

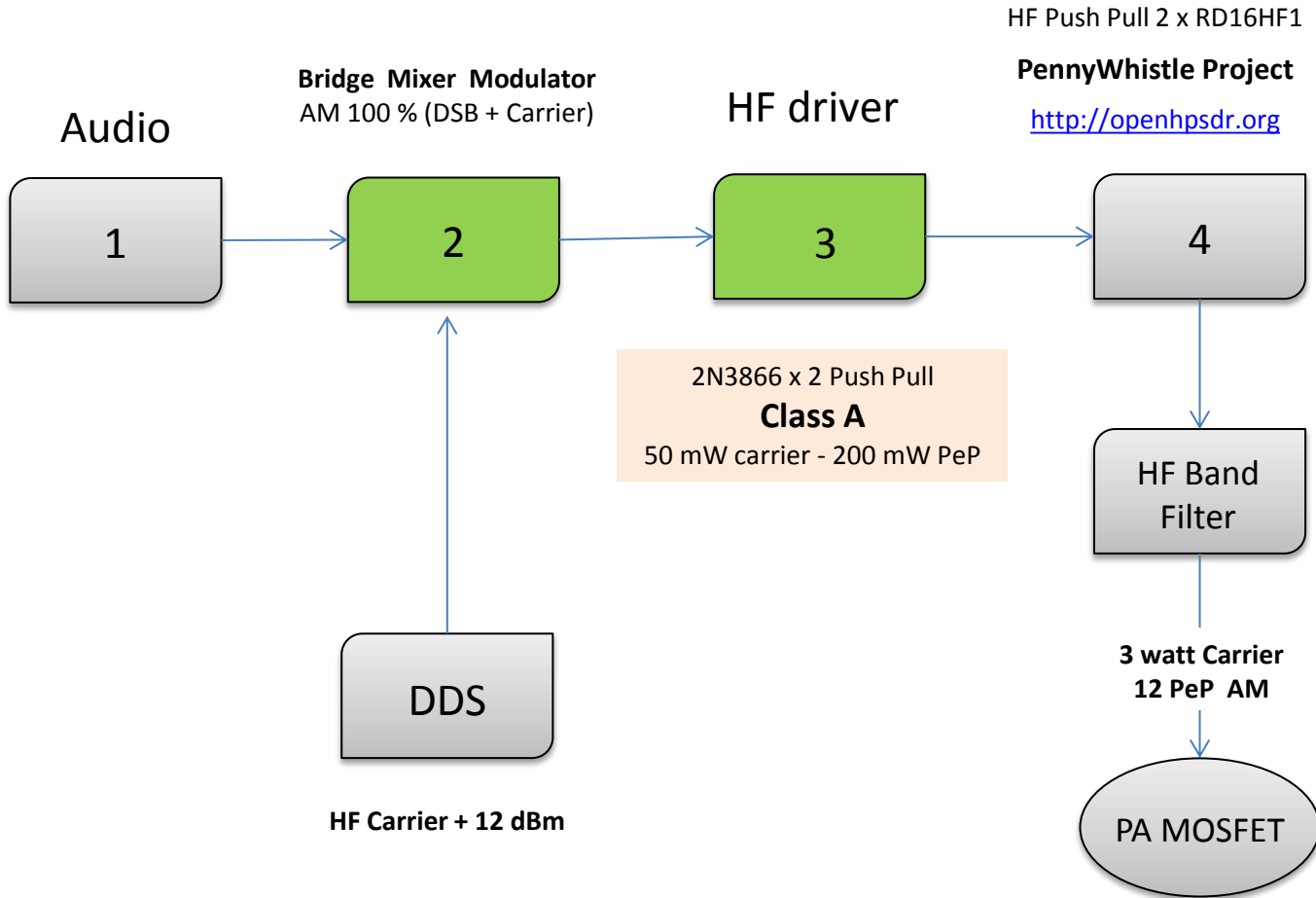
AM 100 % Modulator & HF Exciter



3 Watt Carrier with 12 watt PeP AM

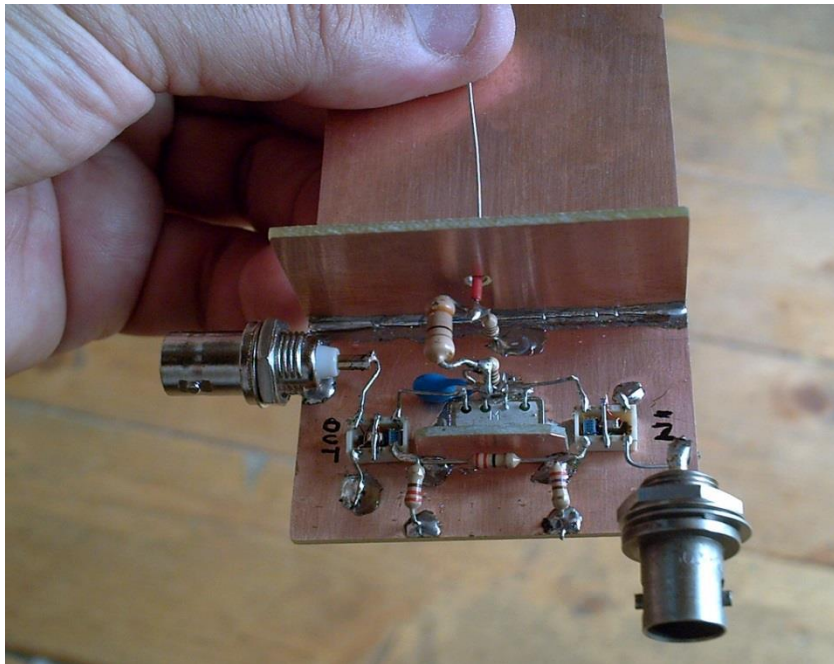
73 de ik2nbu Arnaldo

General Block Modules

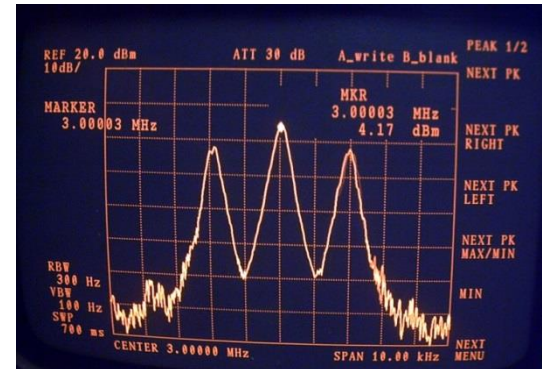


This document shows the details of the 2 green blocks: **Bridge Modulator and Driver** (which are the most significant of my Exciter)

