Remote HF Radio Operation

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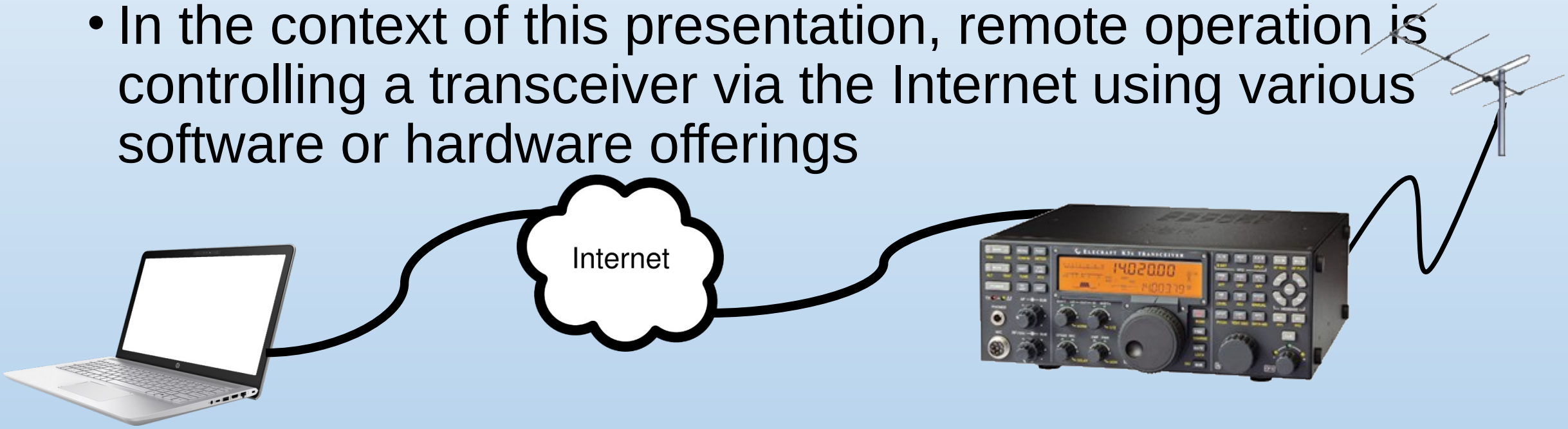
Discussion Objectives

- What is remote HF operation?
- Why would anyone want to do this?
- How do I access or setup a remote station?
- Q & A

What is remote operation?

- In simplest terms, remote operation allows you to partially or fully control a transceiver at a different location.
- In the context of this presentation, remote operation is controlling a transceiver via the Internet using various software or hardware offerings



Why would I want to do this?

- A restrictive HOA
- Local RF Noisy location
- Traveling
- Access to systems across the United States and around the world.

Equipment Software/Hardware Options

- CRD, RDP, Teamviewer
  - Remote Control Desktop Software
- Manufactures Software
  - Specialty software from radio manufacture
- RemoteRig – remoterig.com
  - Dedicated Specially Designed Hardware
- RemoteHams – remotehams.com
  - Software System Using Computers

With increased interest in remote operations, there are several groups and companies looking at creating software for this market.

