222 MHz 100W Amplifier
$1 / Watt!

43RD EASTERN VHF/UHF/MICROWAVE CONFERENCE
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Topics:

- Why 222 for the rover? Home QTH too!
- Adapting eBay VHF amplifier to 222: Easy and inexpensive
- It’s not hard: Transverter, $100 amp, $30 ant

Some have great locations….



And some have to rove ….



222 For Rovers & Home QTH'ers: Now more than ever

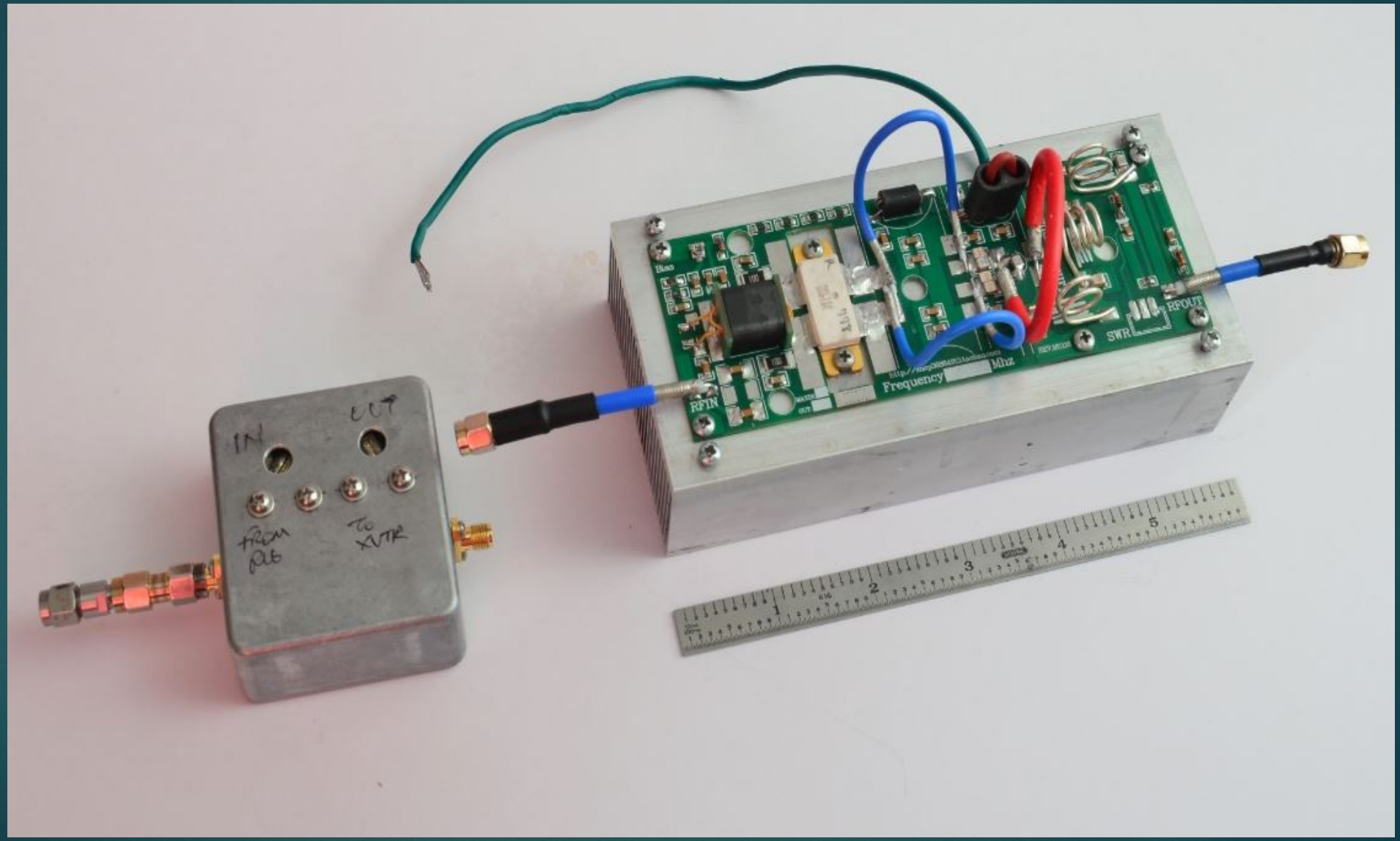
- It's like 2 meters
- Activity growing
- New 222Up rules incent 222 vs. 432 – 2:1
- Parts / pieces are cheap & plentiful
- Great way to add points to your contest scores & more fun!

