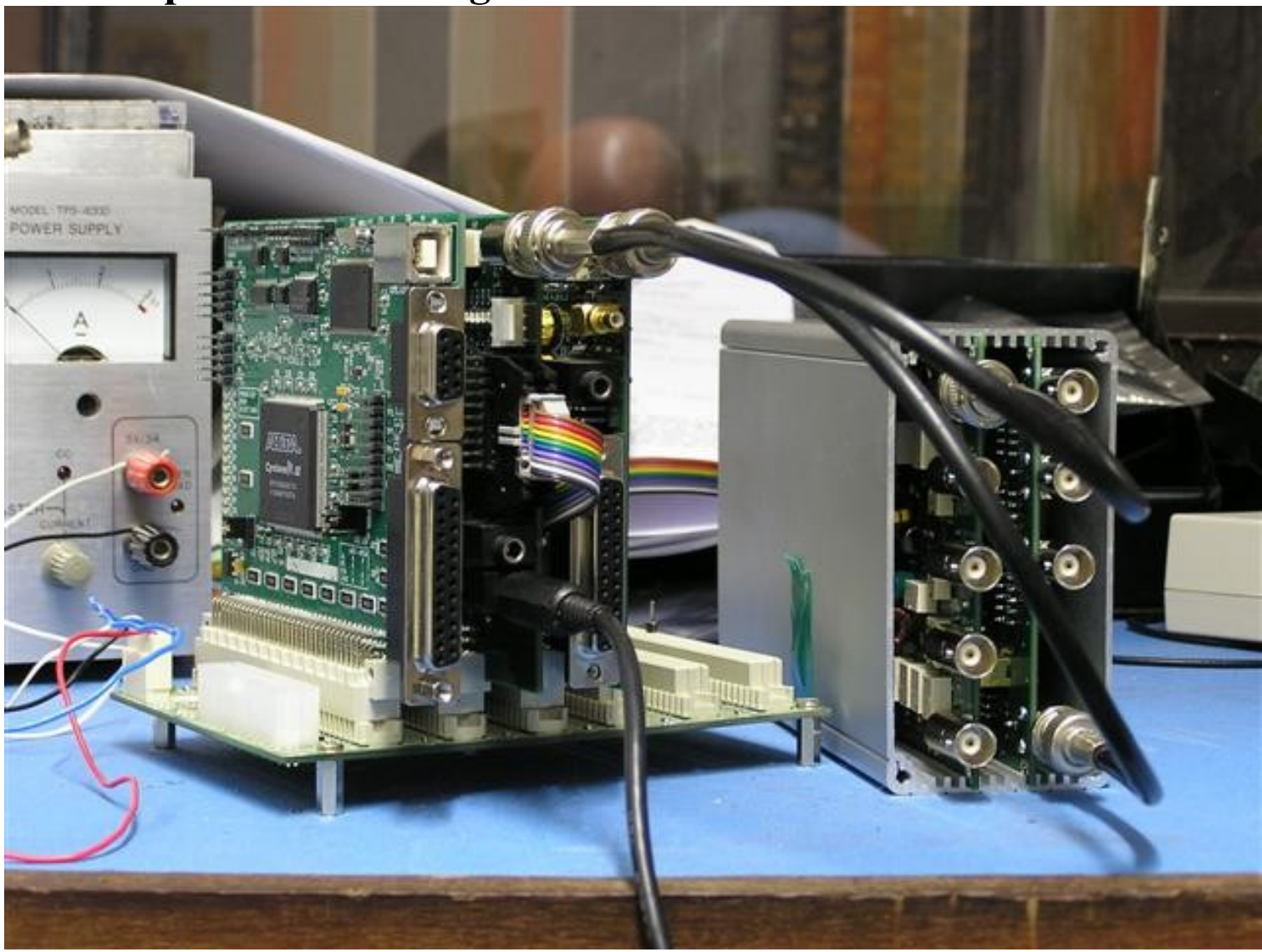
High Performance Software Defined Radio

An Open Source Design



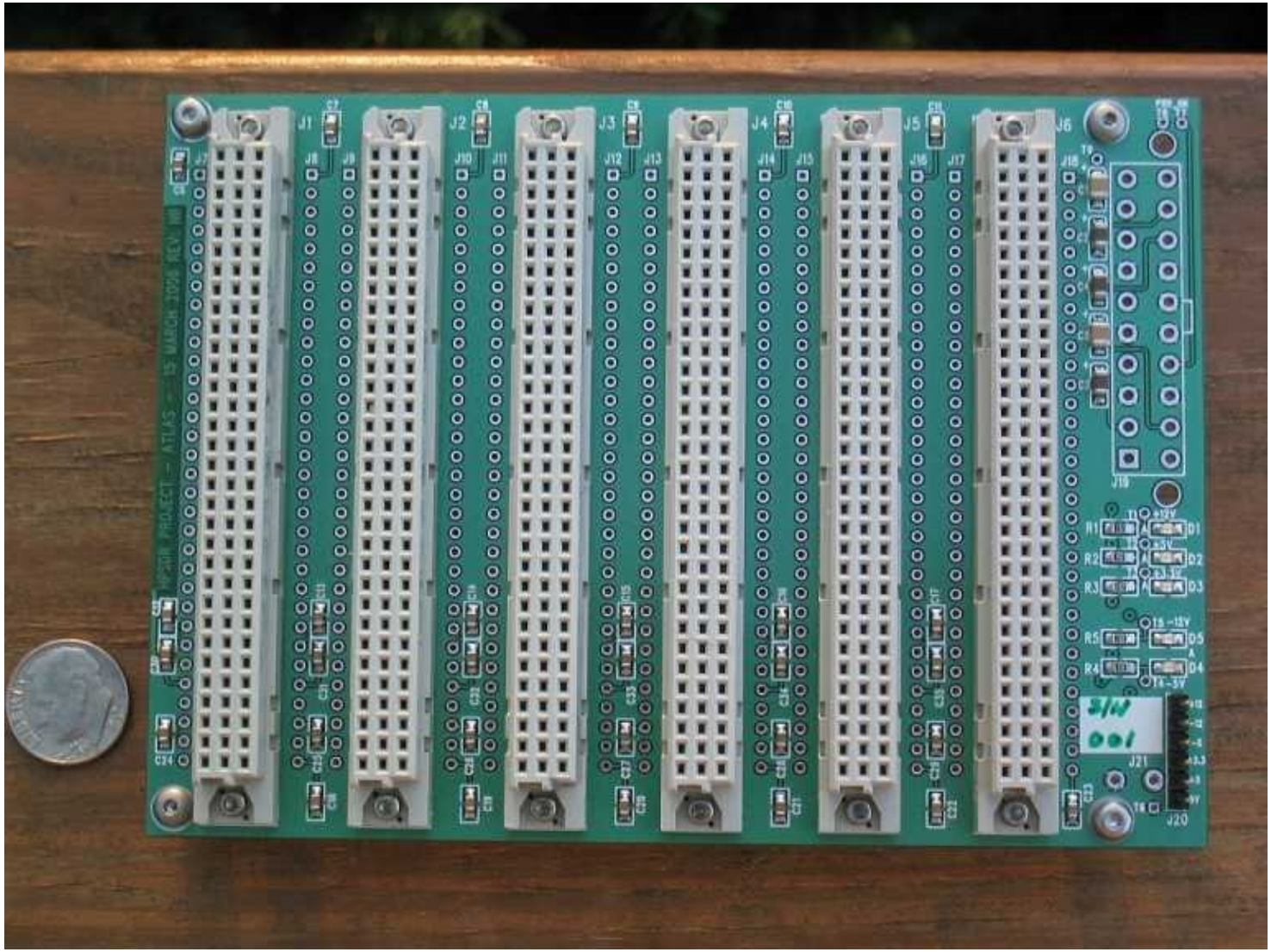
Don W1FKF

N.E.W.S.

3-7-09

http://www.tapr.org/

http://hpsdr.org/



Atlas - backplane

http://hpsdr.org/

$35.

OZYmandias - interface module

http://hpsdr.org/

$137.

