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Author: Dr. Hector Simon Vargas Martinez
Universidad Popular Autónoma del Estado de Puebla, Mexico, hectorsimon.vargas@upaep.mx

Ms. Joel Contreras
Universidad Popular Autónoma del Estado de Puebla, Mexico, joel.contreras@upaep.edu.mx
Ms. Enrique Garcia
Universidad Popular Autónoma del Estado de Puebla, Mexico, enriquerafael.garcia@upaep.edu.mx

INTERSATELITAL COMMUNICATION BETWEEN THE CUBESAT "AZTECHSAT-1" AND THE GLOBALSTAR CONSTELLATION

Abstract

The CubeSat "AzTEchSat-1" is a satellite of a unit whose mission is to intercommunicate with the Globalstar constellation. The UPAEP accepted this challenge given by NASA, through the Mexican Space Agency, mainly being developed by a group of students from different engineering disciplines and others that support the successful completion of the project. It should be noted that NASA is supporting with advice, evaluations of the different stages of development as it does for its projects following the systems engineering methodology, and will also support the launcher to take the cubesat to the International Space Station and from there release in its corresponding orbit, this release is planned for March 2019. To solve the mission the Globalstar STINGR will be used, the integrate circuit contains a simplex modem and a gps, mainly, the attitude control resource will also be used so that the satellite can point or stabilizing its orientation of the STINGR towards the constellation of satellites. Links or communication between satellites provide direct connectivity between two or more satellites, eliminating the need for intermediate ground stations when sending data. Links between satellites have been considered for satellite constellation missions involving earth observation and communications. Historically it started with satellites that required an extremely high financial budget, but with the successful arrival of CubeSat type platforms they provide financially feasible support to realize this type of constellations. The demonstration of the mission will motivate new Cubesat projects to use this resource so that they can download their mission data without having to go through their earth station and even at a higher speed download. In the present work the advances of the requirements and critical design stages are given, as well as the summary of the different analyzes corresponding to these stages.