High Level Mixer Bridge Modulator AM 100 %



Testing first Prototype Mixer Bridge Modulator



USB/ LSB = - 6 db under the Carrier

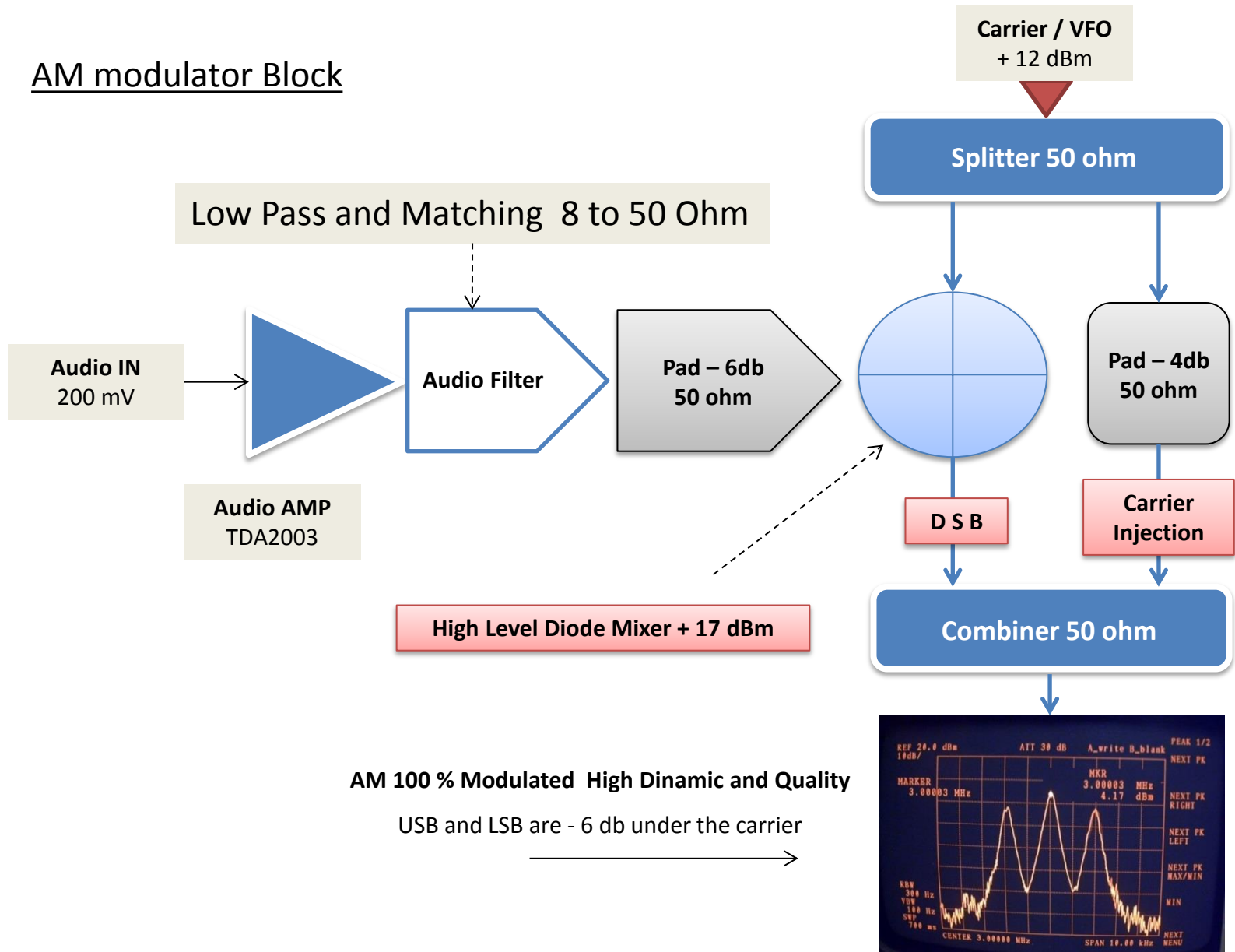
Audio IN : 200mV

Carrier IN : + 12 dbm

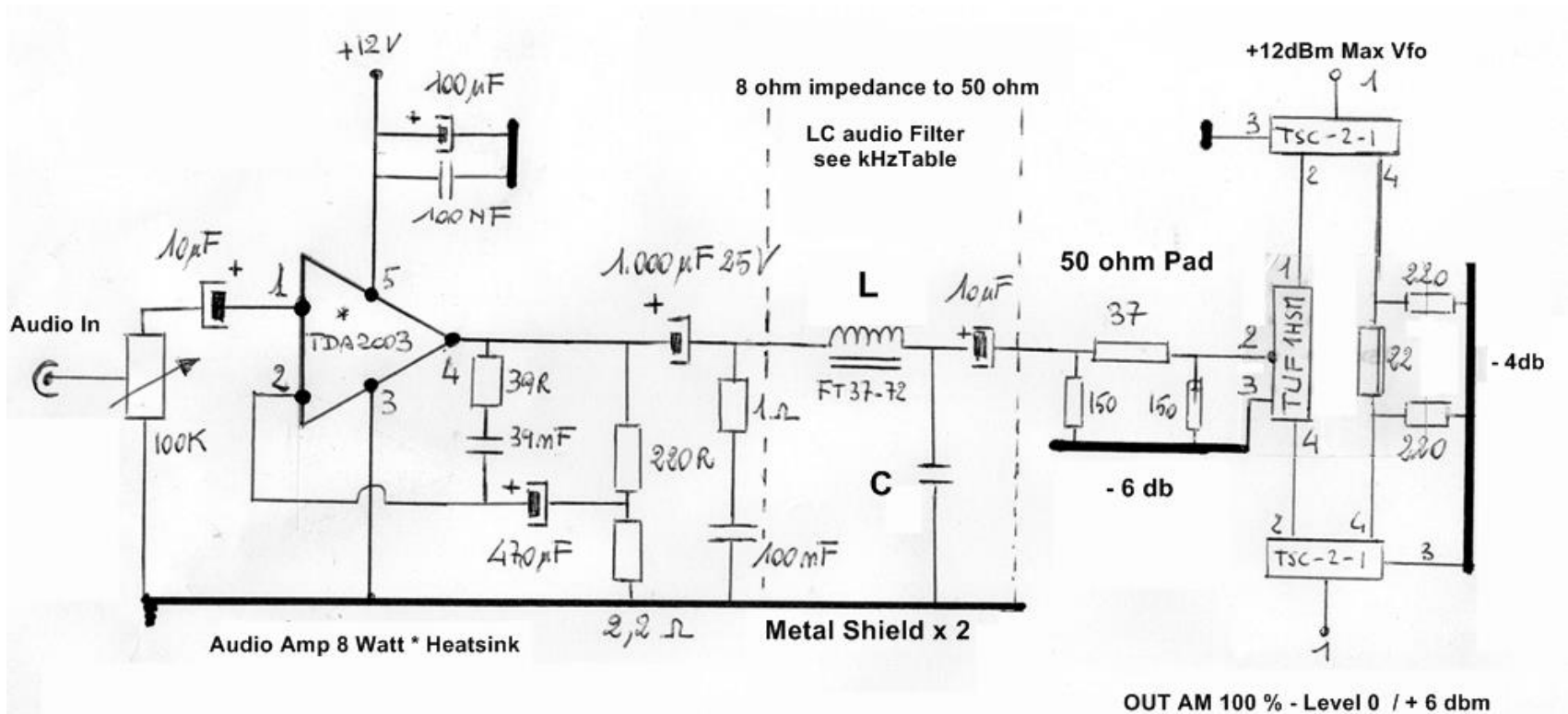
OUT = 0 dBm Carrier
+ 6 dBm PeP modulated AM

This is a classic and simple system to generate DSB and insert the carrier adjustable AM after a High Level mixer (+17 dbm) as the **TUF-1HSM** or **EMT-3MH** diode mixers. The best result is obtained with n. 2 power splitter/combiner at 50 ohm 0° as PSC2-1 or TSC-2-1 from Mini-Circuits . As audio driver use a **TDA2003** with low pass audio filter 6 kHz and a impedance from 8 to 50 ohm, to have a correct matching between Audio and RF.

