



The Return of *Hands-On* Ham Radio

Wayne Burdick – N6KR

Eric Swartz - WA6HHQ

Who Are We?

- **Both hams since 1971** (WN6HQH, WN6HHQ)
- **Wayne Burdick:**
 - QRP rig design (NC40, sierra, SST...)
 - B.S. Cognitive Science, Univ. of CA, San Diego
 - Silicon valley guy (HW/FW/UI – Interval Corp.)
- **Eric Swartz**
 - Instrumentation, HW/SW design & management
 - B.S. Engineering & Applied Science, Yale Univ.
 - Silicon valley guy (startup addict: Mountain, Verisys..)



- **Elecraft Started 1998**
- **Goal: Reintroduce high performance kits to the Amateur Radio market.** (Following in the footsteps of Heathkit..)
- **Headquarters: Aptos, CA**
- **Virtual Staff: Silicon Valley, Phoenix AZ, OR & WA**
- **First K2s Ship: January 1999**
- **Full Production: June 1999**
- **Almost 5,000 K2s, 2100 K1s, 1200 KX1s Shipped**
- **Thousands of other kits and accessories shipped**

HEATHKIT

QUALITY ELECTRONICS YOU CAN BUILD YOURSELF • WINTER 1979-80



Digital Synthesizer Oscilloscope
— see page 11



8080-based Computer
— see page 3



Compressor Tester
— see page 20



Shavers Cleaner
— see page 11



Digital Multimeter
— see page 20



Lap Printer
— see page 6



HeathKit W-5M



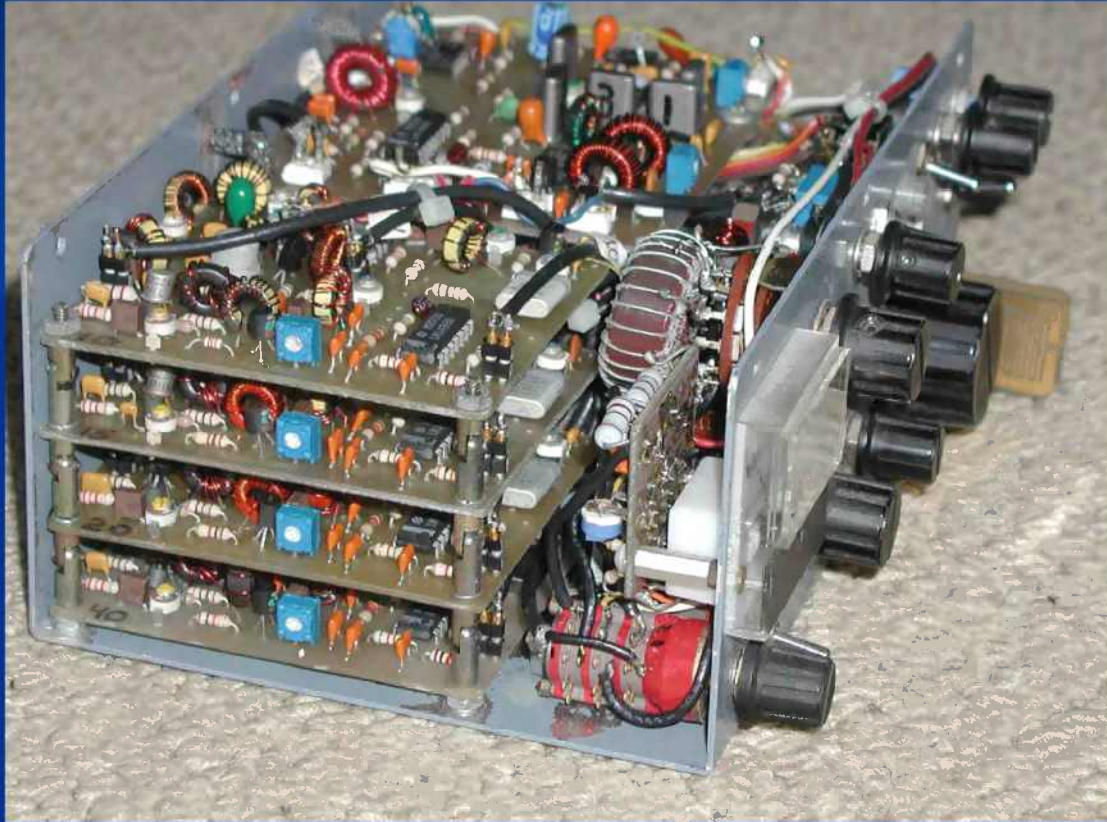
Field Day 1999





Safari-4,
1990

4 bands, 1 W
Ant. tuner
0.8 Ah batt.
3 lbs.
105 in.³



Safari-4
interior

4 transverters

12 (!) RG174
cables

Early Designs *(Before Elecraft)*



NorCal 40



Sierra



SST



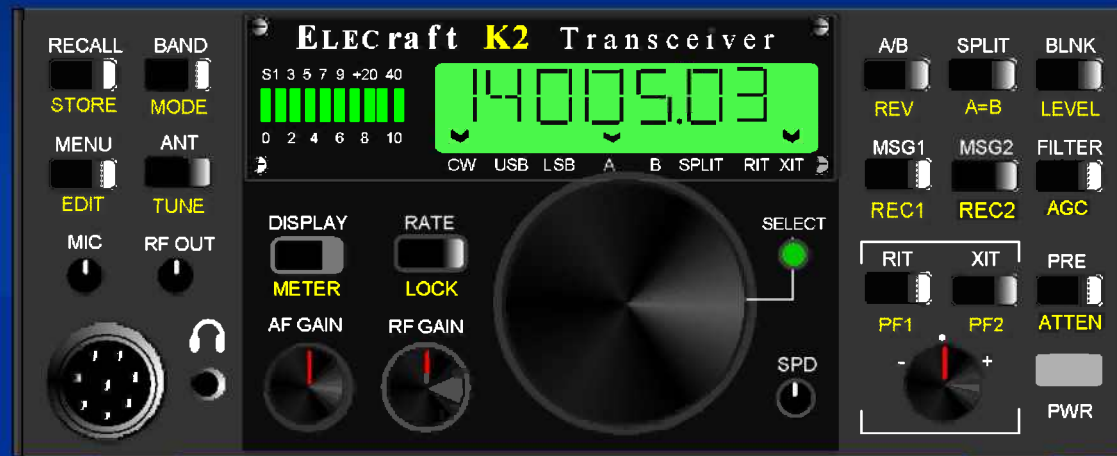
Elecraft K2

High Performance
Portability
10/100W

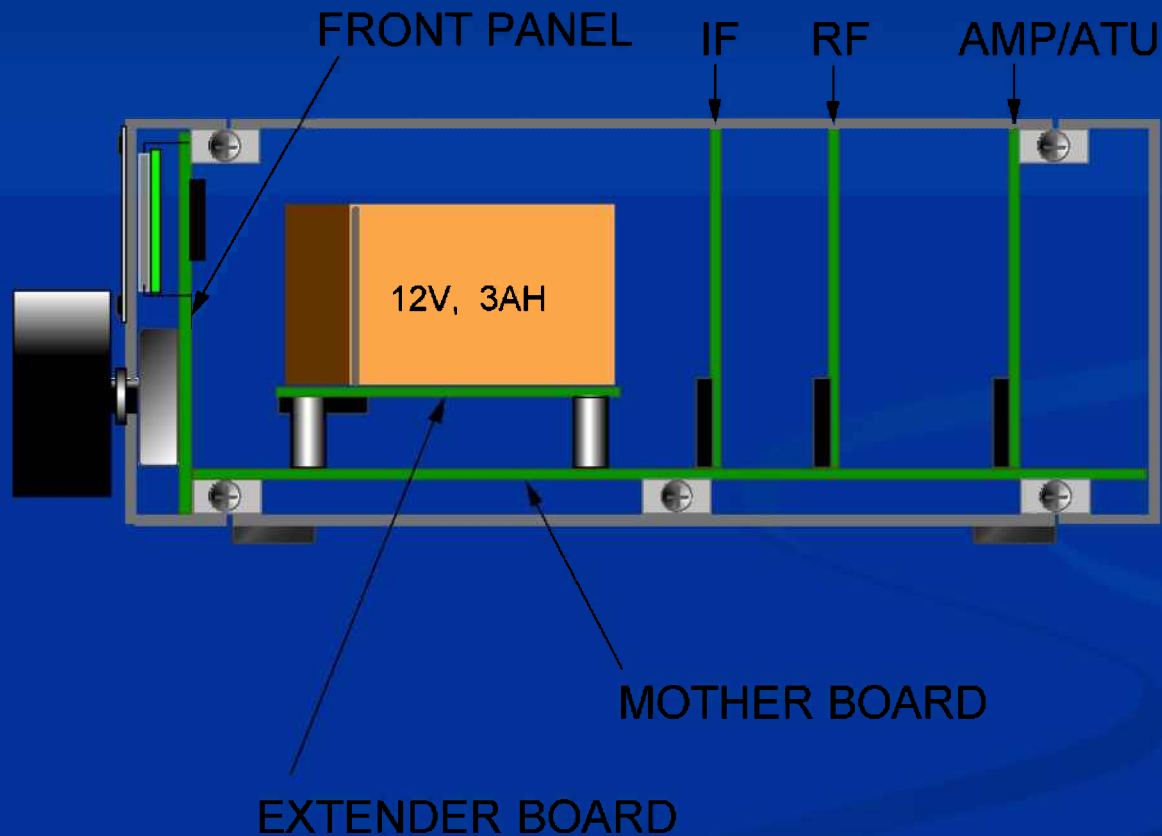
*Stealth Amateur
