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Family EMCOMM: APRS

wgreene@ARRL.org

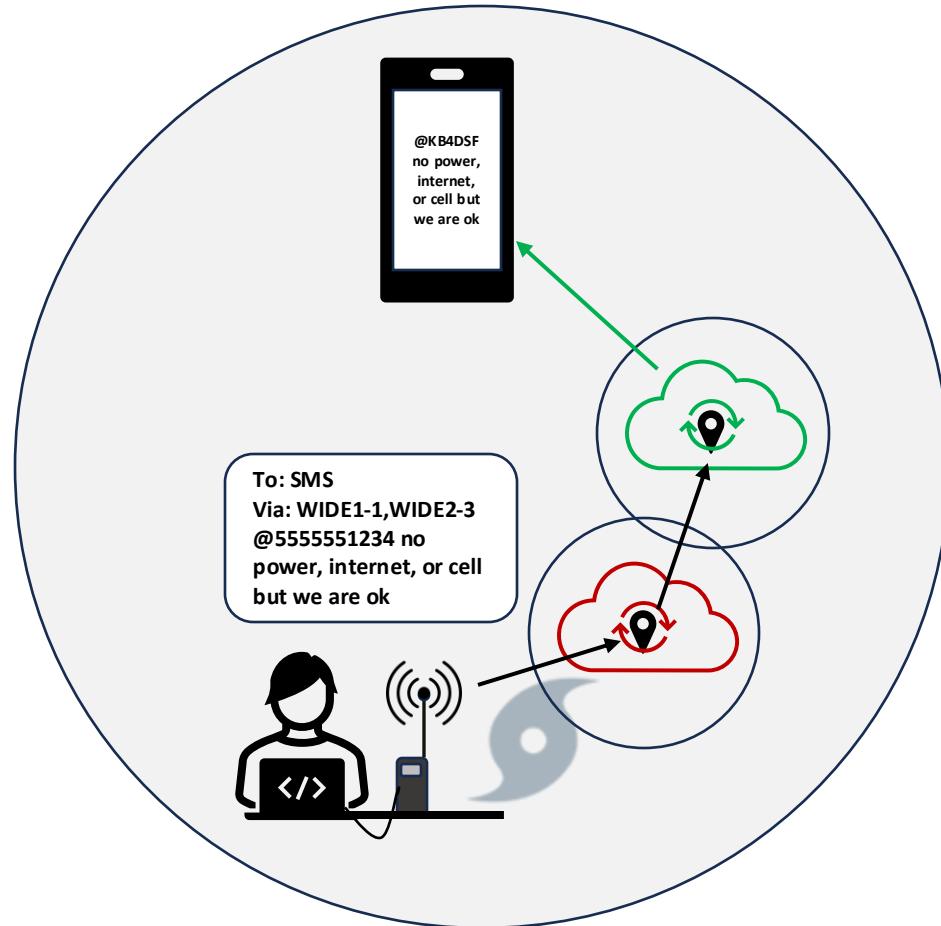


ARRL
The National Association for
Amateur Radio®



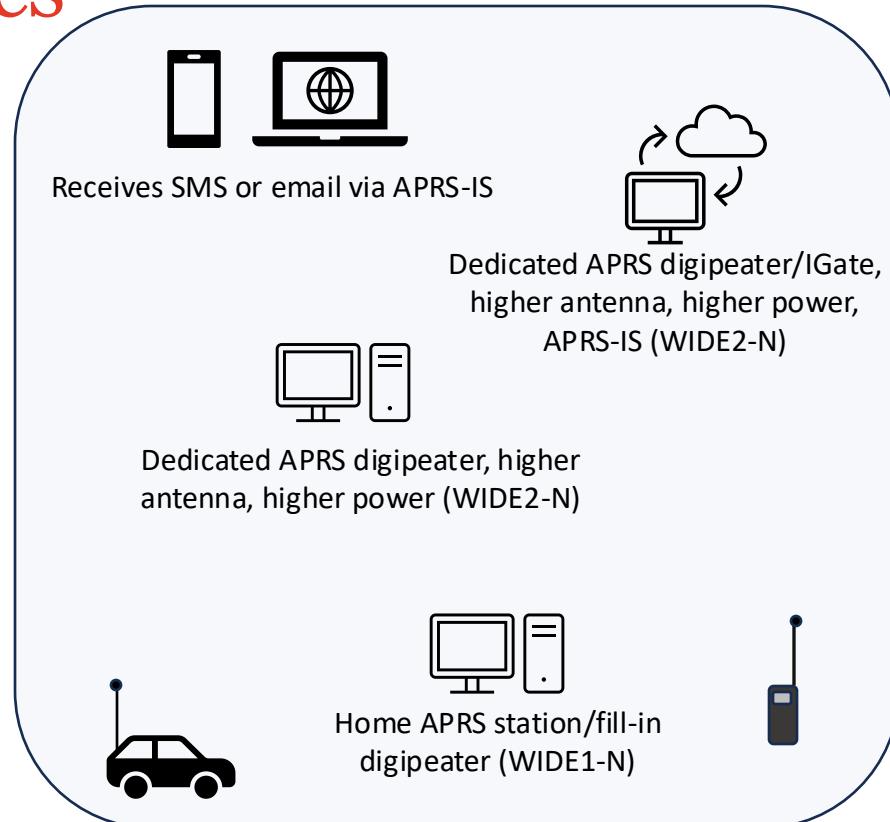
To Cover

- APRS Network Basics
- APRS Digipeaters
- APRS Paths
 - Undirected
 - Directed
- Resources to determine potential digipeater paths
- APRS to SMS
- APRS EMAIL bot
- APRS to email via APRSLink



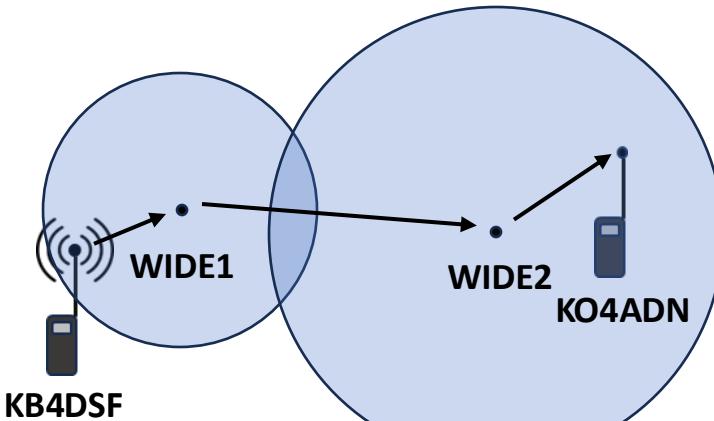
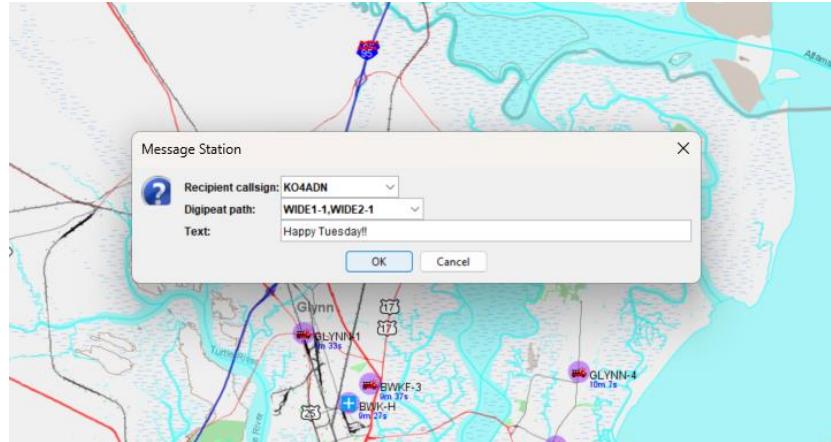
APRS Network Basics

- A sort-of mesh network
- All devices operate on 144.39 MHz
- AX.25 digital protocol
- Network devices:
 - User devices (HTs, mobiles, etc)
 - Fill-in digipeater, alias WIDE1-N
 - Wide area digipeater, alias WIDE2-N
- APRS-IS
 - Internet capabilities



APRS Paths

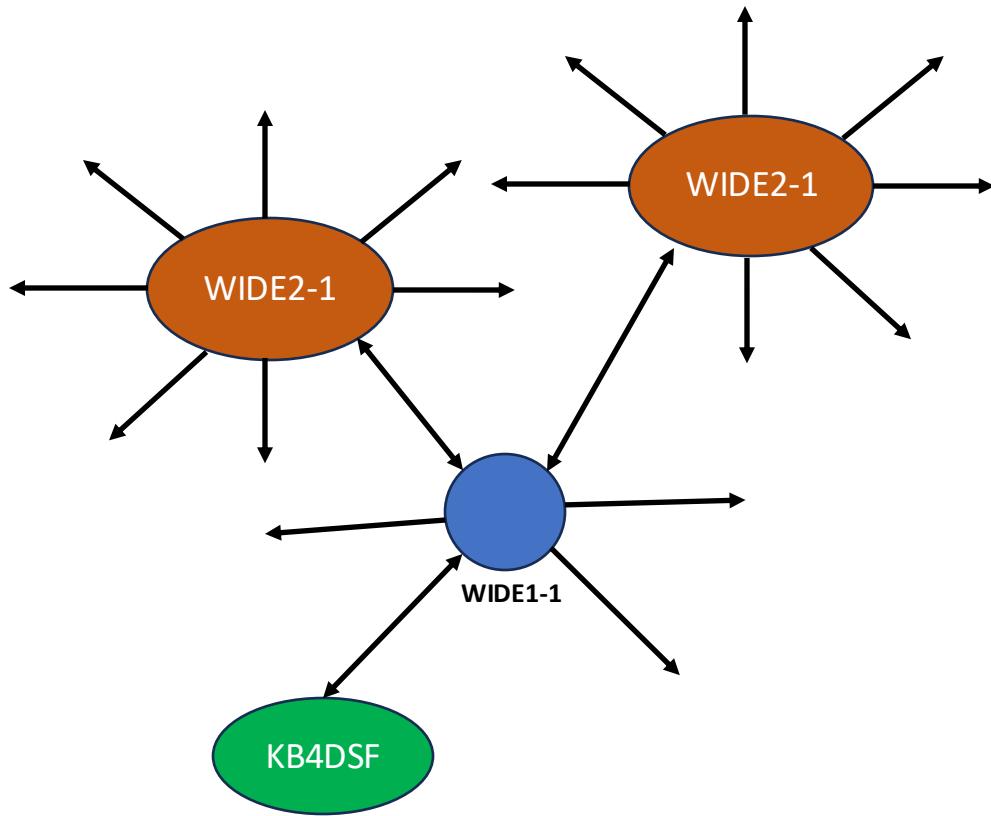
- Understanding how APRS paths work is key
- Normally use WIDE aliases
 - Typical is WIDE1-1,WIDE2-1
- WIDE1 digipeater, if available, can help repeat the APRS message to a WIDE2 digipeater
- WIDE2 digipeater will have greater range



APRS Paths

Undirected Path

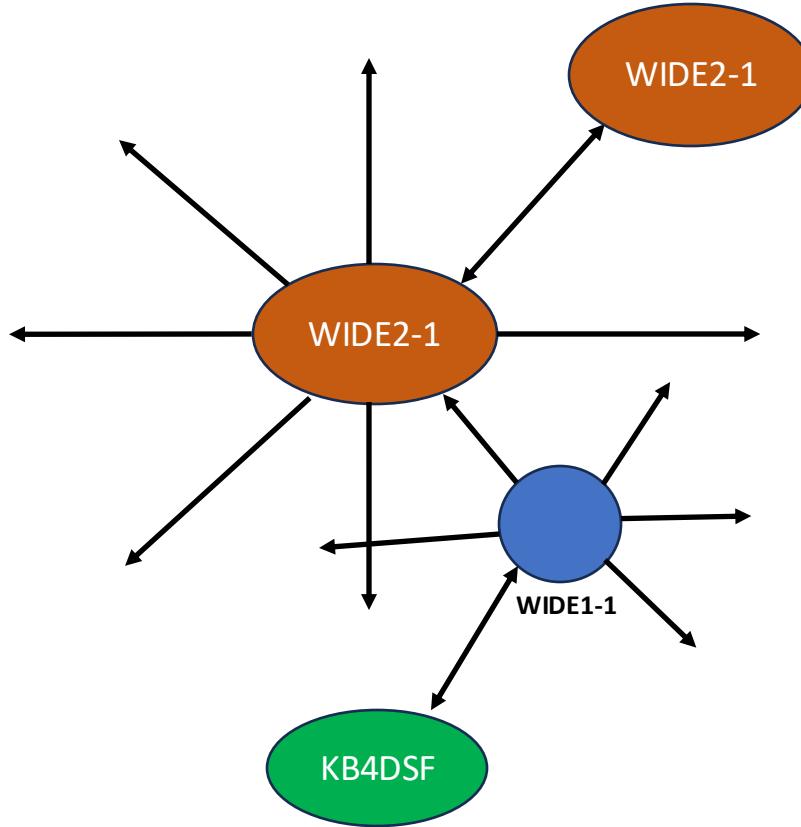
- Most common
- WIDE n - N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common