AM modulator Block



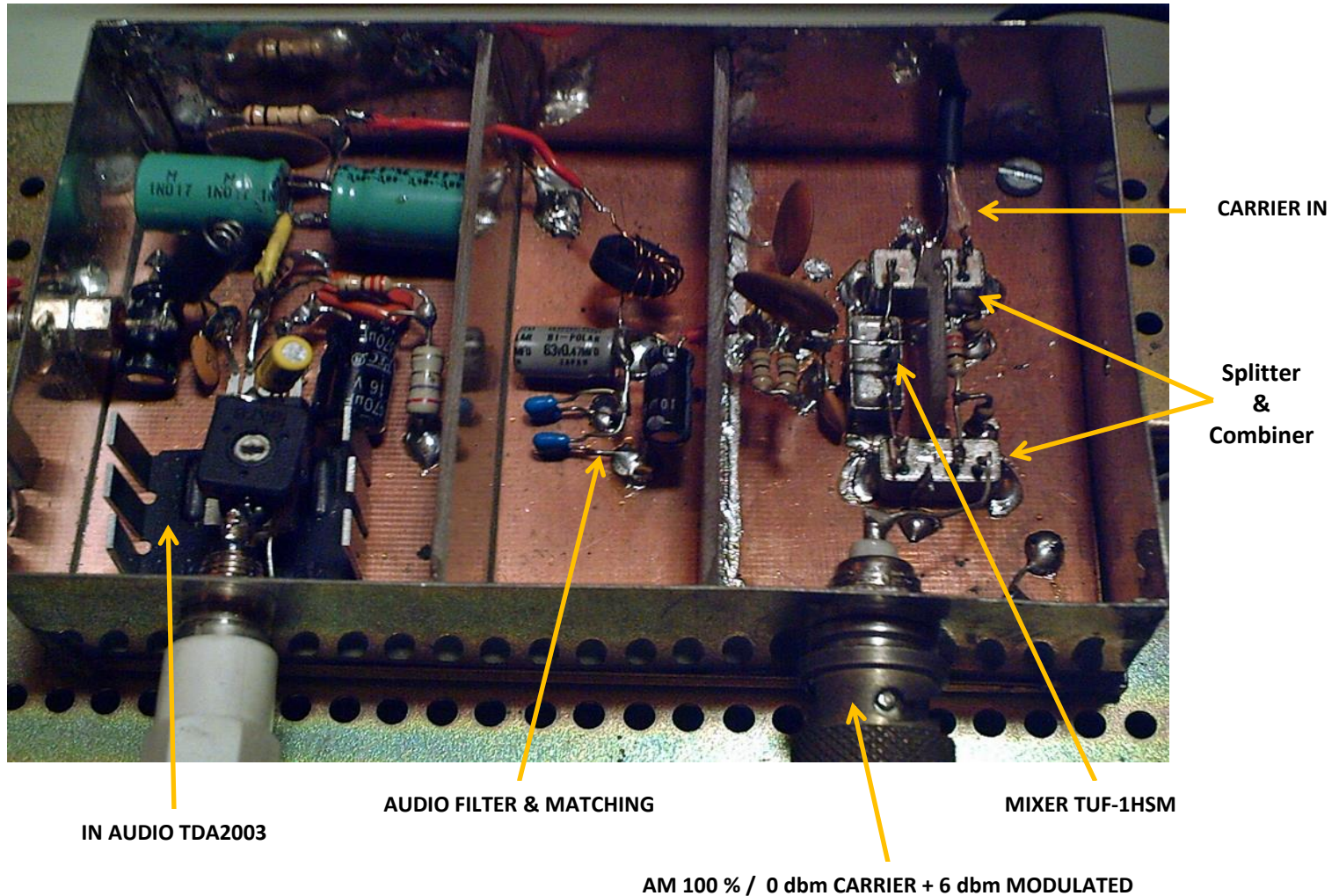
High Level Mixer Bridge Modulator AM 100 %



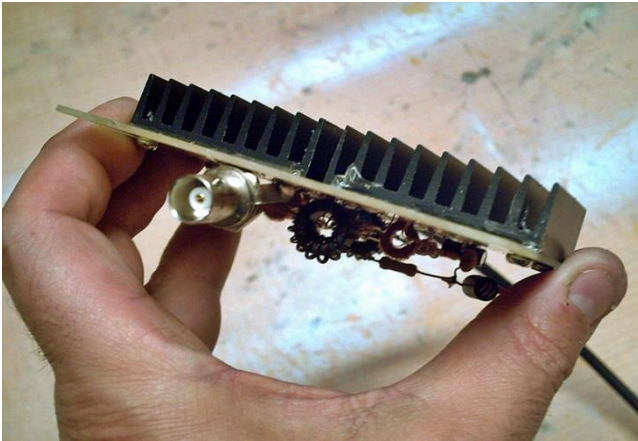
Low Pass	5 Khz	6 Khz	8 Khz	10 Khz
L	580 µH	486 µH	364 µH	290 µH
C	1.5 µF	1.2 µF	910 nF	730 nF

The 6 Khz filter is best choice for AM voice. You can use a passive mixer or amplified microphone with a EQ tone control, directly connected to the audio IN trimmer.

