How to Receive SSTV Images from the ISS: A Step-by-Step Guide

Capturing Slow Scan Television (SSTV) images directly from the International Space Station (ISS) is an exciting and accessible project—even for those without a ham radio license! Since this is receive-only, you don't need a license, and it's a fantastic entry into the world of amateur radio. Here's everything you need to get started.

What You'll Need

1. **ISS Tracking App or Website** – To know when the ISS will pass overhead.
2. **VHF Radio or SDR** – Any radio capable of tuning to **145.80 MHz FM** will work, including handhelds, mobile radios, base stations, or even a low-cost SDR dongle.
3. **Antenna** – A basic rubber ducky antenna is fine, but a longer whip or Yagi antenna will improve reception.
4. **Recording Device** – A smartphone, digital recorder, or any device that can capture audio.
5. **SSTV Decoding Software** – Software to convert the received audio into images.

Step 1: Track the ISS Pass

Knowing exactly when the ISS will pass overhead is essential for timing your reception. Here are some reliable tools to track the ISS:

Websites

- **Heavens-Above** – Provides detailed ISS pass predictions and interactive sky charts. Visit heavens-above.com (https://heavens-above.com).
- **NASA's Spot the Station** – The official NASA tool that offers alerts and pass details for upcoming ISS passes. Access it at spotthestation.nasa.gov (https://spotthestation.nasa.gov).

Mobile Apps

- **ISS Detector for Android** – Allows you to track ISS passes with options for visibility and altitude. Find it on the Google Play Store (https://play.google.com/store/apps/details?id=com.runar.issdetector).

- **GoISSWatch for iOS** – Provides real-time tracking with ISS position and pass details. Available on the Apple App Store (https://apps.apple.com/us/app/goisswatch-iss-tracker/id426610884).

Desktop Apps

- **Orbitron for Windows** – Satellite tracking software with detailed pass predictions, tracking maps, and multi-satellite capabilities. Download it at satobs.org (http://www.satobs.org/orbitron/).
- **Stellarium for Mac** – A planetarium program with a satellite plug-in that can track the ISS. Get it at stellarium.org (https://stellarium.org).
- **Gpredict for Linux** – Open-source software with ISS tracking and prediction features. Available at gpredict.oz9aec.net (http://gpredict.oz9aec.net/).

Step 2: Set Up Your Radio or SDR

- **Frequency** – Tune your device to **145.80 MHz FM**, the standard downlink frequency for ISS SSTV transmissions. For more information, see AMSAT UK's guide (https://amsat-uk.org/beginners/iss-sstv/).
- **Antenna** – Attach the best antenna available. While a basic rubber ducky antenna can work, a longer whip or directional Yagi will improve signal strength.

If you're using an SDR dongle, tune it to 145.80 MHz FM using software such as SDR# (for Windows) or Gqrx (for Mac and Linux).

Step 3: Record the Transmission

The ISS transmits SSTV images in **PD120 mode** at **25 watts**, typically for about 2 minutes on, followed by 2 minutes off (ARRL (https://www.arrl.org/news/sstv-transmissions-scheduled-from-iss)).

- **Recording** – If your radio or SDR setup does not support internal recording, use a smartphone's voice memo app or a digital recorder. Place it near the radio's speaker for clear audio.
- **Why Record?** – Recording the audio instead of decoding live allows you to replay it and make adjustments during decoding, often resulting in a clearer image.

Step 4: Decode the SSTV Image

Once recorded, use SSTV decoding software to process the audio and create an image. Here are recommended options for each platform, with download links:

- **Windows**: MMSSTV (http://hamsoft.ca/pages/mmsstv.php) – A popular choice for SSTV decoding among amateur radio operators.
- **Mac**: MultiScan 3B (http://www.qsl.net/kd6cji/) – Compatible with macOS and supports various SSTV modes.
- **Linux**: QSSTV (https://users.telenet.be/on4qz/qsstv/) – Open-source SSTV decoder commonly used in Linux.
- **Android**: Robot36 (https://play.google.com/store/apps/details?id=xdsopl.robot36) – A versatile SSTV decoder for Android devices.
- **iOS**: SSTV Slow Scan TV by Black Cat Systems (https://apps.apple.com/us/app/sstv/id387910013) – Designed specifically for SSTV decoding on iOS.

Settings – Set the decode mode to **PD120** to match the ISS transmission. Load your recorded audio into the software, and the SSTV image will display.

Additional Tips

- **Antenna Positioning** – For optimal reception, ensure a clear line of sight to the sky. Directional antennas like a Yagi will significantly improve signal strength.
- **Practice** – Use the recording attached to this guide to practice decoding before trying to receive ISS transmissions live. This will help you become familiar with the software. (FYI, the recording is from a 6 minute ISS pass at 19:56 UTC on the 11 November 2024. It was recorded by VK4MPB through a mobile whip attached to a car mounted IC-7100, sitting in an open-air car park)
- **Stay Updated** – ISS SSTV events are not continuous. Stay informed about upcoming transmissions through amateur radio forums and official ISS communication channels.

Receiving SSTV images from the ISS is accessible even to those without a ham license. With just a simple setup, you can enjoy this fun and rewarding entry into the world of amateur radio. Happy listening, and enjoy your journey into the hobby!