



# RMS 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.).
- RMS 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 limited and requires \$400 modem (Kantronics or SCS Tracker). 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.
- **HF Pactor 1, 2, 3 and 4** – Fast and reliable but requires an expensive modem (\$1500+).
- All RF modes can be Peer-to-Peer.

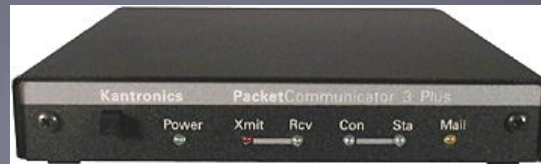
# Resources Needed for RMS Express

## 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?).

# Installing RMS Express

- Download zip file:
  - <ftp://autoupdate.winlink.org/User%20Programs/>
  - [www.winlink.org](http://www.winlink.org) – Client Software, RMS 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.

# RMS Express Initial Setup

**RMS Express Properties**

**Call Signs**

My Callsign:  My Password:  ←

Require password on connections. (Enable Secure Login.)  Show password

Callsign suffix (optional):  (Used for country code)

Password recovery e-mail:  (Non-Winlink e-mail address where lost password will be sent when requested)

**Auxiliary Callsigns and Tactical Addresses**

←

My Grid Square:   ←

RMS Express registration key:

Path to propagation forecast program:

**Service Codes**

←

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)  
If you change service codes, you must update the list of channels.

**Contact Information (Optional)**

Name:

Street address 1:

Street address 2:

City:

State/Province:

Country:

Postal code:

Web Site URL (optional):

Phone number:

Non-Winlink e-mail:

Additional information (optional):

Recalculate HF path quality if SFI changes more than:

Keep logs for  weeks. Keep deleted messages for  days.

Display list of pending incoming messages prior to download

Warn about connections to stations holding messages

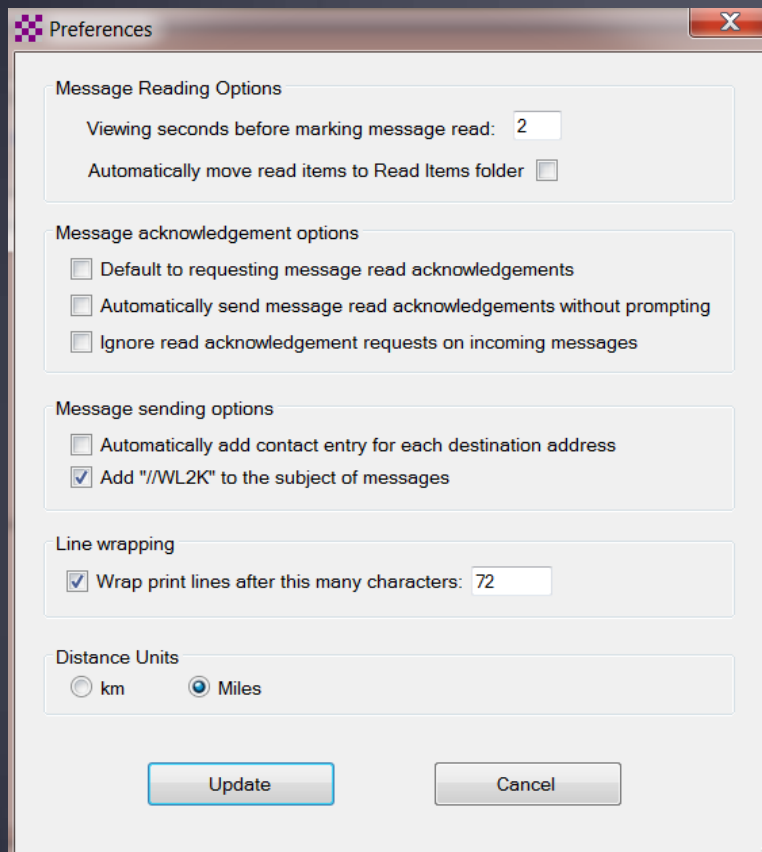
Disable Peer-To-Peer Message Transfer

Allow diagnostic information to be sent to the Winlink Development Team

Automatically install field-test (beta) versions of RMS Express

# User Preferences

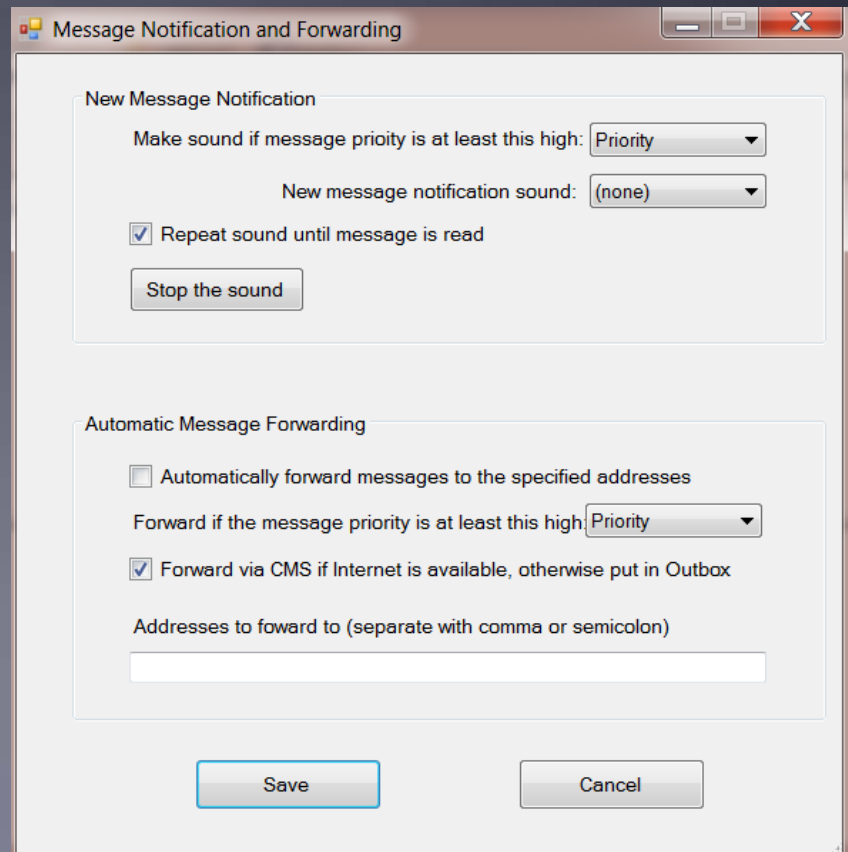
- Click “Files” followed by “Preferences/Message Notification”



The 'Preferences' dialog box is shown with the following settings:

- Message Reading Options**
  - Viewing seconds before marking message read: 2
  - Automatically move read items to Read Items folder:
- Message acknowledgement options**
  - Default to requesting message read acknowledgements:
  - Automatically send message read acknowledgements without prompting:
  - Ignore read acknowledgement requests on incoming messages:
- Message sending options**
  - Automatically add contact entry for each destination address:
  - Add "/WL2K" to the subject of messages:
- Line wrapping**
  - Wrap print lines after this many characters: 72
- Distance Units**
  - km:
  - Miles:

Buttons: Update, Cancel



The 'Message Notification and Forwarding' dialog box is shown with the following settings:

- New Message Notification**
  - Make sound if message priority is at least this high: Priority
  - New message notification sound: (none)
  - Repeat sound until message is read:
  - Stop the sound: [Button]
- Automatic Message Forwarding**
  - Automatically forward messages to the specified addresses:
  - Forward if the message priority is at least this high: Priority
  - Forward via CMS if Internet is available, otherwise put in Outbox:
  - Addresses to forward to (separate with comma or semicolon): [Text Field]

Buttons: Save, Cancel

# Installing RMS Express

- The first time you originate a message using RMS 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 it 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

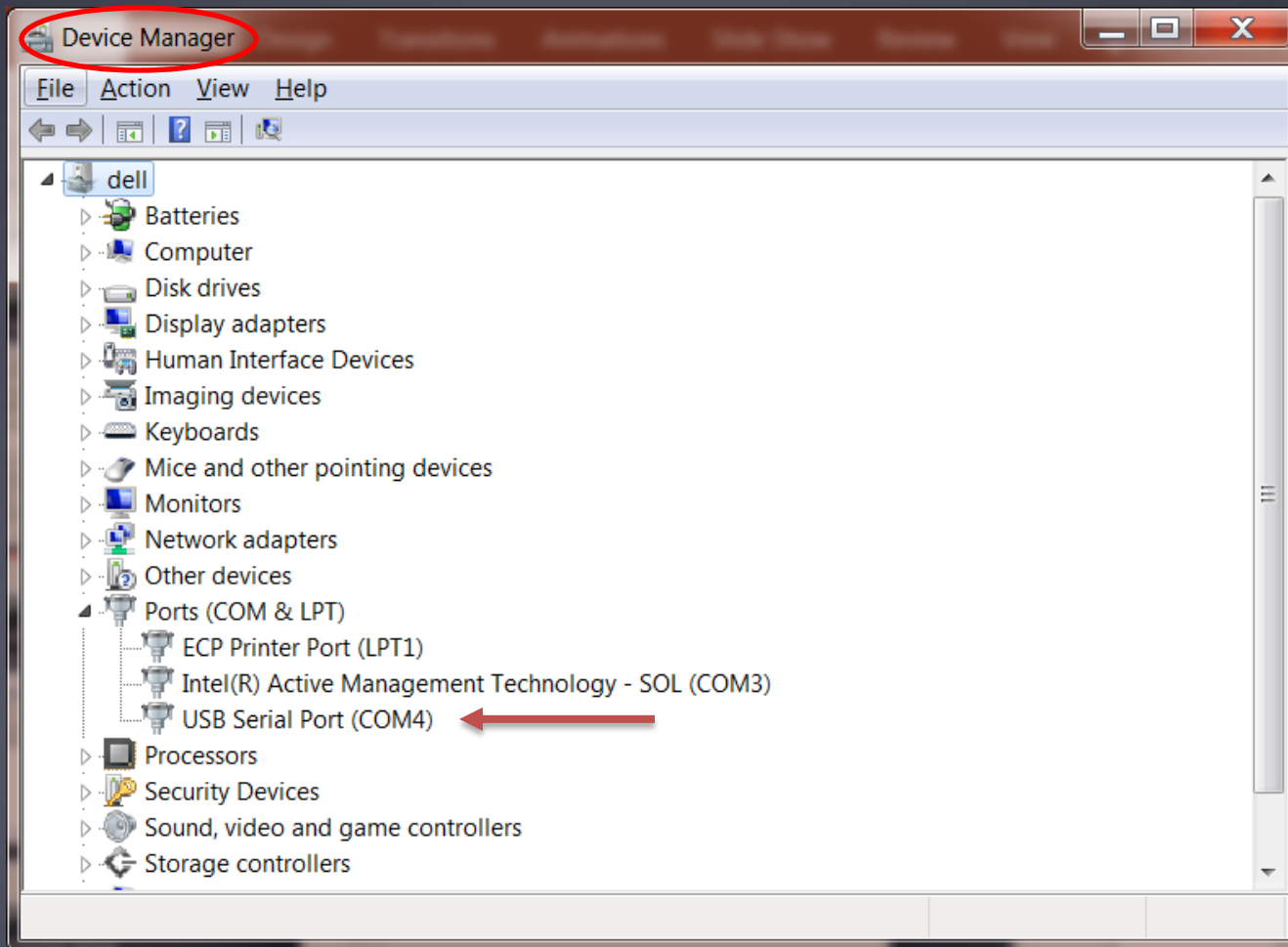
The screenshot displays the RMS Express 1.3.10.0 - NS7C interface. The main window has a menu bar with 'Files', 'Message', 'Attachments', 'Move To: Saved Items', 'Delete', 'Open Session:' (circled in red), 'Packet Winlink', 'Logs', and 'Help'. A 'Packet Winlink Session' dialog box is open, showing 'Exit' and 'Setup' (circled in red) buttons. The 'Setup' button is highlighted. The 'Packet Winlink/P2P Setup' dialog box is also open, showing the following settings:

