Google Drive
DesignReview2_doc
MeetingMinutes

Overview for this meeting

1. Review subsystem demonstration plan
2. Subsystem Demonstrations
    a. Sensor Subsystem - Jeff M.
        i. Show measurements on serial monitor from the sensors on breakout boards, connected to the microcontroller.
            1. Humidity boundary
            2. Microphone >> if an alarm goes off (noise thresholding)
            3. Temperature boundary
            4. Light boundary
    b. Optical Communications Subsystem - Kyle C., Jeffrey Y.
        i. Show match between input and output data for optical communication between two microcontrollers.
            1. Range and aim on IR
    c. Data Processing and Integration Subsystem - AnnahMarie B., Kyle C.
        i. Show match between input and output data for communication between microcontroller and laptop via Ethernet (W5500 module).
                a. Link to Link setup for Ethernet Ports
                    i. ESP32 >> Has MAC address not, IP address (must be assigned, get a static IP address from OIT)
                        1. Put in private address space
                    ii. The desktop in 205 might be a temporary IP address (dynamic)
                    iii. Lookup in the DNS about TCP communication
            2. Find ESP32-S3 IP Address
            3. Send data over Ethernet to Desktop IP Address
            4. Desktop Python server script to listen on port 12345.
        ii. Is it possible to have an ethernet interface directly on the device
            1. What hardware between the ESP32 and Ethernet
                a. Does ESP32 assume running over SPI? Probably not.
                b. External modifying device
        iii. Show GUI for data display and storage on the central console.
        iv. Show implementation of error correcting codes, with robustness to simulated random noise
    d. Power Subsystem - Katherine D.
        i. Detailed explanation of power calculation and design choices.

1. Could be longer than 10 minutes for humidity//
2. DC converter page 28 for PCB layout
    a. ENSURE the pinout/footprint is correct to the spec sheet (are GND pins on the side?)

Table 10-2. List of Recommended Inductors

INDUCTOR VALUE [µH]	SATURATION CURRENT [A]	DCR [mΩ]	PART NUMBER	MANUFACTURER(1)	SIZE (LxWxH mm)
0.47	5.4	7.6	XFL4015-471ME	Coilcraft	4 x 4 x 2
0.47	5.5	26	DFE201612E	Toko	2.0 x 1.6 x 1.2

(1) See *Third-party Products Disclaimer*.

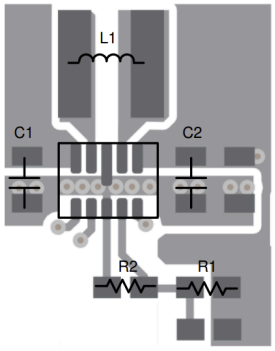

Figure 12-1. TPS63802 Layout

Progress Updates

- MEM microphone still has not arrived.

Areas of concern

- Board redesigns possible?
- Frequency of data collection/power optimization
    - Either: 6 pin header, or USB-C
        - Reset, GND, Power, TX, RX, Serial
        - Female connector or holes//Male header pins w jumpers