Alternate fan mod for IC-7000

Contact author: M3SVO

!! IF YOU ARE UNSURE ABOUT PERFORMING THIS MOD DON'T!!

!!IF YOU DAMAGE YOUR RADIO YOU ONLY HAVE YOURSELF TO BLAME!!

I have performed this mod on MY OWN radio without any adverse affects and my LDG AT-7000 atu still works as it should.

Before this mod after been turned on for an hour or so the temp meter on the radio would show around 50% on the scale (7 or 8 bars), after the mod the temp meter shows around 25% on the scale (4 bars).

First remove the top cover and remove the fan from the radio,

take a 100ohm resistor and solder a length of wire to each end and cover with heat shrink tubing. Cut the red wire to the fan and attach one of the resistor wires between the two halves and cover with heat shrink tubing.

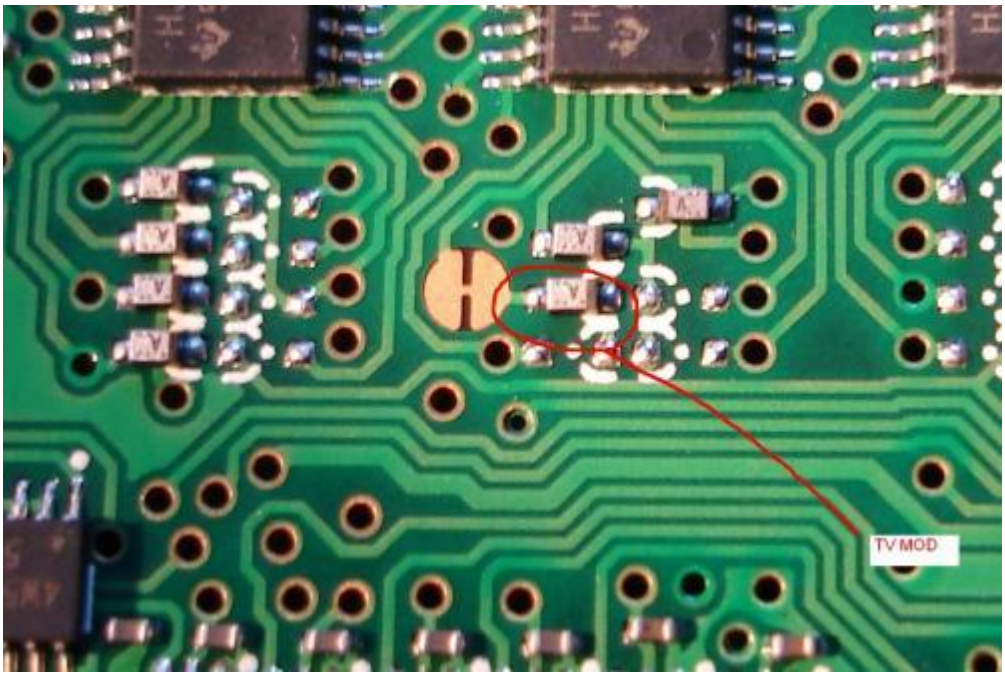
Next follow the ORANGE wire from the ATU molex socket on the back of the radio to where it is soldered on to the DDS unit (top right hand corner at the back of the radio) and attach the remaining resistor wire to this point, position the resistor and wires so that they look neat and tidy and then refit the fan and the top cover, mod is now complete.

Enable TV reception for ICOM IC-7000

Contact author: Duke - NA1A

1. Remove CPU/DSP unit by unscrewing three silver screws holding it down (the silver box on the top of the radio with copper taped sides) and pull up.
2. Locate four shift registers and bank of diodes - shift registers are 4094's. There are two next to each other and then a couple more. We'll call the two stacked the "left" ones
3. The "middle" shift register if looking from the front of the radio is the target.
4. Locate bank of SMT diodes (silver with "K" on top on one side) in front of the target shift register. They are in two columns, "left" and "right"
5. Unsolder one side of the second diode from the front on the left and lift up one side (or remove, slip to the side, whatever turns you on)

Thanks to Luma for this piucture.



Alternate method to enable TV mode

Contact author: Dave

My IC-7000 has an additional set of solder pads next to TV diode D2154.

The solder pads are in the shape of half circles connected by a thin printed trace. The thin pc trace can be easily cut with an exacto type knife.

If present this method eliminates unsoldering the small surface mount diode, furthermore, the TV function can be easily disabled by bridging the half circles with solder.

