Mechanical Overview (Spring 2020)

Team: 8
Project: AudioBeamer
Creation Date: 2/12/20
Last Modified: 2/14/20
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Assignment Evaluation:

Item	Score (0-5)	Weight	Points	Notes
Assignment-Specific Items				
Commercial Packaging Analysis 1		x2		
Commercial Packaging Analysis 2		x2		
CAD Model Illustrations		x4		
Project Packaging Specifications		x2		
PCB Footprint Layout		x2		
Writing-Specific Items				
Spelling and Grammar		x2		
Formatting and Citations		x1		
Figures and Graphs		x2		
Technical Writing Style		x3		
Total Score				

5: Excellent   4: Good   3: Acceptable   2: Poor   1: Very Poor   0: Not attempted

Comments:
Comments from the grader will be inserted here.

1.0 Commercial Product Packaging

1.1 Product #1

JUST Mixer Portable Pocket Audio Mixer

Product Packaging
- Stereo 3 in/1 out configuration
- 3 stereo channels
- Up to 5 mono input connections
- LED overload indicator
- Battery or USB powered
    - 2 AAA batteries
    - Lasts about 8 hours
- AUX input
- Power indicator
- Balance, aux, and gain adjustment knobs
- Channel and master volume sliders
- Weight: 4 ounces
- Dimensions: 4.1 x 0.9 x 2.7 inches

Pros:
- Multiple color options
- Very compact
    - Can fit in a pocket
- Communicates with user via LEDs

- All UI elements are appropriately labeled

Cons:
- May be too small for certain users with impaired vision
- Knobs and sliders may be too small for users with movement impairments

What We Plan to Adapt
- Descriptive UI elements
    - For our app
- Communication with the user via LEDs

How It Is Different
- This product has no Bluetooth capabilities
- It cannot be controlled from an app
- This product does not include any equalization modification

1.2 Product #2

3 Channel Bluetooth Audio Mixer (PAD30MXUBT)

Product Packaging
- Dimensions (L x W x H): 4.0" x 5.3" x 1.6"
- Weight: 1.4 pounds
- Includes LED light indicators
- Included 3.5 mm jack
- Included I/O for 3 channels

Pros:
- Design looks intuitive and simple
- Can be used by professionals as well
- Controls looks organized
- Included adapter that allows the device to work with AC
- Relatively portable size

