

INTERNSHIP OFFER

Title: Electromagnetic Susceptibility and Compatibility study in a Pluto SDR module

1 UNIVERSITY SPACE CENTER OF MONTPELLIER

The University Space Center of Montpellier (CSUM) is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the area of space project management and product assurance in the framework of university space projects. The CSUM has an AIT (Assembly Integration and Test) Facility, a CDF (Concurrent Design Facility) and both UHF and S-band Ground Stations. The CSUM develops its own 1U and 3U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and both the French and the European space agencies.

2 INTERNSHIP DESCRIPTION

Description of the tasks:

A software radio module, Adalm Pluto, is used to transmit and receive satellite communications in the UHF band. The internship, mostly, experimental, aims to study the module's electromagnetic behavior in a comprehensive manner.

Two aspects will be evaluated:

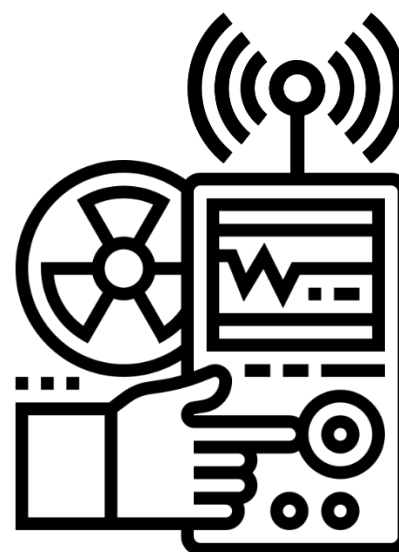
- On the one hand, the compatibility study of the system, in particular the switching noise when switching from transmit mode to receive mode and vice versa.
- On the other hand, the study of the susceptibility of the system, namely the behavior in emission and reception under electromagnetic interference (EMI).

The EMI can be injected in conducted or radiated mode.

The most disruptive form of aggression will be sought depending on its in or out-of-band-frequency, its type of modulation, its injection localization.

The experiments will be carried out at the CSUM for the conducted mode part and in the microwave TP room of the Triolet Campus for the radiated mode.

The CSUM provides a simplified GNU interface of the transmit-receive system to perform representative experiments of the configurations used. In the end a return on the BER will be given.



Skills/Languages:

- Radio Frequency in the UHF band
- Software Defined Radio technologies and tools (ex: Gnuradio)
- Architect, design and implementation of RF systems operating in UHF frequency bands
- Conception and definition of test procedures, test plans and test strategies in alignment with design.
- General Knowledge of any programming language (C, C++, Python, etc...)

Key Words : EMI, EMC, Electromagnetic Susceptibility, SDR, RF, High Frequencies

Level: MSC.

Preferred starting date: March 2022

Duration: 5. Months

Supervisor at CSUM: Sébastien HESSE

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Academic supervisor: Sylvie Jarrix

Location of the internship: Montpellier (Campus Saint Priest and Campus Triolet)

Stipend: 3.90 euros/worked hours for duration between 308 and 924 hours, 35 hours/week.

3 CONTACT

Please upload your application at: <https://csum.umontpellier.fr/en/job-offers-internship/>