Chrome Remote Desktop

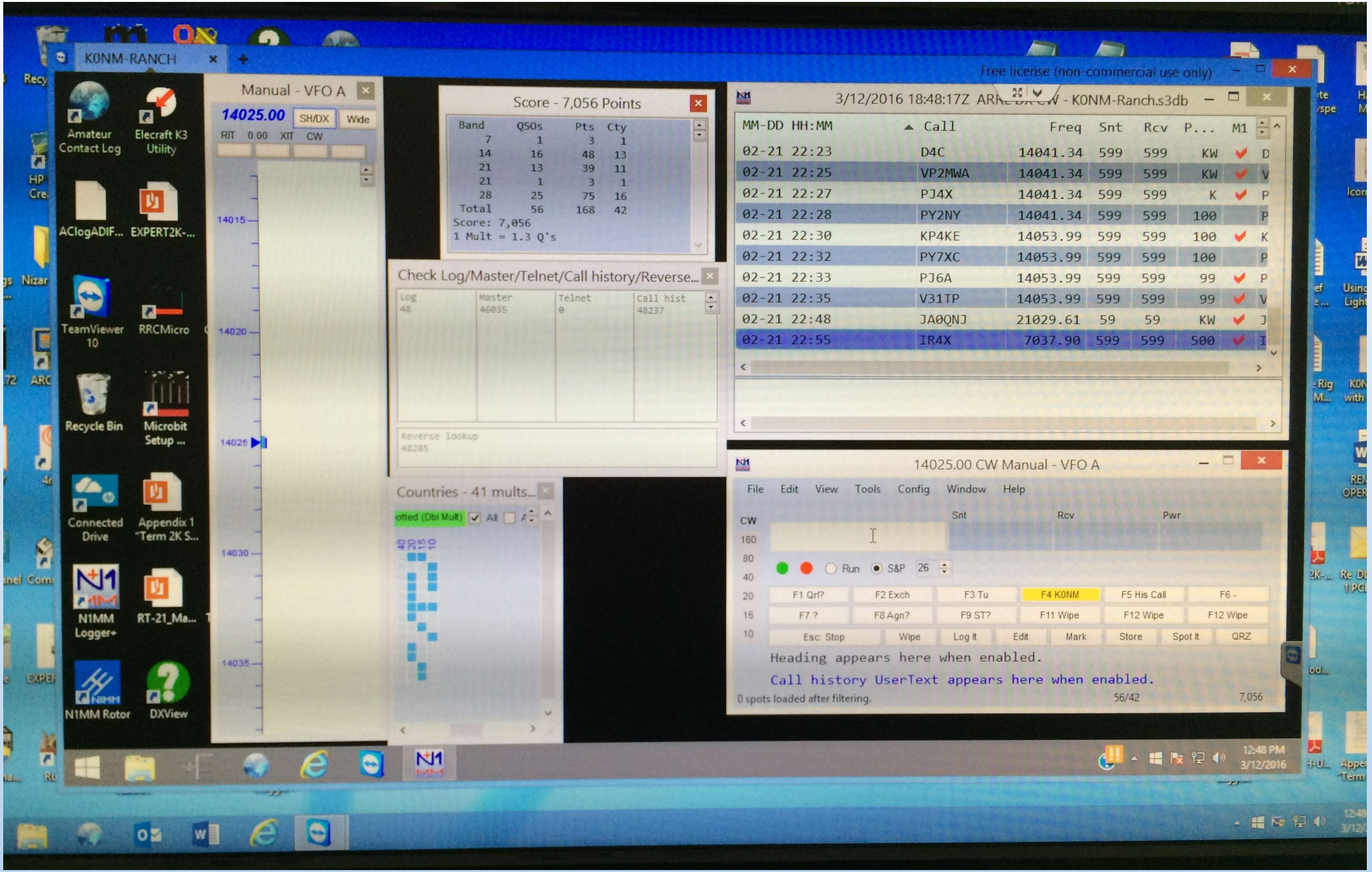
- **Chrome Remote Desktop is a remote desktop software tool developed by Google that allows a user to remotely control another computer through a proprietary protocol developed by Google unofficially called "Chromoting". It transmits the keyboard and mouse events from one computer to another, relaying the graphical screen updates back in the other direction, over a network.**
- **Chrome Remote Desktop requires the use of Google Chrome, along with the installation of an extension from the Chrome Web Store.**
- **Chrome Remote Desktop supports both a remote assistance mode, allowing a user to control another person's computer as well as a remote desktop mode where a user can connect to another one of his or her own machines remotely. The remote desktop functionality is supported for Windows, Mac and Linux operating systems with Linux support in beta. It uses VP8 video to display the remote computer's desktop to the user. Under Windows, it supports copy-paste and real-time audio feed as well**

Remote Desktop Protocol

- **Remote Desktop Protocol (RDP) is a proprietary protocol developed by Microsoft, which provides a user with a graphical interface to connect to another computer over a network connection. The user employs RDP client software for this purpose, while the other computer must run RDP server software.**
- **Clients exist for most versions of Microsoft Windows (including Windows Mobile), Linux, Unix, macOS, iOS, Android, and other operating systems. RDP servers are built into Windows operating systems; an RDP server for Unix and OS X also exists. By default, the server listens on TCP port 3389 and UDP port 3389.**
- **Microsoft currently refers to their official RDP client software as Remote Desktop Connection, formerly "Terminal Services Client".**