Radio, cover*



K2 Concept Drawings - 1997

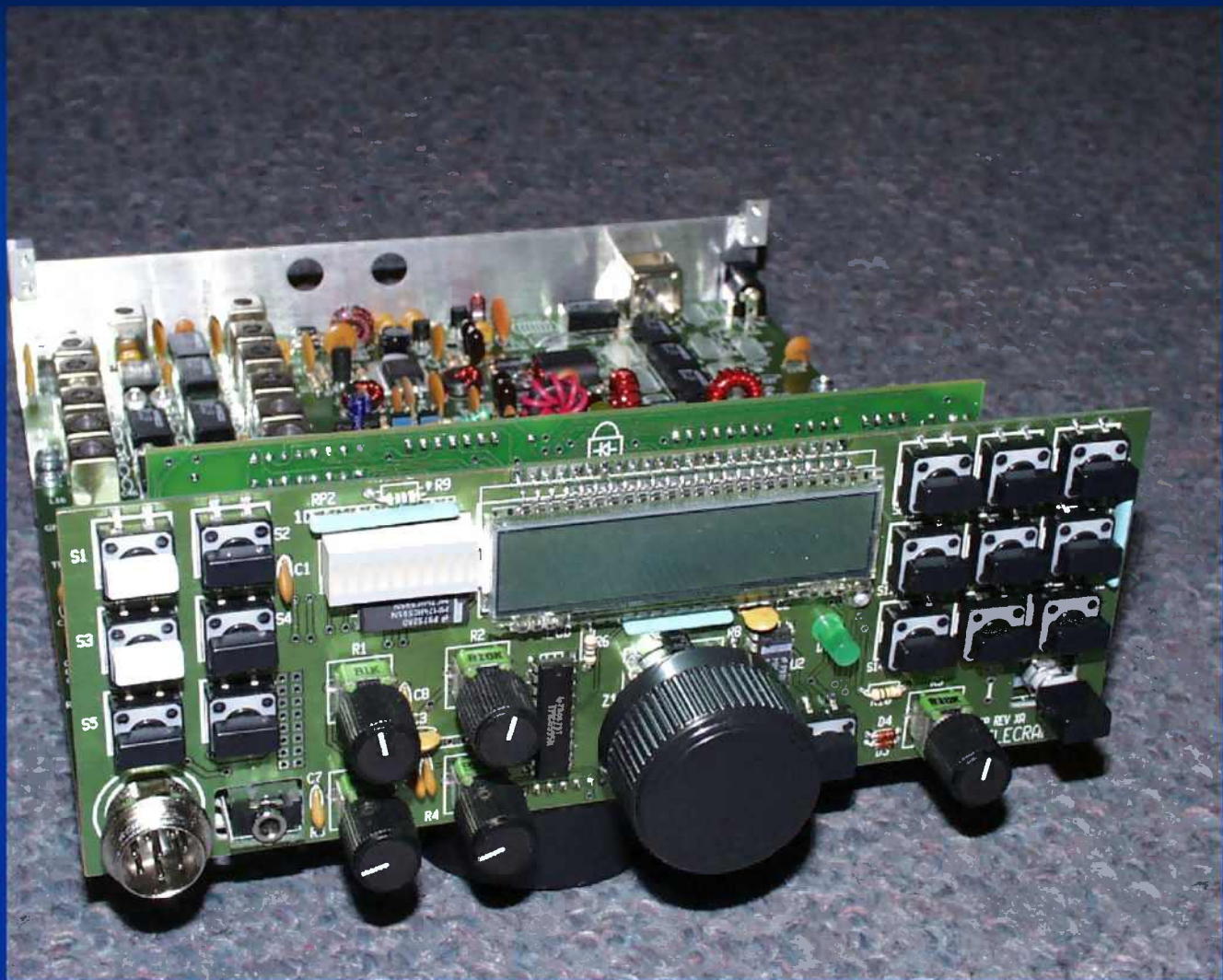


K2 Side View (1997 Concept)



K2 Prototype Demo - 1998







SST

NorCal 40

Sierra

K2



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The K2/100 CW/SSB HF Transceiver



CCQ
Ham Radio

CCQ

1998 9

Ham
Radio

No.627



読者が作ったハムの周辺機器

特集

読者が作った ハムの周辺機器

特別企画

電話とつなごう アマチュア無線

解体選書 日本マランツ

GPSデータ送受機能搭載機

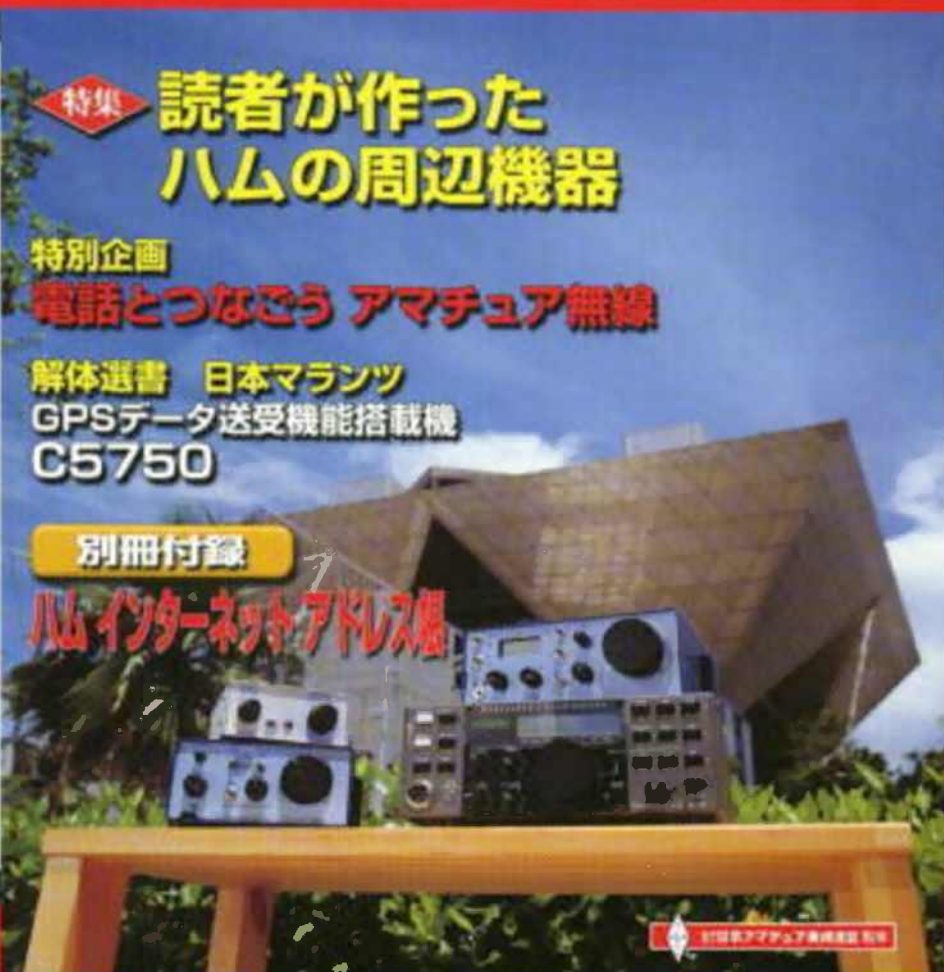
C5750

別冊付録

ハムインターネットアドレス帳

1998

9



日本アマチュア無線連盟 発行



Fundamental RX Goals

- Sensitivity (MDS, -135 dBm or Better)
- Selectivity (B/W, Shape Factor, Ringing)
- IMD Dynamic Range (Intermod)
- Blocking Dynamic Range (Desense)
- Low Audio In Band IMD (Distortion)
- Proper application of DSP (Narrow Cascaded Filters, Noise Reduction, Auto Notch)



