

43rd STUDENT CONFERENCE (E2)
Educational Pico and Nano Satellites (4)

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ACADEMIC PROTOTYPE OF A NANOSATELLITE COMMUNICATIONS SUBSYSTEM FOR
HANDS-ON ACTIVITIES BY STUDENTS**Abstract**

The Telecommunications Department of the Universidad Politécnica de Madrid (ETSIT-UPM) is developing a communications subsystem for the Cubesat QBito, proposal for the QB50 project. The communication system of a Cubesat requires the use of a low cost and low power microcontroller. One of the most commonly used platforms is the Texas Instruments MSP430. This paper describes the elaboration of an academic prototype of a communication subsystem using the MSP430 and the UHF transceiver (CC1120 Development Kit) to be used as an educational demonstrator in labs and for hands-on experiences by students. Our idea is to make an accessible and user friendly educational platform (similar in concept to Arduino and the Rapsberry Pi) that could simulate the interaction between subsystems in a nanosatellite. This demonstrator will be tested with the ground station installed at the ETSIT-UPM. This is an example of the space activities promoted by the project TelCUBE. This prototype would facilitate the involvement of first year students in nanosatellite projects and would ease the formation of long-term working groups. An advanced version of this concept could be used in high school education.