- But I've got no power …

An Amplifier Solution

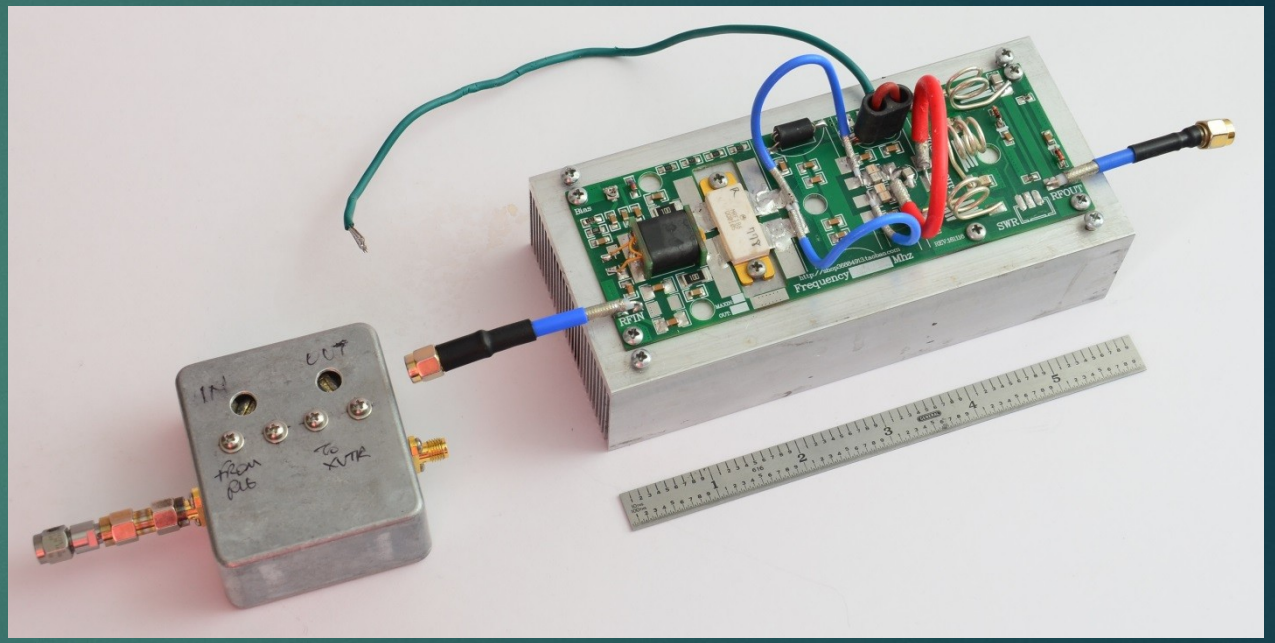
- CN $40 VHF board: 100 -170 MHz
- 100 W output
- Linear: SSB/FM/CW
- Easily modified to 222
- 24V – 8A: 52% efficiency
- Broad band – 222 & 144

That looks like this….

