Description of Experiment

Rockwell Collins, Inc., a part of Collins Aerospace ("Collins") is developing a new Iridium SATCOM terminal for the aviation market using the newest Iridium NEXT constellation that launched in early 2019. Collins' Iridium NEXT SATCOM system will use Iridium NEXT Certus services to provide new and improved safety voice, safety datalink, and high speed data to aircraft. Iridium has selected Collins as one of their Value-Added Manufacturers (VAM) for the aviation market.

The system consists of three main components: the Satellite Data Unit (SDU), a SDU configuration module (SCM) and a Broadband Active Antenna (BAA). The SDU is the main brain of the SATCOM system. Collins SDU design is based on Iridium Commercial-Off-The-Shell (COTS) transceiver from Iridium called Broadband Core Transceiver (BCX). The equipment type is IRT-4000. The SCM holds the configuration of the SATCOM system, and its equipment type is ICM-4000. The BAA contains the antenna elements, Low Noise Amplifier (LNA) and Power Amplifier (PA) to transmit the RF output from the BCX to Iridium satellites and to receive a signal from Iridium that it then passes to the BCX.

Collins plans to design and test different product configurations, utilizing two antennas: an Active Low Gain Antenna (LGA-4000) and a High Gain Antenna (HGA-4000). The configurations are as follows:

- LGA-4000 + SDU + SCM which yields a maximum data rate of 176 kbps.
- HGA-4000 + SDU + SCM which yields a maximum data rate of 352 kbps.