Enable TV reception for ICOM IC-7000

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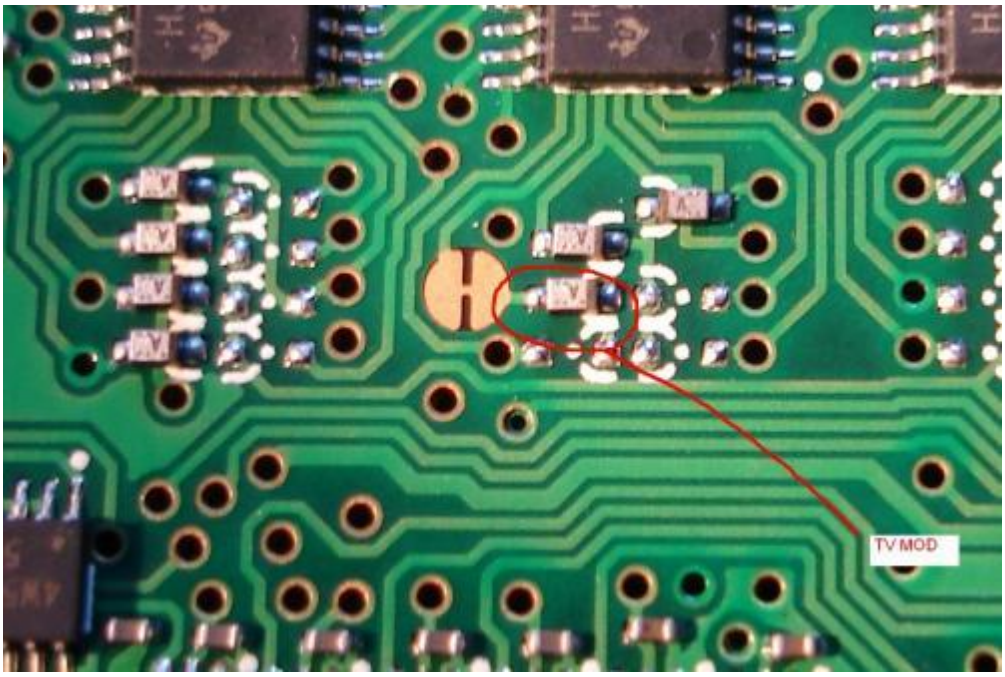


Fan Mod - Cool as ice

Contact author: James Hamelin, KC0RSW

READ ALL OF IT BEFORE PREFORMING THE MOD!

Use a baby thermometor (the electric kind w/ the digitial readout) and see just how hot your rig is running before preforming the mod, I know most all of my readings were over 106F then the thermometer errored out as the temp was too high.

Tempurature Measurements were made with a baby-tempurature thermometor (sorry its all I had at the time).

Heres the Proof!

```
----------------
top - left front 94.6F
top - left rear 103.8F
top - right front N/A (below 85.5F unable to get reading)
top - right rear 92.7F

Right side front 90.6F
Right side rear 91.5F

Left side Front 95.0F
Left side Rear 98.1F
```

After cw keying for aprox 5 min continous duty the heat generated by the IC-7000 did rise enough to enable to the temp control circuit. Heres the good news!

Once the temp control circuit kicks in, the fan goes into high-rpm mode!!! Then returns to 'normal' operation with the 2W / 100ohm resistor voltage.

So with this mod, you get a dual speed fan without any additional modifications!!

Forgot to mention, when you goto solder the lead to the red wire of the fan, please place a rag or something undeneath the area you will be working in (its pretty tight) to prevent any unwanted solder dripping down onto the main board.

When closing everything all up, there is a little pink sticky pad ontop of the cover unit to access the mars/cap and tvro mod. Place your wire so its right on top of the sticky pad. Seemed to be the best place for it at the time.

Options, the Red wire from the fan connecter to the main board could be snipped between the connector and the solder joint to avoid any complications with the temp circuit enabling.

Additionally, the back left of the rig, still feels warm to the touch but its more of a luke-warm, instead of what it was previously which was excessivly hot. The back right, front left and front right all feel cool to the touch.

Im sure there are better ways of preforming this modification, although just stealing 0.14A from the 12v+ DC on the tuner port seemed to make the most sense, since an LDG Tuner only uses 300mA when in operation.

Although I do not know how this will affect the autotuner as I do not have one, I am unable

to test this modification with an autotuner, such as the LDG Z11 or Z100.

Your Icom 7000 Running Hot? ... Heres the FAN mod!
(This has been untested with an inline tuner)

1. Tuner Lead #3 is +12v DC, tap into Tuner Lead #3 with a wire (theres enough room to simply slip a solid copper wire into the crimp for lead #3)
2. Add a 100ohm Resistor at the other end of the solid copper wire (a 100ohm pot will work if you wish to be able to vary the speed of the fan)
3. Strip the insulation of the red wire to the fan back just enough to make a solder connection to the 100ohm resistor / 100ohm pot. We used a lighter to burn away a bit of the insulation in the middle of the wire b/t where it connects to the board and where it connects to the fan itself.

Wrap it all up with some electrical tape to prevent grounding. and Whala! Your Done!!

```
Tuner Port on back of the IC-7000
^
1
2
3 +12v DC -> wire -> 100ohm resistor -> fan red wire
4
-
```

A 100ohm Pot could be used instead of a resistor, values below the 100ohms will increase fan speed.

0 resistance - sounds like an airplane.