APRS Paths

Undirected Path

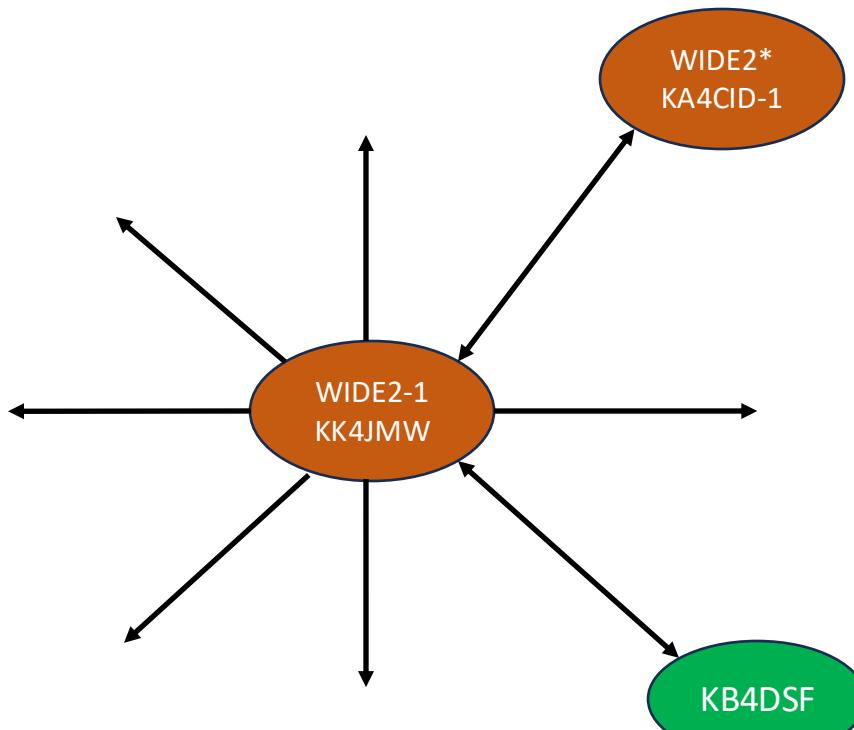
- Most common
- WIDE n - N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common



APRS Paths

Undirected Path

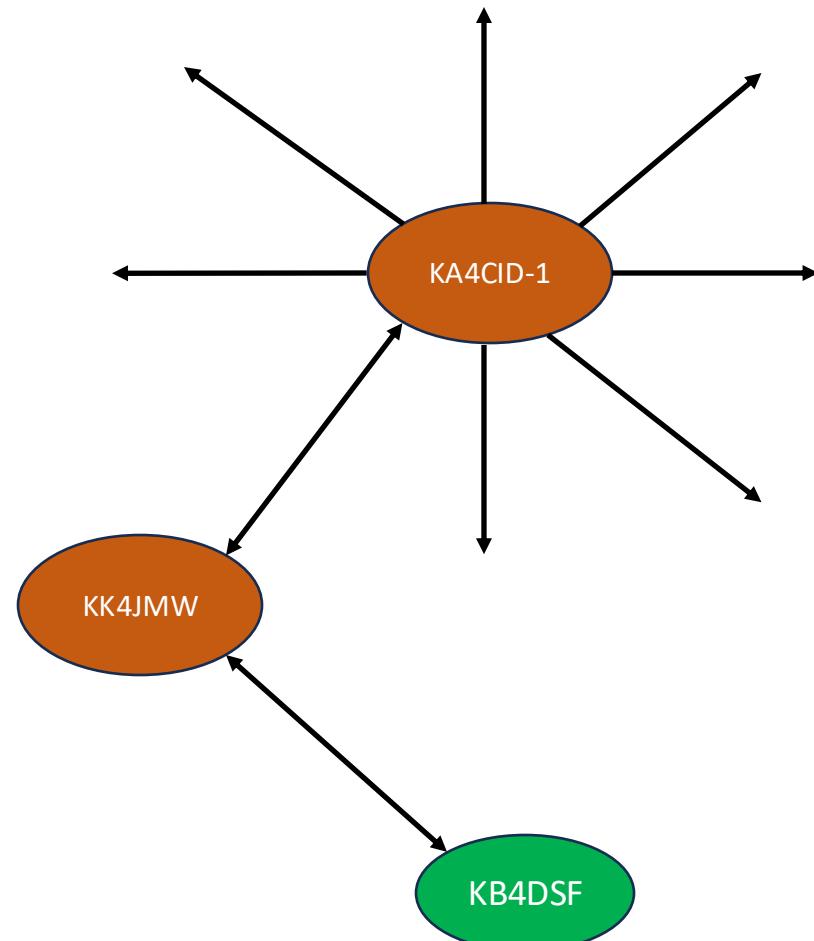
- Most common
- WIDE n - N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common

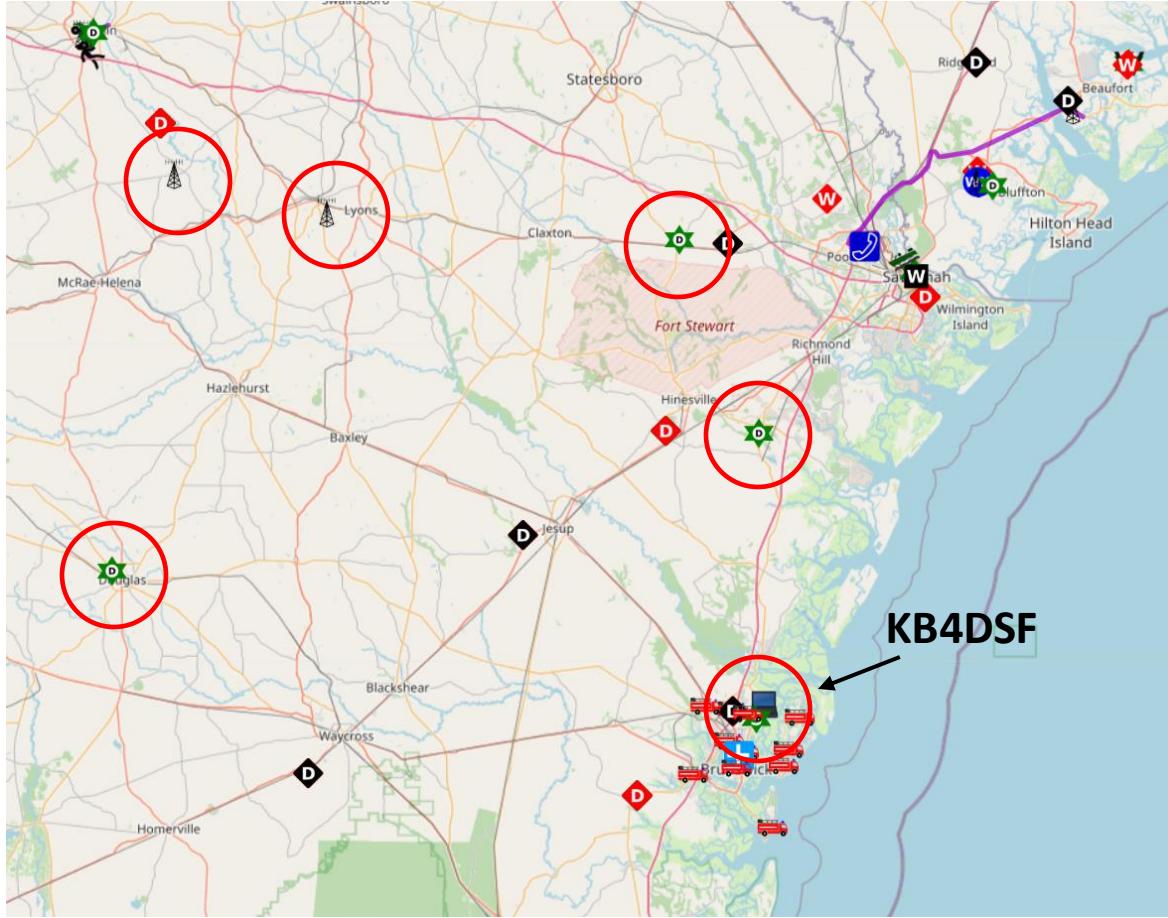


APRS Paths

Directed Path

- State which digipeaters you want in the path
- Pros and cons depending on your needs

