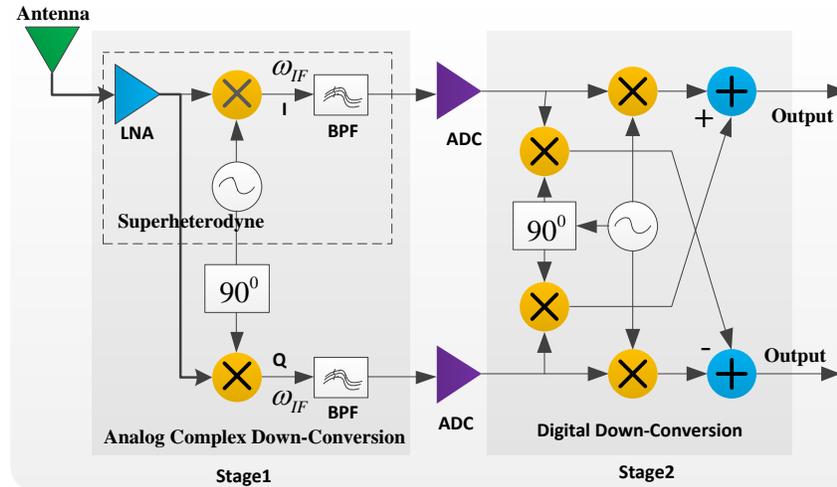


USRP-Based Flexible GNSS Signal Recording and Playback System

PI: Yu (Jade) Morton, Miami University

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USRP is a low IF architecture radio designed to allow general purpose computers or digital signal processors (DSP) to function as high bandwidth communication devices. It has gained much attention as a flexible wide-band low-cost transceiver platform that enables developers to build a wide range of systems with minimum effort. With a maximum sampling frequency of 50MHz and operating frequencies ranging from DC to 5.9GHz, a properly configured USRP2 is capable of capturing and transmitting all L band global navigation systems (GNSS) signals. Additionally, the device is equipped with a flexible data and control interface through a gigabit Ethernet port, making it ideal for field data collections experiments and research and development.

The USRP2-based GNSS transceiver is a very attractive option as we enter a new era of satellite-based navigation with the recent GPS modernization which included L2C, L5, and the planned L1C signals, the increasing number of Russian's GLONASS satellites and reformed signals, the emergence of European's Galileo and China's Compass constellations, and a multitude of regional and spaced-based augmentation systems. This project aims to utilize USRP2 to develop a flexible multi-constellation multi-frequency receiver and transmitter capable of recording and playback quality GPS L1, L2, L5, and GLONASS L1 and L2 signal RF samples for downstream processing.

Further Readings:

- [1] Peng, S., Y. Morton, "A USRP2-Based multi-constellation and multi-frequency GNSS software receiver for ionosphere scintillation studies," Proc. ION ITM, San Diego, CA, Jan. 2011.
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- [3] Vinande, E., M. Stratis, R. Di, R. Wolfarth, "A USRP2-Based Low Cost and Flexible GNSS Signal Recording and Playback System," JNC, Colorado Springs, CO, June 2012.