Design Review 3

BT Speaker Group

Design Review 2 Recap

What we have:

- Bluetooth connection to phone via ESP32
- Amplification board connects ESP32 to speaker drivers to produce quality sound

What we need to improve:

- Power management circuit
- ESP32 Board Improvements
- Radio communication

Battery Management
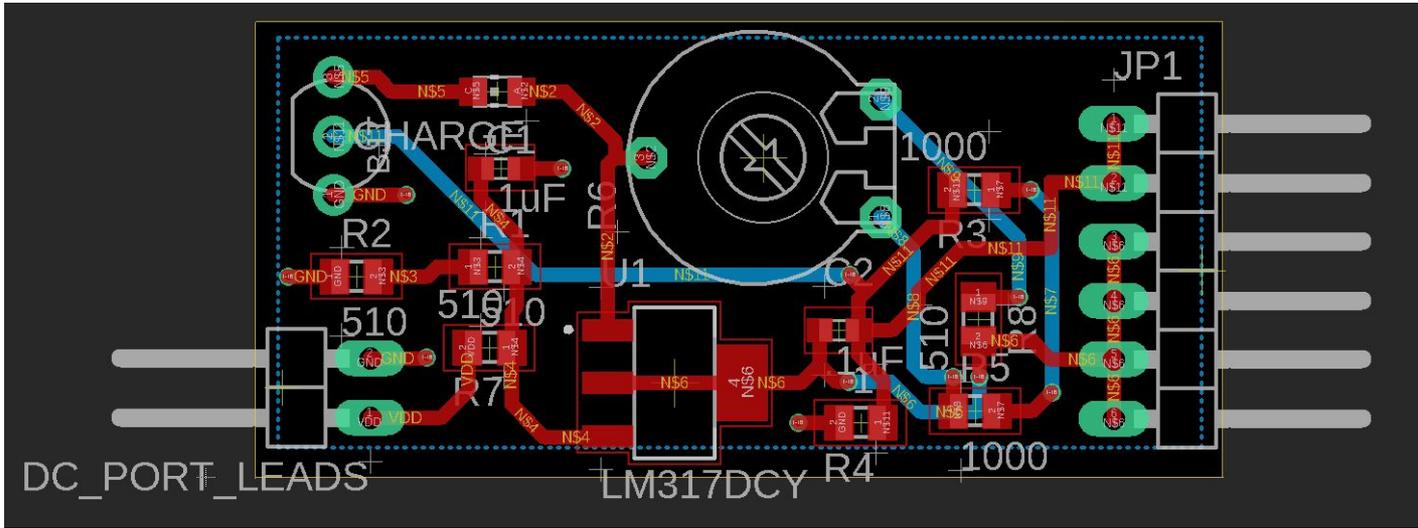
- Use potentiometer to set voltage maximum
- If voltage level is below allowed level, then it will continue to charge
- If it exceeds level, then charging will halt

ESP32 Board Improvements

Old Board

- Used the wrong kind of ESP originally
  - Now we are replacing with dual core
  - ESP32-S3-WROOM-2