Cons:
- This device included several controls and the dimensions might be too small to accommodate that
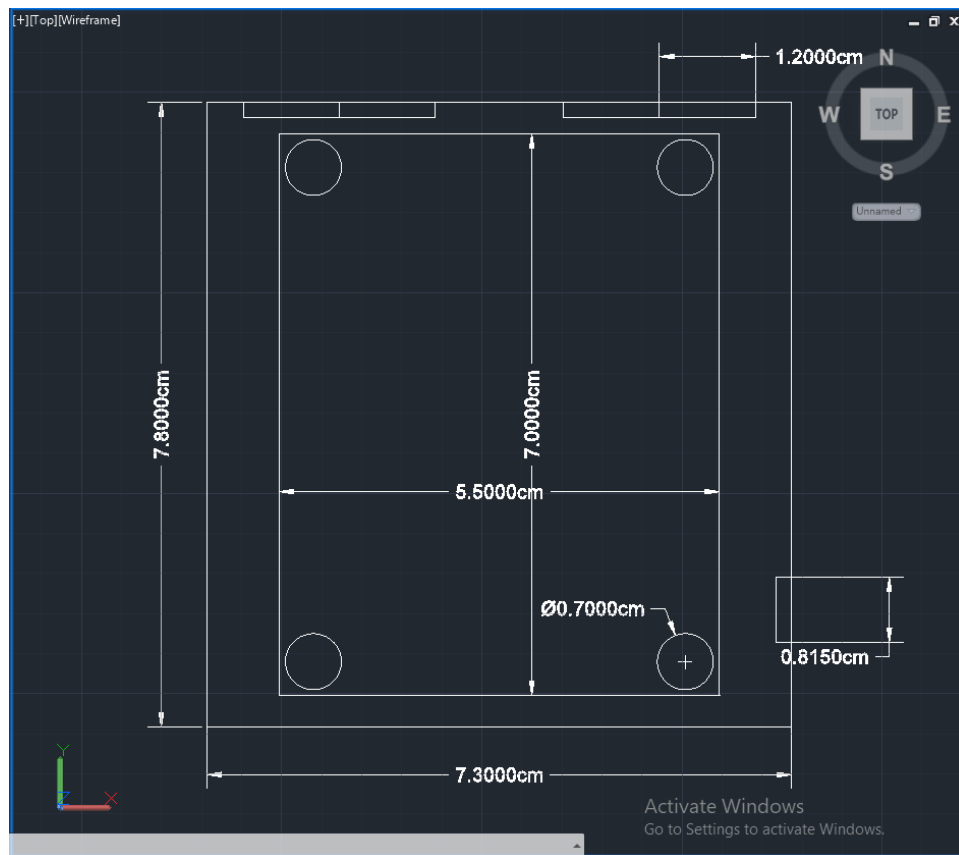
What We Plan to Adapt
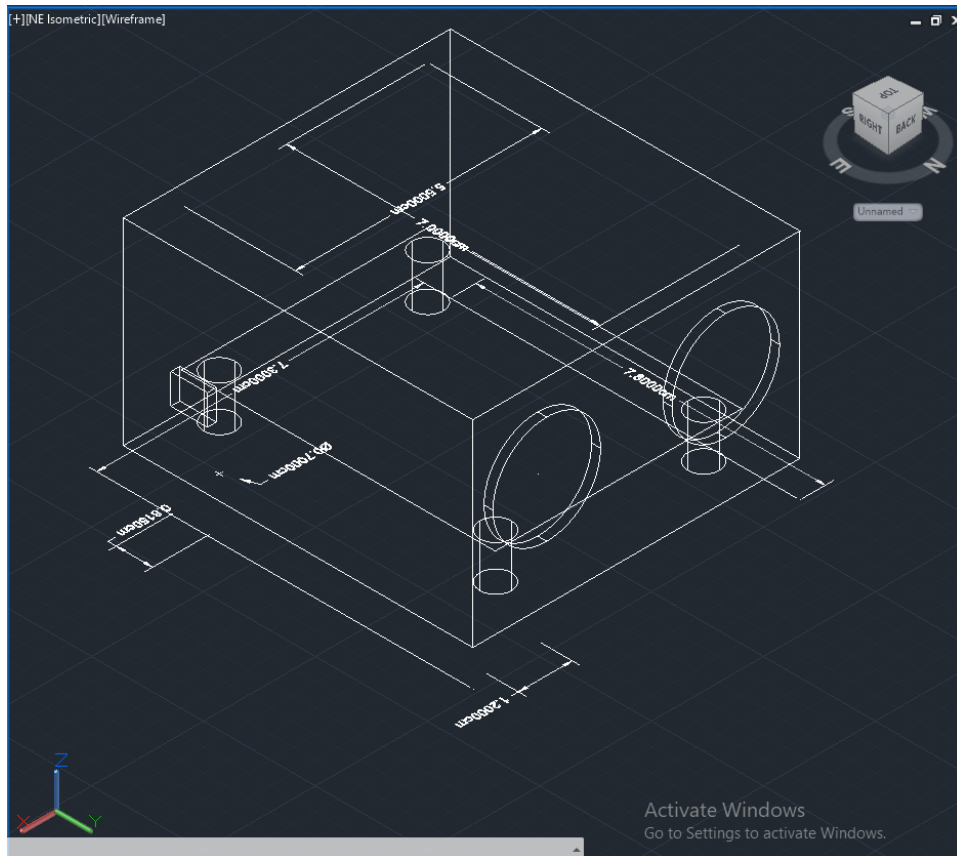- Communication with the user via LEDs

How It Is Different
- This product doesn't seem to have the ability to control the effects through Bluetooth
- It cannot be controlled from an app
- Our device doesn't have an XLR mic connector

3.0 Sources Cited

1. "3 Channel Bluetooth Audio Mixer - DJ Sound Controller Interface with USB Soundcard for PC Recording, XLR, 3.5mm Microphone Jack, 18V Power, RCA Input/Output for Professional and Beginners – PAD30MXUBT." [Online]. Available: https://www.amazon.com/Channel-Bluetooth-Audio-Mixer-Professional/dp/B015NBUVE0/ref=sr_1_6?keywords=audio%2Bequalizer%2Bbattery%2Bpowered&qid=1581528019&s=musical-instruments&sr=1-6&th=1 [Accessed February 12, 2020].
2. "JUST MIXER Audio Mixer - Battery/USB Powered Portable Pocket Audio Mixer w/ 3 Stereo Channels (3.5mm) Plus On/Off Switch." [Online]. Available: https://www.amazon.com/JUST-MIXER-Audio-Mixer-Portable/dp/B01LPT8KQA/ref=sr_1_1?keywords=audio+equalizer+battery+powered&qid=1581528019&s=musical-instruments&sr=1-1 [Accessed February 12, 2020].

Appendix 1: CAD Model Illustrations

Figure 1: Top-down view

Figure 2: NE Isometric view

Appendix 2: Project Packaging Specifications

We are using plastic for the casing.

MATERIALS	ESTIMATED WEIGHT	ESTIMATED COST
PCB WITH COMPONENTS	*20g*	*$30*
CASING	*25g*	*Free with use of Purdue 3D printing resources*
MICRO USB CABLE	*50g*	*$7*
TOTAL	*95g*	*$37*

Appendix 3: PCB Footprint Layout

Estimated dimensions of PCB

5.5x7cm