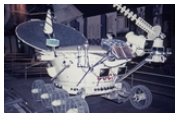


Tracking the ISS

Tyneside, UK
2020 Oct 1
Thursday, Day 275

Maintained by:
Robert Christy

Zarya Home

Satellite Tracking Home

ISS Frequencies

Shuttle/Soyuz Day 1

Transmissions near 600 MHz

Doppler at 922 MHz

Progress M-06M

Visit by Mark Shuttleworth

ISS Now
(new Window/Tab, Flash... "sorry iPad")

Visual Flare

STS-127 & Tank

ISS Operations - 600 MHz

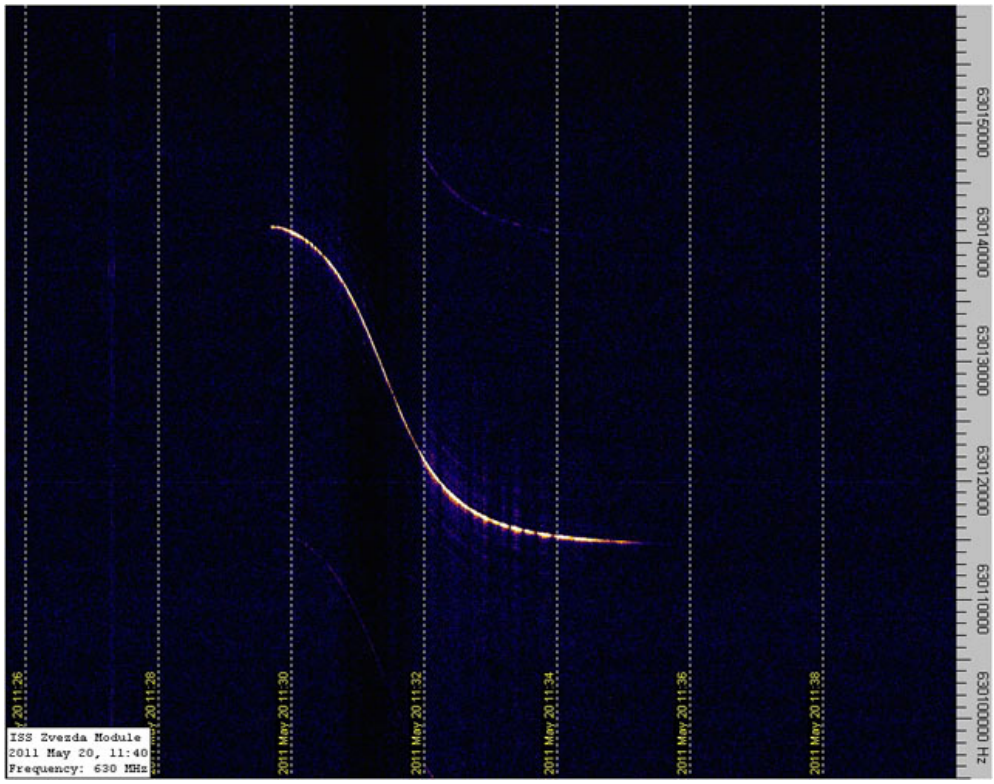
The two major Russian modules of the ISS have transmitters that operate near 600 MHz. The actual allocations are: Zarya - 628 MHz and 630 MHz, Zvezda - 632 MHz and 634 MHz. The actual transmissions consist of sidebands that can be detected 128 kHz either side of the central frequency.

Previous Russian space stations have used this frequency band, notably Mir at 636 MHz and 638 MHz. Some of the other modules that were added to Mir probably also transmitted in this band. As far as ISS modules go, these transmissions were first reported by Sven Grahn and are described at his **web site**.

The transmissions can be detected by tuning to one of the side bands at 128 kHz above and below the basic frequency as there is no central carrier. It is a similar structure to the 166 MHz transmissions that can be detected from Soyuz and Progress when in transit to the ISS, and during 'health checks' performed periodically while they are docked with it.

Zvezda at 630 MHz

Here is a trace of the 630 MHz transmission from Zvezda. It is the "+128 kHz" component of the signal.



Appearance of the signal is sudden when the transmitter switches-on with the ISS several degrees above my horizon, and is the reason for the Doppler curve not being symmetrical in shape.

The aerial used was not ideal for the task in hand as it was built for use at 144 MHz. It will probably account for some of the fading. The stronger appearance of the transmission during the second half of the pass is due to the aerial having greater sensitivity towards the south-east.

The signal fades out about 30 seconds before the ISS reaches horizon. The ISS may have moved into an area of sky where the aerial sensitivity is low but there are other possibilities. There is a 200m high cliff in our local landscape in the direction where the ISS set below the horizon, and it may have blocked the signal for the last few seconds. Blocking of the signal by the ISS structure itself is also a possibility.

Talks & Lectures
Schools, clubs, societies - space exploration and history

On Orbit
Current and historical launch lists, re-entry predictions and diaries, lists of satellites in specialised orbits.

The Kettering Group
People, reminiscences and tracking equipment

Russian Realms
Aspects of the Soviet and Russian programmes

Chinese Meal
Piloted Programme and Other Missions

Korean Collection
Machinations of the Democratic Peoples Republic

Iran In Orbit
Slow steps into space from an emerging nation

American Pie
Snippets from across the Pond

ISS
Mission calendar for the early years

Satellite Tracking
Techniques, analysis and results of tracking activities

Radio Frequencies
Frequency lists, transmission details, BEWARE - last updated 2014

Google Earth 'Tours'
Virtual tours of space places

Tyneside Satellites
Satellite visibility predictions for the Tyneside area

South Tyneside Weather
zarya.info's weather station for South Tyneside