Making a Wireless Controller
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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.

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.

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.

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

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.

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References