



## International Space Station Reference

Details

### Ham Radio

When astronauts, cosmonauts and mission specialists from many nations fly on the International Space Station, they will have amateur, or ham, radio as a constant companion.

Since its first flight in 1983, ham radio has flown on more than two-dozen space shuttle missions. Dozens of astronauts have used the [Space Shuttle Amateur Radio Experiment](#), or SAREX, to talk to thousands of kids in school and to their families on Earth while they were in orbit. They have pioneered space radio experimentation, including television and text messaging as well as voice communication. The Russians have had a similar program for the cosmonauts aboard the Russian Space Station MIR. When U.S. astronauts were aboard MIR in preparation for the long duration missions of the International Space Station, they used amateur radio for communication, including emergency messaging while MIR was in distress.

**Wanna Be a Ham?**  
**What is AMSAT?**  
**Antennas**  
**Curriculum**  
**Phase 1**  
**SAREX**  
**Radio Clubs**  
**Ham Radio**



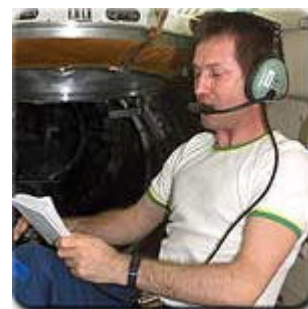
ARISS was created in 1996 to meet certain objectives and was the logical outgrowth of the very successful amateur radio activities on the Mir space station and the space shuttle.

As human space flight moves into a new uncharted era, an organization called [ARISS](#), which stands for Amateur Radio International Space Station, has been formed to design, build and operate equipment. In 1996, delegates from major national radio organizations and from [AMSAT](#), which stands for the Radio Amateur Satellite Corporation, in [eight nations](#) involved with the International Space Station signed a Memorandum of Understanding to form ARISS.

[NASA](#) and the Russian space organization [Energia](#) have signed agreements that spell out the place of amateur radio on the station. A technical team, called ISS Ham, has been officially established to serve as the interface to support hardware development, crew training and on-orbit operations.

In the United States, the [American Radio Relay League](#), which is also known as ARRL, and AMSAT provide leadership and consultation. They also donate and build hardware as well as making sure safety and qualification tests are successfully completed so the equipment can fly. The Russians have provided ports so that antennas can be mounted on the station's Zvezda Service Module -- the space station unit that provides living quarters for the astronauts and cosmonauts. United States and Russian teams have trained the astronauts and cosmonauts to operate the

### Sergei Treschev



Cosmonaut Sergei Treschev, an Expedition Five Flight Engineer, talks on the amateur radio in the International Space Station's Zvezda Module.

### Configuration

Frequencies	
Worldwide downlink for voice and packet	145.80
Worldwide packet uplink	145.99
<b>Region 1</b> voice uplink	145.20
<b>Region 2 and 3</b> voice uplink	144.49
Initial operations will only take place on the 2m band.	
Callsigns for the ISS	
Ken Bowersox	KD5JBP
Don Pettit	KD5MDT
Nikolai Budarin	RV3FB
Russian callsigns	R5OISS, RZ3DZR

equipment. The Italian team has designed and built antennas. The German team has built sophisticated repeater stations that will allow crews to make recorded reports on their daily activities and permit hams on Earth better contacts with men and women aboard the station.



This is a photo of the initial radio station amateur equipment while it was being tested. After testing, the equipment was stowed aboard Space Shuttle Atlantis for delivery to the International Space Station during STS-106.

The initial space station operations will be mostly voice and packet, a text messaging device. The first initial radio station was flown onboard the Space Shuttle Atlantis on STS-106. The crew transferred the ham radio gear into the space station for future use by the Expedition One crew.

More than 40 missions over five years will be required to assemble the International Space Station in orbit. The astronauts and cosmonauts will work hard on these missions, but they plan to take some time off for educational outreach [contacts with schools](#). NASA's Division of Education is a major supporter of the amateur radio activity.

The sponsoring agencies have stated that they consider access to a ham radio system a requirement for psychological support of the crews, by providing family and general contacts for people who will be in space many weeks at a time.

As the International Space Station takes its place in the heavens, the amateur radio community is prepared to do its part by helping to enrich the experience of those visiting and living on the station.

U.S.A. callsign      NA1SS  
 Packet station  
 mailbox callsign    RS0ISS-1  
 Packet station  
 keyboard callsign    RS0ISS

For more information on the procedures used to contact the International Space Station, please visit the [ARRISS Web site](#).

### Related Links

- [Tentative School Contact List and Latest ISS Ham News](#)
- [School Application For ISS Amateur Radio Contact](#)
- [Amateur Radio International Space Station \(ARRISS\)](#)
- [ARRISS-Europe](#)
- [Shuttle Amateur Radio Experiment \(SAREX\)](#)
- [Radio Amateur Satellite Corporation \(AMSAT\)](#)
- [American Radio Relay League \(ARRL\)](#)
- [Amateur Radio Stations Heard via the International Space Station](#)
- [Space Walk to Help Astronauts Ham It Up in Comfort](#)

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