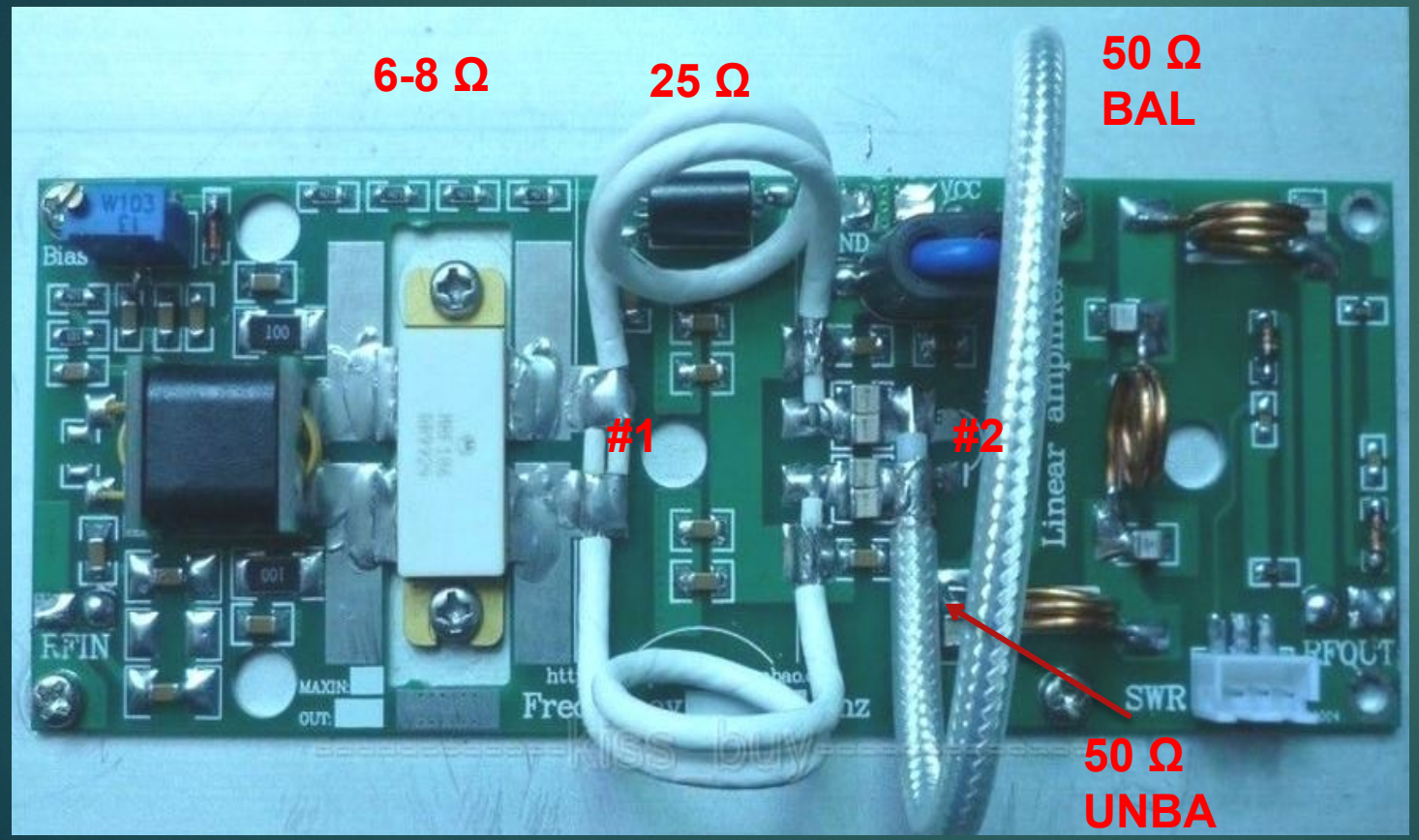


What Needs To Be Done?

- Building the board
  - Guanella loop length
  - 50 ohm balun
  - Matching capacitor ATC
- Low pass filter freq increase
  - Coils
  - Caps
- Input matching: PI network



