

August 2001

Volume 2, Issue 2

ANODE

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Editor's Comments

This column is usually where I rant or rave about something. This week has been rather busy for me. With a so called Public Holiday on Thursday last, I think a lot of people tried to fit five days work into three.

I have managed to fit quite a few articles in this time, some are even Amateur related.

It seems that we have

had the first 'drive by hacking' incident. Wireless networking of computers is on the increase and apparently not that secure. It was a put up job. The computer magazine hired someone to show it could be done.

With the exchange rate worsening even more this last month it surely is time for an enterprising amateur to make use of all the local resources. There

have been quite a few vhf and uhf rigs for sale recently.

Perhaps the exorbitant amount of money charged for an imported rig may start some local amateurs off in local manufacture.

The 'Boot Sale' on the 28th July was a great success and very well attended. Unfortunately some Hams didn't understand the concept of keeping the road clear

(Continued on page 11)

The "Big Room" and A few definitions

Big Room, the (n):

The one with the blue ceiling and intensely bright light during the day and black ceiling with many tiny night-lights at night, found outside all computer installations. "He can't come to the phone right now; I think he's out in the Big Room."

bit rot (n):

Hypothetical disease whose existence has been deduced from the observation that unused programs or features will often stop working after sufficient

time has passed, even though in the interim nothing has changed. The theory posits that bits decay randomly, as if they were radioactive.

casters-up mode (n):

Yet another synonym for broken or down.

cruncha cruncha cruncha (interj):

An encouragement sometimes muttered to a machine bogged down in a serious grind.

documentation (n):

The macerated, pounded, steamed,

bleached, and pressed trees that accompany most soft or hardware products. Hackers seldom read paper documentation and often resist writing it; they prefer it to be terse and online. A common comment on this is "You can't grep dead trees."

drool-proof paper (n):

Documentation which has been obsessively "dumbed- down", to the point where only a cretin could bear to read it, is said to have been "written on drool-proof paper".

(Continued on page 2)

Special points of interest:

- More mods for the FRG7
- Calendar for August
- Contact details on back page

The "Big Room" and A few definitions

For example, this is an actual quote from Apple's LaserWriter manual: "Do not expose your LaserWriter to open fire or flame."

geek out (v):

To temporarily enter technonerd mode while in a non-hackish context, for example at social gatherings held near computer equipment.

godzillagram (n):

1. a network packet that in theory is broadcast to every machine in the universe. The typical case of this is an IP datagram whose destination IP address is [255.255.255.255]. Fortunately, few gateways are foolish enough to attempt to implement this.

2. A network packet for maxi-

mum size. An IP godzillagram has 65,536 octets.

hamster (n):

A particularly slick little piece of code that does one thing well; a small, self-contained hack. The image is of a hamster happily spinning its exercise wheel.

heisenbug (n):

A bug that disappears or alters its behaviour when one attempts to probe or isolate it. Antonym of Bohr bug. See also mandelbug.

liveware (n):

1. synonym for wetware.
2. vermin. "Waiter, there's some liveware in my salad."

lunatic fringe (n):

Customers who can be relied upon to accept your release 1.0 versions of software.

mandelbug (n):

A bug whose underlying causes are so complex and obscure as to make its behaviour appear chaotic or even totally non-deterministic.

mouse droppings (n):

Pixels, usually single, that are not properly restored when the mouse moves away from a particular location on the screen, making it appear that the mouse pointer has left a trail of scat.

nyetwork (n):

A network, when it is acting flaky or is down.

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The FRG7 Mods part 2

Modifying The FRG7

By Peter D. Rouse Part 2

Practical Wireless, October 1984

Switched selectivity filtering for the FRG-7 using a special 2kHz s.s.b. filter provides options for narrow/wide selectivity with options to use either the existing 6kHz filter or fitting a 4kHz type. No holes need be drilled in the front panel and optional switching arrangements are given.

The Problems

As was mentioned in the first part of this series, the FRG-7

does suffer rather badly from excessive i.f. bandwidth. The existing filter is a ceramic type designated LFC6 and it has a 6kHz bandwidth. This may be fine for general listening but it is of little use to the DXer trying to winkle-out weak signals amongst the "megawatters" or narrow-band s.s.b. amongst the crowded amateur bands.

In the FRG-7 the selectivity is decided at the last i.f. of 455kHz and there is no attempt in any of the receiver's preceding stages to determine bandwidth characteristics. However alternative filters for this i.f. frequency are

fairly easy to obtain and so it is not too difficult to design a unit which will allow us to switch in different filters.

Why Two Filters?

