Project IRIS

Description

We set out to develop a device that plugs into your phone and works with an app to communicate without cell phone service or WiFi. This would be useful if you are going on vacation to a cruise or service-less area outdoors and want to communicate with family or fellow travelers across long distances.

We implemented the hardware portion of this project by using a researched Xbee chip set that has the ability to broadcast signal approximately a mile away. This chip set was rigged to interface with the audio jack of a phone.

We implemented the software phase by programming a phone app, which is responsible for modulating and demodulating the signal and translating text into an audio signal for the audio jack output.

System

Approach

First, we built an app that would take user input and translate it into an audio signal that could be transmitted over radio waves.

Second, we used Everycircuit.com to simulate circuits to translate the signal from the phone into a signal that the Xbee transceivers can safely handle.

Third, we separated and soldered a cheap pair of headphones and mapped the wires to the rings of the headphone jack.

Fourth, we built and tested the circuit to verify the voltages and currents would be safe for the cell phone and transmitters.

Conclusion

The finished device shown allows for data transmission from a cell phone headphone jack to a radio transmitter. The signal was successfully received by the receiver Xbee.

This image shows the successful transmission from a cell phone to the output of the receiver. The Yellow line is the input signal and the blue line is the output from the receiver.

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