

Noise Immunity of Data Transfer Channels in Cooperative Observation Systems: Comparative Analysis

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Abstract—The paper compares the noise immunity of the existing data channel in of cooperative surveillance systems, which is based on the use of a positional code, with a proposed data transfer method, which applies the time interval coding of transmitted data and is implemented on the basis of non-synchronous and asynchronous networks of observation systems. It is shown that the proposed method of data transfer makes it possible to reduce the response signal flow intensity in cooperative surveillance systems enabling a decrease in the level of intra-system interference in the response channel and, as a consequence, an improvement improve the noise immunity of the data channel in cooperative surveillance systems. This excludes the unauthorized use of aircraft transponders by any interested party either for obtaining information or for violating its integrity and eliminates the problem of the carrying capacity of aircraft transponders in the considered surveillance systems, and also excludes the unauthorized use of aircraft transponders by any interested party either for obtaining information or for violating its integrity.

Keywords—noise interference; cooperative surveillance systems; intra-system interference; data channel; secondary surveillance radar; cooperative observation systems.

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