If we are to solve the selectivity problem mentioned above then we need to look at an i.f. pass-band of about 2kHz which is generally considered to be near the ideal for s.s.b. However the same bandwidth will cause distorted reception of an a.m. signal particularly music. Having made that point though it must be stressed that the 2kHz filter can provide excep-

(Continued on page 3)

The "Big Room" and A few definitions

(Continued from page 2)

shoenet (n):

Term used (generally with ironic intent) for transfer of electronic information by physically carrying tape, disks, or some other media from one machine to another. "Never underestimate the bandwidth of a station wagon filled with magtape, or a 747 filled with

CD-ROMs."

troglodyte mode (n):

Programming with the lights off, sunglasses on, and the terminal inverted because you've been up for so many days straight that your eyes hurt (see raster burn). Loud music blaring from a stereo stacked in a corner is optional but recommended. See hack

mode and larval stage.

wave a dead chicken (v):

To perform a ritual over crashed software or hardware which one believes to be futile but is nonetheless obligatory so that others may be satisfied that an appropriate degree of effort has been expended.

The FR67 Mods part 2

(Continued from page 2)

tional a.m. performance in terms of trying to sort out weak signals from amongst adjacent strong ones. In fact with the circuit suggested it is frequently possible to hear stations which cannot be heard at all with the 6kHz filter.

The system adopted here uses the existing filter in conjunction with a mechanical 2.1kHz filter and in the author's view this presents a reasonable cost-effective solution. The circuit board will also accept alternatives to the LFC6 should a 4kHz filter be preferred and of course there is no reason why the circuitry should not be extended to a 4-filter system with even wider filters for high quality a.m. or 144MHz band converter use. If this is tried though some thought must be given as to where a 4-way switch can be fitted.

How it Works

When contemplating this project the author was aware that several different methods had

already been published.

These fell into two categories the first being to actually bring the i.f. signal out to the MODE switch, switch it to the appropriate filter then switch it out of the filter and back to the circuit. This method was discounted on the grounds that it restricted the use of the 2kHz filter to s.s.b. and the author considered it dubious engineering practice to route i.f. signals out to the front panel and back.

The second method which seems to have been far more popular involves the use of switching diodes using switched d.c to block or pass the signals. The commercial unit from Cirkit (formerly Am-bit International) uses such a method and the author's initial design work was along these lines. However the method does suffer from drawbacks. There is signal attenuation through the switching diodes and this coupled with the insertion loss through the 2kHz filter and its matching transformers

does make these rather deaf to weak signals.

At this stage the author gratefully acknowledges the advice of Nigel Curzon at South Midlands Communications who not only provided background notes for this series but also suggested trying c.m. o.s. switching. This was done using a 4066 quad-bilateral switch and the results were very pleasing.

CMOS Quad Switches

Several versions of quad switches are available and at the cost of little more than a transistor this is a remarkable device that has clearly been overlooked by many constructors if articles in the hobbyist magazines are anything to go by. It would seem appropriate at this point therefore to give a brief description of the device.

The i.c. chosen for this application is the 4066 which con-

(Continued on page 5)

THE TOYOTA 1000 RACE 2001

As done by Sarel ZS6APO

Warning:

This article must be read in the spirit it was written. [Most probably Brandy - Ed]

This is the 11th "Dessert Race" that I had attended as a Radio Marshal.

How did it happen that an Outjie like me landed on something like this? Quite easy.

First of all, to be a Radio Ham shows an abnormality in his/her personality. (You never think a Fellow Radio Ham would say something like that! - I can see what the XYL's will think of this statement!)

No, it is NOT what you think! It is because We DO IT ON THE AIR, that's why. (In a later episode I will tell you why I am a Marshall at Kayalami, but that is another story.)

Secondly, friends like Frans ZS6ZR that tell you about all the nice things that happen there in the bundus, but Not about the cold nights, little wash, long time on the air, DUST, thorn bushes and the rest.

The "Trans Kalahari" race is being organized by the 4X4 Club of South Africa. Some of the "Hams" like me joined the 4X4 Club with the knowledge that we do not own a 4X4 but we know quite a couple of guys that do own that particular type of Yuppie vehicle. (Another "afwyking? Who knows.)?

Alle grappies op 'n stokkie. No, I think I really see the participation as practical training but also a type of community service that we as Radio Hams render to the racing fraternity.

Let me tell you how A25 ZS6APO starts organizing his typical four days in the veld.

1) E-mail is received from Neville Marsh (Chairman of the 4X4 Club and Communications coordinator). This happens every time when I am away with leave!

2) Advise Neville of all particulars re radios for a Botswana Radio license.

3) Tell wife I am going to the bush again. (Ask her to go along but know beforehand that she will say no).

4) Arrange with Brian Woods (who owns a 4X4) to go with.

5) Getting equipment together and test the antennas, charge batteries, start generator ext.

6) Sunday before the race: Receive Radio license and all other documents from the Club.

7) Wait for the Thursday to start packing.

