Nathan Cinocca PCBs

Signal ampllifier

A computer screen shot of a blueprint

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Filter

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Frequency Modulator

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Power Amplifier

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| Paragraph # | Test Name | Success Criteria | Methodology | Status | Responsible Engineer(s) |
| 13.2.1.1 | Total Harmonic Distortion | The output signal should have a total harmonic distortion less than or equal to 10% | Test the output total harmonic distortion at the output node of the radio with an oscilloscope | TESTED | Jacob Ralls |
| 13.2.1.2 | Frequency Match | The transmitted signal frequency and tuned demodulator frequency should be matched within 3 kHz | Measure the modulator frequency and demodulator frequency with an oscilloscope | TESTED | Full Team |
| 13.2.2.1 | Mass | Have the entire ultrasonic radio be less than or equal to 10 kilograms | Weigh all PCBs that make up the radio on a scale | TESTED | Full Team |
| 13.2.3.1.1 | Power Consumption | The maximum peak power of the system shall not exceed 4.5 watts | Use multimeter to check power consumption of ultrasonic radio | TESTED | Full Team |
| 13.2.3.1.2 | Input Voltage Level | The input voltage level for the ultrasonic radio shall be +5 VDC for the transmitter and +9 VDC for receiver | Use multimeter to check voltage levels of ultrasonic radio | TESTED | Full Team |
| 13.2.3.1.3 | Input Current Level | The input current for the ultrasonic radio shall not exceed 900 mA | Use multimeter to check current levels of ultrasonic radio | TESTED | Full Team |
| 13.2.3.1.4 | Voice Input | The ultrasonic radio shall take user voice input that operates from 100 Hz to 3 kHz | Test input microphone with different voice frequency recording within the 100 – 3kHz range | TESTED | Nathan Cinocca |
| 13.2.3.2.1 | Voice Output Frequency | The ultrasonic radio shall output the voice input at frequencies 100 Hz to 3 kHz | Test output speaker with different voice frequency recording within the 100 – 3kHz range | TESTED | Jacob Ralls |
| 13.2.3.2.2 | Voice Output Volume | The ultrasonic radio shall be heard from up to 15 meters away | Measure output volume in decibels to determine audible distance of output noise | TESTED | Jacob Ralls |
| 13.2.4.1 | Pressure | The ultrasonic radio may be able to operate at 1 atm of pressure | Use ultrasonic radio in a standard room with 1 atm of pressure | TESTED | Full Team |
| 13.2.4.2 | Thermal | The ultrasonic radio may be able to operate at thermal temperatures ranging from 55 degrees Fahrenheit to 95 degrees Fahrenheit | Use ultrasonic radio outside at different temperatures | TESTED | Full Team |
| 13.2.5.1 | Recovery | The Ultrasonic radio should provide a way to reset the entire system | Reset the system by unplugging power supply from both transmitter and receiver for 10 seconds to reset system | TESTED | Full Team |