- TNC Connection
  - Packet TNC Type: TNC-X (indicated by a red arrow)
  - Packet TNC Model: (empty)
  - Serial Port: COM3 (indicated by a red arrow)
  - Serial Port Baud: 9600
  - AutoConnect Time: Disabled
- TNC Parameters
  - 1200 Baud (selected) / 9600 Baud
  - TX Delay (Milliseconds): 400 / 300
  - Maximum Packet Length: 128 / 255
  - Maximum Frames: 4 / 7
  - Frack: 2 / 2
  - Persistence: 160 / 224
  - Slot time: 30 / 20
  - Maximum Retries: 5 / 5
  - Disable Xmt Level Adjust:  (checked)
  - Transmit Level: 100 / 100

Buttons at the bottom of the 'Packet Winlink/P2P Setup' dialog are 'Update' and 'Cancel'.

# Initial Packet Setup

## Hardware TNC COM Port





# Initial Packet Setup

## Sound Card Interface

- Download zip file (UZ7HO):
  - [http://uz7.ho.ua/modem\\_beta/soundmodem94.zip](http://uz7.ho.ua/modem_beta/soundmodem94.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 (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)

The image shows two overlapping windows from the SoundModem software. The background window is titled "SoundModem by UZ7HO - Ver 0.84b" and has a menu bar with "Settings", "View", "Clear monitor", and "About". It features two channels, Ch A and Ch B, both set to 1700, and a DCD threshold control. The "Settings" panel is open, showing "Sound Card" options: Output device is "Speakers (2- USB Audio CODEC)" and Input device is "Microphone (2- USB Audio CODEC)". There are checkboxes for "Dual channel", "TX rotation", "Single channel output", "Color waterfall", and "Stop waterfall on minimize". TX and RX SampleRate are both set to 11025, and TX and RX corr. PPM are both set to 0. The "Server setup" section shows "AGWPE Server Port" at 8000 (disabled) and "KISS Server Port" at 8100 (enabled). The "PTT Port" section shows "Select PTT port" as "NONE" and checkboxes for "Dual PTT" and "Swap COM pins for PTT".

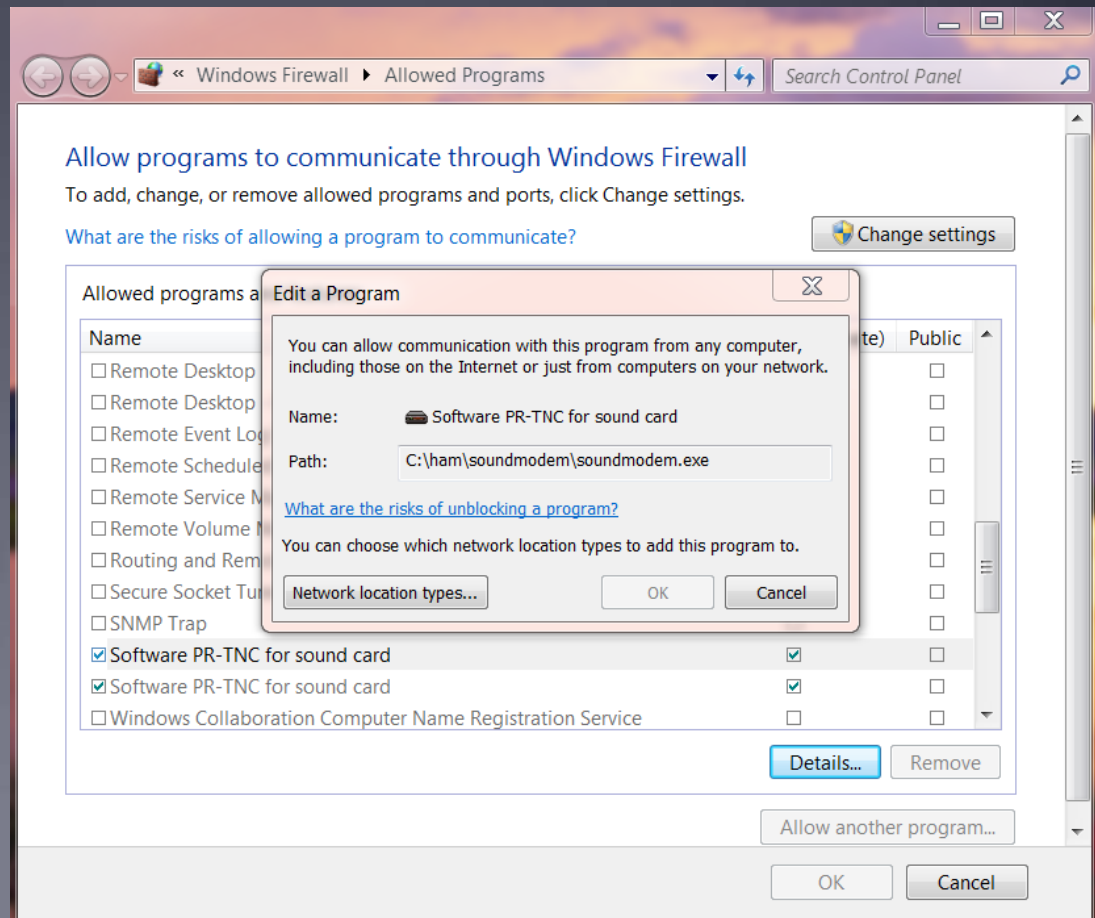
The foreground window is titled "Packet Winlink/P2P Setup" and has a menu bar with "Settings", "View", "Clear monitor", and "About". It features two channels, Ch A and Ch B, both set to 1700, and a DCD threshold control. The "TNC Connection" section shows "Packet TNC Type" as "KISS", "Packet TNC Model" as "NORMAL", "Serial Port" as "TCP", and "AutoConnect Time" as "Disabled". The "TCP Host/Port" section shows "TCP Host" as "127.0.0.1" and "Port" as "8100". The "TNC Parameters" section shows "1200 Baud" selected, "TX Delay (Milliseconds)" as 400, "Maximum Packet Length" as 128, "Maximum Frames" as 4, "Frack" as 2, "Persistence" as 160, "Slot time" as 30, and "Maximum Retries" as 5. There are also checkboxes for "Disable Xmt Level Adjust" and "Enable IPoll".

Red arrows point to the "Speakers (2- USB Audio CODEC)" output device in the SoundModem window, the "KISS" Packet TNC Type in the Packet Winlink/P2P Setup window, the "KISS Server Port" 8100 (Enabled) checkbox in the SoundModem window, and the "8100" port value in the Packet Winlink/P2P Setup window.

# 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 RMS Express (and other applications) to use the virtual TNC.



# Initial Packet Setup

## Sound Card Interface (UZ7HO)

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

The screenshot shows a 'Modem settings' dialog box with two columns for 'Modem filters ch: A' and 'Modem filters ch: B'. Channel A is configured for VHF AX.25 1200bd, while Channel B is for HF AX.25 300bd. Both channels have similar filter settings (BPF Width, TXBPF Width, LPF Width, BPF Taps, LPF Taps) and checkboxes for 'Default settings', 'KISS Optimization', and 'non-AX25 filter'. Channel A has 'PreEmphasis filter' set to 'None' and 'All' checked, while Channel B has 'PreEmphasis filter' set to 'None' and 'All' checked. Channel A has 'TXDelay' 250 msec, 'TXTail' 50 msec, 'Add. RX' 2 pairs, 'Add. RX shift' 30 hz, and 'Bits Recovery' SINGLE. Channel B has 'TXDelay' 250 msec, 'TXTail' 50 msec, 'Add. RX' 0 pairs, 'Add. RX shift' 30 hz, and 'Bits Recovery' NONE. 'Ok' and 'Cancel' buttons are at the bottom.

Channel	Modem filters	Modem type
ch: A	BPF Width: 1400 TXBPF Width: 1600 LPF Width: 650 BPF Taps: 256 LPF Taps: 128 Default settings: <input checked="" type="checkbox"/> PreEmphasis filter: None <input checked="" type="checkbox"/> All KISS Optimization: <input checked="" type="checkbox"/> non-AX25 filter: <input checked="" type="checkbox"/>	Mode: VHF AX.25 1200bd TXDelay: 250 msec TXTail: 50 msec Add. RX: 2 pairs Add. RX shift: 30 hz Bits Recovery: SINGLE
ch: B	BPF Width: 500 TXBPF Width: 500 LPF Width: 155 BPF Taps: 256 LPF Taps: 128 Default settings: <input checked="" type="checkbox"/> PreEmphasis filter: None <input checked="" type="checkbox"/> All KISS Optimization: <input type="checkbox"/> non-AX25 filter: <input checked="" type="checkbox"/>	Mode: HF AX.25 300bd TXDelay: 250 msec TXTail: 50 msec Add. RX: 0 pairs Add. RX shift: 30 hz Bits Recovery: NONE

# Initial Packet Setup

## Sound Card Interface (Direwolf)

```
direwolf - Notepad
File Edit Format View Help

#####
#                               #
#           TEXT TO SPEECH COMMAND FILE           #
#                               #
#####
#SPEECH dwspeak.bat

#####
#                               #
#           VIRTUAL TNC SERVER PROPERTIES           #
#                               #
#####
#
# Dire Wolf acts as a virtual TNC and can communicate with
# client applications by different protocols:
#
#   - the "AGW TCP/IP Socket Interface" - default port 8000
#   - KISS protocol over TCP socket - default port 8001
#   - KISS TNC via serial port
#
AGWPORT 8000
KISSPORT 8100

#
# Some applications are designed to operate with only a physical
# TNC attached to a serial port. For these, we provide a virtual
# port that appears to be connected to a TNC.
#
# Take a look at the User Guide for instructions to set up
# two virtual serial ports named COM3 and COM4 connected by
# a null modem.
```