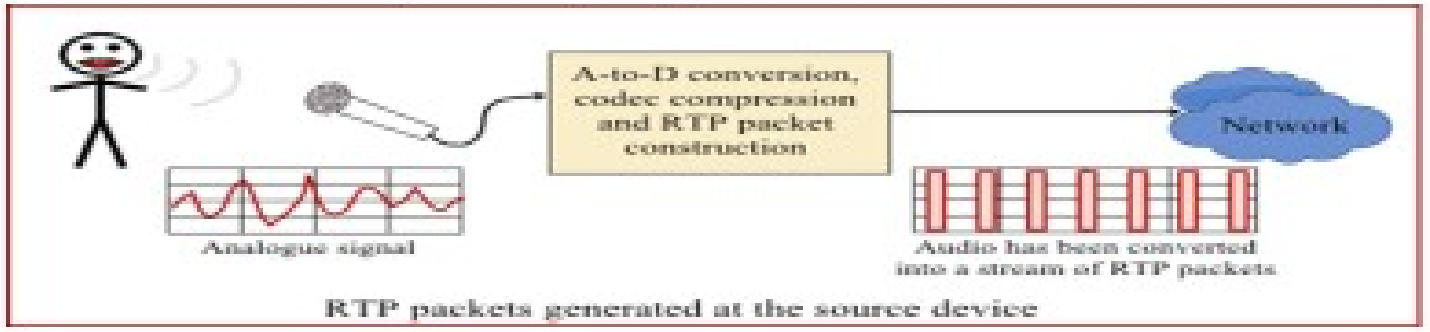
Teamviewer

- **TeamViewer is a proprietary computer software package for remote control, desktop sharing, online meetings, web conferencing and file transfer between computers.**
- **TeamViewer is available for Microsoft Windows, macOS, Linux, Chrome OS, iOS, Android, Windows RT, Windows Phone 8 and BlackBerry operating systems. It is also possible to access a machine running TeamViewer with a web browser. While the main focus of the application is remote control of computers, collaboration and presentation features are included.**
- **TeamViewer can be used without charge by non-commercial users, and Business, Premium and Corporate versions are available**.


K0NM-RANCH
Free license (non-commercial use only)
Manual - VFO A
14025.00
SH/DX
Wide
RIT 0.00 XIT CW
14015
14020
14025
14030
14035
Score - 7,056 Points
Band QSOs Pts Cty
7 1 3 1
14 16 48 13
21 13 39 11
21 1 3 1
28 25 75 16
Total 56 168 42
Score: 7,056
1 Mult = 1.3 Q's
Check Log/Master/Telnet/Call history/Reverse...
Log 48
Master 46035
Telnet 0
Call hist 48237
Reverse lookup
48285
Countries - 41 mults...
3/12/2016 18:48:17Z ARRL DX CW - K0NM-Ranch.s3db
MM-DD HH:MM Call Freq Snt Rcv P... M1
02-21 22:23 D4C 14041.34 599 599 KW
02-21 22:25 VP2MWA 14041.34 599 599 KW
02-21 22:27 PJ4X 14041.34 599 599 K
02-21 22:28 PY2NY 14041.34 599 599 100
02-21 22:30 KP4KE 14053.99 599 599 100
02-21 22:32 PY7XC 14053.99 599 599 100
02-21 22:33 PJ6A 14053.99 599 599 99
02-21 22:35 V31TP 14053.99 599 599 99
02-21 22:48 JA0QNJ 21029.61 59 59 KW
02-21 22:55 IR4X 7037.90 599 599 500
14025.00 CW Manual - VFO A
File Edit View Tools Config Window Help
CW
Snt
Rcv
Pwr
160
80
40
20
15
10
Run
S&P
26
F1 Qrl?
F2 Exch
F3 Tu
F4 K0NM
F5 His Call
F6 -
F7 ?
F8 Agn?
F9 ST?
F11 Wipe
F12 Wipe
F12 Wipe
Esc Stop
Wipe
Log It
Edit
Mark
Store
Spot It
QRZ
Heading appears here when enabled.
Call history UserText appears here when enabled.
0 spots loaded after filtering.
56/42
7,056
12:48 PM
3/12/2016
Amateur Contact Log
Elecraft K3 Utility
ACLogADIF...
EXPERT2K-...
TeamViewer 10
RRCMicro
Recycle Bin
Microbit Setup ...
Connected Drive
Appendix 1 "Term 2K S...
N1MM Logger+
RT-21_Ma...
N1MM Rotor
DXView

Critical Parameters for Voice over Internet

A/D Sampling Rate and Bits



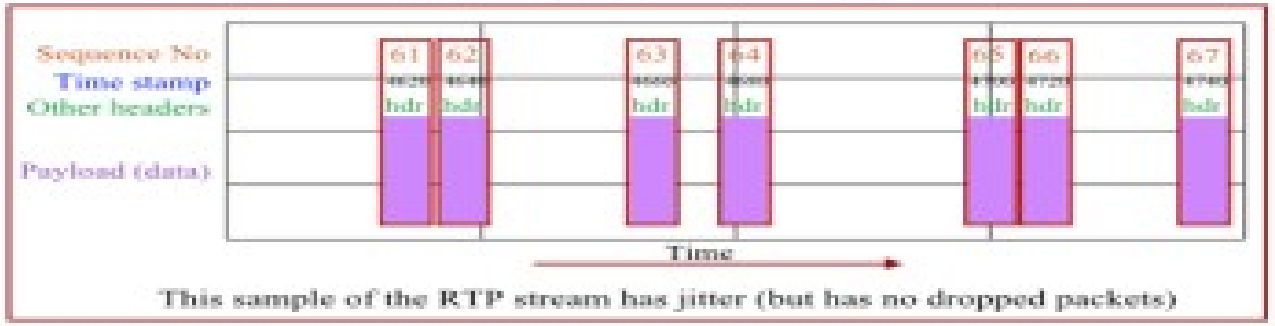
Packet Size Buffer Size

Loop Time (PING)

