MARL

MALTA

Magazine by MARL

For Maltese and Gozitan Radio Amateurs

Number 65

July 2011

Smoking is prohibited at the Centre

From the Editor

Friends,
I welcome you to another issue of this magazine for July 2011, which is issue 65 of this series.

First of all I would like to remind you about the good news that we had on our request that we have been asking for a long time about **500 kHz**. Now I can tell you that the work that the Comittee has been doing for a long time was fruitful and we have been given an allocation. You will find details further down.

I remind you that about this frequency there is a motion on the agenda of the **International Telecommunications Union World Conference** that is going to be held next year and probably as wished by radio amateurs there is going to be a world-wide allocation on this frequency or nearby frequencies.

As **Ivan 9H1PI** wrote in his e-mail to the Yahoo group and as everyone knows where authorities are concerned, you have to talk with them for years to get something. I do not blame them for thinking it over for a long time because as I wrote many times if everything is all right and nothing happens no one thanks them, but if some trouble results they will be blamed.

Now foreigners also do not have to pay when they apply for a licence to work temporarily (**9H3****) from Malta. Then from our side we can use **XX/9H1**** in the countries that had signed the TR61-01 because previously a country recognized that we can do so if there was the official entry into effect of this possibility for their radio amateurs as well as due to some differences between our mutual licenses.

It also took so long because there was payment for the license and althout it is a small fee, the Communication Authorities could not give their approval if they did not have the prior aproval of the Government because it is Government income and could not be repealed if there was no such agreement.

We now hope that other requests that we may have and which we have been talking about will also be acceded to by the authorities so that Maltese radio amateurs will be able to use other frequencies that other countries have given to their radio amateurs.

What I tell you is to use all the frequencies that we are given carefully and observe the regulations and restriction that there may be so that the authorities will not have any difficulty for other requests.

As always, I hope that you find the information in the magazine useful to you and if you have some article please leave it in my **QSL** box or you can send it to me on my e-mail **9h1avLaw at gmail dot com**.

Lawrence
9H1AV/9H9MHR/9H79AV

500 kHz

As you know through an e-mail from **Ivan**, **9H1PI**, we had the good news that after long discussions that the Comittee has been holding for a long time with the Malta Communication Authority we have succeeded in getting an allocation on this frequency.

These discussions were not easy because although as I wrote several times there is still no allocation by the International Telecommunications Union to radio amateurs on this frequency, although a number of countries as I have shown many times gave an allocation to their radio amateurs.

It is therefore very satisfactory that now we have been given an allocation on this frequency for those radio amateurs interested to experiment on it. This is not a general allocation for all radio amateurs, but whoever is interested can apply for permission to experiment on it.

In fact, this allocation is found in the National Frequency Plan where there is laid down an allocation to radio amateurs as well as a note that one finds in the same plan where there are the conditions for one to experiment on it.

The allocation of the band 501 - 504 kHz to the amateur service is valid until 31 December 2011. Stations in the amateur service using this frequency band shall not exceed a maximum effective radiated power of 10 Watts (10dBW) and shall not cause harmful interference to other services operating in the same or adjacent frequency bands. Transmissions in this band shall be limited to experimental or research.

This is a step forward because this is the first time where Maltese radio amateur were given permission to experiment on a frequency when there is still no allocation by the International Telecommunications Union to the amateur radio service.

This is the fruit of long work, careful and without a lot of fanfare, which work took years, but after all is of benefit for those radio amateurs who want to experiment on this frequency.

I remind you that although we had to wait for an allocation from the International Telecmmunications Union to the radio amateur service to be given an allocation on the frequency of **136 kHz**, even to be given this allocation we had long discussions with the Maltese authorities so that everything was ready when there was the approval and the date from when we were able to use it in fact we could start using it.

Now that we have been given the possibility to use this frequency, we hope that it is used carfeully and as it should be so that not only will there be no problems but there will be the possibility to be given permission to continue using it even after 31 December until there is a permanent allocation by the international Telecommunications Union to the radio amateur service.