Mercury - a direct sampling front end
0-65 MHz

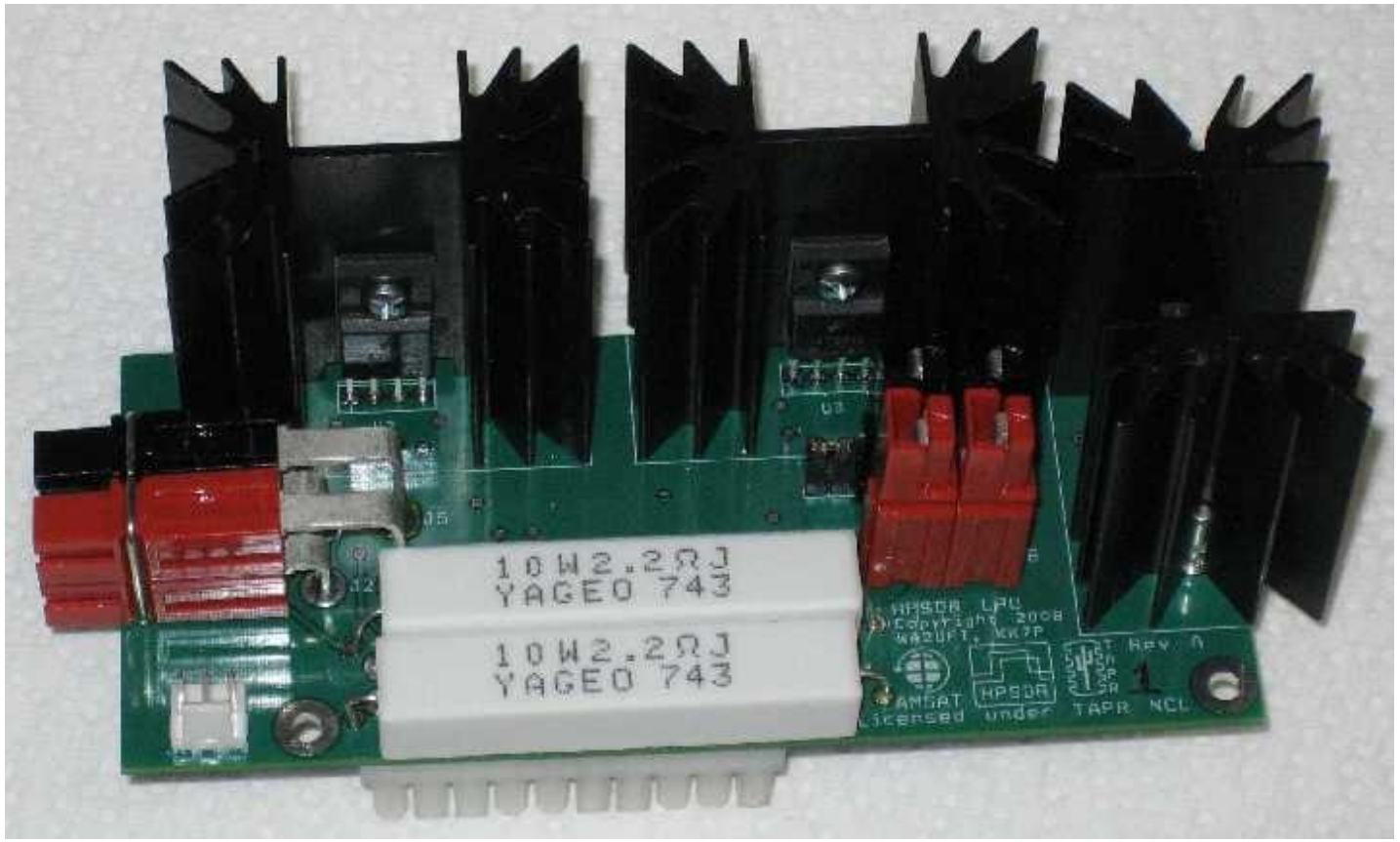
http://hpsdr.org/

$329

Penelope - HF 1/2-watt Exciter

http://hpsdr.org/

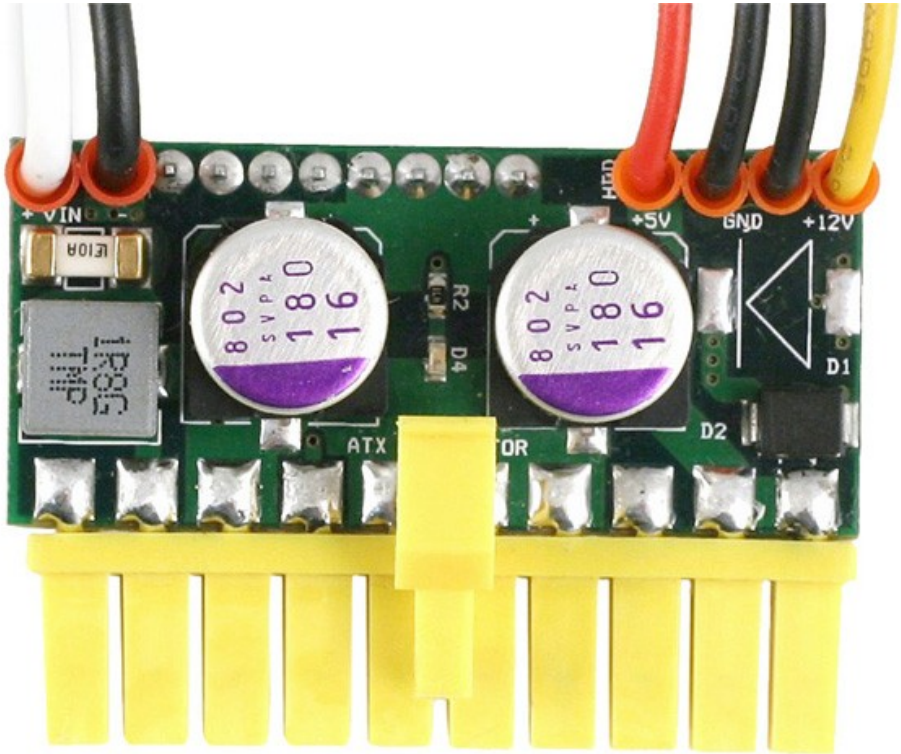
Sold out but available in Europe for Aprox $275.