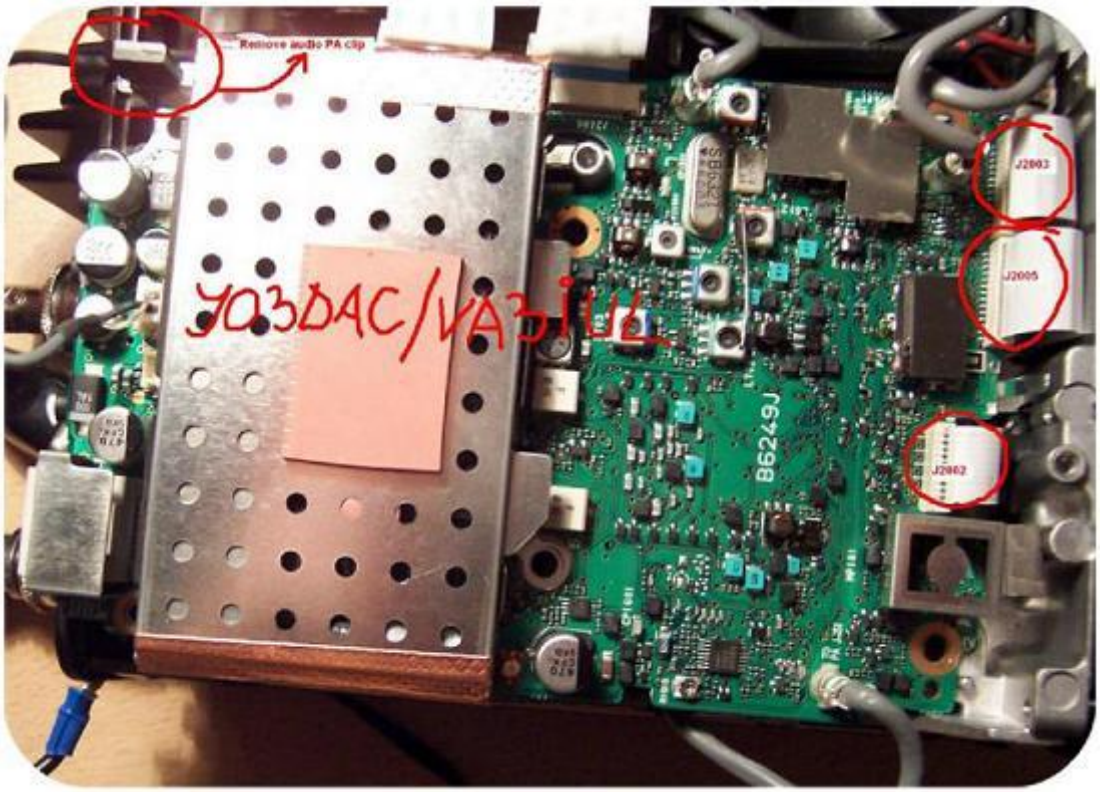
How to fix the IC-7000 audio noise (hiss)

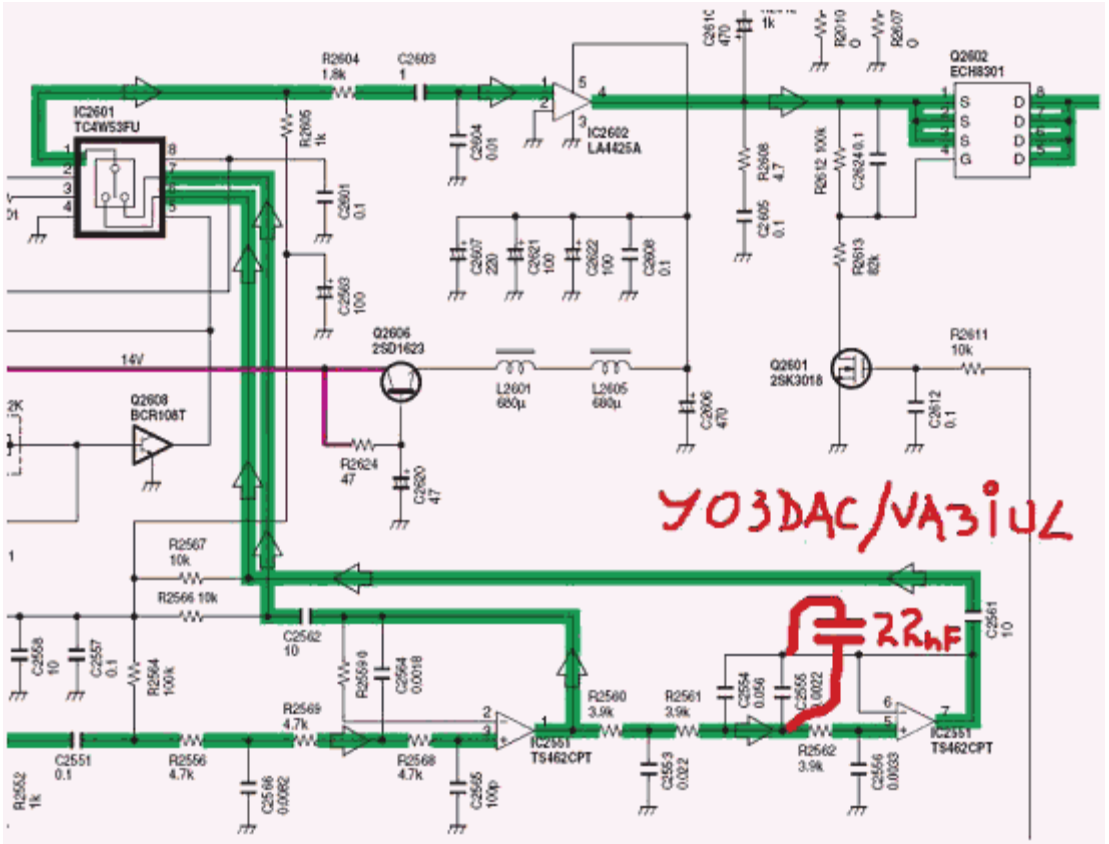
Contact author: Iulian Rosu YO3DAC / VA3IUL