Bridge Modulator Inside the HF AM exciter

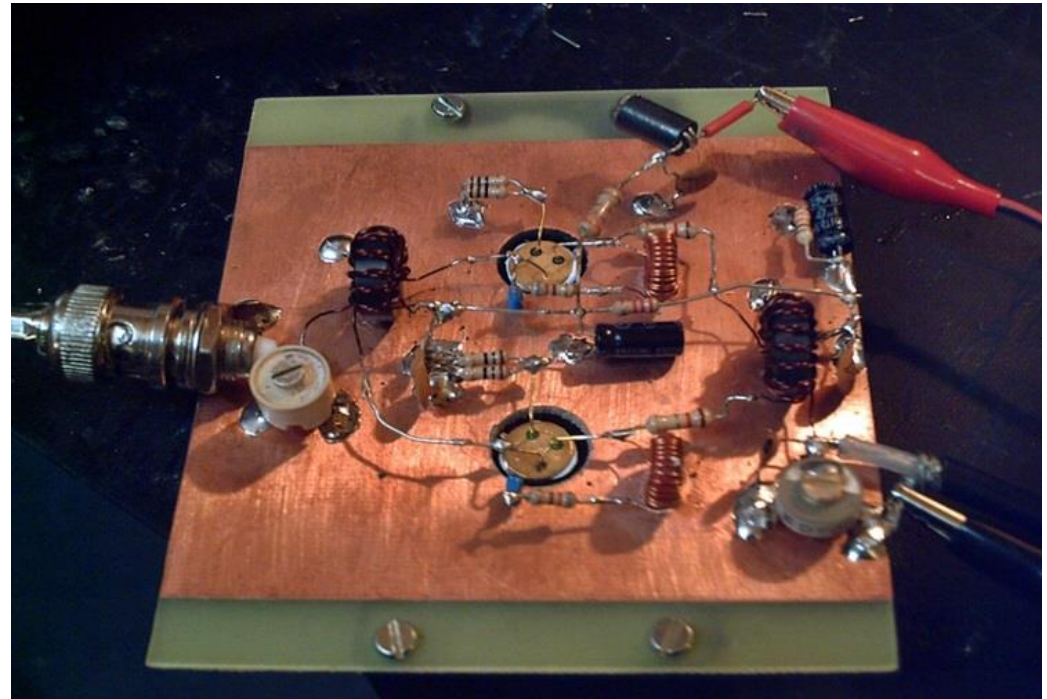


HF Driver Class A _High Dynamic



IN = 0 / + 6 dBm modulated

OUT = + 17 Carrier / + 23 dBm modulated

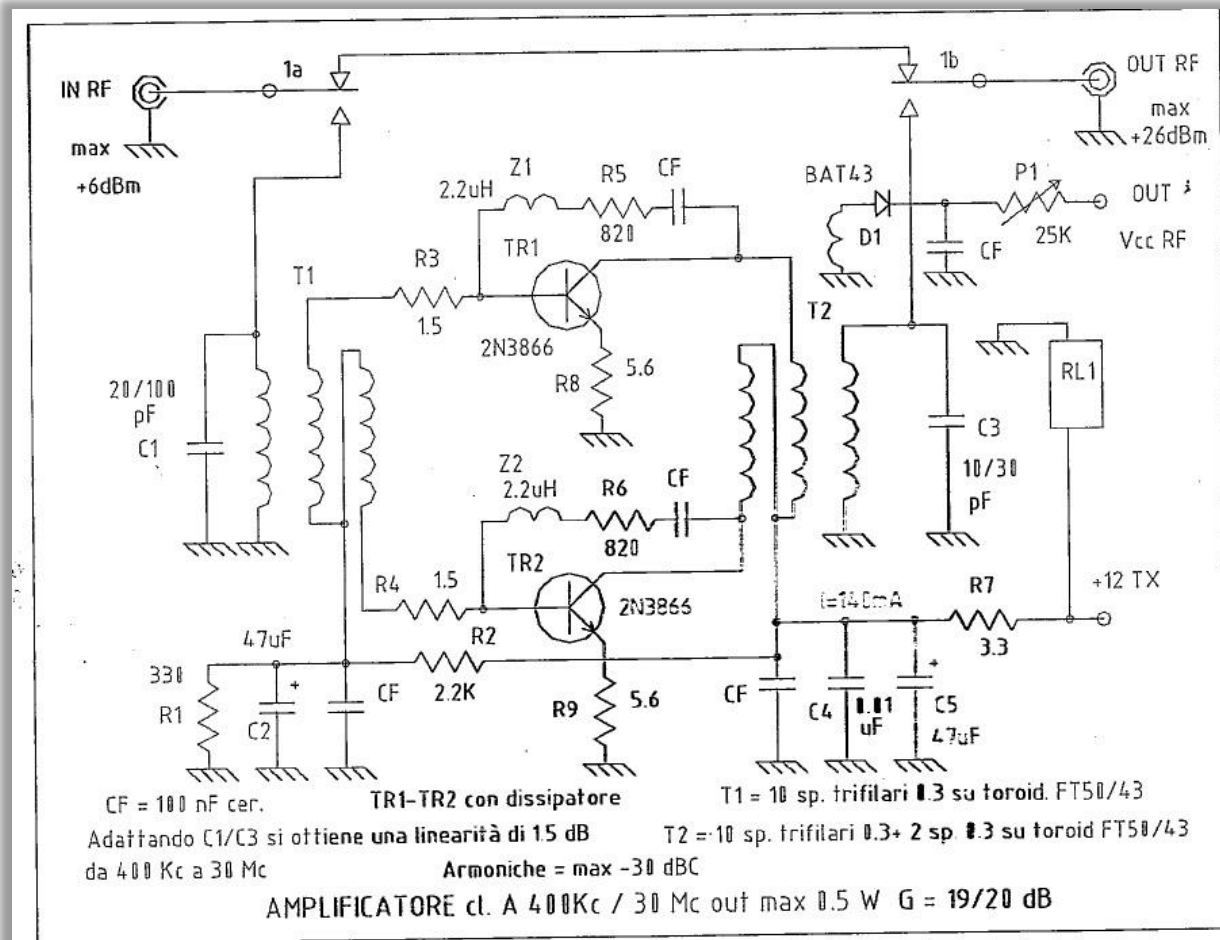


A great scheme made by I2BUM to have low distortion and audio fidelity in the AM modulation, using Class A 2N3866 x 2 in a wide band push pull configuration. If you enjoy long chats AM, Class A requires a good heatsink ! The level of harmonics is – 30 db under the F1 Carrier, and we will use band pass filters at the end of the amplification chain, to get – 60 db below at 12 Watt Rf out.

The total gain of the driver is about + 17 dbm, from 2 to 29 MHz (+/- 1 db)