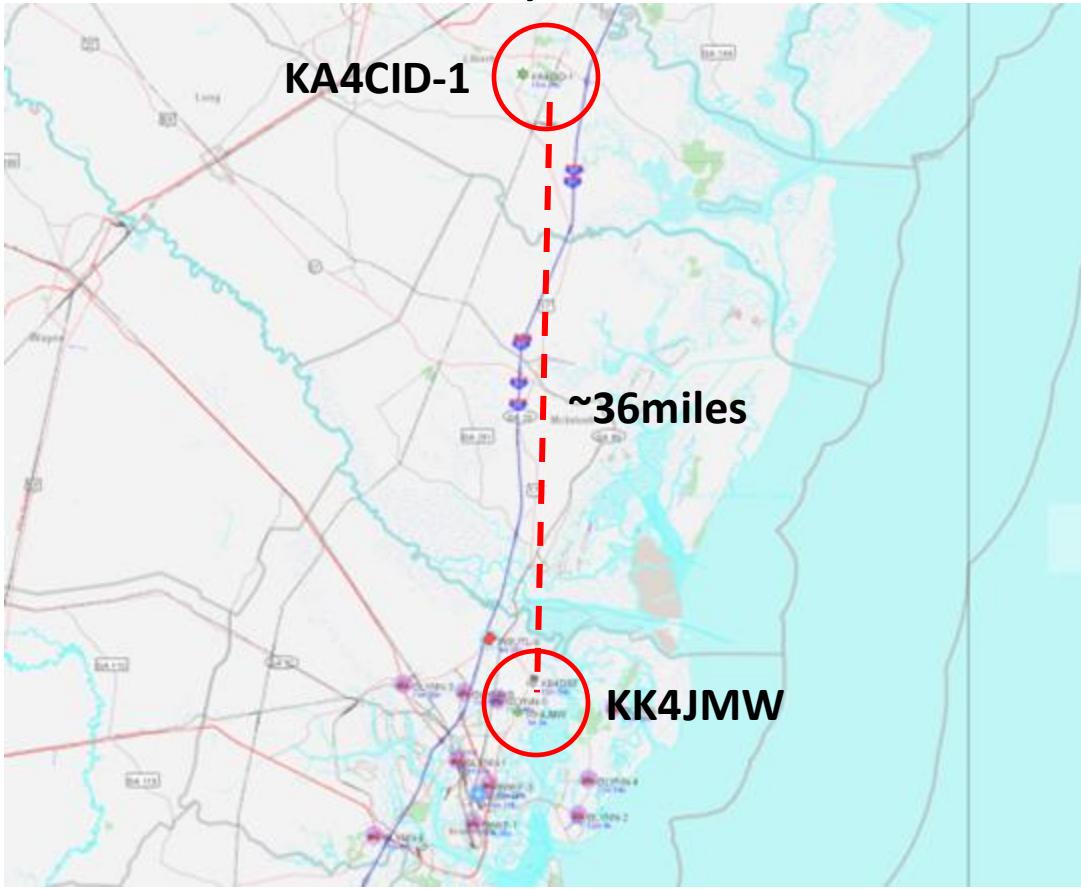




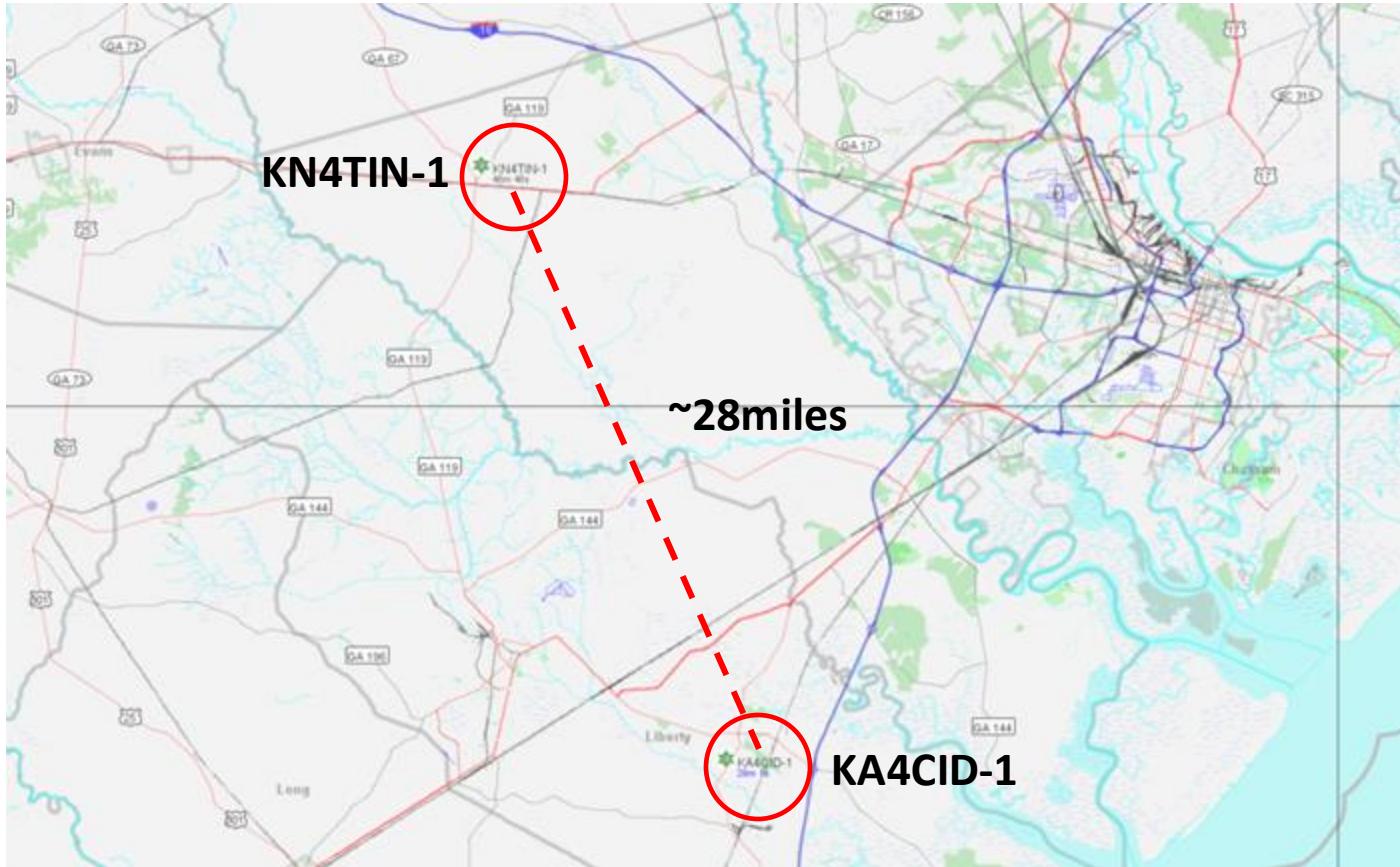
aprs-map.info



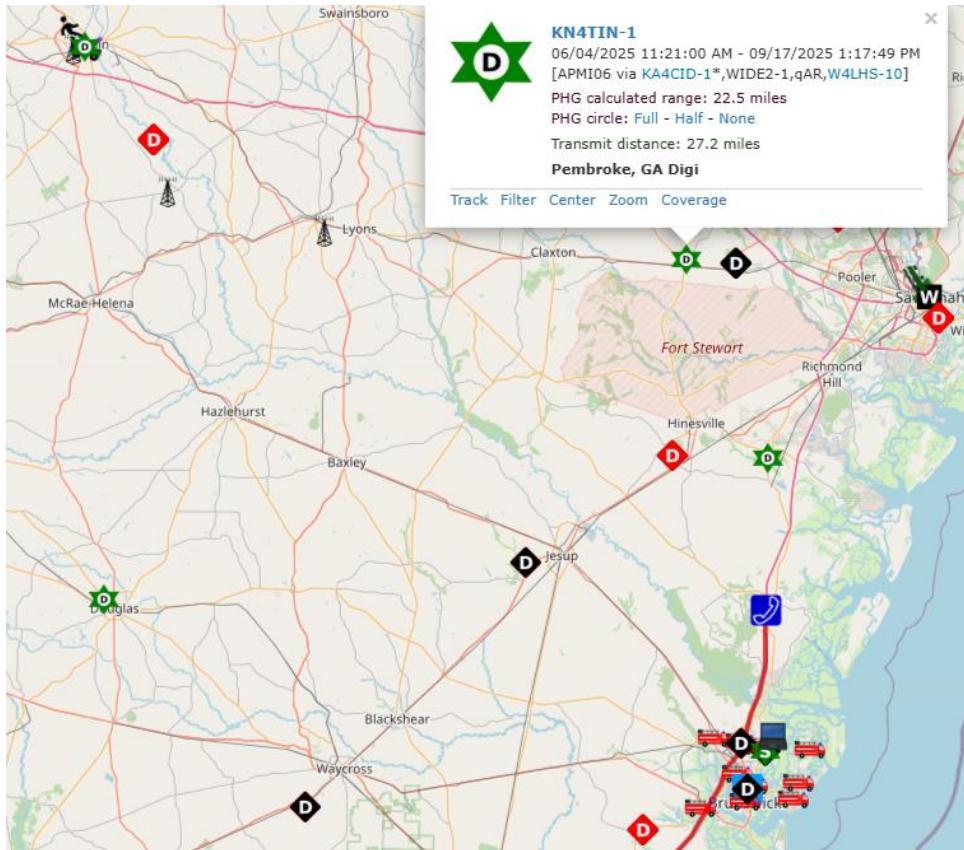
WIDE1-1,WIDE2-1

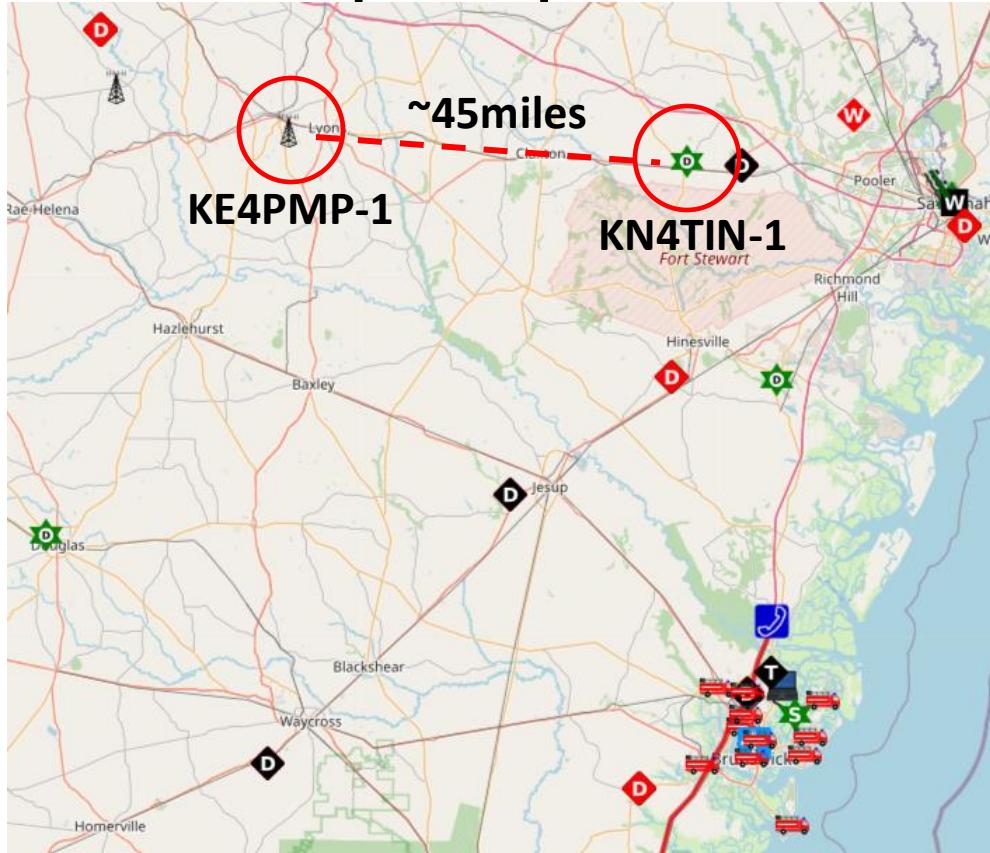


WIDE1-1,WIDE2-1

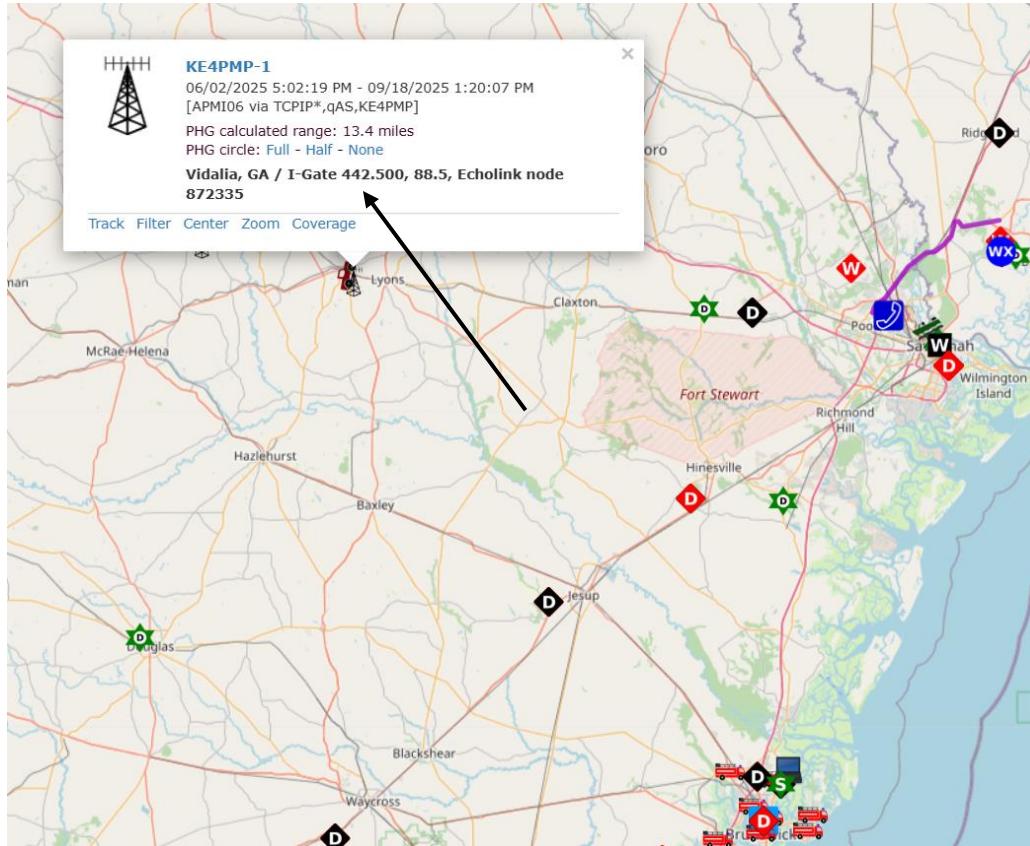


aprs-map.info

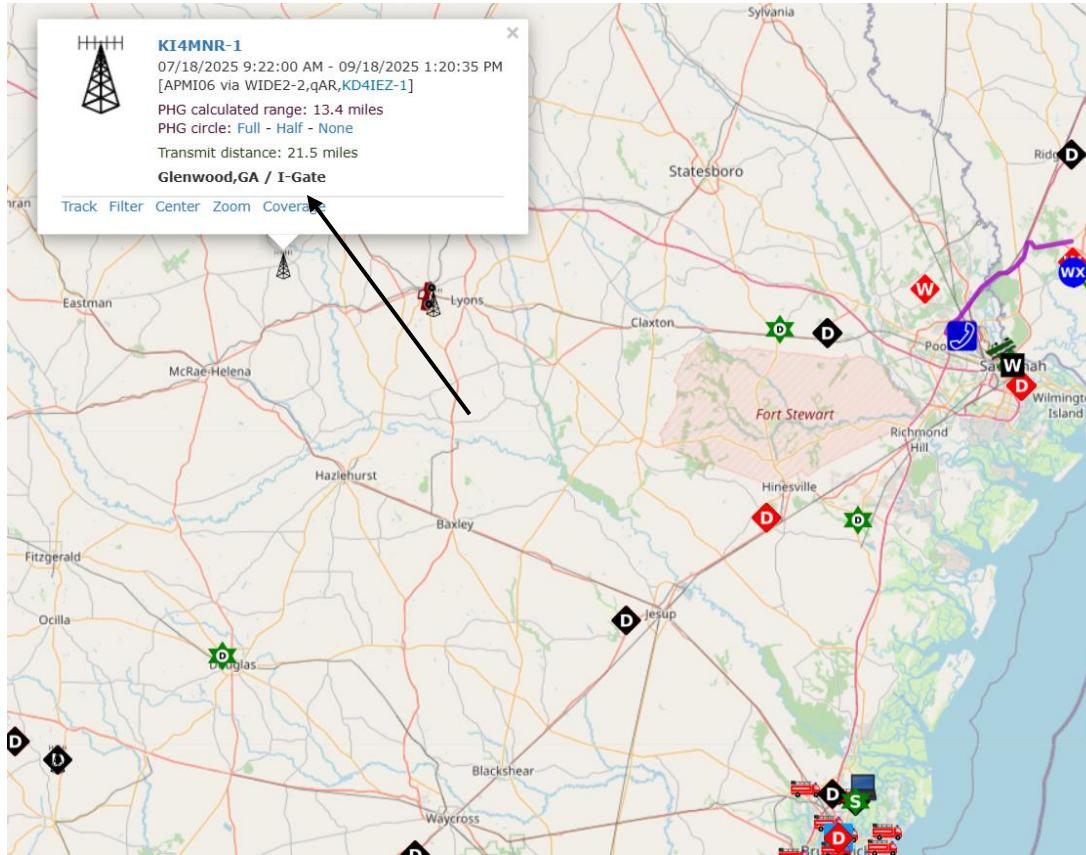




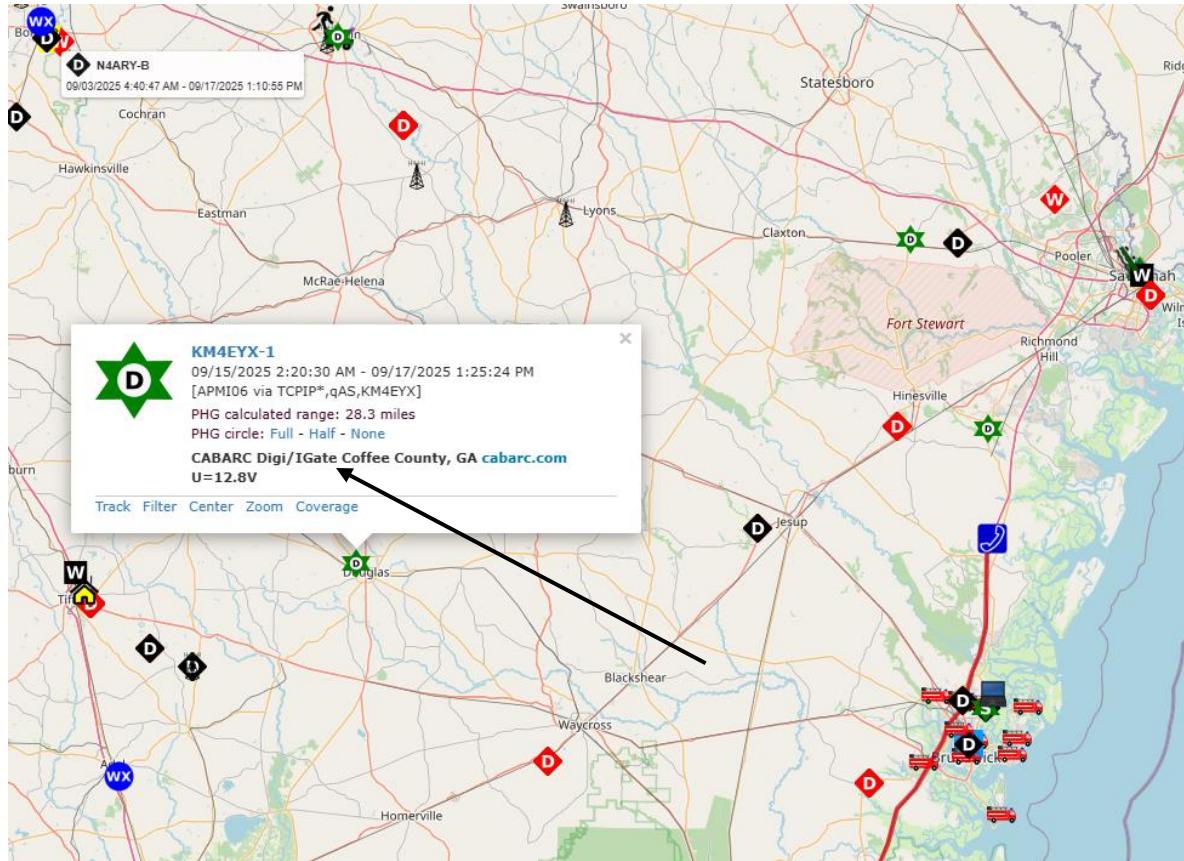
aprs-map.info



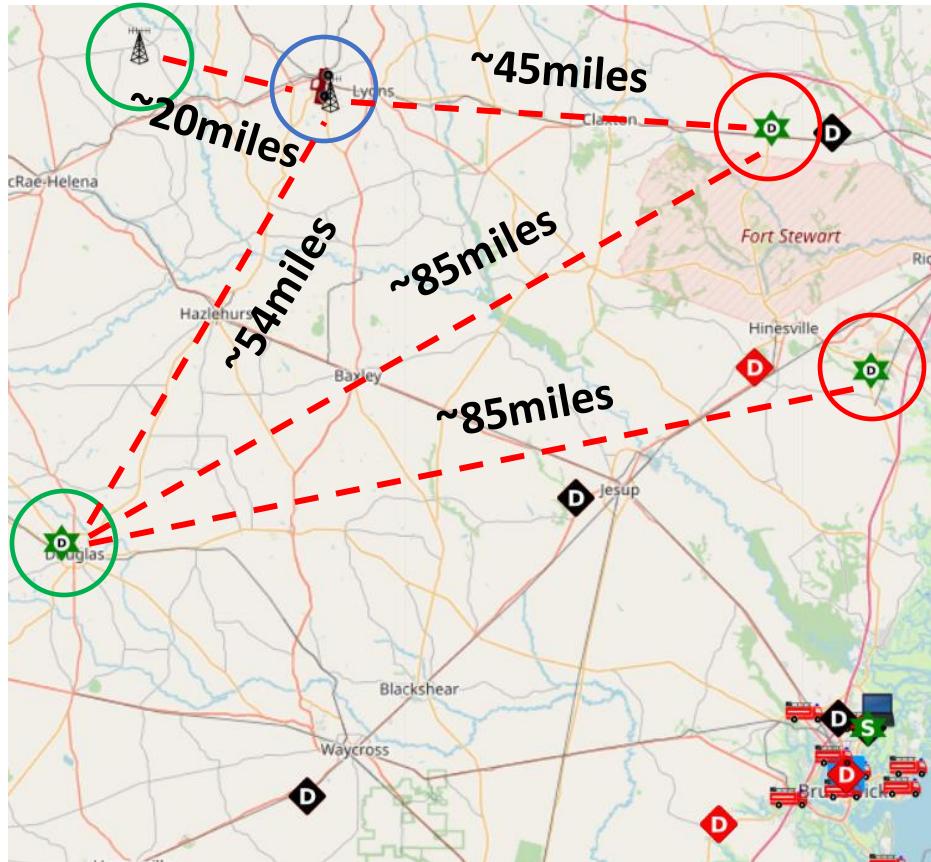
aprs-map.info



aprs-map.info



aprs-map.info



aprs-map.info



KA4CID-1 Overview

Overview Statistics Trail Chart Weather Telemetry Raw packets

Name: KA4CID-1
Station ID: 22830
Source: APRS-IS
Symbol: 

Latest Packet:
Receive Time: 09/17/2025 1:15:35 PM-04:00
Age: 3 minutes ago
Path: APOT40,WIDE2-2,qAR,W4LHS-10
Comment: Echolink on 443.300 PL 97.4

Position Packet
Latest Position: 31.78383, -81.44117
Receive Time: (Received in latest packet)
[Show on map](#)

Packet frequency: 360s (Latest 10 packets)

Nearby stations/objects:

 KA4BBQ-C	12.1 miles
 KA4BBQ-C	12.1 miles
 W8RD-5	24.11 miles
 WX4JDM-D	24.94 miles
 WX4JDM-C	24.94 miles
 WX4JDM-C	24.94 miles
 WX4JDM-N	24.94 miles
 KN4TIN-1	27.15 miles
 AF4VH-10	31.71 miles
 KB4DSF	35.41 miles
 GLYNN-8	36.25 miles
 KO4ZD-LB	36.26 miles



[Search for KA4CID at QRZ](#)
[Export KA4CID-1 data to KML](#)



Who has heard KA4CID-1?

KA4CID-1 Stats

Overview Statistics Trail Chart Weather Telemetry Raw packets

