### Sangre de Christos Amateur Radio Club Digital Comms Session II Installing Winlink to work with Radio for Radio Mail Service (RMS)

### Objectives

### Objectives

- modem software
- Configure Hardware
  - Radio
  - Computer
  - Terminal Network Controller

Winlink mail server / Gateway

### Download, install & configure Winlink Client Software and supporting

Compose an E-mail message & send through your radio to a local

- Radio without built in sound card nor Radio with built in sound card / TNC TNC

  - VHF and/or UHF mobile or base station • Use of handheld transceivers is possible but not recommended to start with
  - Computer
    - Windows 10 or later operating system
      - With at least 3 USB ports
  - Sound card
    - TigerTronics SignalinkTM USB
  - Cables
    - USB Cable from computer to SignaLinkTM sound card
      - Provided in the with the SignaLinkTM sound card
    - Cable from the sound card to the radio

### Recommended Equipment For this Session

- VHF and/or UHF mobile or base station
  - not recommended to start with
- Computer
  - - With at least 3 USB ports
- Cables
  - data port

• Use of handheld transceivers is possible but

Windows 10 or later operating system

Need the correct cable that goes from the computer USB port to the RADIO's TNC or

### Review: Where is the Terminal Node Controller located?

- There are multiple configurations of a combination of hardware & software that make up TNC functionality
  - Sometimes it's built into the radio (such as the Yaesu FT-991A)
  - Sometimes it's totally contained within an electronics box inserted between a personal computer and a radio
  - Sometimes various functions of the TNC is split between software on a personal computer and a sound card.

### Review: Where is the Terminal Node Controller located?

- software that make up TNC functionality

  - personal computer and a radio

Sometimes various functions of the TNC is split between software on a personal computer and a sound card. Let's focus on this configuration

There are multiple configurations of a combination of hardware &

Sometimes it's built into the radio (such as the Yaesu FT-991A)

Sometimes it's totally contained within an electronics box inserted between a



# Third Configuration - TNC split between software on PC and a soundcard



**Distributed TNC Function** 



### Software Download & Install

### Software

### Two Software application to install are:

### Soundmodem

### Winlink Express

- User Interface software

• Converts digital data to binary frequencies for use on "Packet Radio"

• with e-mail creation, radio connection, message send & receive

### Download & Install SoundModem

### Soundmodem - Download & Install

### Go to the (C:) folder aka "root folder" and create a new folder and change its name to SoundModem



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### Soundmodem Download & Install

### • Go to webpage $\rightarrow http://uz7.ho.ua/packetradio.htm$



dem	High-Speed Soundmodem
0, 600, 1200, 2400 bps	<ul> <li>G3RUH 4800, 9600, 19200 bps</li> </ul>
300, 600, 1200, 2400 bps	<ul> <li>Manchester 1200, 2400, 3600, 7200 bps</li> </ul>



### Soundmodem Download & Install

in order to download



### Scroll down until you see the link labeled soundmodem114.zip or similar ("114" is the version number and may change) and <u>click on it</u>

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### Sound Modem Download & Install • Find the soundmodemxxx.zip file by navigating to your Downloads

# Folder



### A word about .zip folders

- A folder with .zip suffix is a compressed file or collection of files and the contents must be decompressed and extracted in order to use.
- This process is referred to as extracting or unzipping

### To unzip (extract) on Windows 7 or later systems

- Locate the zipped folder that you want to unzip (extract) files or folders from.
- Do one of the following:
  - To unzip a single file or folder, double click on the zipped folder in order to open it and see the contents, then drag the file or folder from the zipped folder to a new location.
  - or
  - To unzip all the contents of the zipped folder, press and hold (or right-click) the folder, select **Extract All...**, and then follow the instructions.

### How to Extract All







Click on "Extract All"

### Soundmodem Download & Install

- folder.