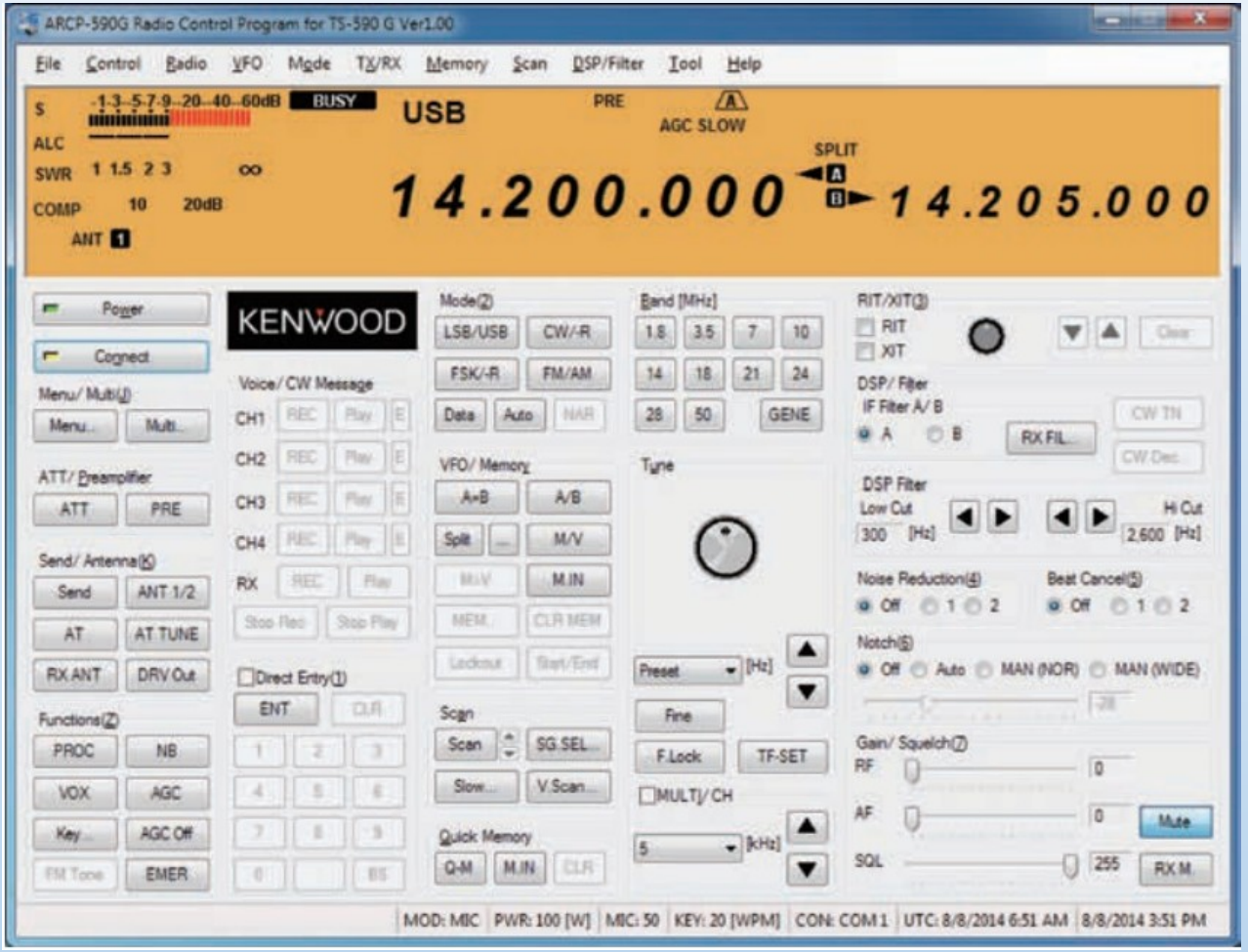
Processing Delay

Total Delay <150 ms

Time Jitter Dropped Packets

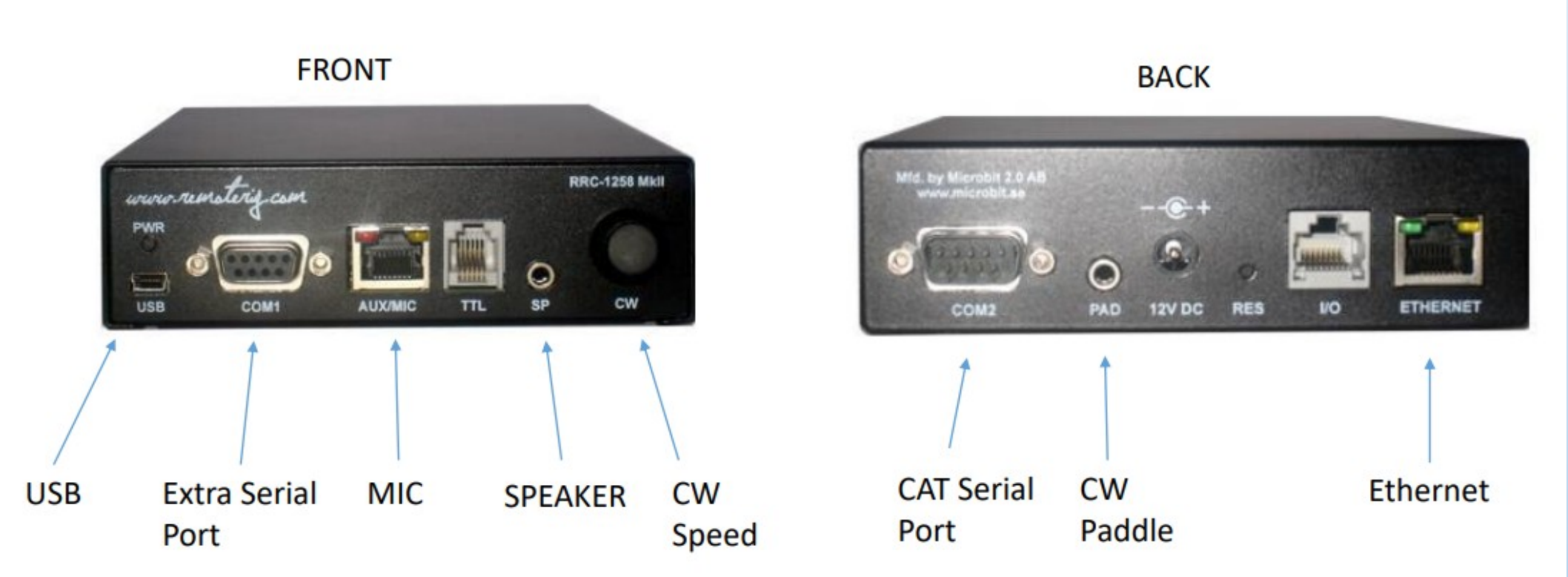


Kenwood Remote Software



RemoteRig Hardware

- Dedicated Microprocessor And Electronics for Faster Processing
- RRC now has PC and Android options