8) Pack Venter, tick off the list. (If you did not pack something you must do without it.)

9) 06:00 Friday. Hitch trailer, recheck that passport and all other documents are packed

and leave for the border.

Now the sports begin. Put on a "Poker face" for customs purposes.

Who can declare the Beer, Obies, Brandy, Whisky, Coke's and the Mampoer? A poor ham can't afford enough Pulas to pay the duties after purchasing the RF, that's why.

Off to Gabs. This year we had to buy our meat in Gabs. They do not trust our "Bek & Klou". Even have to do a rain dance on a chemical cloth at the border! We found a German Butcher with good but affordable meat. Then we filled up with Petrol and wash water - again if you haven't got it you do without.

The Grand Palm Hotel is the next stop. Only to pick up (buy) a Desert Race sweater (got to prove to wife you were there) and beg, borrow or steal a Competitors list.

Now is the time to hit the road to MP4 (my address for the next three days). First to Molepolole, try to find the tar road out of town, then the turnoff to MP4. The Post Marshals will be waiting for us at a predetermined spot as arranged. Problems strike. We could not find the spot and turned back to the tar road after we went a further ten or more kilometres past where we thought MP4 should have been. With luck I found the

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THE TOYOTA 1000 RACE 2001

(Continued from page 4)

marshals per HF at overnight stop with Race control.

After more than an hour the Marshals arrived (With their Off road caravans). We then went to the site where MP4 was to be for the period of the race.

That was the time when we started getting busy. I put up masts, Dipole/Slim Jim and Radios. Brian put up the tent and cooking facilities while the Marshals were putting out the boards and other equipment for the next morning race. The caravans took longer to get "Waterpas".

At 17.30 contacts was made with Race Control on HF and 2 Meters. At that time it was get-

ting cold but wood was already fetched and a Makulo fire was lit.

Now I will first give you a little background of the race itself.

In total the race is run over two days. The Saturday it is the Out race starting outside Gabarones. Every 200 Kms. is a "Clipping" Marshall post with a Radio Ham for comms. The 4X4 marshals got a 35Mhz. Fm system for their own use.

The Designated Service Point is plus minus 250 Kms from the start. This is where control was situated this year. DSP also doubles up as the Overnight Stop. After DSP the track forms a 250 Kms. "Loop" and the vehicles (I am not sure that the

drivers/support crews do) sleep over at Overnight stop. The Sunday the race is run in the opposite direction and ends in Gabbs.

The next is a typical day as a Radio Marshal (Ag shame)

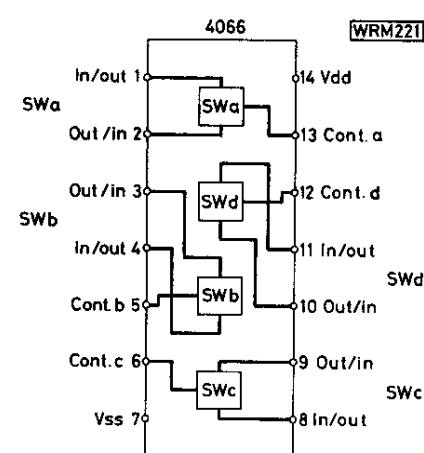
Get up at 06:00. Brush teeth with freezing water. Light gas stove to boil coffee water. Take table, chair, Radios and all necessities to the end of the coaxial cable. That is where you will sit and work the whole day. Somebody, this time Brian must bring drinks, that is cold drinks or tea/coffee. RF like beer is OUT while you are on duty. (What a long day).

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The FRG7 Mods part 2

(Continued from page 3)

sists of four solid-state switches in a 14-pin d.i.l. package. Each switch has a control pin which when held low causes the switch to open. In effect it exhibits a resistance equal to 10TOhms (10^{13} Ohms). When the same pin is pulled high the switch closes and, in the case of the 40669 exhibits only 120 Ohms when 10 volts are applied. In the case of the somewhat cheaper 4016 the on resistance is slightly higher. Crosstalk between switches is quoted at -50dB and the i.c.s will work with both single and dual rail supplies. Bandwidth is quoted at 40MHz and it is possible to strobe the control pins at



up to 10MHz. Yet a third variant, the 4416, offers double-pole, double-throw (d.p.d.t.) switching by having two switches normally closed and two open. The only points to be watched with all these switches

is that the voltage being switched should not exceed the supply rail voltage and of course the normal precautions should be observed for handling c.m.o.s. devices.

Circuit description

The circuit uses the existing LFC6 filter (FL-1), which must be removed from the circuit board and the Toko MFL45501L (Cirkit) which is supplied with two matching transformers, only one of which, the red-cored one, is used. Signal is taken from the pad which was the input point

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THE TOYOTA 1000 RACE 2001

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By this time the water is boiling and you drink your first cup of coffee. Remember it is freezing cold and your fingers are too stiff to tune the radio but the coffee heats you up just enough to get the transmitter going and then reports to Control that you are ready to race.

