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Bachelor Thesis Work

of Choose title Name, Surname

Implementation of a Generic Iridium Device Handler for the SOURCE On-Board Software

Implementierung eines generischen Iridium Device Handler für die SOURCE On-Board Software

Motivation:

The Institute of Space Systems (IRS) and the Small Satellite Student Society (KSat e.V.) both at the University of Stuttgart are currently developing the Stuttgart Operated University Cubesat for Evaluation and Education (SOURCE), a 3-Unit nanosatellite. Equivalent to the structure of other satellite projects, the SOURCE project is structured into several subsystems. One of these subsystems is the communication subsystem, which ensures that the satellite can be commanded, and that telemetry can be received.

SOURCE has two Iridium 9603 backup communication modules which can be used if the primary communication path has issues. Some basic tests were already performed using a Rockblock 9603 module. The next step is to implement a generic device handler of the Iridium 9603 device in the SOURCE On-Board Software (OBSW). The Flight Software Framework (FSFW) developed at the Institute of Space Systems provides some building blocks which take care of a lot of common tasks required by a physical device and allows to write generic code for a device so the same device handlers can be used on different platforms.

The candidate's task is to implement this device handler, test it and document the software in an existing wiki so operators can use it. The work is completed with a presentation and documentation of the work.

Task:

- Familiarization of the Flight Software Framework (FSFW) and the components it provides to write device handlers
- Familiarization with the Rockblock 9603 test hardware, device documents and existing tests reports
- Familiarization with the AT91 board ARM microcontroller target hardware
- Implementation of the generic device handler
- Testing and Verification the device handler on the development board:
  - Testing of telecommands and parameters the device handler exposes
  - Tests of the device where an actual connection to Iridium satellites is possible. These tests are possible with a host computer as well.
- Documentation for satellite operators
- Documentation of the work

Supervisor:	Robin Müller	**Acknowledgement of receipt:** I hereby confirm that I read and understood the task of the bachelor thesis, the juridical regulations as well as the study- and exam regulations.
Starting date:	As soon as possible	
Submission until:	Click for date	

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Prof. Dr.-Ing. Sabine Klinkner   Signature of the student
(Responsible Professor)

Declaration

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