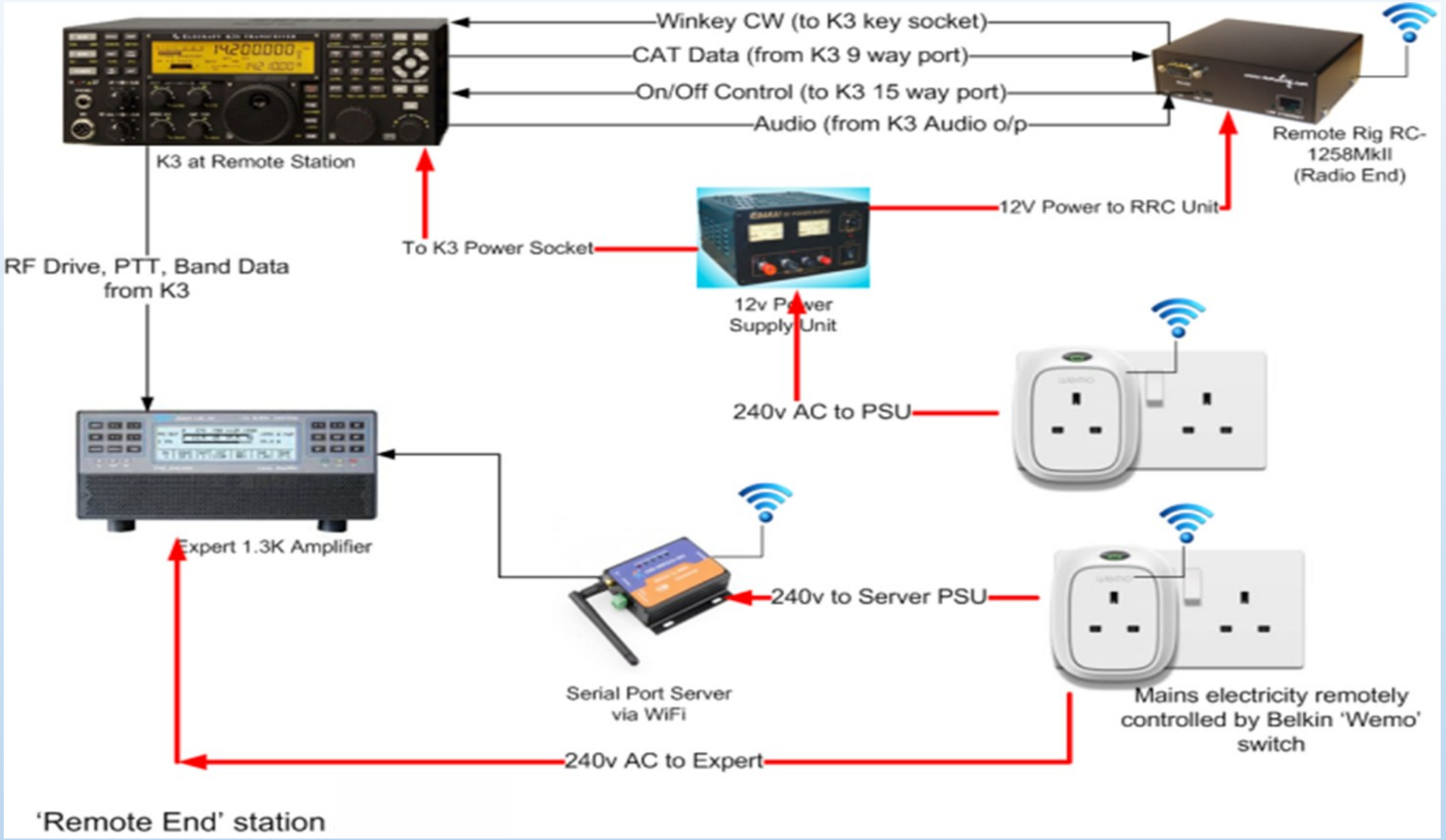
RemoteRig Dedicated Hardware

- No Computer Needed (rigs w/ detachable head)
- A Black Box that contains a microprocessor, inputs for Mic, Speaker and CAT signal. A serial port for the CAT signal and an extra serial port to be used for other controls. A Winkey device for CW operation.
- One box required at each site. One is called the Radio unit (remote location) and the other is the Control unit at the user. Ethernet cable connects each box to the outside world.

