Get Ready for AMSAT Fox-1!

You’ll be on the air with this new satellite using your 2 meter/70 cm dual-band HT and a portable antenna ...

Fox-1 is the first in a new generation of AMSAT-NA CubeSats. It is currently expected to be launched in December 2014 as part of the ELaNa XII, NROL-55 mission. The launch vehicle will be an Atlas V from Vandenberg AFB, CA.

Since the voice portion of the satellite will operate as a cross-band, FM repeater you can use the radio and antenna you have for operation on FM satellites such as AO-51 or SO-50. If you need to acquire some gear, you can shop at your favorite radio store for an off-the-shelf, dual-band 2 meter/70 cm radio with full-duplex operation.

Compared to the existing fleet of amateur radio FM satellites on-orbit, Fox-1 will be an “EasierSat” for two reasons: The use of a 2 meter downlink will make the satellite approximately 6 db stronger than the usual 70 cm downlink with the same transmitter power, and the receiver will have Automatic Frequency Control (AFC) to assist in Doppler correction on the uplink. That will make it possible to access the satellite even if your uplink signal is a bit off frequency.

Continent-wide Coverage Using Your HT

Because the orbit is elliptical, the size of the reception footprint will vary throughout the orbit. At apogee, its coverage will approximate that of AO-51. Stations appropriately located will often be able to make intercontinental contacts, with full coverage of a continent being typical.

Fox-1 will have a group of 2-3 passes lasting 5-15 minutes, each approximately 90 minutes apart, followed by another group of 2-3 passes approximately 12 hours later. Web-based satellite tracking aids will get you started to calculate when Fox-1 is in range of your station.

Fox-1 is expected to be an excellent satellite for both operations and demonstrating the adventure of amateur satellites, and will on some days be available during normal school hours for student access to the telemetry downlink of the experiment data.

Science on board

AMSAT has been awarded the launch opportunity by NASA’s Educational Launch of Nanosatellites (ELaNa) program because of our value to their Science, Technology, Engineering, and Mathematics (STEM) initiative.

In addition to the amateur operations there are a number of scientific experiments on board the spacecraft. Vanderbilt University is providing a Low Energy Proton radiation experiment, Virginia Tech a JPEG camera experiment, and Penn State University – Erie a gyroscope experiment. Telemetry will normally be transmitted in the subaudible 10-200 Hz range usually used for PL tones in terrestrial repeaters, allowing simultaneous voice and 200 bps data operation. The high speed (up to 9600 bps) mode downlink will be used periodically to send camera pictures and for test purposes.

Find out more at: http://www.amsat.org