

MOBILE DIRECTION FINDING STATION OF HF FREQUENCY BAND “BERKUT”

Mobile direction finding station “Berkut” is designed for detection and direction finding of radio emission sources in the 1.5–30 MHz frequency band. Station provides scanning of preset frequency band, spatial searching and position localization of radio emission source (RES) by surface and sloping radio wave of vertical polarization.

Operational control of operating modes providing RES searching, automatic bearing sampling and interaction with external radio monitoring system through GSM communication channel is realized in mobile radio direction finding station “Berkut”.

Equipment of radio direction finding station is installed inside car body of jeep type (or any other according to Customer demand); direction finding antenna is disposed in special cargo box or is fit into roof of a car.

Presence of GSM communication and navigation equipment in the composition of the station allows increasing efficiency of RES searching, especially in terms of joint operation of the station inside integrated direction finding network with similar stations.

Mobile radio direction finder “Berkut” on the basis of Reno “Duster” jeep:

External view

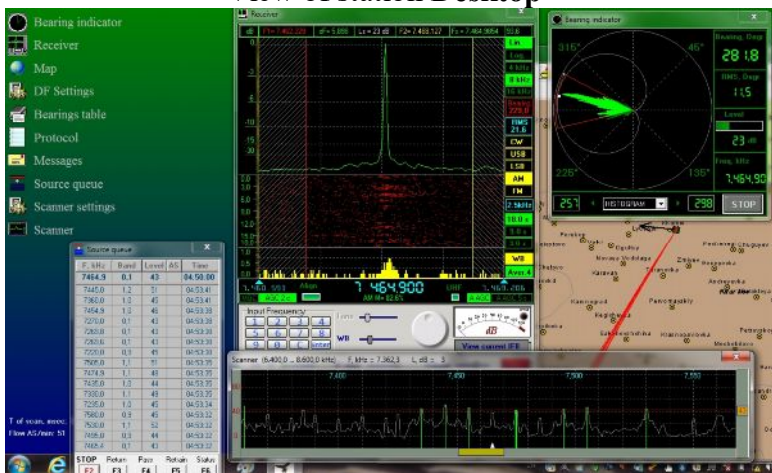


view of apparatus section



Radio direction finder built on the basis of three-channel receiving and measuring device provides stable signal direction finding using **Watson-Watt** method in conditions of real open waves and also gives bearing samples for short term RES with signals' duration of **5-200 ms** (including those from interference sources).

View of station Desktop



Implementation of spatial FFT-processing allows direction finding of several RES, signals of those operate simultaneously in the frequency bands with overlapping spectra.

In the mode of bearing accumulation with polarization signal processing direction finder allows in quite number of cases to **take stable bearings** by spatial radio wave.

COMPOSITION

- Direction finding antenna-feeder system on the basis of magnetic HF-loop antenna;
- Receiving and measuring device on the basis of three channel DSP-radio receiver with narrowband retunable preselector and additional independent scanning receiving channel;
- Operator board on the basis of industrial computer ;
- Navigation equipment (receiver of GPS-18 type),
- GSM/GPRS modem with antenna;
- Power supply unit with autocharging system of storage sells;
- Two storage sells (main and secondary);
- Set of cables and accessories (including field heterodyne unit designed for taking radio deviation correction of bearing after equipment installation inside the car);
- Complete set of operational documentation.

MAIN FUNCTIONS

- Direction finding of RES in the preset frequency;
- Scanning over preset frequency band or through the list of frequency channels aiming RES detection;
- Indication of amplitude spectrum of the signal which bearing is being taken on the screen of the monitor;
- Recording of bearing information and speech signals to computer hard disk;
- Indication of RES and direction finding station location against the digital map of the area;
- Informational exchange through the external system or similar radio direction finding stations;
- Archiving and automatic measuring results processing;
- Automatic functionality check, equipment diagnostics and storage sells charge control and their automatic recharge in time of motion.

TECHNICAL SPECIFICATION

Operating frequency band	1.5– 30.0 MHz
Polarization	Vertical
Direction finding method	Watson-Watt
Modes of DF	«instantaneous» direction finding Histogram accumulation Frequency RES selection Polarization selection
Instrumental bearing error accounting correction radio deviation (RMS):	2°
Sensitivity by electromagnetic field (RMS threshold = 3°)	5...25 μV/m
Minimal duration of the signal	5 ms
Dynamic range of signal to which bearings are being taken (accounting for automatic gain control)	not less than 130 dB
Estimation of bearing quality and signal level	RMS/ dB μV
Frequency pass band	0.03 ...16 kHz
Frequency resolution of bearing samples	100 Hz
Relative frequency measuring error	< 2.0·10⁻⁷
Remote control	GSM/GPRS
Power consumption from car on-board network	not more 120 W
Duration of operation from autonomous power supply unit	8 hours
Operation temperature of: equipment	0° C...+ 50° C
antenna	-40° C...+ 60° C

«Scientific-Engineering Center of Radio Engineering Systems of Applied Radioelectronics of Academy of Science» Ltd.
7/8, sq. Zashitnikov Ukrainy, Kharkov, Ukraine, 61001
+38 (057) 732-25-53, +38 (057) 732-68-63 E-mail: ntcrts@kharkiv.com www.ntcrts.com