UAV Tracking Antenna Testing Experiment

This memo describes the program of experimentation.

ViaSat is developing an auto tracking antenna to be used with our airborne equipment. As part of the development process, testing of the tracking algorithms in a real life environment is required.

To simulate the UAV, ViaSat will attach its airborne equipment to a helicopter and fly in different patterns to test the auto tracking antenna. This is a 2 way system, meaning the auto tracking antenna on the ground will be transmitting as well as receiving. All of the transmitting equipment will be limited to be under 5 watts.

The equipment is listed in the application as EnerLink III A and EnerLink III B to signify the airborne portion of the equipment and the ground portion of the equipment.

The helicopter will fly up to 16 km from the fixed location of the tracking ground antenna station. The tracking antenna on the ground will point to the aircraft as required. The azimuth and elevation angles will vary as needed. Azimuth angles will typically range from 0 (North) to 180 (South) and elevation angles will be 45 degrees or less.

ViaSat currently offers 4 different frequency bands for its equipment. The bands are; L-band (1700-1850), S-band (2200-2500), lower C-band (4400-4950) and upper C-band (5250-5850). For testing, most combination of these bands can be used, but we propose the following frequencies for usage.

Five possible options listed below in descending priority:

Pair 1:
Ground to air transmission: 5250 MHz
Air to Ground transmission: 4400 MHz

Pair 2:
Ground to air transmission: 5350 MHz
Air to Ground transmission: 4500 MHz

Pair 3:
Ground to air transmission: 5450 MHz
Air to Ground transmission: 4600 MHz

Pair 4:
Ground to air transmission: 5550 MHz
Air to Ground transmission: 4700 MHz

Pair 5:
Ground to air transmission: 5850 MHz

Air to Ground transmission: 4950 MHz

In the event that the transmission need to be terminated in the case of interference or for other reasons, ViaSat maintains a 7/24 network operations center. The contact number for the NOC is 1-888-272-7232 and any of the on duty technicians can contact the engineers to effect a termination of emissions.