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K2 Design Areas

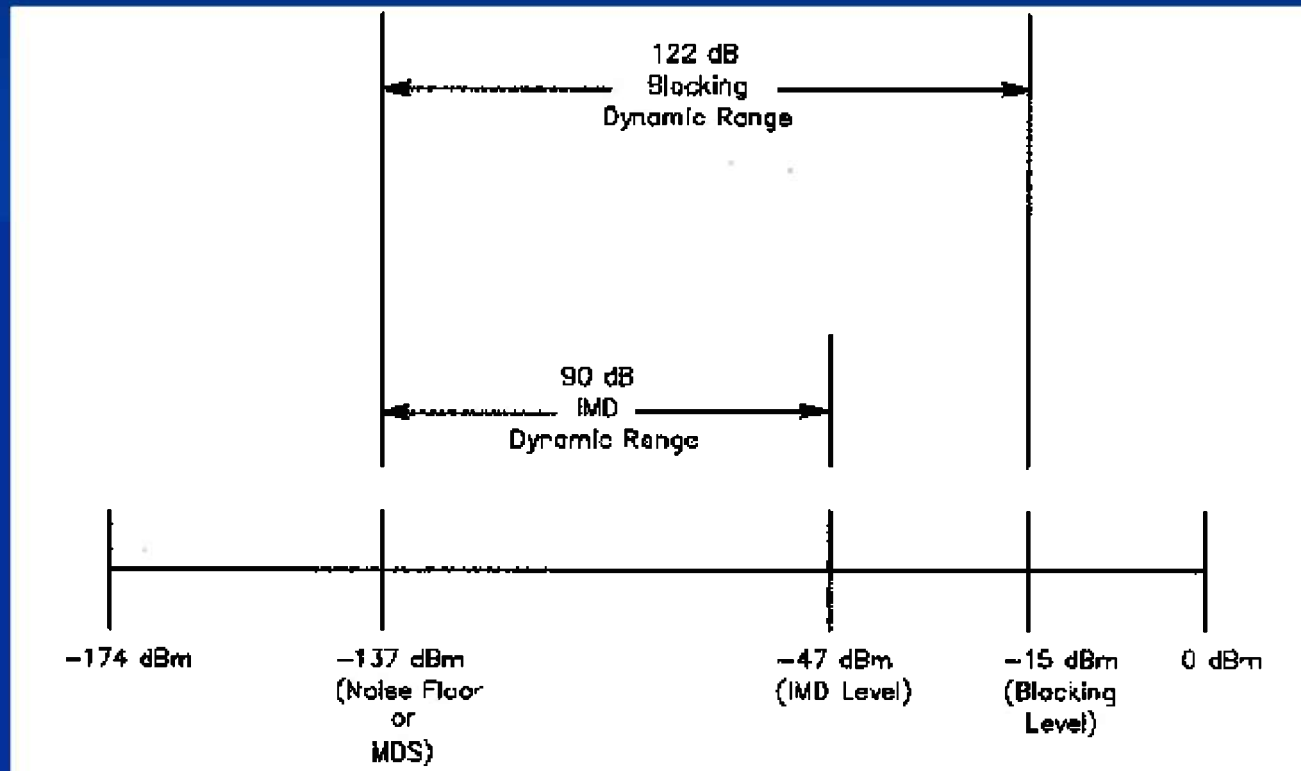
■ Analog

- Small signal Rx (Low Noise & Distortion)
- Wide Dynamic Range
- Crystal Filter Design
- Phase Lock Loop – Synthesizer

■ Digital

- Microprocessor Control system
- Multi Processor Aux. Bus
- KDSP2 DSP Processor (located after crystal filters)
- Built In Test (Freq. Counter, Volt/Current Metering)

Dynamic Range Versus MDS



IMD Dynamic Range and Blocking Dynamic Range 5 kHz Signal Spacing (ARRL Lab Tests)

