

HydroWatch Minutes

Meeting led by: Rebecca

Minutes by: Tyler

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******-Comments/Questions from Schafer

-custom protocol is written, sends out a notification to the interface every 200 ms... 8 byte value being sent so that the first two bytes are identifiers for the 4 LEDs and identifying in post-processing which LEDs are being used. The other 6 bytes are an actual voltage reading.

******signed or unsigned data from AFE? Is data from AFE positive and negative? → signed quantity but mostly won't ever get down to that negative value (seems like a lot of precision for 6 bytes of data).

Log file is downloaded and parsed by python code through a matlab program and eventually send a text message for notification through an email service.

******Data goes to computer with Bluetooth interface on it? Yes. (Just making sure not trying to process on a phone) → Python 3

-We have a functioning "SPI" interface and when run by itself it was working, but MISO spikes have

******Careful with sampling rate on the logic analyzer (sample at fastest rate that it can). Make sure it's not an artifact of the logic analyzer not being fast enough. Assuming decoupling is on the board right now.

****** Need reset power up to be sent, but SPI is not designed to be sent for long distances. Having the signals going over wires next to higher frequency clock can cause these issues.

Need to add Python and MATLAB onto computer → ******will do, which version of python? Preferably anaconda (Python 3)

Ultimate goal: direct connection to computer terminal to go directly into writing from the COM Port and interface directly with the RSL10 dongle. MATLAB should be able to read directly from the COM Port, need to figure out the GATT and GAPP ******Is there a good reference for that? → not really a great single reference

******Long term: at some point, the ultimate goal is to graduate...Do we think it can get to a point where the RSL10 can process the data and tell you that you're dehydrated (like a wearable like a smart watch)... Right now, we're grabbing data and sending to computer for analysis... if our sensors can tell us that information in a reasonable way, could probably do enough processing on the RSL10 and set a dehydration LED high, or something along those lines

LEDs/Photodiodes: ******Weird LEDs have shipped.

One of O'Sullivan's grad students has done extensive work on the absorption spectra for deuterium vs. normal water and have a better set up with LEDs and photodiode on the board. We would be able to

demonstrate whether the water level is higher or lower. Different molecules: potassium ions and hematocrite? Might signal a change→the levels won't be extremely changed or altered so we are looking into how we can sense the difference. Can also look at hemoglobin and deoxyhem. To test out this kind of research on phantoms. Deuterium test very soon, moving on to the rest of the testing to get different ions.

**Test the SPI: slow everything down... faster you run=more RF created... if running slower and the spikes go away, it is likely a frequency problem.

RSL10/AFE Board: Parts and solder paste have arrived, waiting on the board to get back from fab