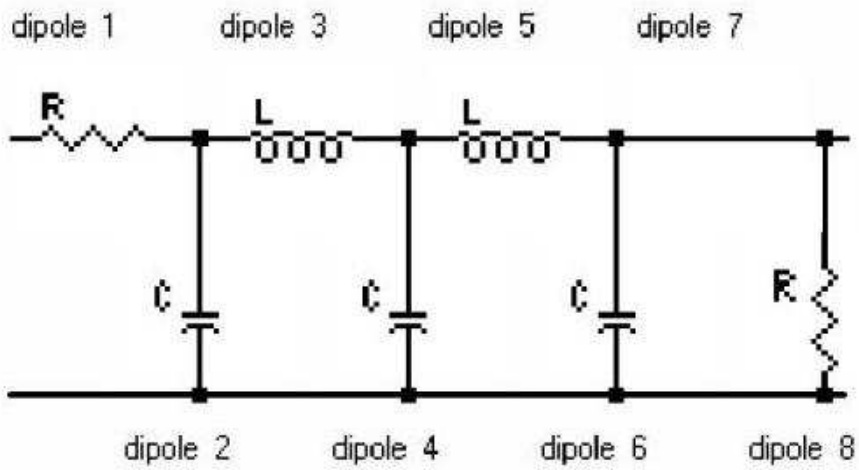
Transmitter Filters

Today I am going to give you the circuits of some filters that allow frequencies below **500 kHz** to pass and stop higher frequencies. These are important because the frequency of **500 kHz** multiplied by 2 as well as by 3 fall on the broadcast frquencies and whoever is going to use **500 kHz** should filter the signal after the transmitter prior to going to the antenna.

These filters are designed for an impedance of **50Ω** and the first one is 5 poles and is a **Chebychev** design. You can use toroidal coils or not, that is wound on a form, as an example, a plastic pipe, The resistors are there to represent the filter impedance and not to put them there physically.

This filter is designed to have a loss of less than **1 dB** on **510 kHz**. Loss increases by **0.1 dB** on **550 kHz** where the response starts dropping. The second and third harmonics are reduced by about **40 dB** and **65 dB** respectively. The following curve shows the transmission loss in the filter in **black** and the return loss in **red**.

The value of the coils is shown and you can work out how many turns you need with programmes that one can download from the internet and which I have sometimes given you the links.



DIPOLE 1
R 1=50.

DIPOLE 2
C 2=.012356uF

DIPOLE 3
L 3=15.787uHy
Qu~50.
F(L3C2)=
360.364557KHz

DIPOLE 4
C 4=.017368uF
F(C4L3)=
303.949576KHz

DIPOLE 5
L 5=15.787uHy
Qu~50.
F(L5C4)=
303.949576KHz

DIPOLE 6
C 6=.012356uF
F(C6L5)=
360.364557KHz

DIPOLE 8
R 8=50.

5.th order (6/1/2005) Chebyshev Low-Pass
Cutoff = 1. db @ 550.Khz
Stopband = 40.443 db minimum @ 1.Mhz
Design Impedance=50. ohms
Input Impedance = 50. ohms
Output Impedance = 50. ohms
Capacitance Spread = C 4 : C 6 = 1.406
Inductance Spread = L 3 : L 5 = 1.

(6/1/2005) Chebyshev Low-Pass Schematic

The Second Filter

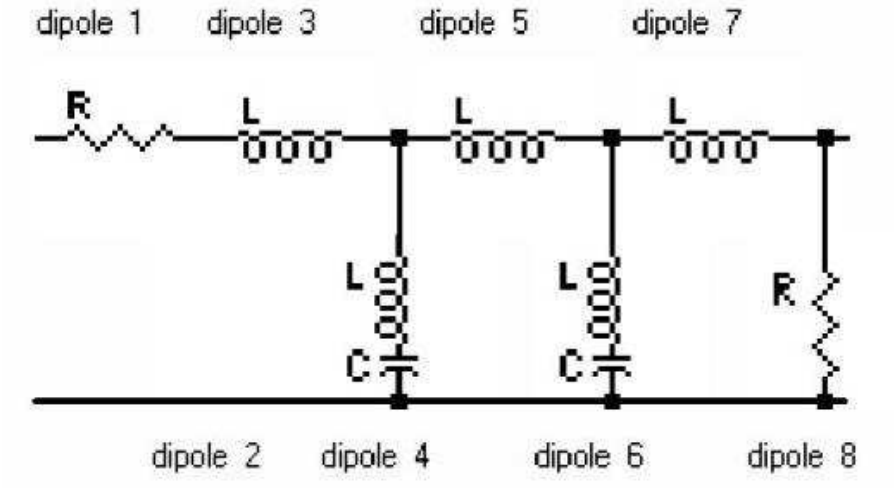
The second filter is also of 5 poles and Elliptic design. These filters are found on the internet webpage of the American group that was the first that was given and started transmitting on this frequency.**http://www.500kc.com/500kc-lpf/index.htm**

This second filter has more components but is designed to cut off the second and third harmonics much more.

