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The evolution of transmission security functions in modern military wideband radios

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Abstract: Rapid development of advanced military command and control systems results in a dynamic growth in demand for data rate. One of the methods that make it possible to deal with the problem of limited capacity of military wireless systems is the use of broadband radios. Another one is the increase in the capacity of narrowband radios by implementing advanced modulation systems. Apart from remarkable

benefits, such as the increase in system bit rate, there are also certain limitations since such radios are more sensitive to radio-electronic countermeasures, and the operation in the broad band makes it easier for the enemy to detect the radio emission. In such a situation, it is essential to define again and implement the transmission security functions into modern radios consistently. In this article, some current NATO activities are discussed, regarding the definitions of transmission security functions and the way of implementing them in radios, while paying special attention to a new element, that is to AIE radio cryptography (On Air Encryption). In the paper, the authors present an exemplary implementation of the functions in the Cognitive Radio Demonstrator using R-450C radio, the results of the examinations as well as the conclusions.

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