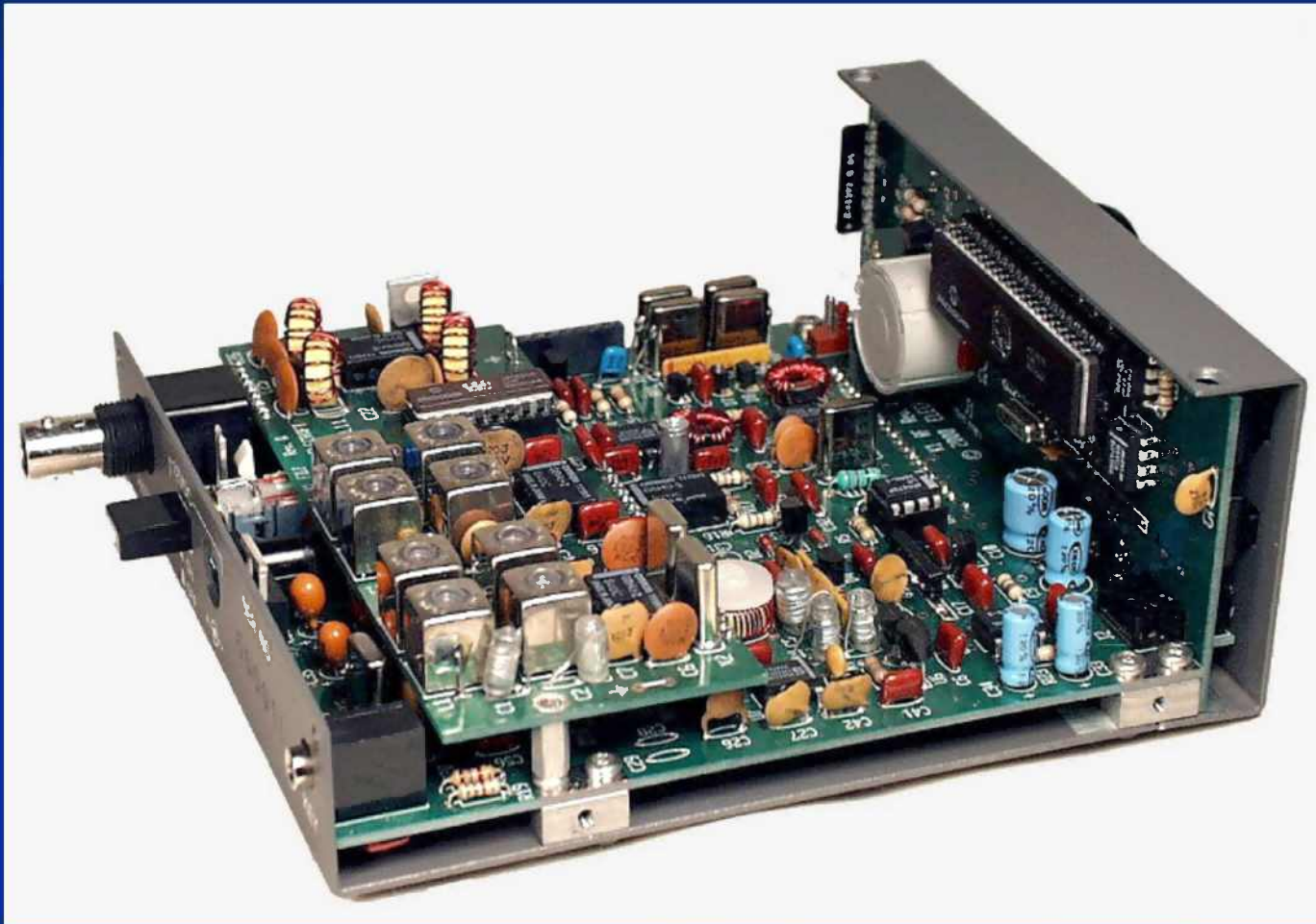
Rig	IMDDR3	BDR
Elecraft K2	91	135
Ten-Tec Orion	92	130
ICOM IC-7800	89	115
Ten-Tec Omni 6+	86	119
ICOM IC-756 Pro	80	104
ICOM IC-775DSP	77	104
ICOM IC-706 MkII G	74	86
Kenwood TS-570D	72	87
ICOM IC-756	67	98



Elecraft K1

4 bands, 5 W, MCU, LCD
ATU, 2 Ah battery
2.2 lbs, 65 in.³

K1 Internals



K1 Internals



KX1 Transceiver

(Hands Optional)

