

Winlink on Android – Using WOAD VGC VR-N76 and Mobilinkd TNC4

VGC with built-in KISS TNC | Mobilinkd TNC4 with a compatible FM radio

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This guide documents two working approaches to Winlink Packet on Android: a VGC VR-N76 with a built-in KISS TNC, and a compatible FM radio connected to an external Mobilinkd TNC4. The Yaesu FT5D is the example for the second approach. This guide accompanies the RadioLab video and requires no screenshots.

1. Equipment and operating principle

Setup	What you need
A – VGC	Android phone with WOAD; VGC VR-N76 (or comparable VR-N75 where supported); Bluetooth; antenna.
B – TNC4	Android phone with WOAD; Mobilinkd TNC4; compatible analog FM radio; model-specific audio/PTT cable. Example: Yaesu FT5D.
Example RMS	SM6YEC-10, 144.925 MHz, 1200-baud Packet, JO67AJ. Choose an accessible RMS for your location.

Signal path: WOAD on Android → Bluetooth → KISS TNC → FM radio → Packet RMS → typically internet to the Winlink CMS. The phone does not need its own internet connection for the radio hop; a conventional RMS normally needs internet to relay email.

2. Preparation for both setups

- Install WOAD and enter your own callsign and Winlink password in account settings.
- Pair the relevant Bluetooth device with the phone. Close other apps that may hold the connection open.
- Choose a reachable 1200-baud Packet RMS. Use the correct frequency, analog FM, simplex and normally no CTCSS/DCS.
- Your own callsign (e.g. SM6YEC) is distinct from the destination RMS callsign (e.g. SM6YEC-10).

3. Option A – VGC VR-N76 with built-in KISS TNC

3.1 Prepare the VGC radio in the HT app

- Use analog FM, simplex and no CTCSS/DCS for your selected RMS frequency.
- Set KISS TNC = ON and Digital Mode = OFF. This was essential for the successful setup.
- You do not need to edit any particular APRS memory channel or select a separate data band. Band/VFO is selected in WOAD; memory-channel assignments vary between operators.

- Fully close the HT app before starting a WOAD session. Leaving HT open caused the radio to alternate between VFO and a memory channel; closing HT resolved it.

3.1B Configure the VGC directly on the radio

You do not need the HT app to select a channel or operating frequency. Follow these steps on the VR-N76 itself. Use the RMS frequency applicable to your location; the example here is SM6YEC-10 on 144.925 MHz.

Select the band and VFO on the radio

1. In dual-watch display, press and hold the Back key to switch between the main and sub band. The band displayed with larger digits is the active main band.
2. Select the band you will use for Winlink, for example band A as shown in this guide.
3. In standby, press and hold the * key to switch from memory-channel mode to VFO mode. Check that the radio displays a frequency instead of just a memory label.
4. Enter 144.925 MHz on the keypad. Confirm analog FM, simplex and no CTCSS/DCS tones.

Configure KISS and Bluetooth

5. Check KISS TNC = ON and Digital Mode = OFF. These settings can also be checked in the HT app before closing it.
6. If not already paired, pair the radio with the Android phone using the radio Pairing menu and Android Bluetooth settings.
7. Fully close HT if you used it. Then open WOAD, select VGC / VR-N76, A band / VFO and the correct RMS frequency.

Important: memory channels and APRS

There is no universal APRS or Winlink memory-channel number. Each operator may have different channel names and memory positions. You therefore do not need to edit a specific APRS memory channel. WOAD's A band / VFO selection should match the band chosen on the radio.

When the session starts, confirm that the radio stays on the correct frequency. If it alternates between a VFO and a memory channel, first check that the HT app is fully closed.

Button functions above follow the VGC VR-N76 User Manual, sections 5.4–5.7. Menu labels may differ by firmware version.

3.2 Create a VGC session in WOAD

WOAD field	Setting / example
Protocol / Type	Packet / Outgoing
Destination address	SM6YEC-10
Via	No digipeater for direct RMS connection
TNC type / Connection	KISS / Bluetooth
Device manufacturer / model	VGC / VR-N76
Device configuration	A band / VFO
Frequency / Offset	144.925 MHz / Off (Simplex)
KISS Port number	0
Auto-connect / Message transfer	None / Send and receive

With the correct VGC model selected, WOAD can set the band/VFO and frequency for the session. Confirm that the radio remains on the intended frequency after connection starts.

3.3 Test the VGC connection

Compose a short message, place it in the Outbox, and start the Packet session. Check for TX, received packets and a completed transfer. A “Running” status alone does not confirm success.

