Our customers use this technology for testing HF, VHF, UHF, SHF, and EHF radio receivers and RF components in radio, electronics, aerospace, shipbuilding, and automotive industry!



Supply variants

- Development and delivery of the ADFTS on the "turn-key" basis in accordance with the arranged technical specifications
- Adjustment of the Customer's measuring equipment and delivery of the additional hardware (if necessary) and specialized software
- Supply of the extended hardware and software complex for EMC analysis, monitoring, and prediction which includes:
 - ADFTS
 - "EMC-Analyzer" a specialized expert system for EMC analysis
 - and prediction in local co-site systems
 - "Virtual Testing Area" a specialized software tool
 - for EMC analysis and simulation of space-distributed radio systems with the use of a geoinformation system and digital area maps





Automated Double Frequency Test System

A new era in radio receiver EMC-testing!





BELARUSIAN STATE UNIVERSITY OF INFORMATICS AND RADIOELECTRONICS

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There are no analogs of our technology for automated detection and identification of all linear and nonlinear paths in radio receiver!

General potentialities

Automated detection, recognition, and measurement of parameters and characteristics of the radio receiver desired response (located at the receiver tuning frequency) and all spurious responses (image responses, spurious responses created by harmonics of the local oscillators' signals, responses at the intermediate frequencies, etc.), through which the interference can influence the receiver operation

Automated detection, identification, and measurement of radio receiver susceptibility to nonlinear effects: blocking (desensitization), cross-modulation, intermodulation of all types and orders, reciprocal mixing, etc. Measurement of all standardized RF characteristics of sensitivity, selectivity, and susceptibility of radio receivers and RF components (RF amplifiers, mixers, voltage-controlled oscillators, etc.)

Electromagnetic compatibility (EMC) analysis and prediction in severe electromagnetic environment with the use of • results of the radio receiver's

- double-frequency testing,original technique of discrete nonlinear EMC analysis,
- original technique of virtual testing area (which uses geoinformation systems and digital area maps)

You can use the best RF measuring equipment, but you need our technique and software to achieve a real progress in measurement and simulation technology!

The main advantages

ADFTS is the most informative, expedient, and efficient technology of radio receiver EMC testing and measurements

ADFTS is used successfully by our customers for designing HF, VHF, UHF, SHF, and EHF radio receivers, systems, and components applied in radio systems of different services (radiolocation, fixed and mobile communications, radionavigation, etc.), civil and military aircrafts, satellites, ships, radars, etc.

ADFTS can be implemented with the use of the standardized equipment set of modern systems for traditional measurements of nonlinear effects (intermodulation, blocking, and cross-modulation) in radio receivers

The main idea of technology

1. Radar-technique probing of the radio receiver's "interior" through its antenna input, using the sum of two frequency-sweeping signals





ADFTS basic structure



2. Original representation of test results in a form of the 3D double-frequency characteristic (DFC) and a number of 2D/2D+ double-frequency diagrams (DFDs) of the receiver on the PC display





3D image of the RUT Double-Frequency Characteristic (DFC) 2D+ image of the RUT Double-Frequency Diagram (DFD)

If you want to know more about ADFTS, please see

• IEEE Trans. on EMC, Vol. 42, May 2000, pp. 213–225, "Automated Double-Frequency Testing Technique for Mapping Receiver Interference Responses"

• Proceedings of the 10-th Int. Symposium on EMC "EMC Europe 2011", UK, York, Sept. 26–30, 2011, pp. 405–411, "Experimental Analysis of Radio Receiver Susceptibility to Out-of-Band Interference by Means of Double-Frequency Test System"