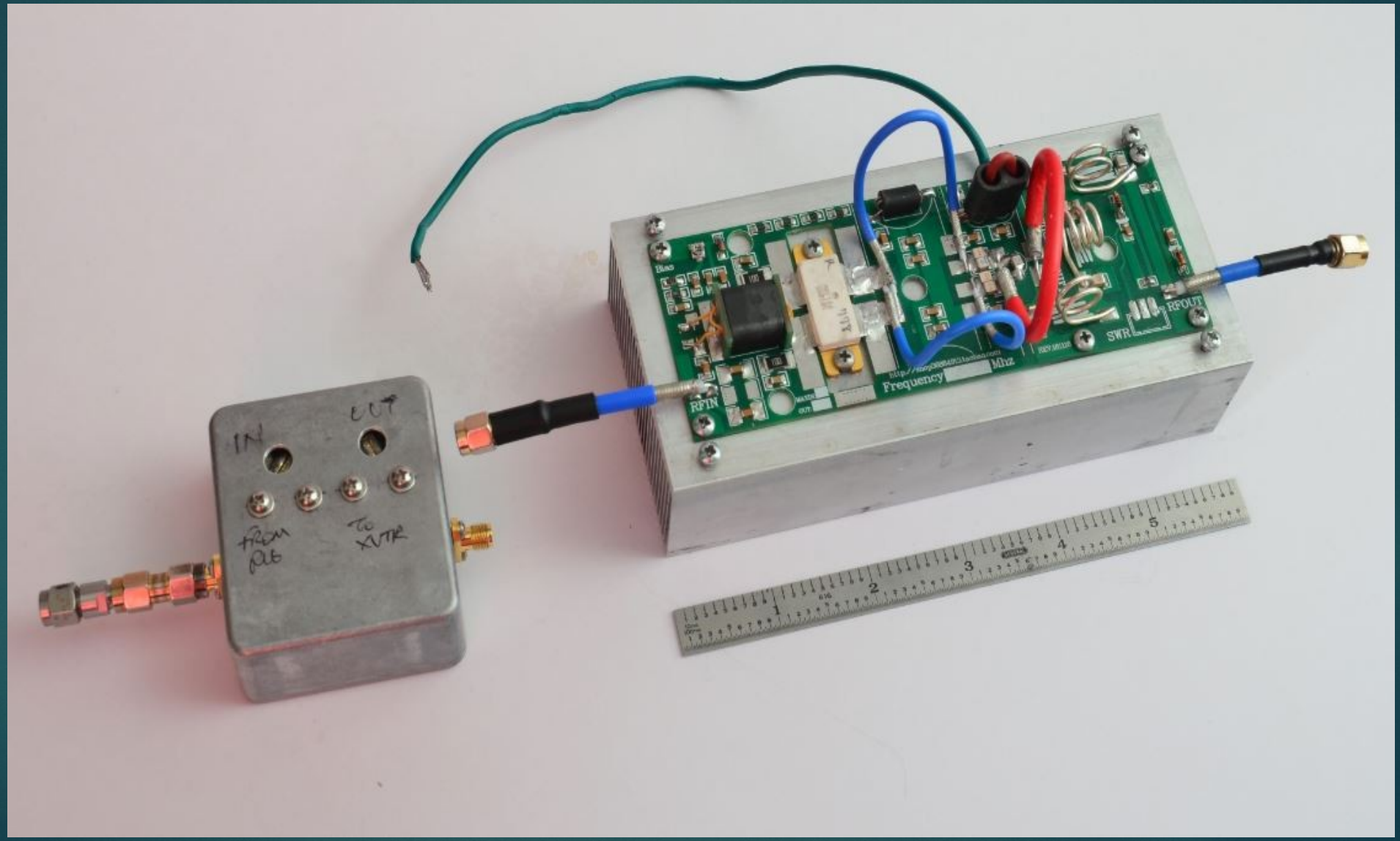
Guanella Transformer Matching



$Zm = SQRT\ (Zin * Zout)$
$25 = SQRT\ (Zin * 50)$
Zin=12.5 Ω

A 15pF ATC cap at #2
Or
60pF at #1 improves match

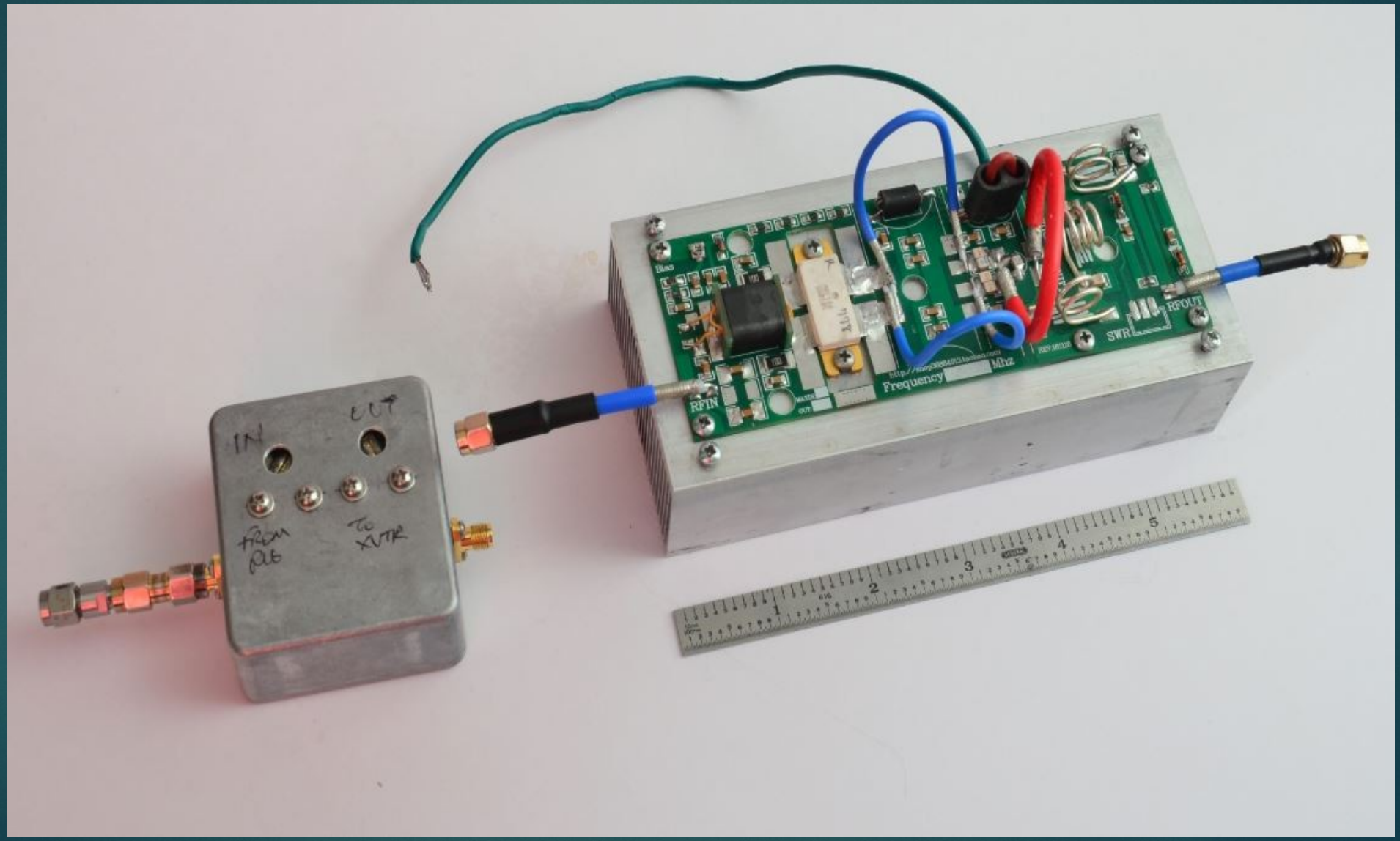
Amplifier L.P. Filter Mods



Low Pass Filter Modification

- Butterworth design – 7 element by AADE program, V4.5
  - 4 caps ATC 800B
  - 3 coils silver used to reduce loss
  - Inductance calculator
    - http://www.daycounter.com/Calculators/Air-Core-Inductor-Calculator.phtml
- Cutoff: 3dB at 310 MHz; approx. 25+ dB down on 2nd and 3rd harmonics