One has to consider that the Americans use more powerful transmitters and have a lot of stations on the medium wave and therefore it was and still is important for them to cut off as much as possible the harmonics of the **500 kHz** signal.

This second design has a little more loss, about **1.1 dB**. It also starts attenuating earlier, on **525 kHz** instead of **550 kHz**.

In this design, the second and third harmonics are attenuated to about 67 dB and 95 dB respectively. This filter curve also shows the transmission loss in **black** and the return loss in **red**.



DIPOLE 1
R 1=50.
F(L6C6)=
1.043847MHz

DIPOLE 3
L 3=31.022uHy
Qu~50.

DIPOLE 7
L 7=28.723uHy
Qu~50.

DIPOLE 4
C 4=.006228uF
L 4=1.556uHy
Qu~50.
F(L4C4)=
1.616777MHz

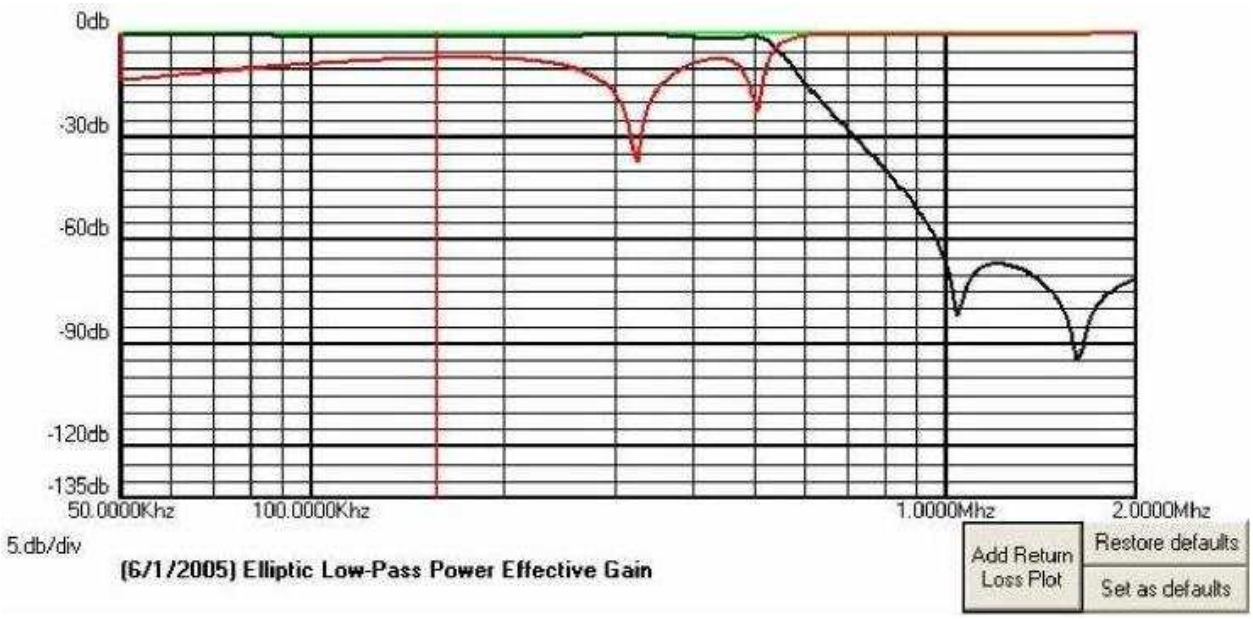
DIPOLE 8
R 8=50.

DIPOLE 5
L 5=41.013uHy
Qu~50.

DIPOLE 6
C 6=.005567uF
L 6=4.176uHy
Qu~50.

