UWB Open Spectrum Access for a Smart Software Radio

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Abstract : In comparison to systems that are typically designed to provide capabilities over a narrow frequency range through hardware elements, the next generation cognitive radios are intended to implement a broader range of capabilities through efficient spectrum exploitation. This offers the user the promise of greater flexibility, seamless roaming possible on different networks, countries, frequencies, etc. It requires true paradigm shift i.e., liberalization over a wide band of spectrum as well as a growth path to more and greater capability. This work contributes towards the design and implementation of an open spectrum access (OSA) feature to unlicensed users thus offering a frequency agile radio platform that is capable of performing spectrum sensing over a wideband. Thus, an ultra-wideband (UWB) radio, which has the intelligence of spectrum sensing only, unlike the cognitive radio with complete intelligence, is named as a Smart Software Radio (SSR). The spectrum sensing mechanism is implemented based on energy detection. Simulation results show the accuracy and validity of this method.

Keywords : cognitive radio, energy detection, software radio, spectrum sensing
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