OUFTI-2: status report on the design and construction of the second educational nanosatellite featuring D-STAR amateur-radio communications

Sebastien De Dijcker¹, Valéry Broun², Xavier Werner³, Jacques G. Verly⁴

¹ University of Liège (ULg), Dept. of Electrical Engineering and Computer Science, Liège, Belgium
² Haute Ecole de la Province de Liège (HEPL), Engineering Department, Electronics Service, Liège, Belgium
³ University of Liège (ULg), Department of Aerospace and Mechanics, Liège, Belgium

Main payload: D-STAR space repeater
- D-STAR stands for Digital Smart Technologies for Amateur Radio
- Digital communication protocol (radio and internet) allowing voice & data
- Radio frequencies are 145MHz and 435MHz

Secondary payload: RAD
- Measure the degradation of electronical component by radiations
- Does measurements for the same experience with 3 different shielding
- Dose measured by RADFET

Secondary payload: IMU
- Determines attitude via inertial & magnetic measurements
- Developed by college students from Sint-Pieterscollege from Jette, Belgium

Communication
- RF shielding to avoid electromagnetic interference
- Addition of beacon mode in D-STAR Tx

On-Board-Computer
- External watchdog
- Two homemade on-board-computer’s
- In orbit programming from ground

Electrical Power System
- Semi-regulated power bus
- Batteries meeting requirements of ISS
- New power dissipation electronics

Timeline and milestones
- Presentation of the new Architecture: 8/6/2016
- Critical design review: 12/1/2016
- Functional test review: 12/1/2017
- Flight model: 3/2/2017
- Flight readiness review: 3/12/2018

OUFTI-2 is pre-selected to take part in the ESA “Fly Your Satellite! 2017” programme.

FYSI 2017 programme