

SURFACE MOVEMENT RADAR "ALCOR"

PURPOSE

"ALCOR" X-band Solid-State Surface Movement Surveillance Radar (SMR) is intended for monitoring and control of movement of aircraft, special purpose vehicles, technical aids and other objects in aerodrome movement area (maneuvering area and apron, runway, taxiways and aircraft parking areas).

SMR operates both in stand-alone mode with output of data to controller's workstation, and as the part of advanced surface movement guidance and control systems (A-SMGCS).

COMPOSITION OF "ALCOR" SMR

- » antenna module comprising linear antenna array and the pedestal;
- » equipment cabinet containing transmitting-receiving equipment, processing equipment, means of interface with communication links, as well as power supply and rotation control systems;
 - » waveguide section;
 - » service workstation;
 - » uninterruptible power supply source (UPS).

"ALCOR" SMR ENSURES THE FOLLOWING

- » all-round surveillance of aerodrome movement area adjacent to SMR stand-point;
- » detection of ground objects within SMR coverage;
- » measurement of coordinates of the objects detected in horizontal plane;
- » transfer of object coordinates to the users including transfer into A-SMGCS equipment.

BASIC FUNCTIONAL CAPABILITIES OF INFORMATION PROCESSING AND DISPLAYING OF SMR "ALCOR"

- » stabilization of false alarms;
- » manual and automatic adjustment of the threshold of signal detection in range;
- » automatic and manual target lock-in and target tracking initiation;
- » manual reset of radar target tracking;



- » suppression of spurious reflections including unnecessary ones from the objects in areas specified using the maps with resolution of not worse than 3m;
 - » radiation blocking in the sectors specified with resolution of not worse than 1 degree;
 - » signal averaging for adjacent soundings (with staggering) and for scans;
 - » squint-effect processing;
 - » displaying of data on service monitor, and on the controller's workstation monitor as well in case of stand-alone operation;
 - » capability of entering map graphic data and coordinates of aerodrome objects;
 - » smooth scaling and image off-centering;
 - » high-quality displaying of data on colour monitors with a screen diagonal of not less than 43cm (17 inches) and resolution of not less than 1280 × 1024 pixels;
 - » surveillance on the monitors of airfield situation at illumination of up to 1000 lx in ground plane;
 - » specific adjustment of brightness of target symbols and of underlying surface displaying;
 - » selection of coloring scheme of situation displaying;
 - » capability of manual activation of identification indexes into a target label.

BASIC SPECIFICATIONS OF SMR "ALCOR"

Frequency band	X
Coverage:	
» In range	90-5000 m
» In azimuth	360°
Transmitter type and peak power	solid-state, 600 W
Radiation polarization	circular, horizontal
Antenna rotation period	1 s
Quantization of echo-signals	500 MHz, 14 bits
Width of sounding signals:	
» Narrow pulse mode	20 ns
» Wide pulse mode	5 μ s
Maximal detection range for a target with RCS of 1m ² and rain intensity of 16 mm/h	not less than 6000 m
Accuracy of coordinate measurement for raw video and target marks	not worse than 7.5 m
Resolution:	
In azimuth and range at the distance of 2000m from the antenna stand-point	not worse than 15 m
Antenna type:	
» Type	antenna array
Overall dimensions of the antenna system (W × H × D), mm:	6560 × 410 × 637
Beam width of the antenna directional pattern (horizontal-vertical)	0.36°-10°
Gain	38 dB

