



Groza-S

counter-UAV electronic warfare station

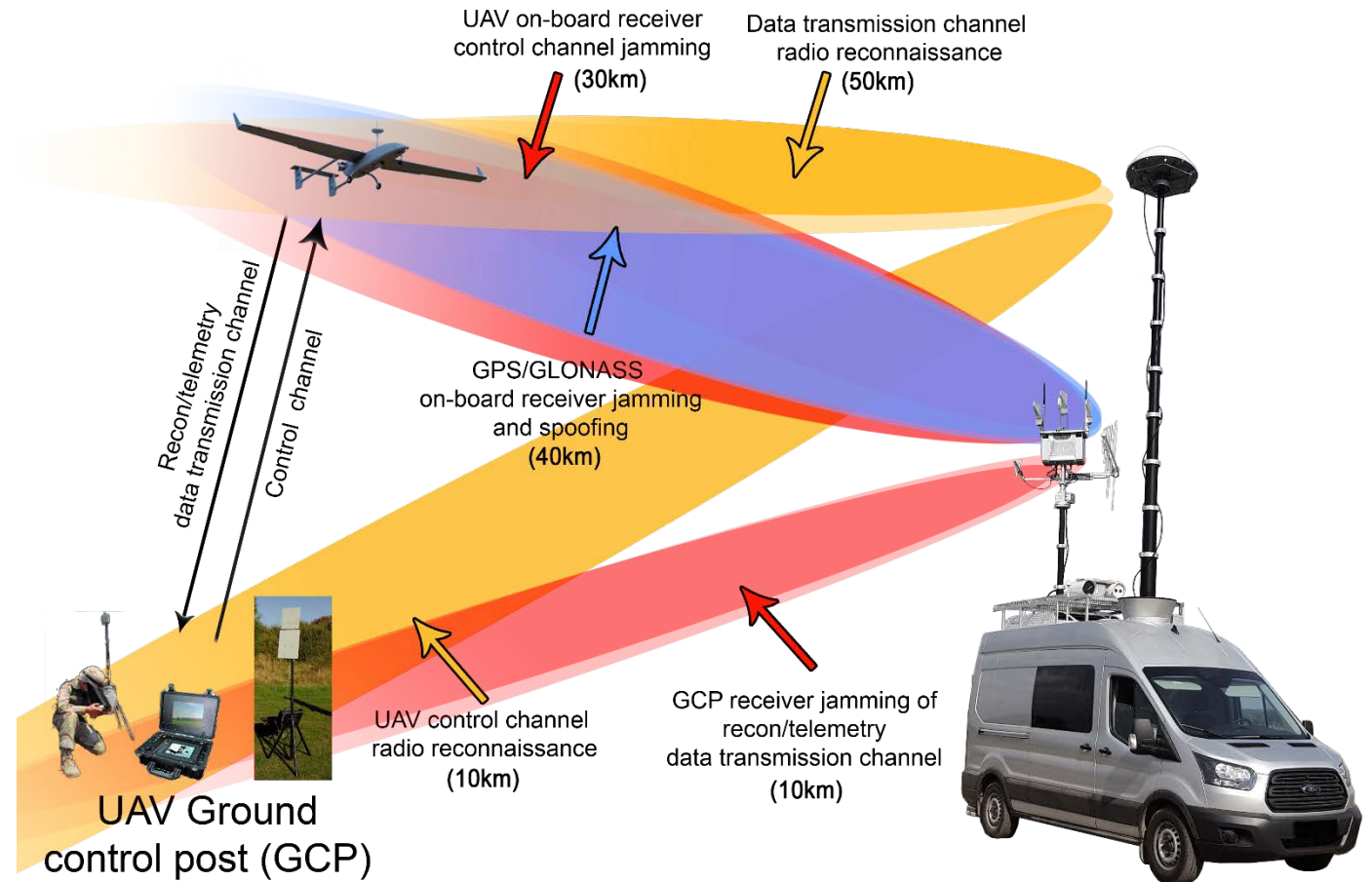
Designation

Detection, direction-finding, positioning and incapacitation of unmanned aerial vehicles (UAV) by electronic countermeasures (ECM).

