

A photograph of an amateur radio station on a wooden desk. In the foreground, a hand is pressing a button on a grey remote control. In the background, a radio with a green-tinted screen and a coiled microphone is visible. The text is overlaid on the image.

# Amateur Radio Operation By Remote Control

1. An Introduction to Common Methods
2. Live Demo of a Custom Configuration

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# Agenda

- Ham Radio operation at a distance... The regulations, and... Why operate remotely?
- How might YOU use it? (Discussion)
- Requirements and considerations
- Different methods of remote operation... Costs and levels of difficulty... Which is best for YOU?
- Seeing different methods in action via YouTube
- Putting the pieces together: One example of a custom configuration
- A live demonstration by KB3BB
- Some resources and links are provided, should you wish to operate remotely
- Q&A Session



# Remote Operation Defined

- Definition of Remote Operation
- Types of Remote Operation Systems
- Benefits and Limitations
- Safety, Regulatory Compliance and Good Operating Practice

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## How & Why Operate Remotely?

- Remotely operate someone else's station: Utilize remote operation to overcome limitations of your home station (e.g. limited power, limited antenna gain, limitations of your home station's geographic location), and do so easily without transporting equipment or figuring out how to set up remote station technology
- Remotely operate your home station: Get on the air using YOUR home from almost any location, without having to transport bulky, expensive radio equipment
  - Eliminates need to transport and deploy an effective antenna at your remote location
  - However YOU must figure out how to set up the remoting capability for your station, configure and deploy it



# Remote Operation Requirements

- A computer or smartphone
  - MIDI controller (optional) for “knobs and buttons”
- Remote configuration must include automatic 3-minute Tx cutoff should you experience loss of transmitter control
- If no control op is present at the location of the transmitter, YOU are the control operator
- If the transmitter is outside the U.S., there must be full compliance with the governing authority’s rules at the location of the transmitter. In this example you must be granted the same operating permission and adhere to the same rules that would be required had you physically traveled to operate a station in that country
- If the transmitter is located in the U.S. and you are licensed to operate in the U.S., you’re free to operate remotely via Internet, from wherever you are located in the world!



## FCC Exam Question

E1C08 (B) [97.213]

What is the maximum permissible duration of a remotely controlled station's transmissions if its control link malfunctions?

A. 30 seconds

B. 3 minutes

C. 5 minutes

D. 10 minutes

## FCC Exam Question

E2C01 (D)

What indicator is required to be used by U.S.-licensed operators when operating a station via remote control and the remote transmitter is located in the U.S.?

- A. / followed by the USPS two-letter abbreviation for the state in which the remote station is located
- B. /R# where # is the district of the remote station
- C. / followed by the ARRL Section of the remote station
- D. No additional indicator is required

## FCC Exam Question

G1D05 (A) [97.7]

When operating a US station by remote control from outside the country, what license is required of the control operator?

A. A US operator/primary station license

B. Only an appropriate US operator/primary license and a special remote station permit from the FCC

C. Only a license from the foreign country, as long as the call sign includes identification of portable operation in the US

D. A license from the foreign country and a special remote station permit from the FCC



## FCC Exam Question

G1D12 (C) [97.507]

When operating a station in South America by remote control over the internet from the US, what regulations apply?

- A. Those of both the remote station's country and the FCC
- B. Those of the remote station's country and the FCC's third-party regulations
- C. Only those of the remote station's country
- D. Only those of the FCC

