

A Short Introduction to Using Your FT-817 and Arrow™ for SSB Satellite Demonstrations

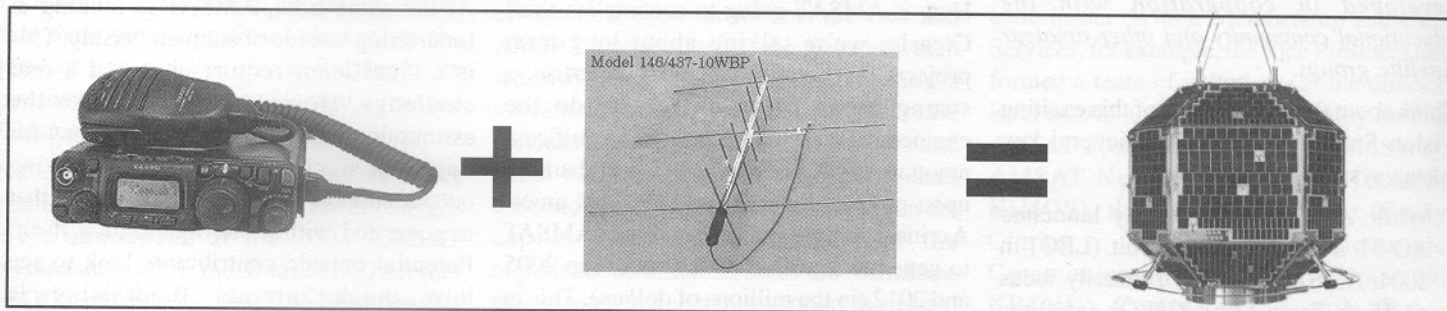
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This article describes my successful experiences using the Yaesu FT-817 portable radio with an Arrow antenna to demonstrate satellite operations on linear

changes to 145.930 LSB. Do all the pre-pass preparations you normally do for an FM bird.

The Limitations

There is a combination of factors that makes this all work. While most of us understand why it is important to only operate full



transponder satellites. During the time before AO-51 was launched, after UO-14 died and AO-27's operation was moved to evenings, I and fellow Area Coordinators were in a bit of a pickle when trying to do satellite demonstrations at hamfests. SO-50 was working, and easy to use, but the time it comes over each day changes at a fairly rapid pace leaving passes outside of hamfest hours on some weekends. I needed something to fill the gap. Some experimentation led to the following procedures to making good demonstrations on FO-29 and sometimes AO-7.

The Equipment

- Yaesu FT-817, preferably on a shoulder/neck strap
- Standard Arrow satellite antenna, or similar
- Most everything else you have for a regular FM demonstration

The Setup

Hang the FT-817 around your neck where it is easy to look down and see the display. Set VFO A to 145.930 LSB, VFO B to 435.805 USB. From VFO B engage split mode. If you have an Arrow with a diplexer, attach it to the front BNC. Then check to see that both VFOs/bands are set to the front antenna. If you have an Arrow without the diplexer, run one cable to the rear connector and one to the front. Configure the antenna menu option appropriately. I find it easier if the cables are well labeled, and my rig's finals appreciate the proper VSWR with them attached to the correct antenna half. Key the microphone and make sure the frequency

The Pass

As FO-29 rises you should hear the beacon somewhere around 435.805 sending telemetry in CW. Get a feel for polarity and direction doing the standard Arrow swing and twist. Polarity makes a big difference so you shouldn't use a tripod unless you have to. When you feel comfortable, tune slowly up to about 435.870. You'll probably hear some noise around 435.850. This noise is a product of the transponder that has appeared in the recent year or so. If you are lucky you'll hear some traffic around 435.855 to 435.865, and you may be content to listen to these as you answer questions from the onlookers. Now the fun part - I usually try to make prior arrangements to have an experienced operator looking for me around 435.870 down/145.930 up. If someone is listening for me I'll give him or her a long call, then tune up and down 5-6 kHz on receive listening for his or her reply. Although before my time I imagine it is not unlike using a crystal bound transmitter and a tunable receiver. If you don't have a prearranged QSO, feel free to call CQ. I always mention "half duplex, long calls please" so others know I need to tune around some to find them. Leave your uplink fixed. If you find yourself calling CQ more than a few times with no response, you may want to tune your receive back down the band to find a signal to peak up your pointing. Sometimes, and with practice, the noise floor from the satellite is enough to point the antenna by at high elevations.

duplex on the FM satellites, those same problems are almost nonexistent on FO-29. By choosing an uplink frequency other than the most popular ones near the center of the passband we avoid collisions with other users. With only 5 watts and ~6 db of gain we are unlikely to overpower the satellite on the uplink. However, these differences should be explained to the observers and we should avoid half duplex demonstrations on any FM satellite.

The Next Steps

AO-7 can be worked the same way, with a few complications. When AO-7 emerges from eclipse, the mode it starts up in is somewhat random. Most passes seem to be in Mode B with activity around 145.950 downlink/432.150 uplink. The difficulty is in demonstrating AO-7 when the mode is unknown or uncertain. I have on occasion heard the Mode A downlink on a Miracle Whip antenna but it is usually pretty weak and of limited use for a demonstration of this type. Luckily, the upcoming mode B VUsat satellite from AMSAT-India should be very easy to work in this manner.

Other possibilities for expanding our portable demonstration abilities include Mode V/S on AO-51 and Mode U/S on the upcoming SSETI satellite. QSO's have already been made on AO-51 V/S with 2 HTs, an omnidirectional antenna on 145, and a handheld patch and downconverter on 2.4 GHz. I look forward to hearing about your demonstrations on the satellites, and am always available at ko4ma@amsat.org.