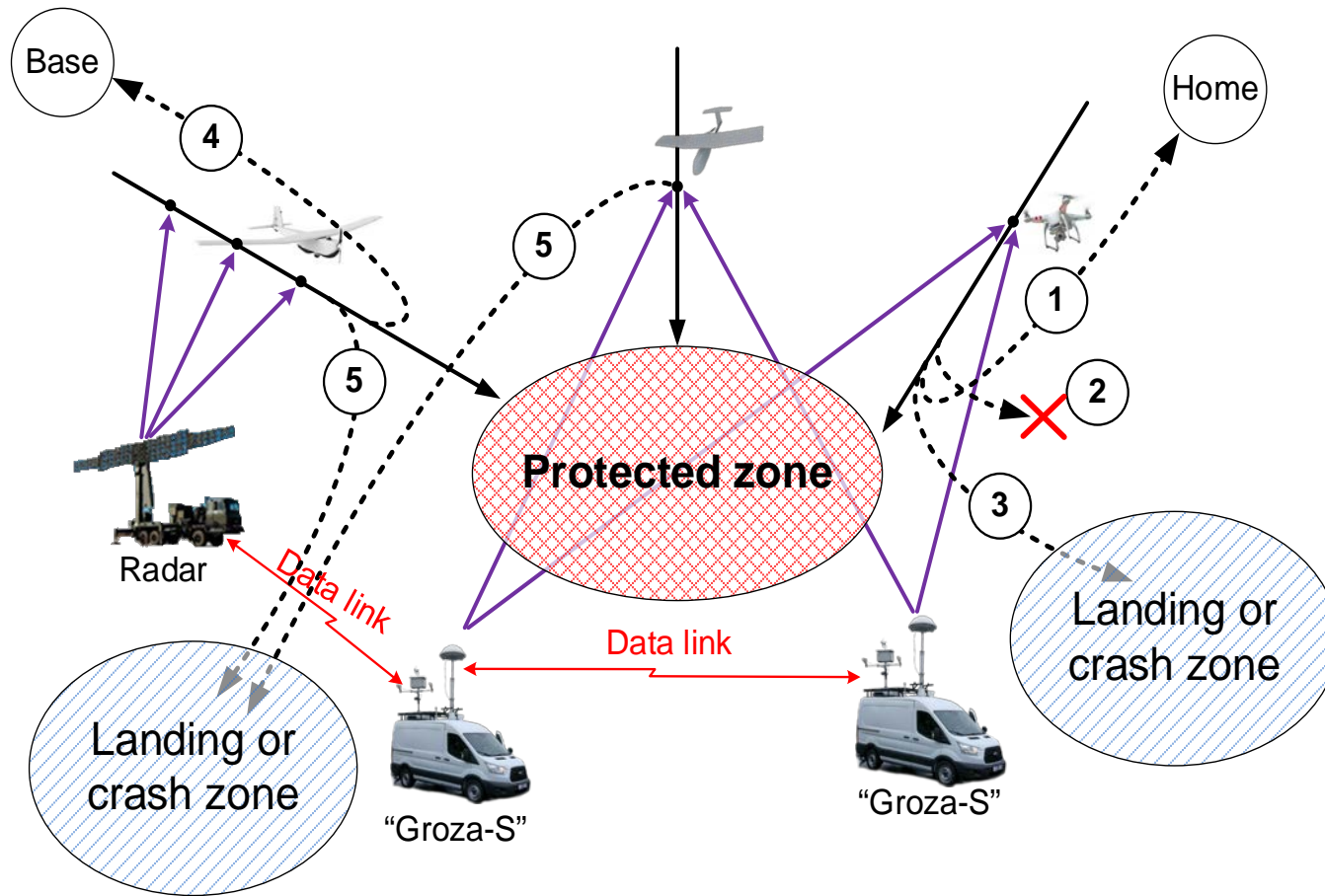


Capabilities

- detecting and tracking UAVs by radiation of their on-board transmitters (“downlink”: UAV – ground control post);
- detecting and positioning the UAV ground control post (“uplink”: ground control post–UAV);
- plotting locations of the UAV and ground control post on an electronic map of the terrain;
- “uplink” and “downlink” communication jamming;
- jamming GPS, GLONASS, BeiDou, GALILEO navigation receivers;
- deception (spoofing) of GPS navigation receivers, deflecting UAVs from their flight routes;
- observation and tracking of UAVs in the near zone using an electro-optical suite (option).



