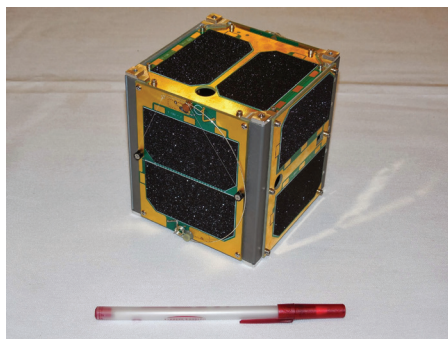


Get Ready for AMSAT Fox-1!

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



AMSAT Fox-1 Cubesat 10x10x10 cm

- Projected Launch: currently December 2014, depending on primary mission schedule.
- Manifested on NASA ELaNa XII, NROL-55 launch on an Atlas-V rocket from Vandenberg AFB.
- Standard 1U (One Unit) CubeSat.
- Size: 10 cm X 10 cm X 10 cm.
- Orbit: Nominal 470x780 km, (~295x490 mi.)
- 64° inclination, 11 year orbit
- RF: 400 mW EIRP, U/V (Mode B) FM only.
 - Uplink: 435.180 MHz FM voice
 - Downlink: 145.980 MHz FM voice -and-
 - FSK telemetry downlink simultaneous with voice operation.
 - High speed data downlink up to 9600 bps
- University scientific payloads
 - Low energy proton radiation experiment
 - JPEG camera experiment
 - Micro gyroscope experiment
- Power source: NiCad batteries and fixed solar arrays.
- Deployable 2 meter and 70 cm antennas.

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>



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/70cm 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, like most LEO satellites, 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.



Tom, KA6SJP portable satellite operation in northern Nevada

Fox-1 Operating Hints

- Use a small beam like the Arrow Antennas Yagi or Elk log periodic
- Select the 67.0 Hz PL/CTCSS for transmit
- Use no more than 5 watts with a modest gain antenna
- Open your Squelch all the way
- Use a combo headphone/boom mike to reduce feedback/echo (and give you a free hand)
- Have a printout of the satellite path over your QTH, or use your smartphone or tablet to track
- Have an audio recorder to log the QSO (it is difficult to talk, point the antenna, do PTT) operation, remember the callsign, and think - all at the same time)
- Set your transmit and receive frequencies in memories to make tuning easier
- Twist the antenna as the pass progresses to improve signal strength



Help Fox-1 Fly - Support AMSAT! Visit <http://store.amsat.org/catalog/> to join ...