0-7803-7406-1/01/$17.00©2001 IEEE

Efficient Implementation Of Quadrature Amplitude Modulation Transmitters

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ABSTRACT

Quadrature Amplitude Modulation (QAM) is widely used in many digital communication systems such as high speed modems. Increasing the data rate by using larger constellations has brought a revolution in digital communication systems. Consequently, there is a need for efficient techniques of implementation of QAM, both in software and the hardware. This article presents an efficient technique for implementation of QAM transmitters for any sampling rate. Moreover, this approach isolates the design of the major blocks of the transmitter from the operating frequency of the digital to analog converter. The computational gain becomes substantial when a certain desirable set of carrier frequency and data rate is encountered. The technique has been implemented in software and the results are presented. The approach can be generalized for any kind of QAM transmitter.