Seven o'clock the vehicles were started at Gabbs. And you follow the procedure over the HF comms. 10:09 the first vehicle hits MP2 and the sequences started to be passed to Race Control and your job really starts. 12:04 the first vehicle came through MP4 going on to DSP. And then to MP6.

At this point of time tragedy struck. A herd of cattle came stampeding through our base. With my spider web of mast, stays and dipole it was obvious that something must happen. One horned animal decided to hook the one leg of the dipole and to make off with one 40/80 meter trap. (By the way that trap is still missing, please listen out for a horny CQ on 40/80 from A25 land!) As a good Radio Ham I took my Long wire antenna along so that I was back on the air in 10 minutes flat!!!!

With the passing of the sequences, emergency mes-

sages were also passed, like broken shoulders, legs etc. This time a couple of bikers came off between MP2 and MP4 but for no reason at all was not reported with our Marshall. Probably they reported it at the petrol or road crossing points.

Here I want to mention that Steward Grobler was the Rescue Co-ordinator with mobile rescue units in the field. Each Rescue Unit had a Radio Ham plus a paramedic in their team. Unfortunately I was sitting in the bush and cannot tell you their exact modus operandi. All I know is that they

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The FRG7 Mods part 2

(Continued from page 5)

for the existing filter (FL-1) and fed to the new switching board, shown in Fig. 2.1.

Here, it is coupled to pins 2 and 4 of XIC1 which are the inputs to two of the switches. The outputs of the same two switches are on pins 1 and 3 and so depending on which switch is on, the i.f. is passed to either XF2 or XT1.

The same switching arrangement is extended to the output of XF2 and the output of XFL1 via the f.e.t. amplifier. These outputs appear at pins 8 and 11 of XIC1 and are switched to the circuit's output at pins 9 and 10, then back to the IF-AF unit to the pad that was the existing filter's connection point. The f.e.t. amplifier has been included to provide extra gain to make up for the

loss through the narrow filter as this is higher than through the LFC6 (FL1). In fact, whereas the LFC6 has only 7dB loss, the MFL455 (XFL1) and its transformer has about 12dB.

The blue-cored output transformer for XFL1 has been discarded in this application as it is only necessary for the narrow filter to see about 500 Ohms termination and this is provided by XR1.

Construction

All construction should be done on a single-sided p.c.b. according to the layout shown in Fig. 2.2. First remove FL-1, the LFC6 filter, from the IF-AF board of the FRG 7. This

should be done with care using either a proper desolder pump or de-solder wick. Minimum heat should be applied to the device or damage could result to its elements even though ceramic filters are fairly hardy.

Work on the new printed circuit board will be made easier if the filters and XT1 are fitted last. Beware c.m.o.s. handling and use an i.c. socket, only fitting the 4066 when the circuit has been finally wired into the set. The next stage involves fitting the screening and mounting panel and this is spaced from the bottom of the IF-AF board on two threaded stand-off pillars.

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The FR67 Mods part 2

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Work should proceed as follows:

i) Remove the screw that holds the voltage regulator heatsink bracket at the end near the regulator. Replace this with a 4BA screw from the component side of the board (you may have to enlarge the hole) and on the foil side of the board screw a 12mm threaded stand-off pillar. Next locate a point just below the a.f. i.c. (Q410). Here there is a large area of ground foil and a second stand-off should be soldered directly onto this, 48mm away from the first pillar. These two stand-offs now provide the support for the bracket as shown in Fig. 2.3.

ii) Before fitting the bracket, the four remaining holes on it should be fitted with stand-off pillars facing away from the IF-AM circuit board. If the f.m./squench board is to be fitted, then fit all four pillars at this stage.

iii) Connect two short lengths of miniature coaxial cable to input and output points formerly occupied by the filter. Locate a suitable point to run two leads for the 10 volt supply.

iv) Fit the panel to its support pillars.

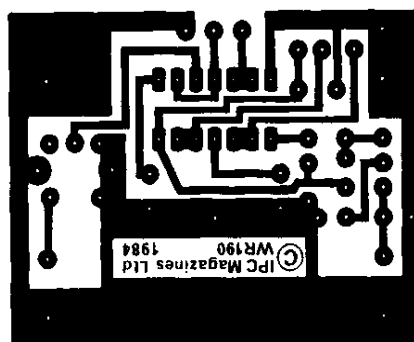
v) Make necessary connections to the new circuit board, as shown in Fig. 2.2.

vi) Carefully plug-in XIC1.