Amplifier Input Matching



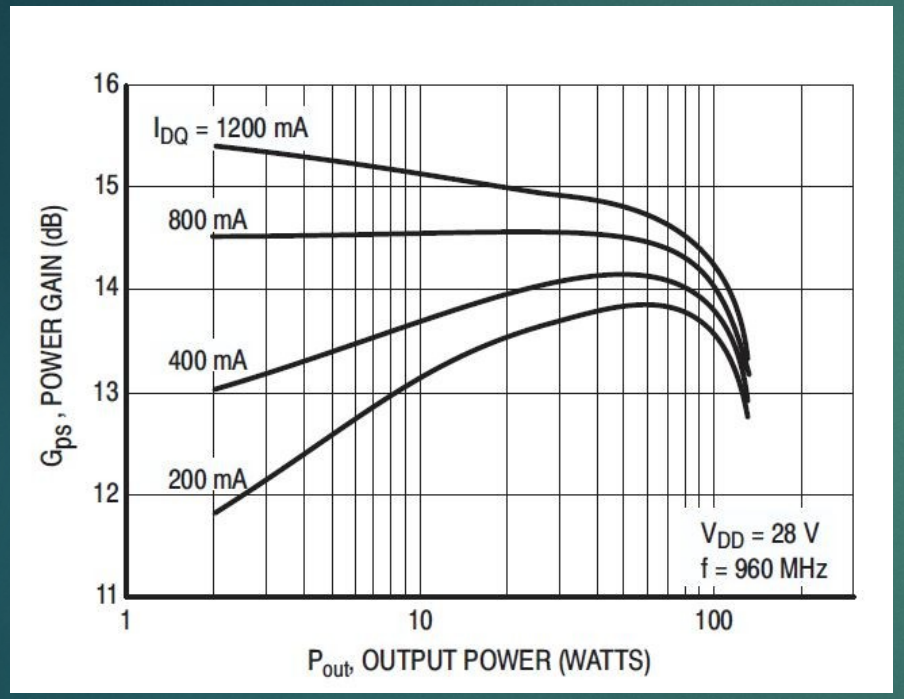
Input Matching: Impacts Drive Power

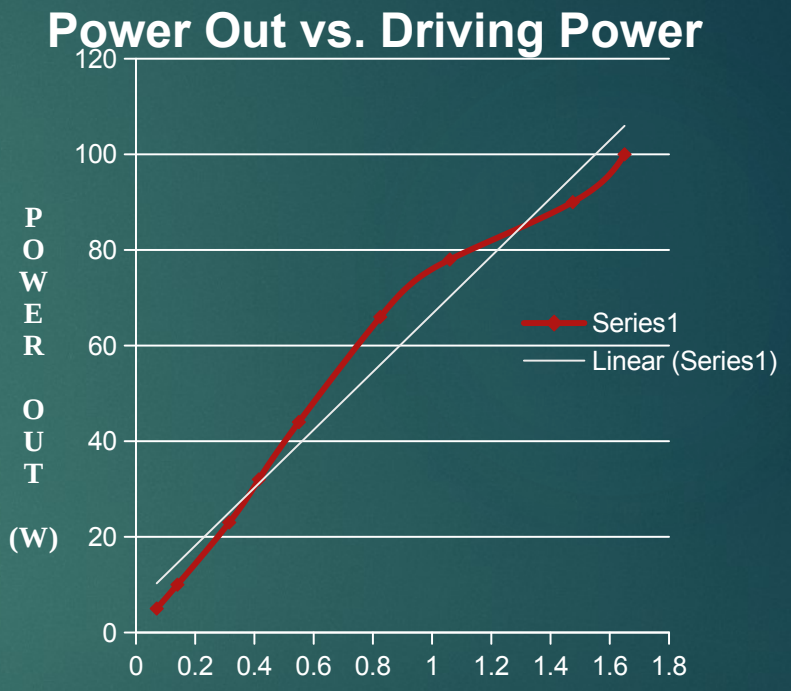
- PI network match
  - 1 3T inductor
  - 2 trimmer caps 30-60pF max value
- Separate box is best given amplifier gain
- Close to input of amplifier is best ~2”. Match varies based on coax length.

$100 - REALLY?