4. Option B – Yaesu FT5D with Mobilinkd TNC4

4.1 Prepare the FT5D

- Use the A/B key to select band B (the band used in the recorded demonstration). Set 144.925 MHz, analog FM, simplex, and CTCSS/DCS OFF. This is the chosen operating band, not a separate DATA BAND setting for the external TNC.
- Disable the internal APRS modem: hold F MENU → APRS → 4 APRS MODEM → OFF.
- Yaesu’s Advanced Manual recommends turning receive Battery Save OFF for packet operation: hold F MENU → CONFIG → 17 SAVE RX → OFF.
- Connect TNC4 to the FT5D MIC/SP jack using the correct cable, with equipment switched off while making the connection.
- The FT5D’s internal Bluetooth is not used. The Bluetooth link runs between the TNC4 and Android phone.
- Start with the FT5D receive volume at about 50% and SQL 0 during troubleshooting. Adjust to suit TNC4 input level.

4.2 Pair the TNC4 and configure the modem

Mobilinkd Config	Setting / explanation
Bluetooth	Pair “TNC4 Mobilinkd” in Android and connect from Mobilinkd Config.
Modem Settings	1200 baud AFSK (VHF Packet).
PTT Style	Multiplexed for this FT5D and cable. Other cables may require other settings.
Audio Input Settings	Check the radio receive-audio level; adjust FT5D volume for a clean input without clipping.
Audio Output Settings	Output Volume 65 (working value in this specific setup); Output Twist 50.

4.3 Output Volume, Output Twist and the 2200 Hz test

1200 baud AFSK identifies the modem mode. 1200 Hz and 2200 Hz are the two audio tones used by that same mode. Accordingly, set 1200 baud under Modem Settings but select 2200 Hz when testing transmit audio.

Output Volume sets the audio level sent from TNC4 to the transmitter microphone input. Output Twist adjusts the relative levels of the two tones; 50 is the usual starting value. The tested Output Volume of 65 is not a universal setting or a measurement of proper deviation.

- Use low power on a clear test frequency, preferably into a dummy load. Never transmit test tones on the APRS channel. Use a second receiver when it can safely monitor the signal.
- In Audio Output Settings, select 2200 Hz, confirm Output Twist 50, then press Transmit.
- Adjust Output Volume while Transmit is active. Increase it cautiously until the monitored tone stops becoming louder, then reduce it by approximately 10% from that point.
- Stop Transmit. There is no need to switch the test tone to “Both”; WOAD uses the two AFSK tones automatically during normal traffic.
- Check the resulting setting with a real RMS connection and message transfer. Consistent links show that it works; precise calibration requires RF deviation measurement. Demonstrated setup: Output Volume 65 and Output Twist 50 gave reliable transfers to SM6YEC-10. Recheck audio and PTT when changing radios or cables.

4.4 Create the TNC4 session in WOAD

WOAD field	Setting / example
Protocol / Type	Packet / Outgoing
Destination address	SM6YEC-10
Via	No digipeater for a direct connection
TNC type / Connection type	KISS / Bluetooth
Device	TNC4 Mobilinkd
Device manufacturer	Generic
KISS Port number	0
Auto-connect	None
Message transfer	Send and receive

Stop test transmissions and close or disconnect Mobilinkd Config before letting WOAD connect to the TNC4.

5. WOAD Packet parameters

Parameter	Documented working value
Tx delay	300 ms
Maximum packet length	128
Maximum outstanding frames	4
Frack time	4s
Persistence	64
Slot time	300 ms
Maximum retries	10
Tx tail	20 ms

These settings were recorded from working WOAD sessions. Timing may need adjustment depending on the radio, channel conditions and RMS.

6. Send and receive email

- Compose a short email with recipient and subject and place it in the Outbox.
- Open the correct Packet session. Confirm the RMS callsign and frequency, then start the session.
- Check radio TX/RX, the session log, completion status and that the message leaves the Outbox. Check the Inbox as well.
- To demonstrate an offline phone, enable Airplane mode, then re-enable Bluetooth while leaving Wi-Fi and mobile data off. Send a new message over radio. The RMS may still use internet to reach the CMS.

7. Troubleshooting

Symptom	Check / action
VGC alternates between VFO and	Fully close the HT app; review WOAD VGC configuration and A band / VFO.

memory

WOAD cannot find Bluetooth device	Check pairing; close HT, Mobilinkd Config and other apps using the device.
VGC transmits but does not connect	Check KISS TNC ON, Digital Mode OFF, correct RMS, frequency and simplex.
TNC4 appears active but FT5D does	Check the FT5D cable and PTT Style = Multiplexed for this cable.

not transmit

FT5D hears RMS but packet is not	Check SQL, radio receive volume, TNC4 Audio Input; consider RX Save OFF.

decoded

Radio transmits but RMS does not reply Check coverage, RMS operation, frequency, tones, audio levels and session log.

WOAD displays Running / Unconnected	Read actual session log and delivery results; status alone is not sufficient.

8. Sources and revision history

Sources: SM6YEC documented working setup and recording script; Mobilinkd TNC4 User Guide; Yaesu FT5D Advanced Manual; WOAD documentation.