Control Site

Control Site

Remote Site

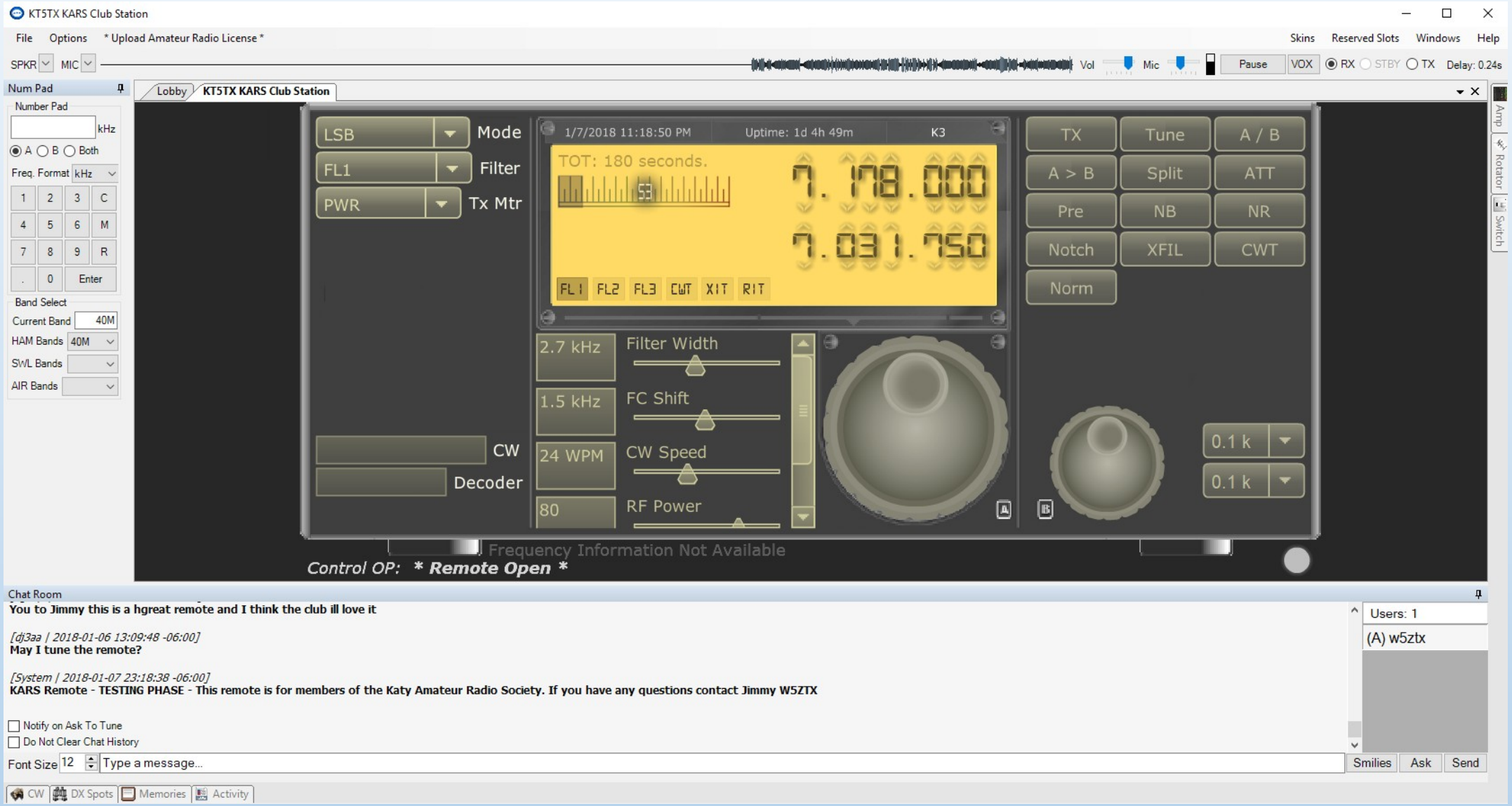

Winkey CW (to K3 key socket)
CAT Data (from K3 9 way port)
On/Off Control (to K3 15 way port)
Audio (from K3 Audio o/p
K3 at Remote Station
Remote Rig RC-1258MkII (Radio End)
12V Power to RRC Unit
To K3 Power Socket
RF Drive, PTT, Band Data from K3
12v Power Supply Unit
240v AC to PSU
Expert 1.3K Amplifier
240v to Server PSU
Serial Port Server via WiFi
Mains electricity remotely controlled by Belkin 'Wemo' switch
240v AC to Expert
'Remote End' station

Remote Rig Operation Using a Phone

Your Rig in the Palm of Your Hand

- Android Phone
- Hot Spot Ethernet
- Half the Cost
- Cheaper Than Mobile

RemoteHams Software



RemoteHams Software

- Operate from any location with Internet access using a free Windows based client (or Android app $9.99)
- RemoteHams software allows multiple users to access the same system.
- Only one control operator, users takes turns being the control operator.
- Supports Phone, CW and Data modes.
- Control Radio, Amplifier, Rotator, Other supported switched devices
- System security defined features, allows transceiver functions to be locked or hidden from users
- Works with HRD and other logging software

RemoteHams Software

- www.remotehams.com
- Follow the instructions
  - Create an account > use call sign as username <
  - Download the software
    - RCForb Client v0.8 – Stable version
    - RCForb Client v0.9 – Alpha version
    - RCForb Server v.07 – Remote host software
- Login, select remote station from list

* If you want TX privileges on remote sites you will need to upload a copy of your FCC license to the RemoteHams system.

RCForb Client v0.9 Public Alpha

Today we are releasing a sneak peak of the next generation of the RemoteHams.com RCForb software. Many improvements including all new look and feel, with a new modern user interface.
Read More...

RCForb Client for Android Beta

GET IT ON Google play

You may now enjoy tuning your favorite remote around using only your Android based device! Supports receive and transmit along with all your favorite radio controls. Features a built-in DX Spot client to make DX hunting a breeze.

Welcome to RemoteHams.com, your online remote base community.