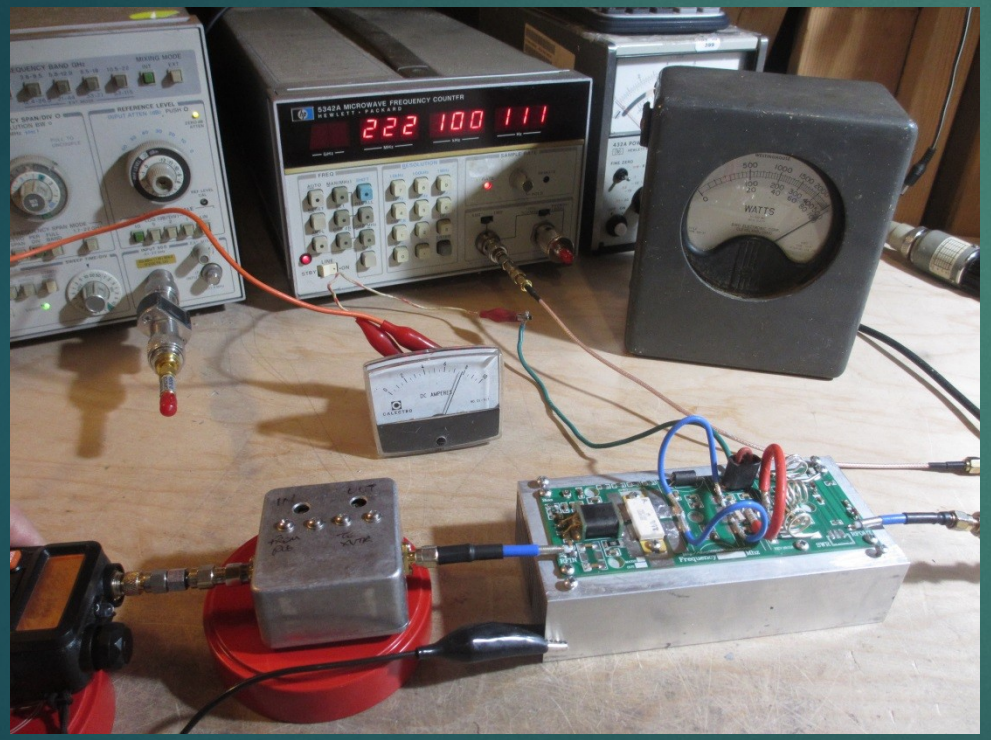
Item	Cost
Board & Kit	$40
Heat Sink	$13
ATC Caps	$20
Fan	$ 3
Freight/Stuff	$ 24
Grand Total	$100

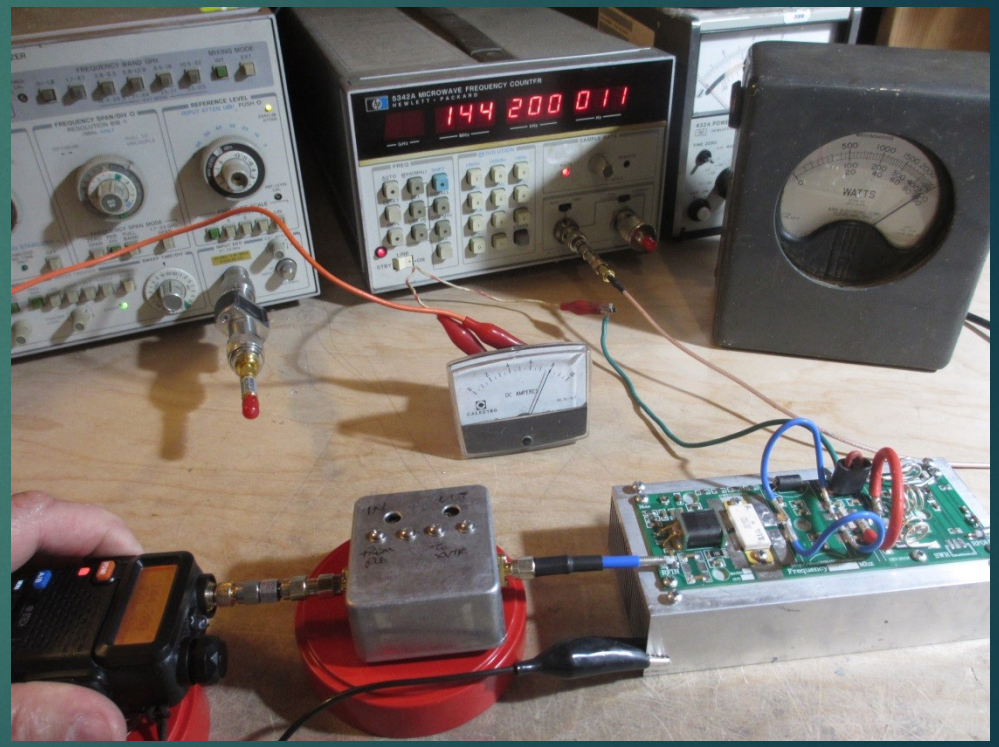
How Linear is the Amplifier?