**Packet Winlink/P2P Setup**

TNC Connection

Packet TNC Type: **KISS**

Packet TNC Model: **NORMAL**

Serial Port: **TCP**

AutoConnect Time: **Disabled**

TCP Host/Port: **127.0.0.1** **8100**

TNC Parameters

1200 Baud  9600 Baud

TX Delay (Milliseconds): **400** **300**

Maximum Packet Length: **128** **255**

Maximum Frames: **4** **7**

Frack: **2** **2**

Persistence: **160** **224**

Slot time: **30** **20**

Maximum Retries: **5** **5**

Disable Xmt Level Adjust  Transmit Level: **100** **100**

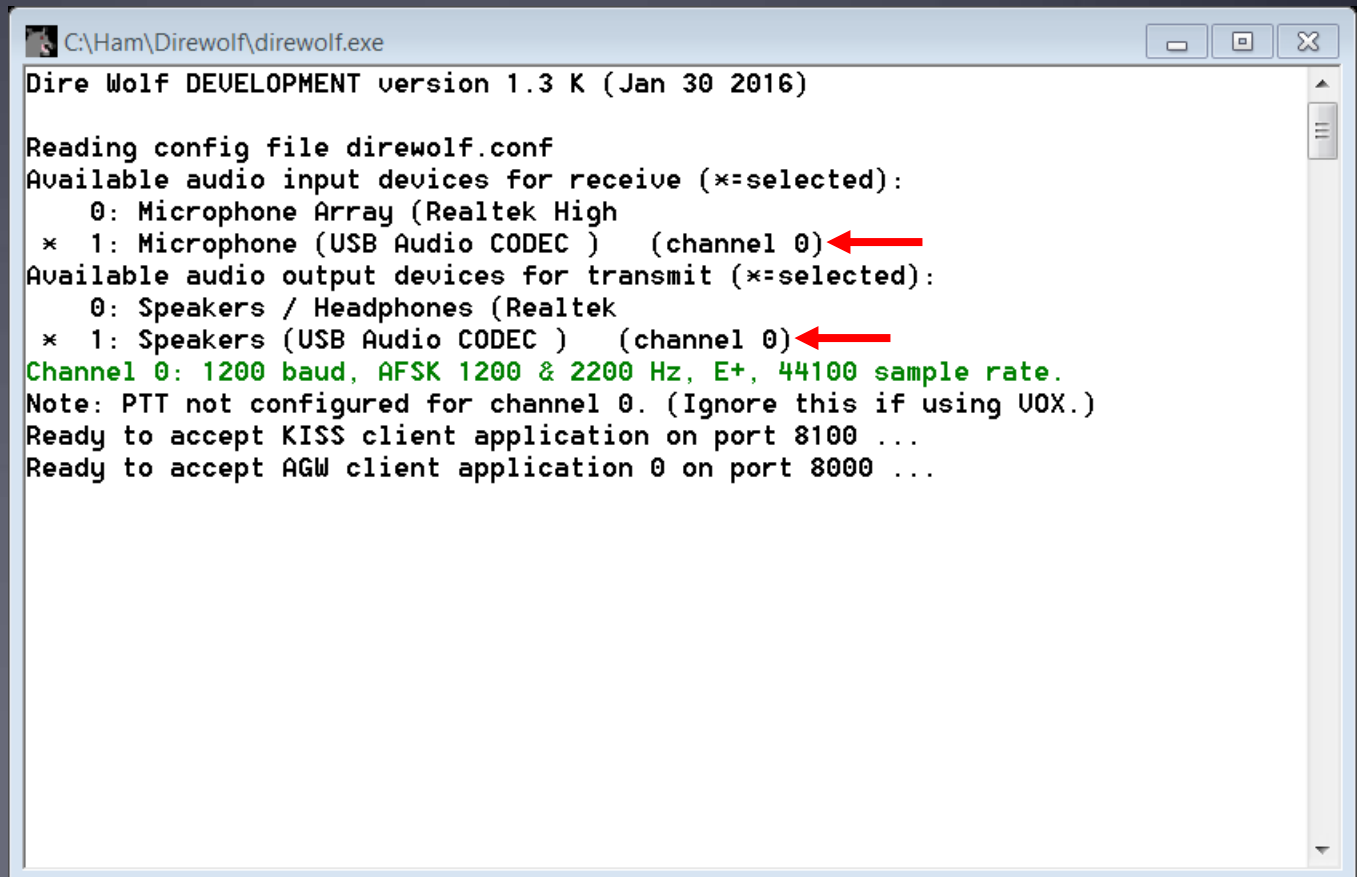
Enable IPoll

**Update** **Cancel**

# Initial Packet Setup

## Sound Card Interface (Direwolf)

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



The screenshot shows a Windows application window titled "C:\Ham\Direwolf\direwolf.exe". The window content displays the following text:

```
Dire Wolf DEVELOPMENT version 1.3 K (Jan 30 2016)

Reading config file direwolf.conf
Available audio input devices for receive (*=selected):
  0: Microphone Array (Realtek High
  * 1: Microphone (USB Audio CODEC ) (channel 0) ←
Available audio output devices for transmit (*=selected):
  0: Speakers / Headphones (Realtek
  * 1: Speakers (USB Audio CODEC ) (channel 0) ←
Channel 0: 1200 baud, AFSK 1200 & 2200 Hz, E+, 44100 sample rate.
Note: PTT not configured for channel 0. (Ignore this if using UOX.)
Ready to accept KISS client application on port 8100 ...
Ready to accept AGW client application 0 on port 8000 ...
```

Red arrows point to the selected devices: "Microphone (USB Audio CODEC )" and "Speakers (USB Audio CODEC)".

# Initial Packet Setup

## Sound Card Virtual TNC

```
C:\Ham\Direwolf\direwolf.exe

Reading config file direwolf.conf
Available audio input devices for receive (*=selected):
  0: Microphone Array (Realtek High
  * 1: Microphone (USB Audio CODEC ) (channel 0)
Available audio output devices for transmit (*=selected):
  0: Speakers / Headphones (Realtek
  * 1: Speakers (USB Audio CODEC ) (channel 0)
Channel 0: 1200 baud, AFSK 1200 & 2200 Hz, E+, 44100 sample r
Note: PTT not configured for channel 0. (Ignore this if using
Ready to accept KISS client application on port 8100 ...
Ready to accept AGW client application 0 on port 8000 ...

W7EFR-10 audio level = 64(30/19) [NONE] _|||||||_
[0.3] W7EFR-10>BEACON:EF&R Winlink RMS Packet Server<0x0d>
Unknown message type E, motorcycle

W7EFR-1 audio level = 63(30/18) [NONE] _|||||||_
[0.3] W7EFR-1>ID:Network Node (COUGAR)<0x0d>
Unknown message type N, Ambulance

K7CST-10 audio level = 92(44/23) [NONE] _|||||||_
[0.4] K7CST-10>BEACON:Winlink 2000 RMS Packet Server<0x0d>
```

SoundModem by UZ7HO - Ver 0.94b

Settings View Clear monitor About

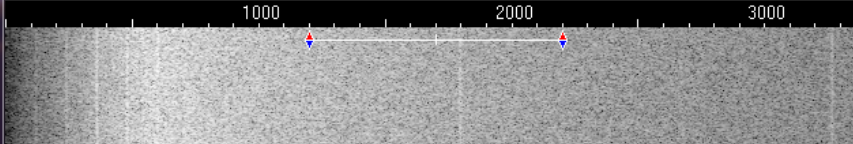
Ch A 1700 Ch B 1700 DCD threshold  H

1:Fm NS7C-5 To CQ <UI R Pid=F0 Len=19> [20:56:28R] [+++]  
Making packets....

1:Fm NS7C-5 To CQ <UI R Pid=F0 Len=23> [20:56:38R] [+++]  
And more packets.....

1:Fm W7EFR-1 To ID <UI R Pid=F0 Len=22> [20:56:41R] [+++]  
Network Node (COUGAR)

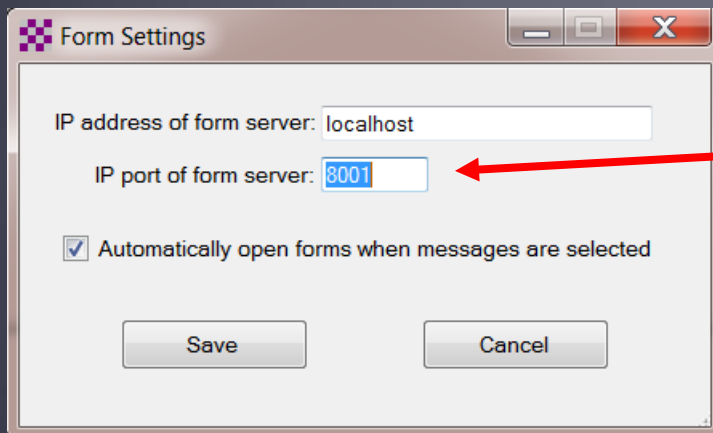
MyCall	DestCall	Status	Sent pkts	Sent bytes	Rcvd pkts	Rcvd byte	Rcvd FC	CPS TX	CPS I



# Initial Packet Setup

## Sound Card Virtual TNC

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



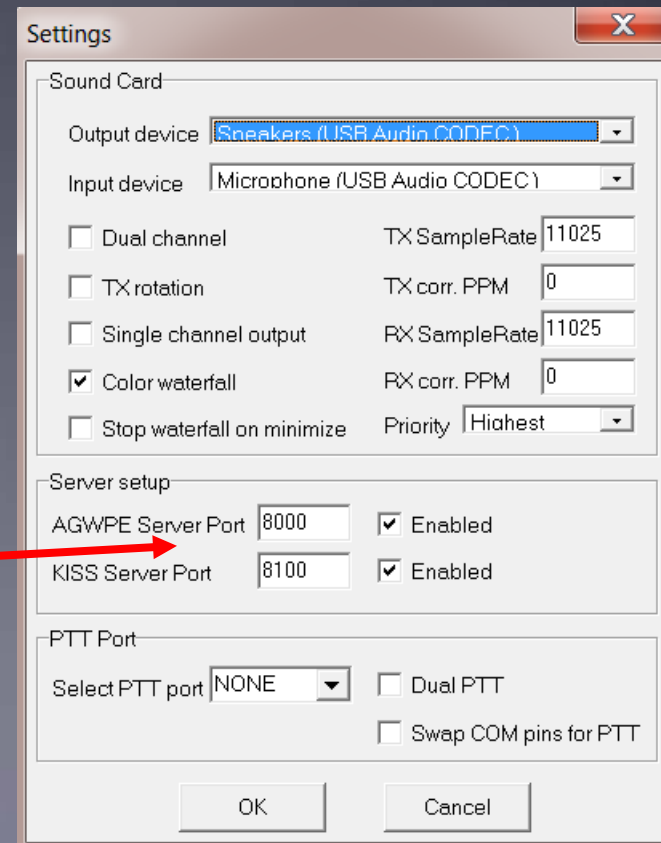
Form Settings

IP address of form server: localhost

IP port of form server: 8001

Automatically open forms when messages are selected

Save Cancel



Settings

Sound Card

Output device: Sneakers (USB Audio CODEC)

Input device: Microphone (USB Audio CODEC)