Move the soundmodem114.zip file from the Downloads file to the C:\SoundModem

• Extract the .zip file into the C:\SoundModem folder.

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Download & Install Winlink Express



### RMS Express (aka Winlink, aka Winlink Express) Download & Install Go to website → <u>https://www.winlink.org/</u> and click on "Download"



### RMS Express (aka Winlink, aka Winlink Express) Download & Install Click on "User Program"



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ps://downloads.winlink.org	☆	$\bigtriangledown$	$\overline{\gamma}$	٢	
org - /					
Programs Products					



### RMS Express (aka Winlink, aka Winlink Express) Download & Install Click on "Winlink\_Express\_install 1-7-21-0.zip"

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wnloads.winlink.org/User Programs/



### - /User Programs/

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### RMS Express (aka Winlink, aka Winlink Express) Download & Install • Go to Downloads folder and extract the contents of the .zip file



### RMS Express (aka Winlink, aka Winlink Express) Download & Install Click on "Winlink\_Express\_install.exe"

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### RMS Express (aka Winlink, aka Winlink Express) Download & Install This is a false warning. Click "More\_info"



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### RMS Express (aka Winlink, aka Winlink Express) Download & Install Click "Run anyway"





# Different for every computer

Now let's Connect Computer, SignaLink Sound Card & Radio

### Before connecting SignaLink to your computer

Let's Open the Device manager......

### Opening Device Manager

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All

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Settings

Best match

Second, **Click on "Device manager"** 

First, **Press the Windows Key** and type "Device Manager"



### Device Manager

Look for "Audio inputs and outputs" in Device Manager and double click on it to expand



### Device Manager

Note Audio Devices



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io) Idio) tek Audio)	

### Connect SignaLink to Computer

computer and turn on



### Plug in the Signal Link USB cable in between the SignaLink and the



### New Audio Devices appear in Device Manager

### Before Plugin

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Audio inputs and outputs		
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> 🤜 Computer		
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> Display adapters		
> 🎽 Firmware		
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> 🕞 Imaging devices		
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Mice and other pointing devices		~

### After Plugin

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default Audio Devices

# Restore Windows System

### Windows Automatic USB Device Detection/Selection

- system default audio device.

• When a new USB audio device is plugged into a Window Operating System based computer, (as we just did) the Windows Operating System assumes the user wants to use that audio device as the

 This is an incorrect action on part of the operating system when a modem sound card such as SignaLink USB is attached.

• So, the default audio devices must be restored for normal computer operations and so that the radio will not transmit normal computer sounds

## Restore System default audio devices (continued)

Using the Windows Operating System Sound Control Panel

### Open Sound Control Go to lower right hand corner of desktop



👼 Device Manager

InstallationAndOpera...


#### Sound Control



#### Sound Control



#### Select Sounds



## Restore System default audio Playback device



Highlight your normal audio output Devices & click on "Set Default"



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Sounds Communications	
ce below to modify its settings:	
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nes ISB Audio ged in	
JSB Audio ged in	
Set Default	<u>P</u> roperties
OK Cancel	Apply

#### Restore System default audio Recording device



# Adjust SignaLink Audio Levels For radio operation

### Adjusting Receive Volume on SignaLink Soundcard

**Reopen the Sound Control** Panel go to Recording tab

Double Click what ever audio device the SignaLink soundcard is for your computer



# slide



# Note to Bruce: Add recording level adjust

×		Line Properties
ncel	Slid Line volume to 100	General Listen L



# Launch & Configure

Winlink Express Software

#### Start Winlink Express

#### Find either the

- Winlink Express icon
  or the
- RMS Express icon

# on your computer Desktop screen and double click it



Winlink Express 1.7.2	21.0 - N5WBB						977A) - 23	
N5WBB	Settings Messige Attachments Move To: Winlink Express Setup	Saved Items	↓ D	elete Oj	pen Session:	Packet Winlink	<ul> <li>Logs</li> </ul>	Help
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Conta 2145375404@MMS.ATT 2145375404@TXT.ATT.N	Add Global Folder Hybrid Network Parameters Propagation calculation parameters View Usage Statistics View background tasks Backup and restore databases Exit							