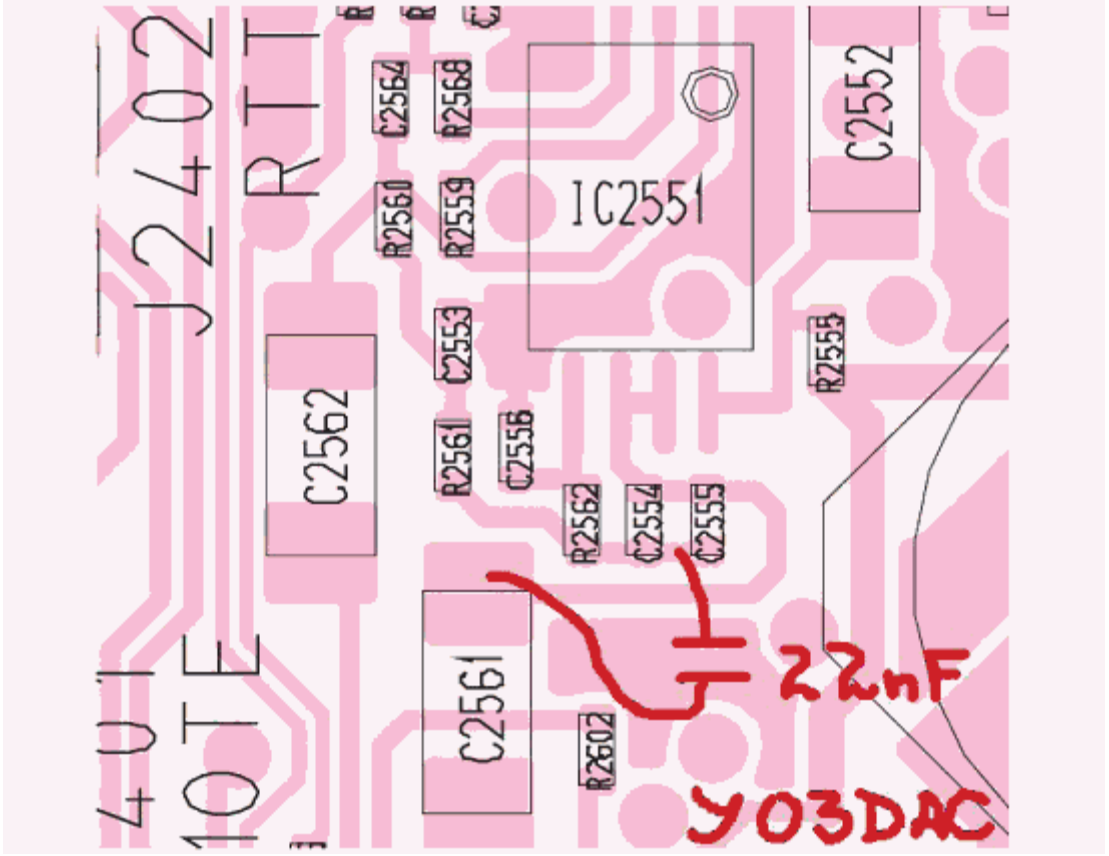
This paper is about fixing the IC-7000 noisy audio that occurs only when the audio output is connected to high-fidelity earphones.
This audio noise (which sound like a hiss or white noise), is even stronger if the earphones are connected to the external speaker connector on the back of the transceiver.
The hiss (that is not the same as the 8 kHz tone issue) is very inconvenient especially when listen weak stations in CW and SSB and using high fidelity headphones.