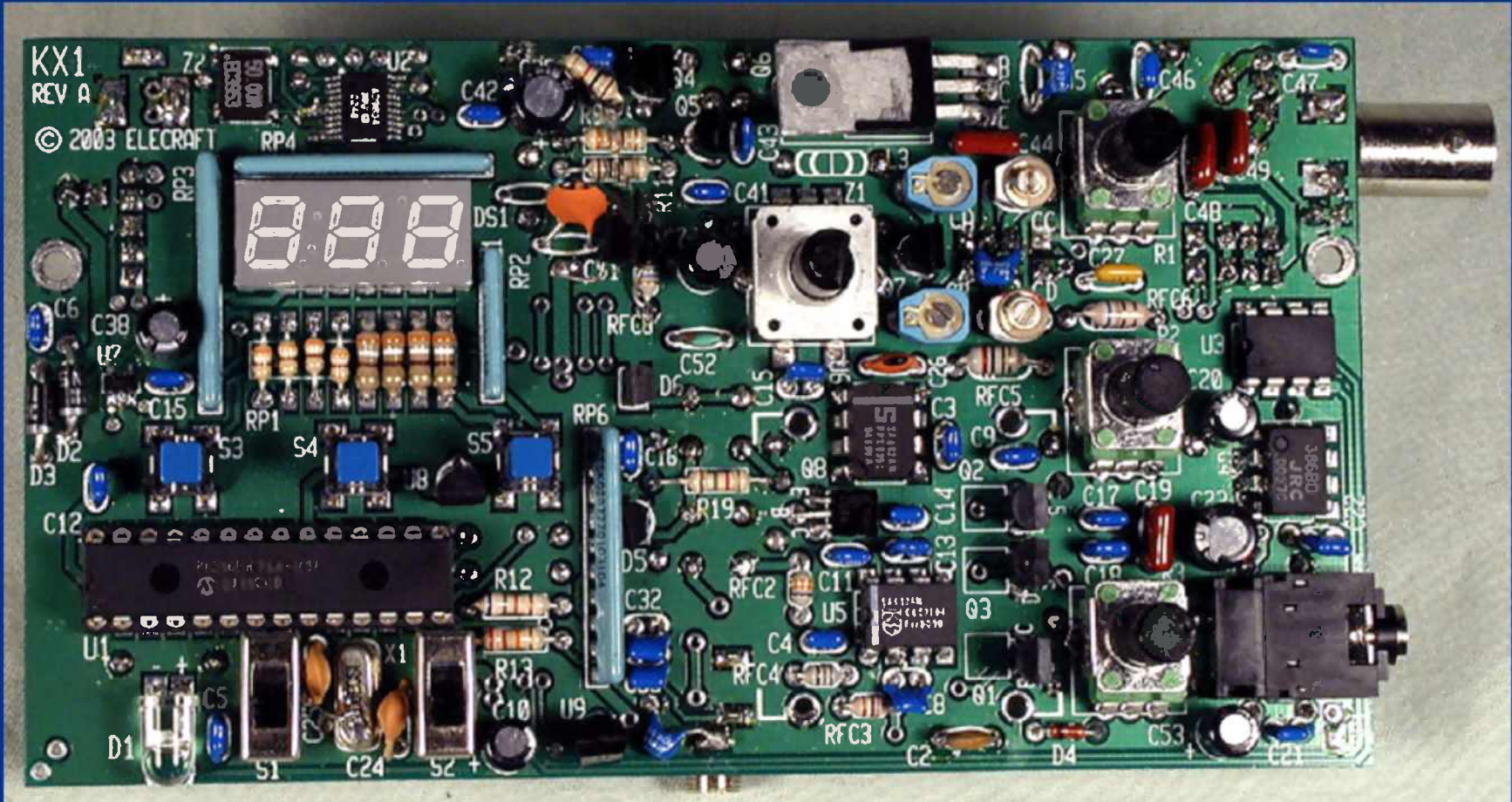


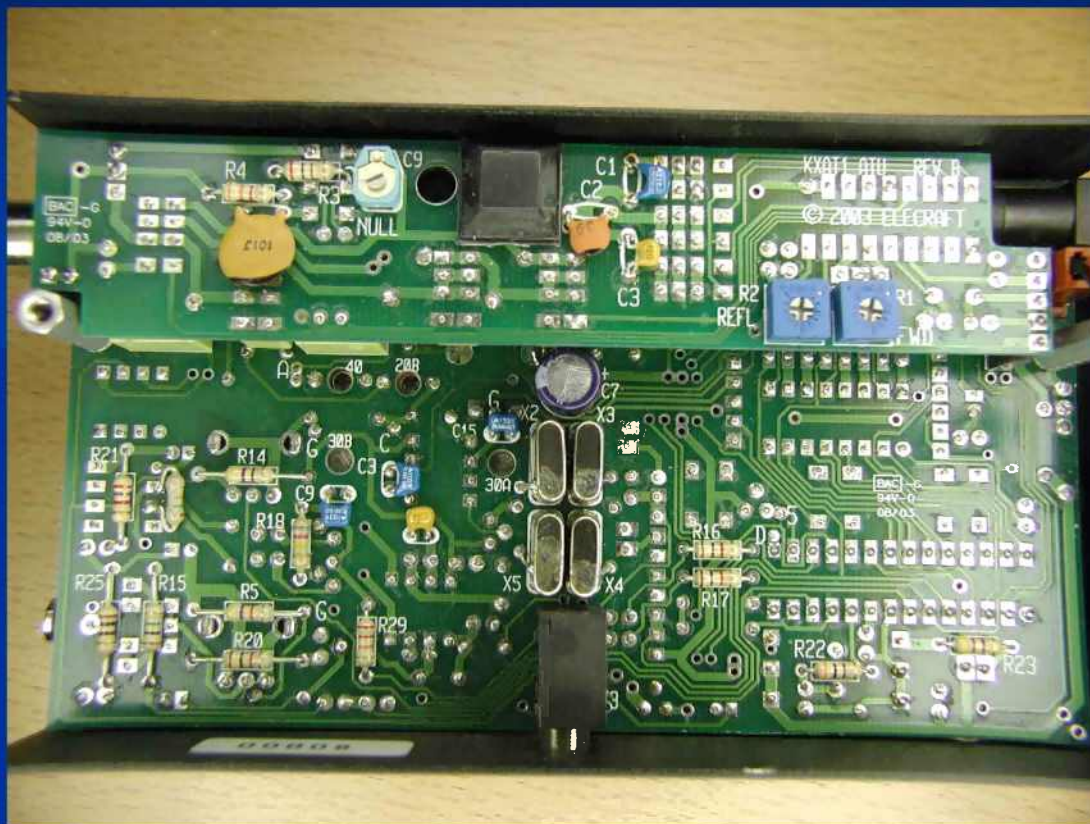


Day-
hike
station

