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Author: Mr. ABDALLA ELSHIWI
Egyptian Space Agency (EgSA), Egypt

Prof. Fatma Elhefnawi
National Authority for Remote Sensing and Space Sciences (NARSS), Egypt

Prof. Abdelhady Amar
Al Azhar University, Egypt

SMALL SATELLITE C-BAND MICROSTRIP ANTENNA ARRAY FOR INTER-SATELLITE
COMMUNICATIONS

Abstract

Works on small satellites have gained momentum large recently, especially those that consider space missions that utilizing multiple of miniaturized satellites flying together in a coordinated formation. These satellites will likely communicate with each other via an inter-satellite link (ISL) to enable control and relative navigation signals, information processing and health data exchange for achieving mission objectives. Small satellite missions in low earth orbit (LEO) were based on similar larger satellites but with some limitations. These limitations are due to mass, power, size, deployment mechanism, coast, capacity and operational period. Varieties of antenna types and antenna architectures have been proposed for small satellites to withstand these constraints. So, it is important to design and implement an antenna system that has low profile and can sustain wireless links between two interlinked satellites. In this paper we develop C-band microstrip antenna array operating at 5.8 GHz based on an inset fed microstrip antenna as a single element. The proposed antenna array radiation characteristics were examined on CST simulation software. The simulation results show an efficient line-of-sight (LOS) array performance to enable real time communication and control operation through the inter-satellite link during mission life.