Abstract

In recent years, there is rapid growth of wireless multimedia applications which demands more radio spectral resources and requirement of data transmission like video using the same medium which is used for voice transmission. The fixed spectrum assignment policy is not giving efficient spectrum utilization due to which a great portion of the licensed spectrum is under-utilized. This problem of spectrum efficiency can be resolved using the concept of cognitive radio (CR). CR involves activity like sensing and adapting the operating parameters according to the interactions with the surrounding radio environment. So, detecting spectrum white space, selecting the best frequency band and adjusting its radio operating parameters accordingly are identified as the key aspects of a CR which also needs adaptive frequency variations of transmitter frequency as per band availability. So to support the multimedia application along with adaptive frequency variations generates a need for deployment of new devices which supports transmission of increased traffic and changes in hardware. To carry out the video transmissions desires to do several changes in the hardware. Thus to address this problem Software Define Radio (SDR) is used. SDR is a platform which employs a
reconfigurable hardware that may be programmed with open source system GNU Radio software which functions under different wireless standards. Use of SDR replaces modifications in hardware structure by the changes in software only. Till now performance of the video transmission along with adaptive frequency variations has been analyzed on many platforms. This paper considers the design of GMSK based GNU Radio Companion (GRC)-flow graphs to transmit and receive video at different frequencies. Flexibility and cost effectiveness are main motive for using GNU Radio along with SDR-LAB. This paper focuses on the implementation of adaptive frequency variations during transfer of real time video transmission. The results given in this paper are taken from the experiment performed in laboratory on SDR-LAB kits with GNU Radio.

The effective implementation of the proposed methods is verified by adaptive frequency variations throughout the transmission and reception of the real time video signal which is key aspect required for CR environment.

References

7. GNU radio introduction: [online] https://www.gnuradio.org/about/

Index Terms

Computer Science       Wireless
Keywords

Adaptive frequency variations; SDR; Cognitive radio; GNU radio