

SIMULATION ON-BOARD RADIO LOCATION SYSTEM (BRLS)

The BRLS – is the radio-location system based on the flight object of difference classes. The main idea of BRLS is obtained radio-location information (RLI) about air-,space-, and ground objects (targets), including adverse weather conditions and the absence of vision contact with object. The structure of BRLS consists of one or more antennas, one or more transmitters, receiver, processor (device) for processing radar signals and radar data, the indicator on the cathode-ray tube and other. RLI is extracted either from the echo radio-signals resulting from the reflection of radio waves from an object irradiated with radar sounding signals or radio signals from radar, reradiated active device located at the object. BRLS can be combined with various methods of separating RLI. The processor output data post to the indicator and to the on-board computer for farther usage.

BRLS controlled by the crew or onboard computer system. According to the task the BRLS sub-classified on probe, navigation, panoramic, ground surface observe.

The main characteristics of BRLS are the range of action, and the review of the sector of space and searching for targets, accuracy target coordinates measurement, the number of simultaneously processed purposes, immunity of noise, electromagnetic compatibility (the ability to perform the given functions, with the possible influence of electromagnetic part as onboard or external electronic systems), weight, dimensions, reliability, power consumption, maintainability, etc.

According to specific features of BRLS, was made simulation program with special algorithm of BRLS at the carrier, flight object (FO), with radar-data processing signal and probability of detecting targets according to the threshold of, sensitivity and identification which depends on local area objects (surface) and specific targets criterion, such as size, surface, made material, and motion the target according to the radar carrier. So program is simulated block-model for testing BRLS and RLI processing as the part of the search system on the specific class of carrier, and get conclusion according to the sensitivity of BRLS and specific goals of it's usage and can be used for air-training systems.

Simulation program is visualized and subdivided into four sub-screens. At top simulate the screen of radar with identified local targets (left), and local map topology with carrier movement (right); At bellow view of the BRLS carrier (left) , and carrier flexible characteristics as speed, velocity and so on.