

Goal

- To make PlayStation 2 Wired Controllers able to communicate wirelessly with a PlayStation 2 console via FM modulation. Two transceiver systems at 900MHz are implemented for this project.

Motivations and Objectives

- Motivations
 - To implement RF design techniques practically
 - To reinforce and supplement design techniques learned
- Objectives
 - To make a PlayStation 2 Wireless Controller
 - To minimize lag and optimize the system after development

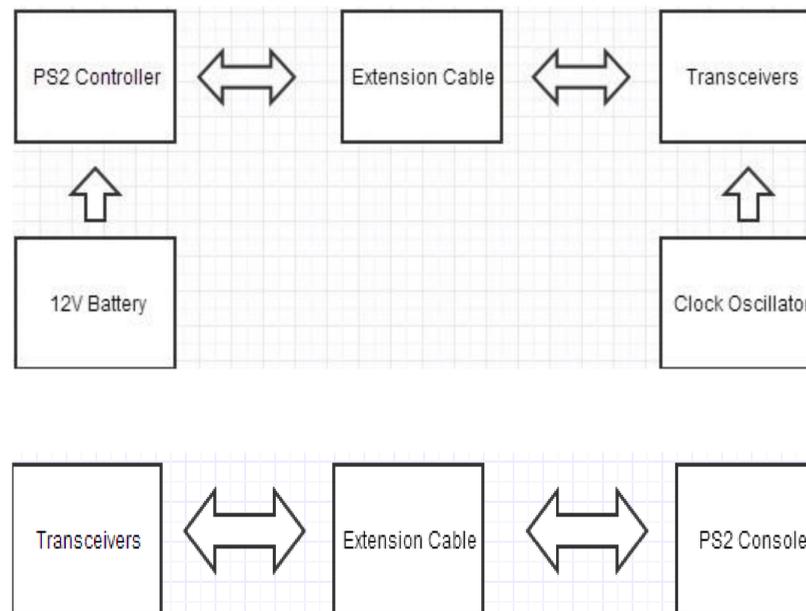
Project Challenges

- Having a RF transceiver system for each channel is costly and inefficient, as well as being far more prone to error.
- Using only two channels to transmit the data is difficult; RF transceivers on the market that are affordable cover up to 300kbps --- each wire uses 255kbps.
- Having the system be portable without much hassle is a challenge in itself too; it must be durable.

Acknowledgement

I would like to thank Steve Orbine for his help on several issues throughout the project; it helped streamline and simplify numerous procedures.

Methodology

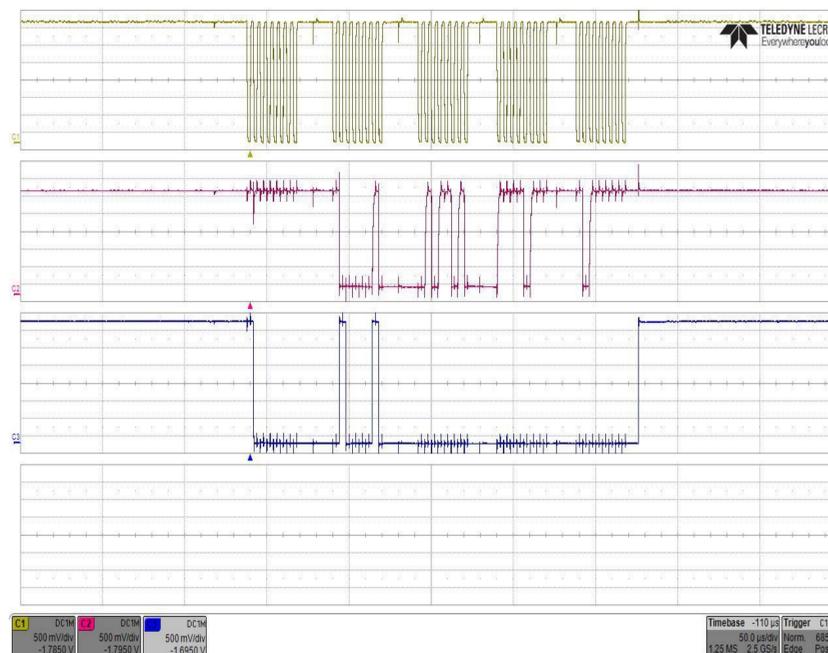


Frequency Modulation FDD System:

- Controller Side (Top) : Since the console provides power/ground and the clock for the system, each part of the system must be created locally.
- Console Side (Bottom) : The console must receive the acknowledge and data lines from the system.

Each end of the system transmits and receives data in a serial duplexing manner; one wireless channel transmits the data sends to the console, the second wireless controller vice versa. Frequency Division Duplexing is used to divide the two channels, with encoders and decoders used to get multiple wires onto a single wireless channel.

Results



The PlayStation2 system has 9 wires used within the system, 5 of which are mandatory of communication (ignoring power sources).

The signal on the left shows the clock, data and command signals from the PS2 from top to bottom respectively; the data rates for each line is roughly 255kbps. Each line idles high with active low digital signals.

- Data Line: This line feeds the button presses from the controller to the console; the buttons are input in the 4th/5th bytes after a 3 byte header.
- Command: This line feeds the console data to the controller --- this is used far less than the data line outside of vibrations for the controller and other similar data.

References

- [1] <http://store.curiousinventor.com/guides/PS2/> - A major guide for reverse engineering the inputs and serial duplexing of the PS2 hard-wired communication system.