



Automatic Radio Compass is a Method of Reducing the Noise and Interference of the Radio Receiver

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Abstract: In this article, we describe the automatic radio compass and its functions, its prevention of radio receiver noise and interference from outside. Radio receiver (abbreviated name - receiver, oral - radio) - a device connected to an antenna, used for radio reception, that is, for separating signals from radio waves.

Keywords: automatic radio compass, radio receiver, radio signal, radio transmitter, crystal detector.

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INTRODUCTION: Radio receiving equipment means a radio receiver equipped with an antenna, as well as means of processing the received data and reproducing it in the required form (visual, audio, printed text, etc.). During most cases, the antenna and repeater are structurally part of the radio receiver. A radio receiver uses an antenna to select spatial and polarizing radio waves and convert them into electric radio signals (voltage, current), change the frequency, useful from a set of other (disturbing) signals and noises that act at the output of the receiving antenna and do not coincide with the frequency of the useful signal that is radio signal separation, amplification, conversion of a useful radio signal into a form that makes it possible to use the information in it

MATERIALS AND DISCUSSION: Radio receiving equipment is divided according to the following characteristics: According to its main function: Radio broadcasting, television, communication, direction finding (finding), radar, for radio control systems, measurement, etc.

By type of work: radiotelegraph, radiotelephone, phototelegraph, etc By the type of modulation used in the communication channel: amplitude, frequency, phase, single-band (various), pulse (various); According to the recommendations of the International Radio Consultative Committee (ICRC), on the received wave range: Millimeter waves - 100-10 km, (3 kHz-30 kHz), SDV (ultra-long waves) Kilometer waves - 10-1 km, (30 kHz -300 kHz), DV (long waves)

Hectometer waves - 1000-100 m, (300 kHz -3 MHz), SV (medium waves)

Decameter waves - 100-10 m, (3 MHz-30 MHz), KV (short waves)

Meter waves - 10-1 m, (30 MHz-300 MHz), VHF (ultra-short waves)

Decimeter waves - 100-10 cm, (300 MHz-3 GHz), DMV (decimeter waves)

Centimeter waves - 10-1 cm, (3 GHz -30 GHz), CMV (centimeter waves)

Millimeter waves - 10-1 mm, (30 GHz -300 GHz), MMV (millimeter waves)

A receiver that covers all radio broadcasting bands (DV, SV, KV, UKV), is called omni-directional. According to the principle of construction of the receiving path: detector, direct amplification, Direct reshaping, regenerative, super-regenerators, single, double or multiple reshaping superheterodyne;

According to the method of signal processing: analog and digital; on the basis of the applied element: in the crystal detector, lamp, lamp, transistor, microcircuits; According to implementation: autonomous and embedded (as part of other devices); According to the place of installation: stationary, on-board, portable; According to the method of supply: network, autonomous or universal

An automatic direction finder (ADF) is a marine or aircraft radio-navigation instrument that automatically and continuously displays the relative bearing from the ship or aircraft to a suitable radio station. ADF receivers are normally tuned to aviation or marine NDBs (Non-Directional Beacon) operating in the LW band between 190 – 535 kHz. Like RDF (Radio Direction Finder) units, most ADF receivers can also receive medium wave (AM) broadcast stations, though these are less reliable for navigational purposes.

The operator tunes the ADF receiver to the correct frequency and verifies the identity of the beacon by listening to the Morse code signal transmitted by the NDB. On marine ADF receivers, the motorized ferrite-bar antenna atop the unit (or remotely mounted on the masthead) would rotate and lock when reaching the null of the desired station. A centerline on the antenna unit moving atop a compass rose indicated in degrees the bearing of the station. On aviation ADFs, the unit automatically moves a compass-like pointer (RMI) to show the direction of the beacon. The pilot may use this pointer to home directly towards the beacon, or may also use the magnetic compass and calculate the direction from the beacon (the radial) at which their aircraft is located.

The radio compass may be described as an automatic radio goniometer. It indicates the direction of chosen transmitters which may be situated at any points round the airplane. The apparatus is based on the following principle. When a receiving loop aerial turns regularly round a vertical axis, maximum reception occurs every time that the plane of the loop passes in the direction of the transmitter. If the loop turns at a constant speed, a certain number of maxima and minima receptions per second can be observed in a receiver turned on to a transmitter. A rotating speed of five revolutions per second has been chosen as the standard, maxima and minima of receptions taking place at ten per second. The phase of these maxima and minima, that is, the moment at which they occur in connection with a given origin, depends on the direction of the transmitter in relation to the axis taken as origin. If the location of the transmitter changes in relation to the radio compass, the minima and maxima phases also change, and it is the changing of the phases which is utilized in the apparatus to obtain the automatic indication. The scheme and design of the radio transmitter depends on several factors: its intended purpose, operating frequency range, power, etc. Nevertheless, some sample blocks can be distinguished, which are in one form or another available on most transmitters. The structure of the transmitter (Fig. 2.1) is its main defined by its functions, which include:

- receive high-frequency vibrations at a given power and a specified frequency;
- Modulation of high-frequency vibrations with a transmitted signal;

— Whose frequencies are outside the necessary radiation band and others vibrations and harmonics that may interfere with radio stations filtering,

— Radiating vibrations through an antenna.

A high frequency, often called a donor or base generator the generator meets high requirements for its accuracy and stability service for receiving high-frequency vibrations corresponding to the frequencies of radio transmitters does. The synthesizer base generator is usually constant frequency radio communication and it changes to the frequency needed for broadcasting at that moment. Frequently its stability should not change negatively during such a change. Some in cases, when the generator directly produces the desired frequencies, no synthesizer needed. But with the synthesizer, the required frequency is high accuracy and stability can be easily ensured, because, first of all, it operates at much lower frequencies, where the required stability is easier is achieved, and secondly, it operates at the recorded frequency. Besides, modern synthesizers can be synthesized remotely or automatically adapted to the control, which is the general automation of the transmitter makes it easier. High-frequency intermediate amplifier follows after synthesizers necessary for the following reasons: support due to intermediate amplification with a large amplification factor generator and synthesizer does not require much power.

A power amplifier (it's called an externally driven generator) radio signal strength to the level determined by the requirements of the radio communication system increases. The main requirement for a power amplifier is that it is to ensure high economic indicators, in particular FIK. The output circuit transmits amplified vibrations to the antenna, the latter is strong matching the amplifier output with the antenna, high frequency oscillations serves for filtering

CONCLUSION: To sum up, we have discussed in this article about radio devices and the methods used for noise suppression, and we hope that this article will be very useful for those who are not familiar with this field. The field of radio is rapidly developing day by day and its most important aspects are to make human life more convenient and life with more opportunities more interesting.

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