The communication statistics that we show here may differ from similar communication statistics on other websites; the reason is probably that this website is not collecting packets from the same APRS servers. Each APRS server performs duplicate filtering, and which packet that is considered to be a duplicate may differ depending on which APRS server you receive your data from.

Stations that heard KA4CID-1 directly during the latest 10 day(s).

Station	Number of packets	Latest heard	Longest distance
W4LHS-10	1225	09/17/2025 1:15:35 PM-04:00	29.14 miles
KN4TIN-1	28	09/17/2025 10:57:36 AM-04:00	27.21 miles
KX4MW	548	09/17/2025 10:45:35 AM-04:00	37.3 miles
KE4MP-1	32	09/17/2025 10:27:35 AM-04:00	63.04 miles
NF4CA-5	20	09/17/2025 10:22:42 AM-04:00	134.44 miles
KI4MRN-1	9	09/17/2025 10:06:23 AM-04:00	83.05 miles
W4PVW-15	5	09/17/2025 9:54:18 AM-04:00	136.19 miles
W4LVD	22	09/17/2025 9:51:35 AM-04:00	128.59 miles
WA4LJSN-5	126	09/17/2025 9:47:59 AM-04:00	113.56 miles
KM4EYX-1	26	09/17/2025 9:40:27 AM-04:00	86.21 miles
KF4TPM-10	1	09/17/2025 9:21:35 AM-04:00	147.39 miles
KD4IEZ-1	31	09/17/2025 9:09:35 AM-04:00	101.8 miles
KC4YOM-2	13	09/17/2025 9:00:38 AM-04:00	144.87 miles
WA4LJSN-3	1	09/17/2025 8:34:46 AM-04:00	108.1 miles
W4DOD-1	2	09/17/2025 5:46:35 AM-04:00	44.22 miles
W4DEX	17	09/17/2025 5:15:38 AM-04:00	247.88 miles
NE4SC-12	22	09/17/2025 4:53:43 AM-04:00	202.2 miles
WC4PEM-9	19	09/17/2025 4:45:35 AM-04:00	248.99 miles
WC4PEM-12	1	09/17/2025 3:09:35 AM-04:00	278.65 miles
WC4PEM-6	10	09/17/2025 2:39:35 AM-04:00	259.69 miles
KG4UOY-1	7	09/16/2025 11:57:36 PM-04:00	67.82 miles

Who has KA4CID-1 heard?