#### Under the Setting tab, select Winlink Express Setup

- grid square location etc....
- Create a password and remember it. ③
- When finished click upd

### • Fill out the Winlink Express Properties page with you callsign, address and

Winlink Express Properties			×
Call Signs My Callsign:	My Password:	Registration Contact Information	
	(Case sensitive) Show password	Name:	
Callsign suffix (optional):	(Used for country code) Change password	Street address 1:	
Password recovery e-mail	r	Street address 2:	
(Non-Winlink e-mail addres	s where lost password will be sept when requested)	City:	
		State/Province:	
Remove Calisign	Request password be sent to recovery e-mail	Country:	
		Postal code:	
Auxiliary Callsigns and Tactical	Addresses	Phone number:	-
	Add Entry	Web Site UBL (ontional):	5
	Remove Entry		
	Edit Entry	Additional information (optional):	
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My Grid Square:	Lat/Lon to Grid Square		ų.
Ministrali, Frances and American			
winlink Express registration	key:		
Service Codes		Recalculate HF path quality if SFI changes more than: 10	
PUBLIC		Keep logs for 2 🚖 weeks. Keep deleted messages for	720 days.
(Use PUBLIC for ham call sig	ns. Separate multiple service codes by spaces.)	Display list of pending incoming messages prior to download	
If you change service codes	, you must update the list of channels.	Warn about connections to stations holding messages	
		Automaticaly install field-test (beta) versions of Winlink Express	
Update	Cancel Help	Automatically install updates without prompting	

Winlink"

Winlink Express 1.7	.21.0 - N5W	BB		
N5WBB +	Settings	Message	Attach	ments Mo
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No active session.				
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Global F	olders			

#### • Click on the dropdown list to the right of "Open Session:" and select "Packet

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)   €							
	Message ID	Size	Source	Sender	Recipient	Subject	

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# Configure Winlink Express Click on "Open Session:"

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N5WBB + Settings	Message Attachments Mov
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National Traffic System (0)	
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Global Folders	

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îme to next Autoc	onnect = Disabled	l, Call when message	s to send				
<ul> <li>Starting WL2K pace</li> <li>Launching C:\Sou</li> <li>Soundcard modern</li> <li>Initializing KISS ov</li> <li>Initialization complete</li> <li>Ready</li> </ul>	ket session ndModem\soundmo is running. er TCP Host 127.0.( te	dem.exe 0.1 Port 8100					

#### Elick on Settings

#### Packet Settings

Packet TNC Type: Packet TNC Model: Serial Port: TCP Host/Port:

KISS NORMAL TCP 127.0.0.1 8100

Packet Sound Modem

(browse to SoundModem's folder location)

Automatically launch packet sound modem **CHECK** 

TNC Parameters check **1200 Baud** Enable Ipoll CHECK

Automatically call when there are pending outping CHECK messages

**Click on "Update" to close** 



TNC Connection			
Packet TNC Type: KISS		$\sim$	
Packet TNC Model: NORMAL 🗸		Serial Port: TCP ~	
	TCP Host/Port:	127.0.0.1 8100	
Packet sound modem: C:\SoundMode	em\soundmodem.e	xe B	rowse
(For Kiss mode)	ly launch packet s	ound modem	
TNC Parameters			
Sector (1995) 1995	1200 Baud	9600 Baud	
TX Delay (Milliseconds):	400 ~	300 ~	
Maximum Packet Length:	128 ~	255 ~	
Maximum Frames:	4 ~	7 ~	
Frack:	2 ~	2 ~	
Persistance:	160 🛩	224 ~	
Slot time:	30 ~	20 ~	
Maximum Retries:	5 ~	5 ~	
Disable Xmt Transmit Level:	300 🗢	300 \$	
Enable IPoll:			
Automatic Calling			
Autoconnect time: Disabled	$\sim$		
Automatically call when there are	pending outgoing	messages	