## FCC Exam Question

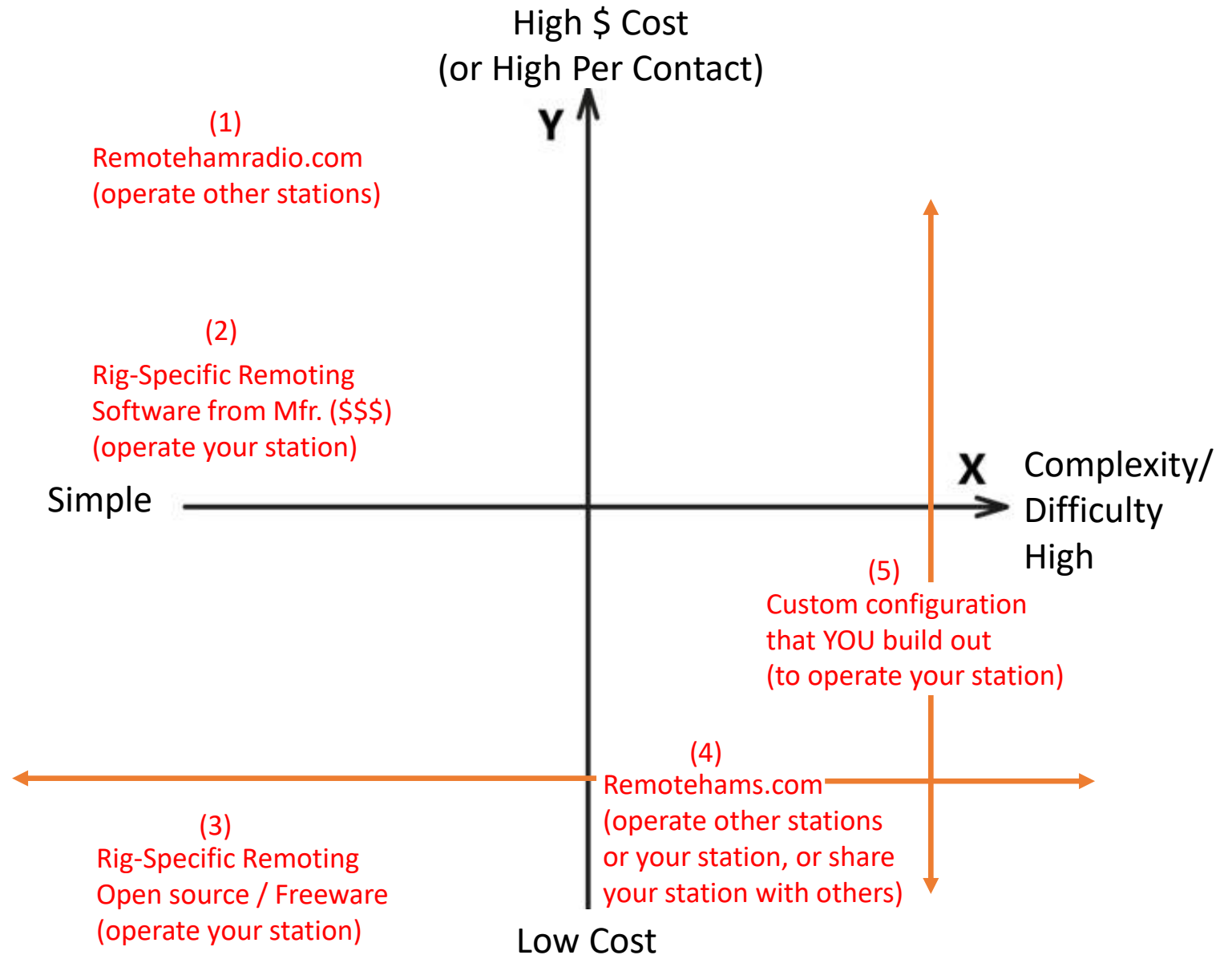
G1E12 (A) [97.115]

When may third-party messages be transmitted via remote control?

- A. Under any circumstances in which third party messages are permitted by FCC rules
- B. Under no circumstances except for emergencies
- C. Only when the message is intended for licensed radio amateurs
- D. Only when the message is intended for third parties in areas where licensing is controlled by the FCC

# Choices, choices!

Depending on YOUR operating needs, requirements and preferences, you can operate remotely using various methodologies and services depicted at right:



# Technical Considerations for Remote Control

- Latency Considerations
- Remote Equipment Monitoring and Maintenance
- Remote Troubleshooting and Support
- Integration with Other Communication Technologies (e.g. FT-8 with WSJT-x)