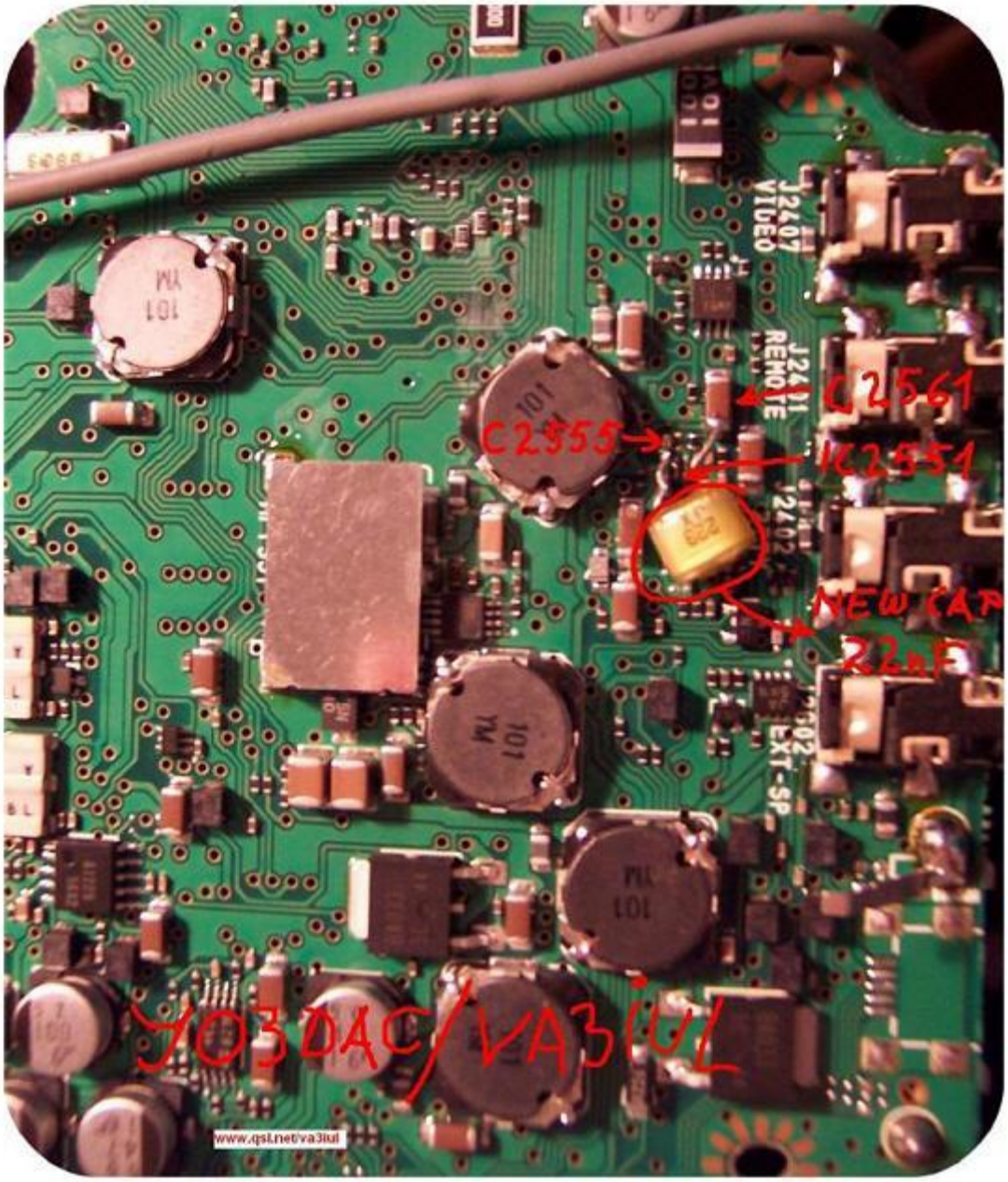
What to do:
To fix this problem have to lower the cut-off frequency of the active audio filter (IC2551) which is placed before the audio power amplifier (IC2602).
How to do:

- Remove the top cover of the radio and unplug the speaker.
- Remove the spring clip of the audio Power Amplifier (IC2602 - see picture).
- Remove the CPU/Logic unit (Silver box).
- Remove the DDS unit (B6294L).
- Remove all coaxial plugs and ribbon cables from the board. Be careful when removing the J2005 and J2003 ribbon cables as they can be pulled out of the PA unit. Would be very difficult to reinsert them into the PA unit.
- Remove the Main Unit (B6249J) – The modification is done on the bottom of this unit.
- Add a 22nF capacitor in parallel to C2555. You can solder one pin of this cap to C2561 (10uF) and one pin to C2555, or you can add an SMD (0402) 22nF in parallel to C2555.
- Plug in the two ribbon cables from the DDS unit into the Main board before fitting the Main board to the chassis.
- Replace all screws and tighten.
- Plug in all the cables, re-fit the CPU/Logic unit.
- Replace the top cover and plug in the speaker.


Remove audio PA clip
YO3DAC/VA3IUG
J2003
J2005
J2002
B6249J


IC2601
TC4W53FU
R2604
1.8k
C2603
1
R2605
1k
C2604
0.01
IC2602
LA4425A
Q2602
ECH8301
R2608
4.7
C2605
0.1
R2612 100k
C2624 0.1
R2613
82k
C2601
0.1
C2607
220
C2621
100
C2622
100
C2608
0.1
C2603
100
14V
Q2606
2SD1623
L2601
680µ
L2605
680µ
C2606
470
Q2601
2SK3018
R2611
10k
C2612
0.1
Q2608
BCR108T
R2624
47
C2620
47
Y03DAC/VA3IUZ
R2567
10k
R2566 10k
C2562
10
22nF
C2561
10
C2558
10
C2557
0.1
R2564
100k
R2559
0
C2564
0.00018
R2569
4.7k
R2560
3.9k
R2561
3.9k
C2554
0.056
C2555
0.022
IC2551
TS462CPT
R2562
3.9k
C2556
0.0033
C2553
0.022
C2551
0.1
R2556
4.7k
C2566
0.0082
R2568
4.7k
C2565
104p
R2552
1k


J2402
RTT
C2564
R2568
R2560
R2559
IC2551
C2552
C2562
C2553
R2555
R2561
C2556
R2562
C2554
C2555
C2561
R2602
22nF
Y03DAC



PDF version: http://www.qsl.net/va3iul/Files/IC7000_audio_noise.pdf Downloaded from mods.dk

Good luck,

73's

Iulian Rosu, YO3DAC / VA3IUL

http://www.qsl.net/va3iul/

Icom HM-151 modifications (original IC-7000 hand mic)