#### Restart Winlink Express

- Close the Packet Winlink Session Window
- Exit Winlink Express
- Re-start Windows Express
- session to the right of "Open Session:"
- Click on "Open Session"

At the top of Winlink program window, re-select a "Packet Winlink"

#### Look for 3 Windows:

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#### The Winlink window, The Packet Winlink Session window, & the SoundModem window



# Configure SoundModem Select SignaLink as soundmodem audio devices

## Configure SoundModem



SoundModem by UZ7HO - Ver 1.14 - [AFSK AX.25 1200bd]	<u> 94 –</u>
Settings View Clearmonitor Calibration About	
A: AFSK AX.251200bd 💽 1700 🚖 🗢 DCD threshold	

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#### Select Audio Devices



- Ver 1.14 - [AFSK AX.25 1200bd] or Calibration About		~
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#### Select Audio Devices

	Settings		
Settings	Sound Card	Settings	×
Sound Card	Output device C24F390 (Intel(R) Display Audio	Sound Card	
Output device Speakers / Headphones (Realtek 🕞	Input device Speakers / Headphones (Realtek C24F390 (Intel(R) Display Audio	Output device Speakers (4-US	B AUDIO CODEC) -
Input device Microphone Array (Realtek Audio	Dual channel	Input device Line (4- USB AUI Microphone Array	DIO_CODEC)
Dual channel TX SampleRate 11025	TX rotation TX corr. PPM 0	Dual chanr Line (4- USB AU	DIO CODECI
TX rotation TX corr. PPM	✓ Single channel output RX SampleRate 11025	☐ TX rotation	TX corr. PPM
✓ Single channel output RX SampleRate 11025	Color waterfall RX corr. PPM	Single channel output	RX SampleRate 11025
Color waterfall RX corr. PPM	Stop waterfall on minimize Priority Highest	Color waterfall	RX corr. PPM
Stop waterfall on minimize Priority Highest	Minimized window on startup	Stop waterfall on minimize	Priority   Highest
Minimized window on startup	Server setup	Minimized window on startup	
Server setup	AGWPE Server Port 8000 Enabled	AGU/DE Server Pert 9000	E Enabled
AGWPE Server Port 8000	KISS Server Port 8100 🔽 Enabled	KISS Server Port 8100	Enabled
KISS Server Port 8100 🔽 Enabled			
PTT Port	PTT Port	PTT Port	
Select PTT port NONE 🖃 🗖 Dual PTT	Select PTT port NUNE   Dual PTT	Select PTT port NONE	Dual PTT
Advanced PTT settings Swap COM pins for PTT	Advanced PTT settings	Advanced PTT settings	Swap COM pins for PTT
OK Cancel	OK Cancel	OK	Cancel

## Other Device Settings

Uncheck **TX rotation** Check **Single channel output** Check **Color waterfall** AGWPE Server Port **Uncheck Enabled** KISS Server Port **8100 & check Enable** Select PTT Port **NONE** Uncheck **Dual PTT** Uncheck **Swap COM pin** Click **OK** 

U	

Settings	
Sound Card	
Output device Speakers (4- U	SB AUDIO CODECI
Input device Line (4- USB At	JDIO CODEC)
🗖 Dual channel	TX SampleRate 1102
TX rotation	TX corr. PPM
Single channel output	RX SampleRate 1102
Color waterfall	RX corr. PPM
Stop waterfall on minimize	Priority Highest
Minimized window on startur	D
Server setup	
AGWPE Server Port 8000	Enabled
KISS Server Port 8100	Enabled
PTT Port	
Select PTT port NONE 🖵	🔲 Dual PTT
Advanced PTT settings	Swap COM pins for
OK	Cancel