At this point it is necessary to decide which switching method to use. If the f.m. circuit is not going to be incorporated then

two options are open.

a) The record socket can be re-located on the back panel next to the loudspeaker output and the hole vacated can be filed



open slightly to take a standard miniature 2-pole double-throw switch.

b) Spare wafer connections on the MODE switch can be used to provide narrow filter switching at SSB and AM/ANL switching positions. This latter method involves sacrificing the noise limiter but in the author's view this has little effect anyway.

If f.m. with squench is going to be fitted then yet a third method should be adopted as the AM/ANL position on the MODE switch will be needed for the f.m. and the record socket hole will be needed for the squench control.

The squench potentiometer for the f.m. unit will be a 10k Ohm log with push-pull switching and a suitable device is made by Alps and available from Cirkit. Once fitted the two wires from the light switch should be transferred to the appropriate switch tags on the back of the

potentiometer so that lights come on when the switch is pulled.

The LIGHT switch is now free to be used for switching the filters.

Finally, it only remains for the board to be screwed onto its pillars and the front panel switch labelled in a suitable way. In the author's case, dark grey card with white rub-down lettering was made up and stuck over the existing lettering with light glue.

Testing and Alignment

Switch on the set and select the wide filter position. Normal reception should be possible. Now switch to the narrow filter position and check that it is operating. Whatever setting the core of XT1 is at reception should be possible and if not the likely faults will be a wrong connection or the 4066 damaged by handling. Assuming all is well, find a fairly weak signal around S-2 or 3 and trim XT1 for maximum deflection of the meter. This is all that is necessary for aligning the actual switched-filter unit.

Because the narrow filter has a different centre frequency to the original wide one it is necessary to re-tune the b.f.o. The Toko filter centres on 453.3kHz and so the b.f.o. will need to tune to 452.0kHz for u.

(Continued on page 8)

THE TOYOTA 1000 RACE 2001

(Continued from page 6)

rendered a fantastic, organized service. The Sunday was the same except that the Antennas were the wife was taking a hot bath, the second best thing of

Back to MP4. We did a radio sweep but could not trace a couple of vehicles. This must have been the result that a lot of vehicles retired at DSP. This kept me busy for quite a while. The sweep vehicle could also not trace any of these "missing" vehicles. At 19:00 I extended the HF coax and operated from next to the fire in the camp. Officially I was released at 20:30. From signing off until bedtime was called "Drinking Time" The best time of a racing day.

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The Sunday was the same except that the Antennas were brought down after I was released at approximately 18:00. We braaied and enjoyed the fire even more than the previous evening.

the wife was taking a hot bath, the second best thing of the weekend.

I trust that you enjoyed the glimpse into the Toyota 1000 race. As I am not a writer, it

The Monday we slept late, got up at 07:00, made breakfast and broke up camp and hit the road to Gabbs. We went through Customs after lunch and did the return trip at our own pace. Stopped for eats at the Wimpy at Zeerust.

The best time of a racing day. The first thing that was done af-

(Continued from page 6)

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I trust that you enjoyed the glimpse into the Toyota 1000 race. As I am not a writer, it is mos easier per mike, I tried to sum up the good things of the race. Bad things do happen. Ja two years ago I lost my marshal in an accident going back after the race, but let us keep with the good, lekker things.

was called "Drinking Time" Regards Sarel

The FRG7 Mods part 2

(Continued from page 7) digital frequency counter is merely re-tune i.f. style trans-

s.b. and to 455kHz for l.s.b. If a available this is an easy task, former T406 for l.s.b. and then

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s.b. and to 455kHz for l.s.b. If a digital frequency counter is merely re-tune i.f. style trans-

former T406 for l.s.b. and then trimmer capacitor TC404 for u.s.b. (both are located close to the audio i.c. and TP405 is the measuring point).

The diagram shows a circuit for a digital frequency counter. It starts with a +10Vc supply. A trimmer capacitor XT1 is connected to the supply. A variable capacitor XFL1 (ME 45501) is connected to XT1. The output of XFL1 is connected to the base of a transistor XTR1 (BF245). The emitter of XTR1 is connected to ground. The collector of XTR1 is connected to a 1k resistor XR3, which is then connected to ground. The output of XR3 is labeled as the measuring point.