Techniques and effectiveness of employment



- 1 When jamming uplink, multicopter will land or flight «home»
- 2 When jamming uplink and GPS/GLONASS systems, multicopter will crash
- 3 When jamming uplink and GLONASS systems, spoofing GPS system *), multicopter will fly to the designated zone and crash
- 4 When jamming uplink and GLONASS systems, UAV will return to base using INS
- 5 When jamming uplink and GLONASS systems, spoofing GPS system, UAV will fly to the designated zone and crash

*) In spoofing, the "Groza-S" automatically, based on computing the UAV range, varies power of the emitted false GPS signal. Computation of the range is performed using the coordinates coming to the station from external radar, or coordinates computed based on cooperative work of two "Groza-S" stations (triangulation using two target bearings from two stations)

Primary advantages

- all-weather round-the-clock UAV detection and direction-finding channel using emissions from UAV on-board transmitters; capability of UAV positioning and UAV flight trajectory plotting when two “Groza-S” stations work in a mated pair;
- integrating three UAV detection, recognition and tracking channels (detector/direction-finder, TV module, thermal imaging module) when the station is equipped with HVS electro-optical monitoring complex (optional);
- wide frequency band for UAV-to-GCP control channel detection and jamming (uplink); detecting and jamming data transfer from UAV (downlink) – from 100 MHz to 6 GHz – covering all possible frequency links (uplinks and downlinks); great emission power provides for greater jamming range;
- capability for jamming GPS and GLONASS navigation systems by operator’s choice or both systems simultaneously;
- capability for spoofing GPS navigation receiver (while simultaneously jamming GLONASS signals’ reception) is the function that is not provided by any other manufacturer worldwide. The capability allows for pulling UAV off the protected zone to the other zone assigned by station operator and force UAV crash at the assigned zone;
- capability to implement the station stationary (high-rise buildings), on light and heavy vehicles, on the vehicles selected by the Customer.

Versions



Mobile version for the Ministry of Defense and Border Guard – set of equipment installed on armored vehicle

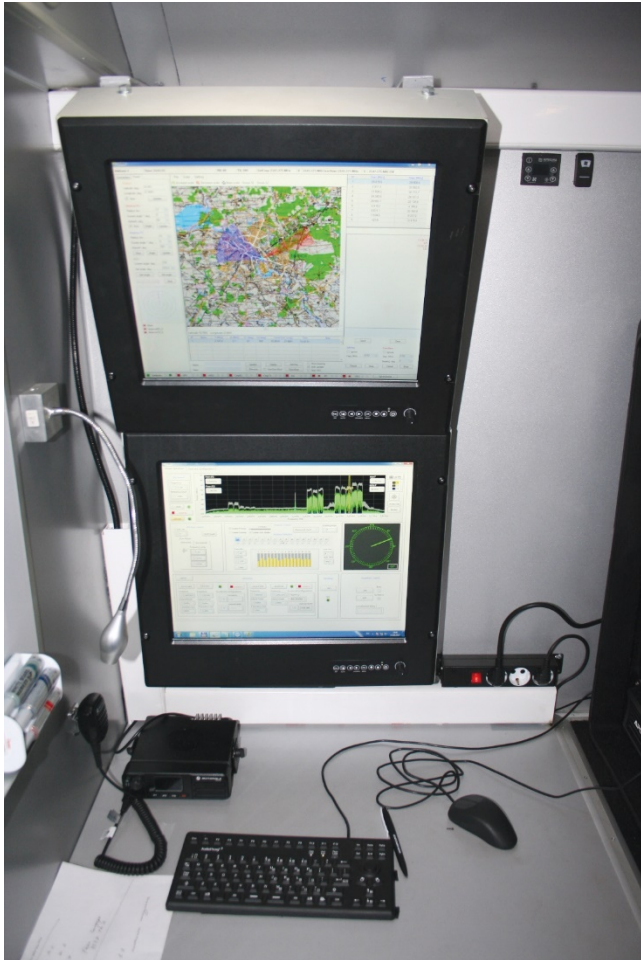


Mobile version for security services and police – set of equipment installed on all wheel drive car (mini-van) like Ford Transit, Mercedes-Benz Sprinter and similar



Mobile version for the Ministry of Defense and Border Guard – set of equipment installed on military truck with container for placement of the equipment and the crew

Operators' workstations (Ford Transit)