#### Modem Timing Settings

**Under settings click** "Modems"

SoundModem by UZ7HC	) - Ver 1.14 - [AFSK AX.25 1200bd]
Settings View Clear mon	itor C <u>a</u> libration A <u>b</u> out
Output volume	00 🚖 🗢 DCD threshold 🔽
Input Volume	M C P> [16:25:101]
Devices	M C P> [16:25:14T]
Modems	M C P> [16:25:191] M C P> [16:25:23T]
I:LUNOMER 10 NOMER-10 (2)	ADM C P> [16:25:271]

Call	DestCall	Status	Sent pkts	Sent bytes	Rovd pkts	Rovd bytes	Rovd FC	CPS TX	CP



<u>888</u> 7		×
		<u>^</u>
	2	v
S RX	Direction	-

£2	3	83	<i>0</i> )	83	, 40

## Soundmodem Modem Settings

Check KISS Optimization Check non-AX25 filter

**Under Modem type ch: A** Mode **AFSK AX.25 1200bd** TXDelay **500** msec

Click on "OK"

Modem settings	×
Modem filters ch: A	Modem filters ch: B
BPF Width 1400 Show	BPF Width 1400 Show
TXBPF Width 1600 Show	TXBPF Width 1600 Show
LPF Width 650 Show	LPF Width 650 Show
BPF Taps 256	BPF Taps 256
LPF Taps 128	LPF Taps 128
Default settings	Default settings
PreEmphasis filter       None       ✓       ▲ All         ✓       KISS Optimization         ✓       non-A×25 filter	PreEmphasis filter       None       ✓       All         Image: KISS Optimization       Image: KISS Optimization       Image: KISS Optimization         Image: Non-AX25 filter       Image: Non-AX25 filter       Image: Non-AX25 filter
Modem type ch: A	Modem type ch: B
Mode AFSK AX.251200bd 👻	Mode AFSK AX.251200bd 👻
TXDelay 500 msec	TXDelay 250 msec
TXT ail 50 msec	TXTail 50 msec
Add. RX 0 pairs	Add. RX 0 pairs
Add, RX shift 30 Hz	Add, RX shift 30 Hz
Bits Recovery NONE	Bits Recovery NONE
FX.25 Mode RX-ONLY	FX.25 Mode RX-ONLY
Ok	Cancel

## SoundModem Main Window Settings

#### Select AFSK AX.25 1200bd

#### **Check Hold pointers**

SoundModem by UZ7HO - Ver 1.14 - [AFSK AX.25 1200bd]		×
Settings View Clear monitor Calibration About		
	Internetion	× .
MyLall DestLall Status Sent pkts Sent bytes Hove pkts Hove bytes Hove FL LFS IA	Direction	_
		400
1000 2000 2000 3000 □		4UU I

# Sending an Email Message

#### Compose an E-mail message

Under Message Menu select New Message....



BB Add Callsign Settings	Message Attachments Move To: Read Items	2	✓ Delete	Open Session: Page	cket Winlink	~
is Help	New Message					
2 2 2 2 4 2 4	Reply					
tive session.	Reply to All					
System Folders	Forward	urce	Sender	Recipient	Subject	
x (0 unread) d Items (13) ox (0)	Forward without change Acknowledge receipt					
Items (18)	Save message as					
eted Items (0) ted Items (0) ts (0)	Edit					
Personal Folders	lemplate manager					~
rado ARES (4) DC (0)	Set favorite templates					
onar franc System (0)	HTML Forms					
	Import form xml file					
Global Folders	Generate Form 309 Communications Log					
	Generate maps and CSV files for forms					
	Export selected messages					
Contacts	Import messages					
3/5404@MMS ATT NET	Archive messages					×.