Dual channel TX SampleRate: 11025

TX rotation TX corr. PPM: 0

Single channel output RX SampleRate: 11025

Color waterfall RX corr. PPM: 0

Stop waterfall on minimize Priority: Highest

Server setup

AGWPE Server Port: 8000  Enabled

KISS Server Port: 8100  Enabled

PTT Port

Select PTT port: NONE  Dual PTT

Swap COM pins for PTT

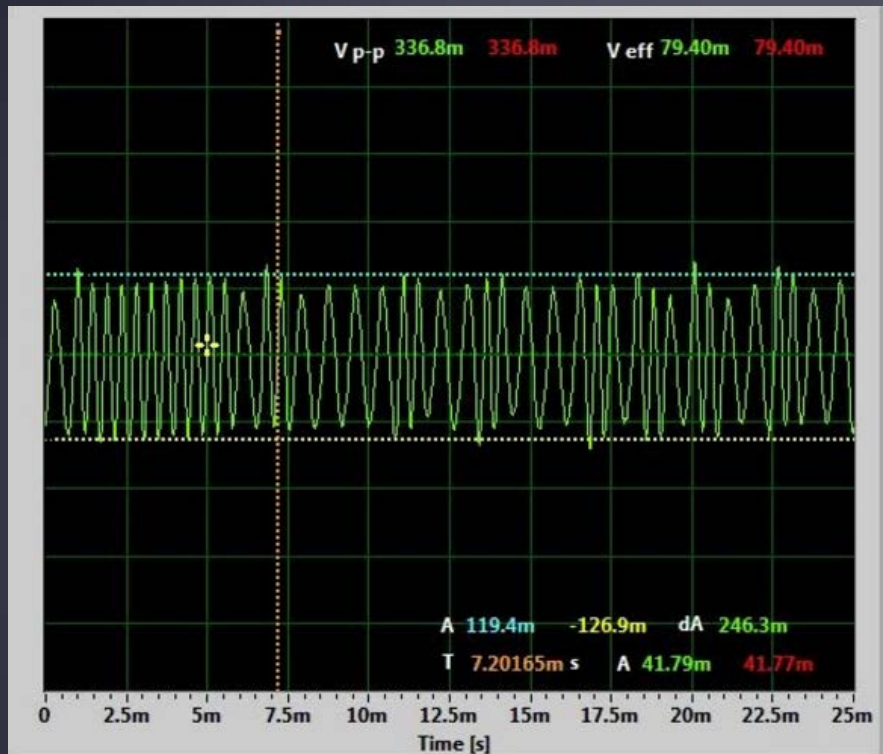
OK Cancel





# 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](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.

The screenshot shows the 'Packet Winlink/P2P Setup' dialog box. It is divided into two main sections: 'TNC Connection' and 'TNC Parameters'.

**TNC Connection:**

- Packet TNC Type: KISS (dropdown)
- Packet TNC Model: NORMAL (dropdown)
- Serial Port: TCP (dropdown)
- AutoConnect Time: Disabled (dropdown)
- TCP Host/Port: 127.0.0.1 (text field) and 8100 (text field)

**TNC Parameters:**

	1200 Baud (selected)	9600 Baud
TX Delay (Milliseconds):	300	300
Maximum Packet Length:	128	255
Maximum Frames:	4	7
Frack:	2	2
Persistence:	160	224
Slot time:	30	20
Maximum Retries:	5	5
Transmit Level:	100	100

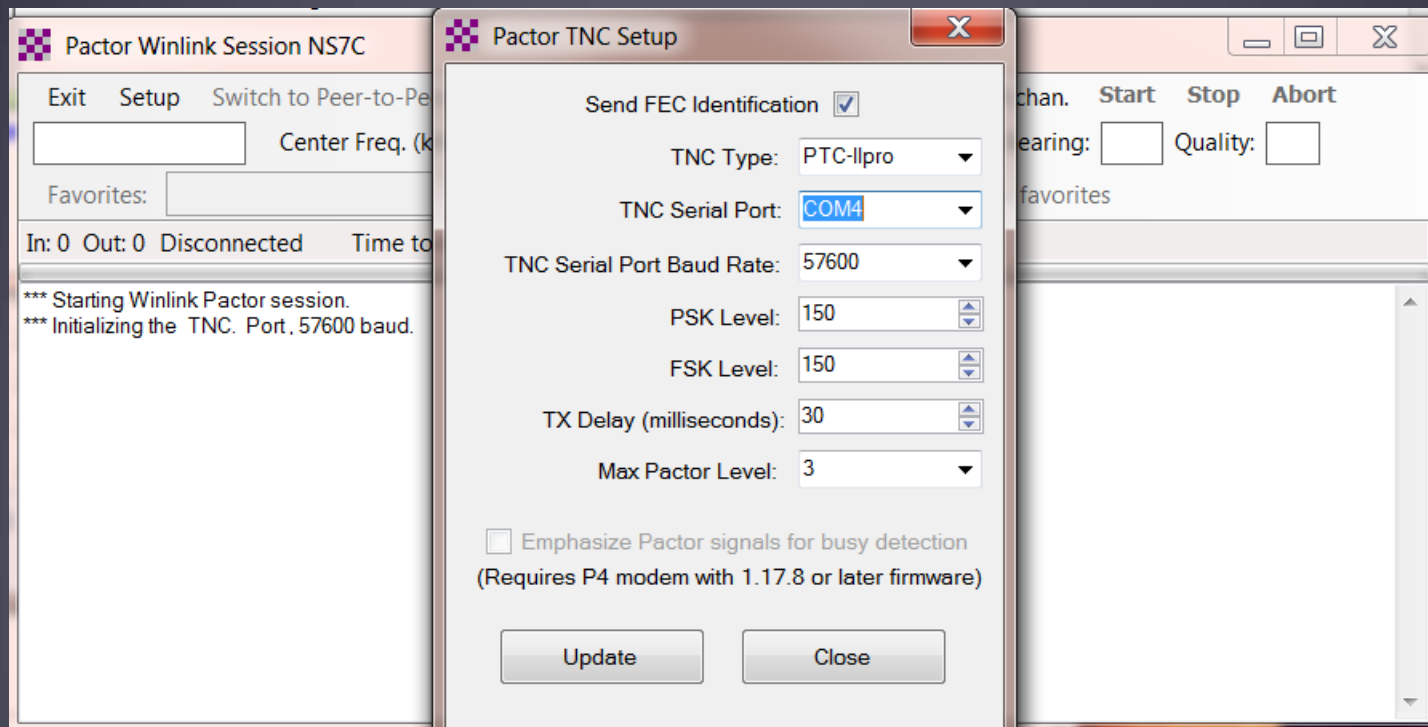
Additional options:

- Disable Xmt Level Adjust:
- Enable IPoll:

Buttons: Update, Cancel

# Initial Pactor Setup

PTC modem



# Resources Needed for RMS Express

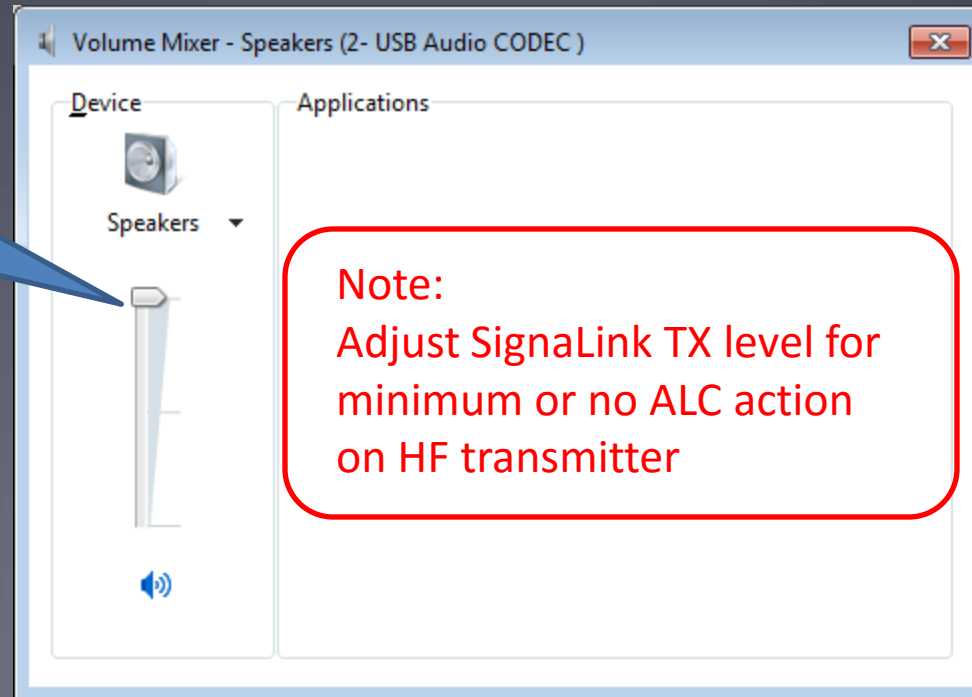
## HF Winmor

- Same computer and software requirements as V/UHF Packet. Winmor modem is included with RMS 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

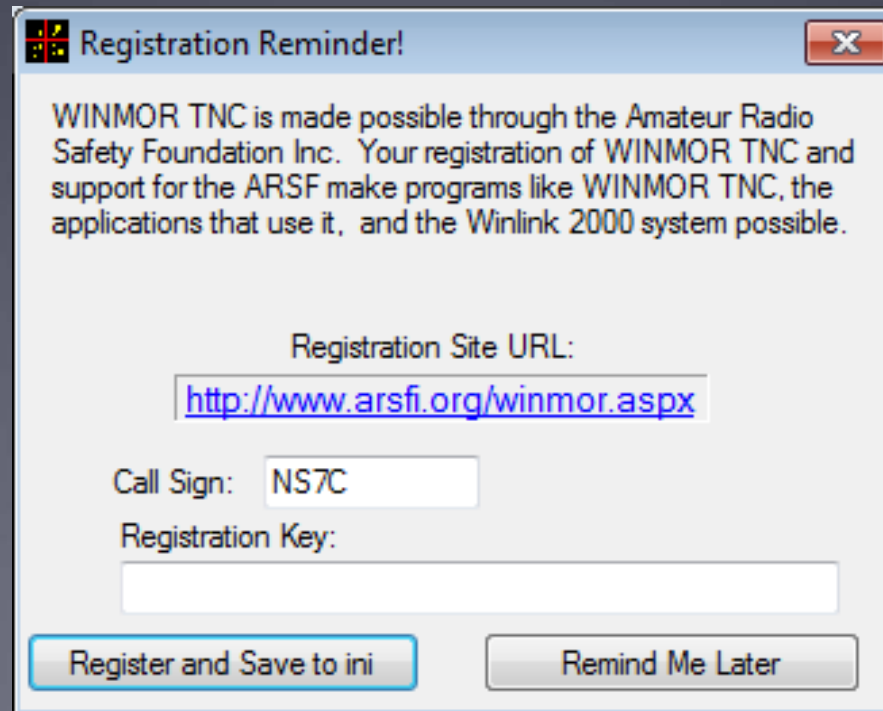
Watch drive/ALC levels on transmitter

Set to  
Max



# Winmor Registration Screen

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



Registration Reminder!

WINMOR TNC is made possible through the Amateur Radio Safety Foundation Inc. Your registration of WINMOR TNC and support for the ARSF make programs like WINMOR TNC, the applications that use it, and the Winlink 2000 system possible.