Linear Power Unit (LPU) - HPSDR Simple Power Supply

http://hpsdr.org/

This is the
One I used



Specifications, picoPSU-120, 120Watts DC-DC ATX Power Supply

Power Ratings (Max Load = 140 Watts)

Volts (V) Max Load (A) Peak Load (A) Regulation %

5V 6A 8A +/- 1.5%

5VSB 1.5A 2A +/- 1.5%

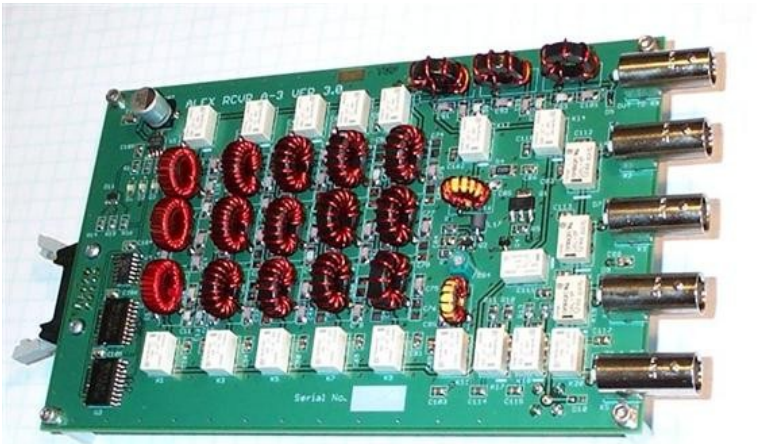
3.3V 6A 8A +/- 1.5%

-12V 0.05A 0.1A +/- 5%

12V 7A 10A Switched input http://www.mini-box.com/site/index.html

http://www.mini-box.com/site/index.html

$50.

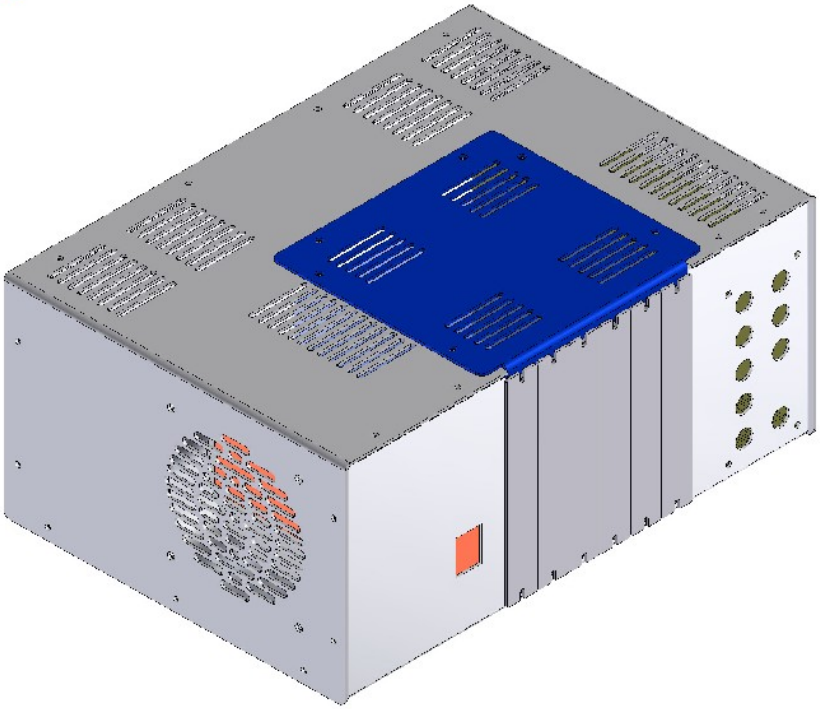


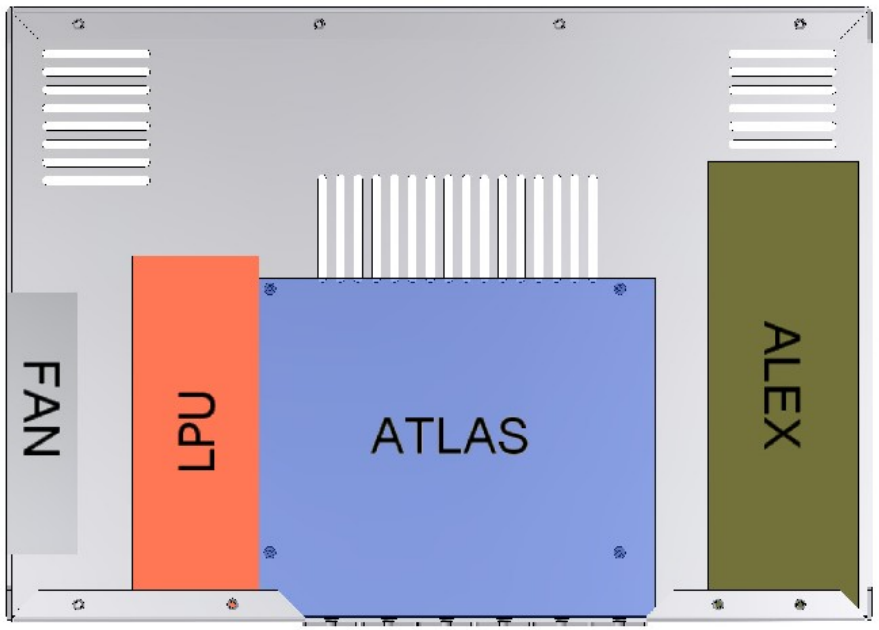
ALEX for short) is a combination RF Preselector for use with MERCURY or any other SDR, as well as a transmitter low pass filter bank for a transmitter such as PENELOPE, and optionally, with an associated RF power amplifier up to 100 watts peak.