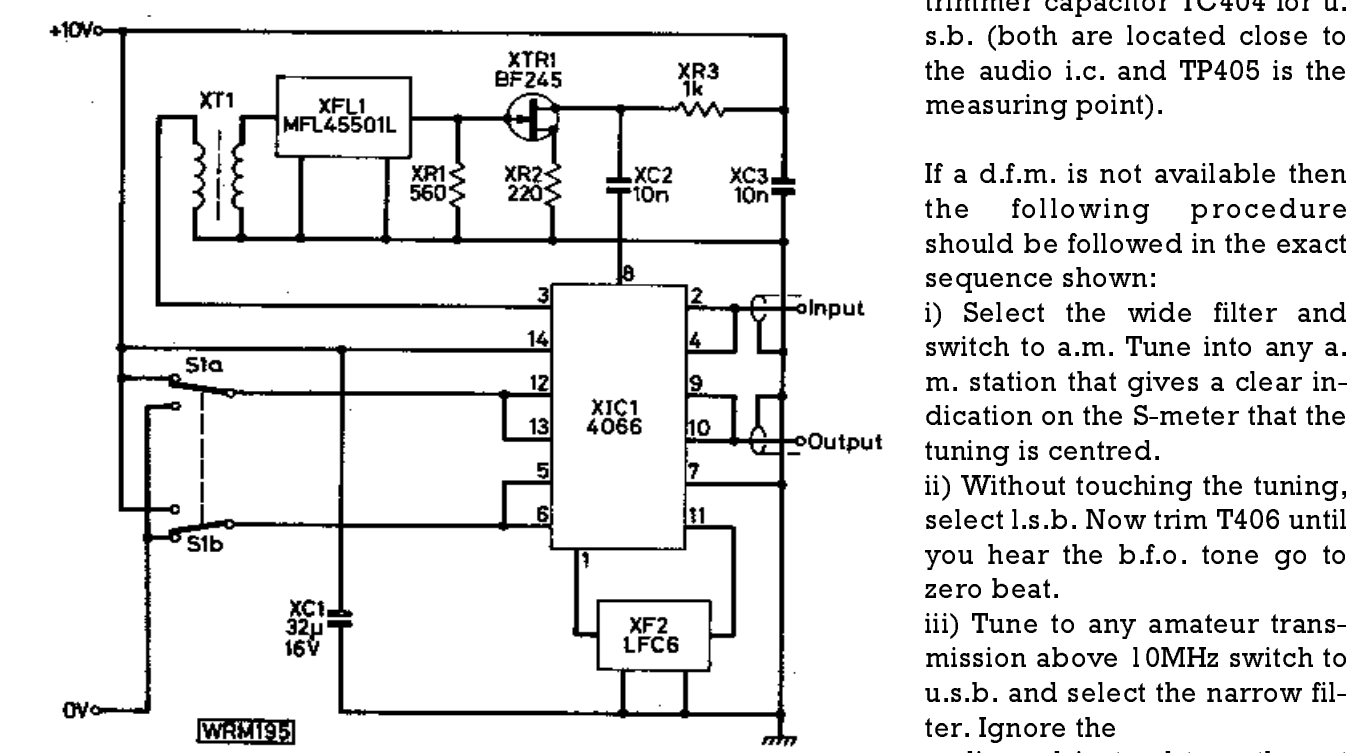


Fig. 2.1: The circuit diagram of the new switching board

Figure 10-10 is a circuit diagram showing a transformer with two secondary windings. The primary winding is connected to a common ground. The secondary windings are connected to a common ground through a series of components: a resistor labeled XR1 (560), a resistor labeled XR2 (220), a capacitor labeled XC2 (10n), and a capacitor labeled XC3 (10n). The components are connected in series between the secondary windings and the common ground.

Diagram of the XIC1 4066 IC showing pin connections for the first stage. Pin 14 is connected to the positive supply rail. Pin 12 is connected to the positive supply rail through a 10k resistor. Pin 13 is connected to the positive supply rail through a 10k resistor. Pin 3 is connected to the positive supply rail. Pin 2 is connected to the positive supply rail. Pin 4 is connected to the positive supply rail. Pin 9 is connected to the positive supply rail. Pin 10 is connected to the positive supply rail. The output of the first stage is connected to the input of the second stage.

iii) Tune to any amateur transmission above 10MHz switch to u.s.b. and select the narrow filter. Ignore the

Fig. 2.1: The circuit diagram of the new switching

board (Continued on page 9)

The FR67 Mods part 2

(Continued from page 8)

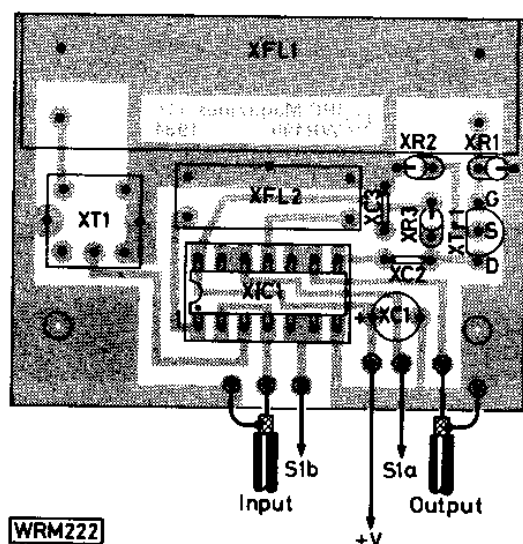


Fig. 2.2: The track pattern and component layout of the new switching board, shown full size

tion. Then resolve for the best audio by trimming TC404.

iv) Now repeat procedure (i), then select l.s.b. and note if the b.f.o. is still zero beating. If it does or if it is only slightly off frequency then you do not need to go any further. However, if it is obviously off frequency then you will have to re-trim T406 and then repeat procedure (iii).

