

SATELLITES YOU MAY BE ABLE TO HEAR

The listings below are the receive frequencies on Earth, FM mode only, so you may be able to hear them on an (older) public service scanner, if you don't have a 2M/440 HT yet. And having an outside antenna will definitely help reception; you may not hear them at all inside with just an indoor antenna – depends on the angle of the satellite. Directional antennas (e.g., yagis) are best though.

And turn off the squelch on the radio!

ISS – International Space Station

FM Receive frequency: 145.800 Mhz - random voice contacts, scheduled communications with schools
APRS Receive/Xmit frequency: 145.825 - won't be able to decode unless you have an APRS set-up

AMSAT-OSCAR series - receive frequencies:

Quite strong – may be able to hear these “birds” somewhat inside your house

AO-85 - 145.980

AO-91 - 145.960

AO-92 - 145.880

(Saudi-Sat) SO-50

Receive frequency: 436.805 Mhz – 436.785 Mhz

This one is a little trickier to listen to, because it isn't as strong (you may need a directional antenna to hear it decently) and because of doppler shift (which is negligible on 2 Meters).

At the beginning of the pass (I'll talk about how to find this below), tune the radio to 436.805, then as the audio gets weaker/distorts, switch to 436.800, then as it weakens/distorts again, tune to 436.795, and ditto to 436.790, and ditto to 436.785 towards the end of a pass. Doppler shift will move relatively slower the farther away the satellite is (but the signal from the satellite will be weaker); doppler shift will move more quickly the closer to overhead the satellite is, but the satellite signals will be louder.

WHEN ARE SATELLITES PASSING OVER (OR WILL PASS OVER)

The EASIEST way to find this information is to go to WWW.AMSAT.ORG, scroll over to the [Satellite Info](#) tab, hover over it, and a drop-down menu will appear. Click on the first item, [Pass Predictions](#).

ISS will be the default satellite; use the down arrow to select the “bird”, and the number of passes. In the next box, where it asks for [Lat/Lon or Grid Square](#), enter EM96 (?), click [Calculate Position](#), and the Lat/Lon boxes will populate. (Or just enter your latitude and longitude if you know them.)

For elevation, Winston-Salem is 300 meters. Put a check mark into the [Save My Location](#) box – so you don't have to enter the grid square/elevation every time. Then click [Predict](#). A page will open with a numeric list of predictions for that satellite. The time is in UTC and we in the Eastern time zone are currently 4 hours behind UTC, so subtract 4 hours from the times shown to get local time. BE AWARE that the local day/date may change due to this subtraction; the dates are given in UTC, and, for example, it may be Tuesday there, UTC time, and still Monday here, local time.

Some definitions on the AMSAT tracking site:

AOS is “acquisition of signal”, at what time the satellite's footprint will come into range.

AOS azimuth is where on the horizon the leading edge of the footprint will appear; 0 deg (or 360 deg) being true (not magnetic) North, 90 degrees being East, etc.

Duration – how long the satellite's footprint will last

Maximum elevation – unless you're near the top of a mountain (or in a flat area with no mountains close by) you're probably not going to hear anything below 5 degrees elevation, so I generally ignore passes less than this...

Maximum elevation azimuth – this tells in what direction on the horizon the satellite will be when it's at its greatest elevation.

LOS is “loss of signal”, so LOS azimuth reveals in which direction on the horizon the trailing edge of the satellite will be when the satellite goes out of range.

LOS time – the time when LOS occurs (remember, this is in UTC, so adjust for local time accordingly.)

(If using a non-directional antenna, max elevation and max elevation azimuth won't matter anyway.)

Other tracking methods

Android smartphone? AmsatDroidFree, Heavens-Above, ISS Detector

iPhone? GoSatWatch (\$10) or Satellite Explorer Pro

Software programs for PCs: Linux – Gpredict; Windows - NOVA (now free), SATPC32; Apple – MacDoppler (not free). (These are overkill for the FM satellites; use the AMSAT website tracker. :-))

AMSAT Argentina - <http://amsat.org.ar/pass.htm>

There are other satellites which operate in different (linear) modes like SSB and CW, but those are a bit more complicated to listen to and operate through (but not to track). Most handheld radios will probably not be able to decode those modes, and for most of the linear satellites, you **will** need directional antennas to hear them.

OTHER RESOURCES

AMSAT - <https://www.amsat.org/station-and-operating-hints/>

K6LCS's site - <http://www.work-sat.com/Home.html> (link to tutorial on right side of page)

John KG4AKV's SpaceComms YouTube channel -

<https://www.youtube.com/channel/UCJDdMdjxwFsjdzhXQFHVv2g>

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