TX $254

http://hpsdr.org/

RX $209

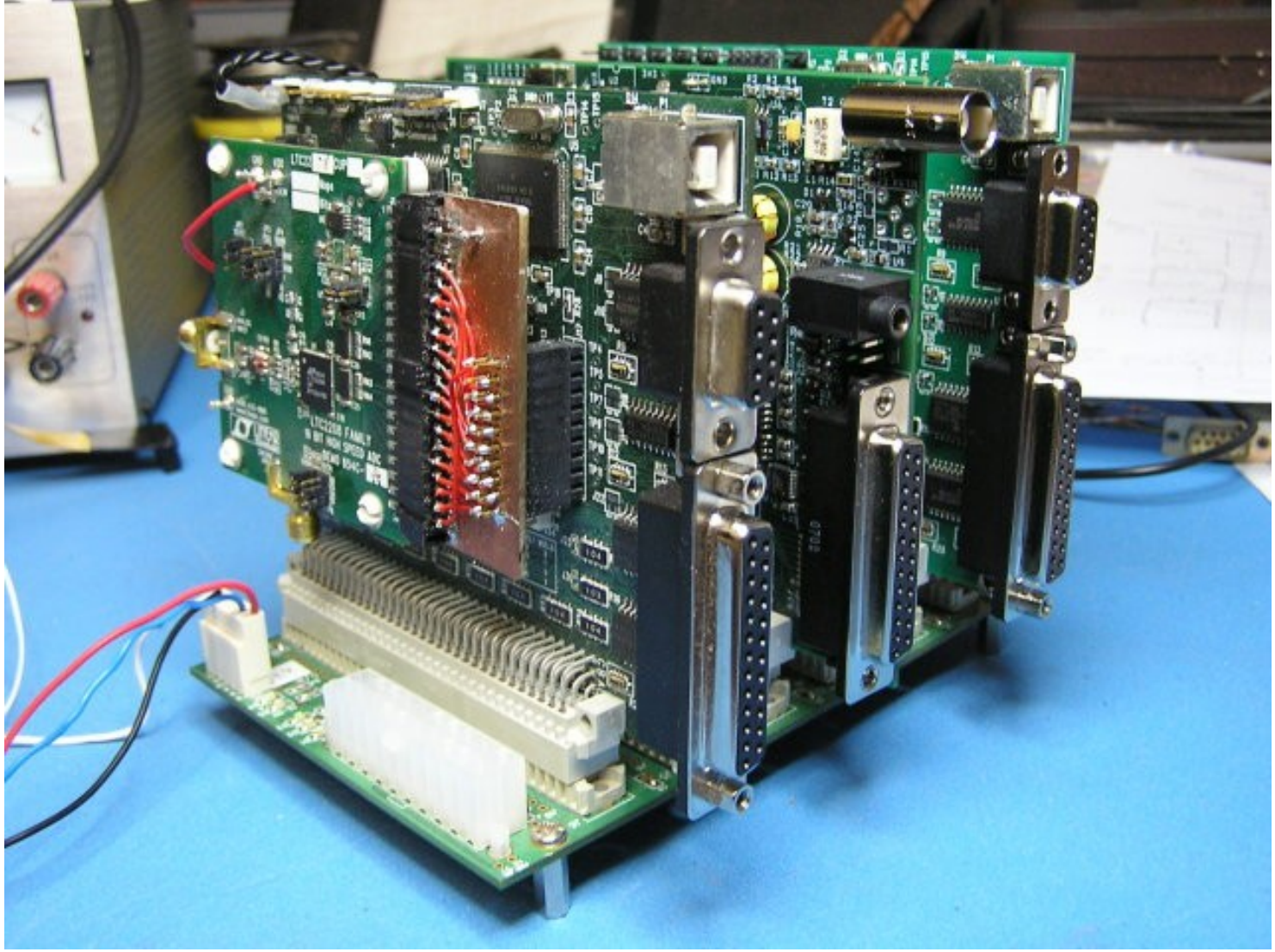




PANDORA Mark II ENCLOSURE

http://hpsdr.org/

$99.



