Next generation meteor radar receiver using an open hardware/software radio platform

*Ryan Seal and Julio Urbina
The Pennsylvania State University, University Park, PA, 16802

Interest in digital communication techniques has led to several recent open-hardware implementations; providing high performance hardware at very modest prices. The most popular of these implementations in use today is the Universal Software Radio Peripheral (USRP) board, which provides a complete digital receiver system compatible with the GNU Radio software platform. The system provides up to 4 input channels sampled at rates up to 64 MSPS with 12-bit precision. Data is transferred to a general purpose computer (GPC) using a USB 2.0 interface capable of continuous data collection at bandwidths up to 8 MHz. We present a technique to modify the existing USRP board to operate in a pulsed mode using an external trigger signal to control data collection; effectively increasing signal bandwidth. Additionally, software techniques used to improve system performance and provide the capability for real-time processing and data display will be given.