Photo by: Pixabay <https://www.pexels.com/@pixabay>



## (1) RemoteHamRadio.com

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- “Turnkey” access to 29 established Amateur stations, many with QRO power
- Short learning curve to get on the air controlling a remote station as long as you have a computer with Internet access
- Cost is \$20 Monthly or \$99 yearly PLUS “airtime usage” which vary from \$0.19 to \$1.25 per minute of operation
- “Youth network” of ten stations at no cost to Amateurs 21 or younger
- All modes, including digital
- Knowledge base at [Knowledge Base – Remote Ham Radio](#)
- Tutorials at [RHR Tutorial Series – YouTube](#)
- And [WebDX Tutorial RemoteHamRadio.com \(youtube.com\)](#)

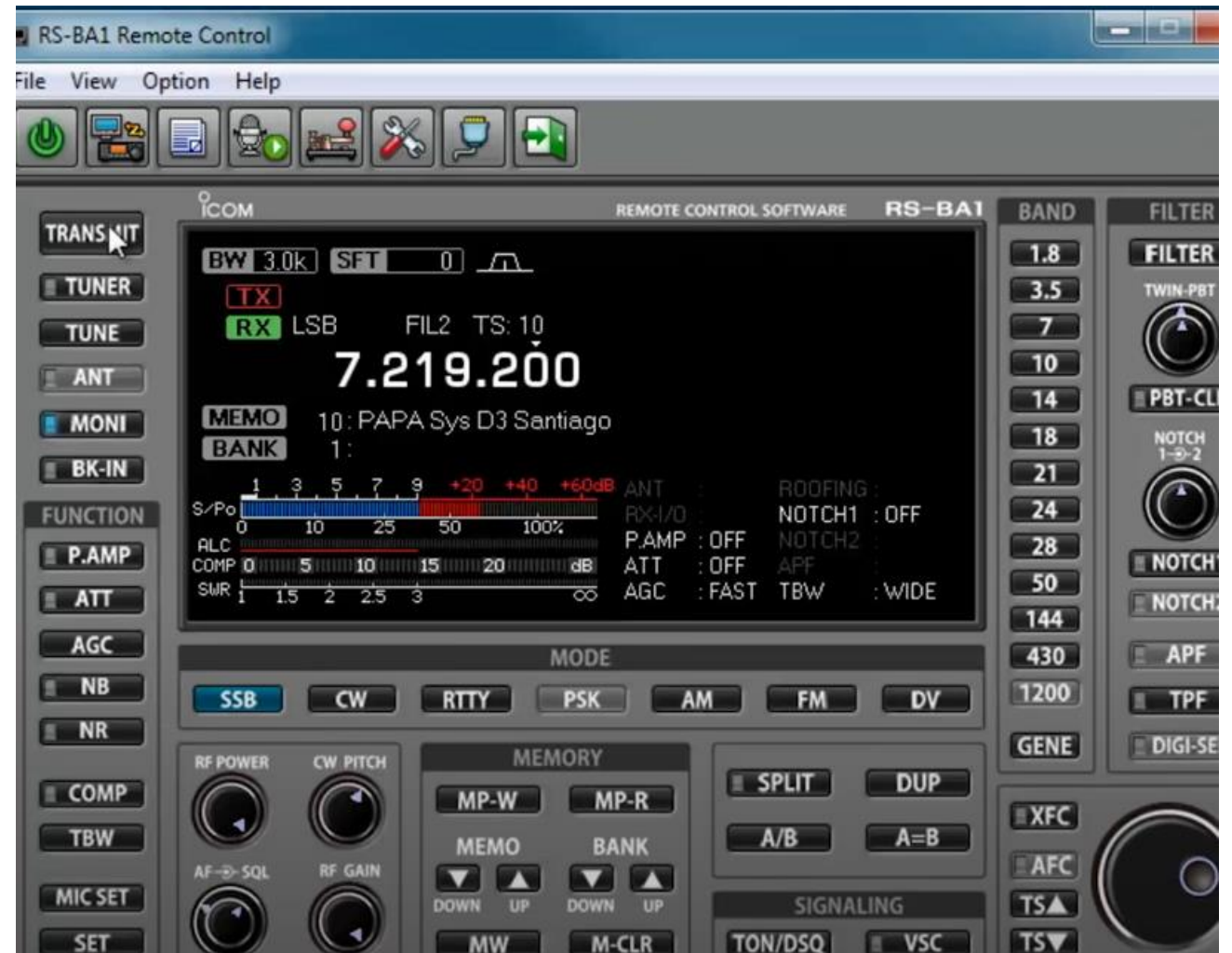




(2)

