

Conceptual Form of Information Subsystem of Antiaircraft Guided Missile of Promising AMS

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Abstract—It is considered an approach to development a form of information subsystem of self-guided antiaircraft controlled missiles (ACM) of promising antiaircraft missile systems (AMS). Author's viewpoint about mentioned problem is based on long experience of theoretical researches in this application domain and development works of integrated homing heads (HH).

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Last time intensive technical progress in all technology developed countries all over the world has resulted in fundamental changes of electronic warfare conception in course of operations conducting, appearing new aircraft systems of individual defense, essential decrease of aircraft visibility practically in all applied electromagnetic bands, wide utilization of complex counteraction (target manoeuvre, interferences production, fire resistance, etc).

In such cases the efficiency of existing AMS is extremely low. The main factors of this are following: minimal radiolocation (RL) and infra red (IR) visibility of current-technology promising aircrafts, high density of masking and imitating RL-interferences, a great amount of false RL-targets of aircraft location, imitating radiolocation, trajectory and tactical sign of real aircraft, aircraft self-cover by RL, IR and combined traps (shooting, towed, dropped, autonomous flying), that do not decrease an aircraft performance, development of aviation systems of missile attack prevention, providing detection type and all moving parameters of ACM, that allows flight computer to choose the best way of counteraction.

One of directions of AMS development is self-guided ACM system perfection especially for AMS for up-to-date aircrafts damage in case of complex counteraction.

The purpose of the paper is to define (conceptual level) possible form of information subsystem of self-guided ACM of promising AMS.

The analysis of current-technology promising aircrafts and electronic warfare technical performances shows that the main difficulty of the task of target damage by self-guided missile in case of mentioned above counteractions is corresponding dataware of self-guided system, in particular information about coordinates and movement characteristics of shot target with required accuracy and also about characteristics, providing its detection from target group, its selection and recognizing in case of interferences (including wide application of RL, IR and combined traps).

At that, for adequate efficiency of self-guided system achievement the informational redundancy is necessary. The informational redundancy is a presence in the system more information than it is necessary to solve their main task in ideal conditions (i.e. in case of counteraction absence). Moreover, it is necessary to find new methods of different type location channels interconnecting and to develop new algorithms of location information processing, when HH of ACM is operating in mentioned above conditions.

Conducted researches show that cardinal way of information redundancy achievement of self-guided systems of ACM in case of counteraction is reasonable interconnection of information channels of the same physical type (spatial, temporal, multichannel frequency) and also location channels of different physical type into one integral information unit of board target coordinator.

In interconnected system there is not only informational, but also structural redundancy, because of location channels. The structural redundancy means that the same coordinates and parameters of target movement are measured by different channels or devices. In such system essential growth of noise immunity and hiding (because of passive location channels utilization) is possible. Moreover, reliability of such systems growths essentially (because of generalized reserving in the system). Developers of new and promising HH of ACM analyze different variants of combined and interconnected HH of ACM: