Winlink Express – Installation And Configuration

What is Winlink

- Worldwide system for sending e-mail via radio.
- Provides e-mail from almost anywhere in the world.
- Entirely supported and operated by amateur radio volunteers (Amateur Radio Safety Foundation, Inc.).
- Winlink Express software is the preferred client application.
- Adopted for contingency communication by many government agencies.
- Used by infrastructure-critical NGOs such as International & American Red Cross, Southern Baptist Disaster Relief, DHS Tiered AT&T Disaster Response & Recovery, FedEx, Bridgestone Emergency Response Team, etc.

Winlink Connection Modes

- **Telnet** – Non-radio connection through the Internet. Good for training (no radio equipment required) and use if radio is down or network is busy.
- **VHF/UHF Packet** (local LOS propagation) –
  - **9600 baud** – Fast, reliable, range may be limited and requires $400 modem (Kantronics or SCS Tracker) or a good soundcard (non-Signalink) modem. Radio must be 9600 capable.
  - **1200 baud** – Slower, but can use inexpensive TNC like Byonics TinyTrak-4, TNC-X, or even soundcard modems. Will work with virtually any FM radio.

Winlink Connection Modes

- **HF WINMOR** – "Poor man's Pactor". Not as good as Pactor, but operates with an inexpensive sound card device ($100), speeds between Pactor 2 and 3.
  - This mode will soon be replaced by the ADROP software TNC that is currently in test
- **HF Pactor 1, 2, 3 and 4** – Fast and reliable but requires an expensive modem ($1500+).
- All RF modes can be Peer-to-Peer.

Resources Needed for Winlink Express

VHF/UHF Packet Radio

- Computer running Windows XP through Windows 10.
- Microsoft .NET 3.5 framework.
- V/UHF radio with data port (1200/9600) or speaker/mic connection (1200 only).
- Packet TNC (Kantronics, TNC-X, MFJ, etc.), or SignaLink or similar USB soundcard interface. Might require a USB to Serial dongle.
- Note: Some new radios have built-in soundcards/TNC's.
- Software downloads:
  - ftp://autoupdate.winlink.org/User%20Programs/
- All software is free, donation is suggested.

Packet TNC

- Can be simple KISS mode, or full function.
- Cost from about $100 to $1500.
- Radio needs to have a data port (1200/9600), or use microphone and speaker connections (1200 only).
- Some radios include a built-in TNC or sound card.
- Might require a USB to serial adapter (built-in on TNC-X)
  - Use FTDI chipset devices for best results

Packet TNC

- Prolific chipset USB to serial converters have driver issues.
- Counterfeit Chinese products used Prolific product ID and “piggy backed” on official Prolific drivers.
- Prolific countered by changing the hardware/drivers so the counterfeit devices would not work with their drivers.
- This website may help: http://www.ifamilysoftware.com/news37.html
- Adapters based on the FTDI chipset do not have this problem (yet anyway).

SignaLink Soundcard Interface

- Simple device powered by USB connection.
- Cost is about $100 including radio-specific cable.
- Radio needs to have a data (sound) port, or use microphone and speaker connections.
- Need to run “Software TNC” application such as Direwolf, or UZ7HO soundmodem.

Hardware TNC or Sound Card?

There are advantages to both

Hardware TNC

- Relatively low cost (TNC-X), old one in the closet?
- Probably the simplest connection.
- No additional software needed.

Sound Card

- Can be used for other digital modes besides Winlink.
- Software TNC has superior decode over older hardware TNC.
- Can be used for both Packet and Winmor.

Hardware TNC or Sound Card?

There are disadvantages to both

Hardware TNC

- Only does packet (or maybe Pactor too).
- Older units do not perform as well, no new development.
- Will require USB to serial adapter.

Sound Card

- Sound levels and other settings may be changed unexpectedly.
- Requires additional software, and a slightly more complex operation (more training?).

Hardware TNC or Sound Card?

Presenter Soapbox

1200b AFSK Packet must die!

While this mode is relatively easy to setup and get working, and we must retain this capability for certain conditions, it is time to move up to faster modes.

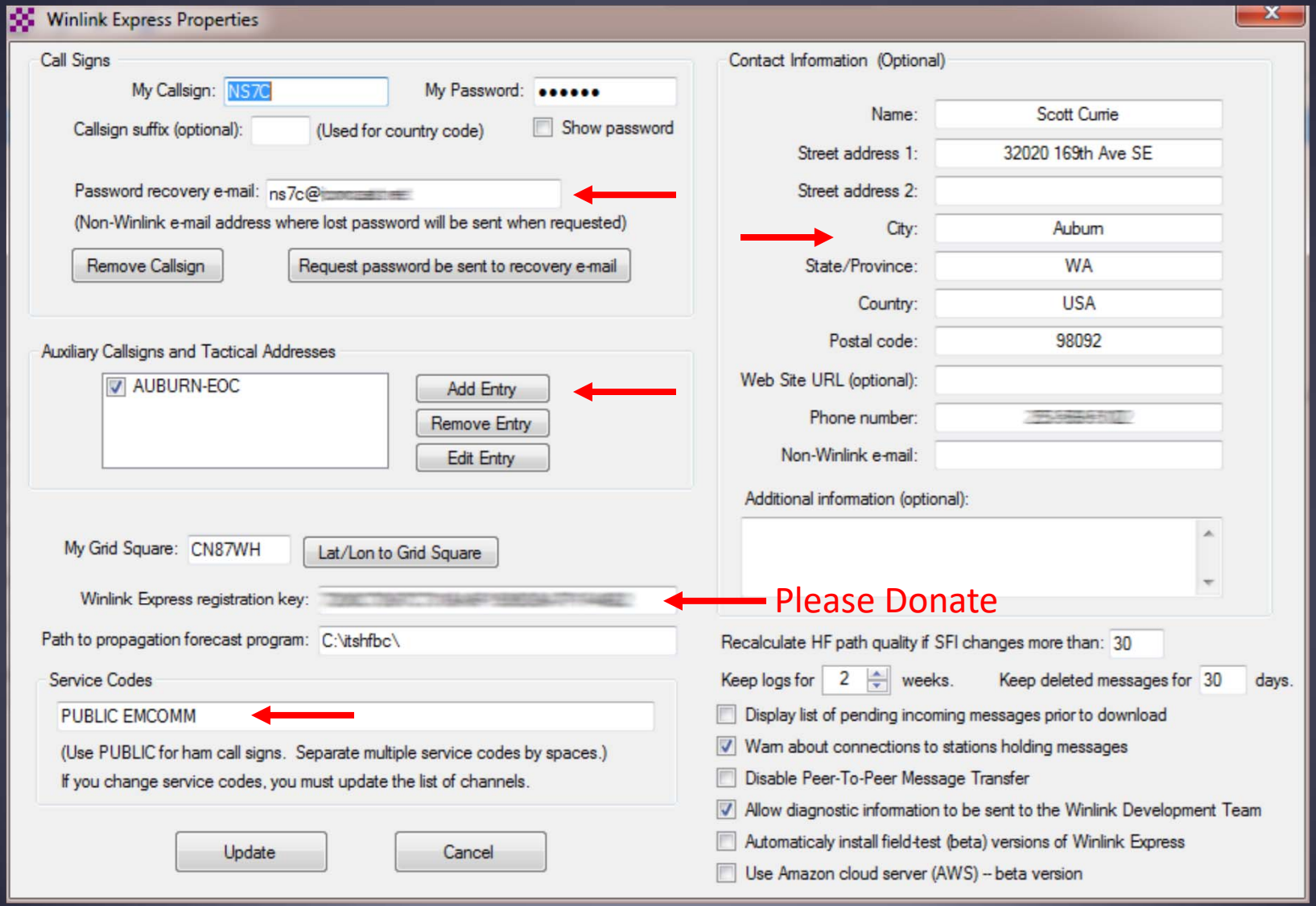
UZ7HO soundmodem provides several options for higher speed communications. 4800b should be easy to achieve for most setups.

Both Direwolf and UZ7HO support G3RUH 9600b support and modern radios should handle this speed.

Installing Winlink Express

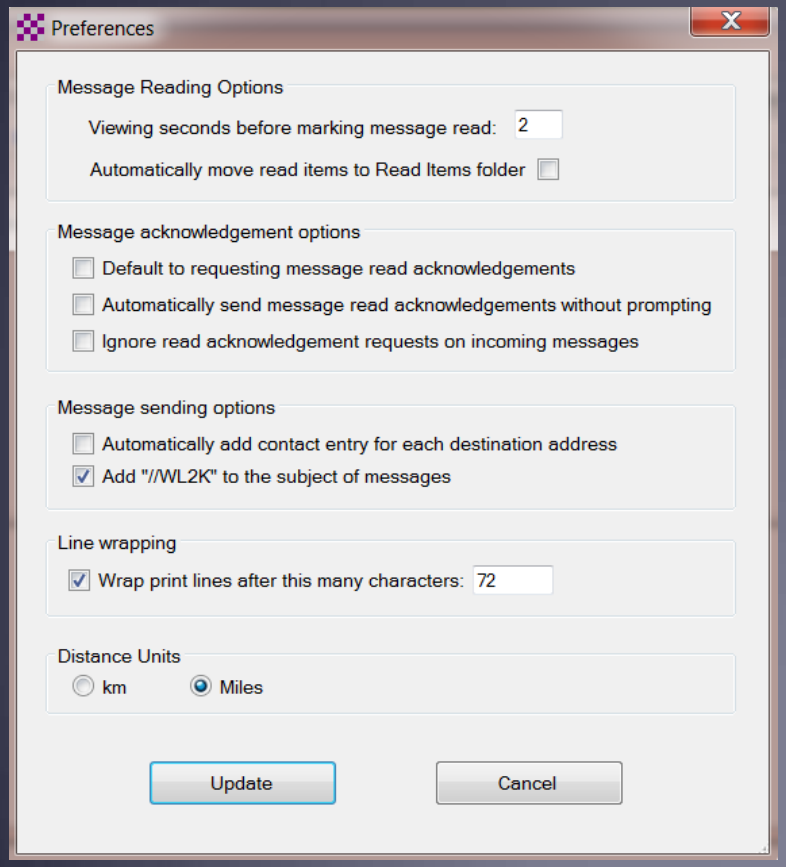
- Download zip file:
  - ftp://autoupdate.winlink.org/User%20Programs/
  - www.winlink.org – Client Software, Winlink Express
  - Watch for false downloads
- Extract the .msi installer from the zip file and run it.
- Complete the setup screens (call sign, location, etc.).
- Browse C:\RMS Express\, right click on.
  - RMS Express.exe and select option to create a shortcut.
  - Change the name to Winlink Express.

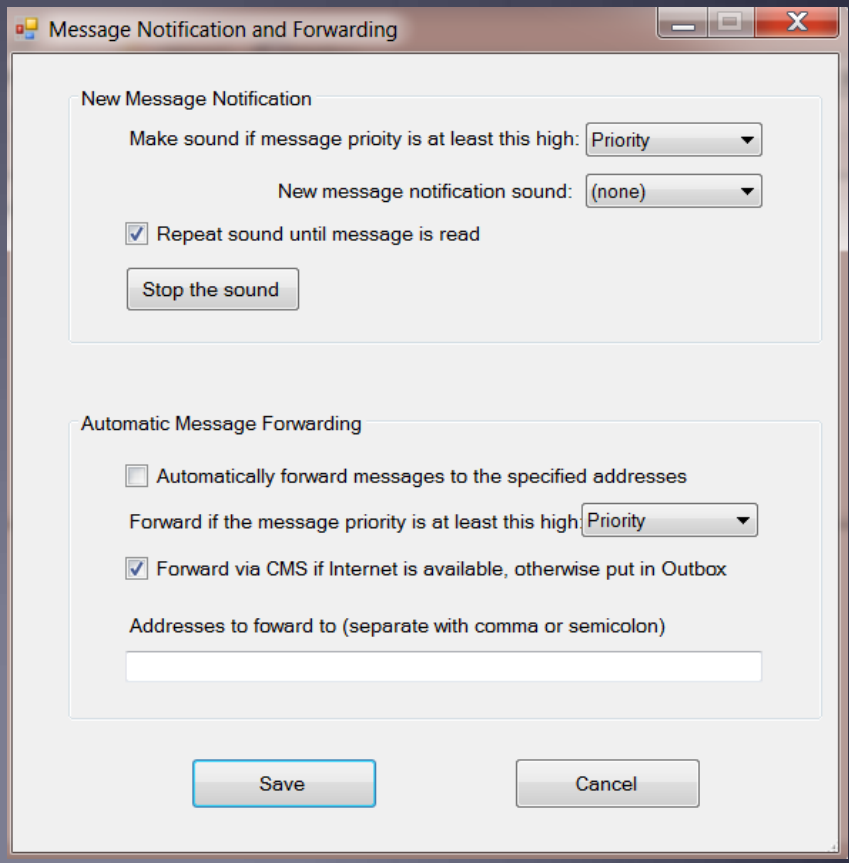
Winlink Express Initial Setup



User Preferences

- Click “Files” followed by “Preferences/Message Notification”



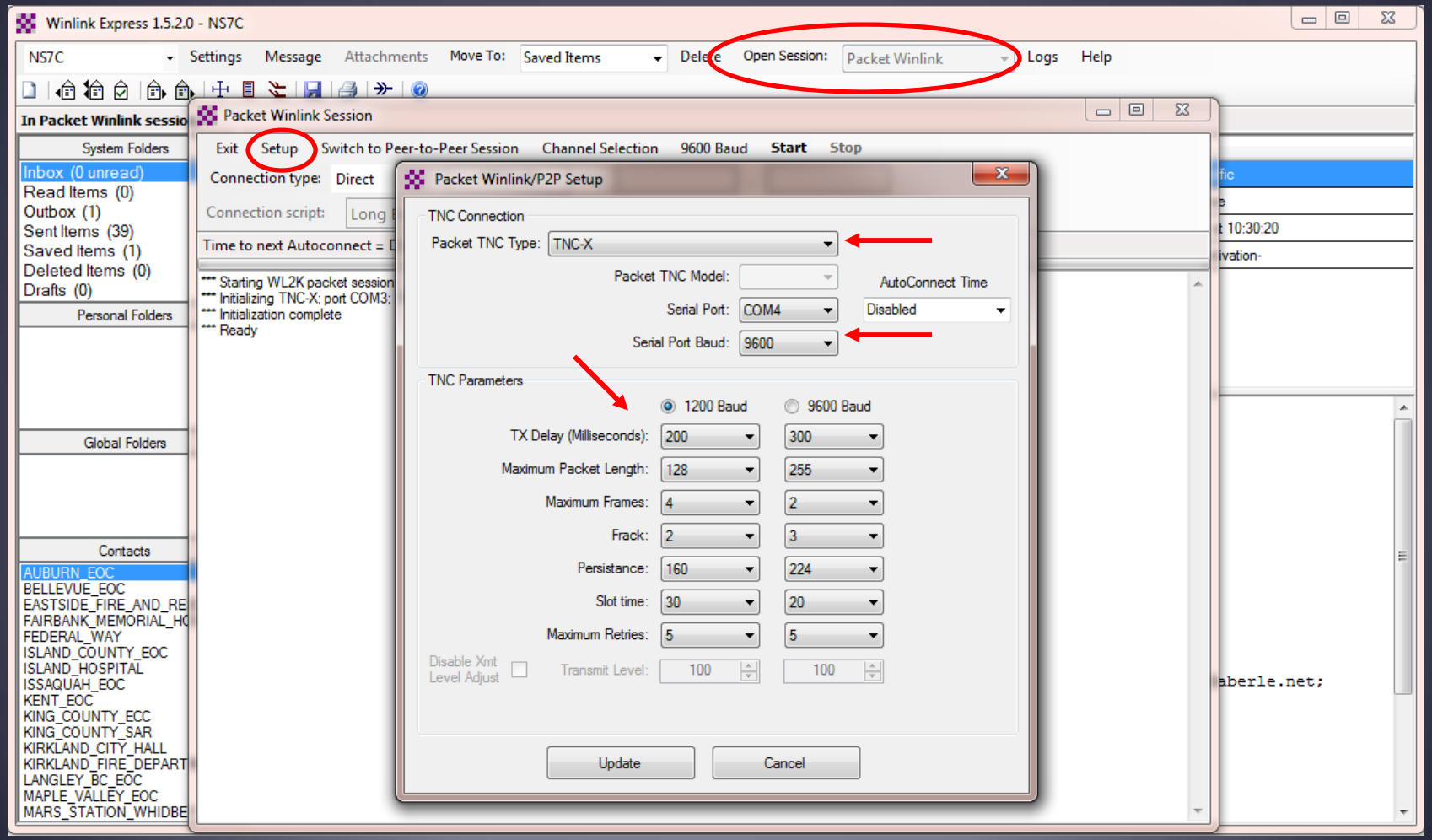


Installing Winlink Express

- The first time you originate a message using Winlink Express, you will be registered in the Winlink system and will have a callsign@winlink.org address. This account remains active as long as you use is regularly. Inactive accounts will be purged after about 1 year.
- You will also have access to the Winlink Webmail system and other good tools on the Winlink.org website.

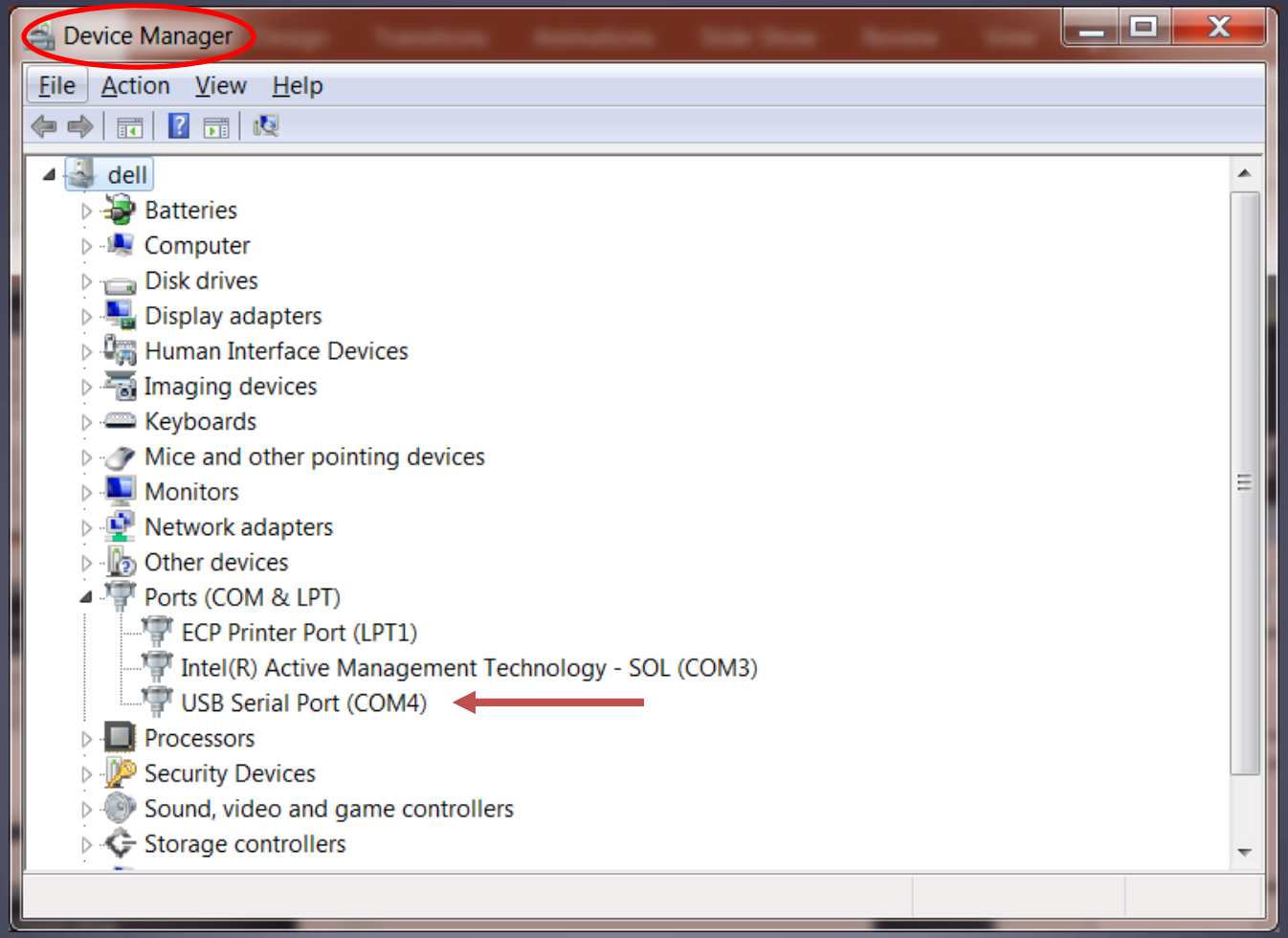
Initial Packet Setup

Hardware TNC



Initial Packet Setup

Hardware TNC COM Port



Initial Packet Setup

Sound Card Interface

- Download zip file (UZ7HO low speed):
  - http://uz7.ho.ua/modem_beta/soundmodem97.zip
  - Extract the program from the zip file and run it.
  - Configuration settings from the drop down menus.
  - Windows only, firewall message.

- Download zip file (UZ7HO high speed):
  - http://uz7.ho.ua/modem_beta/hs_soundmodem15.zip
  - Extract the program from the zip file and run it.
  - Configuration settings from the drop down menus.
  - Windows only, firewall message.

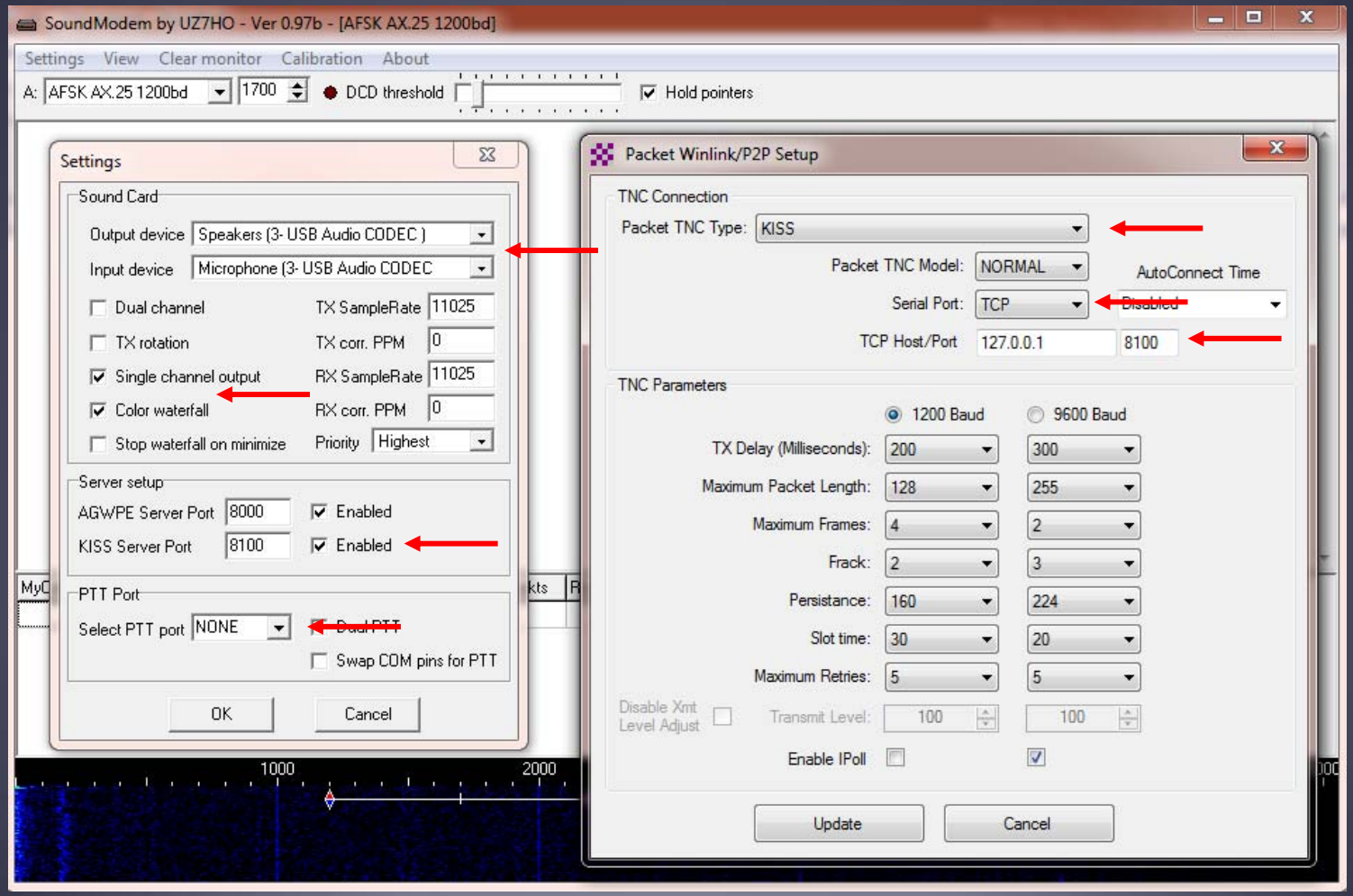
Initial Packet Setup

Sound Card Interface

- Download zip file (Direwolf):
  - https://github.com/wb2osz/direwolf/releases/download/1.3-dev-K/direwolf-1.3-dev-K-win.zip
  - Extract the program files from the zip file and run the app.
  - Edit the INI file to configure.
  - Multi-platform capable.

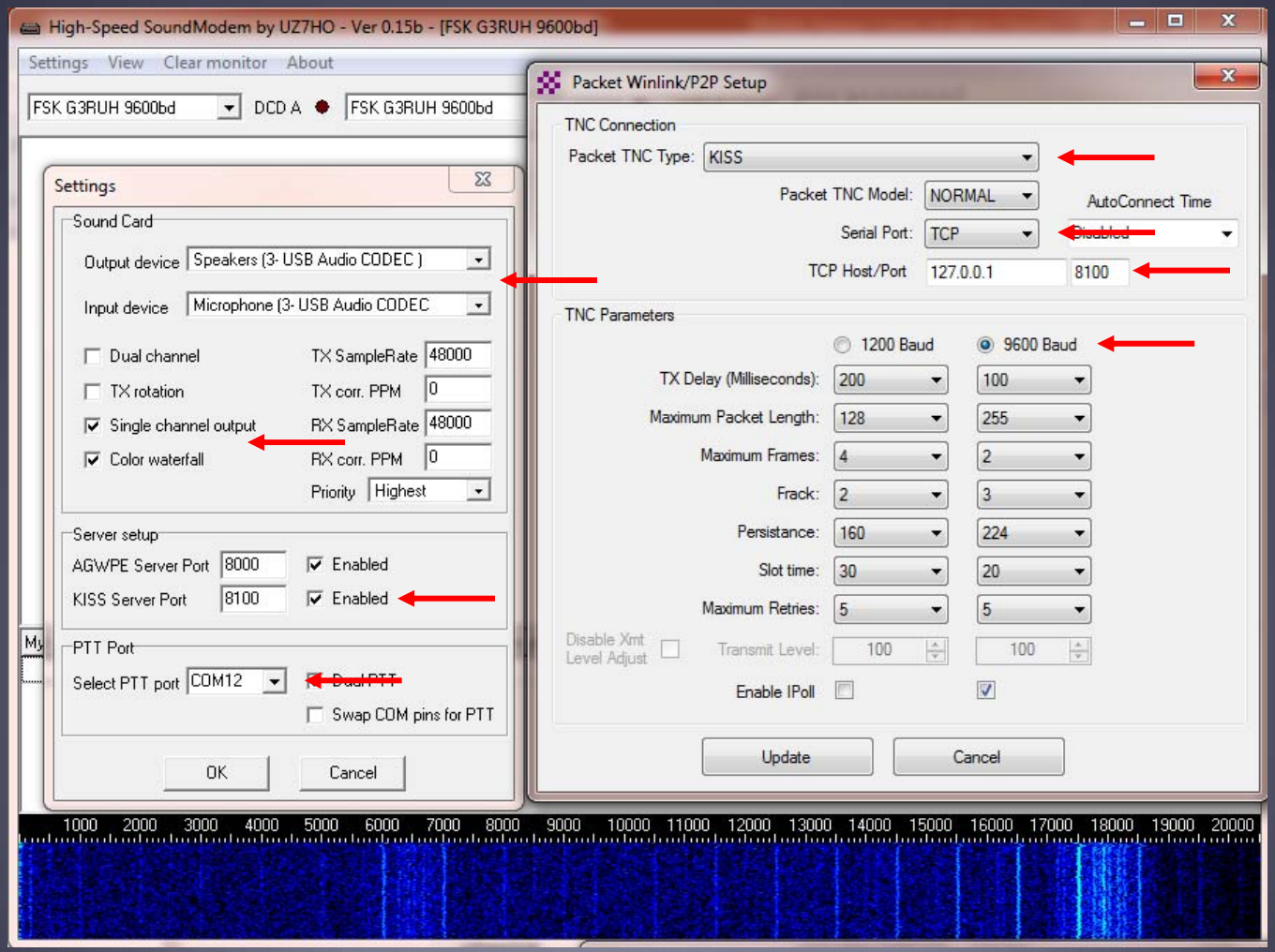
Initial Packet Setup

Sound Card Interface (UZ7HO and Signalink)



Initial Packet Setup

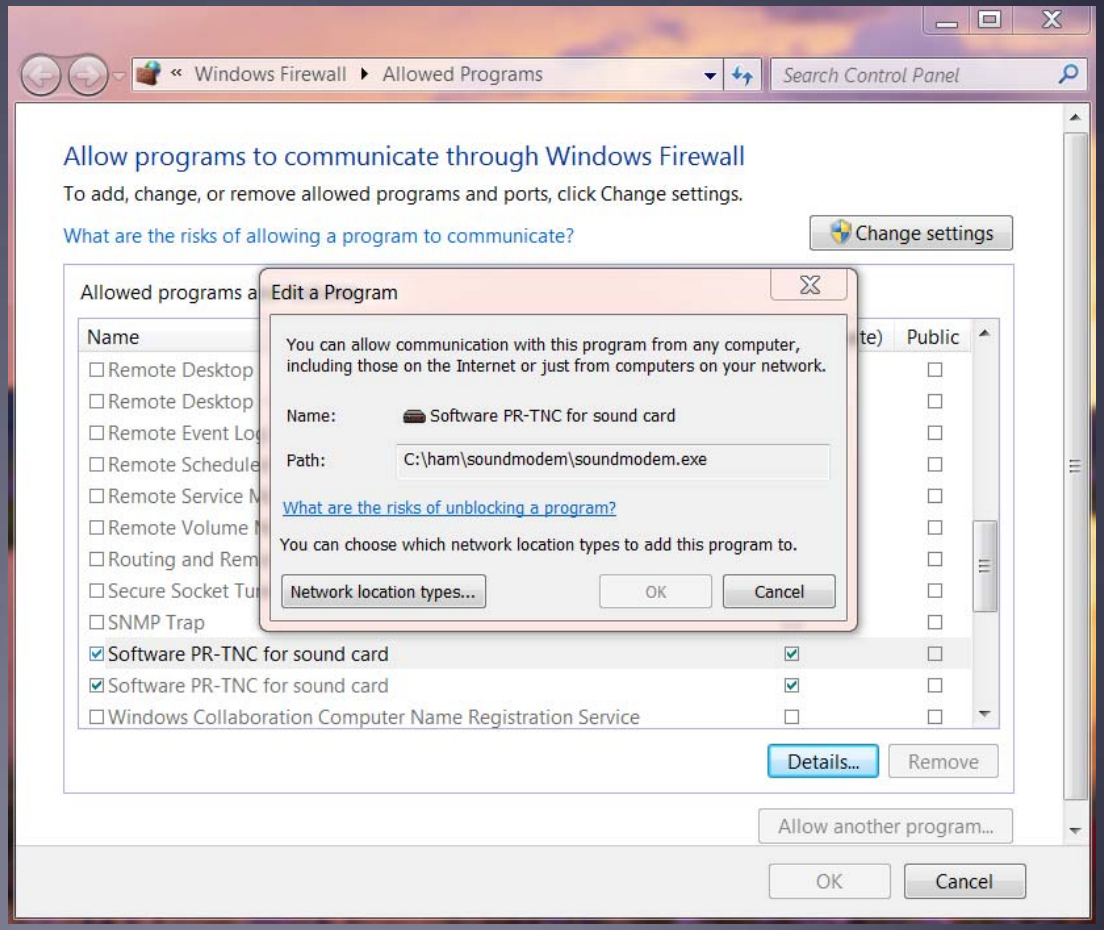
Sound Card Interface (UZ7HO High Speed)



Initial Packet Setup

Sound Card Interface (UZ7HO)

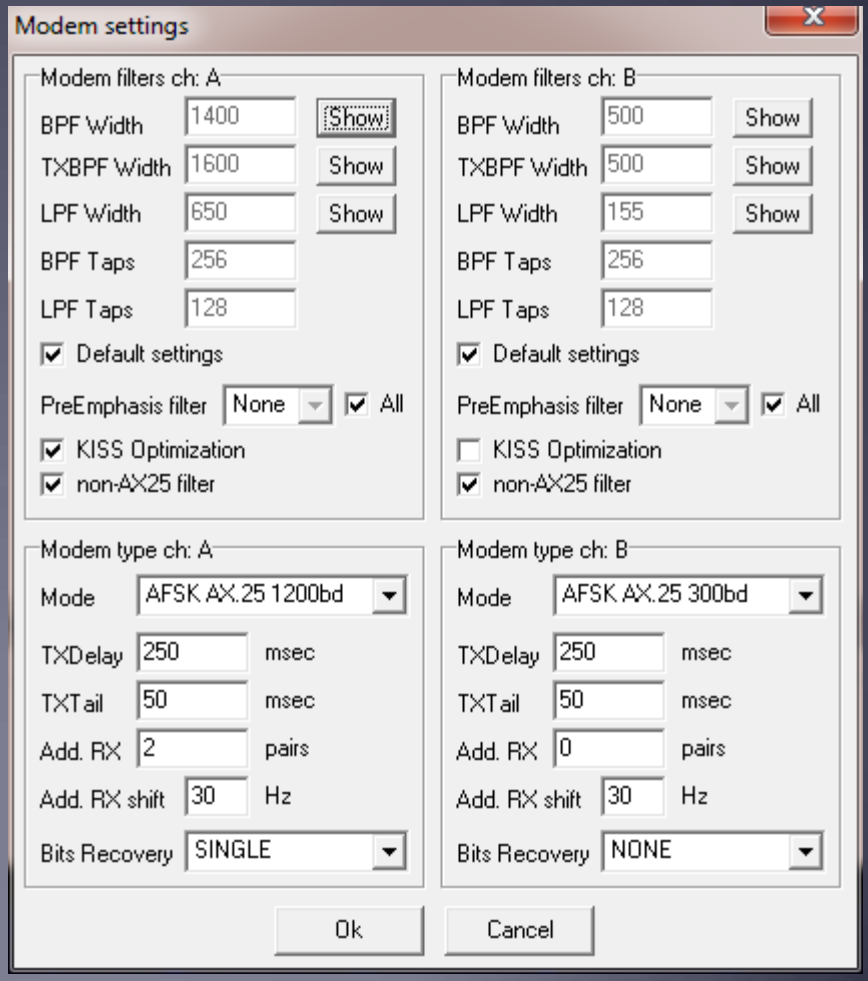
UZ7HO and Direwolf both create “KISS TNC” servers within the network stack, ports on the firewall must be opened to allow Winlink Express (and other applications) to use the virtual TNC.



Initial Packet Setup

Sound Card Interface (UZ7HO and Signalink)

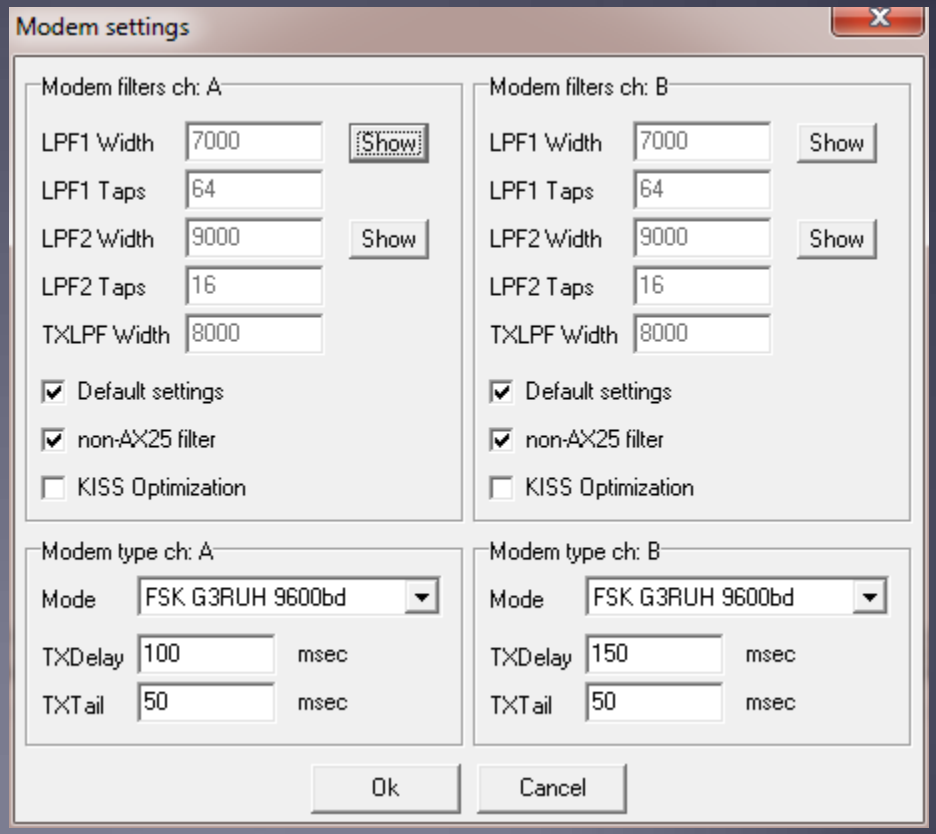
UZ7HO and Direwolf both allow for multiple modems using a “stereo” sound card, for Signalink, only modem “A” is available. Set to AFSK AX.25 1200bd modem.



Initial Packet Setup

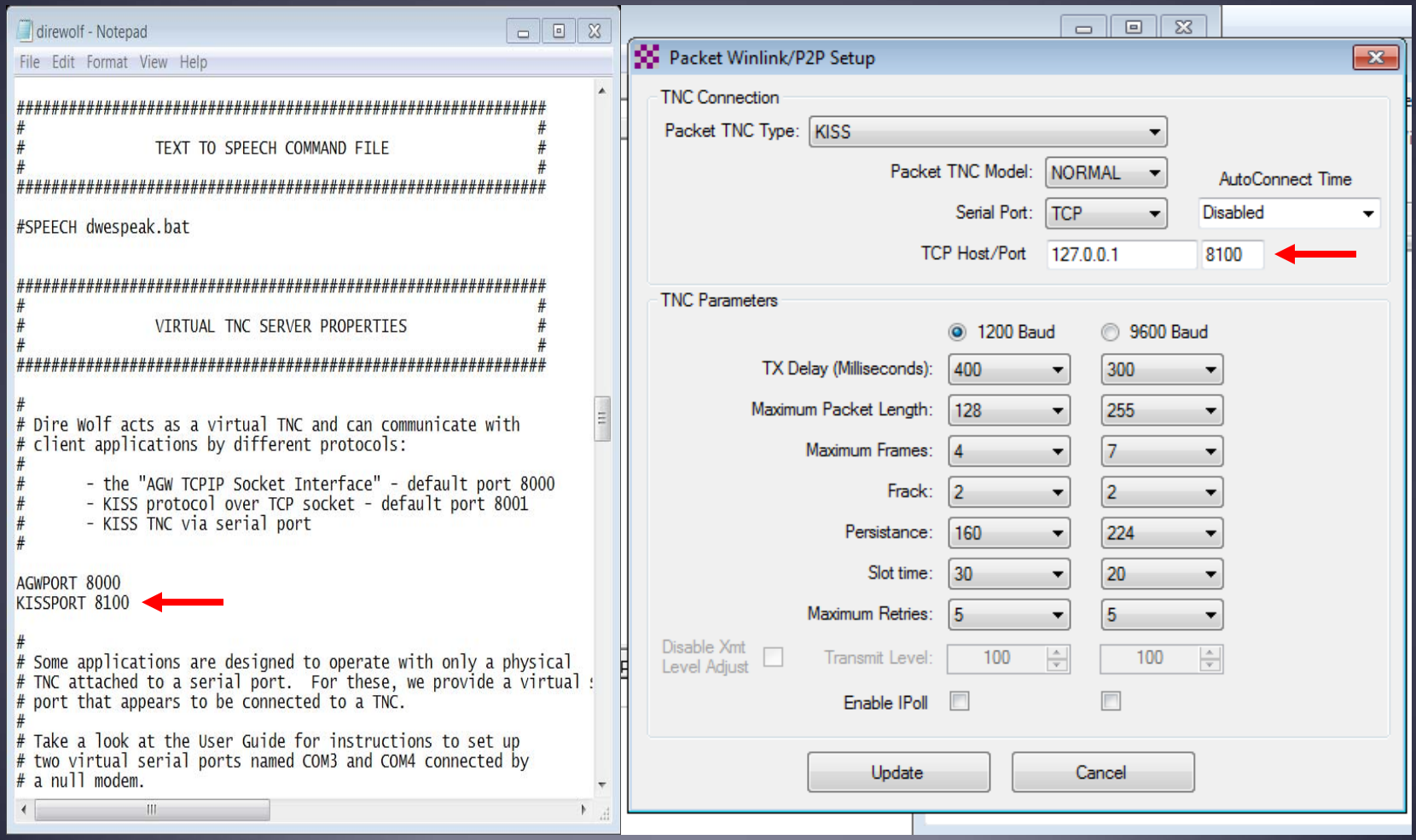
Sound Card Interface (UZ7HO High Speed)

UZ7HO and Direwolf both allow for multiple modems using a “stereo” sound card. For initial setup, only use modem ch “A”. Set to FSK G3RUH 9600bd modem.



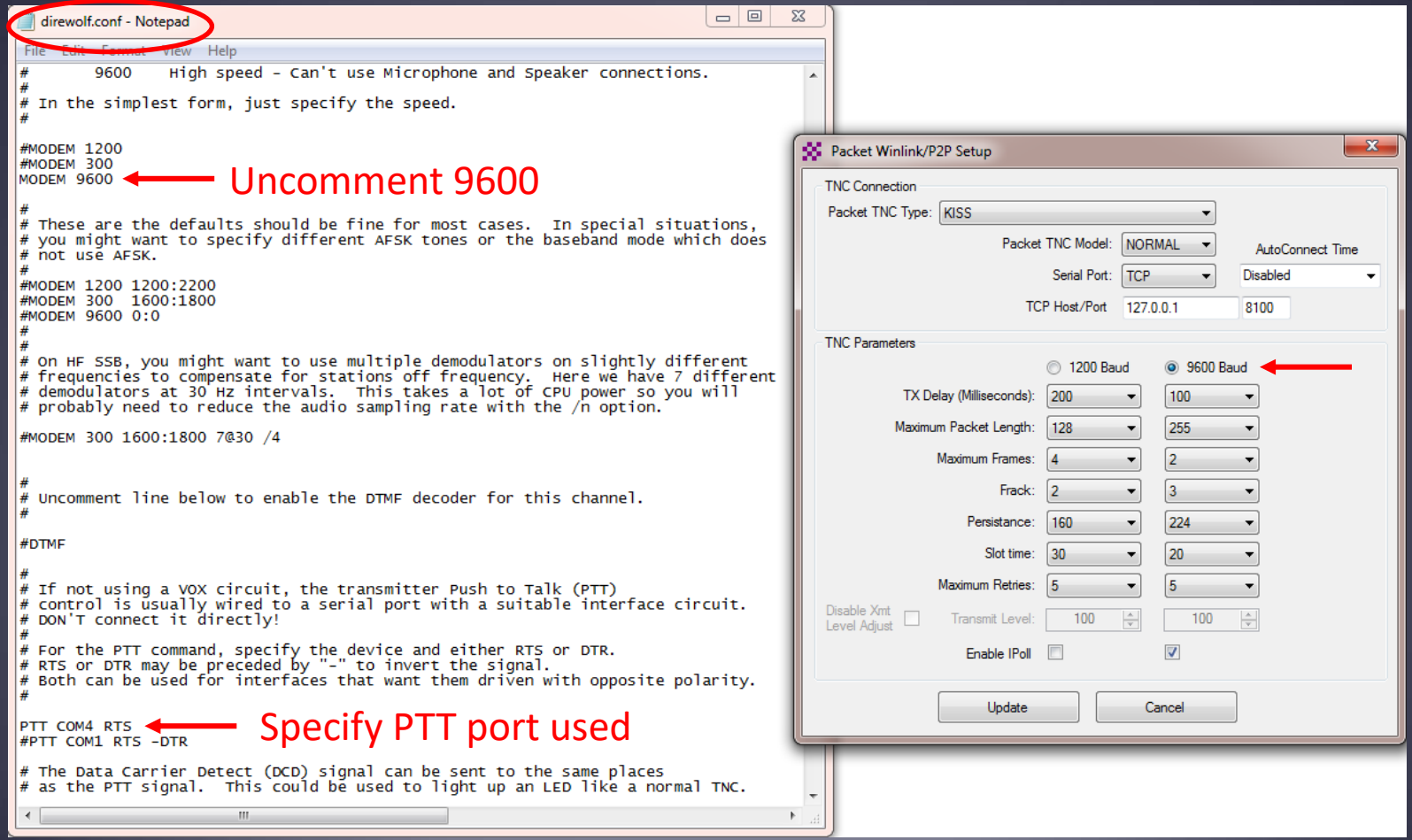
Initial Packet Setup

Sound Card Interface (Direwolf and Signalink)



Initial Packet Setup

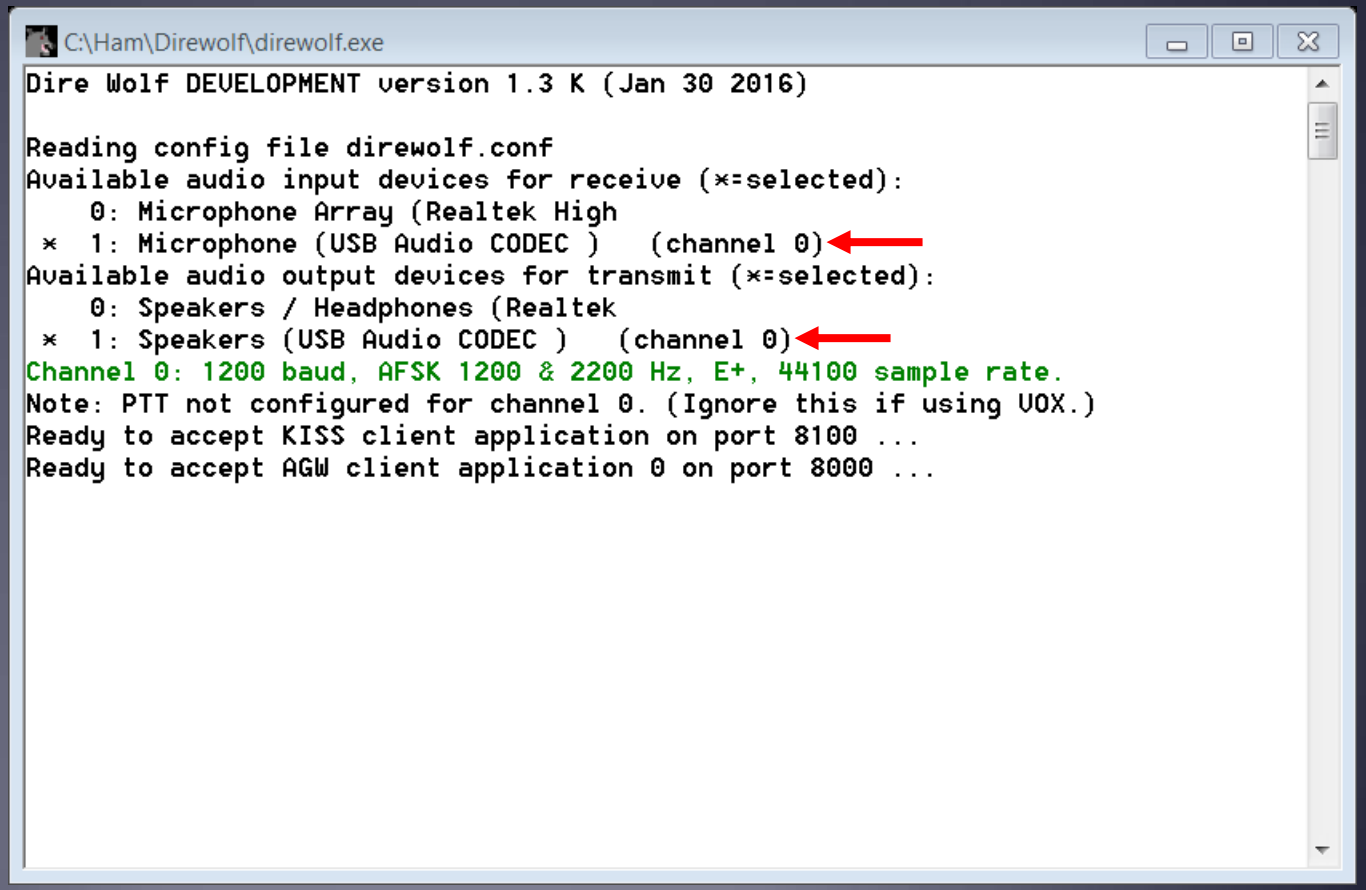
Sound Card Interface (Direwolf High Speed)



Initial Packet Setup

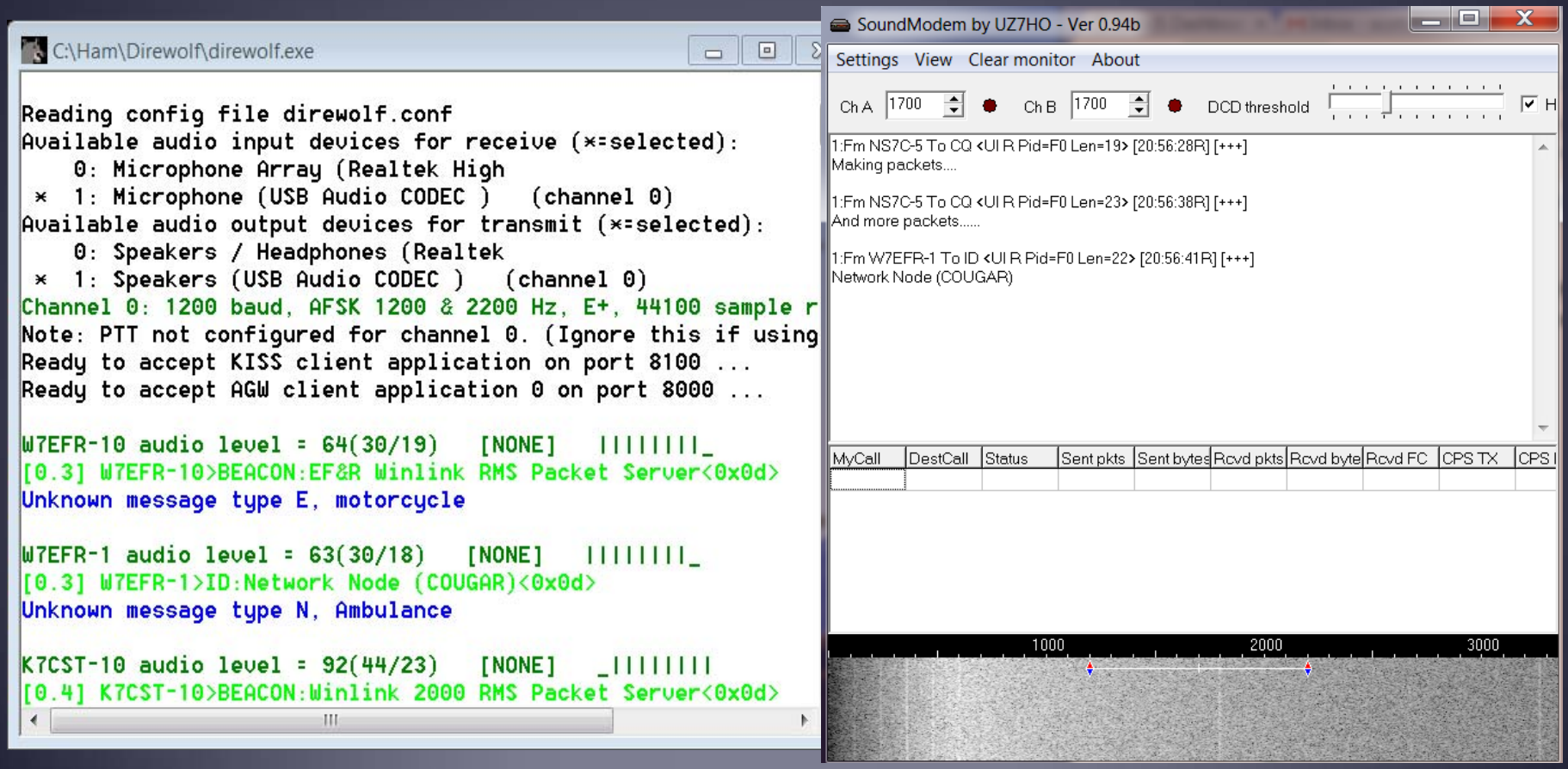
Sound Card Interface (Direwolf)

Direwolf startup shows available audio devices. Signalink shows as USB Audio Codec



Initial Packet Setup

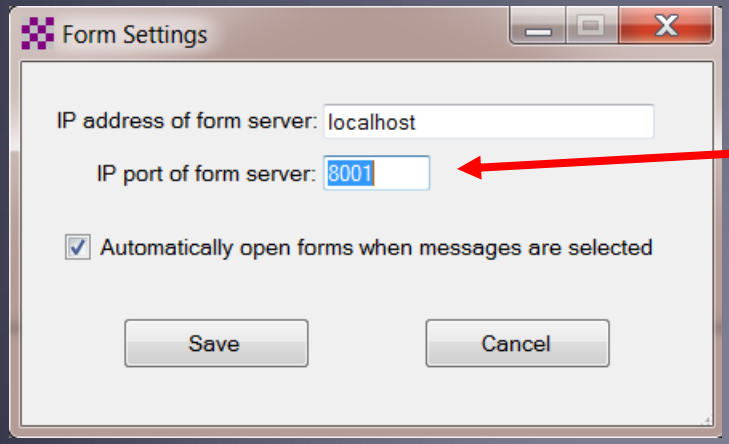
Sound Card Virtual TNC

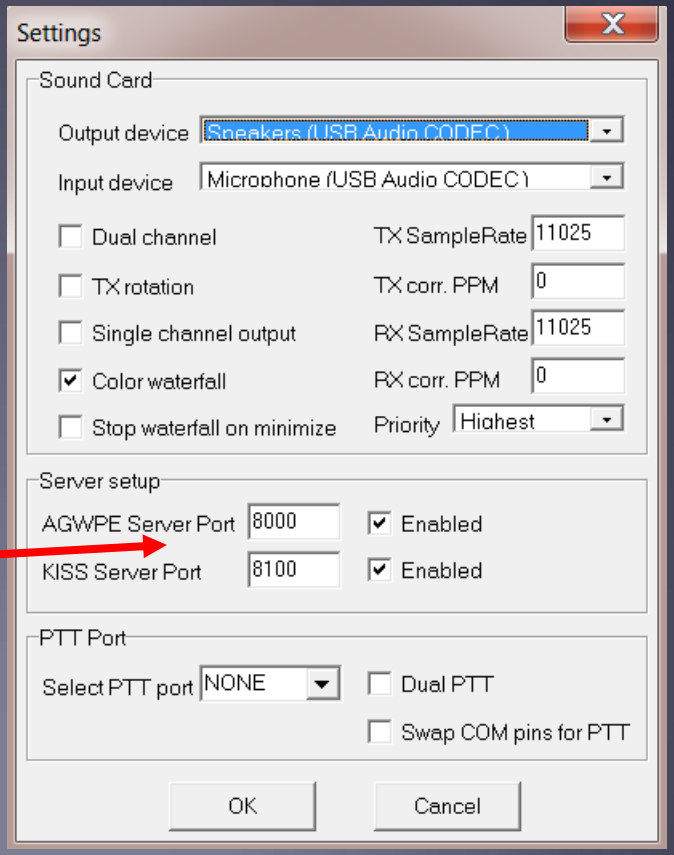


Initial Packet Setup

Sound Card Virtual TNC

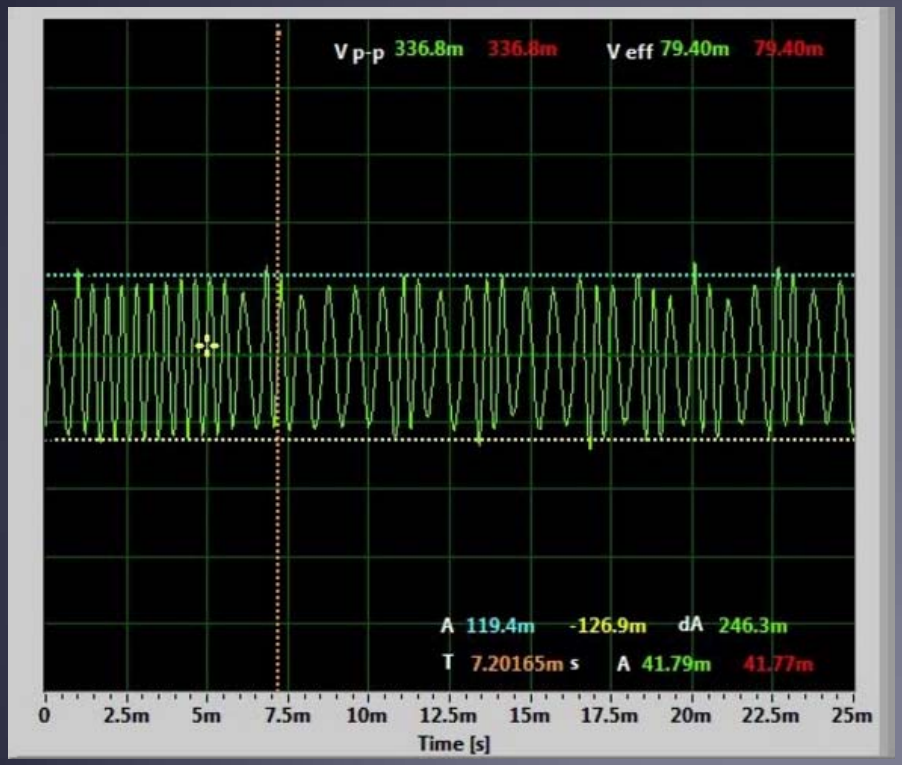
Make sure your Virtual TNC server TCP ports do not conflict with the Winlink Express forms server.

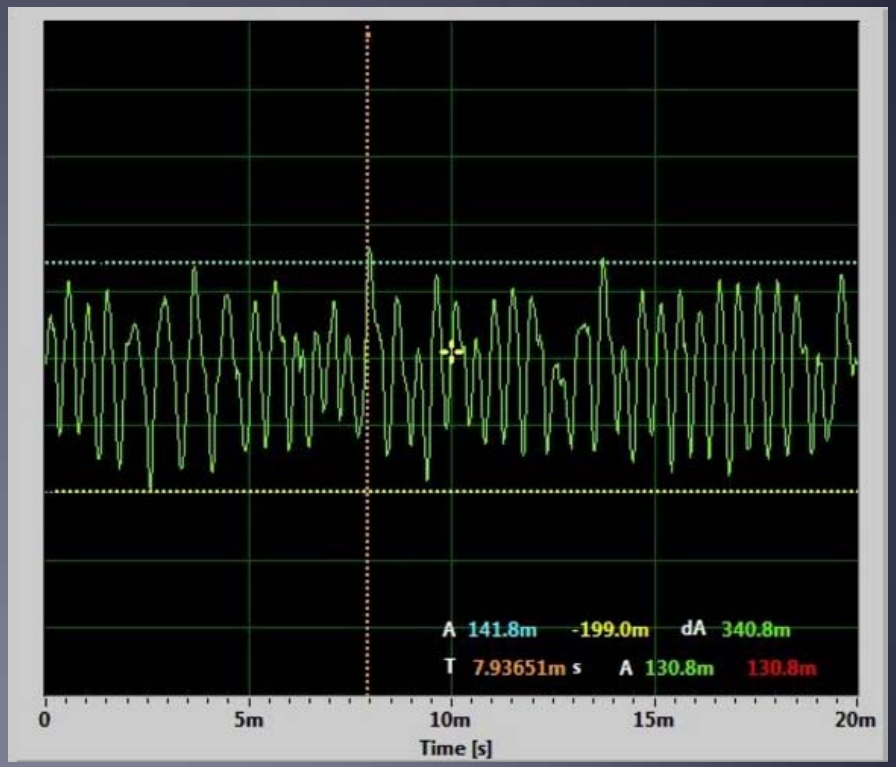




Initial Packet Setup

Set your transmit levels correctly! (It is not plug and play)





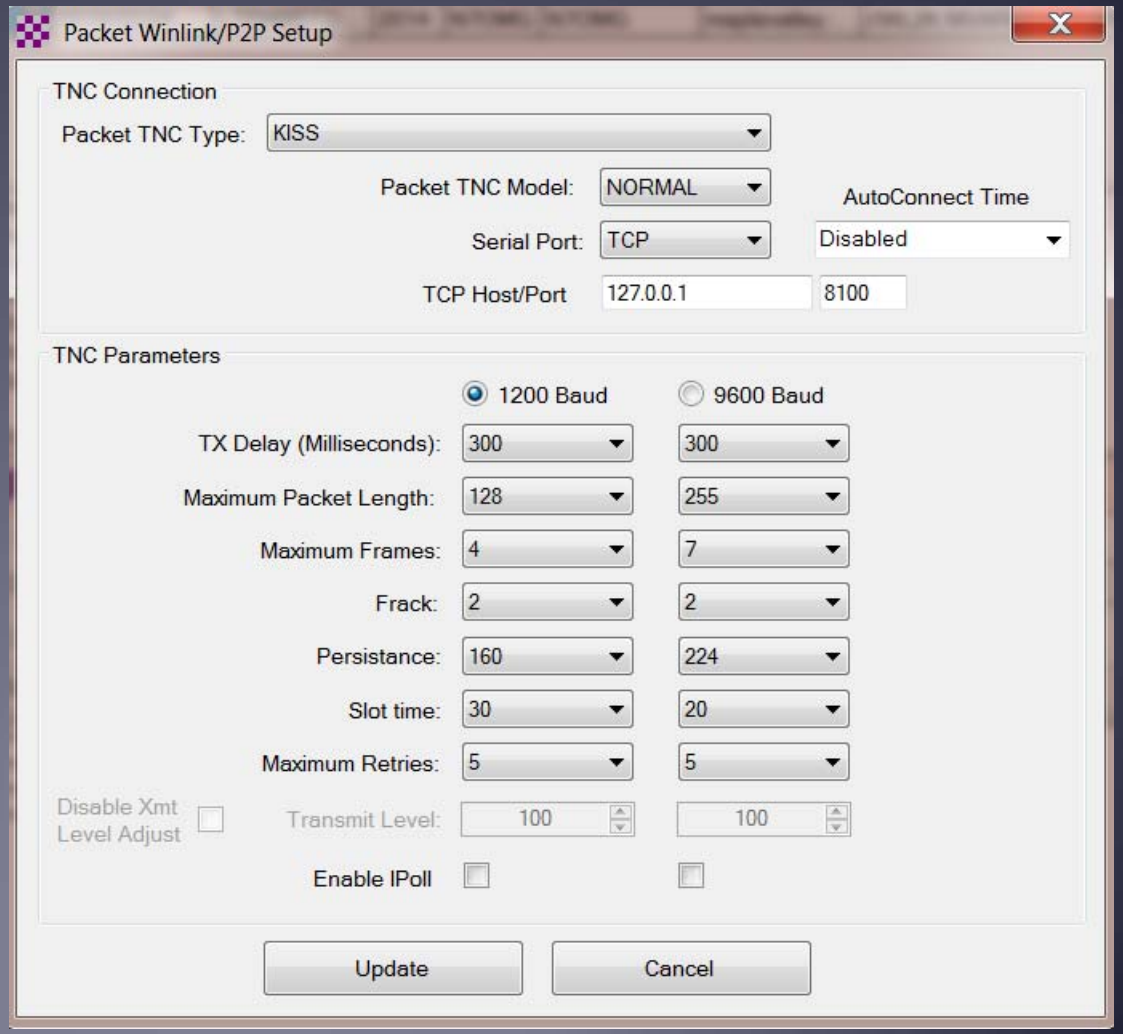
- http://www.febo.com/packet/layer-one/transmit.html
- http://www.zeitnitz.de/Christian/scope_en

Initial Packet Setup

Important Parameters

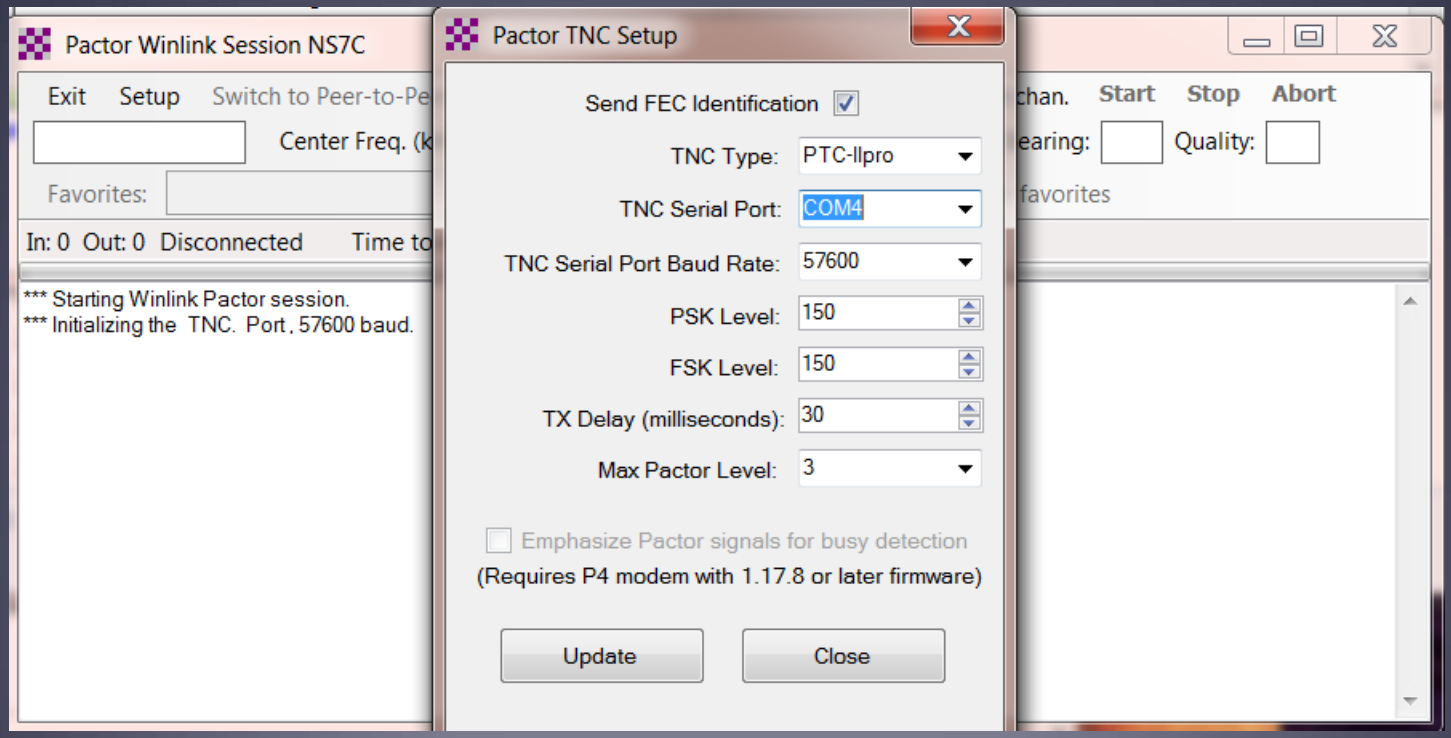
- TX Delay (TXD)
- Packet Length
- Max Frames
- Frack
- Max Retries
- AutoConnect Time

Note: For soundcard configurations, TXD is set in the Software TNC application.



Initial Pactor Setup

PTC modem



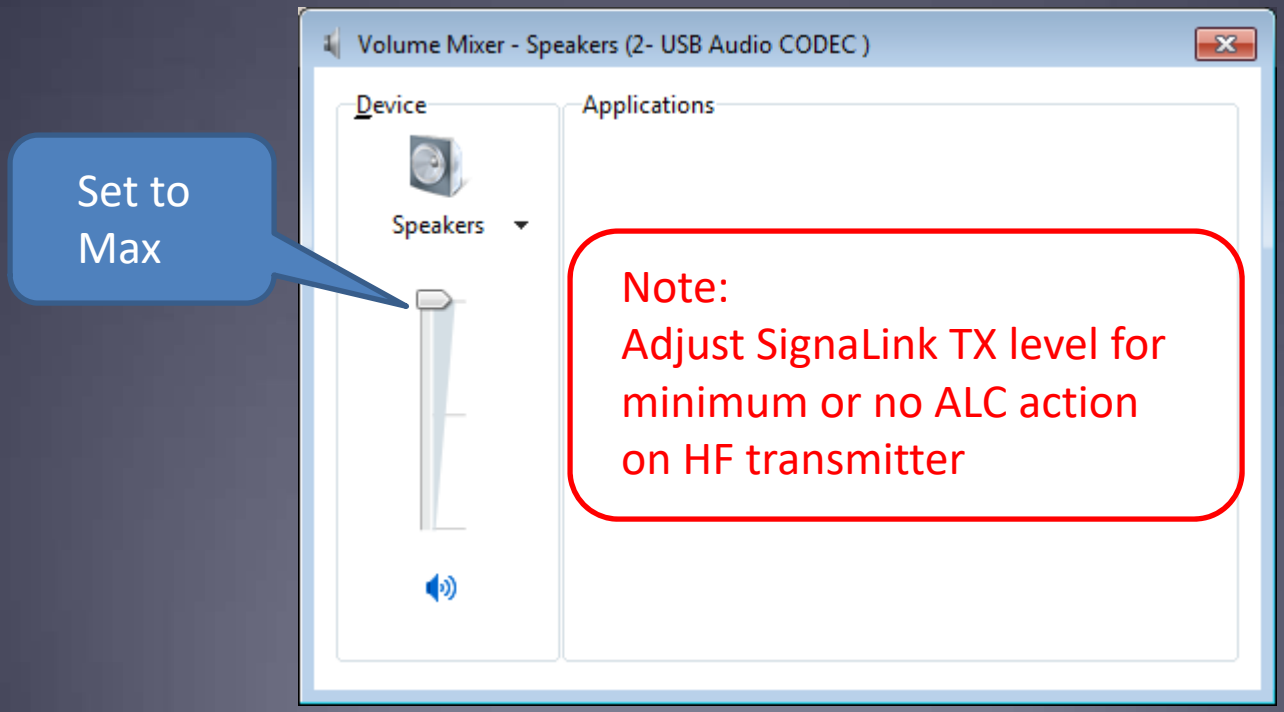
Resources Needed for Winlink Express

HF Winmor

- Same computer and software requirements as V/UHF Packet. Winmor modem is included with Winlink Express.
- ITSHF propagation prediction program. Note, you will be prompted to download this on first Winmor run. A link to the software will be provided.
- HF radio with data (sound) port and optionally computer control (CI/V, CAT, etc. for rig control).
- SignaLink or similar soundcard interface, may be built-in on newer radios.
- All software is free, donation is suggested.

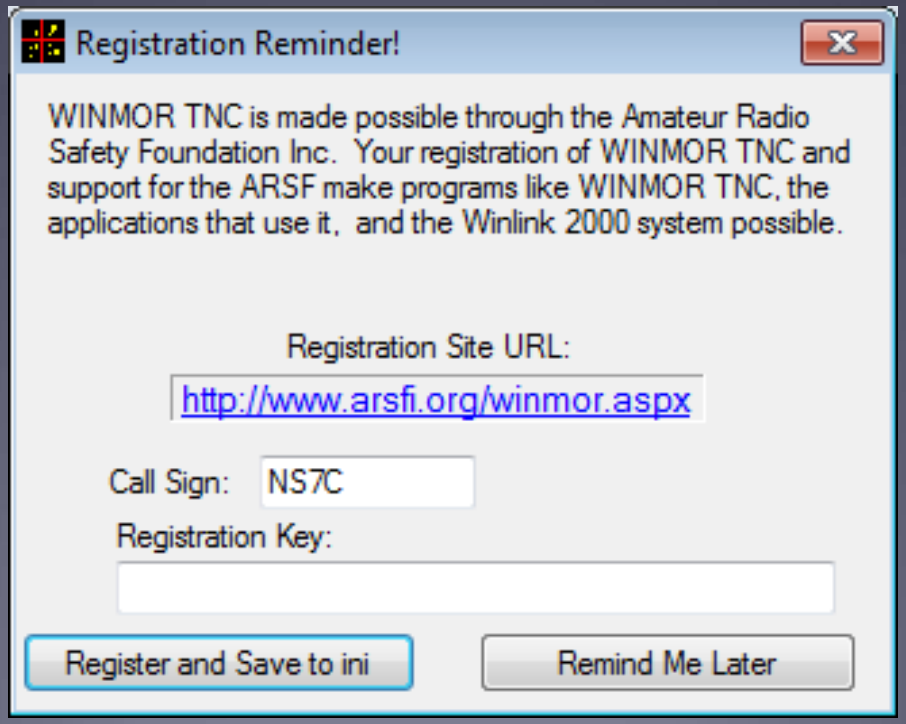
Configuring Sound Levels

Watch drive/ALC levels on transmitter



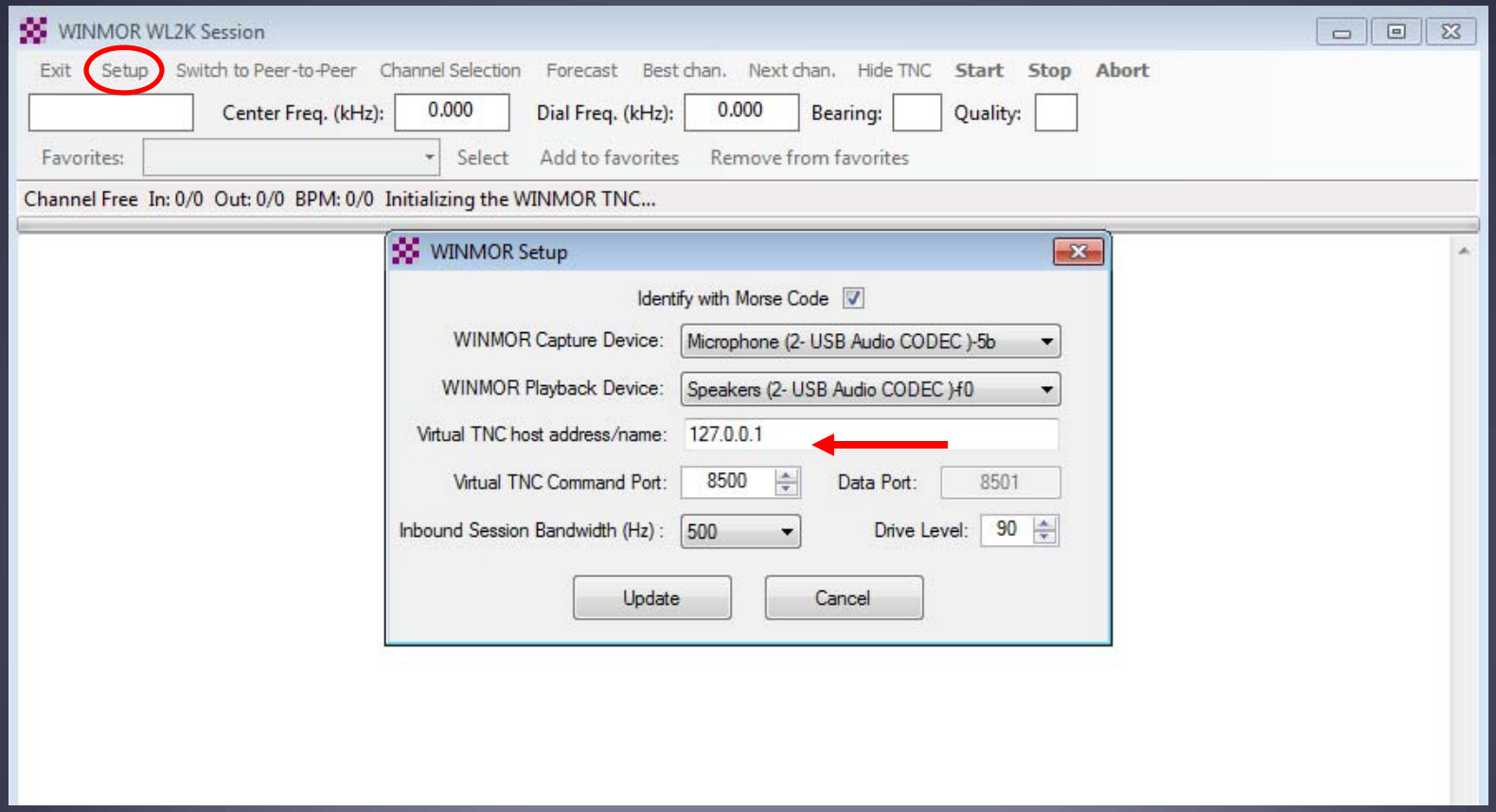
Winmor Registration Screen

Appears each time you start Winmor until you register and get a key.



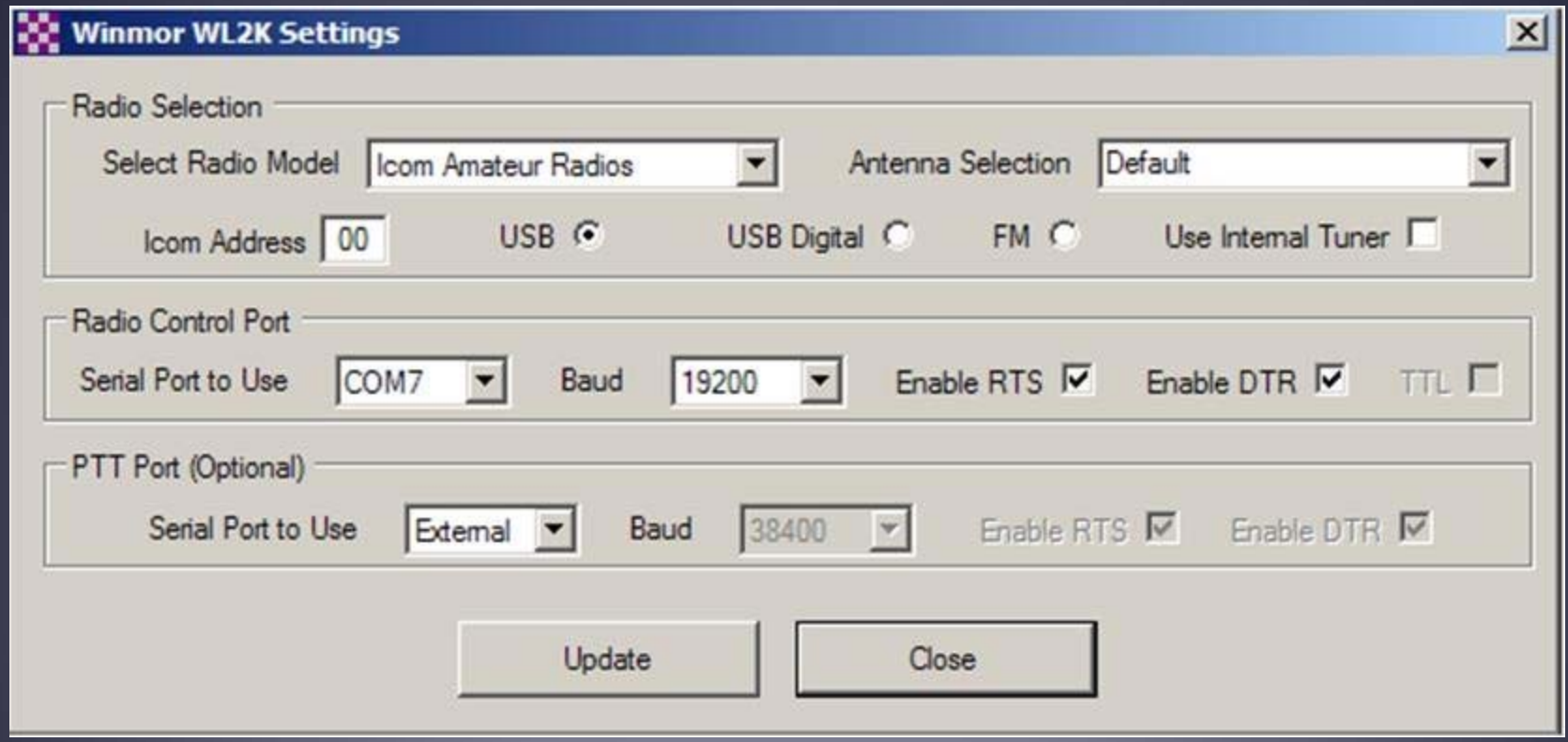
Initial Winmor Setup

Selecting the Audio Device



Winmor Radio Setup

Rig Control Parameters



Composing A Message

New Message Button

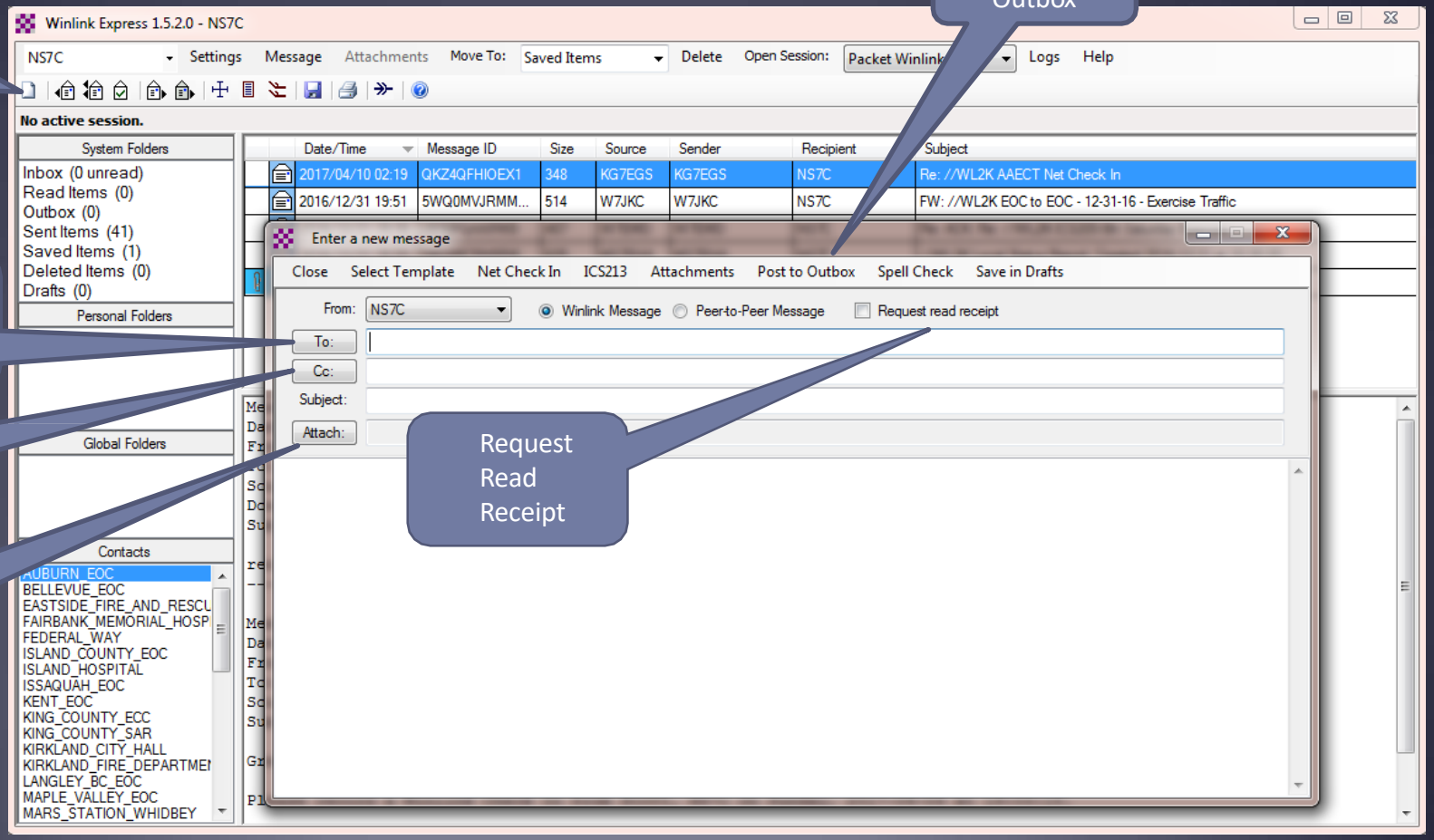
Click "To" or "CC" for contacts

Multiple recipients and CC

File attachments

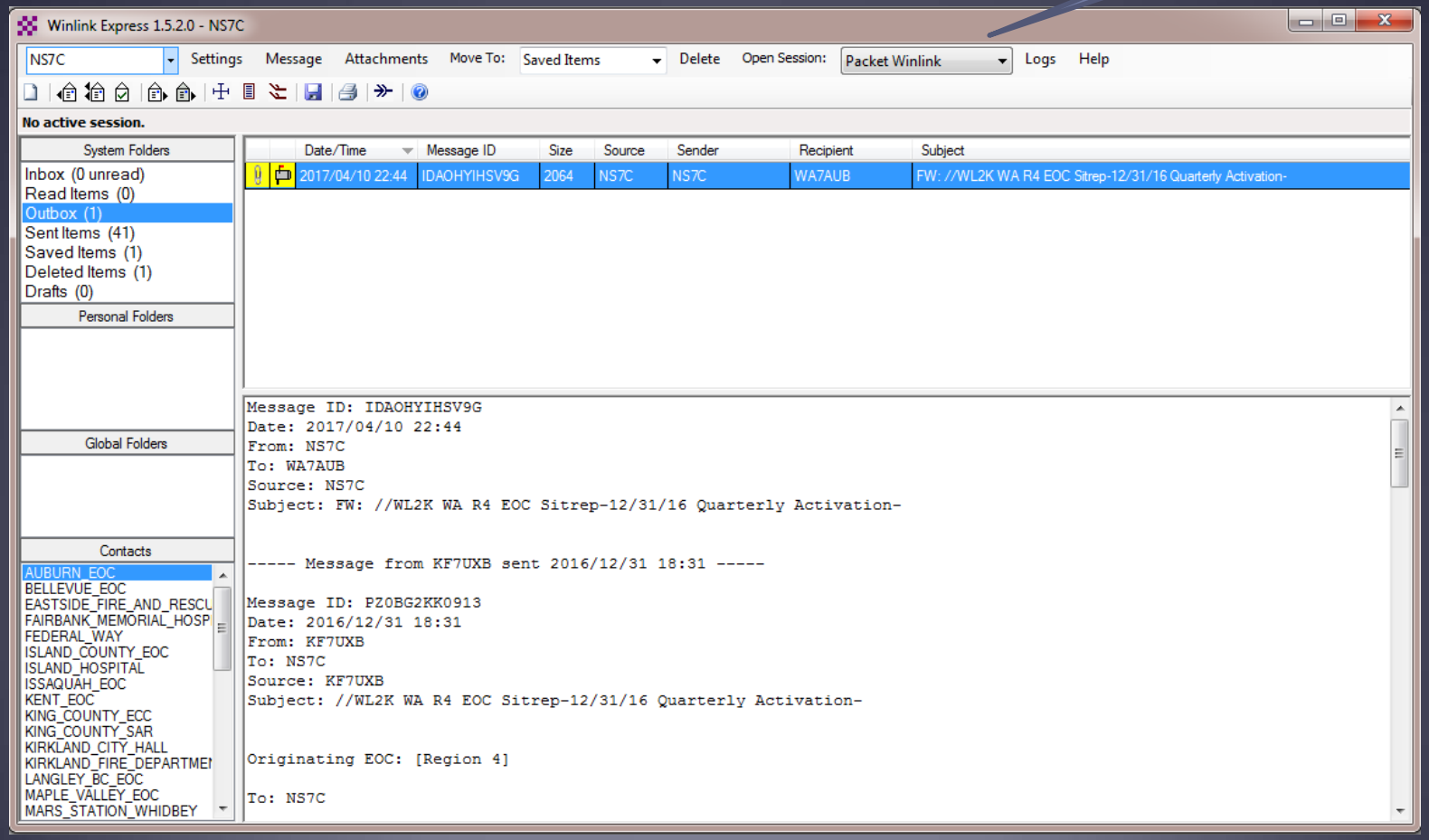
Post to Outbox

Request Read Receipt



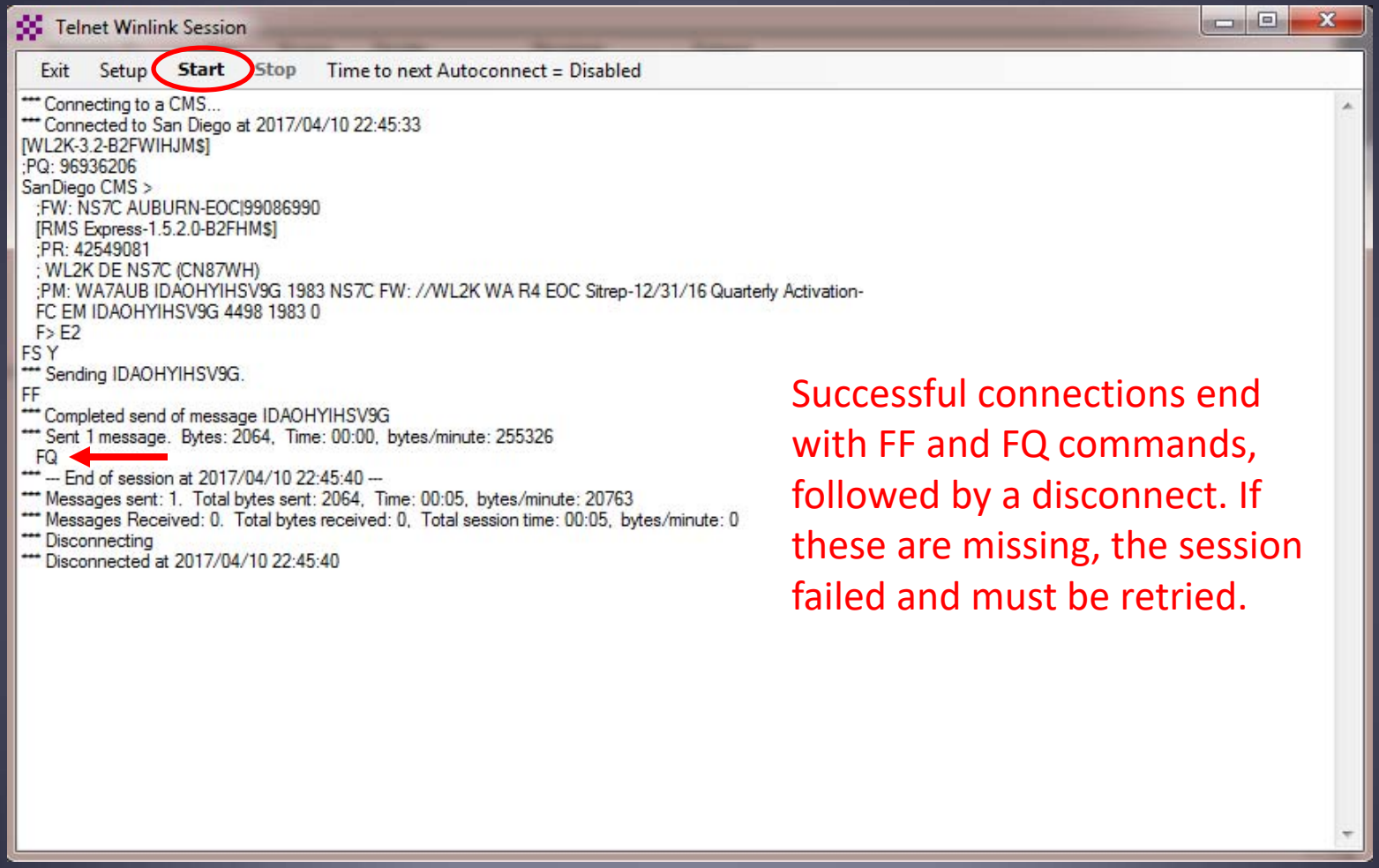
Pending Message In Outbox

Open Session



Telnet Session

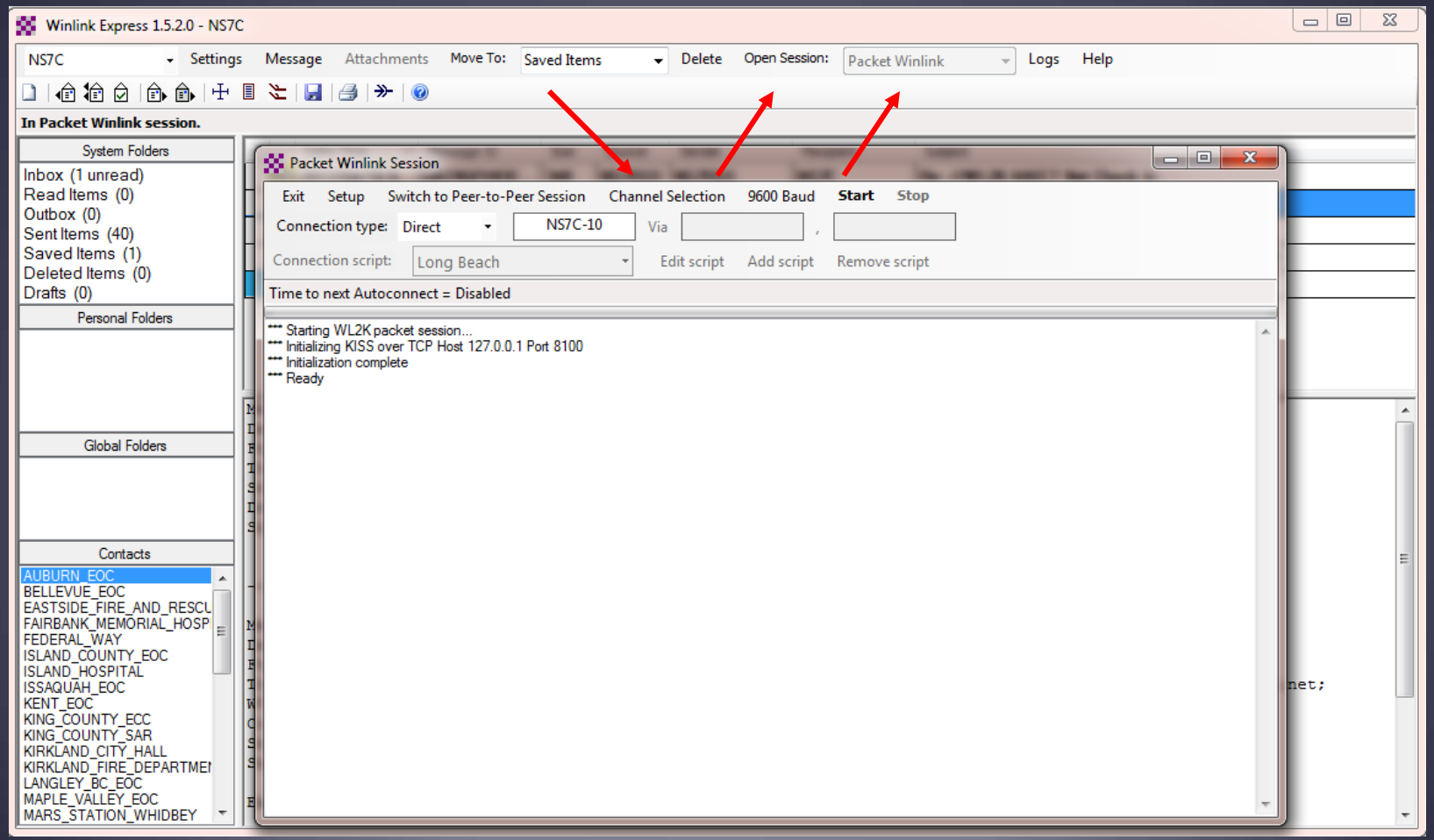
Connect, login, send message, log off



Successful connections end with FF and FQ commands, followed by a disconnect. If these are missing, the session failed and must be retried.

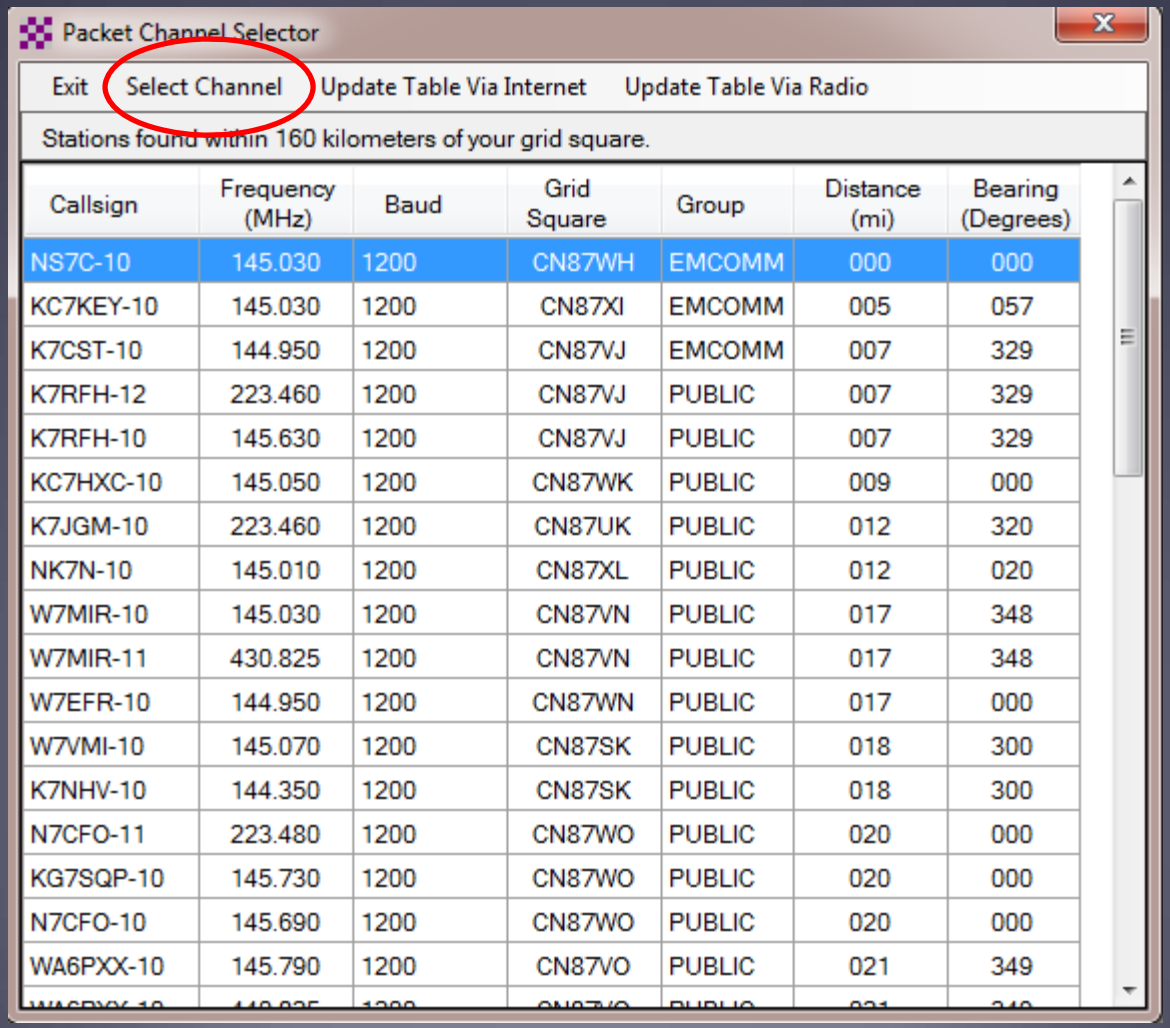
Packet Radio Session

Select Mode and Open Session



Packet Channel Selection

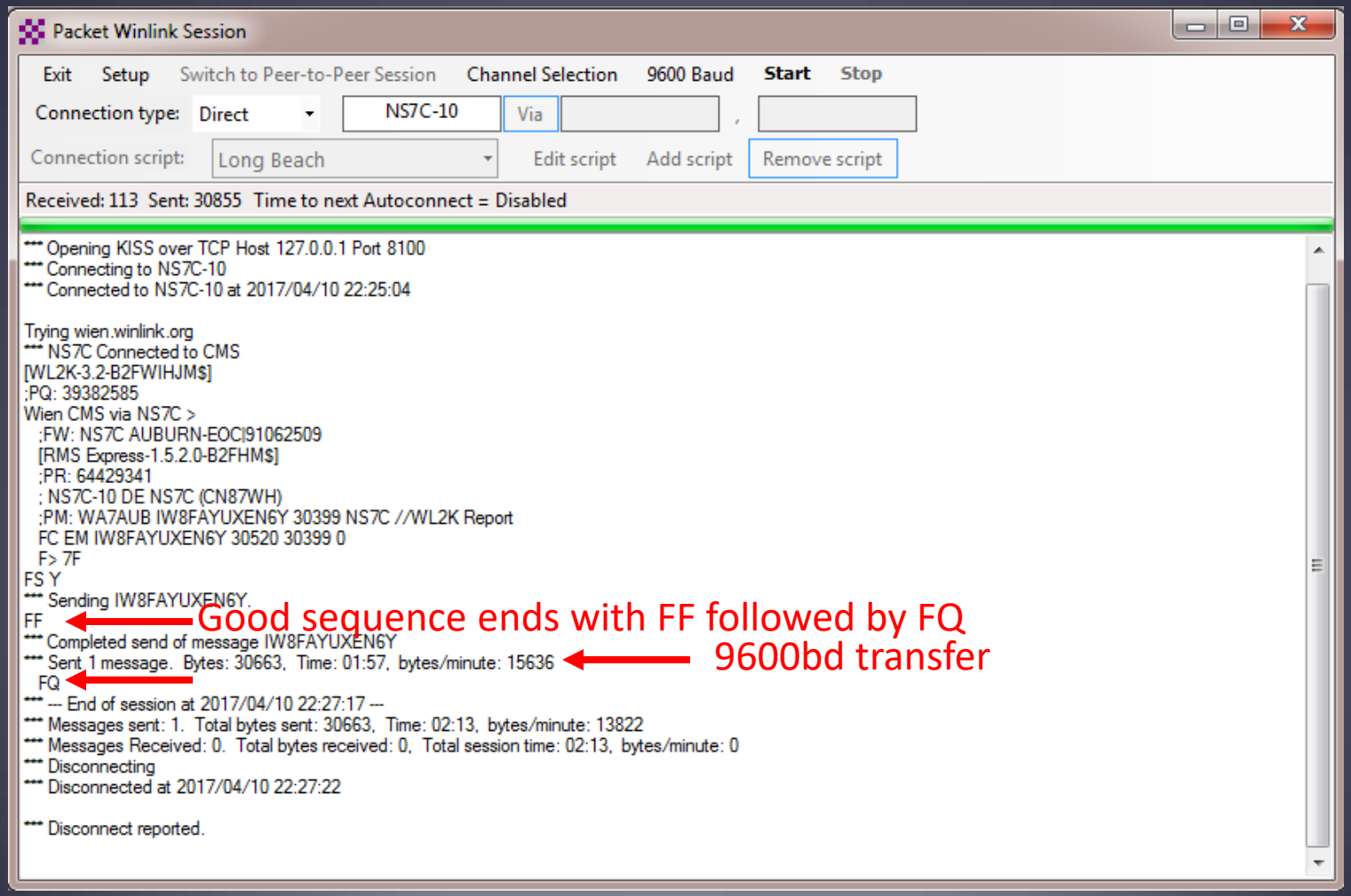
Based on your grid square



Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (mi)	Bearing (Degrees)
NS7C-10	145.030	1200	CN87WH	EMCOMM	000	000
KC7KEY-10	145.030	1200	CN87XI	EMCOMM	005	057
K7CST-10	144.950	1200	CN87VJ	EMCOMM	007	329
K7RFH-12	223.460	1200	CN87VJ	PUBLIC	007	329
K7RFH-10	145.630	1200	CN87VJ	PUBLIC	007	329
KC7HXC-10	145.050	1200	CN87WK	PUBLIC	009	000
K7JGM-10	223.460	1200	CN87UK	PUBLIC	012	320
NK7N-10	145.010	1200	CN87XL	PUBLIC	012	020
W7MIR-10	145.030	1200	CN87VN	PUBLIC	017	348
W7MIR-11	430.825	1200	CN87VN	PUBLIC	017	348
W7EFR-10	144.950	1200	CN87WN	PUBLIC	017	000
W7VMI-10	145.070	1200	CN87SK	PUBLIC	018	300
K7NHV-10	144.350	1200	CN87SK	PUBLIC	018	300
N7CFO-11	223.480	1200	CN87WO	PUBLIC	020	000
KG7SQP-10	145.730	1200	CN87WO	PUBLIC	020	000
N7CFO-10	145.690	1200	CN87WO	PUBLIC	020	000
WA6PXX-10	145.790	1200	CN87VO	PUBLIC	021	349

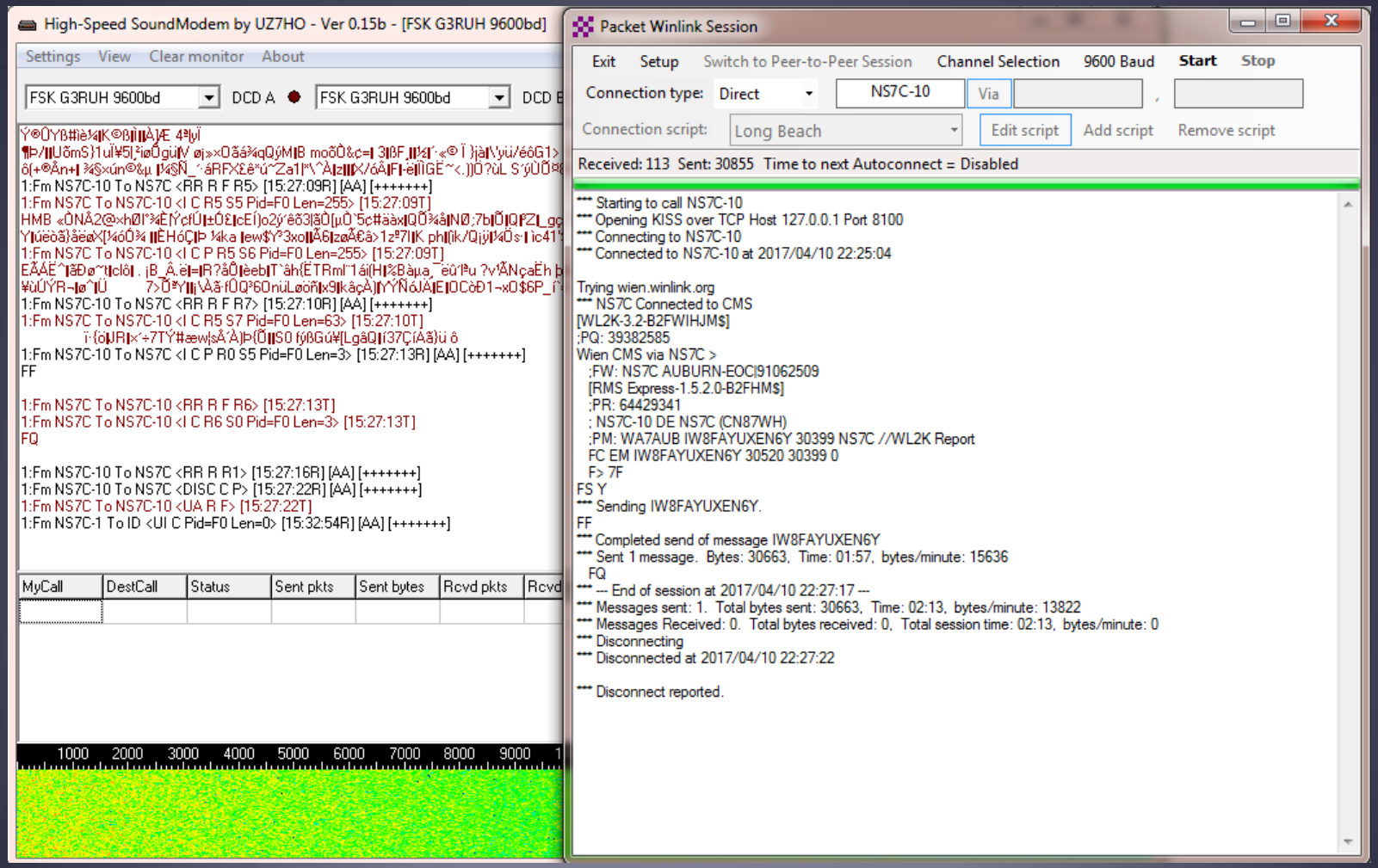
Packet Session (TNC)

Connect, login, send message, log off

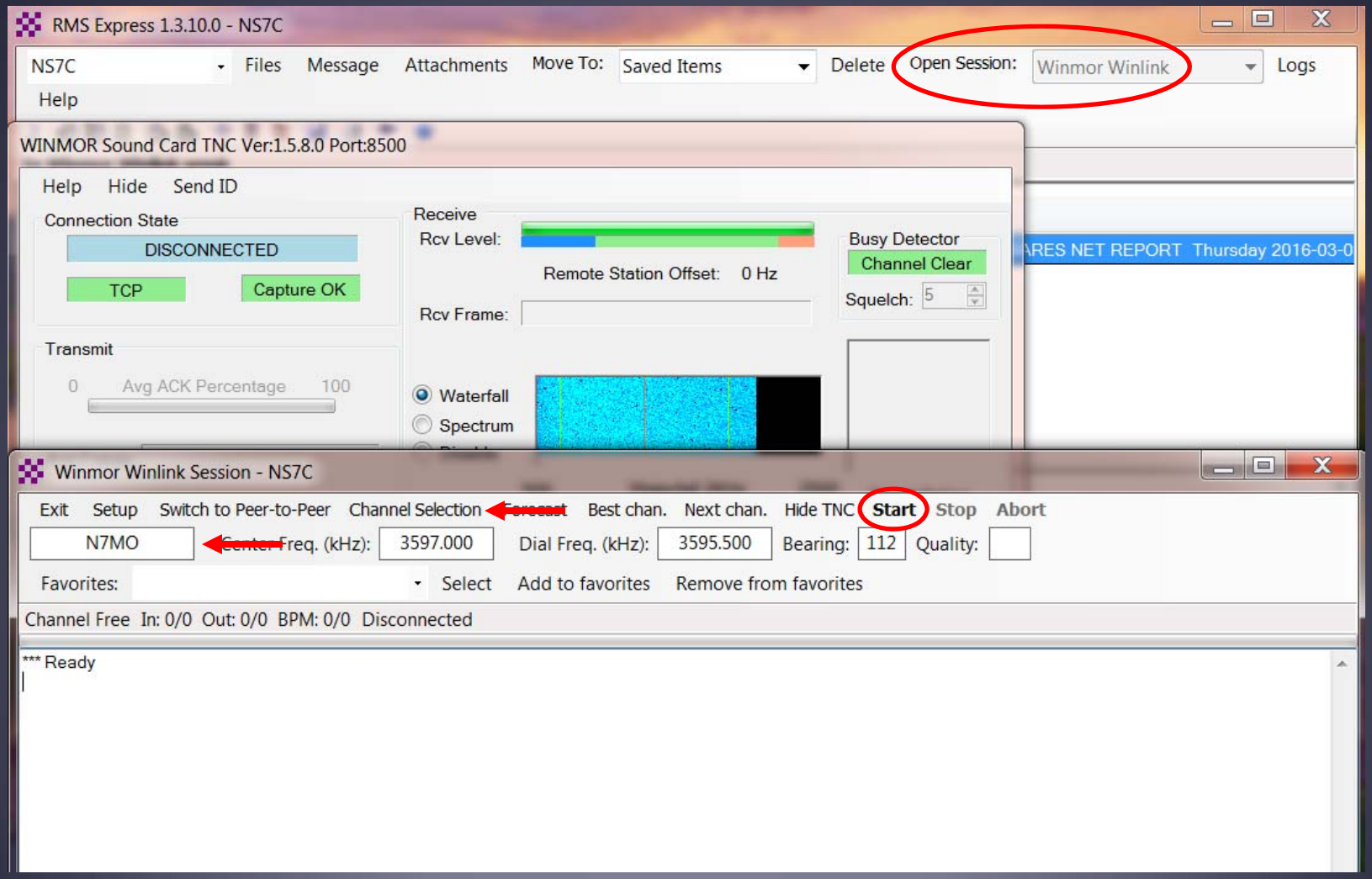


Packet Session (sound card)

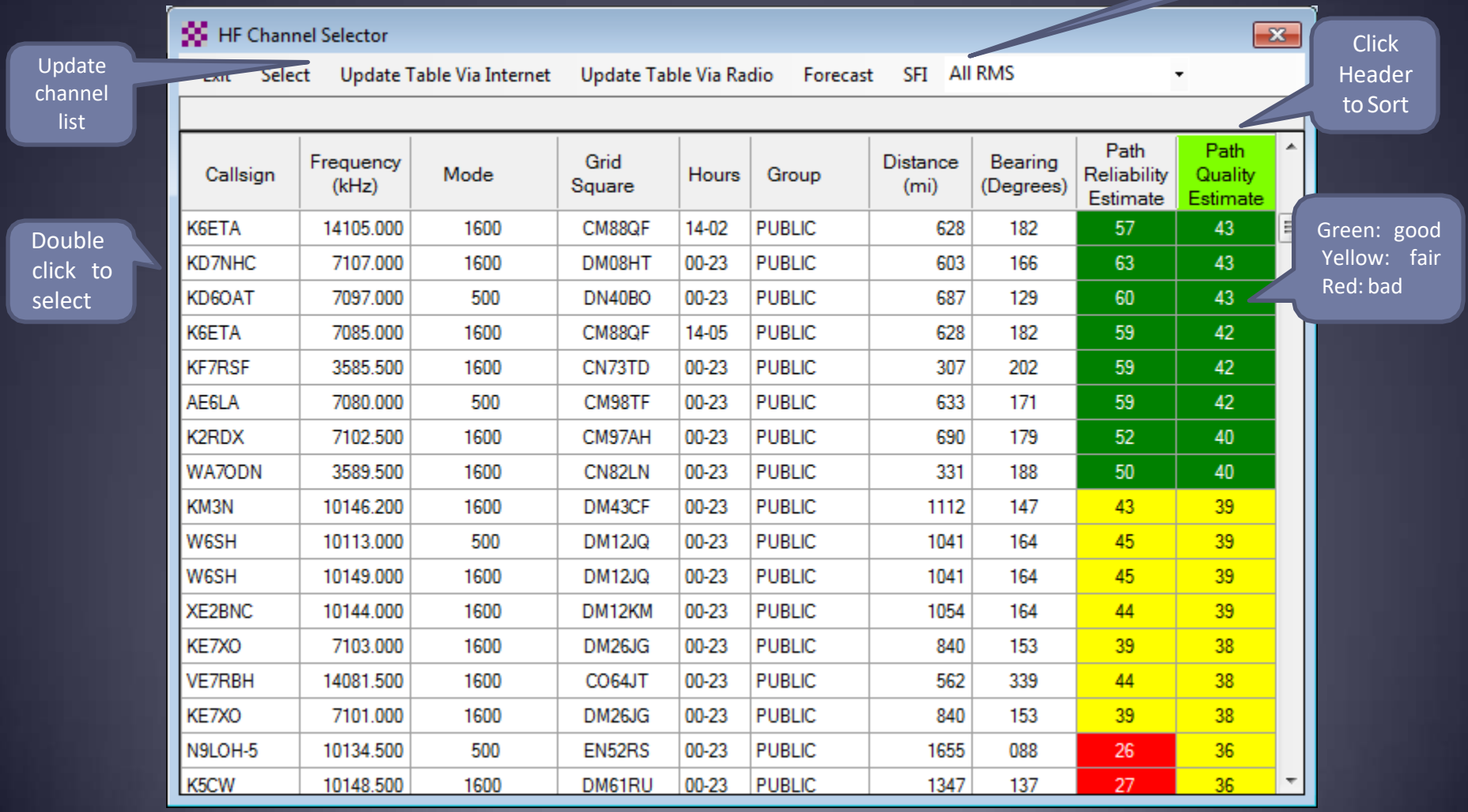
Connect, login, check for message, log off



Winmor HF Session



HF Channel Selection Screen



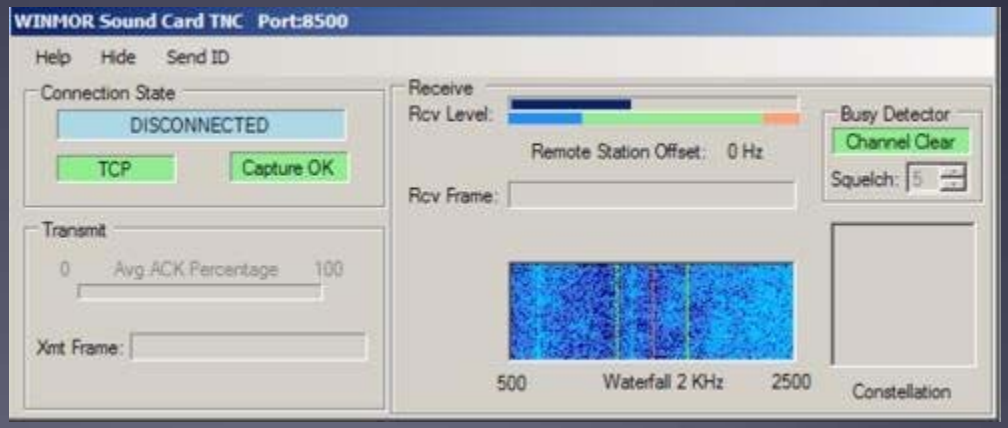
HF Channel Selector

Exit | Select | Update Table Via Internet | Update Table Via Radio | Forecast | SFI | All RMS

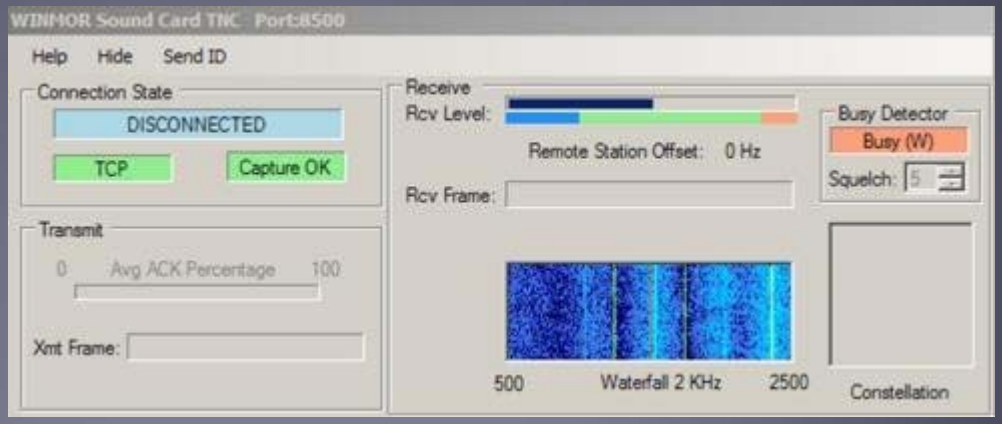
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
K6ETA	14105.000	1600	CM88QF	14-02	PUBLIC	628	182	57	43
KD7NHC	7107.000	1600	DM08HT	00-23	PUBLIC	603	166	63	43
KD6OAT	7097.000	500	DN40BO	00-23	PUBLIC	687	129	60	43
K6ETA	7085.000	1600	CM88QF	14-05	PUBLIC	628	182	59	42
KF7RSF	3585.500	1600	CN73TD	00-23	PUBLIC	307	202	59	42
AE6LA	7080.000	500	CM98TF	00-23	PUBLIC	633	171	59	42
K2RDX	7102.500	1600	CM97AH	00-23	PUBLIC	690	179	52	40
WA7ODN	3589.500	1600	CN82LN	00-23	PUBLIC	331	188	50	40
KM3N	10146.200	1600	DM43CF	00-23	PUBLIC	1112	147	43	39
W6SH	10113.000	500	DM12JQ	00-23	PUBLIC	1041	164	45	39
W6SH	10149.000	1600	DM12JQ	00-23	PUBLIC	1041	164	45	39
XE2BNC	10144.000	1600	DM12KM	00-23	PUBLIC	1054	164	44	39
KE7XO	7103.000	1600	DM26JG	00-23	PUBLIC	840	153	39	38
VE7RBH	14081.500	1600	CO64JT	00-23	PUBLIC	562	339	44	38
KE7XO	7101.000	1600	DM26JG	00-23	PUBLIC	840	153	39	38
N9LOH-5	10134.500	500	EN52RS	00-23	PUBLIC	1655	088	26	36
K5CW	10148.500	1600	DM61RU	00-23	PUBLIC	1347	137	27	36

Check If Channel Is Free

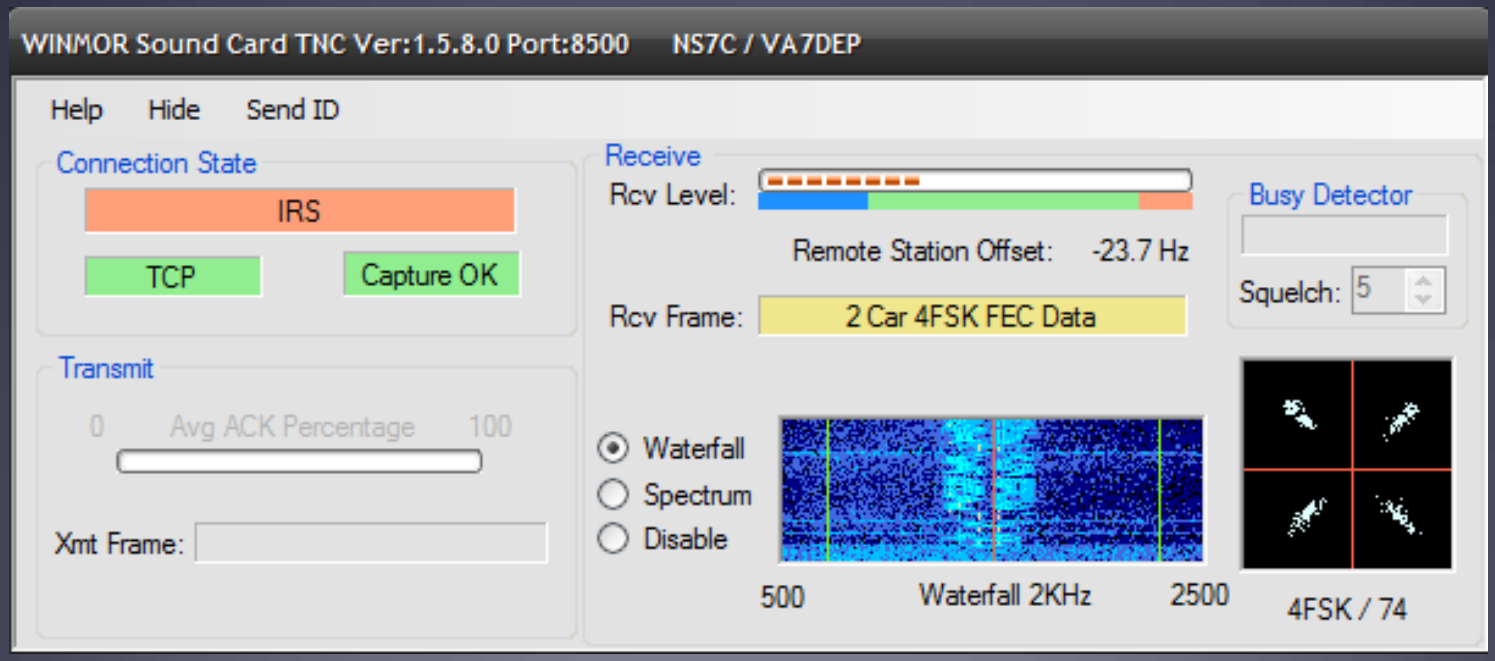
Free Channel:



Busy Channel:

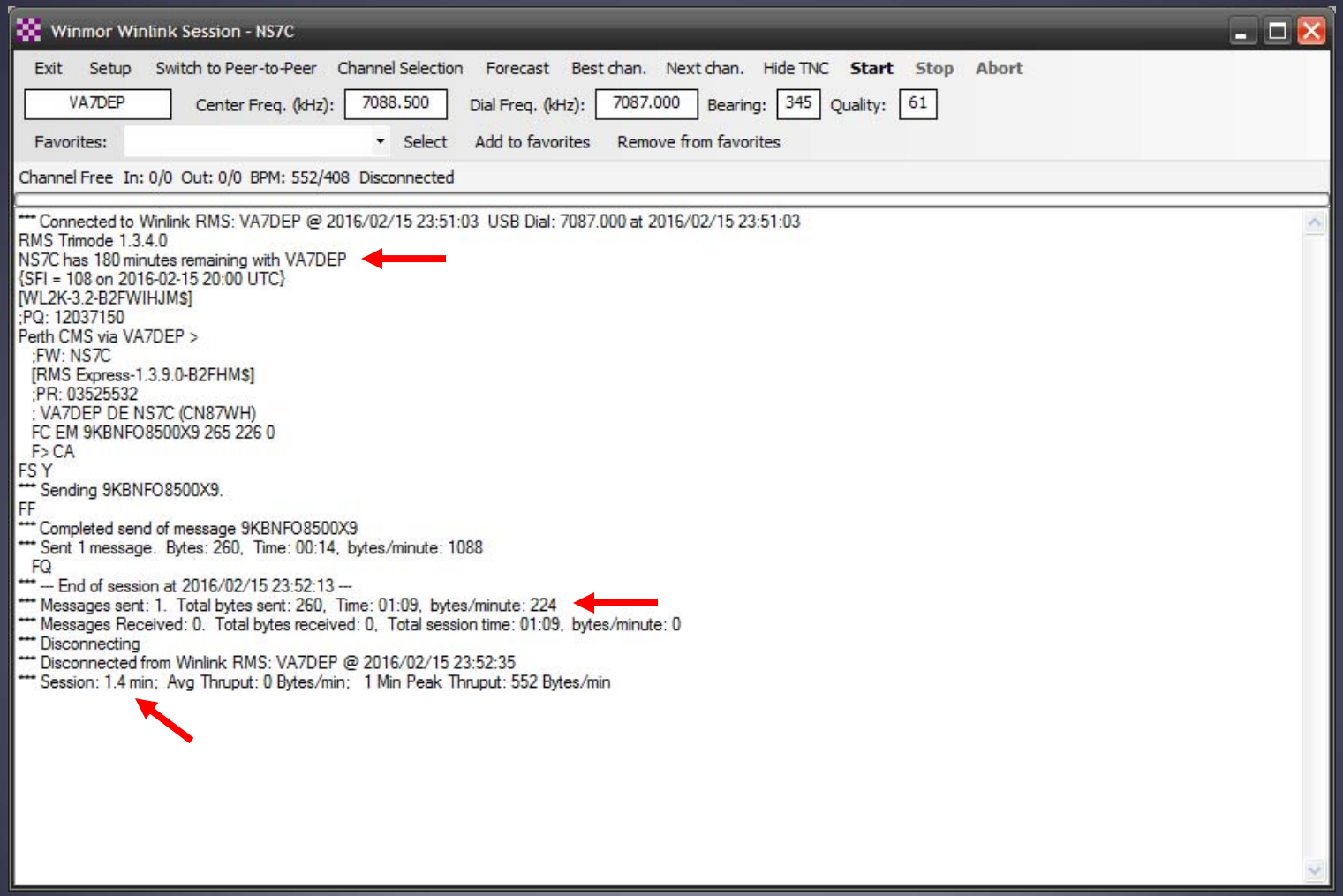


Active Winmor Connection



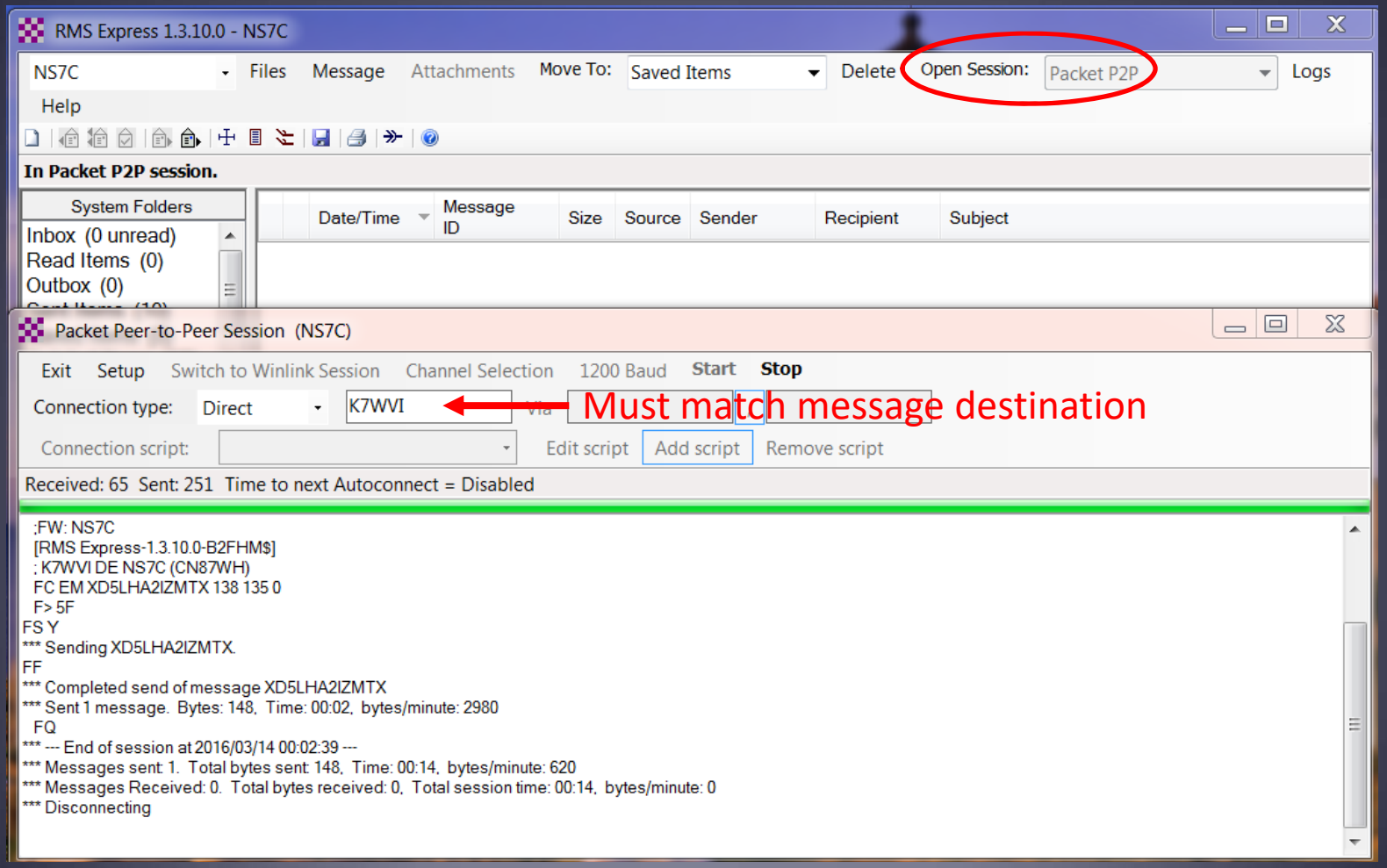
Winmor Session Log

Connect, login, send message, log off



Packet P2P Session Log

Connect, login, send message, log off



Conclusion

- Winlink Express use continues to grow, especially for EmComm.
- The Winlink Development Team continues to enhance capabilities to adapt to changing needs.
- Installation and set up is relatively easy.
- Familiar “e-mail” like interface.
- Supports multiple radio transfer modes.
- Support for both hardware and software interfaces.

Questions?