5.th order (6/1/2005) Elliptic Low-Pass
Cutoff = 1. db @ 525.Khz
Stopband = 66.885 db minimum @ 1.Mhz
Design Impedance=50. ohms
Input Impedance = 50. ohms
Output Impedance = 50. ohms
Capacitance Spread = C 4 : C 6 = 1.119
Inductance Spread = L 5 : L 4 = 26.359

(6/1/2005) Elliptic Low-Pass Schematic



Computer Programmes

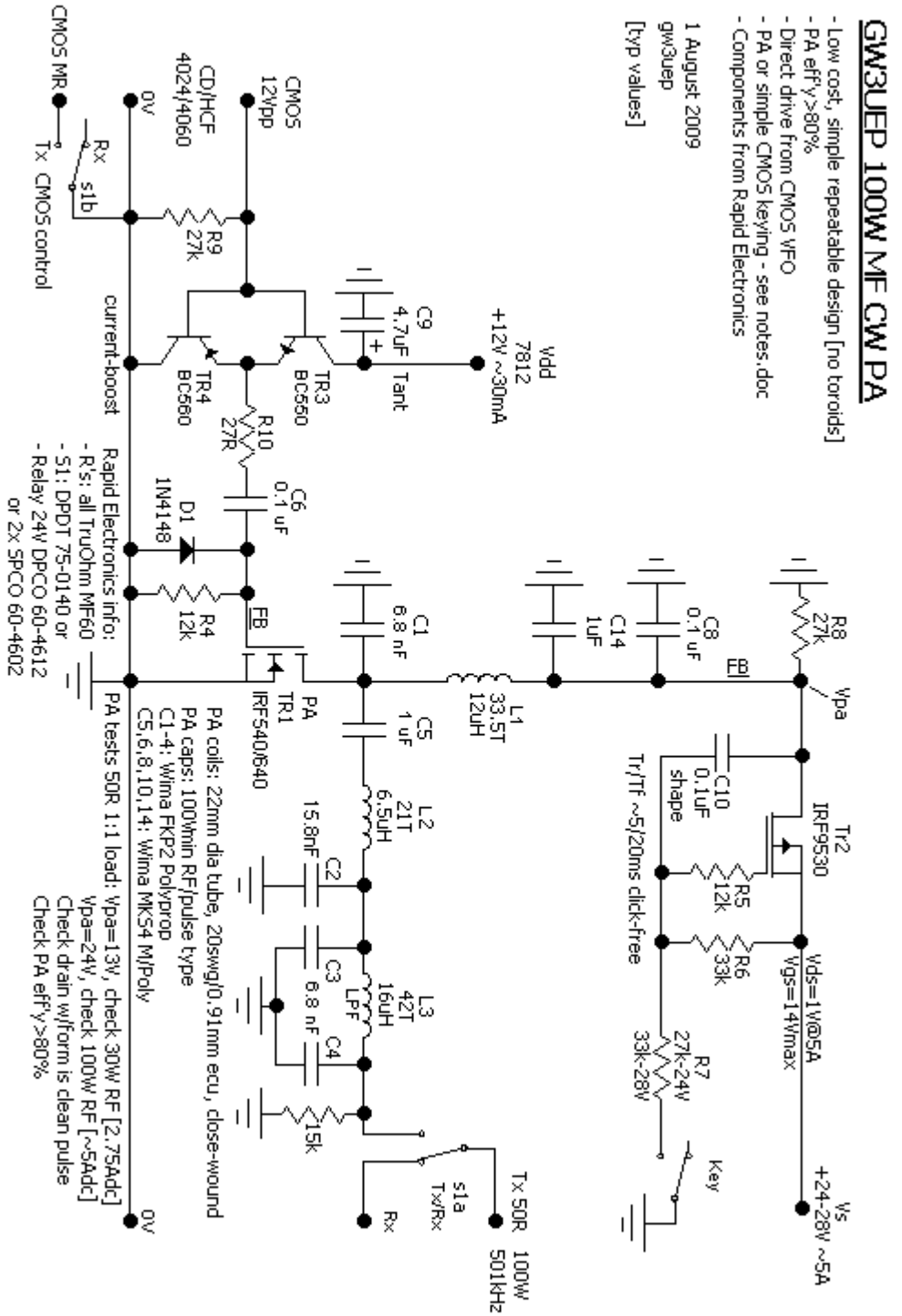
Although if one uses the Morse code he can communicate on this frequency, there are a number of computer programmes that one can use because presently the power that we can use is limited to **10 Watts erp**.

