

RF Architecture for Software-Defined Radio: A *Motorola OPP Project*

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Abstract

Due to the ever increasing demand for wireless systems and services, wireless service providers and device manufacturers continue to find ways to flexibly and cost-effectively introduce new devices into the market. Software-defined radio (SDR), a communications device whose operation from the physical layer through higher-level protocol layers is principally defined in software using programmable hardware, can provide a framework to enable the continuous evolution of wireless systems.

In this work, we study the performance of a SDR system via computer simulation using a LabView platform. Specifically, we create a library of the basic reconfigurable hardware components required for each sub-section of the SDR transceiver. Then we identify the features of each component and the respective programmable parameters that make it desirable for digital software reconfiguration. We identify technology overlaps, protocol implications, and establish a database of transceiver components for analysis and consideration for a SDR transceiver.