



## "Groza-S" counter-UAV electronic warfare station (mounted onto military vehicles)

Designed for detection, direction-finding of UAV (downlink: UAV – ground control post) and UAV ground control post (GCP) (uplink: GCP – UAV); downlink and uplink jamming of GPS, GLONASS, GALILEO, BeiDou on-board satellite navigation system equipment; spoofing GPS on-board satellite navigation system equipment.

### Composition:

- antenna-receive module;
- two automated operator workstations;
- modules for jamming UAV and GCP receiving systems and UAV satellite navigation systems;
- module for spoofing GPS satellite navigation system receiving equipment at UAV;
- transmitting antenna set;
- all-terrain vehicle comprising two masts for SIGINT and jamming hardware, life support system and autonomous power supply.



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### Advantages

- Radio reconnaissance operating frequency range: 100 – 6000 MHz
- Radio jamming operating frequency range: 100-6000 MHz
- UAV signals' radio reconnaissance range (data transmission from UAV): up to 50 km
- Ground control post signals' radio reconnaissance range (control channel): up to 10 km
- UAV receiver jamming range (reception of control signals from ground control post: up to 30 km
- Ground control post receiver jamming range (data and telemetry channel): up to 10 km
- UAV navigation receiver jamming range: minimum 40 km
- UAV navigation receiver spoofing range: minimum 40 km
- Setup time: 10 min
- Power supply: 220 V $\pm$ 10%, 50 Hz
- Crew: 4 men

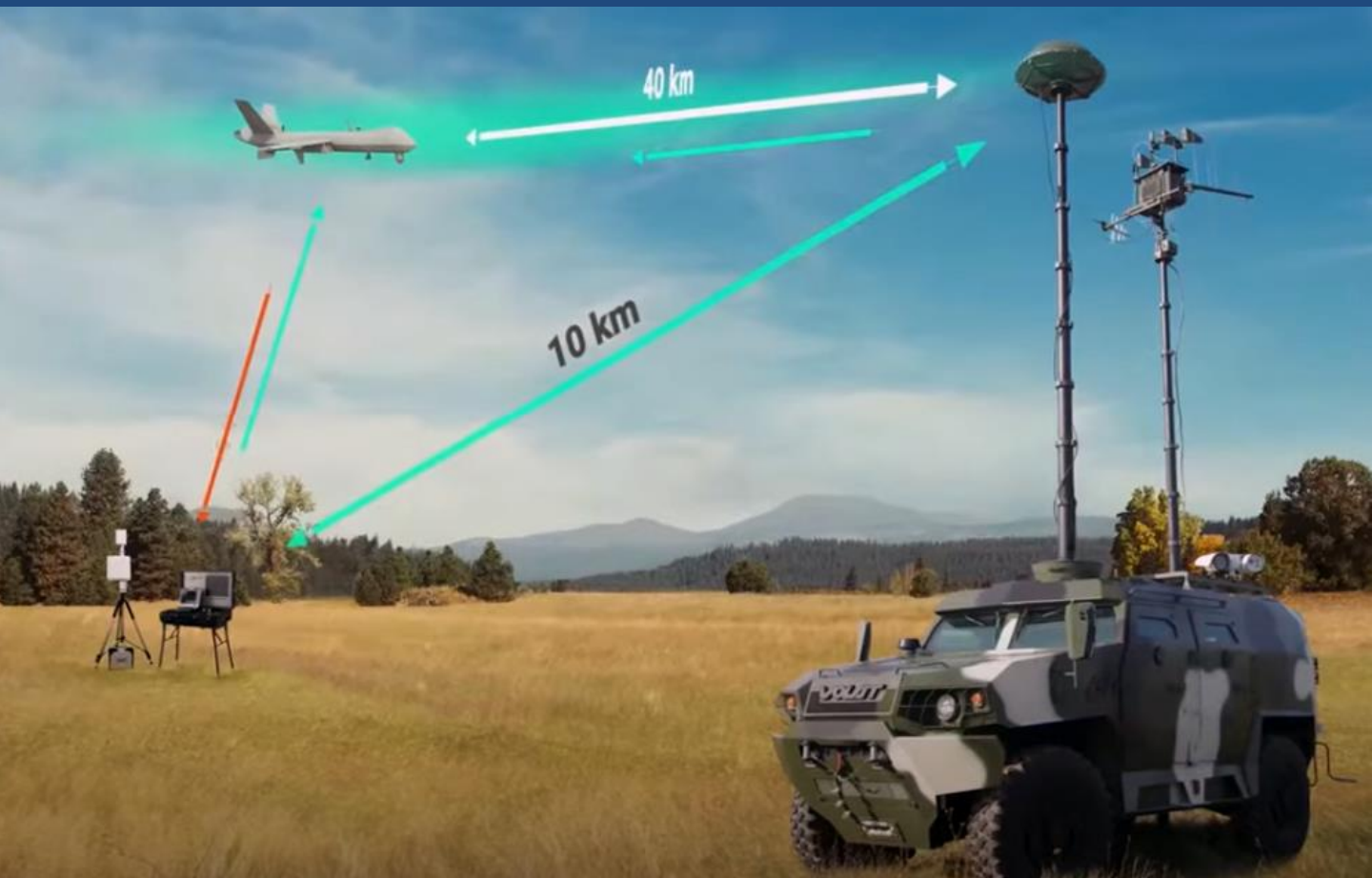
Detection of UAV appearance within the station coverage; monitoring UAV displacement;