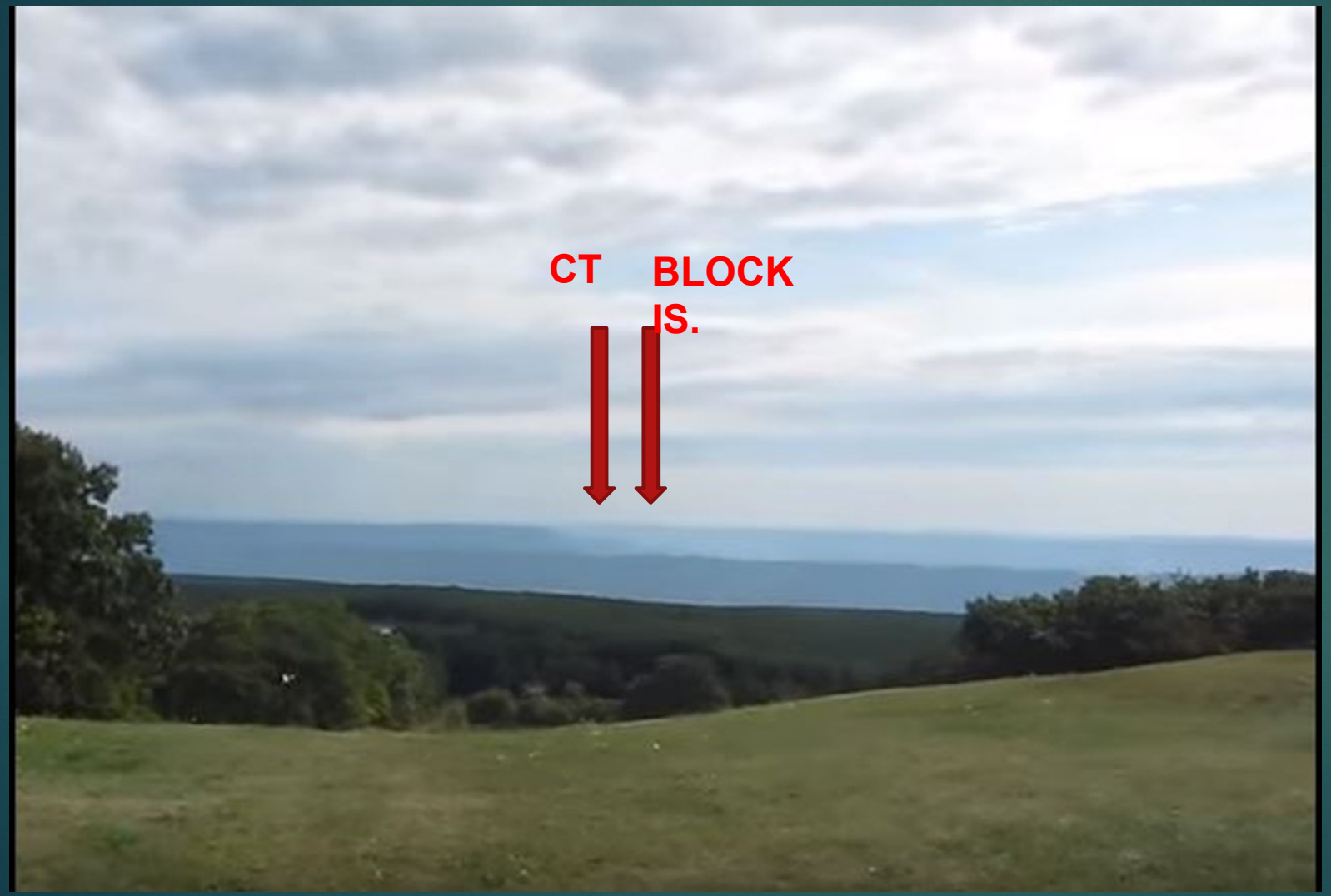


222 AND 144? BOGO…





73 & CU on 222 !





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