Newsletter n°3

April 2010

Fifteen students are currently working nearly full-time on OUFTI-1, so technical advances are numerous! This newsletter presents some recent realizations in the OUFTI-1 project, as well as selected ongoing activities.

Contact: Amandine.Denis@ulg.ac.be

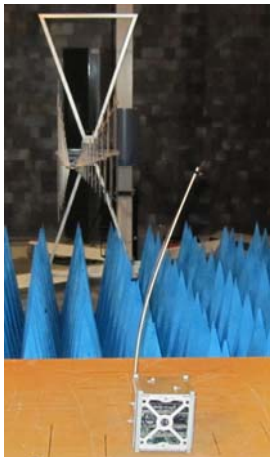
Antennas at the ULg

LATEST NEWS OF THE GROUND STATIONS

The two tracking stations were introduced in the last newsletter. Last month, the antennas of the main ground station were installed on the roof of the Montefiore Institute, at the University of Liège. Final connections and first tests are scheduled for this week.

Antenna tower in Redu.

Moreover, members of the OUFTI-1 team visited the installations of the EuroSpace Center at Redu, where the back-up ground station is located. An impressive 20 meters high tower was installed to support the antennas and provide a wide clear horizon. Tracking material is operational and tested. Next step is to define and establish the link with the main ground station of Liège.



OUFTI-1 in the anechoic room (ULg- ACE – CEM).

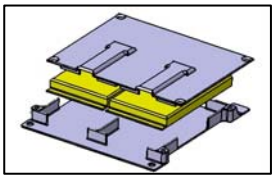
RADIATION PATTERN MEASUREMENTS

Last week, students working on the radio-frequency part of the COM subsystem performed measurements in the anechoic room (ACE –CEM lab) of the University of Liège. Preliminary tests in the brand new anechoic room of the University of Louvain-la-Neuve were also performed last month. The main aim of these tests is to verify if the ground plane (that is, the structure of the CubeSat) will influence the common radiation pattern of the quarter-wavelength antenna, and how it will do so. Results obtained are good: only the short antenna (17 cm, 435 MHz) is slightly affected. The antennas of OUFTI-1 are thus quasi-omni-directional, as expected.

DESIGN OF A SUPPORT FOR THE BATTERIES

A current task for the students responsible of structural and thermal control is the design of a support for the batteries. The selected batteries (Lithium-Polymer from Kokam) deform substantially in vacuum (upper picture). This deformation is potentially dangerous for adjacent electronic parts, and has therefore to be restrained. A solution is to enclose batteries in a box. The design has also to take into account thermal and mechanical constraints, and presence of heaters and thermostats. The lower picture shows the current design (batteries are represented in yellow). Manufacturing should start soon and tests in vacuum chamber at CSL are scheduled for May.

Deformed battery.



Battery support

OUFTI-1: A LINK BETWEEN AMATEUR-RADIO OPERATORS AND STUDENTS

In February, a delegation of students and supervisors presented OUFTI-1 at the monthly assembly of the amateur-radio club (UBA) of Gembloux. They received a warm welcome and the presentation was the source of many questions, suggestions and promising contacts. Minister Laruelle was an attentive and interested member of the audience. The press coverage was important and a TV-report (in French) was realized by Canal Zoom.

More information and press review on UBA-Gembloux website
TV-report on Canal Zoom website

INTERFACE TECHNICAL REVIEW

Meeting in Redu.

The OUFTI-1 team is currently concluding its first review process. This technical review focuses on interfaces (i.e. mechanical, electrical, thermal, and operational boundaries between subsystems), since there was a crucial need to check and definitively fix them. The so-called Interface Technical Review (ITR) appears to be also an excellent opportunity for education: students get familiarized with a process widespread in industries and agencies.

Different activities took place following a rigorous procedure inspired by the current standards at the European Space Agency (ECSS). Students fulfilled data-packages defining the interfaces of their subsystems, which were then reviewed by panels (composed of professors and industrials). These panels formally emitted comments and remarks, which were answered by students. These answers were discussed during a weekend gathering the whole team and the panels at the EuroSpace Center. This weekend was also an excellent opportunity to strengthen team spirit.

Simulation of the launch of the space shuttle.

NEXT NEWSLETTER

The next newsletter will be issued in June 2010. At that time, students will be concluding their graduation theses. The fourth newsletter will thus outline the major realizations and results of the 2009-2010 team. In the meantime, news and information can be found on the OUFTI-1 website: www.oufti.ulg.ac.be .

The OUFTI-1 team is pleased to collaborate with numerous partners and thanks them for their support.

www.oufti.ulg.ac.be
Contact: Amandine.Denis@ulg.ac.be