Analysis of the Impact of Interference on the Time Position of Signals in Requesting Airspace Observation Systems

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***Abstract*—In the presented work, the analysis of the influence of interference and accidental loss of the received response signals due to the final availability factor of the aircraft responder of the airspace surveillance requesting systems on the time position of the decoded signals is carried out. It was shown that a decrease in the readiness factor of an aircraft responder, as well as the probability of detecting single pulses of the used response signals in requesting radar systems for observing the airspace, leads to an increase in both the delay of the output pulses and to an increase in the magnitude of the dispersion. The method of decoding response signals with inter-period pre-processing of response signals is more preferable due to the fact that it has both a shorter delay time and a variance in the estimation of the delay time in comparison with the method of decoding with subsequent inter-period processing of the received signals.**

Keywords—Airspace Control Systems (ACS), Air Traffic Control (ATC), Secondary Surveillance Radar (SSR), Identification Friend or Foe (IFF), Air object (AO).

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