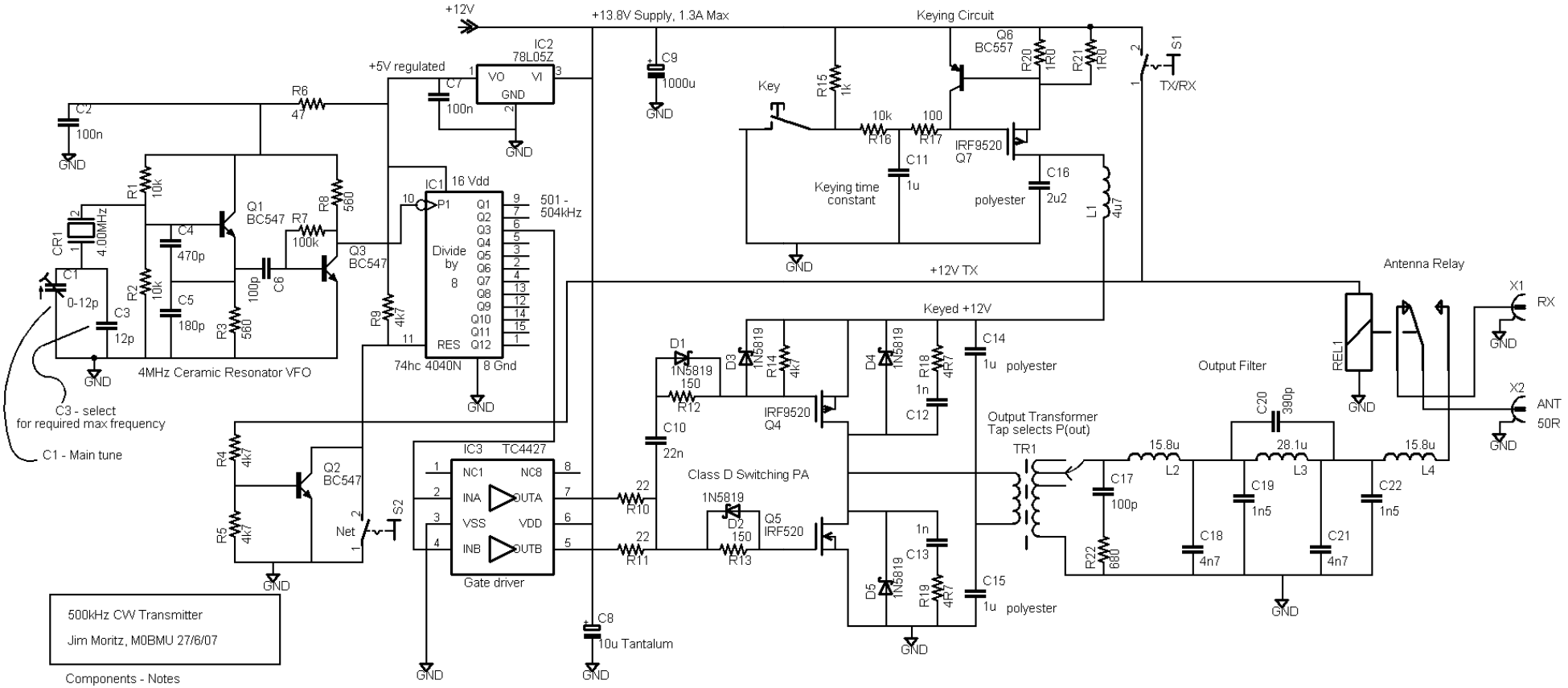
Therefore, hereunder you have some internet links from where you can download these programmes.

http://www.wireless.org.uk/software.htm
There are a number of links from where you can download computer programmes.

http://www.wireless.org.uk/g4fgq/page3.html
A number of useful programmes.

You also have some transmitters' circuits that although some of which I had previously given, I am giving again to save you from searching for them. We'll wait for you on this frequency.





Q4, Q5 mounted on 20degreesC/W heatsinks

Q7 mounted on 4 degreesC/W heatsink

L2, L4 53 turns 0.4mm wire on Micrometals T-68-2 Toroid

L3 70 turns 0.25mm wire on Micrometals T-68-2 Toroid

L1 4u7 (not critical) supression choke rated at least 1.2A

D1 - D5 1N5819 30V 1A schottky rectifier diode

RL1 Change-over contacts rated 2A, 12V coil

TR1 PA output transformer on 22mm Fair rite 43 material toroid (5943007601)
(RS components 467-4217)

Primary - 3 turns 0.8mm wire
Secondary - 15 turns 0.6mm wire, with taps to suit required output power

(Approximately) 10t = 5W
13t = 8W
15t = 11W

C3, C4, C5 polystyrene, SM, etc.

