Test Name	Success Criteria	Methodology	Status	Responsible Engineer(s)
Bluetooth receiver & DAC	Bluetooth receiver receives the audio signal from an external transmitter.	Bluetooth receiver will receive an input via bluetooth from a phone. The receiver output will be connected to a DAC to then output to a speaker.	*UNTESTED*	Nicole LoGiudice
ADC & Bluetooth transmitter	Bluetooth transmitter transmits the audio signal to a specified external receiver and it plays.	An ADC will have an analog signal input and an output connected to the bluetooth transmitter. The transmitter will be put into search mode to find all available receivers in the area. The specified receiver will be selected as the desired receiver.	*UNTESTED*	Nicole LoGiudice
Connectivity range	Bluetooth connectivity for input and output is at least 10 meters.	The GrAPE will be in the center of the input and output bluetooth devices. The two devices will start off right next to the GrAPE, but will be drawn farther away until they reach 10 meters.	*UNTESTED*	Full Team
Wireless connection stability	Bluetooth connectivity does not drop more than 1 time per 5 minutes.	Bluetooth will be tested 5 times. Each time, the GrAPE will be equally distanced in the middle from the phone and speaker.	*UNTESTED*	Full Team
Frequency channel selection	Each channel is able to manipulate its frequency and nearby frequencies without excessive disruption of neighboring channels. The channels can work in combination with each other and with multi-tone signals. The sliders frequency gain effects are uniform in nature across all 10 bands.	Each channel will be tested individually against its control frequency. If every channel responds with the ability to adjust its set frequency to a consistent gain magnitude higher and lower than feed amplitude, then the signals will be tested with mixed frequencies with the same expectation of results.	*UNTESTED*	Nathan Finley
Bandwidth	The full range of the tunable frequencies is 0-20kHz. A single channel has a standard deviation from base frequency in which frequencies outside of said standard deviation are not amplified past a certain gain.	The top and bottom channels will be tested in their gain manipulation of the top and bottom frequencies (0 and 20 kHz) to meet the specified amplitude requirements. Intermediate frequencies will also be tested in the bandwidth of their frequency manipulation.	*UNTESTED*	Nathan Finley
Display integration	The display shows a menu on a screen (potentially a LCD) and works concurrently with the bluetooth module on the GrAPE.	The display integration will be tested by checking if the display successfully shows a select menu where it displays the available Bluetooth devices to be connected to.	*UNTESTED*	Antonio Cardona & Nicole LoGiudice
User-controlled menu	The user-controlled menu allows the user to select and connect to a Bluetooth speaker. The interface has a minimum of 3 buttons: up, down (or left and right) and an enter button.	The menu will be tested by selecting a Bluetooth device on the display and checking if the GrAPE successfully connects to the selected Bluetooth speaker.	*UNTESTED*	Antonio Cardona
Size/dimensions	The GrAPE fits within an average sized backpack with pockets that completely zip.	The GrAPE will be placed within a backpack along with any external parts.	*UNTESTED*	Full Team
Housing material	The material does not interfere with the bluetooths' connection to meet the 10 meters requirement.	The GrAPE will be tested first through the 'Connectivity range' test without the housing. Once passed, the 'Connectivity range' test will be performed with the housing.	*UNTESTED*	Full Team
Input voltage (subsystems)	The required voltage levels for all subsystems is met.	Use multimeter to validate input voltage levels.	*UNTESTED*	Antonio Cardona
Rechargeable battery power supply	Rechargeable battery power supplies expected voltage levels according to its specifications.	User multimeter and oscilloscope to validate voltage and current levels.	*UNTESTED*	Antonio Cardona
Full system demo	The GrAPE accepts audio input from a smartphone device via Bluetooth and is able to connect to a speaker via Bluetooth and Aux. The equalizer has at least 10 frequency channels that can be adjusted by slidable knobs and the audio processing and filtering is analog. The GrAPE's design is small enough to fit into a backpack.	Team members will test the GrAPE with a smartphone device and play an audio signal (i.e a song) via Bluetooth through the equalizer onto a speaker via Bluetooth and Aux.	*UNTESTED*	Full Team