1.7 lbs

KX1 Internals

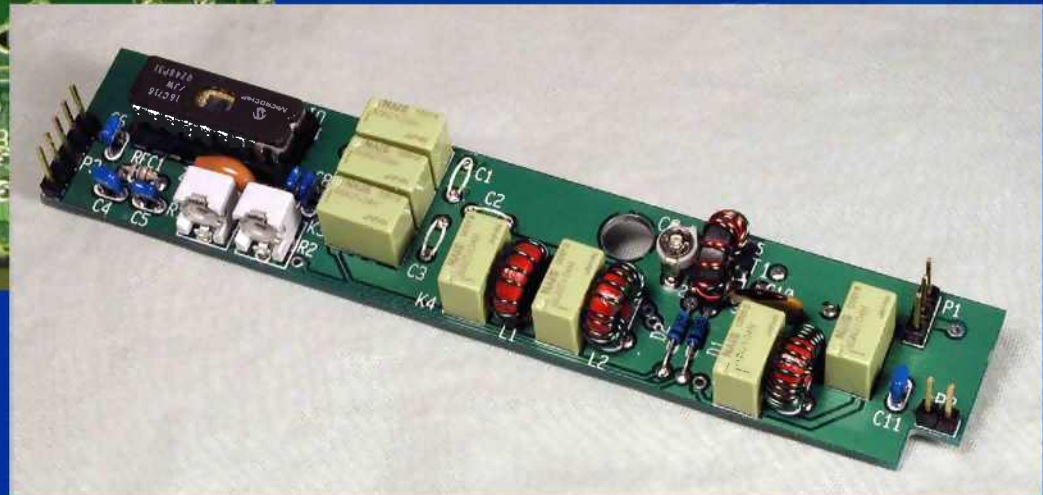
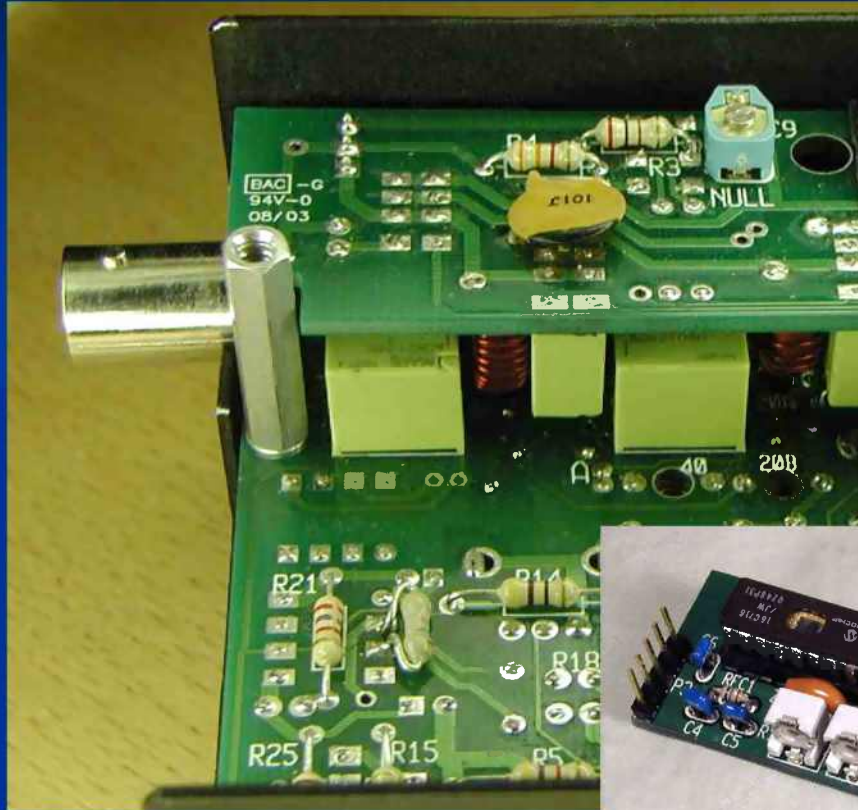




