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CUBESAT COMMUNICATION SUBSYSTEM – AN OVERVIEW

**Abstract**

Small satellites such as the U1 nanosat, provide a smaller, faster, and cheaper way of penetrating space and better understanding our own planet earth. Among the multiple subsystems comprising the CubeSat, the communication subsystem holds a key role to the success of the mission. The communication subsystem consists of both space and ground segments where the telemetry, telecommand, and payload data are exchanged. A reliable delivery of data between the two is the end-goal of the team working on this subsystem under the constraints of time, cost, and efficiency. Factors such as the limited contact time between the CubeSat and earth (uplink and downlink), the amount of footage required, the payload data type, the data rates needed, the secrecy of data, the efficiency and reliability levels required, along with the cost and time involved, determine the type of transceivers required, the setup of the ground station, the type of antennas and radio channels needed (hobbyist vs commercial), the usage of COTS (components of the shelf) vs. in-house built ones, the use of open source software vs. a purchased one, signal processing techniques, and finally the utilization of projects like the open source global network of satellite ground-stations (SatNOGS). In this research, the main communication system components and technologies will be highlighted and broken down, the latest advances and technologies will be evaluated against the traditional ones employed, and successful launch examples will support the discussion providing a roadmap for implementation requirements and procedures to follow.