Improved Board
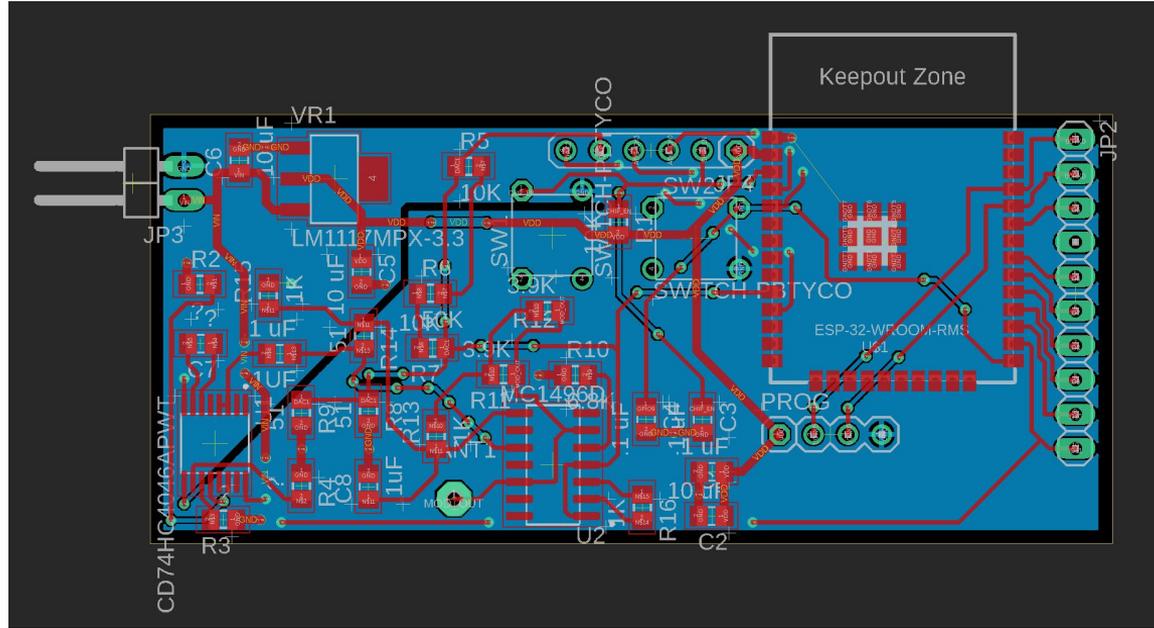
Radio Communications

Investigated modulators and demodulators and antennas to purchase.
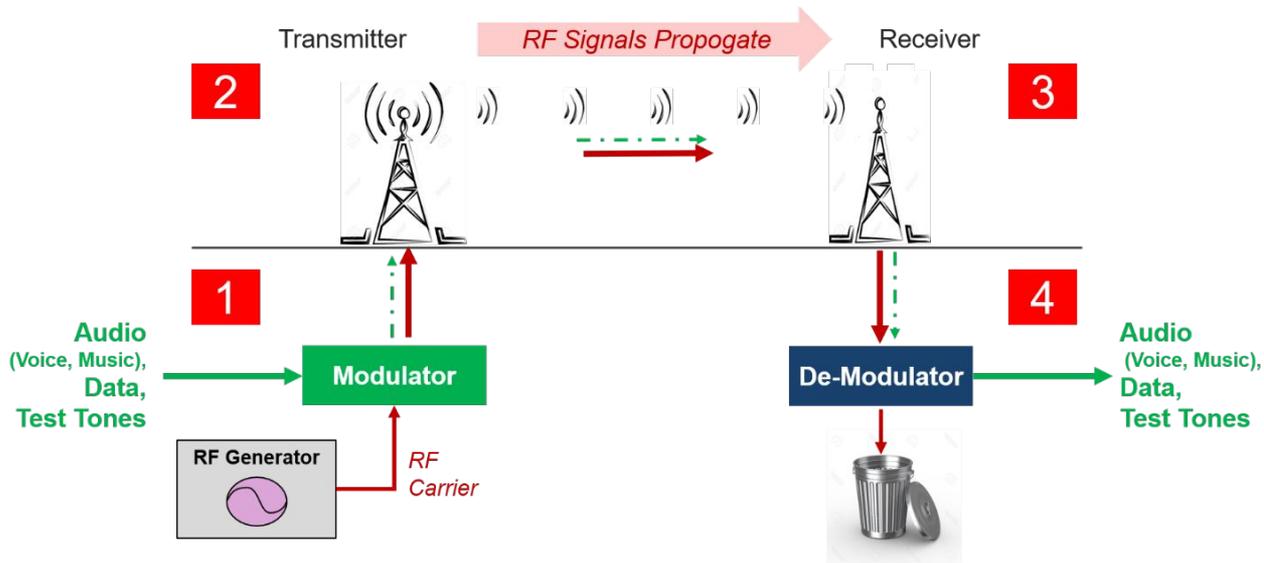
Our specifications:
- 433MHz
- AM modulator
    - Easier to demodulate
- Adjustable Gain and Signal Handling
- Balanced Inputs and Outputs
-

Modulator/Demodulator

MC1496, MC1496B

Balanced Modulators/ Demodulators

Features

- Excellent Carrier Suppression −65 dB typ @ 0.5 MHz
  −50 dB typ @ 10 MHz
- Adjustable Gain and Signal Handling
- Balanced Inputs and Outputs
- High Common Mode Rejection −85 dB Typical
- This Device Contains 8 Active Transistors
- Pb−Free Package is Available*

Antenna

2JL01

433 MHz ISM Surface Mount

Key Features

433 MHz ISM

- 433-435 MHz
Surface Mount
Easy to Integrate
Compact Size
Ceramic Material
Ground Plane Dependent
Dimensions 5 x 3 x 0.5 mm

Subwoofer Cabinet Design

- Vented to allow air to come out, which allows for bigger, louder sound
- Minimum 5 inch depth
- Midwoofer/tweeter box will be a similar shape and fix onto the top of the subwoofer box
- It will not be vented and will have a minimum depth of 3.5 inches