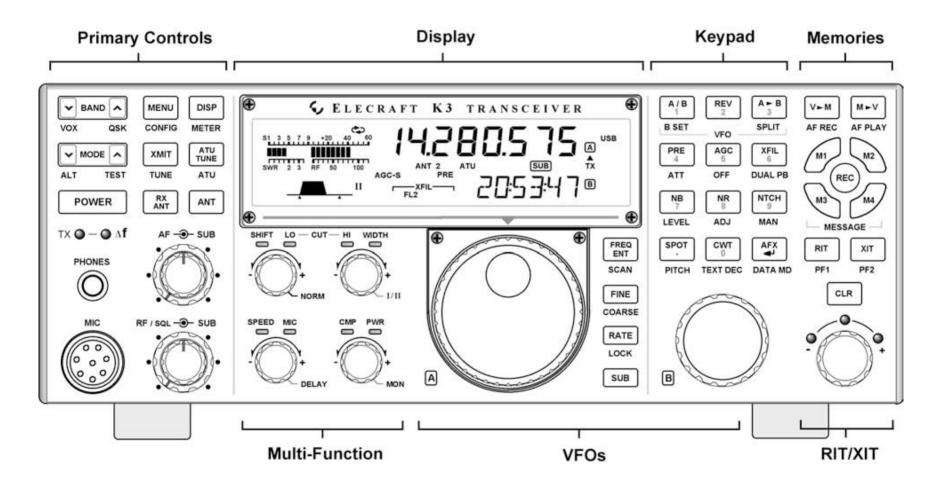# Real-World Experience with the Elecraft K3

Rick Tavan N6XI and Ed Muns W0YK

Northern California Contest Club

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Outline

- Quick Look
- Recent Changes
- Futures
- Integration
- Data Modes
- Operating
- Resources
- Summary
- Q&A

Panel Layout

Receiver Performance

- Sensitivity 136+ dBm, 500 Hz bandwidth
- Image & IF rejection > 70 dB
- Blocking Dynamic Range 140 dB at 5, 10 & 20KHz spacings with 400 Hz filter
- IMD3 Dynamic Range:

Filter	20 KHz	10 KHz	5 KHz	2 KHz
250 Hz	100+ dB	100+ dB	100+ dB	95 dB
400 Hz	100+ dB	100+ dB	100+ dB	95 dB
1000 Hz	100+ dB	100+ dB	100 dB	94 dB
2800 Hz	100+ dB	100 dB	93 dB	na

Size Matters

	K2/100	K3/100	756 Pro III	7800	FT2000	TS2000	
Height	3	4	4	6	5	4	inches
Width	8	10	13	17	16	11	inches
Depth	8	10	11	17	14	13	inches
Volume	185	400	656	1679	1178	498	cu. inches
Foot-print	64	100	150	286	222	133	sq. inches
Panel	23	40	59	98	85	40	sq. inches
Weight	5	8	21	55	33	17	pounds

Recent Changes

- New front and rear panels
  - AF-SUB, RF/SQL-SUB repurposed, swapped
  - PF's moved & restructured
  - Several labels changed to accommodate DUAL PB, PITCH, TEXT DEC, DATA MD, etc.
  - Switched 12V accessory socket
- HW Noise Blanker now shipping - standard
  - Adjacent settings in one menu item – HW, DSP NBs
  - Dedicated panel button for ON/OFF
- DSP Noise Reduction control simplified
- Auto-notch implemented
- Production shipping ramp-up began Oct. 9

Options Shipping Now

- 100W PA
- ATU
- General coverage bandpass filter board
- Transverter / Rx Antenna interface
- Many fixed bandwidth roofing filters
- High precision TCXO
- OEM mic, headset, USB adapter
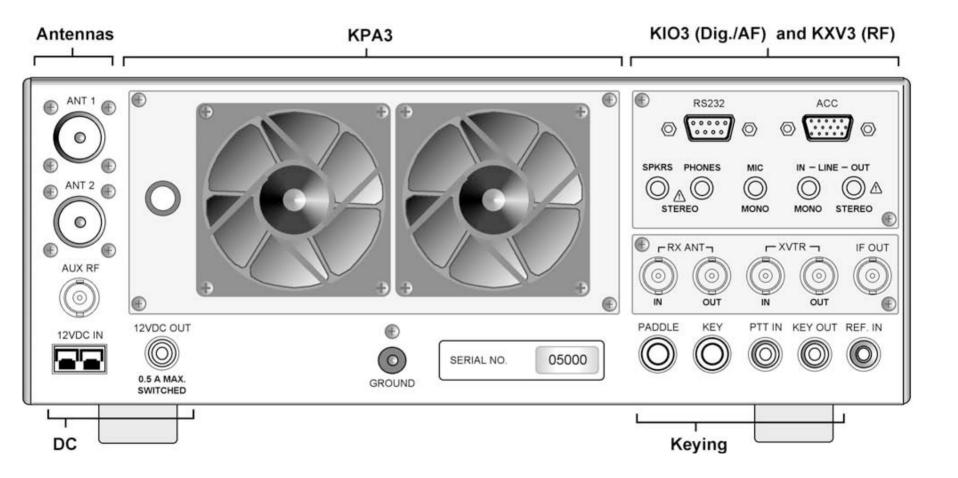
Anticipated Futures