Atlas, Mercury, Penelope, Ozy, Power Supply = $800

Case (Pandora), Atlas (Filters) = $550

100 watt amplifier =Aprox $500

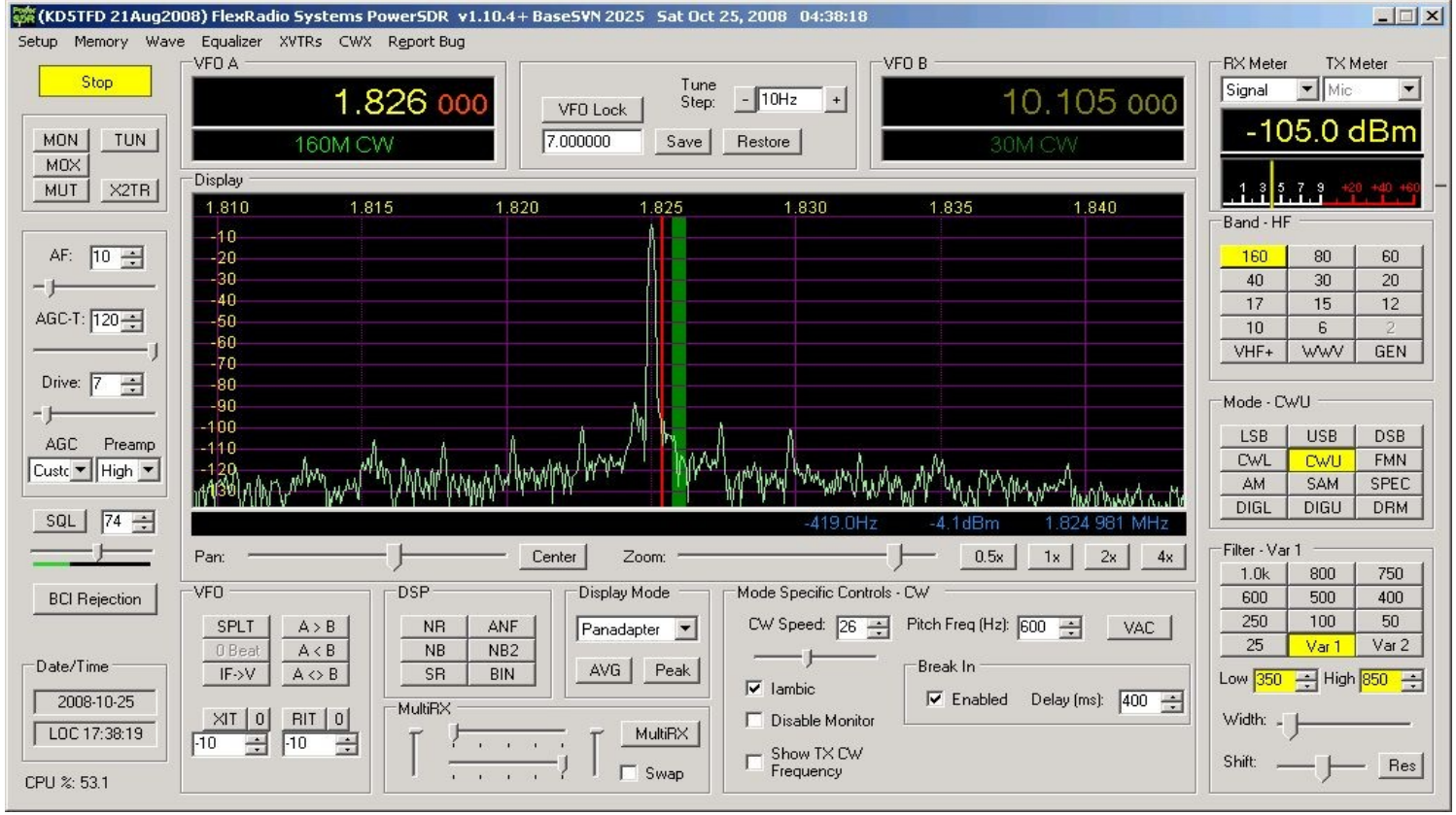
Total $1900

http://hpsdr.org/

Amplifier I plan to use
Yaesu FT757GX Power Amplifier

Few mw in for 100 watts out

Includes band pass filters (6)



Performance figures are as follows:

ADC overload (preamp on) -12dBm (preamp off) +8dBm

MDS (500Hz) all bands 160m - 6m = -138dBm (preamp on) - 118dBm (preamp off)

MDS (500Hz) 6m via Alex preamp = -146dBm

IP3 equivalent = +33dBm (preamp on) >50dBm (preamp off) The IP3 is independent of tone spacing.

