

## BER Analysis of Energy Detection Spectrum Sensing in Cognitive Radio Using GNU Radio

**Authors :** B. Siva Kumar Reddy, B. Lakshmi

**Abstract :** Cognitive Radio is a turning out technology that empowers viable usage of the spectrum. Energy Detector-based Sensing is the most broadly utilized spectrum sensing strategy. Besides, it is a lot of generic as receivers does not like any information on the primary user's signals, channel data, of even the sort of modulation. This paper puts forth the execution of energy detection sensing for AM (Amplitude Modulated) signal at 710 KHz, FM (Frequency Modulated) signal at 103.45 MHz (local station frequency), Wi-Fi signal at 2.4 GHz and WiMAX signals at 6 GHz. The OFDM/OFDMA based WiMAX physical layer with convolutional channel coding is actualized utilizing USRP N210 (Universal Software Radio Peripheral) and GNU Radio based Software Defined Radio (SDR). Test outcomes demonstrated the BER (Bit Error Rate) augmentation with channel noise and BER execution is dissected for different  $E_b/N_0$  (the energy per bit to noise power spectral density ratio) values.

**Keywords :** BER, Cognitive Radio, GNU Radio, OFDM, SDR, WiMAX

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020