- Second receiver
- More roofing filters including variable bandwidth
- Digital audio recorder (voice, AF out)
- Many firmware enhancements such as
  - Configuration manager
  - More digital modes
  - CW to generate PSK

Crystal Ball

[Guesses not based on company input!]

- Panadaptor
- Enhanced digital mode ASCII output
- Purpose-built terminal window in provided K3 Utility Program
- Full remote control software packages (third party?)
- Dozens of "little features" such as amp tuning with dit string, band plan mgt, fancier ATU algorithms, direct FSK on serial port, etc.

Integration

Integration

- Basic support by third-party logging programs
  - K2 or a generic Kenwood.
  - Rich new features to exploit.
- Rear panel mic/phones → No front panel cables needed!
- Transformer-coupled LINE IN/OUT with independent level control
- Real Serial port with direct KEY and PTT
- Accessory connector: FSK, Band Data, Control signals – very handy

Integration, cont.

- Independent SSB and CW delay, monitor volume … accessible from front panel
- Separate QSK ON/OFF control
- Two SO-239 ANT jacks (w/ ATU)
  - plus Aux BNC (w/ sub-receiver)
- Rx ANT IN and OUT jacks
  - Receive band-pass filters
  - Receiver A/B comparisons
- Separate XVTR I/O
  - Displays target XVTR frequencies
- Best-in-class data modes

Data Modes

Receive Features

- Isolated LINE OUT with independent level control
- AFSK display frequency: Mark or carrier
- Shift and Mark tone easily selected
- Dual-tone filter (DTF) for FSK & AFSK
- Decoder for FSK, PSK and CW

Transmit Features

- FSK & PSK direct keying or LINE IN
- Send CW to transmit FSK (PSK soon)

⌁ ELECRAFT K3 TRANSCEIVER

14.083.07 Ⓐ

S1 3 5 7 9 20 40 60

SWR 2 3 RF 50 100

AGC- F

ANT1 ATU

PRE

SPLT TX DATA

▼

XFIL

FL5

14.086.81 Ⓑ

II

SHIFT LO — CUT — HI WIDTH

FREQ
ENT

SCAN

NORM I/II

FINE

MIC
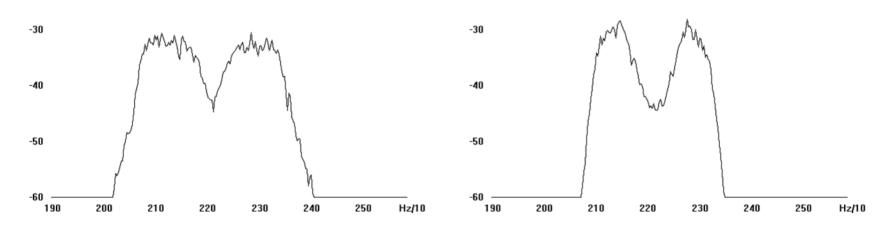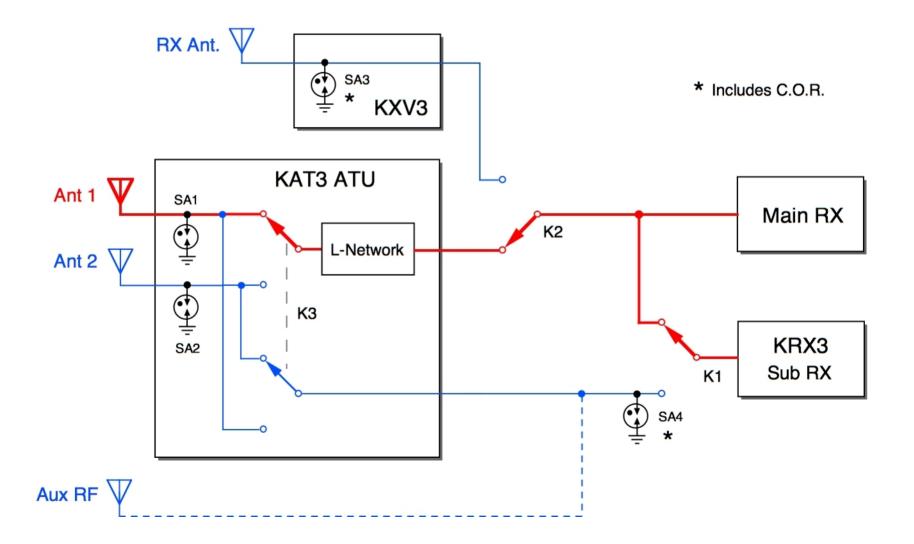
RTTY Dual-Tone Filter

IC-756ProIII

K3

Main/Sub RX Antenna Routing with KAT3 and KXV3

RX Ant.