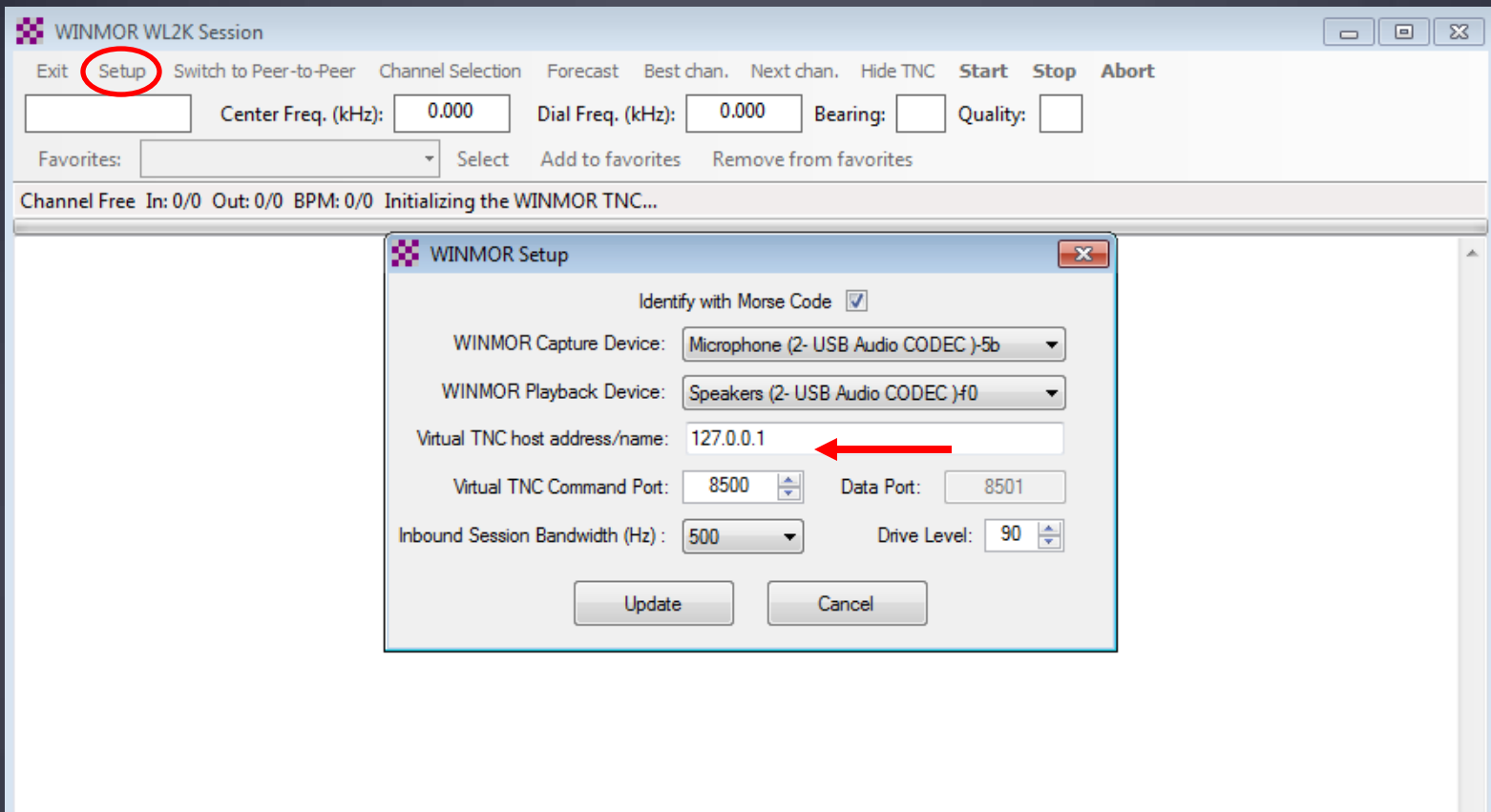
Registration Site URL:  
<http://www.arsfi.org/winmor.aspx>

Call Sign:

Registration Key:

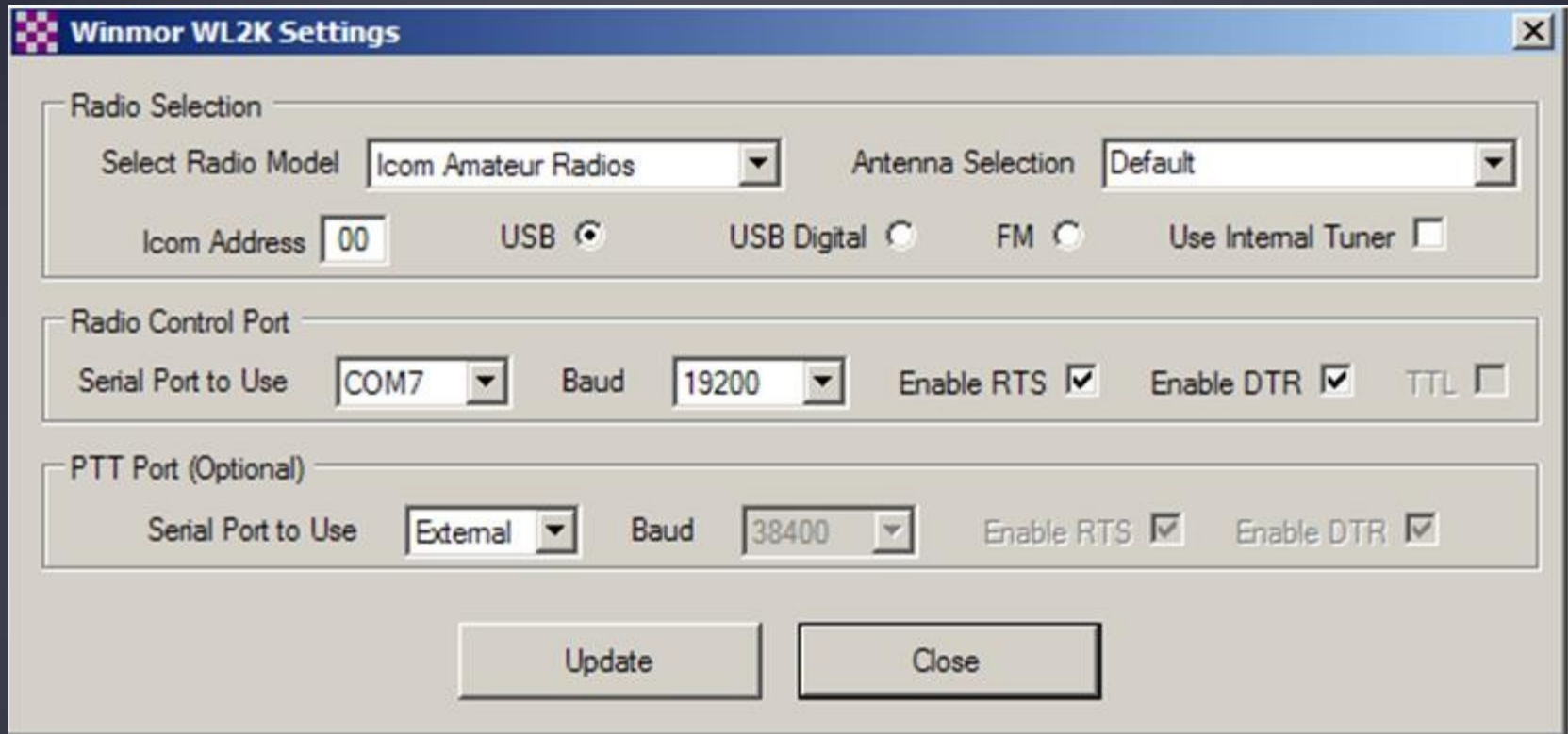
# Initial Winmor Setup

## Selecting the Audio Device



# Winmor Radio Setup

## Rig Control Parameters



The image shows a Windows-style dialog box titled "Winmor WL2K Settings". It is divided into three main sections: "Radio Selection", "Radio Control Port", and "PTT Port (Optional)".

**Radio Selection:** This section contains a "Select Radio Model" dropdown menu set to "Icom Amateur Radios", an "Antenna Selection" dropdown menu set to "Default", an "Icom Address" text box containing "00", and four radio buttons: "USB" (selected), "USB Digital", "FM", and "Use Internal Tuner" (unchecked).

**Radio Control Port:** This section contains a "Serial Port to Use" dropdown menu set to "COM7", a "Baud" dropdown menu set to "19200", and three checkboxes: "Enable RTS" (checked), "Enable DTR" (checked), and "TTL" (unchecked).

**PTT Port (Optional):** This section contains a "Serial Port to Use" dropdown menu set to "External", a "Baud" dropdown menu set to "38400", and two checkboxes: "Enable RTS" (checked) and "Enable DTR" (checked).

At the bottom of the dialog are two buttons: "Update" and "Close".



# RMS Express Main Screen

Begin connection

Connection Mode

Multiple call signs

Standard Folders

Personal message folders

Contacts address book

RMS Express 1.3.10.0 - NS7C

NS7C Files Message Attachments Move To: Saved Items Delete Open Session: Telnet Winlink Logs Help

No active session...