Keep repeating procedures (i) to (iv) until you are able to set TC404 for u.s.b. without upsetting the l.s.b. tuning.

This can be rather tedious but because of the interaction between the transformer and trimmer capacitor it is necessary if fairly accurate b.f.o. settings are to be obtained.

DFM Discrepancies

When using the narrow filter with a receiver fitted with digital frequency readout, allowance must be made for the fact that the Toko filter's passband centres on 435.5kHz and not 455kHz.

In practice this means that although the meter will read correctly for lower sideband, 1.5kHz must be added to the readout when tuning u.s.b or a.m.

Operating

When switching between narrow and wide positions it will be noticed that there is a slight

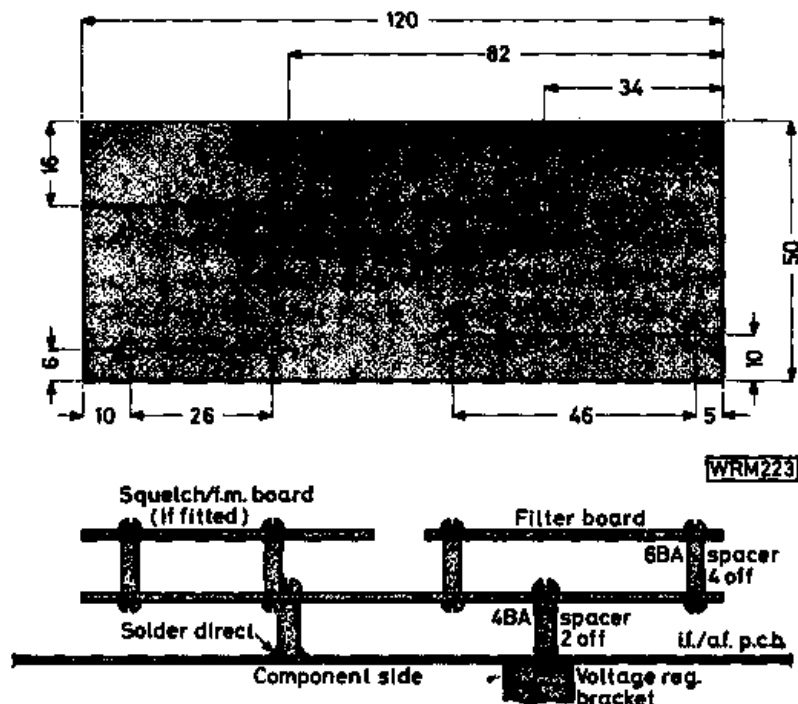


Fig. 2.3

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A Living Philosophy!

A philosophy professor stood before his class and had some items in front of him.

When the class began, wordlessly he picked up a large empty mayonnaise jar and proceeded to fill it with rocks, rocks about 2" in diameter. He then asked the students if the jar was full? They agreed that it was.

So the professor then picked up a box of pebbles and poured them into the jar. He shook the jar lightly. The pebbles, of course, rolled into the open areas between the rocks. He then asked the students again if the jar was full. They agreed it was. The students laughed.

The professor picked up a box of sand and poured it into the jar. Of course, the sand filled up everything else.

"Now," said the professor, "I want you to recognise that this is your life. The rocks are the important things - your family, your partner, your health, your children - things that if everything else was lost and only they remained, your life would still be full. The pebbles are the other things that matter like your job, your house, your car.

The sand is everything else, the small stuff. If you put the sand into the jar first, there is no room for the pebbles or the rocks. The same goes for your life. If you spend all your time and energy on the small stuff, you will never have room for the things that are important to you. Pay attention to the things that are critical to your happiness. Play with your children.

Take time to get medical checkups. Take your partner

out dancing. There will always be time to go to work, clean the house, give a dinner party and fix the disposal. Take care of the rocks first - the things that really matter. Set your priorities. The rest is just sand."

But then...a student then took the jar which the other students and the professor agreed was full, and proceeded to pour in a glass of beer.

Of course the beer filled the remaining spaces within the jar making the jar truly full.

The moral of this tale is:- no matter how full your life is, there is always room for BEER!