Enjoy operating remote amateur transceivers & more by joining our community today! Don't miss rare DX you may never have a chance to hear. Test your own signal propagation, are you being heard in a DX location? Multiple operator support allows for new methods of contesting, nets, round tables, etc. between RF and REMOTE operators.

Below is a guide to get you operating as quickly as possible using RCForb Client software. It's as simple as 1-2-3!

Step 1 - Sign Up

The first step is to register for an account. This will allow you to access our forums, gain access to remotes, join clubs and interact with the community!

Sign Up

Click Here to Sign Up

Use your callsign as your username!

Step 2 - Download RCForb Client

Do you want to remotely control a ham radio site? RCForb Client v0.8 is now available with lots of new features and layout! Some of the new features include new Skin Editor, CW Keying, Rotator Support, new DX Spots engine and more!

Download

Minimum Requirements:
- Windows XP, Vista, 7 or 8
- .NET Framework 4.0
- Adobe Flash Player Active X
- 1.0 GHz CPU
- 1GB RAM

Step 3 - Login, Select a Remote and Enjoy!

On first load, RCForb Client will ask for you to login and will remember your login details. The program will load into a "lobby" view. Double-click on a remote in the lobby and you're off!

After playing with the client and familiarizing yourself with how to operate a remote station using RCForb Client, you may want to setup a remote of your own.

RCForb Client v0.9 Public Alpha (Total Downloads: 24,250)

RCForb Client v0.9 Public Alpha is now available with lots of new features and layout! **Read More...**

- RCForbClientSetup_v0.9.218.exe
  (**8,606 downloads**) *(Saturday, April 29, 2017)*
- RCForbClientSetup_v0.9.213.exe
  (**1,032 downloads**) *(Sunday, April 23, 2017)*
- RCForbClientSetup_v0.9.205.exe
  (**3,075 downloads**) *(Sunday, March 05, 2017)*

Minimum Requirements:
- Windows 7 or newer
- .NET Framework 4.0
- Adobe Flash Player AX
- 2.0GHz Dual-Core or better
- 2GB of RAM (4.0GB recommended)

RCForb Client v0.8 (Total Downloads: 69,858)

Do you want to remotely control a ham radio site? RCForb Client v0.8 is now available with lots of new features and layout! Some of the new features include new Skin Editor, CW Keying, Rotator Support, new DX Spots and more!

