

Monitoring of Spectrum Usage and Signal Identification Using Cognitive Radio

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Abstract : The monitoring of spectrum usage and signal identification, using cognitive radio, is done to identify frequencies that are vacant for reuse. It has been established that 'internet of things' device uses secondary frequency which is free, thereby facing the challenge of interference from other users, where some primary frequencies are not being utilised. The design was done by analysing a specific frequency spectrum, checking if all the frequency stations that range from 87.5-108 MHz are presently being used in Benin City, Edo State, Nigeria. From the results, it was noticed that by using Software Defined Radio/Simulink, we were able to identify vacant frequencies in the range of frequency under consideration. Also, we were able to use the significance of energy detection threshold to reuse this vacant frequency spectrum, when the cognitive radio displays a zero output (that is decision H₀), meaning that the channel is unoccupied. Hence, the analysis was able to find the spectrum hole and identify how it can be reused.

Keywords : spectrum, interference, telecommunication, cognitive radio, frequency

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