

# WA8LMF TNC Test CD Results

## a.k.a. Battle of the TNCs

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Compiled by WB2OSZ, September 2015

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It's not that hard to build something that receives perfect APRS / AX.25 Packet Radio signals. Building something that works well, with all of the less-than-ideal signals out there, takes some effort.

How can we compare how well different TNCs perform under real world conditions?

The de facto standard of measurement is the number of packets decoded from WA8LMF's TNC Test CD obtained from <http://wa8lmf.net/TNCtest/index.htm>.

Many have published the number of packets they have been able to decode from this test. Here they are, all gathered in one place, for your reading pleasure.

**WARNING:** Do not take these numbers too seriously.

There are a few things to keep in mind:

1. These tests were performed by different people, different times, different places, under different conditions.
2. **Most don't mention which track was used. Track 1 is easier.** Track 2 is more difficult but generally closer to typical real world conditions. To find out why, see <https://github.com/wb2osz/direwolf/raw/master/doc/A-Better-APRS-Packet-Demodulator-Part-1-1200-baud.pdf>
3. Some information might be outdated. Newer versions of the same thing might be better.
4. Small differences are not significant. It all depends on the mix of packets in the test. If you took another similar collection another place, another time, the rankings might be a little different. Even under scientifically controlled, repeatable conditions, another 10 packets is only a 1% increase.

Reference	TNC	Packets decoded
KI4MCW <a href="https://sites.google.com/site/ki4mcw/Home/arduino-tnc">https://sites.google.com/site/ki4mcw/Home/arduino-tnc</a>	Arduino Duemilanove (328p)	871
	TNC-X	818
	Argent Data OpenTracker 1+	729
	AGWPE 2005.127	500
	Linux PC soundmodem	412
	Linux PC multimon	130
N4MSJ <a href="http://groups.yahoo.com/group/tnc-x/message/542">http://groups.yahoo.com/group/tnc-x/message/542</a>	KPC-3	986
	MFJ-1274	883
	AEA PK90	728
	Early Beta TT4	920
4X6IZ <a href="http://www.tau.ac.il/~stoledo/Bib/Pubs/QEX-JulAug-2012.pdf">http://www.tau.ac.il/~stoledo/Bib/Pubs/QEX-JulAug-2012.pdf</a>	AX25 Java Soundcard Modem	964
N1VG <a href="http://www.tapr.org/pipermail/aprssig/2007-May/019449.html">http://www.tapr.org/pipermail/aprssig/2007-May/019449.html</a>	Tracker 2	910
	KPC-3 (non-plus)	967
	uTNT	970
	Tracker 2 with TCM3105	991
	AEA PK-90	728
	MFJ-1274	883
Microsat <a href="http://microsat.com.pl/product_info.php?products_id=100">http://microsat.com.pl/product_info.php?products_id=100</a> <a href="http://www.rpc-electronics.com/microsat-wx3in1p2.php">http://www.rpc-electronics.com/microsat-wx3in1p2.php</a>	WX3in1 Plus 2.0, track 1/2	960 / 981
UZ7HO <a href="http://www.pe0sat.vgnet.nl/tag/uz7ho/">http://www.pe0sat.vgnet.nl/tag/uz7ho/</a>	UZ7HO Sound-Modem 0.83b	1021
OZ7HVO & OZ1EKD <a href="http://www.kissoz.dk/">http://www.kissoz.dk/</a>	ARM32M4F TNC platform	994 - 998
WB2OSZ <a href="https://github.com/wb2osz/direwolf/blob/master/doc/A-Better-APRS-Packet-Demodulator-Part-1-1200-baud.pdf">https://github.com/wb2osz/direwolf/blob/master/doc/A-Better-APRS-Packet-Demodulator-Part-1-1200-baud.pdf</a>	Track 1 / Track 2 - Dire Wolf version 1.2 - Dire Wolf version 1.5	1011 / 1004 1012 / 1008
CT1EIZ <a href="https://www.facebook.com/aprspro/posts/601800476638754">https://www.facebook.com/aprspro/posts/601800476638754</a>	Track 1 / Track 2 - APRSpro v2.1 (Note 1) - PocketPacket v2.2 - KPC3 (highly suspicious)	1012 / 958 964 / 1 1043 / 942
<a href="http://vapn.org/design/scs-tracker-dsp-tnc-1200-baud.html">http://vapn.org/design/scs-tracker-dsp-tnc-1200-baud.html</a>	Track 1 / Track 2 - Dire Wolf 1.2 - SCS Tracker DSP TNC 1.5s	1010 / 999 988 / 943
DrYerzinia <a href="https://hackaday.io/project/2865/logs">https://hackaday.io/project/2865/logs</a>	BluetoothLE APRS TNC	958 / 641
<a href="http://unsigned.io/the-new-micromodem/">http://unsigned.io/the-new-micromodem/</a>	MicroModem	658

Note 1: APRSpro uses demodulator from Dire Wolf.

## Conclusions:

If we separate the numbers into 3 groups a very interesting pattern emerges.

- Traditional TNCs with hardware modems.

700's to high 900's

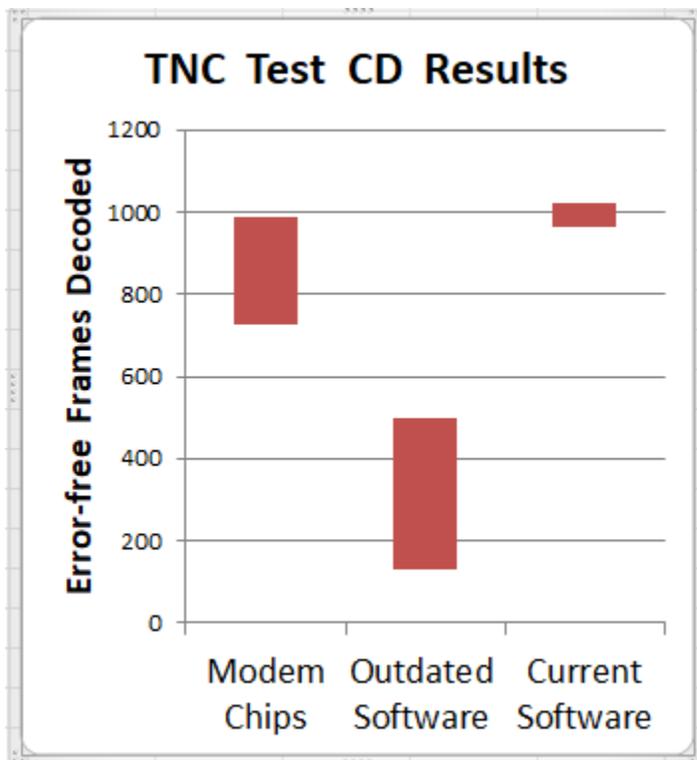
- First generation soundcard modems.

500 and below.

These gave the software approach a bad reputation. You will still find **outdated** articles that insist you **NEED** to buy a hardware TNC for best results.

- Second generation soundcard modems.

Upper part of 900 and over 1000.



A couple decades ago, you needed specialized hardware for the best results.

Those days are gone.

Some of the "software" decoders are now leading the pack, leaving the modem chips behind.