

Interference immunity of aircraft responders in secondary surveillance radars

I.V. Svyd

Dept. Radiotechnologies Information and Communication Systems
Kharkiv National University of Radio Electronics, KNURE
Ukraine, Kharkiv
irynd.svyd@nure.ua

G.E. Zavolodko

Department of Information Systems
National Technical University «KhPI», NTU «KhPI»
Ukraine, Kharkiv
ann.zavolodko@gmail.com

I.I. Obod

Dept. Radiotechnologies Information and Communication Systems
Kharkiv National University of Radio Electronics, KNURE
Ukraine, Kharkiv
prof.obod@gmail.com

O.S. Maltsev

Dept. Radiotechnologies Information and Communication Systems
Kharkiv National University of Radio Electronics, KNURE
Ukraine, Kharkiv
aleksandr.maltsev@nure.ua

Abstract—The work shows the method of interference immunity estimation of airborne secondary security radar responders as open one-channel queuing systems with failures. It considers the presence of unintentional (intrasystem) and deliberate (correlated and uncorrelated) interference in the request channel when servicing the request signals of imitating-stable mode and imitating-unstable mode. It is shown that the absence of spatial and temporal differences between the request signals and deliberate correlated interference leads to a significant decrease in interference immunity of aircraft responders and, as a result, to a decrease in the quality indicators of the querying identification systems in general.

Keywords—Identification Friend or Foe; aircraft responder; Interference immunity.

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