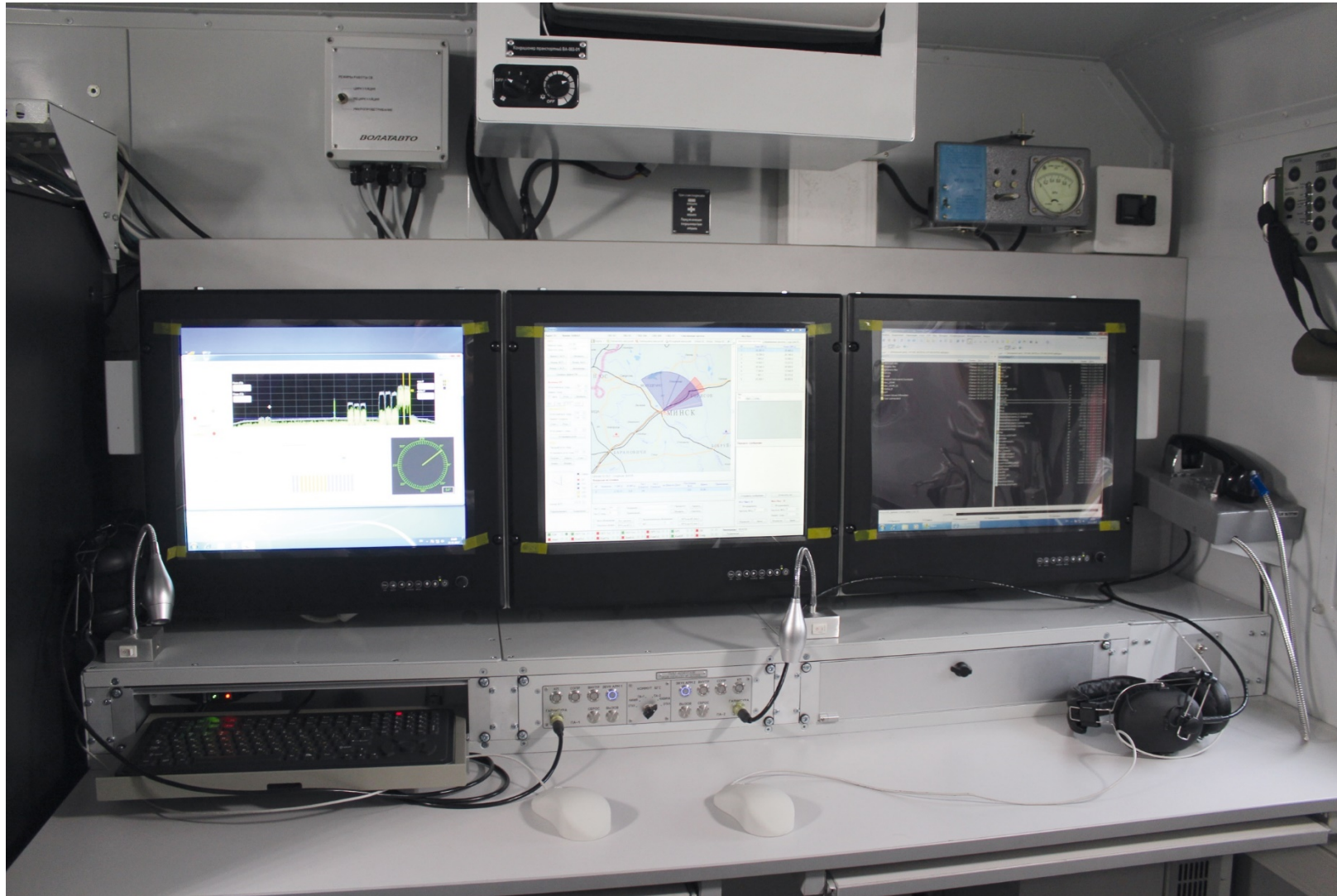


radio reconnaissance and jamming
operator's workstation



electro-optical monitoring complex operator's
workstation

Operators' workstations (MAZ)



Specifications

Frequency range	100–6000 MHz
Range of reconnoitering UAV transmitters (data transmission down to the ground control post)	up to 50 km
Range of jamming UAV receivers (reception of signals from the ground control post)	up to 30 km
Range of reconnoitering ground control post signals (the control channel)	up to 10 km
Range of jamming the ground control post receiver's signal (data transmission channel)	up to 10 km
Range of jamming UAV navigation receivers	up to 40 km
Range of spoofing UAV navigation receivers	up to 40 km
Type of communication between stations	VHF, 3G/4G, wire
Setup (teardown) time	10 min.
Crew	4 men