Tracking the ISS

Tyneside, UK
2020 Oct 1
Thursday, Day 275

Maintained by:
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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

Radio Transmissions from the International Space Station

Most of the ISS frequencies listed here are active, It ill be obvious which ones are not but they are included in order to complete the record. With patience and knowledge of when the Space Station is above your horizon, they can be picked up by a reasonable receiver and aerial combination.

Russian transmissions are mainly restricted to Europe but the telemetry from Progress and Soyuz is occasionally detectable over other parts of the world during the 2-3 days chase of the ISS after launch. There are occasional communication checks from the ISS with US ground stations using the VHF-1 and VHF-2 channels (143.625 and 130.167 MHz). They are seldom reported.

The STS frequencies at 259.7 MHz and 2217.5 MHz are no longer used with the demise of the Shuttle programme.

A simple dipole, or even the telescopic aerial supplied with a hand-held scanner, may suffice for the frequencies used by Soyuz, the ISS for voice, and the telemetry/tracking frequencies of 166 MHz and 922.763 MHz. A pre-amplifier is recommended for the best results. There are some tips for tracking launches to the ISS in the satellite tracking area of this site. There is a link in the right hand menu.

Freq (MHz)	Satellite	Transmission	Notes
121.500	Soyuz TM (7K-STM)	Morse code 'AN' recovery beacon and direction finding for recovery teams	**Mir & ISS Crew ferry:** Space station missions, three crew seats, 1986-2004 - NOTE: this is an international distress frequency
121.500	Soyuz TMA	Morse code 'AN' recovery beacon and direction finding for recovery teams	**ISS Crew ferry:** Enlarged crew space, updated control systems, three crew seats, 2002-2012- NOTE: this is an international distress frequency
121.500	Soyuz TMA-M	Morse code 'AN' recovery beacon and direction finding for recovery teams	**ISS Crew ferry:** Digital control system, three crew seats, from 2011 - NOTE: this is an international distress frequency
121.750	Soyuz TM (7K-STM)	30 kHz deviation FM voice	**Mir & ISS Crew ferry:** Space station missions, three crew seats, 1986-2002
121.750	Soyuz TMA	30 kHz deviation FM voice	**ISS Crew ferry:** Enlarged crew space, updated control systems, three crew seats, 2002-2012
121.750	Soyuz TMA-M	30 kHz deviation FM voice	**ISS Crew ferry:** Digital control system, three crew seats, from 2011
130.167	ISS 1998-067A 25544	Medium bandwidth FM voice	**Space station:** VHF-2 channel for Russian segment, used as an alternative to VHF-1 (143.625 MHz) during Shuttle/ISS on-orbit operations
130.167	ISS 1998-067A 25544	Ranging pulses	**Space station:** Used by TORU remote control docking system on the Russian segment, usually tested 1-2 days before a Progress docking is due, the Progress return path is at 121.750 MHz
143.625	ISS 1998-067A 25544	Medium bandwidth FM voice	**Space station:** Russian segment VHF-1 channel for communication with Moscow, also used to relay Mission Control to the Shuttle during docking. Used as part of the ISS Early Communications System over the USA working with the Wallops Facility and White Sands and still used there occasionally but mainly in test mode. Sven Grahn detected it carrying packet data transmissions during Expedition 1.
145.800	ISS 1998-067A 25544	Amateur Radio downlink frequency	**Space station:** Amateur radio downlink from US segment - see NASA's ARISS Page