A wide range of radio reconnaissance and jamming frequencies corresponding to all possible operating UAV equipment ranges;

Detection and jamming of UAV control channels from the ground control post and data transmission channels from the UAV to the ground control post;

Effective jamming of UAV navigation, navigation spoofing, and "pulling-off" the UAV from its route or forcing an emergency landing;

Short setup and teardown time of the station due to implementation of quickly erected antenna mast devices.



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- Automatic search, detection, direction finding to a UAV based on emissions of the data transmission link means ("downlink" (UAV – Ground control post));
- Automatic search, detection, direction finding to a UAV ground control post (GCP) based on emissions of the control link means ("uplink"(GCP – UAV));
- Determination (patrolling) of a UAV and GCP location zone when two "Groza-S" systems operate in coupled mode;
- Technical analysis of signals used in UAV control and data transmission links;
- Jamming of UAV control links ("uplink");
- Jamming of data transmission links ("downlink");
- Jamming of on-board equipment of GPS, GLONASS, GALILEO, BeiDou satellite navigation systems;
- Generation of spoofing signals against on-board equipment of GPS satellite navigation system.

### UAV jamming effect:

- Crash;
- Landing in jamming environment;
- Mission fulfillment failure and return back.



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Reconnaissance frequency range, MHz	400-6000
Jamming frequency range, MHz	400-6000
GCP transmitter radio reconnaissance range (control channel), not less than, km	10
GCP receiver jamming range (data and telemetry channel), not less than, km	10
UAV SNS receiving equipment jamming range (closed code), minimum, km	40
UAV transmitter reconnaissance range (data and telemetry channel), km	up to 50 (depending on the UAV flight altitude)
UAV receiver jamming range (control channel), km	up to 30
GPS navigation equipment spoofing range, km	up to 20
Energy potential of GCP receiver jamming (data and telemetry channel), minimum, W	300
Energy potential of UAV receiver jamming (control channel), minimum, W	300
Energy potential of UAV SNS receiving equipment jamming, minimum, W	300
Energy potential of UAV GPS spoofing channel, W	up to 100
Deployment/folding down time, min	10
Power supply	autonomous AC power supply 220 V, 50 Hz



Based on the experience of operating the Groza-S stations in various climatic conditions, as well as taking into account the wishes of the users of previously exported stations, the specialists of the enterprise made modifications in the design and software of the station.

As a result of the improvements made, it was possible to increase the degree of automation of the station operation, significantly reduce the deployment time and significantly reduce the number of operations performed by the crew to bring the station from the traveling position to the combat position. Improvement was made to ensure the station's stability for operation in extremely hot climates.

The operator compartment has been significantly redesigned, its ergonomics have been improved.

The modified version of the Groza-S station was appreciated by foreign customers and has already been exported.

