oskfngk](https://psu.mediaspace.kaltura.com/media/MP1%20Video%20Demo/1_oskfngk)

Requirements:

- Python 3.8+
- NumPy

Required Files in directory:

- 'wireless\_receiver.py' (Python script)
- 'input.txt' (received signal)
- 'preamble.txt' (known preamble sequence)

Deployment steps:

1. Open a terminal
2. Navigate to the directory containing the files
3. Install NumPy with:  
`pip install numpy`
4. Run the receiver with:  
`python wireless_receiver.py`

## Note\*

Included in the repo is an example input.txt and preamble.txt. These contain intentional noise, so decoding them result in a message with significant typos. These are to simulate wireless noise and therefore an imperfect signal.