C14, C15, C17, C18, C19, C20, C21, C22
Low loss types - SM, polystyrene, polypropylene etc.

R20, R21 1R0, 0.5W resistors

All other resistors 0.25W

QTX

Quick Low-Cost MF Tx

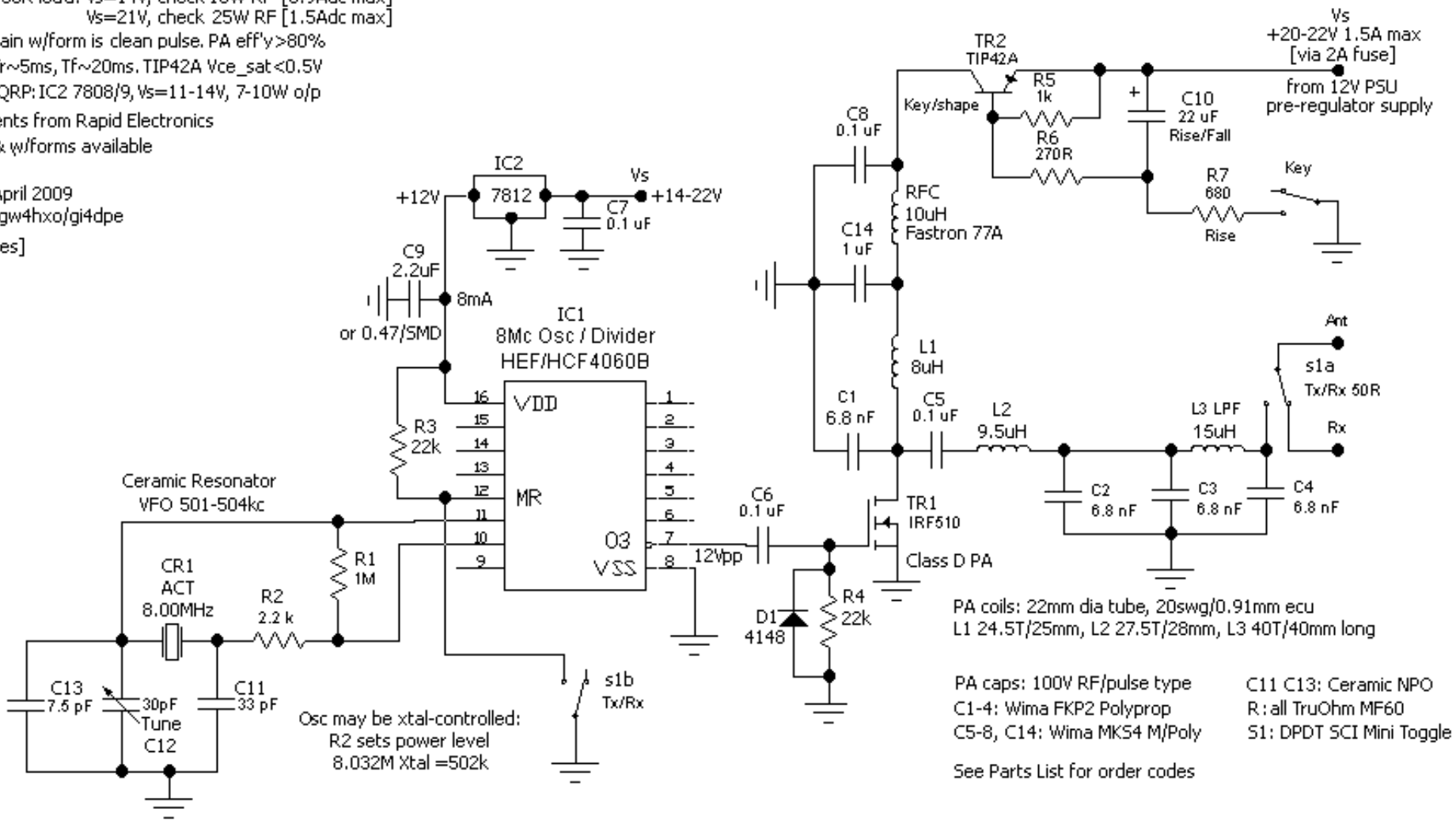
Quick MF CW TX: 501-504 kc/s 25W output

- Low cost, high efficiency, simple repeatable design [no toroids]
- PA tests 50R load: Vs=14V, check 10W RF [0.9Adc max]
  Vs=21V, check 25W RF [1.5Adc max]
- Check drain w/form is clean pulse. PA eff'y >80%
- Keying: Tr~5ms, Tf~20ms. TIP42A Vce_sat<0.5V
- For 12V/QRP: IC2 7808/9, Vs=11-14V, 7-10W o/p

