Project Module IV CEEX – 19/2005

Topic:

Laboratory of bioelectromagnetic compatibility – Expansion of test area

Contract: CEEX 19/7.09.2005

Contracting-party: ***Romanian Accreditation Association***
Contractor*: INCDIE ICPE-CA*
Project director: *Dr. Fiz. Jenica Neamtu*
Project run time: *07.09.2005 – 15.02.2007*

Program: CEEX – Virtuousness research
Project category: Module IV – Research Projects – Complex Development
Project type: P-Conform
Project acronym: BIOELECOMP
Project Value: 750 000 RON

Project Coordinator: INCDIE ICPE-CA, Bucharest

Thematic Areas:

- Research results transfer for treatment of major affections: cancer, heart diseases, diabetes/obesity, rare diseases and others chronic affections (e.g. osteoarthritis). Tracking the development of strategy for orientation unto patient from prevention to diagnostic and treatment, including clinical research.

Operation platform: Electromagnetic Field NET (EMF NET) for FP7

General objective:

Development of compliance estimation services according to European references and standards associated to these references as well as assurance of required conditions for application of mutual recognition principle for compliance tests in the standardized domain.

Project results:

- Accreditation of the laboratory
- National and international publishment of the project results

- Advertising for operation platform and descriptions realized at national and international level

Project outline/calendar

2005 – Phase I: Development and extension of knowledge with regard to testing methodology of products.
Period: 07.09.2005 – 31.11.2005

2006 – Phase II: New testing methods implementation
Period: 1.12.2005 – 25.07.2006

2006 – Phase III: Specific laboratory activities accomplishment
Period: 25.07.2006 – 15.11.2006

2007 – Phase IV: Knoledgement dissemination and expansion of tests accreditation
Period: 15.11.2006 – 15.02.2007

Potential users:

Numerous internal manufacturers of apparatus which are using materials or components realized by autochthonous producers, certified based on analysis/tests performed by authorized laboratories from country with interested by various slops of material and respective components description. By expansion of test area and improvement of existing tests quality – proposed in this project – is creating the possibility to emit test reports in accredited regime for a much wider test area, for potential beneficiary like manufacturers and users of electronic devices in different domains like medicine, electrotechnics and others.

Technical, economic and social impact:

The project theme is a national novelty and a top domain in international research which will have effects in the following directions:

- Development of a complex laboratory for measurement, testing, research and initiation in Electromagnetic Compatibility (EMC) and Bio-electromagnetism (BEM). The laboratory is intended for performing measurements and tests with regard to the disturbing electromagnetic interferences and their effects on both electronic and/or electric devices and human factor.

- Making research in EMC domain concerning the development of new modern technologies (nanotechnologies) for obtaining anti-disturbing protection materials and also for the accomplishment of a powerful centre of training CEM specialists. The project refers to electric and/or electronic devices used in industrial processes, transports and communications, medical domain, environment protection, research.

- Economic competitivity growth in domains like the ones mentioned before, by:

  a. Growth of reliability for the devices used in automation systems;

  b. Reduction of the number of errors on information and data transmissions;

  c. Avoidance of major dangers (fire, explosions) in high hazard installations (chemistry, petrochemistry, nuclear power plants etc.);

  d. Avoidance of collisions in naval transport or on railroad;

  e. Protection of the human factor involved in exploitation and utilization of electric and/or electronic industrial, medical and home equipments.

Equipments from laboratory

Signal Generator E8257D

Manufacturer: Agilent Technologies – SUA (Malaysia)
Manufacture date: august 2005

Technical parameters:

- Frequency range: 250kHz to 40GHz
- Frequency resolution: 0.001Hz

Spectrum Analyzer E7405A

Manufacturer: Agilent technologies – SUA (Malaysia)
Manufacture date: February 2006

Technical parameters:

- Frequency range: 100kHz – 26.7GHz
- Units: dBm, dBmV, dBµV, dBµA, A, V, W and Hz
- Logarithmic scale: 10 divisions
- 0.1, 0.2, 0.5 dB/div and 1 – 20 dB/div per step 1 dB
- Linear scale: 10 div
- Resolution: 0.1dB
- Accuracy: ± 0.75dB

Horn antenna model 3115

Manufacturer: ETS Lindgren USA (Finland)
Manufacture date: 2006

Technical parameters:

- Frequency range: 1 – 18 GHz
- Maximum continuous power: 300 W
- Peak power: 500 W
- Impedance: 50 Ω

Ultra log antennas

Manufacturer: Rhode Schwartz, Germany
Manufacture date: 2006

Technical parameters:

- Frequency range: 30 MHz to 3 GHz

GTEM cell

Frequency range: up to 18 GHz

Power meter E4417A

Manufacturer: Agilent technologies – SUA
Frequency range: 9 kHz – 110 GHZ depending on the sensor
Power range: -70 to +44 dBm depending on the sensor