The FRG7 Mods part 2

(Continued from page 9)

drop in the signal meter reading on the 2.1kHz position. This is perfectly normal as is the slightly "middish" sound. This latter effect is because of the restricted audio bandwidth which removes the lower and upper audio frequency range of the transmitted signal. In practice any signal that is readable in the wide position should also be clear in the narrow one. When tuning through crowded bands, broadcast or amateur, always try the narrow position as well as the wide. In the author's ex-

perience some weaker stations which are often masked by the stronger ones, will suddenly appear whereas with the 6kHz filter it was not possible to tune them in at all.



Editor's Comments

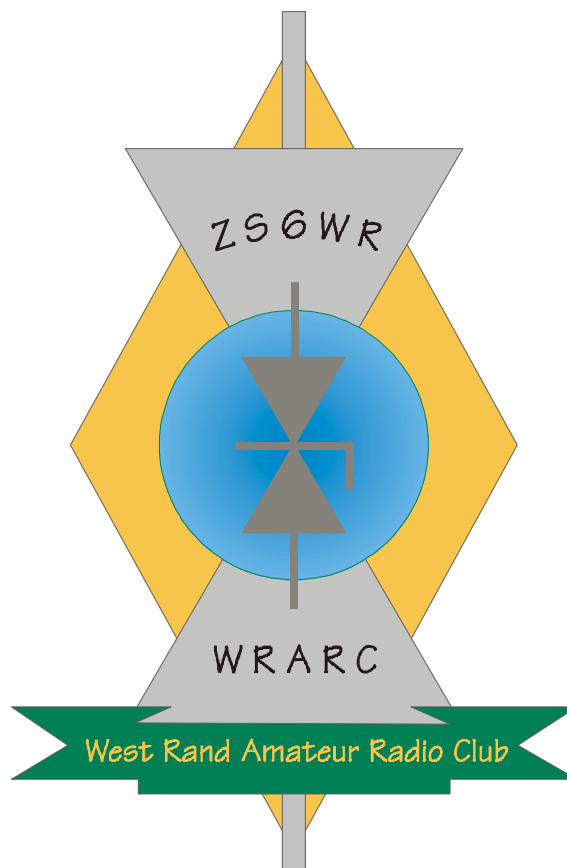
(Continued from page 1)

for traffic. They queued up their cars in line with the gate. This blocked Kroton road and could have caused the club some complaints from the residents. We may have to use 'marshals' in future.

In future please park in the spaces off the track leading to the gate and wait to be let in even if you are a vendor. If the impatient Hams had parked down the slope amongst the trees, the Ham who had his car burned by the veldt fire, would not have had to park next to the open ground past the cluster houses.

How do you like our new logo? —————>

Until next month, 73 and 88's
JB



August 2001

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	Club Meeting	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

The West Rand Amateur Radio Club

26.14122 South - 27.91870 East

P.O. Box 562

Roodepoort

1725

Phone: +27 11 726 6892

Email: john.brock@pixie.co.za

Bulletins (Sundays at ...)

11h15 Start call in of stations

11h30 Main bulletin start

Frequencies

145,625 MHz (West Rand Repeater)

10,135 MHz (HF Relay)

14.160 MHz (HF Relay)

Radio Amateurs do it with more frequency!



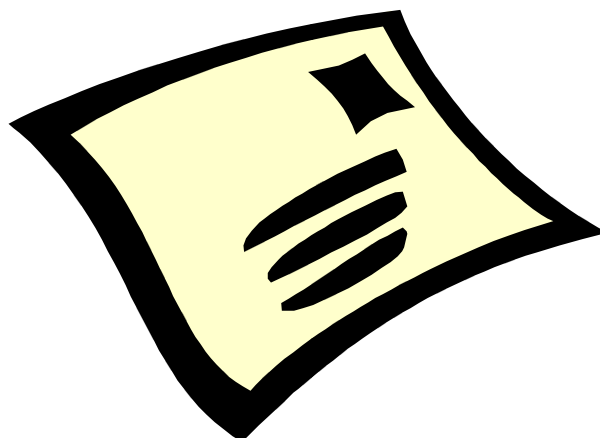
Please note this has been just been registered. Our site will be up in the new year.

Chairman	Bill	ZS6REV	726 6807	---
Vice-Chairman	John	ZS6BZF	768 1626 (A/H)	john.brock@pixie.co.za
Treasurer	Dave	ZR6AOC	475 0566	david.cloete@za.unisys.com
Webmaster	Simon	ZR6SS		ssnyman@feedemgrp.co.za
	Cobus	ZR6COB		support@feedemgrp.co.za
	John	ZS6FJ	672 4359 (A/H)	
	Keith	ZS6AGF	672 6745 (A/H)	mwbronie@iafrica.com
	Phillip	ZS6PVT		

West Rand members input - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address



We need your input! Email us articles, comments and suggestions please.
john.brock@pixie.co.za