ABSTRACT

DYNAMIC SPECTRUM ACCESS (DSA) WITH SPECTRUM SENSING BASED ON CHANNEL AND BANDWIDTH DETECTION FOR SPECTRUM EFFICIENCY

By

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The fast development of technology and the increase of service access demand affect the increase of spectrum requirement also increases. In the Static Spectrum Access (SSA) mechanism, the requirement is not equal to available spectrum allocation, thus there are channels which are not used (idle) which allow the spectrum to be more efficiently allocated. The method to overcome the scarcity is by applying Dynamic Spectrum Access (DSA) mechanism. Spectrum Sensing mechanism based on channel and bandwidth detection is conducted in this research.

In this research, the idle channel determination was determined by channel and bandwidth detection algorithm. The value of threshold power (Pth) is compared to the value of noise power (Pnoise). If threshold power is greater than noise power, idle channel will be declared as detected, otherwise channel idle will not be detected.

The result of calculation show that idle channel is detected on the overall bandwidth if it is detected by another user at a low bit rate. 5 MHz bandwidth has the availability of idle channel greater than 3 MHz, and 1.4 MHz. Detection of idle channel at a bandwidth makes use of spectrum to be more efficient. The user maximum distance to detect the idle channel is as far as 250 meter (n=3) and 15 meter (n=4).

Keywords: Spectrum Efficiency, DSA, idle channel, spectrum sensing.