

Azalea Coast Amateur Radio Club Meeting  
Wilmington, NC  
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## **Working the International Space Station on 2 Meter FM**

“what you need, what you need to know!!!”

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### Presentation Outline and Internet Web Site References

#### Background

SAREX – Space Amateur Radio Experiment (1983-1998)

<http://www.arrl.org/ARISS/sarex-past.html>

Mirex – Amateur Radio on the Mir Space Station, R0MIR (1994-2000)

<http://spaceflight.nasa.gov/history/shuttle-mir/welcome/welcome.htm>

ARISS – Amateur Radio on the International Space Station (2001- )

<http://ariss.gsfc.nasa.gov/EVAs/amsat01.pdf>

(2001: an Amateur Radio Space Odyssey on the International Space Station,  
by Frank H. Bauer, KA3HDO, 8 pages, excellent article!)

<http://www.arrl.org/ARISS/>

<http://www.arrl.org/ARISS/arissfaq.html>

<http://www.rac.ca/ariss.htm>

<http://www.ariss.gsfc.nasa.gov/objectives.html>

<http://spaceflight.nasa.gov/station/reference/radio/index.html>

<http://liftoff.msfc.nasa.gov/realtime/satlookup.aspx?sc=1998-067A>

<http://ariss.gsfc.nasa.gov/>

#### ARISS Sponsors

American Radio Relay League (ARRL) <http://www.arrl.org/>

Radio Amateur Satellite Corporation (AMSAT) <http://www.amsat.org/>

National Aeronautics and Space Administration (NASA)

<http://www.nasa.gov/>

#### ARISS Amateur Radio Equipment

Ericsson Commercial Grade Handheld Transceiver (5 watt)

<http://ariss.gsfc.nasa.gov/EVAs/amsat01.pdf>

(2001: an Amateur Radio Space Odyssey on the International Space  
Station, by Frank H. Bauer, KA3HDO, 8 pages, includes photos of the  
transceiver, auxiliary equipment, and current and future antennas)

<http://www.arrl.org/news/stories/2000/09/09/1/>

<http://www.arrl.org/news/stories/2002/01/15/1/>

<http://www.arrl.org/arrlletter/02/0802/>

#### When to Make Contact

Hard Way – Using Tracking Programs, Keplerian Elements, etc., for AOS/LOS

### Easy Way – Email Schedules from NASA Marshall Space Flight Center

<http://liftoff.msfc.nasa.gov/RealTime/Jpass/PassGenerator/>

(be sure to sign up for “all passes” for “Station” not just “visual passes” and use zip code for home location – easier than Lat/Lon)

<http://liftoff.msfc.nasa.gov/RealTime/Jpass/PassGenerator/help.html>

(higher angle passes last 10 minutes or more, look for passes with maximum elevation of at least 10-20 degrees [note that when the ISS is at very high angles your antenna pattern may cause diminished signal during the middle of the pass]; watch especially for passes where the ISS is moving over the ocean – reducing the number of stations competing for contacts)

### Voice Versus Packet

(most passes are packet [intermittent chirping sounds], listen for voice activity)

### Current Station Location

<http://liftoff.msfc.nasa.gov/temp/StationLoc.html>

### Additional Considerations – Special Events (Field Day, JOTA), Crew Schedule

<http://spaceflight.nasa.gov/station/timelines/>

### What Equipment to Use

Hard Way – Complete Satellite Station with Automatic Az/El Antenna Tracking

Easy Way – 2 Meter Mobile (or 2 Meter Handheld with Lightweight Beam)

(My mobile setup is an IC-706 MkII-G with quarterwave vertical antenna)

### Who to Call / Frequencies to Use

NA1SS or RS0ISS, Valery Korzun (RZ3FK), Sergei Treschev (RZ3FU), Peggy Whitson (KC5ZTD) / 145.800 Downlink, 144.490 Uplink (-1.310 offset)

<http://spaceflight.nasa.gov/station/reference/radio/index.html>

<http://www.w5rrr.org/crews.html>

<http://www.rac.ca/ariss.htm#Current>

### How to Get QSL Cards

Keep a Log (date, time in UTC, frequency, mode, crew member contacted, etc.)

ARRL HQ is QSL Manager

<http://www.arrl.org/ARISS/ariss-qs1.html>

### Keeping Track

AMSAT News Service <http://www.amsat.org/news/ans.html>

AMSAT News Service Weekly Satellite Report

<http://www.amsat.org/amsat/news/ans2002/>

ARRL Newsletter <http://arrl.org/arrlletter>

(look for: relocation of the primary ham shack area from the Zarya Functional Cargo Block [FGB] to the Zvezda Service Module [SM] near the crew dining table, upcoming activity on 70 cm FM voice, SSTV, and possibly HF (20/15/10 meters) operation in the future)