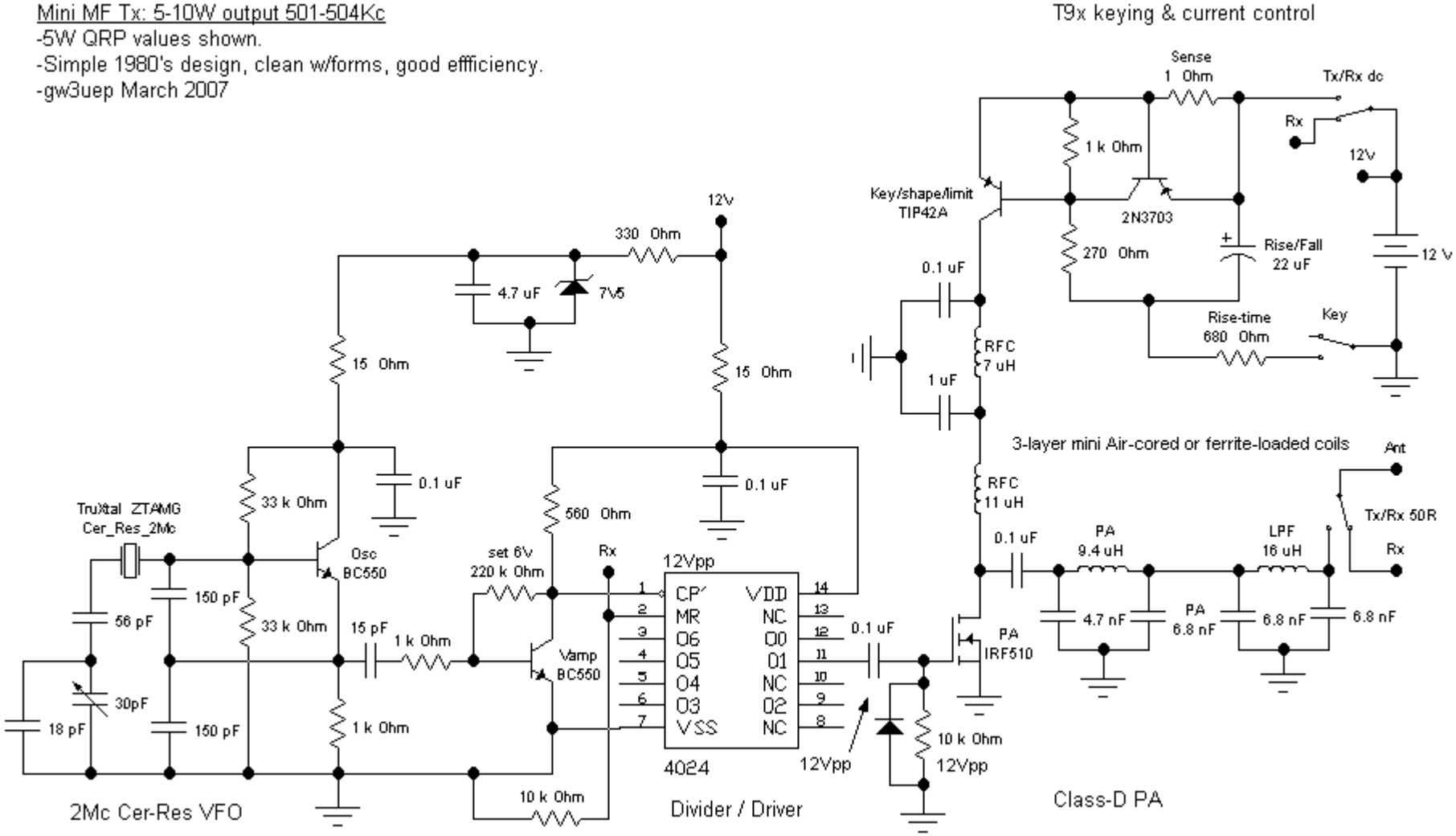
Components from Rapid Electronics
Photo's & w/forms available

QTX 15 April 2009
gw3uep/gw4hxo/gi4dpe

[typ values]



Mini MF Tx: 5-10W output 501-504Kc
-5W QRP values shown.
-Simple 1980's design, clean w/forms, good effficiency.
-gw3uep March 2007



500 kHz

Another bit of news that I am sure that those who are eager to work on this frequency will be happy with is that **Croatia** has also given an allocation to its radio amateurs.