KA4CID-1 Stats

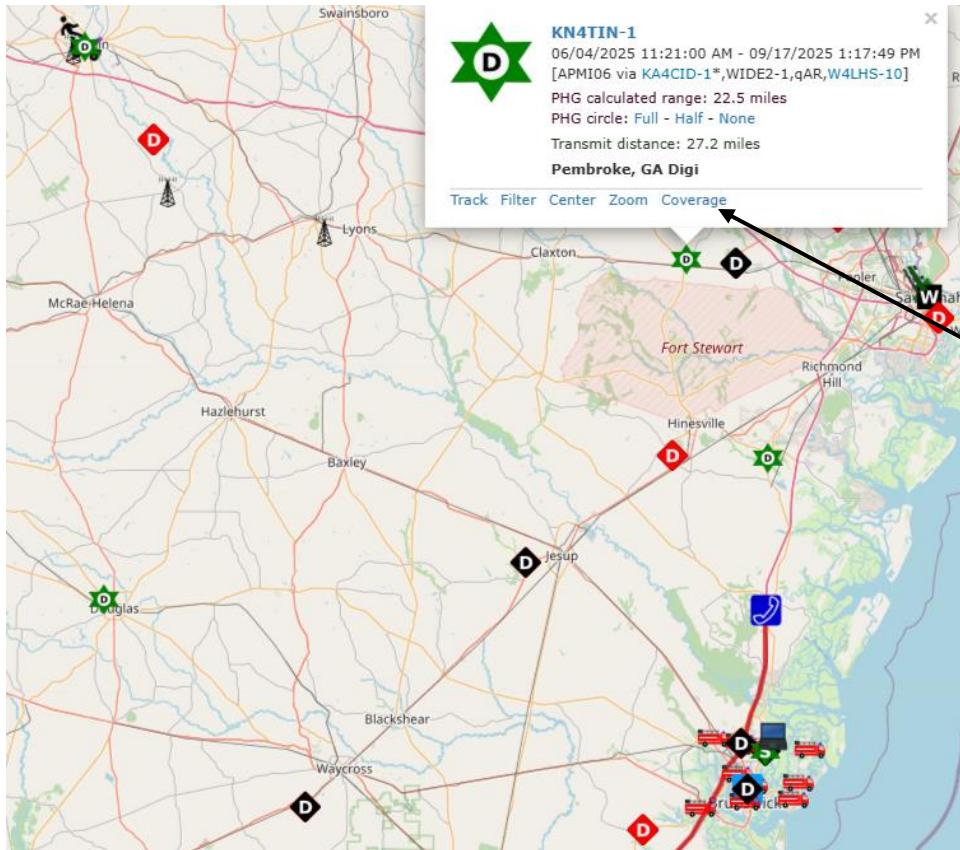
Station	Number of packets	Latest heard	Longest distance
AB4KN-2	1	09/09/2025 4:12:16 PM-04:00	216.98 miles

Stations directly heard by KA4CID-1 during the latest 10 day(s).

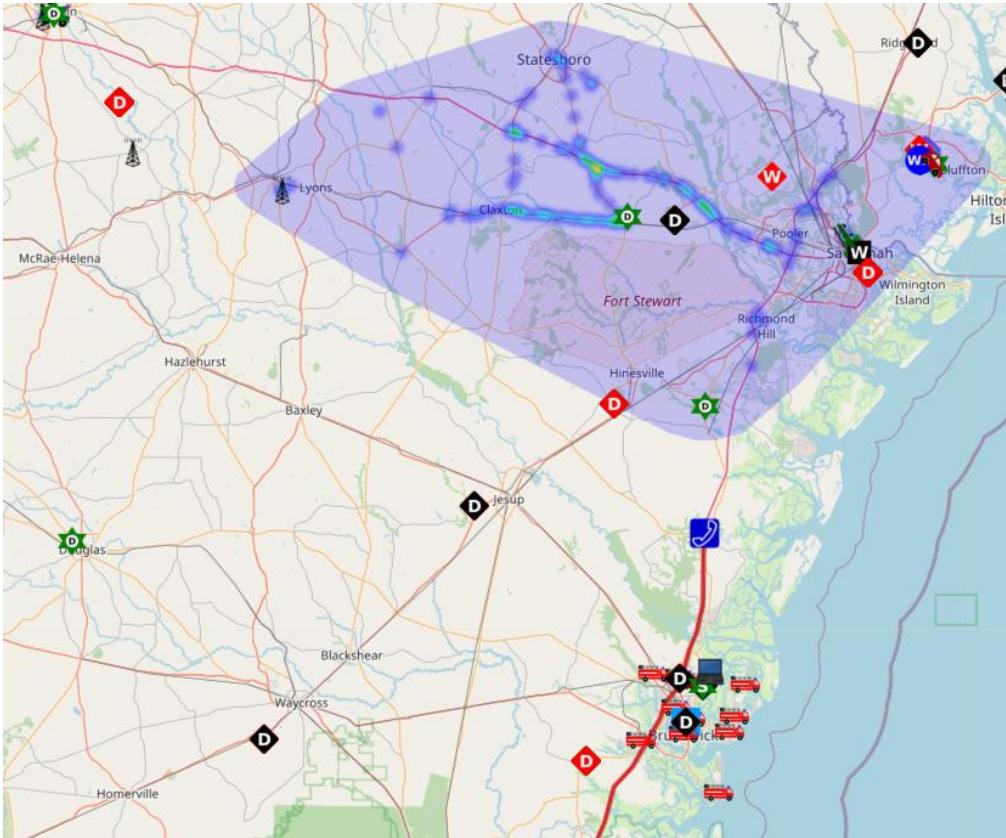
Station	Number of packets	Latest heard	Longest distance
KN4TIN-1	1525	09/17/2025 1:17:49 PM-04:00	27.23 miles
WBUTL-9	5	09/17/2025 10:18:37 AM-04:00	5.81 miles
KE4MP-1	10	09/17/2025 10:02:29 AM-04:00	63.04 miles
W4LKF	73	09/17/2025 9:46:12 AM-04:00	77.6 miles
KX4MW	178	09/17/2025 9:38:51 AM-04:00	37.3 miles
KE4MP-9	3	09/17/2025 8:25:51 AM-04:00	33.95 miles
W4LVD	5	09/17/2025 7:42:51 AM-04:00	128.58 miles
KM4EYX-1	19	09/17/2025 7:32:26 AM-04:00	86.2 miles
W4PVW-15	4	09/17/2025 7:32:18 AM-04:00	136.19 miles
KG4UOY-1	8	09/17/2025 7:02:21 AM-04:00	67.82 miles
K4OZS-10	3	09/17/2025 6:56:40 AM-04:00	187.79 miles
WY2C-1	4	09/17/2025 6:32:52 AM-04:00	105.41 miles
W4DFU-3	3	09/17/2025 6:29:12 AM-04:00	157.75 miles
NASVC-1	2	09/17/2025 5:35:20 AM-04:00	133.49 miles
KI4MRN-1	4	09/17/2025 5:17:10 AM-04:00	83.06 miles
N1RCW-5	11	09/17/2025 5:15:49 AM-04:00	43.26 miles
CHIEFL	1	09/17/2025 5:13:09 AM-04:00	185.57 miles
KN4TIN-8	1	09/17/2025 4:07:52 AM-04:00	29.34 miles
NSCBP-6	1	09/17/2025 4:04:34 AM-04:00	136.68 miles
K4DBN-1	1	09/17/2025 3:56:59 AM-04:00	127.31 miles
K4AMF-1	2	09/17/2025 3:52:45 AM-04:00	112.52 miles
NSEIV-1	3	09/17/2025 3:49:39 AM-04:00	107.98 miles
WC4PEM-6	1	09/17/2025 1:07:17 AM-04:00	259.69 miles
WC4PEM-10	2	09/17/2025 12:56:33 AM-04:00	270.94 miles