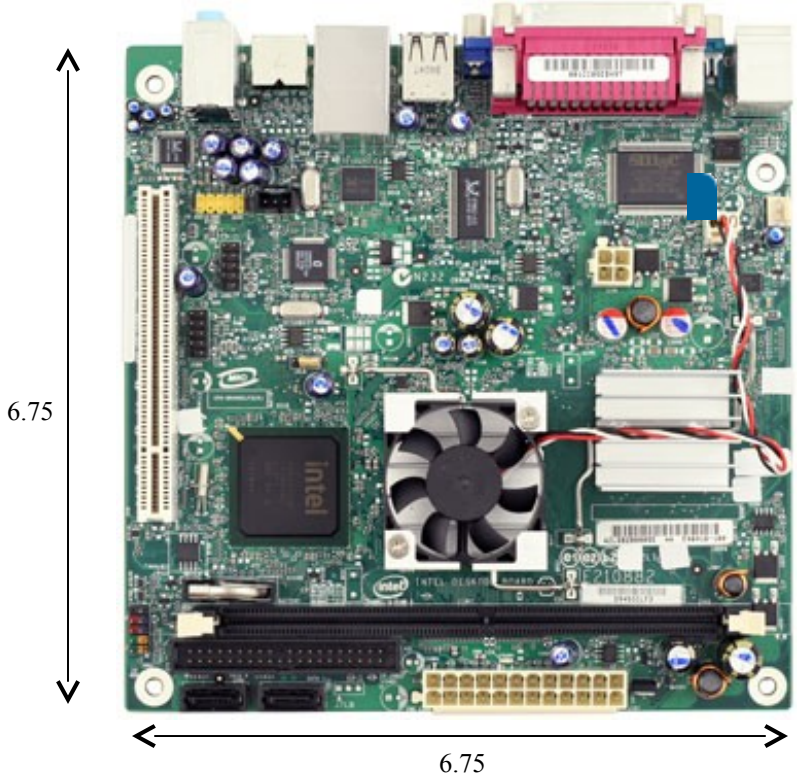
Blocking Dynamic Range 119dB

Blocking Dynamic Range was measured at 100kHz and 5 kHz for 1dB gain compression with similar results. The DBR is set by the overload point of the ADC rather than being phase noise limited.

122.88MHz clock phase noise -149dBc/Hz at 1kHz spacing.

M350
left view

Designed and Manufactured
by Mini-Box.com



FEATURES

Intel D945GCLF2 mini-ITX Motherboard + integrated Intel Atom 330 2x 1.6Ghz

- Dual Core Atom CPU
- TV-Out (S-Video)
- 4x Rear USB 2.0
- VGA, Serial and Parallel
- 1x DDR2 533/667 RAM
- 1 x 1x 10/100/1000 Mbit LAN
- Realtek High Definition Audio
- Power: 24 Pin ATX, P4-connector
- RoHS compliant

- Recommended PSU: **picoPSU-90**

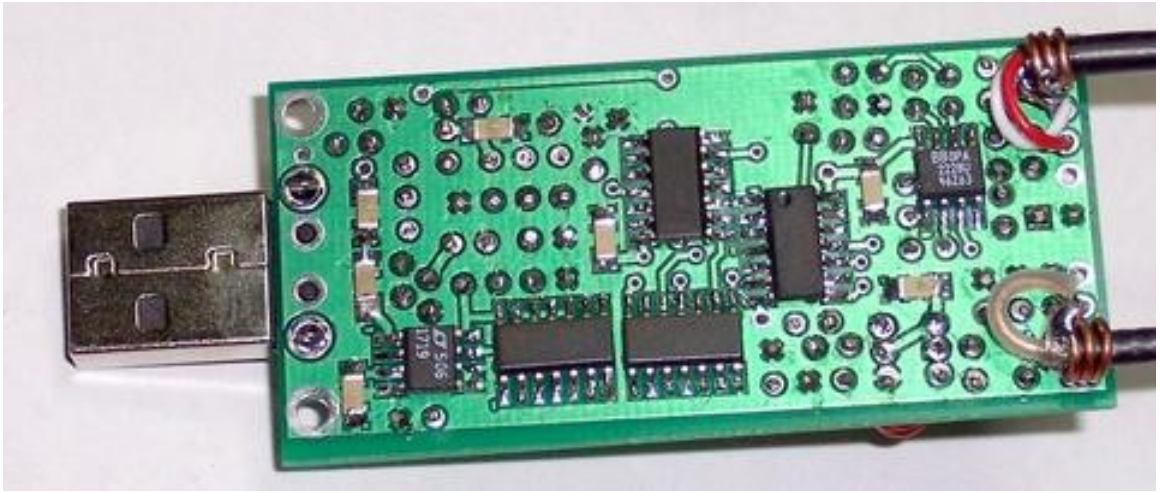
Possible Mini Computer For $300.00

Board=$89
Case= $40
HD 160 GB=$68
DVD $50
PS=$50

http://www.mini-box.com/Intel-D945GCLF2-Mini-ITX-Motherboard

Cheap DSP Radio

KB9YIG. SoftRock



Need good sound card

http://groups.yahoo.com/group/softrock40/messages

KB9YIG. SoftRock RXTX+xtal v6.3 1 Watt

http://groups.yahoo.com/group/softrock40/messages

With all Band Pass Filters $110.