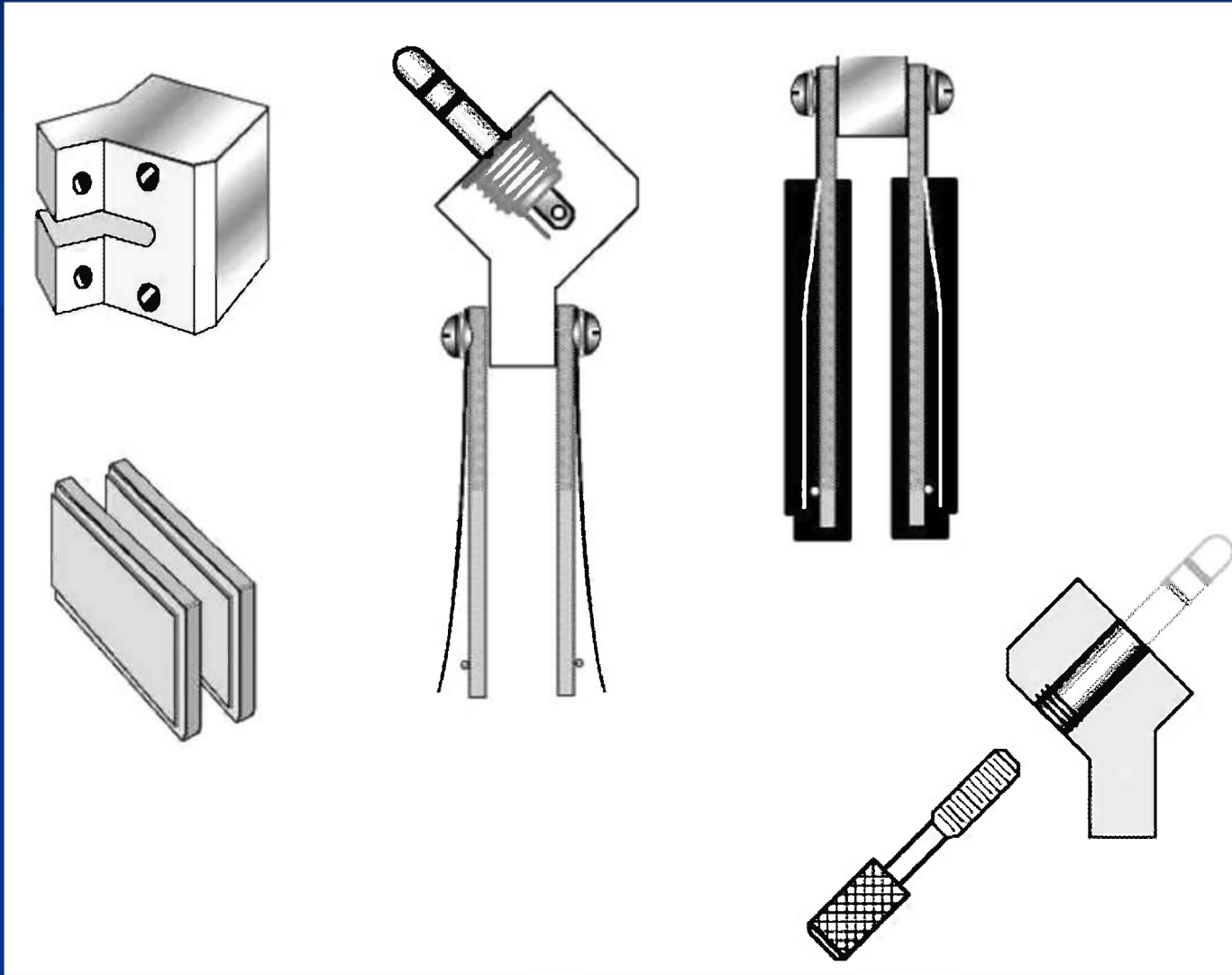
KX1
interior

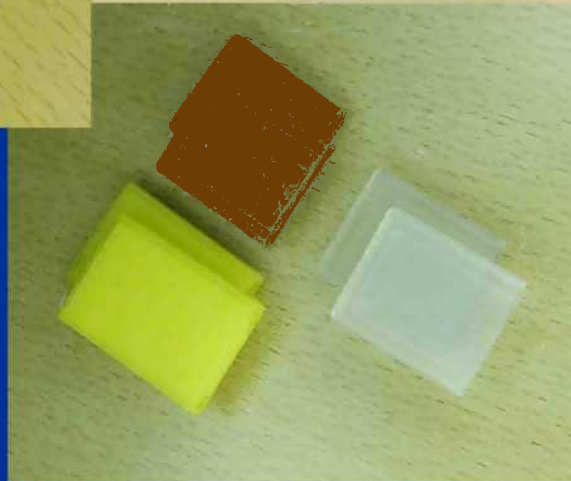
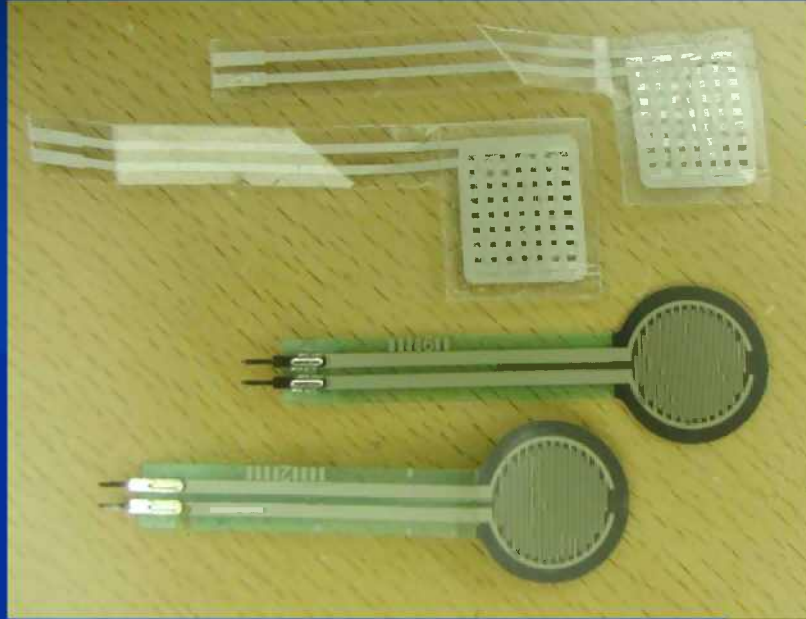
ATU (top)
and main PCB

Close call . . .



KXPD1 Paddle



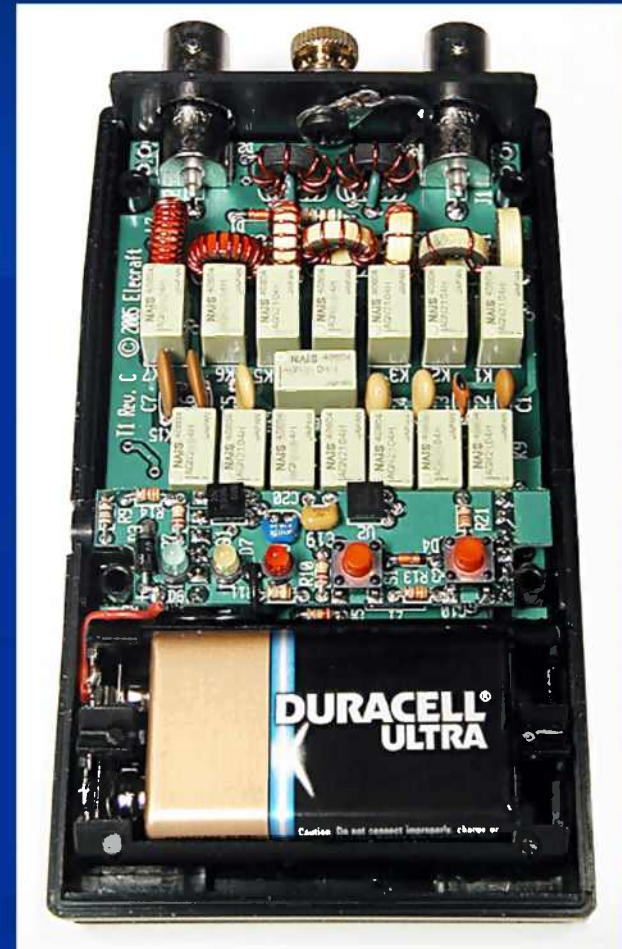


KXPD1 R&D



BNC to dual
banana adapter

T1 Pocket Sized ATU





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XV Transverters for 50, 144 and 222 MHz

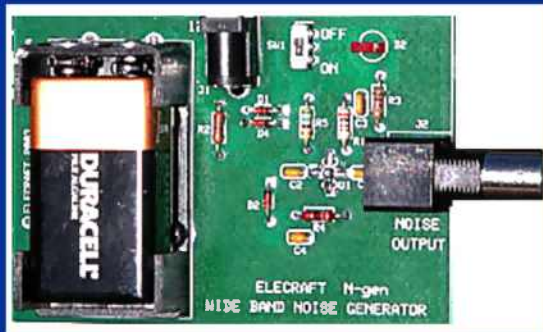
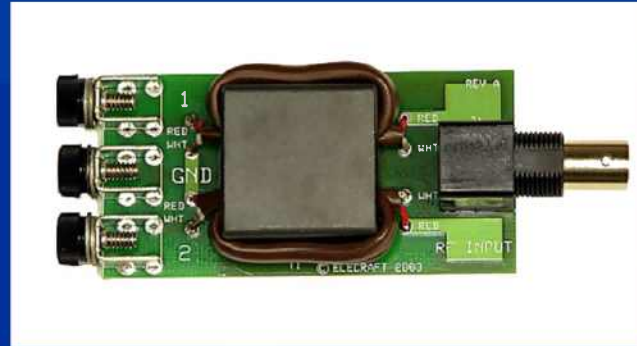




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XG1, N-Gen, BL1, DL1

Mini-Modules





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