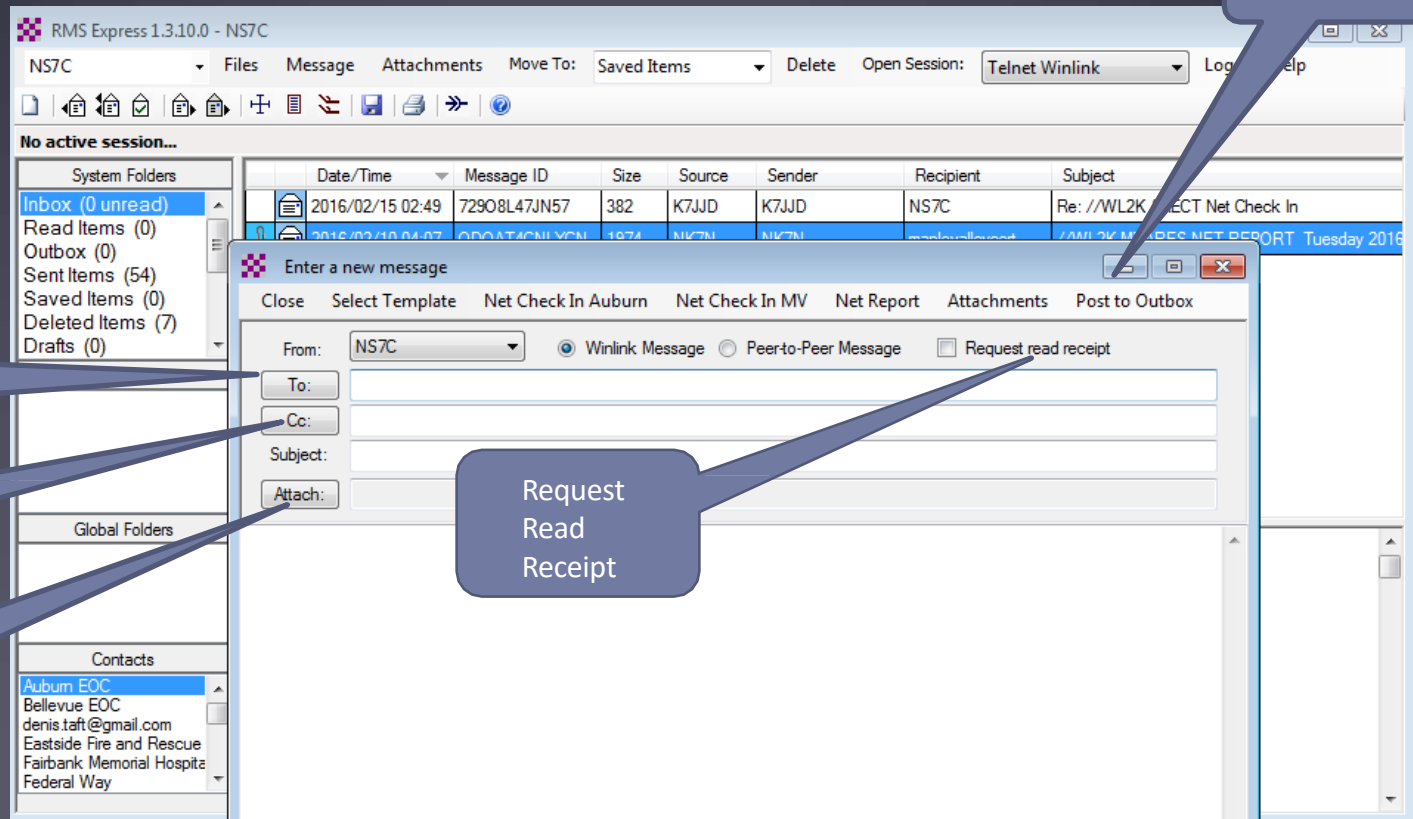
	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2016/02/15 02:49	72908L47JN57	382	K7JJD	K7JJD	NS7C	Re: //WL2K AAECT Net Check In
	2016/02/10 04:07	QDOAT4CNLYCN	1974	NK7N	NK7N	maplevalleycert...	//WL2K MVARES NET REPORT Tuesday 2016

Message ID: QDOAT4CNLYCN  
Date: 2016/02/10 04:07  
From: NK7N  
To: maplevalleycert@gmail.com; mvares@googlegroups.com; NS7C; NK7N  
Source: NK7N  
Downloaded-from: Telnet:Halifax.Winlink.org  
Subject: //WL2K MVARES NET REPORT Tuesday 2016-02-09

Maple Valley ARES Weekly Net Report

# of Member check ins: 8

# Composing A Message



New Message Button

Click "To" or "CC" for contacts

Multiple recipients and CC

File attachments

Request Read Receipt

Post to Outbox

# Pending Message In Outbox

Open Session

The screenshot shows the RMS Express 1.3.10.0 - NS7C interface. The window title is "RMS Express 1.3.10.0 - NS7C". The menu bar includes "NS7C", "Files", "Message", "Attachments", "Move To: Saved Items", "Delete", "Open Session: Telnet Winlink", "Logs", and "Help". The toolbar contains various icons for file operations. The main window is divided into three panes. The left pane shows a folder tree with "System Folders" (Inbox (0 unread), Read Items (0), Outbox (1), Sent Items (54), Saved Items (0), Deleted Items (7), Drafts (0)), "Personal Folders", "Global Folders", and "Contacts" (Auburn EOC, Bellevue EOC, denis.taft@gmail.com, Eastside Fire and Rescue, Fairbank Memorial Hospita, Federal Way). The middle pane displays a table of messages with the following data:

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2016/02/15 19:20	8OXON681WR0I	260	NS7C	NS7C	WA7AUB	//WL2K AAECT Net Check In

The right pane shows the details of the selected message:

Message ID: 8OXON681WR0I  
Date: 2016/02/15 19:20  
From: NS7C  
To: WA7AUB  
Source: NS7C  
Subject: //WL2K AAECT Net Check In

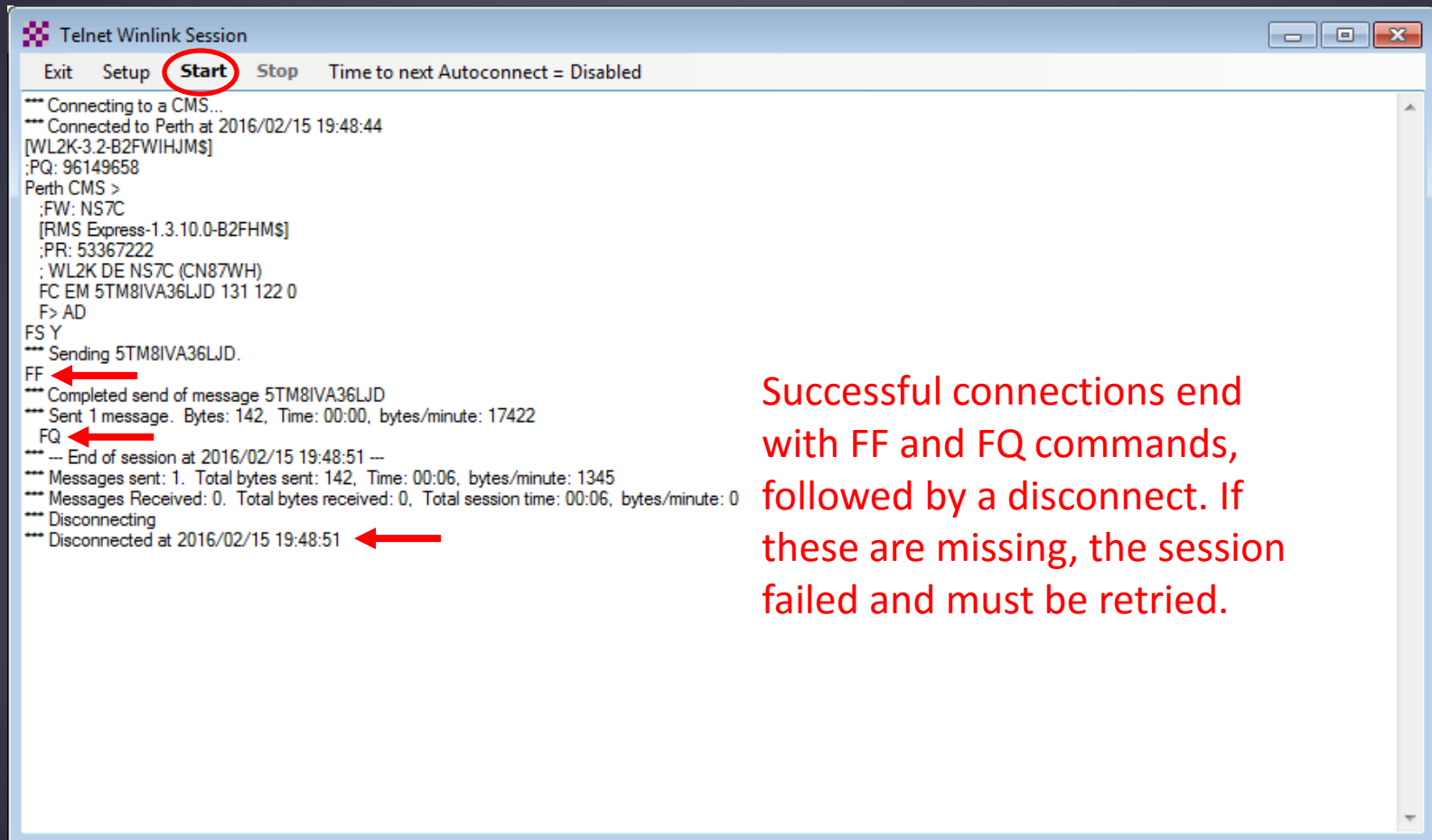
Greetings!

Please record a Winlink Check In from SCOTT, NS7C on Monday, 2016-02-15 at 11:20:44.

Regards,

# Telnet Session

Connect, login, send message, log off



```
*** Connecting to a CMS...
*** Connected to Perth at 2016/02/15 19:48:44
[WL2K-3.2-B2FWIHJMS]
;PQ: 96149658
Perth CMS >
;FW: NS7C
[RMS Express-1.3.10.0-B2FHMS]
;PR: 53367222
; WL2K DE NS7C (CN87WH)
FC EM 5TM8IVA36LJD 131 122 0
F> AD
FS Y
*** Sending 5TM8IVA36LJD.
FF
*** Completed send of message 5TM8IVA36LJD
*** Sent 1 message. Bytes: 142, Time: 00:00, bytes/minute: 17422
FQ
*** --- End of session at 2016/02/15 19:48:51 ---
*** Messages sent: 1. Total bytes sent: 142, Time: 00:06, bytes/minute: 1345
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:06, bytes/minute: 0
*** Disconnecting
*** Disconnected at 2016/02/15 19:48:51
```

The screenshot shows a Telnet Winlink Session window with a menu bar containing 'Exit', 'Setup', 'Start', 'Stop', and 'Time to next Autoconnect = Disabled'. The 'Start' button is circled in red. The session log shows a successful connection to Perth at 2016/02/15 19:48:44. The user sends a message '5TM8IVA36LJD' and receives a confirmation. The session ends at 2016/02/15 19:48:51. Red arrows point to the 'FF' and 'FQ' commands in the log, and another red arrow points to the 'Disconnected at' line.

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

The screenshot displays the RMS Express 1.3.10.0 - NS7C software interface. The main window shows a menu bar with 'NS7C', 'Files', 'Message', 'Attachments', 'Move To: Saved Items', 'Delete', 'Open Session: Packet Winlink', and 'Logs'. Below the menu bar is a toolbar with various icons. The main area is titled 'In Packet Winlink session' and contains a table with columns: 'System Folders', 'Date/Time', 'Message ID', 'Size', 'Source', 'Sender', 'Recipient', and 'Subject'. The 'System Folders' section shows 'Inbox (0 unread)'. Below this is a 'Packet Winlink Session' dialog box with the following options: 'Exit', 'Setup', 'Switch to Peer-to-Peer Session', 'Channel Selection', '1200 Baud', 'Start', and 'Stop'. The 'Connection type' is set to 'Direct' and the 'Channel Selection' is 'NK7N-10'. The 'Connection script' is set to a dropdown menu. There are buttons for 'Edit script', 'Add script', and 'Remove script'. The 'Time to next Autoconnect' is set to 'Disabled'. The log window at the bottom shows the following text: '\*\*\* Starting WL2K packet session...', '\*\*\* Initializing KISS over TCP Host 127.0.0.1 Port 8100', '\*\*\* Initialization complete', and '\*\*\* Ready'. Three red arrows point to the 'Open Session:' dropdown, the 'Packet Winlink' dropdown, and the 'Date/Time' column header.

