

# Comparative Quality Analysis of the Air Objects Detection by the Secondary Surveillance Radar

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**Abstract**—This paper presents a comparative quality analysis of the air objects detection of the Secondary Surveillance Radar (SSR). Two structures for processing the coordinate codes of response signals, taking into account the effect of the aircraft responder availability factor, are compared. The impacts of fluctuation and impulse noise in the response channel also are taken into account. It is shown that the processing of received signals of the coordinate code with preliminary inter-period processing is more preferable, being compared with the current subsequent inter-period processing of the coordinate code. The quality of detection of air objects is improved by reducing the influence of fluctuation and impulse noise in the response channel.

**Keywords**—Secondary Surveillance Radar (SSR), probability of airborne objects detecting, coordinate code, response signal, aircraft responder availability factor.

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