

This document proposes the text to be added to the end of section 3.2.4.1 “VHF and UHF omnidirection types” of the Spectrum Monitoring Handbook, 2002.

Other effective technical solution for improving characteristics of omnidirectional VHF/UHF monitoring antennas, is mounting in antennas converters of radio signals on intermediate frequency (IF converters) rather than amplifiers.

Improvement of antenna characteristics in this case is reached at the expense of a high-frequency cable length reduction to a minimal value taking into account that particularly this cable is the main source of noise while transferring received signals from antenna elements to a radio receiver. The placement of IF converters in the immediate proximity from antenna elements allows to eliminate antenna effect of a cable (which in this case transfers IF signal) and also to transmit IF signal to distances up to several hundred meters. It results in increasing sensitivity and dynamic range of a system.

In [1 - 3] one can find descriptions of a set of direction finding antennas for various applications – from those that can be used at fixed and mobile monitoring stations to those that can be used as portable, quickly deployed antennas. All antennas in the set are based on the same uniform constructive solution: mounting of the IF converters in antenna structures. Figures (1 – 4) show antennas in the set.

Common elements of antennas in the given set are: a circular antenna array with odd number of elements (Figure 1), an antenna switch and a two-channel coherent IF converter. Such unification of antennas for various applications allows to simplify manufacturing and maintenance of antennas and to increase their reliability. It also allows to solve various problems of the monitoring based on uniform system principles, to provide great flexibility in application of various types of direction finders, to unify methodology and, finally, to decrease the general costs.

References

1. The web site: www.ircos.ru/eng/ (in English).
2. **Distributed systems of spectrum monitoring and direction finding.** In magazine "**Special technics**" №5, 2006г. (In Russian). The text is accessible from the address: http://www.ircos.ru/zip/st5_06.pdf.
3. Rembovsky A.M, Ashihmin A.V., Kozmin V. A. **Radio monitoring: problems, methods, means.** (Editor: A.M.Rembovsky). Moscow: “Hot line – Telecom”, 2006, h. 492 (in Russian).



Figure (1). Antenna array with the built-in IF converter for the frequency range 1000 - 3000 MHz



Figure (2). Antenna system with the built-in IF converter for the frequency range 25 - 3000 MHz for installation on vehicles.



Figure (3). Stationary antenna system with the built-in IF converter for the frequency range 25 - 3000 MHz



Figure (4). Portable antenna system with the built-in IF converter for the frequency range 25 - 1000 MHz and a case for carrying all antenna components