IMPLEMENTATION OF SDR BASED RECEIVER USING FPGA AND RF MODULE

Abstract:

This report presents the development of a Software-defined Radio (SDR) system using a Field Programmable Gate Array (FPGA) alongside a specialized RF module. The FPGA boosts the processing capabilities, while the RF Board handles signal synthesis and filtering. Data transmission from the RF Board to the FPGA Board can be achieved through high-speed, full-duplex mode of communication. In this project we will be configuring the RF module using the FPGA. The received frequency band is dependent on the available FPGA and its operating frequency. The SDR system's adaptability lies in the reprogramming of these components for various functions such as modulation and filtering and relying on software tuning. The significance of the project is to use the versatility of FPGA based SDR systems in telecommunications and satellite communication applications. This approach signifies a shift towards more flexible, low-cost and reconfigurable radio systems, offering enhanced functionality and performance in modern communication environments.

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