



FP6-IST Network of Excellence



ACE - Antenna Centre of Excellence



Activity 2.3: Wideband and Multiband Antennas

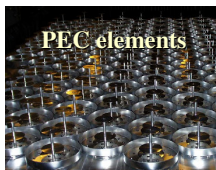
Objectives

Wideband, ultra wideband and multiband antennas are increasingly important as the number of wideband systems expands. Applications include short range high data rate communications links for indoor, urban, mobile and vehicular environments, mobile basestation and terminal antennas, satellite and satellite terminal antennas, short range radar and radiolocation. **WP 2.3-1** gathers and integrates the wide range of wideband, ultra wideband and multiband antenna expertise across Europe.

Reflector and radome surfaces for communications, sensing and medical applications use special materials to separate frequency bands or polarisations. Radomes protect delicate antenna systems including integrated electronics in harsh environments. **WP 2.3-2** collects, classifies and integrates existing methods. When gaps are identified, actions for new research projects are initiated.

Ground or surface penetrating radar is an inspection technique with many important applications, e.g. detection of landmines, buried pipes and cables, and breast tumours. The antennas operate over very wide bands with minimal pulse distortion close to high dielectric media. **WP 2.3-3** integrates the European expertise sharing information and setting up a joint antenna test facility.

Results



PEC elements



FES

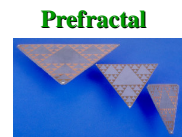


Joint test facility

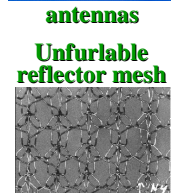
WP2.3-1 appointed for 25 wideband/multiband antenna types and 20 applications prepared reference documents on www.antennasvce.org. Two antenna types appear to the left and right. The antenna type documents define the antenna, explain its operation, list typical performance, and give sources for further information. The application documents explain the application, and define frequency bands and antenna specifications. The catalogue will be updated, but already now forms the basis for defining future work and joint research.

WP 2.3-2 has issued a catalogue of reflector and radome surface categories and analysis methods on www.antennasvce.org. The analysis methods are divided into general methods and specific methods for specific surfaces as the frequency selective surface (left) and the unfurlable reflector mesh (right). A separate volume describes the existing software. A main interest is to compare the approximate methods used in standard software with more accurate approaches and, if possible, to develop an interface software between the various packages.

WP 2.3-3 selected the GPR antenna test facility at Tech. Univ. Denmark (left) as the joint GPR antenna test facility, and it is currently being updated to meet the requirements of the WP. A catalogue of existing GPR antennas has been issued on www.antennasvce.org. It includes the Vivaldi antennas 0.43-8.32 GHz (right). The partners have agreed to share antenna design information and make their antennas available to each other on short notice.



Prefractal antennas



Unfurlable reflector mesh



GPR antenna

Participants

WP 2.3-1. Wideband and multiband radiators

Société d'Applications Technologiques de l'Imagerie Micro-Onde S.A. (SATIMO), France
University of Marne la Vallée, France
University of Karlsruhe, Germany
Institute of Communications and Computer Systems/NTUA, Greece
University of Calabria, Italy
Polytechnic University of Catalunya, Spain
Chalmers University of Technology, Sweden
Swedish Defense Research Agency (FOI), Sweden
Saab Ericsson Space AB, Sweden
The Netherlands Organisation for Applied Scientific Research (TNO), The Netherlands
University of Bristol, U.K.
University of Liverpool, U.K.

WP 2.3-2. Reflector surface models

TICRA Fond, Denmark
Polytechnic University of Turin, Italy
University of Siena, Italy
Chalmers University of Technology, Sweden
Lund University, Sweden
The Netherlands Organisation for Applied Scientific Research (TNO), The Netherlands

WP 2.3-3. Antennas for surface penetrating radars

IDS Ingegneria dei Sistemi Spa, Italy
Technical University of Denmark, Denmark
University of Nice-Sophia Antipolis (CNRS/LEAT), France
Institute of Communications and Computer Systems/NTUA, Greece
University of Bristol, U.K.
University of Liverpool, U.K.
Delft University of Technology, The Netherlands - (non-ACE participant)

Contacts

Activity Leader

Dr. Peter Balling, ASC Antenna Systems Consulting ApS
Selsmosevej 12, DK-2630 Taastrup, Denmark
Tel.: +45 4352 1952; Fax: +45 4352 072
E-mail: pballing@asc-consult.com

WP 2.3-1 Leader

Magnus Bonnedal, Saab Ericsson Space AB
Delsjömotet, SE-40515 Gothenborg, Sweden
Tel.: +46 31 735 4003; Fax: +46 31 735 4000
E-mail: kp@ticra.com and magnus.bonnedal@space.se

WP 2.3-2 Leader

Dr. Knud Pontoppidan & Poul Erik Frandsen, TICRA
Læderstræde 34, DK-1201 Copenhagen K, Denmark
Tel.: +45 3312 4572; Fax: +45 3312 0880
E-mail: kp@ticra.com and pef@ticra.com

WP 2.3-3 Leader

Prof. Ian Craddock, University of Bristol
Dept. E.E., Engineering Room 4.22, Merchant Venturers Building, Woodland Road
Bristol BS8 1UB, U.K.
Tel.: +44 117 954 5182; Fax: +44 117 954 5206
E-mail: Ian.Craddock@bristol.ac.uk

ACE : www.ist-ace.org

ACE VCE: www.antennasvce.org