

Getting Started With Amateur Radio in Hobby Rocketry

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- NOVAAR
- VAST

- MicroMaxx to M!

- BP, APCP, & N₂O

Any hams here?

- Really want to be?
- Not sure if ham radio is for you?
- Just showed up hoping there would be chocolate?

What is Amateur Radio?

- Hobby involving communications and electronics.
- Contests, emergency services, casual chatting, technology development.
- International in scope.



Sunita Williams on board the ISS.
Courtesy NASA.

What Can You Do?



- Tracking
- Telemetry
- Use satellites
- Event coordination
- General chatting

Received from the International Space Station with a handheld radio and iPhone app.

Telemetry Considerations

- Transmit frequency
 - Ham or not to ham?
- Need RDF capability?
 - Spread Spectrum
- May still need audible beeper

Frequency bands

- 145 MHz “ham radio”
 - 144.39 APRS
- 216-219 “wildlife tracking”
- 222-225 ham band
- 440 MHz ham band
- 443.92 MHz
- 900 MHz
- 2 GHz spread spectrum

Strengths and weaknesses

Amateur radio

- More power
- Frequency agile
- Often usable internationally
- Expandable
- Multi-user
- APRS network

Non-licensed

- Lower power
- Fixed frequency

Strengths/weaknesses cont.

Amateur radio

- Licensee presence
- More configurable

Non-licensed

- Shareable
- Easy setup?
- Difficult to RDF

Getting Licensed

- Entry level: Technician
 - 35 question multiple-choice exam
 - Low cost (~\$15) given locally
 - No Morse Code test
- All privileges above 30 MHz

Study For The Test

- Question pool is published
- Local clubs hold classes
- Many books and web pages
- Training software

What Do You Need?

1. Airborne transmission system
 2. Ground reception, decoding, and display
- Club owned shared systems?
 - Get local radio club involved?
 - Buy used?

Current Products

- Consumer
- UAS Platforms
- Rocketry specific

Using the Data

- Post processing
 - Google Maps
- Apps
- Computer tools
- Standalone tools
 - Kenwood TH-D74
- Web based
 - aprs.fi

References

- <https://www.kw4wz.com/NARCON>
- www.ARRL.org
 - <http://www.arrl.org/what-is-ham-radio>
- <https://www.ariss.org/hams-in-space.html>