RMS Express 1.3.10.0 - NS7C

NS7C Files Message Attachments Move To: Saved Items Delete Open Session: Packet Winlink Logs

Help

In Packet Winlink session

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)							

Packet Winlink Session

Exit Setup Switch to Peer-to-Peer Session Channel Selection 1200 Baud Start Stop

Connection type: Direct NK7N-10 Via ,

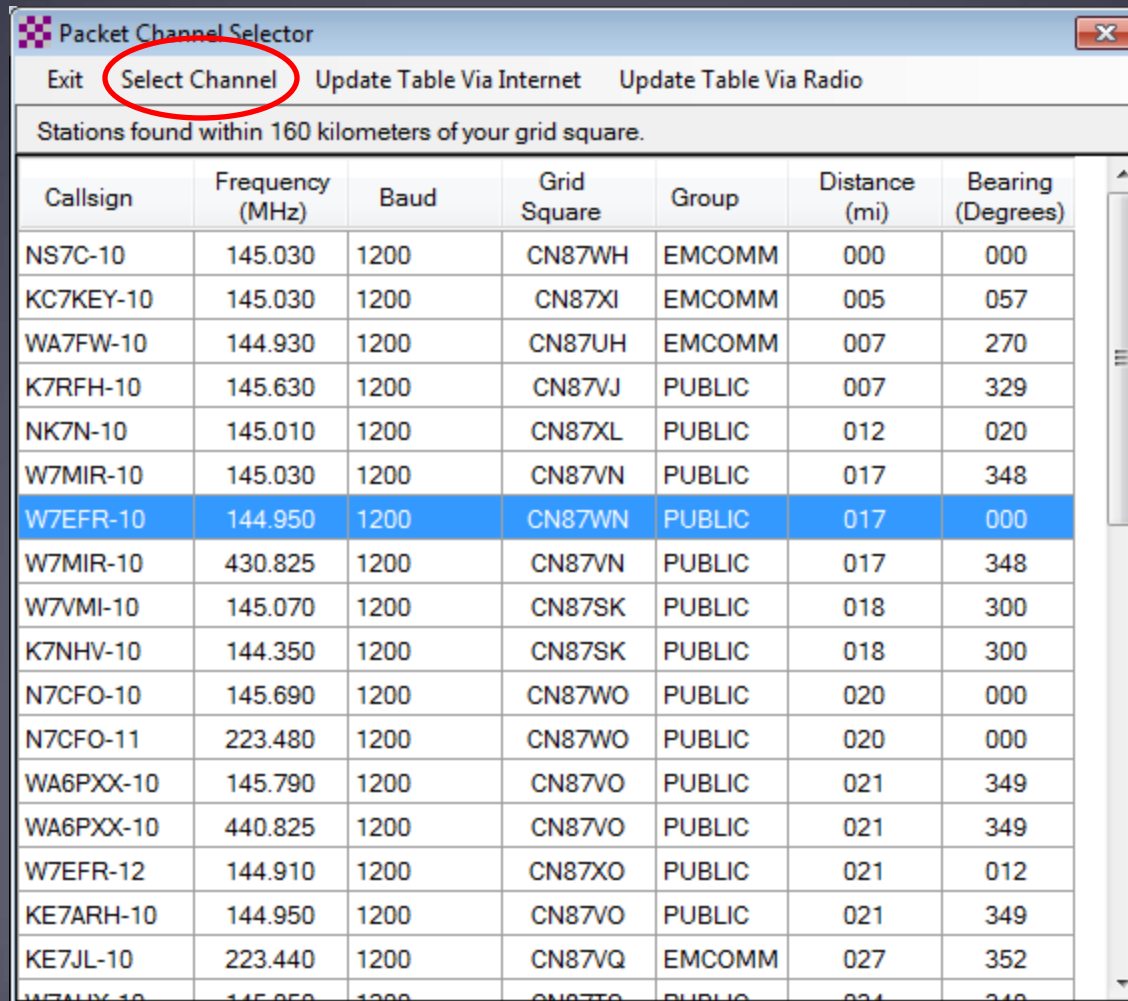
Connection script: Edit script Add script Remove script

Time to next Autoconnect = Disabled

```
*** Starting WL2K packet session...
*** Initializing KISS over TCP Host 127.0.0.1 Port 8100
*** Initialization complete
*** Ready
```

# Packet Channel Selection

Based on your grid square



Packet Channel Selector

Exit **Select Channel** Update Table Via Internet Update Table Via Radio

Stations found within 160 kilometers of 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
WA7FW-10	144.930	1200	CN87UH	EMCOMM	007	270
K7RFH-10	145.630	1200	CN87VJ	PUBLIC	007	329
NK7N-10	145.010	1200	CN87XL	PUBLIC	012	020
W7MIR-10	145.030	1200	CN87VN	PUBLIC	017	348
W7EFR-10	144.950	1200	CN87WN	PUBLIC	017	000
W7MIR-10	430.825	1200	CN87VN	PUBLIC	017	348
W7VMI-10	145.070	1200	CN87SK	PUBLIC	018	300
K7NHV-10	144.350	1200	CN87SK	PUBLIC	018	300
N7CFO-10	145.690	1200	CN87WO	PUBLIC	020	000
N7CFO-11	223.480	1200	CN87WO	PUBLIC	020	000
WA6PXX-10	145.790	1200	CN87VO	PUBLIC	021	349
WA6PXX-10	440.825	1200	CN87VO	PUBLIC	021	349
W7EFR-12	144.910	1200	CN87XO	PUBLIC	021	012
KE7ARH-10	144.950	1200	CN87VO	PUBLIC	021	349
KE7JL-10	223.440	1200	CN87VQ	EMCOMM	027	352
W7ALY-10	145.050	1200	CN87TO	PUBLIC	031	310

# Packet Session (TNC)

Connect, login, send message, log off

The screenshot shows the Packet Winlink Session software interface. The title bar reads "Packet Winlink Session". The menu bar includes "Exit", "Setup", "Switch to Peer-to-Peer Session", "Channel Selection", "1200 Baud", and "Start". The "Start" button is highlighted with a red arrow. Below the menu bar, there are several input fields: "Connection type" set to "Direct", "W7EFR-10" in a field, and "ICS-213" in a "Connection script" dropdown. A "Remove script" button is also visible. A status bar shows "Received: 112 Sent: 380 Time to next Autoconnect = Disabled". The main window contains a log of a session:

```
*** Starting to call W7EFR-10
*** Opening serial port COM9; 9600 baud; TNC-X
*** Connecting to W7EFR-10
*** Connected to W7EFR-10 at 2016/02/15 19:45:58

EF&R WinLink Node - W7EFR-10 - Cougar MT, WA
[WL2K-3.2-B2FWIHJM$]
;PQ: 60109367
Halifax CMS via W7EFR >
;FW: NS7C
[RMS Express-1.3.10.0-B2FHM$]
;PR: 06448107
; W7EFR-10 DE NS7C (CN87WH)
FC EM 80XON681WR0I 266 226 0
F> 93
FS Y
*** Sending 80XON681WR0I.
FF
*** Completed send of message 80XON681WR0I
*** Sent 1 message. Bytes: 260, Time: 00:06, bytes/minute: 2522
FQ
*** --- End of session at 2016/02/15 19:46:21 ---
*** Messages sent: 1. Total bytes sent: 260, Time: 00:23, bytes/minute: 666
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:23, bytes/minute: 0
*** Disconnecting
*** Disconnected at 2016/02/15 19:46:30

*** Disconnect reported.
```

# Packet Session (sound card)

Connect, login, check for message, log off

The image shows two overlapping windows from a software application. The background window is titled "SoundModem by UZ7HO - Ver 0.84b" and displays a log of packet transmissions. The foreground window is titled "Packet Winlink Session" and shows the details of a session with W7EFR-10.

**SoundModem Log:**

```
1:Fm NS7C To W7EFR-10 <I C R3 S0 Pid=F0 Len=10> [14:58:00] :FW: NS7C
1:Fm NS7C To W7EFR-10 <I C R3 S1 Pid=F0 Len=30> [14:58:00] [RMS Express-1.3.10.0-B2FHMS]
1:Fm NS7C To W7EFR-10 <I C R3 S2 Pid=F0 Len=14> [14:58:00] :PR: 60926372
1:Fm NS7C To W7EFR-10 <I C R3 S3 Pid=F0 Len=28> [14:58:00] :W7EFR-10 DE NS7C (CN87WH)
1:Fm W7EFR-10 To NS7C <RR R F R4> [14:58:05R] [+++]
1:Fm NS7C To W7EFR-10 <I C R3 S4 Pid=F0 Len=3> [14:58:05] FF
1:Fm W7EFR-10 To NS7C <RR R F R5> [14:58:07R] [+++]
1:Fm W7EFR-10 To NS7C <I C R5 S3 Pid=F0 Len=3> [14:58:08] FQ
1:Fm NS7C To W7EFR-10 <RR R R4> [14:58:09T]
1:Fm W7EFR-10 To NS7C <DISC C P> [14:58:20R] [+++]
1:Fm NS7C To W7EFR-10 <UA R F> [14:58:20T]
```

MyCall	DestCall	Status	Sent pkts	Sent byte

**Packet Winlink Session:**

Exit Setup Switch to Peer-to-Peer Session Channel Selection 1200 Baud Start Stop

Connection type: Direct W7EFR-10 Via

Connection script: ICS-213 Edit script Add script Remove script

Received: 104 Sent: 85 Time to next Autoconnect = Disabled

```
*** Starting to call W7EFR-10
*** Opening KISS over TCP Host 127.0.0.1 Port 8100
*** Connecting to W7EFR-10
*** Connected to W7EFR-10 at 2016/02/15 22:57:48
*** Connected to W7EFR-10 at 2016/02/15 22:57:58
EF&R WinLink Node - W7EFR-10 - Cougar MT, WA
[WL2K-3.2-B2FWIHJMS]
:PQ: 32205421
Wien CMS via W7EFR >
:FW: NS7C
[RMS Express-1.3.10.0-B2FHMS]
:PR: 60926372
: W7EFR-10 DE NS7C (CN87WH)
FF
FQ
*** -- End of session at 2016/02/15 22:58:08 --
*** Messages sent: 0. Total bytes sent: 0, Time: 00:10, bytes/minute: 0
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:10, bytes/minute: 0
*** Disconnected at 2016/02/15 22:58:20
*** Disconnect reported.
```

879 KB  
7/23/2015 12:02 PM



# Winmor HF Session

The image shows two overlapping windows from the RMS Express 1.3.10.0 - NS7C software. The top window is the main application interface, and the bottom window is the Winmor Winlink Session configuration dialog.

