Assessment of Dynamic Spectrum Allocation Technique in Heterogeneous Network

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Abstract

Mobile services are becoming the priority of access to a growing trend of online services. As services use higher-quality images and video, an increase of wireless network capacity is required. In this case, spectrum is a way to go. Even though capacity is important, there are other factors as well, for example, coverage, flexibility and resilience. Dynamic spectrum access technology allows higher transmission power according to location and license sharing with licensed users. Using the OFDMA technique, the spectrum efficiency is significantly improved. This paper explains the findings that are obtained by two different researches that are related to our research title. The first paper is about the basic OFDM structure using GNU Radio software and implemented using USRP hardware. The second research is about the implementation of Dynamic Resource Allocation for LTE using GNU Radio. The first research explained the advantages and disadvantages of OFDM configuration. The second research explained more about the implementation of Dynamic Resource Allocation in the uplink and downlink configuration, and are tested using three algorithms: Max-sum, Max-min and Max-min with adaptive power. All the results are obtained from GNU Radio. However, the results are not implemented using USRP because of the short amount of time. Based on these two researches, we elaborated the advantages and disadvantages of the proposed designs and develop our own design to mitigate the cross-tier interferance in multi-tier MIMO.

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