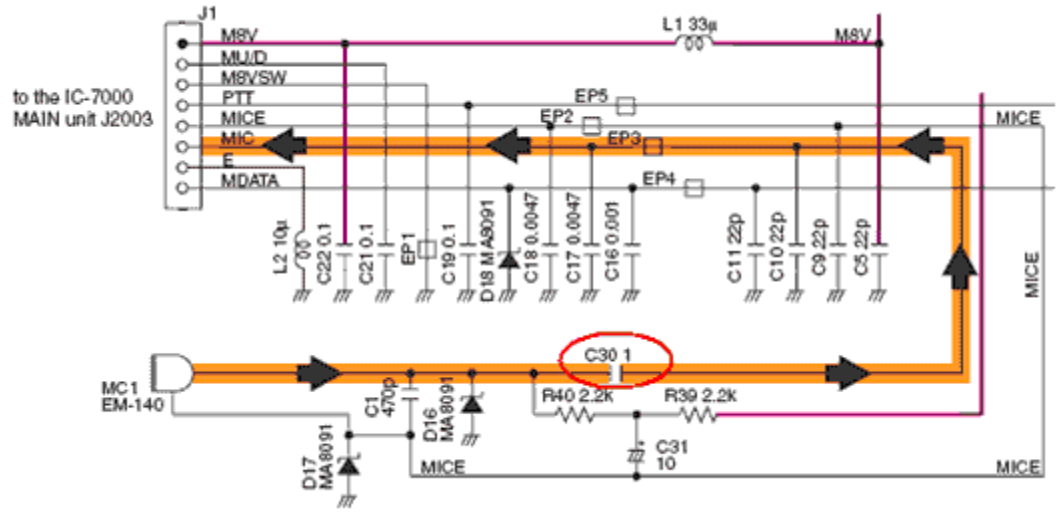
I have experimented with the original hand microphone that comes with the IC-7000. One thing I noticed with the HM-151 is that (compared to the HM-103 etc) it has a lot of bass response, and this also depresses the treble response a bit. Sadly, the IC-7000 do not have the DSP TX equalizer that I feel should have been implemented. The IC-7000 is an excellent radio on transmit, but with the HM-151 it's a bit to "bassy" and it sounds to muffled.

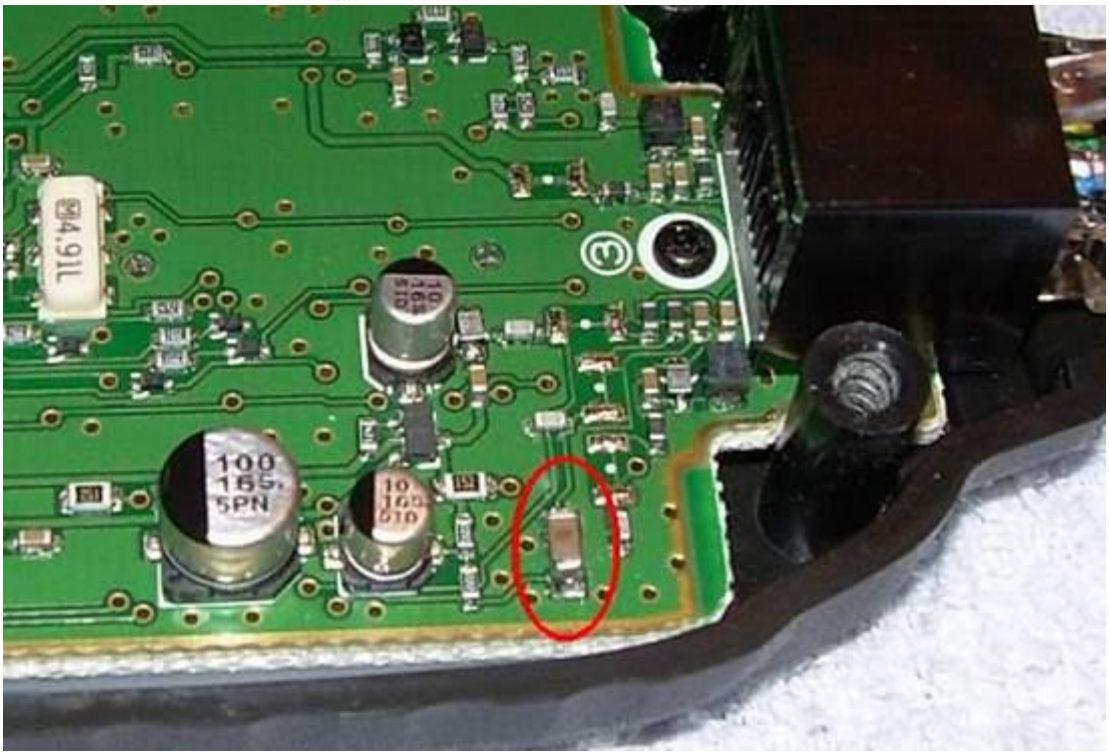
This can be improved by replacing the **C30** ceramic capacitors inside the HM-151.

One can use the MIC RECORDING function in the IC-7000 and record exactly the same phrase before and after the modification to compare and hear the difference.

Remove the rear cover of the HM-151

The schematics below show the HM-151 internal circuit.





The serial capacitor C30 is responsible for the bass roll-off, and 0,22 F is in my opinion the best value. This value also works great for FM-mode. Decreasing it any further will cut away too much bass and it will make the HM-151 sound very thin and weak (with decreased output).