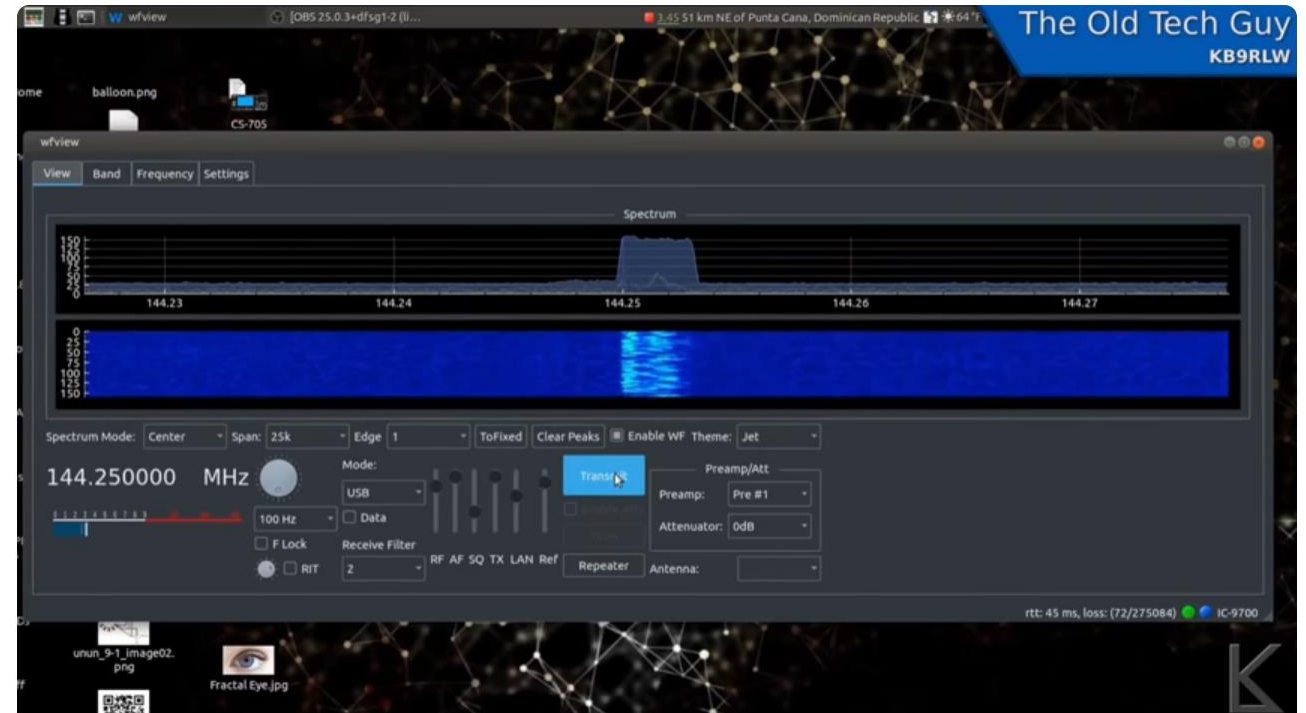
## Branded, Rig-Specific Software (\$\$)