#### Composing E-mail message

Select "Winlink Message"

Enter either Call Sign or an e-mail address

Area for typing message



#### Post Message

After message is composed, click on "Post to Outbox"

Post to (	Outbox Select Template Attachments	Spell Check	Save in Drafts	Close	
From:	: N5WBB ~ Send as: Winlink Me	essage 🗸 🗸	Request me	essage receipt	
<u>T</u> o:	K2SN;				
<u>C</u> c:					
Subject:	t: Hungry				
Attach:	N. I				

Send PIZZA!!!!

7 <u>888</u> 8	×
Set Defaults	
	- A-
	×.

#### Select Gateway

**Click on Channel Selection** 



ket Winlink Ses	sion				3 <u>33</u> 3
Settings CF	annel Selection	1200 Baud	Start Stop		
tion type: Dir	rect •		Via		
tion script:			• Edit script	Add script	Remove s
next Autoconn	ect = 59:34, Call w	hen message	s to send		

		×
crim		
crip	5	
		~

#### Select Gateway

Select closest Gateway



Select Chan	annel Selector nel Update T	able Via Inter	net Update T	able Via Radio	o Exit				
Stations found within 300 kilometers of your grid square.									
Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (km)	Bearing (Degree			
N5WBB-10	145.010	1200	DM78HD	PUBLIC	000	000			
WE0FUN-10	145.010	1200	DM/8JK	PUBLIC	035	025			
WOEER-10	144.935	1200	DM78QH	PUBLIC	068	075			
KOTER-10	144.930	1200	DM780U	PUBLIC	093	033			
KE0GB-10	145.050	1200	DM78OW	PUBLIC	102	030			
WA0DE-10	144.990	1200	DM79MM	PUBLIC	156	013			
AG7U-10	441.050	9600	DM790M	PUBLIC	161	018			
WOARP-10	441.075	9600	DM79QL	PUBLIC	161	023			
WOARP-10	145.030	1200	DM79QL	PUBLIC	161	023			
WOARP-10	145.050	1200	DM79QL	PUBLIC	161	023			
KONTS-10	145.050	1200	DM79GR	PUBLIC	176	358			
KONTS-10	441.075	9600	DM79GR	PUBLIC	176	358			
KOARK-10	145.090	1200	DN70KA	PUBLIC	209	006			
NVON-10	145.090	1200	DN70LE	PUBLIC	229	007			
KF00IC-10	145.070	1200	DM67BG	PUBLIC	240	247			
N0FH-10	145.070	1200	DN70FI	PUBLIC	245	357			
WOLRA-10	145.070	1200	DN70KJ	PUBLIC	251	005			

#### Set your Radio Frequency

Set your Radio Frequency to the Gateway's Frequency

Exit Settings	Channel Selection	on 1200 Baud	14 15 Tak				
Salat Ka			Start Sto	p			
Connection type:	Direct 🔹	N5WBB-10	Via				
Connection script:		3	• Edit scrip	t Add script	Remove scrip	pt	
et the packet radio	frequency to 145	.010 MHz Time to	next Autocon	nect = 53:25, Ca	ll when messag	jes to sei	nd
	244 0000						

#### Send E-mail

#### Click "Start"

Packet Winlink	Session				<u>1950</u> 8		×
Exit Settings	<b>Channel Selection</b>	1200 Baud	tart Stop				
Connection type:	Direct -	N5WBB-10	Via				
Connection script:			Edit script	Add script	Remove scri	pt	
Set the packet radio	frequency to 145.01	0 MHz Time to n	ext Autoconne	ct = 53:25, Ca	l <mark>l when messag</mark>	jes to sei	nd
							~
							~

#### Winlink Client Sends Message



# BACKUP SLIDES backup
## VARA FM (optional)



## Go to webpage → <u>https://downloads.winlink.org/VARA%20Products/</u> Download the file VARA%20FM%20v4.3.8%20setup.zip Extract and run the installation VARA%20FM%20setup%20 (Run%20as%20Administrator).exe similar to method used to install RMS winlink

