ECE4901 - Senior Design I
USB Controlled RF Switch
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Project Specifications

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Introduction

Phonon as a military subcontractor is required to extensively test all of their devices, which are delivered to the customer, to their exact specifications. Currently Phonon uses test set up which is based on obsolete technology, which makes it difficult to maintain and operate. Therefore Phonon wishes to develop a test set up control which will be enduring, easily expandable, and easy to operate.

Device which is to be designed and constructed will include logic control as well as power system which will be maintained through a USB interface. Our design specifications can be achieved through multiple means. The device will include an appropriate DC to DC converter, energy storage element and a control unit consisting of microcontroller and logic control. Particularly we specify more efficient means for accomplishing the desired task in the following specifications:

Technical specifications

- USB interface for desired 5VDC switches, power, and data transfer
- Step-up converter utilized for 28V switches
- Capacitors utilized to maintain 28V output
- 8-Bit Microcontroller for control of system
- Windows-based software utility for automatic and manual switching
- TTL Logic circuit to control switching of the system

Figure 1: System Schematics
Required devices:

To realize this device up to the specifications the following items will be required:

- High capacity capacitor
- Microcontroller
- Step up converter with DC isolation
- TTL Logic circuit