The original size of the C30 capacitor is 1 F, and this is a bigger value than in any other icom hand microphone I know of. This is why it will allow a lot of bass to pass through, and this is why it will sound "bassy" compared to other icom hand mics.

First, you must get your hands on the replacement capacitor.

The C30 capacitor should be replaced with a 0,22 F SMD ceramic capacitor called C3216X7R1H224K. Size/type is 3216 or 1206 (3,2 x 1,6 mm). (also named C1206C224K5RAC C-7025) ELFA part number : 65-777-04

Replace the C30 capacitor. It is a bipolar capacitor, so there is no + or - on it. Please be aware of the fact that soldering such tiny SMD components are VERY difficult, if you don't

feel like doing it yourself I strongly advice you to contact an electronic service shop to do it for you. Be careful ! Buying a new HM-151 is expensive!

Mic gain at 80 - 100 % , COMP on level 1 only.
Try these setting for transmitter bandwidth (TBW):

```
W(L) 100
W(H) 2900                W= Ragchew
M(L) 200
M(H) 2900                M= DX
N(L) 300
N(H) 2700                N= DX (sounds almost like Heil HC-4)
```

This way you will have good settings for both Ragchew and DX. Only use COMP if necessary

Note !
If your IC-7000 has been modified internally (microphone preamp.) you will probably not notice any difference with this modification. This is the case with most IC-7000 radios sold in Scandinavia. They sound good in SSB-mode, but a little low on bass in FM-mode. There is no need to modify these radios any further (leave them as they are). If you on the other hand are planning on buying a new IC-7000, ask for an unmodified radio (microphone preamp.) but let the dealer replace the C30 capacitor inside the HM-151 for you.

Good luck !

Increase the TX power of IC-7000

Contact author: Bill

Want to increase the TX power of your IC-7000?

DO THIS AT YOUR OWN RISK!!!!!!!

Build an adjustment jig plug by taking a 2-conductor 3.5 (d) mm (1⁄8″) plug and short the tip to the barrel.

Enter the adjustment mode

Turn the transceiver's power OFF.

Connect the JIG plug to the [REMOTE] jack on the rear panel.

While pushing and holding [P.AMP/ATT] and [TUNE/CALL], turn the transceiver power ON.

Enter TX adjustment mode. : Push [F-2 (TX)]

CAUTION: Connect a dummy load to the antenna connectors during the transmitter adjustment.

Pushing [F-2 (TX)] until you see on the display PO MAX (HF)

Adjust the power using the dial (VFO)

Press F4 (SET) to accept.

The same can be done for
PO MAX (50 M)
PO MAX (144 M)
PO MAX (430 M)

Be careful you risk destroying your radio all adjustments are at your own risk.

IC_7000 Export No 8 to receive PAL TV in South Africa and TX mod

Contact author: Gary Immelman ZS6YI

Modifying the Icom IC 7000 Export version No 8 to receive PAL TV in South Africa and to open up the TX frequency range.

Gary Immelman ZS6YI

In South Africa the TV audio frequency is different to that used in other parts of the world. We use 6 MHz instead of 5.5 MHz as used in the Icom IC 7000 export #8.

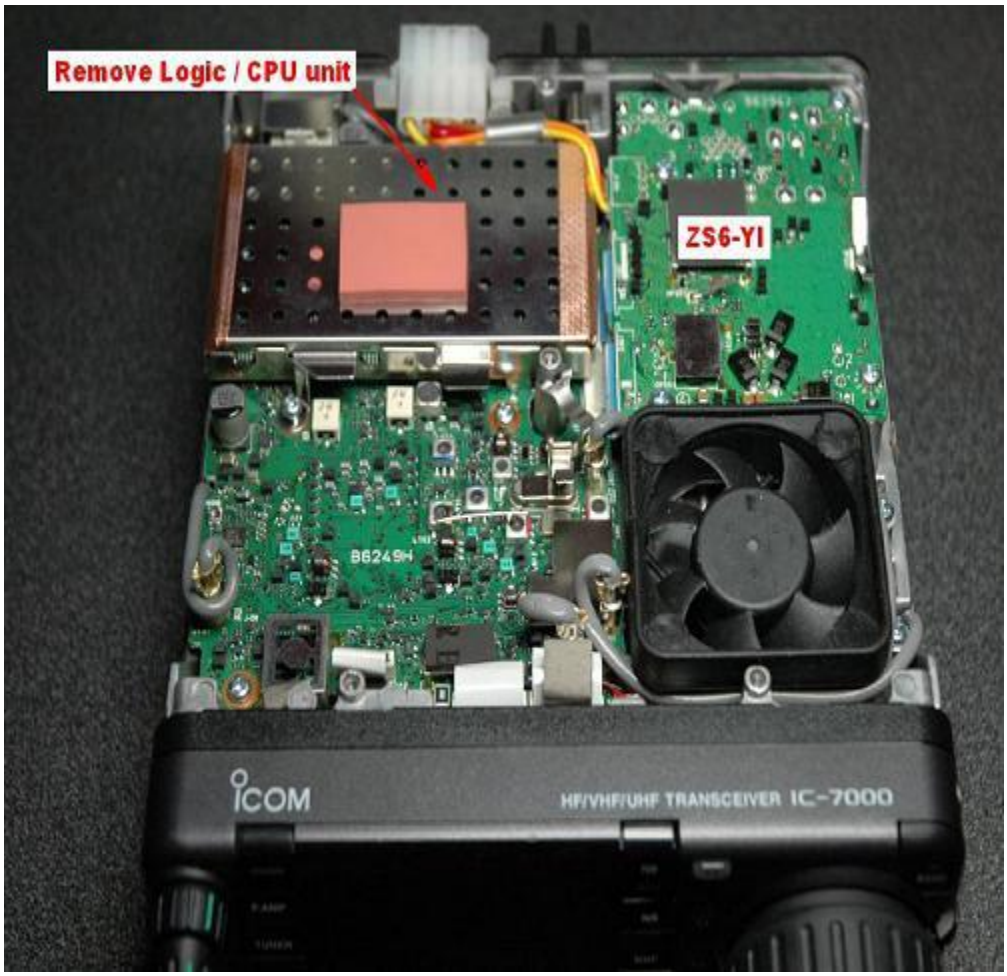
The ceramic trap filters have to be replaced. They are situated at the bottom of the Main Board. This board needs to be completely taken out of the radio then obviously replaced once the new filters have been fitted.