SA3
*
KXV3

* Includes C.O.R.

KAT3 ATU

Ant 1

SA1

Ant 2

SA2

K3

L-Network

K2

Main RX

K1

KRX3
Sub RX

SA4
*

Aux RF

Operating – Contest Exposure

- Several contests such as
  - RAC Canada Day
  - IARU Radiosport
  - NAQP RTTY
  - NA Sprint CW and RTTY
  - CQP
  - SS CW
  - NCCC Sprints

Operating – First Impressions

- Nice tuning feel and adjustable speeds
- Menus are logical, simple and <u>unnecessary</u>.
- Very sensitive, quiet receiver
  - low hiss, noise
  - very few digital artifacts
  - <u>sounds</u> like an analog receiver (except with NR)
- Good acoustic separation of signals
- Easy to use selectivity controls
  - Usable at very narrow bandwidths
- Excellent auto and manual notch filters
- Excellent crowded band performance

Crowded Bands

- SSCW 2007 was a great exercise – often single-band due to lousy conditions; very crowded.
- Typical clicks and crud were GONE using the 400 Hz roofer.
- Felt like a "private room" much of the time
  - "Well, almost…"
  - easily tolerated closer spacing than others could.
- Reports are that keying is ideal, no noticeable clicks or phase noise.
- Dual CW Passband feature – potentially powerful but not used much

More First Impressions

- Seems to generate less crud in SO2R
- Seems less susceptible to inbound crud in SO2R (Two K3s really shine in SO2R.)
- Great VOX – smooth, fast, doesn't false
- Great sounding audio; includes RX AF equalizer
- Adaptable to any mic with TX equalizer and switchable bias; getting good audio reports
- Almost too light but not too small
  - Plenty of panel space for important functions

Customization Example

- Two-tap band switching sets up VFO A/B, Mode, XFil, DSP controls, etc. on favorite mode for each band: M→V, [mnemonic n]

    (16**0**, **8**0, **4**0, **3**0, **2**0, 1**7**, 1**5**, **9**->12, **1**0, **6**)

- Two-tap mode switching sets up same for four modes within current band: M→V, [Mn]

    (M1=CW, M2=SSB, M3=RTTY, M4=PSK)

- M1 Tap: Casual CQ Message
- M2 Tap: Casual QSO Exchange Message
- M3 Tap: B→A
- M4 Tap: SPKR ON/OFF
- PF1 Hold: AFX Mode
- PF2 Hold: LCD Brightness

Configuration & Price

Configuration	Kit Price	Assembled Price
Minimum	$1,399	$1,599
CW Contester	$1,869	$2,109
Phone Contester	$1,869	$2,109
RTTY Contester	$1,869	$2,109
2-mode Contester	$1,989	$2,229
3-mode Contester	$2,109	$2,349
Deluxe Contester	$3,346	$3,676
Fully Loaded	$4,063	$4,393

- 'Minimum' & 'Fully Loaded' for reference only.
- 8-pole filters recommended for contesting.
- Additional options can be added: filters ($120), DVR ($99), IF/RX I/O ($79), ATU ($259), 2nd RX ($539), Gen'l Cov. ($99), TCXO ($99).
- These configurations are examples to illustrate price only. Choices are personal and debatable!

Resources

- Elecraft home page: http://www.elecraft.com/
- Elecraft-sponsored Reflector: elecraft@mailman.qth.net
- Interesting Wiki: http://www.zerobeat.net/mediawiki/index.php/Main_Page
- Unofficial reflectors: groups.yahoo.com
  - elecraft
  - Elecraft_K3
- NCJ Sep/Oct: First Impressions article – N6XI http://www.ncjweb.com/sepoct07feat.pdf
- NCJ Nov/Dec: K3 RTTY article – W0YK

Summary

- Probably the next step in the evolution of seminal contest radios that included:
  - Collins 75A-4/KWS-1
  - Collins S-Line
  - Drake C-Line
  - Kenwood TS-930
  - Kenwood TS-850
  - Yaesu FT-1000D, MP
  - ICOM IC-756 Pro Series
  - Ten-Tec Orion I & II
  - ICOM IC-7800
  - **Elecraft K3**

Questions?