Study and Implementation of Energy Detection Algorithm for WLAN and WiMAX

Nuka Abhisek¹ and B Ujwala²
¹² Department of Electronics & Communication Engineering,
¹²SR International Institute of Technology, Hyderabad, Telangana, India.
¹abhiseknuka02@gmail.com

ABSTRACT

The electromagnetic spectrum is a natural resource. The current spectrum licensing scheme is unable to accommodate rapidly growing demand in wireless communication due the static spectrum allocation policies. This allocation leads to increase in spectrum scarcity problem. Cognitive radio (CR) technology is an advanced wireless radio design which aims to increase spectrum utilization by identifying unused and under-utilized spectrum in dynamically changing environments. But in low signal to noise ratio (SNR) conditions, its performance is weak, which can be improved by signal processing algorithm. As energy detection is simple and easily implemented in hardware, so it is preferred in emerging standard like IEEE 802.22, In this paper energy detection technique is applied for WLAN and WiMAX under BPSK modulation method and Monte-Carlo simulations are performed to test the performance of received signals in WLAN and WiMAX. Following to this work VLSI implementation of spectrum sensing using energy detection have been implemented for pseudo random sequence generated signal and BPSK modulates signal. OFDM is used as modulation standard and it is implemented in VLSI for WLAN and WiMAX.