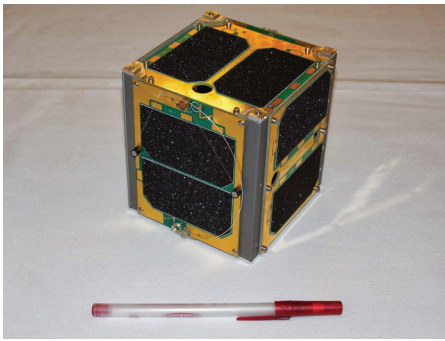


You'll be on the air with this new satellite using your 2 meter/70 cm dual-band HT and a portable antenna ...



Fox-1 is the first in a new generation of AMSAT-NA CubeSats. Fox-1A is planned for launch as part of the NASA ELaNa mission slots. RadFXsat/Fox-1B has been selected for the NASA ELaNa program and is waiting for a mission assignment. Fox-1C is planned for launch in 3Q 2015 on the SpaceFlight Systems initial SHERPA flight.

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. Recommended equipment includes 2m/70cm radio with full-duplex operation; an alternative option includes using two half-duplex radios - one to transmit and the other to receive, and a small directional antenna.

The use of a 2m downlink will make the satellite approximately 6 dB stronger than the usual 70 cm downlink with the same transmitter power.

- Projected Launch: Depending on NASA ELaNa flight availability.
- Standard 1U (One Unit) CubeSat.
- Size: 10 cm X 10 cm X 10 cm.
- Orbit: Depending on NASA ELaNa flight availability.
- RF: nominally 400 mW EIRP, U/V (Mode B) FM only.
 - Uplink: 435.180 MHz FM voice
 - Downlink: 145.980 MHz FM voice
 - 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 planned for Fox-1B or Fox-1C.
 - Micro gyroscope experiment
- Power source: NiCad batteries and fixed solar arrays.
- Deployable 2 meter and 70 cm antennas.

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 SO-50. 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 later in the day. 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, 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 large files and for test purposes.

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



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)
- Use a printout or your laptop, smartphone or tablet to track the satellite path over your QTH
- 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