aprs-map.info

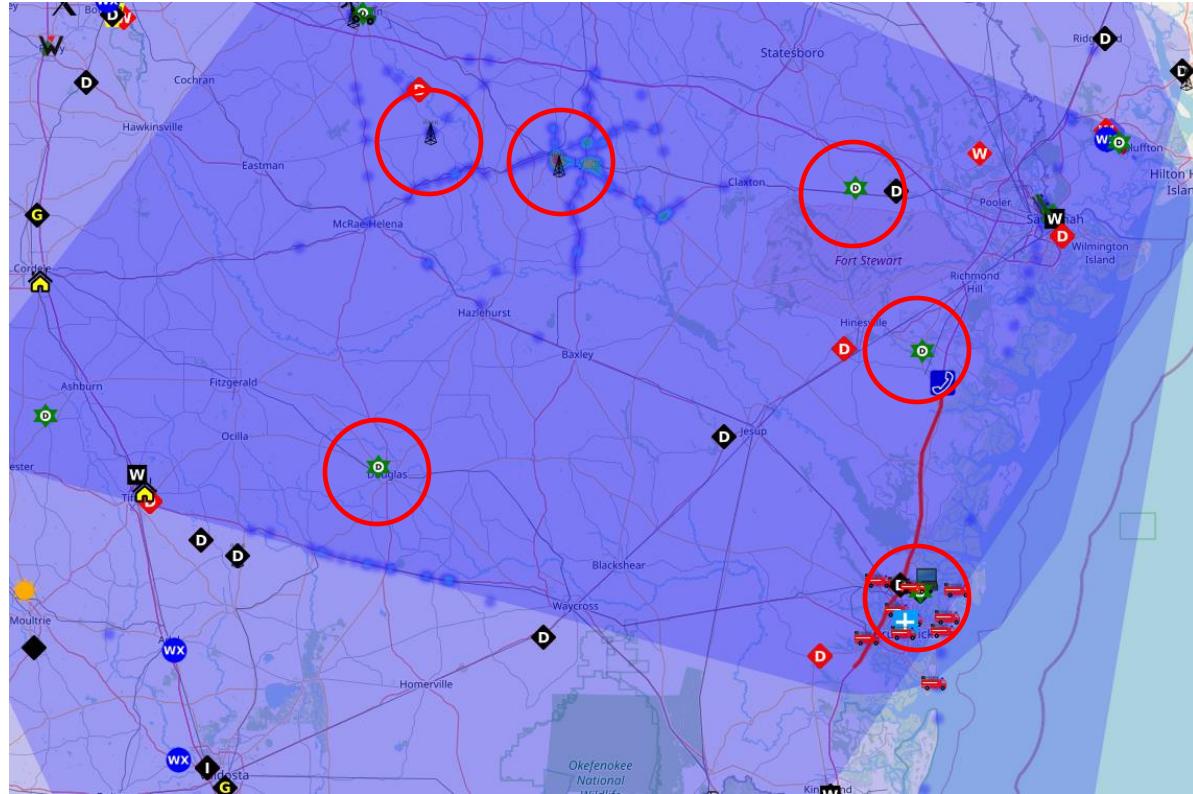


aprs-map.info



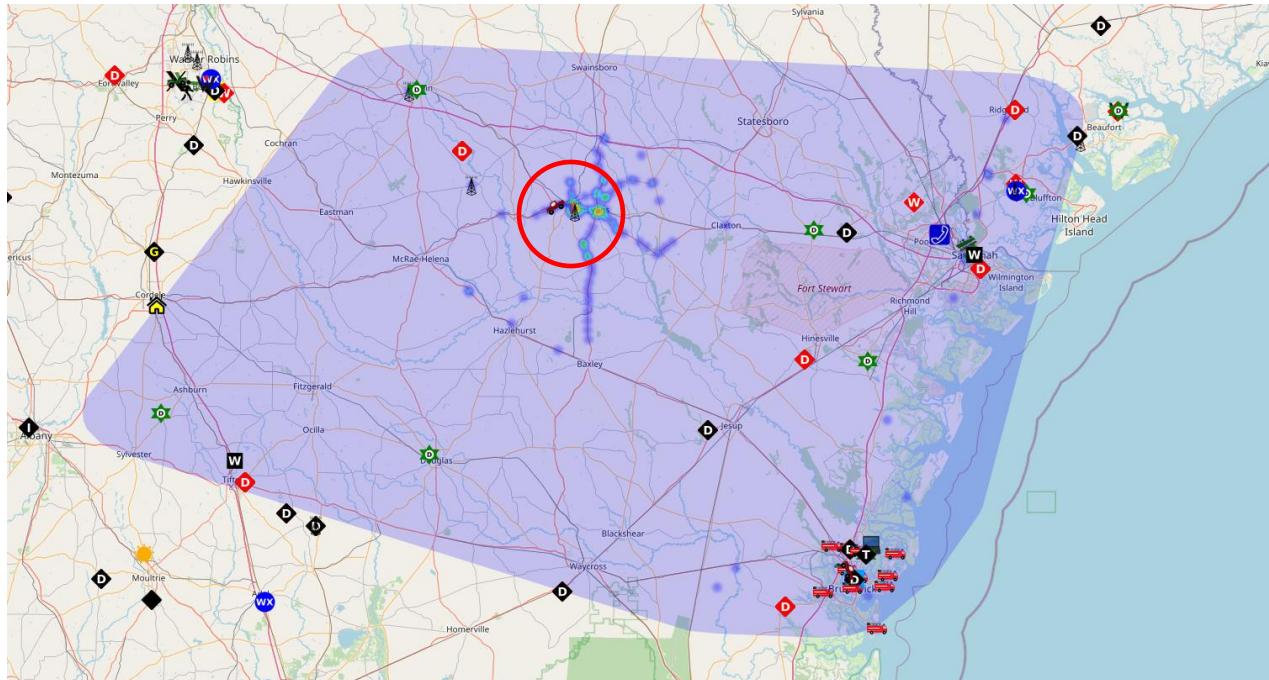
Coverage

- KK4JMW
- KA4CID-1
- KN4TIN-1
- KE4PMP-1
- KI4MNR-1*
- KM4EYX-1*



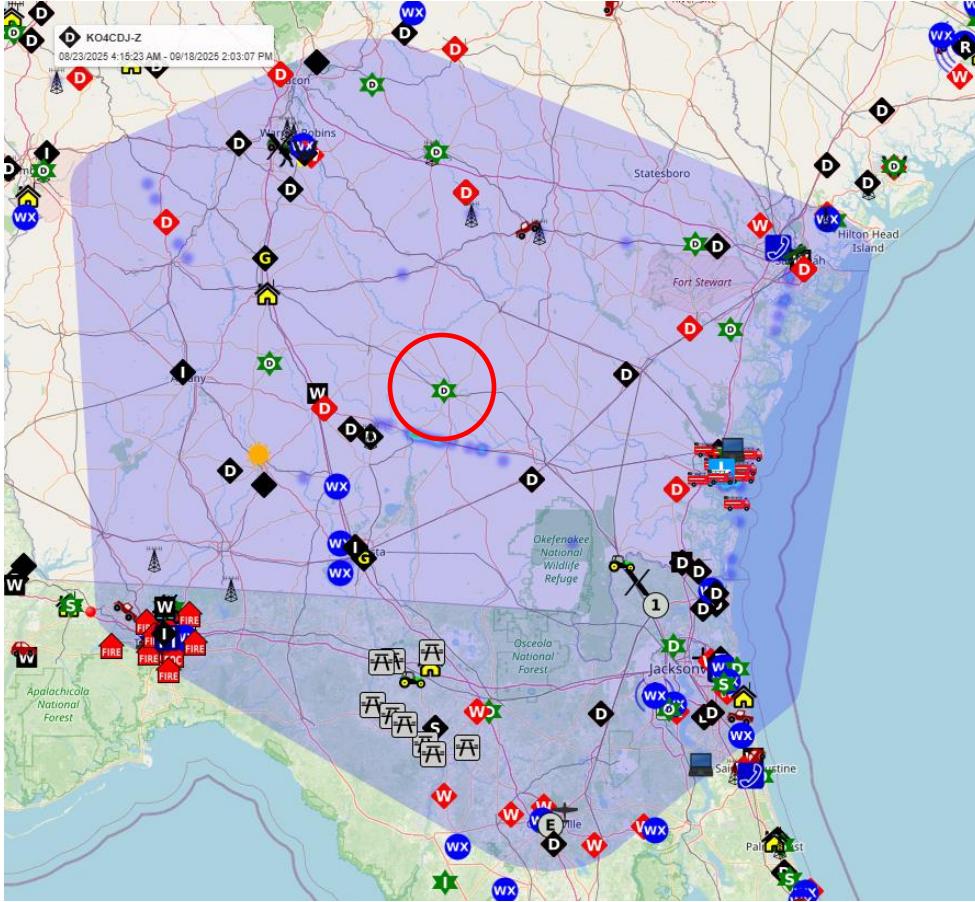
Coverage

- KE4PMP-1



Coverage

- KM4EYX-1

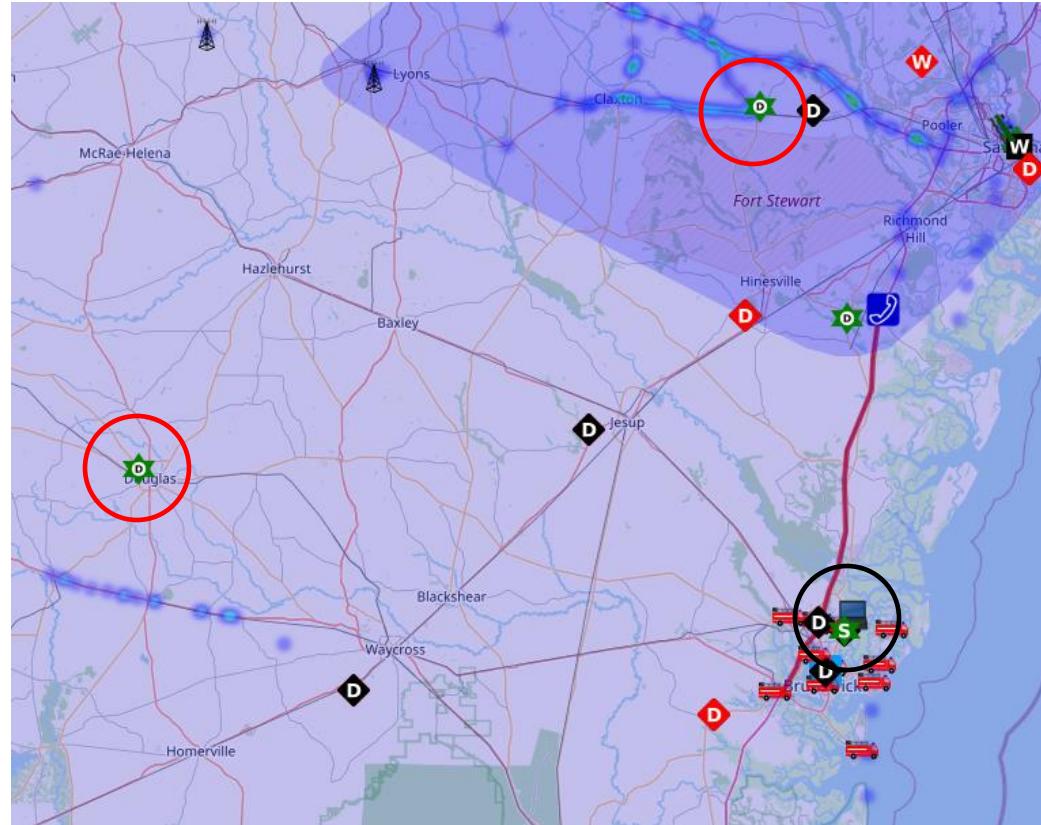


Coverage

TO: SMS

VIA: WIDE1-1,WIDE2-3

@5555551234 no power or cell but
we are all ok



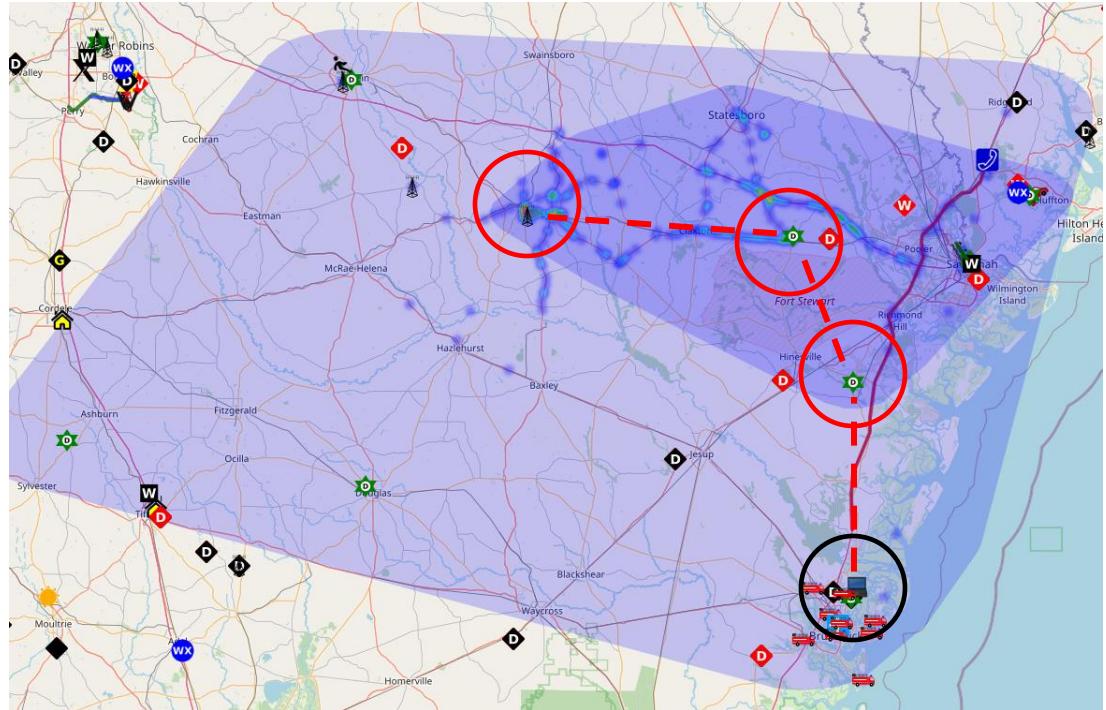
Coverage

- Directed path

TO: SMS

VIA: KK4JMW,KA4CID-1,KN4TIN-1,KE4PMP-1

@5555551234 no power or cell but we are all ok

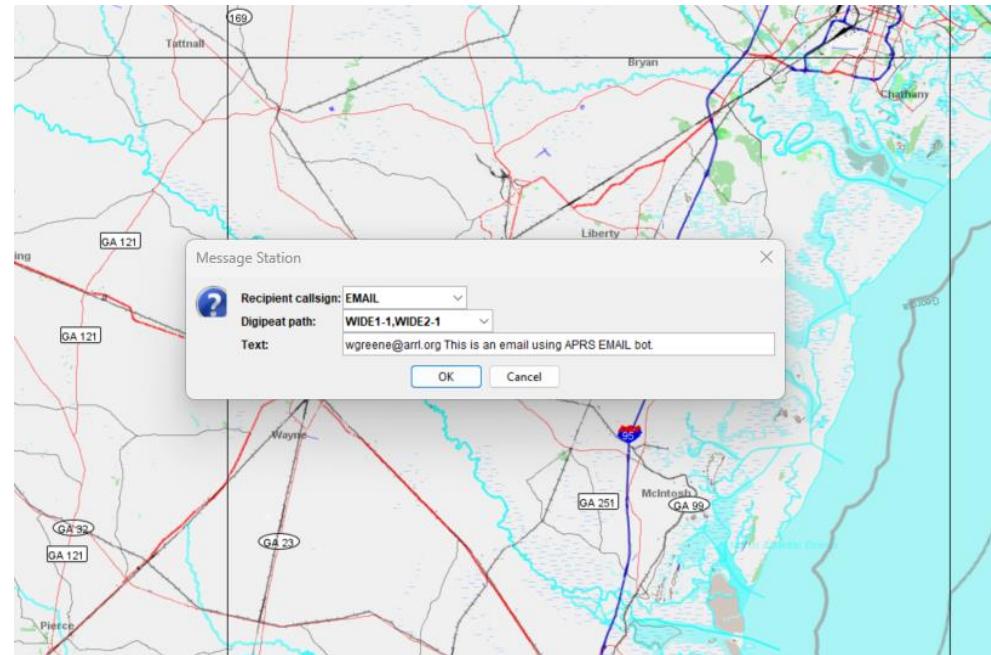


Email using EMAIL Bot

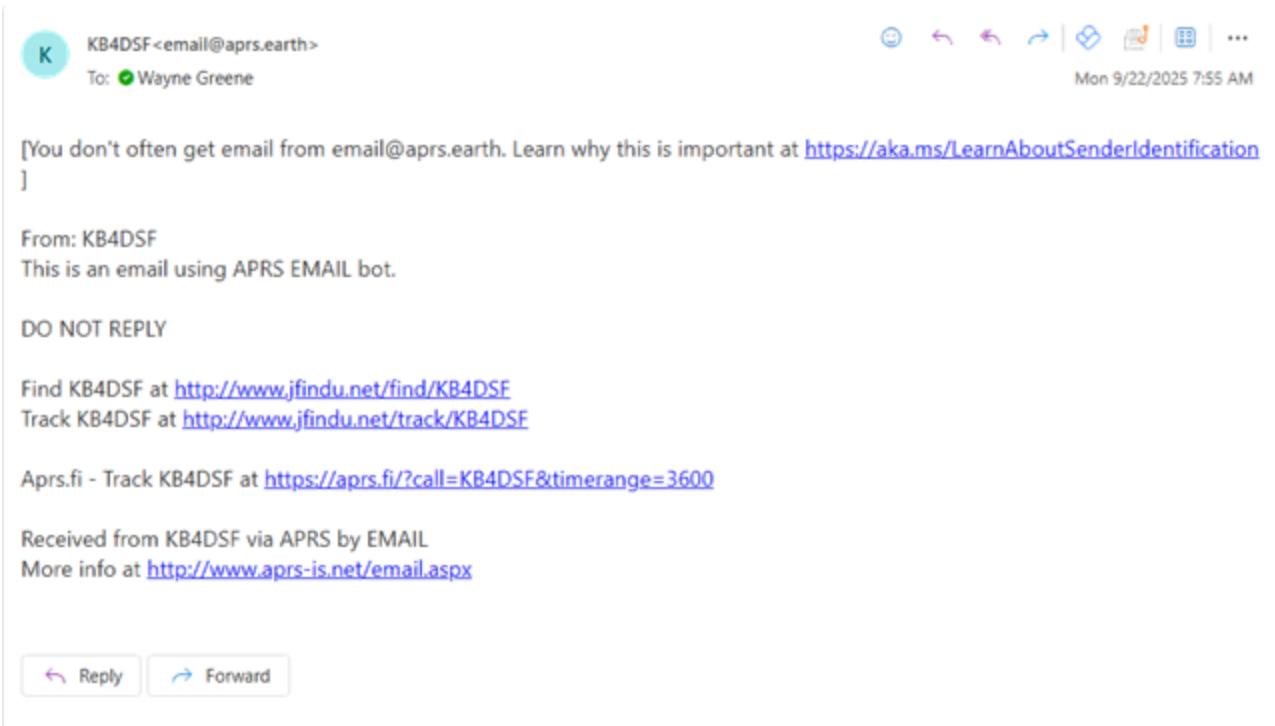
TO: EMAIL

VIA: WIDE1-1,WIDE2-1

wgreene@arrl.org This is an email
using APRS EMAIL bot.



Email using EMAIL Bot



KB4DSF<email@aprs.earth>
To: Wayne Greene

[You don't often get email from email@aprs.earth. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification>]

From: KB4DSF
This is an email using APRS EMAIL bot.

DO NOT REPLY

Find KB4DSF at <http://www.jfindu.net/find/KB4DSF>
Track KB4DSF at <http://www.jfindu.net/track/KB4DSF>

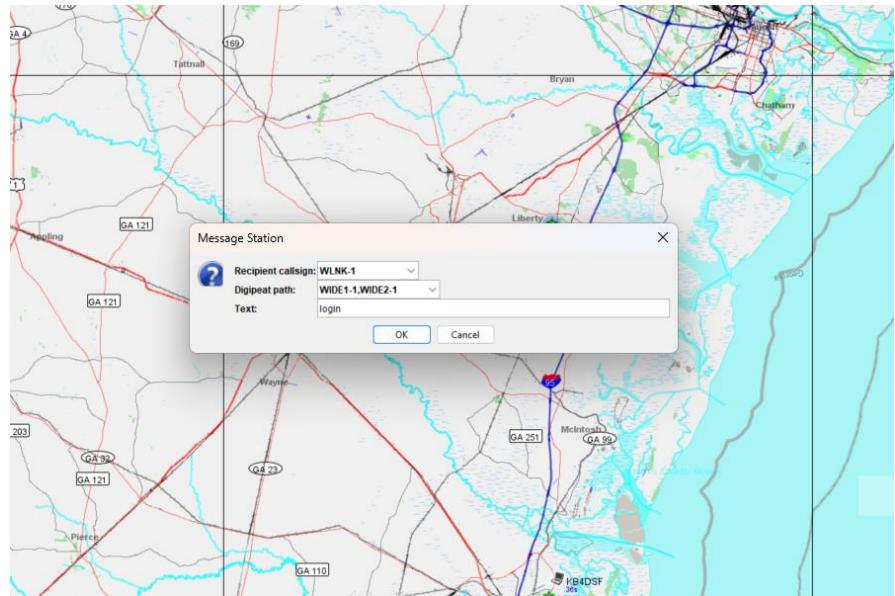
Aprs.fi - Track KB4DSF at <https://aprs.fi/?call=KB4DSF&timerange=3600>

