

## Systems Design Review Meeting Minutes - January 11, 2013

Attendees: Professor Rick, Professor (ID Faculty), Becker-Gomez (CE Faculty), Mr. Scott Lawrence (Audiologist), Sarah Brownell (Guide)

Currently hearing aids cost approximately \$1900 each, cost depends of how many functions and programs the user wants/needs. For example, bottom end 1- program and top tier 4 different programs - \$1200 difference

Professor Rick asked "how does model de-stigmatize a hearing aid?"

Ali replies: Bluetooth component will be sold with it an advertised as an accessory.

Important consideration-Prof. Rick/Lawrence Scott: investigate design of ear molds/shells

Lawrence Scott: Research disc opening, coupling of ear molds that would slide into disc opening-plastic piece and how that will connect to a vent.

Design Constraints Slide-note unit of measure for specs as dB for hearing level

- Hearing level-what the average level of population's hearing

- Sound Pressure level- actual measure of sound being processed

Prof. R: Have option to change/replace battery for convenience-What can the user do if power runs out in the middle of a conference? Can they remove the battery and replacement?

LS- Check out cochlear batteries- Advanced Bionics

Prof. BG has a eval board similar to TIMS5320

Concerns regarding Chips:

- Lower power b/c other microcontroller uses extra DSP & features

- Software not available in university

- Learning curve

- look into other brands as well(research)

- Research how battery will work w/ USB & ASC controller

LS: For NOAH testing, contact him

SB: Update Risk Assessment with names and can we use some extra space in Bluetooth system for something?

## Systems Design Review Meeting Minutes - January 15, 2013

Attendees Sarah Brownell (Guide), Professor Slack (EE)

System Architecture:

Prof. S: What's a Columbus counter?- likes this idea

Ron/Conor: Monitors battery power/thinking of removing it b/c ASC already takes care of this function

Audio Input:

Prof. S: How will cell phones compare to hertz/feasibility of this device? SB: High-end frequency?

Amps:

Conor will discuss with Prof. Philips about specs and how to insulate

Prof. S: Do you need both directional & Omni-directional mics?

Ron: Yes, need one for surrounding sounds and one to hear an individual

Prof. S: Benchmark amplifier device- Radioshack/ TV ad

Conor: Dedicated Chip?

Prof S: Maybe no, can use plastic conductive materials- don't want to build up, not a priority on a scale of 1-10, its a 3.

SB: Add DSP to Risk Assessment

Prof. S: Audio processing is most important item to focus on

Ali: Could we use a gasket to fill up space?

Prof. S: I don't know-ESD prospective- see materials used to protect from parking. Use Texas Instruments as a learning curve, also see Prof. Amuso for eval boards.

SB: Can they participate in TI contest?

Prof. S- Yes, definitely a very analog project. Obtain components, shirts and money

Prof. S: consider GUI, wireless components - get rid of switches if possible. Power-on/off is lower priority-user input

Prof. S: What is class D?

Ron: way it amplifies and the efficiencies of AB

Prof. S: technology of speaker?-Conor: Magnetic Balanced Speaker. Prof. S: Look at existing devices to see how components are nested..

Prof. S: Overall audio acoustic is the heartache, like the idea of development board, definitely in good shape for design, Good research. EE standpoint, ASC makes a lot of sense, have confidence and have support to do this.