

OPTIMIZATION OF Q/V-BAND SMART GATEWAY SWITCHING IN THE FRAMEWORK OF QV-LIFT PROJECT

Roberto Nebuloni¹
Carlo Riva, Lorenzo Luini²
Tommaso Rossi, Mauro De Sanctis, Marina Ruggieri³
Giorgia Parca³, Giuseppe Codispoti⁴

¹ Consiglio Nazionale delle Ricerche (CNR)
Istituto di Elettronica e di Ingegneria dell'Informazione e delle Telecomunicazioni (IEIIT)

² Politecnico di Milano

³ Università Tor Vergata

⁴ Agenzia Spaziale Italiana

Keywords: HIGH POWER AMPLIFIER, GALLIUM NITRIDE, MMIC, CONTINUOUS WAVE, WAVEGUIDE

Abstract

High Throughput Satellite systems are expected to reach the milestone of terabit/s capacity in few years through the exploitation of Extremely High Frequencies (EHF), in particular Q/V-bands and W-band, in the feeder link. In this respect, the H2020 QV-LIFT project, kicked-off in November 2016, aims at filling crucial gaps in the ground segment technology required by future Q/V-band HTS systems. One of the most challenging objectives of QV-LIFT team is develop and test a smart gateway management system (SGMS) operating in the Q/V- band. The SGMS will implement fade mitigation techniques able to counteract the detrimental propagation impairments across the feeder link. This paper reports the optimization and simulation activities that have been performed to design SMGS control logic, with a focus on the atmospheric channel predictor and switching decision algorithm. The channel is fully characterized by synthetic time series of rain attenuation generated by a Multi-site Time-series Synthesizer (MTS).