Received from KB4DSF via APRS by EMAIL
More info at <http://www.aprs-is.net/email.aspx>

[Reply](#) [Forward](#)

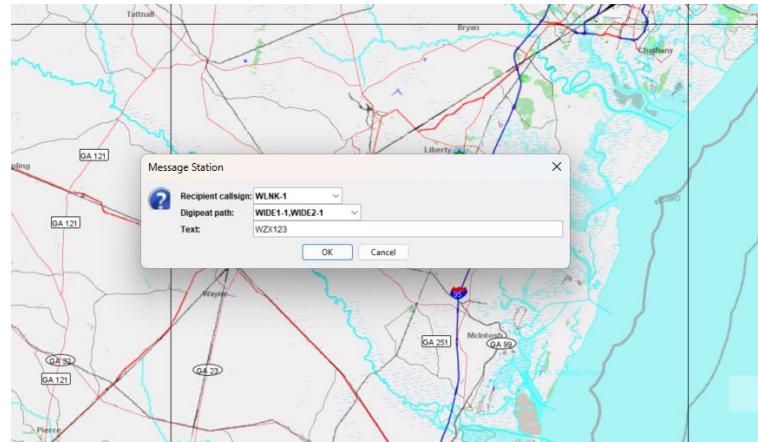
Email using APRSLink

- Send a message to WLNK-1 to login
- Anything will work, but I simply just send “login”



Email using APRSLink

- APRSLink will send a challenge asking for specific characters of your Winlink password
- Enter the characters and include three random numbers
- Logged in for ~2 hours



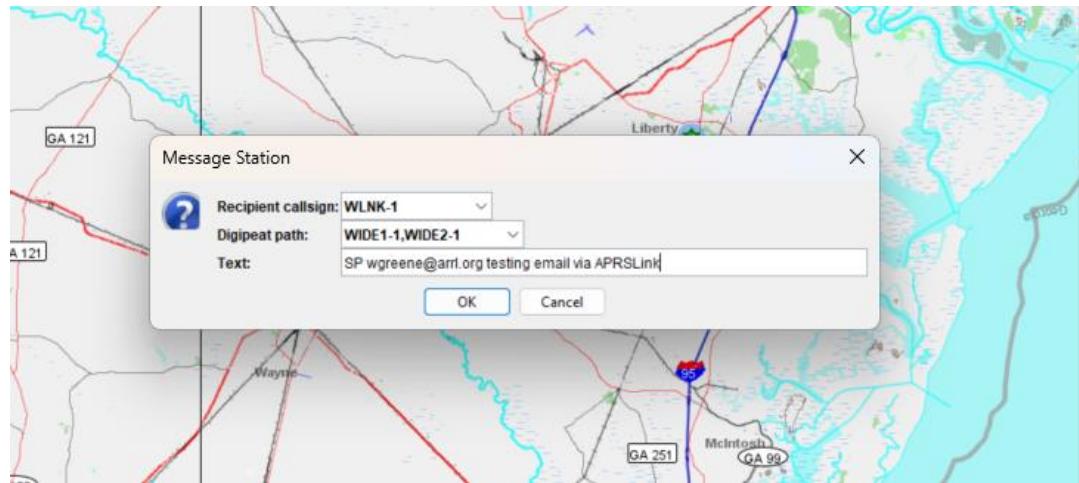
Show every message (not just addressed to this station)

Date/Time	Sender	Addressee	Text	Seq#	Clear
19/Sep/2025 09:14:49	KB4DSF	WLNK-1	WZX123	M0002	<input type="button" value="Clear"/>
19/Sep/2025 09:14:46	WLNK-1	KB4DSF	Hello KB4DSF. Login valid for ~2 hours	1293	<input type="button" value="Clear"/>
19/Sep/2025 09:14:45	KB4DSF	WLNK-1	WZX123	M0002	<input type="button" value="Clear"/>
19/Sep/2025 09:13:46	KB4DSF	WLNK-1	login	M0001	<input type="button" value="Clear"/>
19/Sep/2025 09:13:43	WLNK-1	KB4DSF	Login [648]:	1292	<input type="button" value="Clear"/>
19/Sep/2025 09:13:42	KB4DSF	WLNK-1	login	M0001	<input type="button" value="Clear"/>



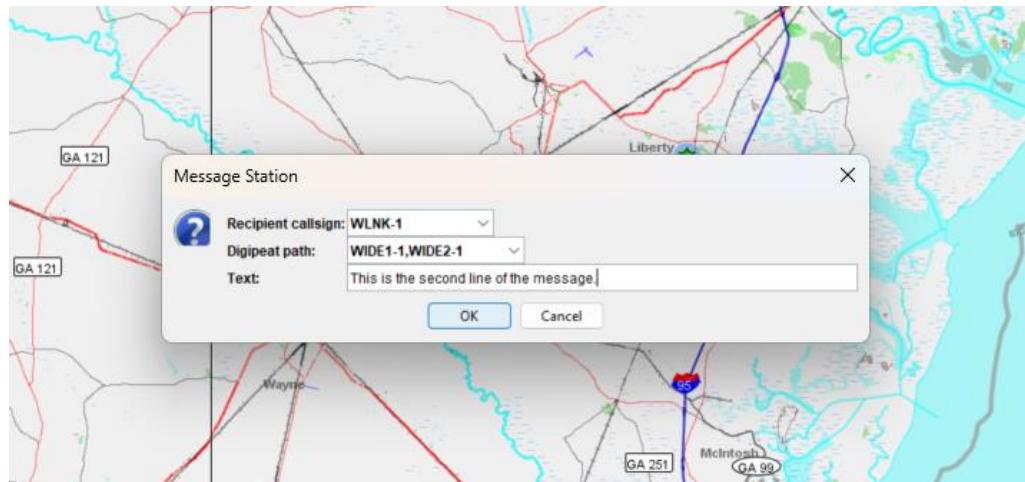
Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.