- Branded software put out by your rig's manufacturer. Example for Icom IC-7300 is the RS-BA1 Version 2, at a cost of about \$149. For a tutorial guiding you through installation and showing the software in action, [Icom RS-BA1 Installation and Configuration \(youtube.com\)](#) A special controller (with knobs and buttons) can also be purchased.
- There is a moderate learning curve to get on the air controlling your station remotely. On top of installing and learning to use the software, there are other considerations such as figuring out how to control your home station's antennas, your automatic tuner, and your power amplifier if any.
- Remote control software is also available to control popular modern transceivers made by other manufacturers, e.g. [Yaesu SCU-LAN10 Remote Control System \(youtube.com\)](#)



## (3) Freeware

- Rig-specific FREEWARE options are also available for remote controlling many radios.
- For example, many Icom radios can be remotely controlled using freeware called “sfview”. Here is a description and tutorial:
- [Ham Radio - Free and open source remote operation of many Icom radios with wfview - YouTube](#)



## (4) “Remotehams” System

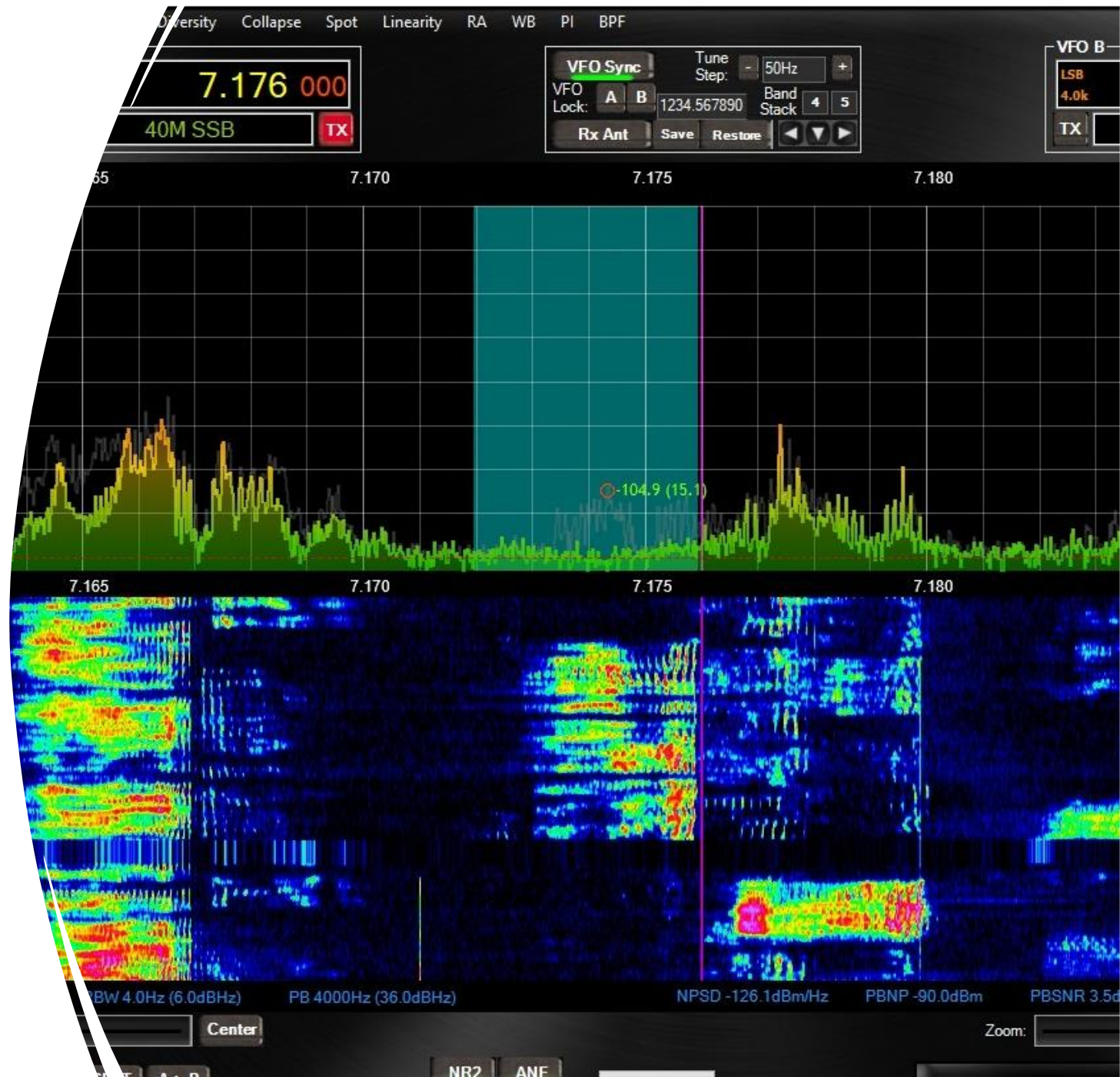
- A way to platform your radio for remote operation, to share your radio with another amateur or radio club, and a way to access other amateur’s equipment
- This system uses “donationware”
- Best description and reviews of this system I found was on eHam.net: [RemoteHams remote control software](#)
- Two versions of software: RCForb Server (is installed at the site where the radio is), and RCForb Client (installed on the computer being used from a remote location, which accesses the rig at the RCForb Server’s location)
- An excellent choice for someone who will become **seriously** involved with remoting, and wants to become part of the “Amateur Radio remoting community”
- For an introduction, see: [RCForb Software Intro \(youtube.com\)](#) For signup information, software and other resources: [RemoteHams.com - Index](#)





