

ABSTRACT

Innovations in the field of wireless communication is growing very rapidly in line with the behavior of modern societies that have high mobility, need the services that are flexible, easy access, high speed data transfer so as to facilitate any activities of its users. The needs of every user of any variety, than just voice, video, data transfer, up to a demanding streaming multimedia capabilities and reliability of the communication system used. One of the factors that affect the quality and speed of data transfer in wireless communications is modulation. Technological developments modulation allows data rate (data transfer rate) becomes faster, more resistant to noise (noise), to security (encryption) in order to secure data sent over the lead.

Implementation of digital modulator PSK (Phase Shift Keying Modulation) and QAM (Quadrature Amplitude Modulation) on FPGA is designed to simplify the design of a hardware by representing the input which are prepared using VHDL programming language. The input will be programmed logic gates contained in the FPGA into a circuit that functions as a digital modulator which can map the input bits into a modulator output that has been mapped in accordance with the coordinates of the constellation.

Expected results of the implementation are three types of digital modulator BPSK, QPSK and 16-QAM to be implemented on FPGA Xilinx Spartan-6 XC6SLX45 CSG324C, modulation type to be used can be selected by entering input on the programs implemented in the FPGA. In the design used input from laptop devices with UART interface and data types for input is ASCII 8 bit for later analysis simulation results modulation of the input to each modulator using Modelsim for simulation design and Chipscope for simulation system design implemented in the FPGA.

Keywords: BPSK, QPSK, 16-QAM, FPGA, VHDL, UART, ASCII.