

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Interactive Presentations - IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (IP)

Author: Mr. ABDALLA ELSHIWI
Egyptian Space Agency (EgSA), Egypt, abdallaelshawi1980@gmail.com

POWER CONSUMPTION ENHANCEMENT FOR INTER-SATELLITE COMMUNICATIONS

Abstract

Abstract

Advances in modern space technology have aided the improvement of high-performance satellites with low power consumption. This leads to new innovation processes in the course of inter-satellite communications. Conventional constellations of low earth orbit (LEO) satellites are usually within the same orbital plane; hence the inter-satellite links (ISL) are almost stable. However, for different planes satellites, orientation and relative position make ISL challenging. Moreover, the platform constraints make the satellite communication system design more critical. Preservation of link quality is the main objective in any space mission. To realize that an enhanced power consumption technique is proposed based on link-budget calculations taking into account antenna radiation performance. Currently and in the near future, CubeSats are considered as the main player in the new space missions especially in the LEO. CubeSats has a very important drawback, they cannot generate much power, and hence their performances are mostly related to their power consumption profiles during their missions. In our paper, we propose a technique to get a solution for the power consumption constraints and the preservation of link quality objective, leading to have more reliable and robust satellite systems and constellations.