•Softrock RXTX + Xtall V6.3. - Multiband (revived fom retirement)

•This kiit was made available for ordering after 14 Feb 2009. This multi-band transceiver is the latest in the RXTX line and, like its single-band predecessor, builds a transmit capability on top of the base multi-band rexeiver's platform.

•Like the RX V8.3, the RXTXv6.3 transceiver board includes a Lite+Xtall receiver function along with the RXTX transmit function. A four-position DIP switch at the edge of the circuit board provides for setting sixteen possible center frequencies for receive and transmit functions.

•The individual Lite+Xtall BPFs are used with the receiver function for band changing and a PA/Filter module plugs on top of the RXTX board for changing the transmit band. As with receive, four PA/Filter modules will be required to cover all HF ham bands.

•Thus, a minimal RXTX for one of the four bands (160m, 80/40m, 30/20/17m, or 15/12/10m) would require one BPF board and one PA/Filter board for the band in question.

•Also included on the RXTX board is the Rocky 3.x serial interface function for control of the PTT input to the board and to provide paddles input to the Rocky SDR program. Alternatively, one can build the USBI2C interface kit to control the transceiver via a USB line instead of via a serial RS232 line.

•The RXTX+Xtall v6.3 kit price is $50 for the RXTX board kit along with the receiver BPF kits for all HF ham bands. The $50 price would include the CMOS Si670 device used on the board. (Without the Si570 included in the kit, the kit price would be $35. The RXTXv6.3 board also provides for use of the LVDS Si570 part.)

•Each PA/Filter kit would be an additional $15 per kit ($16 for DX).

•Thus for two or three band coverage the RXTX+Xtall v6.3 kit group would cost $65. Additional PA/Filter modules would expand the band coverage such that all HF bands could be covered at a total kit price of $110.

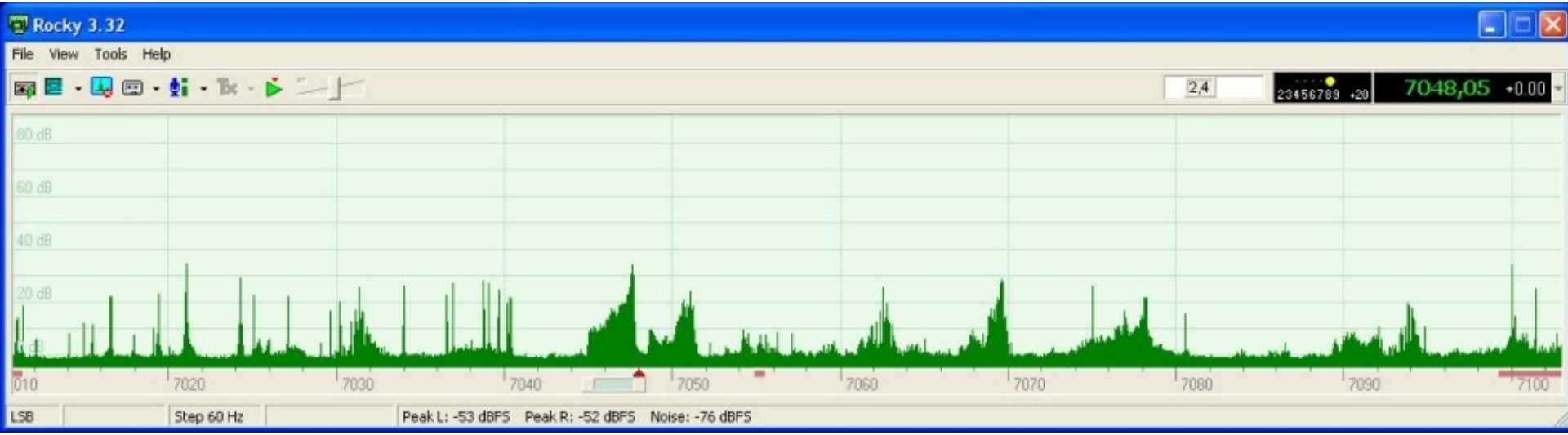
•The DX price for the RXTX+Xtall v6.3 kit is $52 and each PA/Filter kit pirce is $16. In each case the kit price includes mailing cost. PA/Filter kits are for band groups: 160m, 80m/40m, 30m/20m/17m, and 15m/12m/10m.

•For details see the Softrock RXTX V6.3 home page.

•USB I2C Interface Kit

•Now available is the USB I2C interface kit at $10 for US/Canada and $11 for DX. The USB I2C interface kit provides a means of setting the Si570 device on a v6.3 RXTX+Xtall transceiver to any desired frequency from a USB port.

•Enhanced builders notes for the USB I2C Interface are under development. Tony's documentation to build the kit may be downloaded from files area of the Yahoo Softrock 40 Reflector. You will have to register at the website to download the documents for the kit.



Rocky 3.6

http://www.dxatlas.com/Rocky/

KB9YIG. SoftRock
RXTX+xtal v6.3