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

145.825	**ISS** 1998-067A 25544	Amateur Radio downlink frequency	**Space station:** Amateur radio downlink from US segment - see NASA's ARISS Page
145.919	**Kedr** 1998-067CK 37772	CW - morse code telemetry	**Amateur radio satellite released during Russian EVA from ISS 2011 Aug 3, still operating at the time of re-entry:** Only transmitted at this frequency when 145.950 MHz was being used for BPSK-1000 digital telemetry transmission
145.939	**Kedr** 1998-067CK 37772	CW - morse code telemetry	**Amateur radio satellite released during Russian EVA from ISS 2011 Aug 3, still operating at the time of re-entry:** Only used when the digital telemetry sytem switched to backup BPSK-400 mode
145.950	**Kedr** 1998-067CK 37772	Automatic switching between several transmission modes including BPSK telemetry	**Amateur radio satellite released during Russian EVA from ISS 2011 Aug 3, still operating at the time of re-entry:** Ceased to operate on re-entry 2012 Jan 4
145.990	**Suitsat** 2005-035C 28933	NFM - extremely weak	**Amateur radio experiment - life expired Orlan spacesuit equipped with a radio transmitter and released from ISS during a crew EVA:** Voice recording + SSTV image - the low power was due to a failed amplifier - Released from ISS 2006 Feb 3 and battery exhausted 2006 Feb 18
166.000	**Progress M (7K-TGM)**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**Mir and ISS supplies ferry:** 1998-2011
166.000	**Progress M1 (7K-TGM)**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**Mir & ISS supplies ferry:** Uprated propellant capacity, 2000-2004
166.000	**Progress M-SO**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**ISS module delivery:** 2001 & 2009
166.000	**Progress M-M**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**ISS supplies ferry:** 2008-
166.000	**Soyuz TM (7K-STM)**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**Mir & ISS Crew ferry:** Space station missions, three crew seats, 1986-2005
166.000	**Soyuz TMA**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**ISS Crew ferry:** Enlarged crew space, updated control systems, three crew seats, 2002-2012
166.000	**Soyuz TMA-M**	Telemetry transmission PCM-FM, sidebands ±128 kHz	**ISS Crew ferry:** Digital control system, three crew seats, from 2011
259.700	**STS**	AM voice	**ISS Crew/payload transport:** Detected over Europe occasionally prior to Shuttle re-entry from ISS operations, and with voice during the orbital injection phase from Kennedy SC to Europe - also transmitted at 2217.500 MHz, 1981-2011
628.000	**ISS** 1998-067A 25544	FM telemetry - sidebands at +/- 128 kHz	**Space station:** Transmission from the Zvezda module. Transmits on command from within Russia, several times per day - usually in parallel with 630 MHz - Similar transmission format to Soyuz/Progress at 166 MHz but with lower power - part of the BITS telemetry system.
630.000	**ISS** 1998-067A 25544	FM telemetry - sidebands at +/- 128 kHz	**Space station:** Transmission from the Zvezda module. Transmits on command from within Russia, several times per day - usually in parallel with 628 MHz - Similar transmission format to Soyuz/Progress at 166 MHz but with lower power - part of the BITS telemetry system.
632.000	**ISS** 1998-067A 25544	FM telemetry - sidebands at +/- 128 kHz	**Space station:** Transmission from the Zarya module. Transmissions originally reported by Sven Grahn when Zarya first reached orbit - Similar transmission format to Soyuz/Progress at 166 MHz but with lower power - part of the BITS telemetry system and probably no longer in use
633.909	**ISS** 1998-067A 25544	FM telemetry - sidebands at +/- 128 kHz	**Space station:** Transmission from the Zarya module. The central frequency is 91 kHz lower than what might be regarded as the norm for this type of transmission. Transmissions originally reported by Sven Grahn when Zarya first reached orbit - similar transmission format to Soyuz/Progress at 166 MHz but with lower power - part of the BITS telemetry system. Transmissions are infrequent.
922.763	**Progress M (7K-TGM)**	CW carrier.	**Mir and ISS supplies ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. 1998-2011
922.763	**Progress M1 (7K-TGM)**	CW carrier.	**Mir & ISS supplies ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. Uprated propellant capacity, 2000-2004

922.763	**Progress M-SO**	CW carrier.	**ISS module delivery:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. Version flown to deliver ISS components 2001 & 2009
922.763	**Progress M-M**	CW carrier.	**ISS supplies ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. 2008-
922.763	**Soyuz TM (7K-STM)**	CW carreir	**Mir & ISS Crew ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. Space station missions, three crew seats, 1986-2003
922.763	**Soyuz TMA**	CW carrier	**ISS Crew ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. Enlarged crew space, updated control systems, three crew seats, 2002-2012
922.763	**Soyuz TMA-M**	CW carrier.	**ISS Crew ferry:** Part of the REGUL command and control system - there may be other elements of signals on sidebands around this frequency. Digital control system, three crew seats, from 2011
2217.500 SGLS 4	**STS**	CW carrier plus side bands carrying data	**ISS Crew/payload transport:** Integrated voice and data on SGLS Channel 4 - transmitter operates almost continuously while the payload bay doors are open, also transmitted at 259.7 MHz, 1981-2011
2270.000	**Chibis-M** 2011-062C 38051		**Lightning studies satellite:** Frequency information provided by Sven Grahn