

ABSTRACT

Satellite is a technology to communicate over long distances, such as nanosatellite. One representation of Nanosatellite is a Balloon System that represent subsystems contained in Nanosatellite. On-Board Data Handling (OBDH) is a satellite subsystem serves as the control center in the nanosatellite. In this final project, it will be designed a prototype of OBDH that will be simulated with a Balloon System. OBDH subsystem is very important to serve the flow of data from the payload to the transmitter.

The OBDH uses ARM-based microcontrollers to accommodate tasks, such as communicating with sub-modules, acquisitioning OBDH's datas, taking pictures using LS_Y201 cameras, Temperature sensor LM35DZ and sending it to Ground Station using Xbee Pro RF module. For center OBDH module using Mbed NXP LPC 1768

The realization OBDH dimensions is about 10 mm x 10 mm 10 mm, a power consumption at 3.2830 Watt, and overall weight of 146 grams. It's successful to simulate serial data with 0% error rate, the performance of a camera payload of 18.0591494 seconds, the results of Ground Sampling Distance at 0.01088 Km and for temperature testing, it is obtained 1,464 % of temperature error rate. In Simulation with Balloon System at altitude of 70 metres, the telemetry data acquisition are able to be obtained for the temperature but not well enough to be obtained for the camera pictures. In the future it can be realized with perfect space proven – OBDH, able to hand housekeeping datas and able to be implemented in space technology in the future.

Keywords: Nanosatellite , OBDH, payload, Balloon System