This allocation is between **493 kHz** and **510 kHz**. This information came from **9A5K** who was granted the first experimental license for a year and will be on the air as soon as he has the equipment ready.

Lawrence
9H1AV/9H9MHR/9H79AV

Radio Amateur Examination

The Malta Amateur Radio League will be holding the examinations at its Centre in Notabile Road, Ħ'Attard, on Saturday 30th June.

The exam consists of two parts: Written (from 9 a.m. to 11:15 a.m.) and (Practical) Morse Code (from 12 p.m. to 1 p.m.) Please be aware that if candidates finish from their written exam earlier than allocated, the Morse Exam may commence before the time announced so please try to be a bit earlier.

Applications should be submitted by Sunday 24th July (Bring along a colour photocopy of your ID card from both sides and on your application write down your mobile number and email address). For more information call the secretary on 79437808, or email to: Exam Info **ivan.privitera @ gmail.com** subject Exam + Info or in person at the club's premises on Tuesdays and Thursdays from 6 to 8 p.m. and on Sundays from 10 a.m. to noon.

Lawrence
9H1AV/9H9MHR/9H79AV

5 MHz

The latest news on this frequency are that in June 2011 the **Portuguese** Administration **Anacom** assigned the frequency of **5288.5 kHz** with the frequencies of **5371.5 kHz** and **5403.5 kHz** that it had previously assigned on a secondary and non-interferance basis. These permits were issued for a year but, but as usually happens overseas they are generally renewed.

Another news item on this frequency is that **Croatia** has also given an allocation to its radio amateurs. This allocation is between **5.260 MHz** and **5.410 MHz** and all modes may be used.

This information came from **9A5K** who was granted the first experimental license for a year and will be on the air as soon as he has the equipment ready.

Lawrence
9H1AV/9H9MHR/9H79AV

70 MHz

Latest news on this frequency is that Bahrain has given an allocation on this frequency to their radio amateurs. According to **Dave, A92IO**, they were given an allocation between **69.9 MHz to 70.4 MHz** with a maximum power of **500 Watts**.

The allocation is secondary and contacts have already been made between Bahrain (**A92IO**) and the **Czech Republic** (**OK1KT**) and **Slovakia** (**OM3PV**). The two contacts were made on 3 June 2011, 08.12 and 08.28 UTC respectively.

The Committee is still discussing with the authorities about this frequency which is more difficult than the others, but we hope that we shall also arrive at an agreement on this frequency as we have arrived on other frequencies and other issues that we have succeeded to acquire up till now.

Lawrence
9H1AV/9H9MHR/9H79AV

Internet links

Due to this edition of the Magazine having most information relating to the new **500 kHz** frequency, it's good to give you some internet links from where you can download further information on what you would need to work on this frequency as well as on the **136 kHz** frequency.

http://www.alan.melia.btinternet.co.uk/
G4NYK

http://www.qsl.net/on7yd/
ON7YD's Amateur Radio Web Site

http://www.qsl.net/on7yd/136narro.htm
Extreme narrow bandwidth techniques

http://www.w0ch.net/qrss/qrss.htm
QRSS

http://wireless.org.uk/
The World of LF (& MF!)

http://www.rac.ca/en/amateur-radio/operating-technical/longwave/
Longwave

http://www.qru.de/index.html
DK8KW Long Wave Information

Lawrence
9H1AV/9H9MHR/9H79AV

MARL Activities

Yahoo Group

Be attentive and become members in the yahoo group to be fully informed with the latest activities that we intend to hold.

Do not forget that we may have activities which may not be able to appear on this magazine because it may have already been issued and therefore the notice will be sent on the yahoo group.

Send an e-mail to Ivan, 9H1PI ivan.privitera_at_gmail.com to become members in the group.

We remind you that whoever wants to can download the Magazine from www.9h1mrl.org/newsletter.htm

Lawrence
9H1AV/9H9MHR/9H79AV