

Software defined radio application in a digital ionosonde

J. Huang , J. MacDougall

Dept. of Electrical and Computer Engineering, University of Western Ontario, London, Ontario, Canada (jhuang4@uwo.ca / Phone: +1 519 6612111 ext. 87438)

As a popular topic, software defined radio (SDR) has been developing during the last 10 years. We are implementing the newer type of Canadian Advanced Digital Ionosonde (CADI) based on software defined radio. This new system is to digitize the RF signals after a front-end low noise amplifier (LNA) and then performs digital signal processing for filtering, modulation and demodulation, gain control and correlation using software. The prototype system provides up to 30 MHz frequency range with a USB interface to a computer. With a flexible and low cost architecture, it is easy to implement multiply modulation schemes and increase functionalities. The supporting programming languages are Python and C ++.