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Author: Dr. Ghulam JAFFER
University of Luxembourg, Luxembourg

Mr. Sabir Hussain
Pakistan

ENHANCING THROUGHPUT OF THE GEO SATELLITE AT C/KU BANDS

Abstract

The requirement of broadband data due to ever-growing applications has increased drastically in the whole world. On the other hand, the cellular connectivity of 3G/4G/LTE is yet a significant challenge in the vast under-served rural areas. By looking at the historical trend, the data traffic and the internet are still on the rising trends in such areas. The next generation of satellites is trying to decrease the cost/megabyte based on the advantage of higher throughput and availability. To maintain the performance of the link, the importance of choosing an appropriate frequency is evident. A multi-beam satellite system can fulfill the demand and performance over the entire coverage area. The paper simulates and results proclaim that the high throughput satellites (HTS) fulfill such requirement using C and Ku bands. We present a scenario of using Ku-band on the user site and the composite of C and Ku bands on the gateway site to receive the highest benefits of the system. This configuration has proved to be a cost-efficient solution with high performance over the traditional one. Moreover, the system has offered advantage to Ku-band users that they would enjoy the significant improvement in the performance without upgrading their systems. Under such configuration, the results show that the data rate is improved 5x both on upstream and downstream as compared to the existing fixed-satellite services systems.