- RCForb_Client_0.8.6532.exe
  (**1,005 downloads**) *(Sunday, November 19, 2017)*
- RCForb_Client_0.8.6426.exe
  (**2,001 downloads**) *(Saturday, August 05, 2017)*
- RCForb_Client_0.8.6388.exe
  (**929 downloads**) *(Wednesday, June 28, 2017)*

Minimum Requirements:
- Windows XP, Vista, 7 or 8
- .NET Framework 4.0
- Adobe Flash Player AX
- 1.0 GHz CPU
- 1GB RAM

RCForb Server v0.7 (Total Downloads: 38,259)

Help the community grow by sharing your radio. Build a multi-op club remote station or have fun sharing your remote with your friends! You have full control over all security. RCForb Server supports radios, amps, rotators and switches providing the ability to remote your whole shack with a single peice of software.

- RCForb_0.7.6532.exe
  (**882 downloads**) *(Sunday, November 19, 2017)*
- RCForb_0.7.6438.exe
  (**2,388 downloads**) *(Thursday, August 17, 2017)*
- RCForb_0.7.6426.exe
  (**552 downloads**) *(Saturday, August 05, 2017)*

Minimum Requirements:
- Windows XP, Vista, 7 or 8
- .NET Framework 4.0
- 1.0 GHz CPU
- 1GB RAM

RemoteHams Hardware (optional)

- ORB Control Device

- Elecraft K3**/0-Mini**

FCC Rules for Remote Opeations

- 3 – minute TX timeout timer is required
- Station must be protected from unauthorized operations
- Copy of station license with contact info must be posted at remote location
- Control link may be radio (including cellular hostspot) or network based (DSL, cable modem, etc)
- Control Op required if unlicensed are allowed to TX
- No geographical limitations for server location (for DXCC requirements station must be in same DXCC entity)

Several Remote Site Configurations

Remote Antenna

GXP 7-7 Antenna - 7 elements 7 bands

- Frequency: 28, 24, 21, 18, 14, 10, 7 MHz
- Number of elements for 28MHz-14MHz: 3
- Number of elements for 10MHz-7MHz: 2
- Gain [dBd] 28MHz-14MHz: 8,5-8,0
- Gain [dbd] 10MHz: 4,1
- Gain [dBd] 7MHz: 3,9
- Front to back ratio 28MHz-14MHz [dB]: 19-26
- Front to back ratio 10MHz [dB]: 18
- Front to back ratio 7MHz [dB]: 22ti
- Maximal power SSB: 1600 W
- Feeders: 3 x 50 ohm
- 2

- Bandwidth for SWR 1,5:1:
- - 28 MHz 600 kHz
- - 24 MHz 100 kHz
- - 21 MHz 300 kHz
- - 18 MHz 100 kHz
- - 14 MHz 250 kHz
- - 10 MHz 50 kHz
- - 7 MHz 150 kHz
- Boom length: 6.3m (20.8ft)
- Longest element: 14.7m (48.2ft)
- Weight: 48kg (105lbs)

Remote Site Antennas

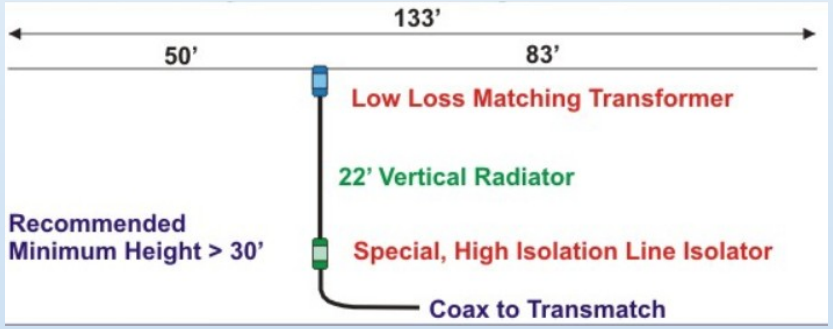
- Remote Rig Station
- TS-480 4 Yrs Non Stop Operation with RRC
- K3 Remote 3 Yrs Non Stop Operation and Contesting

Club Remote Station

- **Elecraft K3S 160-6M Transceiver**
  - **100 watt , ATU**
  - **500hz, 2.8kHz Filters**
  - **General Coverage receiver**

- **Dedicated DSL Internet connection**

- **Carolina Windom**
  - **10-80 m**



- **HP Desktop**
  - **Intel® Core™2 Quad Processor Q8400**
  - **4GB Ram**
  - **Windows 10 64 bit**

Remote Station


ELECRAFT K3s TRANSCEIVER
SAMSUNG

RemoteHams Credits

Remote Hams Concept by Scott Avery (WA6LIE)
RCForb Client/Server Software
developed by Brandon Hansen (KG6YPI)
Copyright RemoteHams.com 2011

Special Thanks:
WA6LIE (Founding Concept Design, Support & Testing)
W8RJ (Driver Development, Support & Testing)
M3GHE (Dedicated from the start! Support & Testing)
VK4FSGW (Skin Development, Support & Testing)
Kelly (Logo Design)

Special thanks to Pat Cameron and Nizzar Mullani

Questions