

# Computational Modeling of External Impact on Electronic Devices

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This report deals with issues and analysis tasks, electronic elements and radio-electronic facilities reliability simulation with due regard for thermal, mechanical, electro-magnetic and other exposures, also software analysis is performed.

All modern facilities (rockets, planes, land battleships, ships, submarines, cars) inevitably involve electronic equipment, consisting of circuit plates, electronic chips etc. And if one of them doesn't work, all equipment doesn't function.

Vibration, impacts, heat, electromagnetic fields, radiation and other exposures considerably impair equipment running. That's why all these exposures tests are important parts of electronic equipment manufacturing. Tests cost too much, involve much time and often don't enable to anticipate electronic equipment condition in actual practice, especially in critical modes.

For thirty years overcoming all obstacles we have created and tested dual-use technology at many Russian enterprises, in the first place, in defense, space and aviation industries. The essence of this technology is as follows: using computer-aided equipment reliability and quality assurance system (ASONIKA), it's possible to foresee and prevent all and any malfunctions of not yet manufactured electronic equipment designed to run on military, space and civil objects. And all this is possible to make within several hours and it is very informative.

Use of ASONIKA system will provide computer-assisted designing of complex radio-electronic facilities (REF) under conditions of external disturbing factors exposure according to CALS-technologies requirements within stages designing–manufacturing–exploitation and thus will secure:

- quality improvement of complex REF designing;
- critical errors exclusion while designing complex REF;
- time and work input cutting to design complex REF;
- achieving complete coverage of production life cycle stages from marketing research up to utilization according to CALS-technologies standards;
- consideration of fullest influencing factors range (mechanical, thermal, electro-magnetic, radiation);
- designing terms and expenses decrease due to access of complex REF developer to offered software and simulation predictions sufficiency.

The aim of ASONIKA system implementation is to increase work efficiency of enterprises structural departments, bring them into compliance with modern world and home quality standards, decrease designing terms and science-based REF development, increase reliability of elaborated REF.

Implementation of this program complex enables to save lots of material resources due to tests quantity decrease while introducing offered software.

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