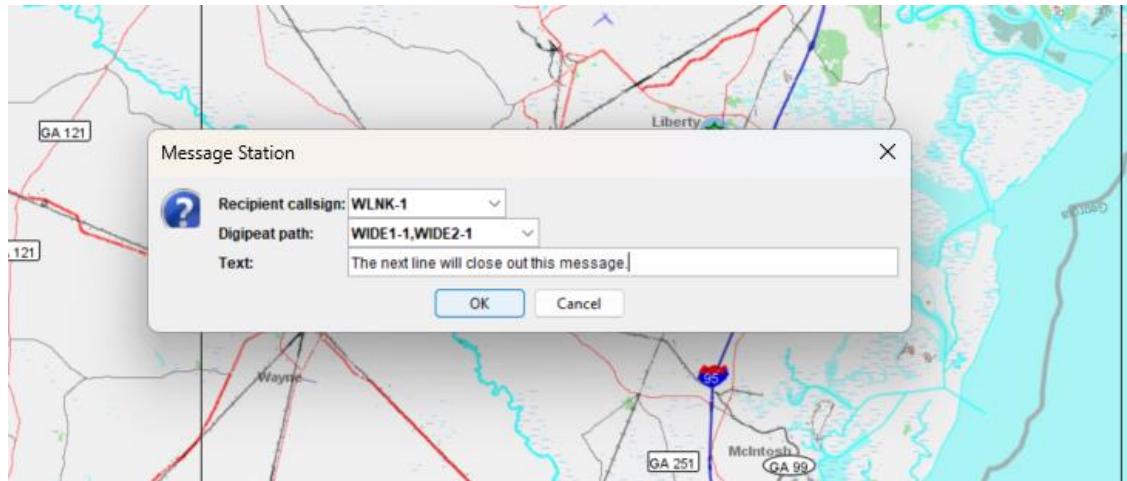
Email using APRSLink

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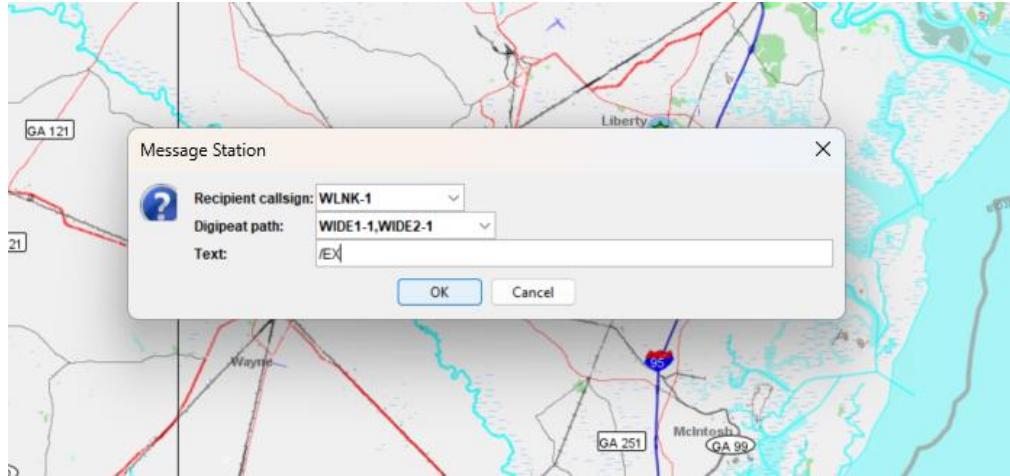
Email using APRSLink

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Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.



Date/Time	Sender	Addressee	Text	Seq#	Clear
19/Sep/2025 09:37:55	WLNK-1	KB4DSF	Message sent to: wgreen@arrl.org	1304	
19/Sep/2025 09:37:54	KB4DSF	WLNK-1	/EX	M000g	
19/Sep/2025 09:37:37	KB4DSF	WLNK-1	The next line will close out this message.	M000f	
19/Sep/2025 09:37:33	KB4DSF	WLNK-1	The next line will close out this message.	M000e	
19/Sep/2025 09:37:06	KB4DSF	WLNK-1	This is the second line of the message.	M000d	
19/Sep/2025 09:37:02	KB4DSF	WLNK-1	This is the second line of the message.	M000e	
19/Sep/2025 09:36:28	KB4DSF	WLNK-1	SP wgreen@arrl.org testing email via APRSLink	M000d	
19/Sep/2025 09:36:24	WLNK-1	KB4DSF	New message to: wgreen@arrl.org. Send /EX when complete.	1303	
19/Sep/2025 09:36:23	KB4DSF	WLNK-1	SP wgreen@arrl.org testing email via APRSLink	M000d	

Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.

KB4DSF@winlink.org
testing email via APRSLink 9:38 AM
[You don't often get email from kb4dsf@winli...]

KB4DSF@winlink.org
To: Wayne Greene

Start reply with: [What does this mean?](#) [What is the message?](#) [Watch the video.](#)

[You don't often get email from kb4dsf@winlink.org. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification>]

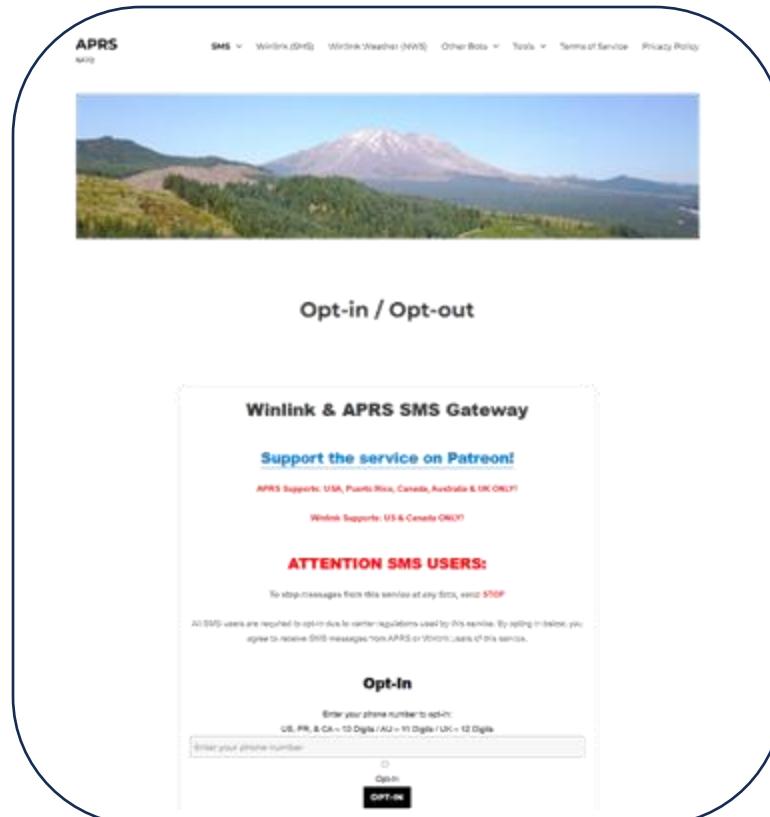
This is the second line of the message. The next line will close out this message.

+++ Below automatically added by APRSLink +++

Last reported position: 3116.28N 08125.89W Grid: EM91GG.
See map at: <http://www.findu.com/cgi-bin/find.cgi?call=KB4DSF>

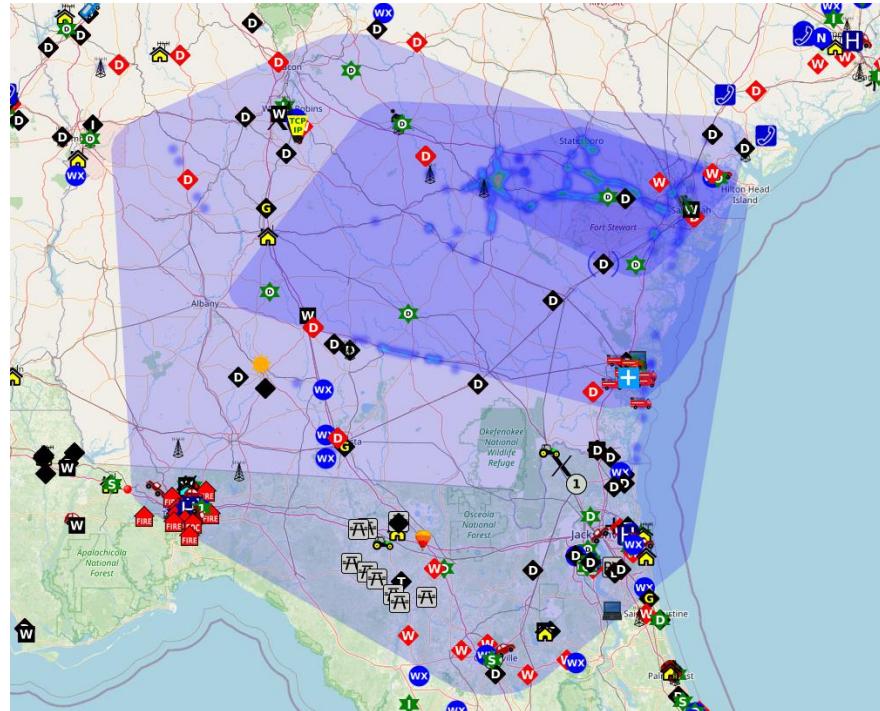
The Time to Learn is Now

- For SMS
 - Opt in your phone number and all others who you wish to contact
 - <https://aprs.wiki/>
- For APRSLink
 - Must have a Winlink account
 - <https://winlink.org/>



The Time to Learn is Now

- Software:
 - YAAC (cross platform)
 - PinPoint APRS (Windows)
 - APRSdroid (Android)
 - PulseModem (IOS)
 - Direwolf (Software TNC)
 - Soundmodem (Software TNC)
- Hardware
 - APRS enabled HT
 - Digirig Mobile or Digirig Lite
 - Mobilinkd TNC
 - Signalink USB



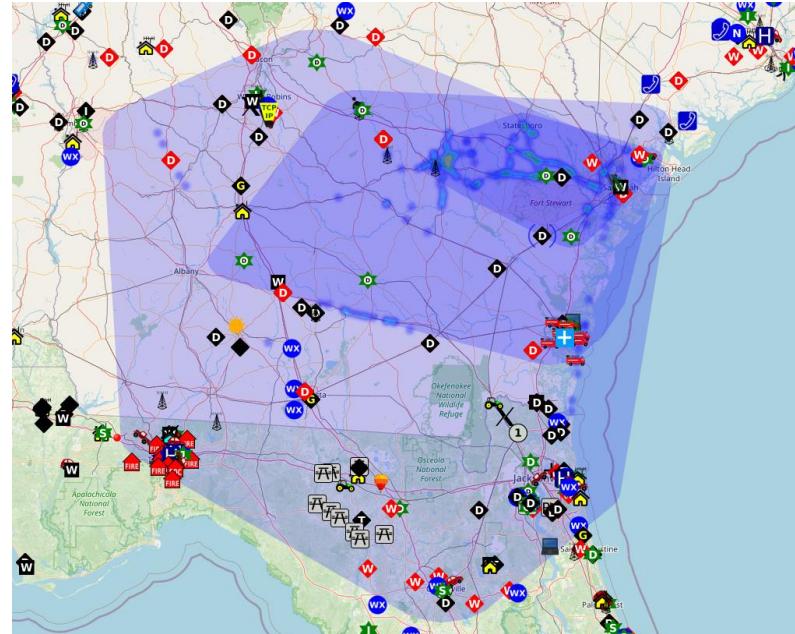
The Time to Learn is Now

- APRS on the Web
 - <https://github.com/wb2osz/aprsspec/tree/main>
 - aprs-map.info
 - aprs.fi
 - APRS-IS Passcode: n5dux.com/ham/aprs-passcode/
- Test
 - Find nearby digipeaters
 - Determine IGate locations
 - Test to determine if you can reach them via RF only
 - Have someone outside of your area help you test

TO: KB4DSF

VIA: KK4JMW,KA4CID-1,KK4JMW,RFONLY,NOGATE

Testing RFONLY and NOGATE



Next Month On the Air Live
October 28 @8pm Eastern

Family EMMCOMM: VarAC

Thank You!



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The National Association for
Amateur Radio®

