International Journal on Recent Researches In Science, Engineering & Technology
(Division of Telecommunication Engineering)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. It is an absolutely free (No processing charges, No publishing charges etc) Journal Indexed in JIR, DIIF and SJIF.
Research Paper
Available online at: www.jrrset.com
Chief Editor : Dr. M.Narayana Rao, Ph.D., Rtd. Professor, NIT, Trichy.

ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
Volume 3, Issue 4, April 2015.
JIR IF : 2.54
DIIF IF : 1.46
SJIF IF : 1.329

BER estimation of OFDM system with adaptive modulation in different channels

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Abstract: Orthogonal Frequency Division Multiplexing (OFDM) is a multicarrier transmission scheme. OFDM transmits data by using a large number of narrow bandwidth carriers. In an OFDM transmission system, each subcarrier is attenuated individually under the frequency-selective, fast fading channel and if the same fixed transmission scheme is used for all OFDM subcarriers it results in highest attenuation and hence poor performance. The purpose of this paper is to introduce the adaptive modulation to get an understanding of the differences between fixed and adaptive modulations schemes. Here adaptive modulation is implemented by dividing whole subcarriers into blocks of adjacent subcarriers. Based on calculated average instantaneous signal to noise (SNR) same modulation scheme is applied to all subcarriers of same block. Here average bit error rate (BER) performance of OFDM system under fixed modulation and adaptive modulation is observed for various channels. Average BER performance is observed for different IFFT sizes. The simulation results show that BER performance of OFDM system using adaptive modulation is better than fixed modulation and the same will be observed for different channels.