System Application Test

Bluetooth Speaker Project

Power Management

Our requirements:

- ➔ isolated AC/DC power supply
- ➔ input power protection
- ➔ energy storage
- ➔ non isolated DC/DC power supply
- ➔ Hub must include a charging apparatus to provide charge to peripheral speakers
- ➔ System should be safe — not likely to cause fire
- ➔ Battery should hold a charge for a minimum of 5 hours

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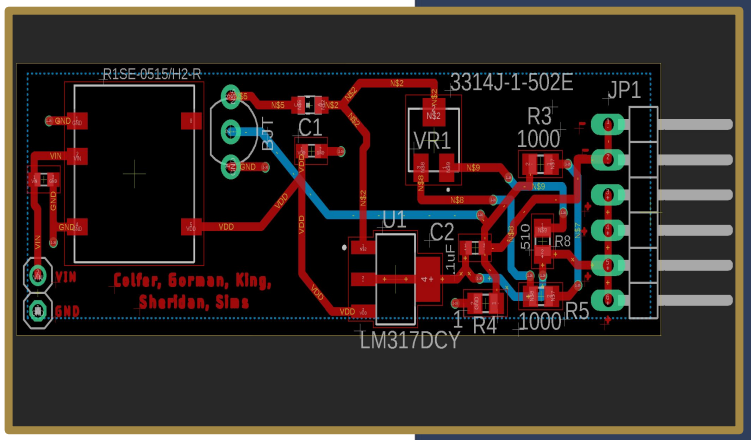
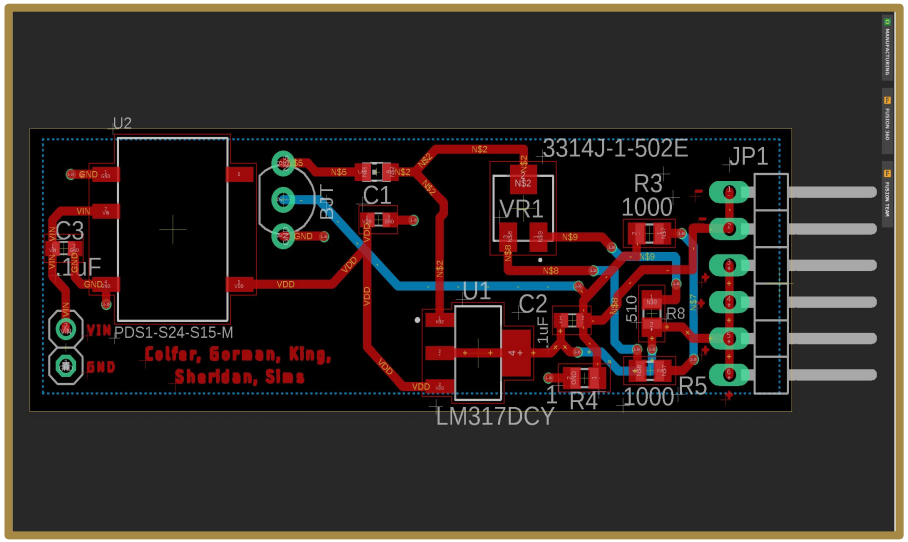


Hub Speaker Power Management Board



Hub Speaker Power Management Board

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Power Management

Our requirements:

The team designed a circuit involving a ***contact charging coil.*** When the peripheral speakers are placed on top of the hub, their batteries will be charged.

- ➔ Hub must include a charging apparatus to provide charge to peripheral speakers
- ➔ System should be safe — not likely to cause fire
- ➔ Battery should hold a charge for a minimum of 5 hours

Our calculation suggest that our batteries will last for **9 hours**.

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Audio Requirements

- ➔ Speakers to simulate the crossover network of a system with one source.
- ➔ The signals will be sent to an amplifier circuit.
- ➔ Volume should be able to fill a standard room (say Stinson 205) with adequate sound.
- ➔ Audio should have minimal noise, not enough to be interpreted by the average listener.

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- The wiring of our speaker components with the amplifier boards has each component playing their specified frequency range to give the listener a full sound experience.

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Human Interface Requirements

- ➔ The ESP32 must have a Bluetooth interface that can connect to multiple peripheral speakers to play calibrated outputs.
- ➔ The input user interface must communicate battery level and connectivity with the user.
- ➔ Bluetooth should be easy to connect to using the settings options on phones or computers to pair
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Human Interface Requirements

The team generally got sidetracked from this requirement and found that it should not be made a priority over the general bluetooth functionality

- ➔ The input user interface must communicate battery level and connectivity with the user.
- ➔ Bluetooth should be easy to connect to using the settings options on phones or computers to pair
- ➔ Bluetooth connection should be continuously reliable

Going to bluetooth settings on your phone, our device is easily found and pairs quickly consistently.

General Requirements

- ➔ Speaker should be no bigger than 1.5x the current standard (9.85 x 17.33 x 14.57 inches
- ➔ Speaker should be comprised of a material that will not hinder the sound quality
- ➔ Must remain under the $500 budget

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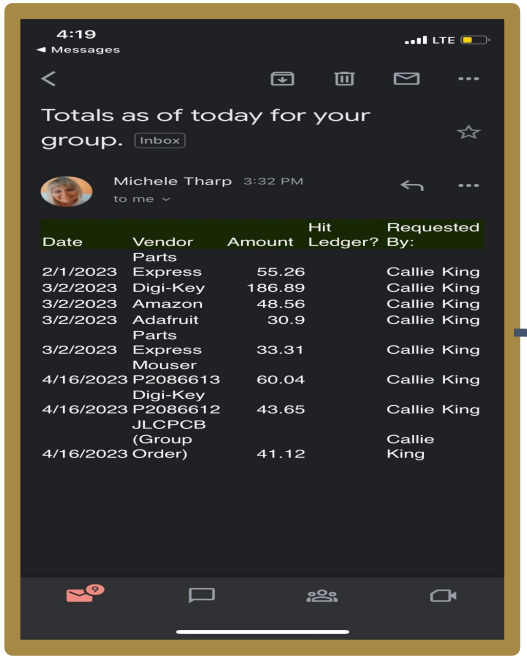

$499.73

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Thank you!!

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