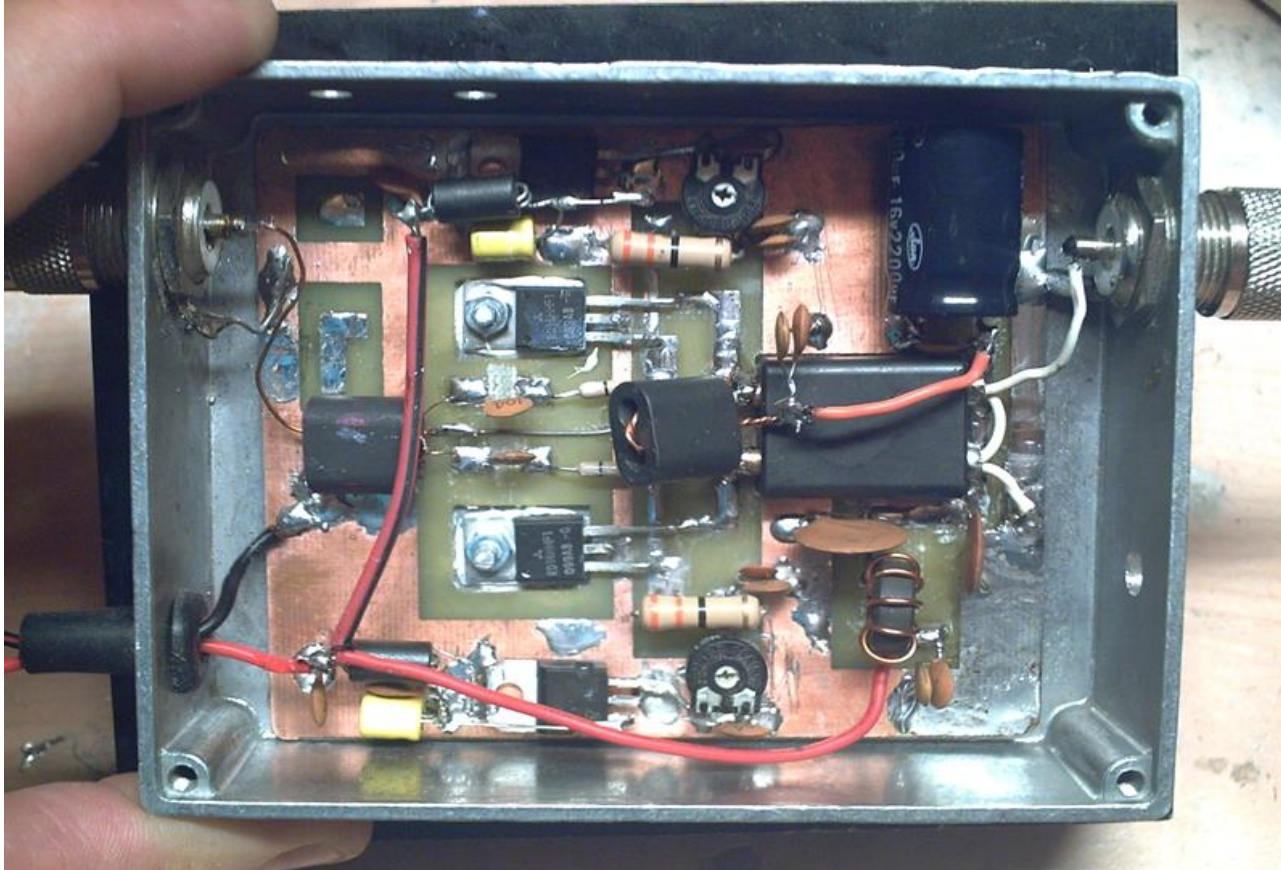
At this point our AM carrier has a level of 50 mW with 200 mW of envelope modulation peak, **maintaining a good dynamic** range on HF.

Class A amplifier 2 x 2N3866 by I2BUM



Using in AM mode 0 dbm IN produces 50 mW Carrier Out and 200 mw PeP

3 Watt Carrier 12 pep in AM mode (using a 20 watt SSB Class AB Amp)



All details of PennyWhistle project are available on:

<http://openhpsdr.org/pennywhistle.php>

Inside the AM HF Exciter Box by Ik2nbu



16 watt Class AB
PennyWhistle Project
Push Pull 2 x RD16HF1
<http://openhpsdr.org>

HF Band Filter

AM bridge Modulator

Class A Driver 2N3866 x 2

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