# Demonstration of Remote-Control Operation

- This is a custom remote-control configuration:
  - **Splashtop Business** (for remote computer control and streaming)
  - **RemAud** (audio control freeware developed for Amateur Radio) to transport input (mic) audio from computer at W2ZQ to KB3BB home station, and output audio from the server computer at KB3BB's home station to client computer at the W2ZQ shack
- Rig being remotely controlled: Apache Labs Anan 7000DLE SDR radio, located ~5 miles away
- Mercury IIIs solid state amp at ~750 watts
- Antenna is a 40-meter loop in the vertical plane, trapezoidal shape, suspended between two pine trees with antenna height varying from 28-55 feet
- Autotuner is set to Bypass (not needed today)



# What it took (KB3BB's custom configuration)...

## Preparation:

- Downloaded and ran VSP Manager software by K5FR, free to licensed U.S. Amateur radio operators. Emailed K4FR for permission to use this software and for the download link. See [VSP Manager - DDUtilV3 \(k5fr.com\)](#) This software created custom COM port pairs needed for PTT control as used by Remaud audio software connecting to Anan transceiver.
- Obtained virtual audio cables from VB Audio [VB-Audio Virtual Apps](#)
- Remaud: Custom Software (freeware) for getting audio in and out of your home (server) computer. Downloaded at [DF3CB.com :: RemAud :: Remote Audio Software](#) . Modified home router to set the computer running Anan transceiver to a static IP address on the home network. On home router, opened up Port 4000 on that static IP address to allow Remaud audio traffic to come in from any remote location. Also took advantage of home router's TP-Link account to establish a DDNS (Dynamic Domain Name Server) address, so whenever home internet provider changes in the public IP address the dynamic name server "follows along".
- Obtained and installed Splashtop Business Access remote desktop software found at [Splashtop Business Access | Remote Computer Access Software](#)
- Configured Anan 7000DLE transceiver to use VAC1 and connected audio input and output on VAC1 to virtual audio cables, set to a sample rate of 44.1kHz and modified sound settings in Windows 10 to set that virtual audio cable to match the 44.1kHz sample rate. In the Anan transceiver settings in Thetis, selected the appropriate virtual audio cables coming to and from the Remaud Server software so that the rig will send and receive audio via Remaud. Also set up a custom profile in Thetis to save this transmit profile under a separate name, "Remaud Remote", so it can be selected again without having to re-configure.
- Configured Remaud to connect with the appropriate virtual audio cables. Also set up usernames and passwords for remote operation, and selected the 44.1k bitrate, 16 bits per second mono (not stereo).
- Purchased a Defiant "Smart Indoor Plug" (15 Amps) to allow power-on and power-off of radio's power supply, using an iPhone.



Q&A