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Selected Methods of Protecting Wireless Communications Against Interferences

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Abstract: Rapid development of advanced military command and control systems dynamically increases the demand for the speed of data transmission by radio links. One of the ways to solve the problem of limited capacity of military wireless systems is the use of broadband radios. The broadband radio has got unquestionable advantages, such as

increased system throughput in comparison with the narrowband radio. They also have some limitations, e.g. they offer smaller ranges, while working in wideband mode. Moreover, high transmitter activity associated with signal broadcasting makes it easier to detect radio emission by the opponent. The article discusses the current status of work carried out in NATO working groups on the definition of the TRANSEC (Transmission Security) function and how it is implemented in radios. In order to immunize the radio against intentional interferences, the idea of coordinated dynamic spectrum access based on the infrastructure of the frequency broker is presented. An exemplary way of implementing the transmission security function in demonstrator of cognitive radio (based on R-450C radios) and the basic results obtained experimentally are presented.

Keywords: WBWF, NBWF, Cognitive Radio, SDR, CSMA, FSO/RF

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