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Dynamic spectrum management: an impact on EW systems

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Autorzy słownie
Gajewski Piotr, Łopatka Jerzy

Autorzy
Suchański Marek

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Abstract: Rapid evolution of wireless systems caused an enormous growth of data streams transmitted through the networks and, as a consequence, an accompanying demand concerning spectrum resources (SR). An avoidance of advisable disturbances is one of the main demands in military communications. To solve the interference problems, dynamic spectrum management (DSM) techniques can be used. Two main techniques are possible: centralized Coordinated Dynamic Spectrum

Access (CDSA) and distributed Opportunistic Spectrum Access (OSA). CDSA enables the wireless networks planning automation, and systems dynamic reaction to random changes of Radio Environment (RE). For OSA, cognitive radio (CR) is the most promising technology that enables avoidance of interference with the other spectrum users due to CR's transmission parameters adaptation to the current radio situation, according to predefined Radio Policies rules. If DSM techniques are used, the inherent changes in EW systems are also needed. On one hand, new techniques of jamming should be elaborated, on the other hand, the rules and protocols of cooperation between communication network and EW systems should be developed.

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