



International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

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IJIEMR Transactions, online available on 30th April 2021.

Link: <https://ijiemr.org/downloads/Volume-10/Issue-4>

DOI: 10.48047/IJIEMR/V10/I04/103

Title: **RADIO MONITORING AND RECOGNITION OF RADIO EMISSIONS
RADIO ELECTRONIC EQUIPMENT**

Volume 10, Issue 04, Pages: 506-507

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RADIO MONITORING AND RECOGNITION OF RADIO EMISSIONS RADIO ELECTRONIC EQUIPMENT

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Abstract: This article describes the basic antennas, radio and television transmitters, and basic receiver elements in a radio monitoring study. Antennas play an important role in radio transmitting and receiving antennas.

Keywords: radio monitoring, bearing, radio interference, radio electronic means.

Introduction

In accordance with the tasks solved by radio monitoring (RM), RM stations must ensure the reception of signals from radio electronic equipment (RES) in the specified frequency and direction ranges, signal detection and direction finding of their sources, analysis and determination of the parameters of received signals, registration and documentation of intelligence data. In addition, the transfer of the received information to the point of collection and processing of information may be provided.

With all the variety of methods and means of RM, it is possible, following to give the following simplified structural diagram of the RM station (Fig).

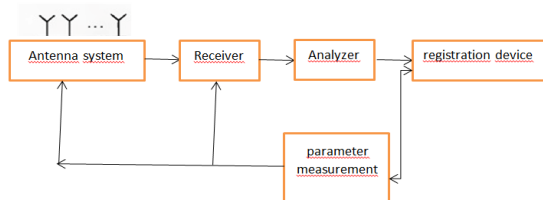


Fig. Simplified block diagram of a radio monitoring station

The antenna system of the RM station must be broadband in order to operate in the entire reconnaissance frequency range and to ensure the direction finding of the reconnaissance source of radiation with the required accuracy. In addition, the antennas of the RM station should have minimal side lobes and ensure good electromagnetic compatibility with other RES. Otherwise, a false

determination of the direction to the direction finding source is possible.

It is simply impossible to satisfy all the requirements with a single antenna, therefore, usually several antennas are used, covering the entire reconnaissance frequency range. For the purposes of direction finding, a special configuration of the RM antenna system is also used. Reception of signals from several RES in a given range of directions of exploration is carried out due to a sequential change in time of the spatial position of the antenna directional pattern.

At the present time, the **Electromagnetic Compatibility Service** of the **Samarkand region** is used:

- Active rod antenna HE-010, frequency range 10 kHz-80 (120) MHz, vertical polarization length 1 m, diameter 120 mm, weight 0.9 kg

- Active vertical dipole HE309 is designed to receive radiation with vertical polarization in the frequency range 20-1300 MHz Withstands wind speed up to 180 km / h without ice, with ice 155 km / h

Temperature range from -40 to +70 C, Humidity 95-100%

- Omnidirectional Antenna HF902 is an omnidirectional receiving antenna designed to simultaneously receive vertically and horizontally polarized signals. Suitable for broadband direction finding and monitoring of RF signals in the 1-3 GHz range. Due to its compact dimensions, it is installed on the RCP complete with the HE-309 antenna

-Broadband direction finding antenna ADD295 consisting of 9 receiving elements and reflectors, receiving vertically polarized signals in the frequency range from 20 to 3600 MHz

DF error: 20-200 MHz ≤ 2 degrees, 200-1300 MHz ≤ 1 degrees, 1300-3600 MHz ≤ 3 degrees.

-ADD195 direction finder antenna, frequency range 20-1300 MHz 1x9 that element, vertical qutbly, Hatoliga direction finding 20-200 MHz = $\leq 2^\circ$, 200-1300 MHz = ≤ 1

Receiving devices (receiver) of RM stations are characterized by the following main parameters:

- explored frequency range δf
- restructuring time T , which characterizes the intelligence efficiency in the range of δf ;

- sensitivity η ; \square resolution Δf ;
- the method of searching for the reconnaissance signal by the carrier frequency and the probability of its detection.

The most important technical characteristic of a reconnaissance receiver is the full frequency range in which it can be used to search for reconnaissance signals. It is desirable that one reconnaissance receiver cover the widest possible frequency range in which the most important enemy electronic devices can operate.

The variety of tasks solved by means of RM determines the variety of types of used receiving devices. In this case, single-channel broadband receivers can be used. The bandwidth of such receivers covers the entire frequency range in which the REM of reconnaissance objects can operate. For more detailed reconnaissance, devices with narrow-band receiving channels are used - scanning and multichannel receivers. Most often, the tuning program is reduced to sequential viewing of all frequencies of the surveyed range δf (panoramic sequential frequency analysis). But other programs are also possible. For example, with the skipping of sections of the range in which non-informative for reconnaissance RES work. Portable scanning receivers are capable

of surveying in the δf frequency band from 100 kHz to 30 GHz.

In conclusion, we can say radio monitoring provides a search and collection of information based on the reception of electromagnetic radiation. One of the main directions of radio monitoring is express analysis, the distinctive features of which are the efficiency and high reliability of information processing.

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