**Top Window: RMS Express 1.3.10.0 - NS7C**

- Menu: NS7C, Files, Message, Attachments, Move To: Saved Items, Delete, **Open Session: Winmor Winlink**, Logs, Help
- WINMOR Sound Card TNC Ver:1.5.8.0 Port:8500
- Connection State: DISCONNECTED
- Transmit: Avg ACK Percentage: 0 to 100
- Receive: Rcv Level (bar graph), Remote Station Offset: 0 Hz, Rcv Frame
- Busy Detector: Channel Clear, Squelch: 5
- Waterfall/Spectrum display

**Bottom Window: Winmor Winlink Session - NS7C**

- Buttons: Exit, Setup, Switch to Peer-to-Peer, Channel Selection, ~~Cancel~~, Best chan., Next chan., Hide TNC, **Start**, Stop, Abort
- Call Sign: N7MO
- Center Freq. (kHz): 3597.000
- Dial Freq. (kHz): 3595.500
- Bearing: 112
- Quality: [ ]
- Favorites: [ ] Select, Add to favorites, Remove from favorites
- Status: Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected
- Text area: \*\*\* Ready

# 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

All RMS or radio-only

Click Header to Sort

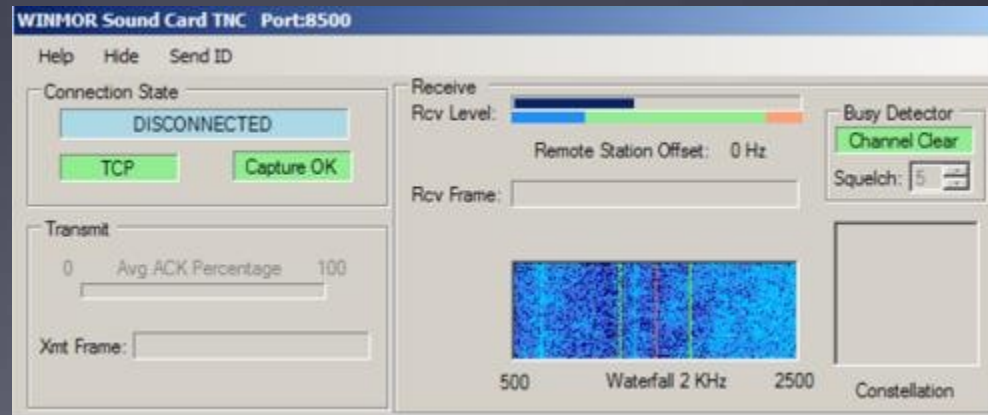
Green: good  
Yellow: fair  
Red: bad

Update channel list

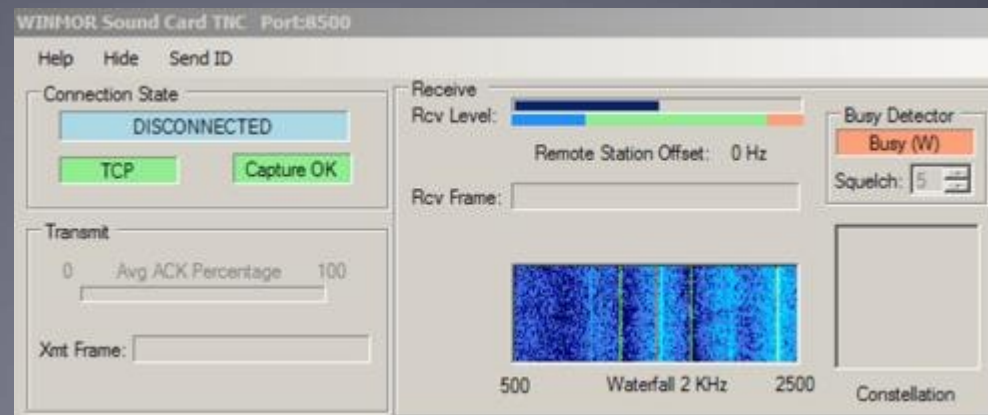
Double click to select

# Check If Channel Is Free

Free Channel:



Busy Channel:



# Active Winmor Connection

WINMOR Sound Card TNC Ver:1.5.8.0 Port:8500 NS7C / VA7DEP


Help Hide Send ID

**Connection State**

IRS

TCP Capture OK

**Receive**


Rcv Level: 

Remote Station Offset: -23.7 Hz

Rcv Frame: 2 Car 4FSK FEC Data

**Transmit**

0 Avg ACK Percentage 100




Xmt Frame:

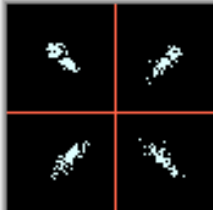
**Busy Detector**

Squelch: 5

Waterfall  Spectrum  Disable



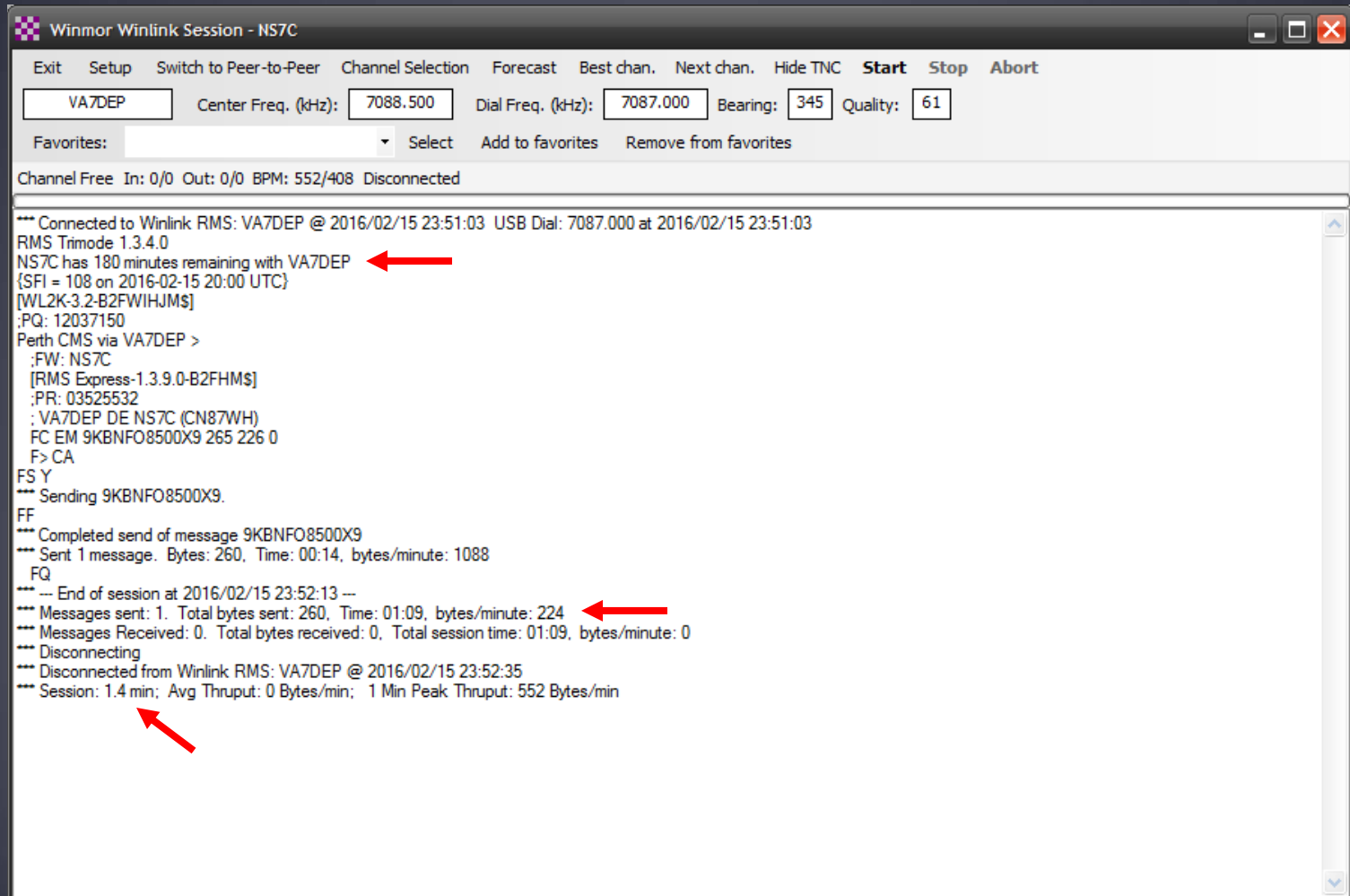
500 Waterfall 2KHz 2500



4FSK / 74

# Winmor Session Log

Connect, login, send message, log off



Winmor Winlink Session - NS7C

Exit Setup Switch to Peer-to-Peer Channel Selection Forecast Best chan. Next chan. Hide TNC **Start** Stop Abort

VA7DEP Center Freq. (kHz): 7088.500 Dial Freq. (kHz): 7087.000 Bearing: 345 Quality: 61

Favorites: [dropdown] Select Add to favorites Remove from favorites

Channel Free In: 0/0 Out: 0/0 BPM: 552/408 Disconnected

```
*** Connected to Winlink RMS: VA7DEP @ 2016/02/15 23:51:03 USB Dial: 7087.000 at 2016/02/15 23:51:03
RMS Trimode 1.3.4.0
NS7C has 180 minutes remaining with VA7DEP ←
{SFI = 108 on 2016-02-15 20:00 UTC}
[WL2K-3.2-B2FWIHJM$]
:PQ: 12037150
Perth CMS via VA7DEP >
:FW: NS7C
[RMS Express-1.3.9.0-B2FHMS]
:PR: 03525532
:VA7DEP DE NS7C (CN87WH)
FC EM 9KBNFO8500X9 265 226 0
F> CA
FS Y
*** Sending 9KBNFO8500X9.
FF
*** Completed send of message 9KBNFO8500X9
*** Sent 1 message. Bytes: 260, Time: 00:14, bytes/minute: 1088
FQ
*** -- End of session at 2016/02/15 23:52:13 --
*** Messages sent: 1. Total bytes sent: 260, Time: 01:09, bytes/minute: 224 ←
*** Messages Received: 0. Total bytes received: 0, Total session time: 01:09, bytes/minute: 0
*** Disconnecting
*** Disconnected from Winlink RMS: VA7DEP @ 2016/02/15 23:52:35
*** Session: 1.4 min; Avg Thruput: 0 Bytes/min; 1 Min Peak Thruput: 552 Bytes/min ←
```

# Packet P2P Session Log

Connect, login, send message, log off

The screenshot displays the RMS Express 1.3.10.0 - NS7C interface. The 'Open Session' dropdown menu is circled in red and set to 'Packet P2P'. Below this, the 'Packet Peer-to-Peer Session (NS7C)' window is open, showing a connection type of 'Direct' to 'K7WVI'. A red arrow points from the text 'Must match message destination' to the 'K7WVI' field. The session log shows the following details:

Received: 65 Sent: 251 Time to next Autoconnect = Disabled

```
;FW: NS7C
[RMS Express-1.3.10.0-B2FHMs]
: K7WVI DE NS7C (CN87WH)
FC EM XD5LHA2IZMTX 138 135 0
F> 5F
FS Y
*** Sending XD5LHA2IZMTX.
FF
*** Completed send of message XD5LHA2IZMTX
*** Sent 1 message. Bytes: 148, Time: 00:02, bytes/minute: 2980
FQ
*** --- End of session at 2016/03/14 00:02:39 ---
*** Messages sent: 1. Total bytes sent: 148, Time: 00:14, bytes/minute: 620
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:14, bytes/minute: 0
*** Disconnecting
```

# Conclusion

- RMS 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.

# Follow on sessions

- Session 3 on Sunday afternoon will focus on the operation of RMS Express in the EMCOMM environment, and possible future developments.

Questions?