Assessing SSR Relative Data Capacity

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***Abstract*—Secondary Surveillance Radars are widely used in many aspects of users' information support, such as air object recognition and radio beacon tracking. The study considers a two-channel data transmission system as an SSR model and assesses its relative data capacity subject to intentional (correlated and uncorrelated) and intra-system interference as well as fluctuation (masking effect) noise in the request and response channels. It is shown that the aircraft transponder design built on the principles of a single-channel queuing system with denial of service has a significant impact on Secondary Surveillance Radar relative data capacity and the information security of both the aircraft transponder and the entire Secondary Surveillance Radar.**

Keywords—secondary surveillance radar, air traffic control, air object, aircraft transponder, cooperative surveillance systems, intra-system interference, identification friend or foe, information support.

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