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Abstract

This paper analyzes the performances of QPSK, GMSK and QAM modulation techniques using the GNU Radio software. These modulation techniques are used in most communications systems like cable modems, DSL modems, CDMA, 4G, Wi-Fi and WIMAX. A basic idea about Software Defined Radio (SDR) is also represented. SDR has the nature of modifying the system parameters without actually changing the hardware part and is very effectively used today. The implementation is done on the GNU Radio Companion. QPSK is very spectrally

efficient and is used in various cellular wireless standards such as GSM, CDMA, LTE, 802. 11 WLAN, 802. 16, WIMAX, Satellite and Cable TV applications. QPSK is noted for its power efficiency and robustness against phase noise. It is popular for both its easy implementation and resilience to noise. GMSK has high bandwidth efficiency and is also used for GSM. It is immune to amplitude variations and therefore more resilient to noise. QAM is used extensively as a modulation scheme for digital telecommunication systems. High spectral efficiencies for QAM are achieved by setting a suitable size for the constellation, limited only by the noise level and linearity of the communications channel. The various performances for these modulation schemes are observed based on their constellation plots and also on their waveforms.

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Index Terms

Computer Science

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Keywords

Sdr Gnu Radio Qpsk Gmsk Qam