The shift register diodes need to be changed in order to open up the frequency range and enable the television tuner. A number of diodes are removed and one diode installed where no diode originally existed.

METHOD

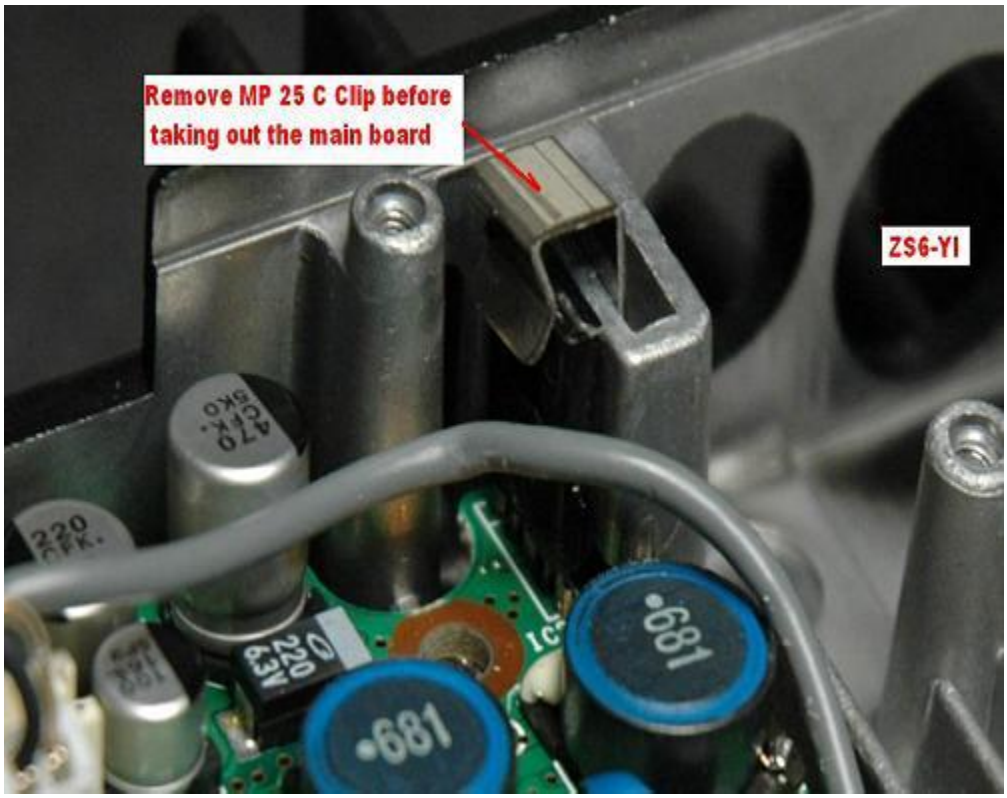
1. Remove the top cover of the radio and unclip the speaker plug.
2. Remove the CPU/Logic unit. (Silver box)
3. Remove the DDS unit.
4. Remove all coaxial plugs and ribbon cables from the board. Be extremely careful when removing the two ribbon cables at the front of the radio as they can be pulled out of the PA unit. It is extremely difficult to reinsert them into the PA unit.
5. Remove the spring clip at the back of the Main board holding IC 2602 to the chassis.
6. Remove the Main Unit - This is the unit to be modified.
7. Remove the two SMD ceramic trap filters situated underneath the board as seen from the top view.
8. Replace old filters with 6 MHz ceramic trap filters obtainable from any TV repair shop. Cost R8.00 each.
9. Remove shift register diodes. Fit one diode at right hand side of the board as viewed from the front of the radio looking towards the back, orientating it with the cathode to the left.
10. Plug in the two ribbon cables from the DDS unit into the Main board before fitting the Main board to the chassis.
11. Replace all screws and tighten.
12. Plug in all the cables, re-fit the CPU/Logic unit etc.
13. Replace the top cover. Don't forget to plug in the speaker.

Label on IC 7000 box #8 Export model



Remove the CPU/Logic unit

Step 1



Unclip the spring clip situated at the back mid right hand side of the radio

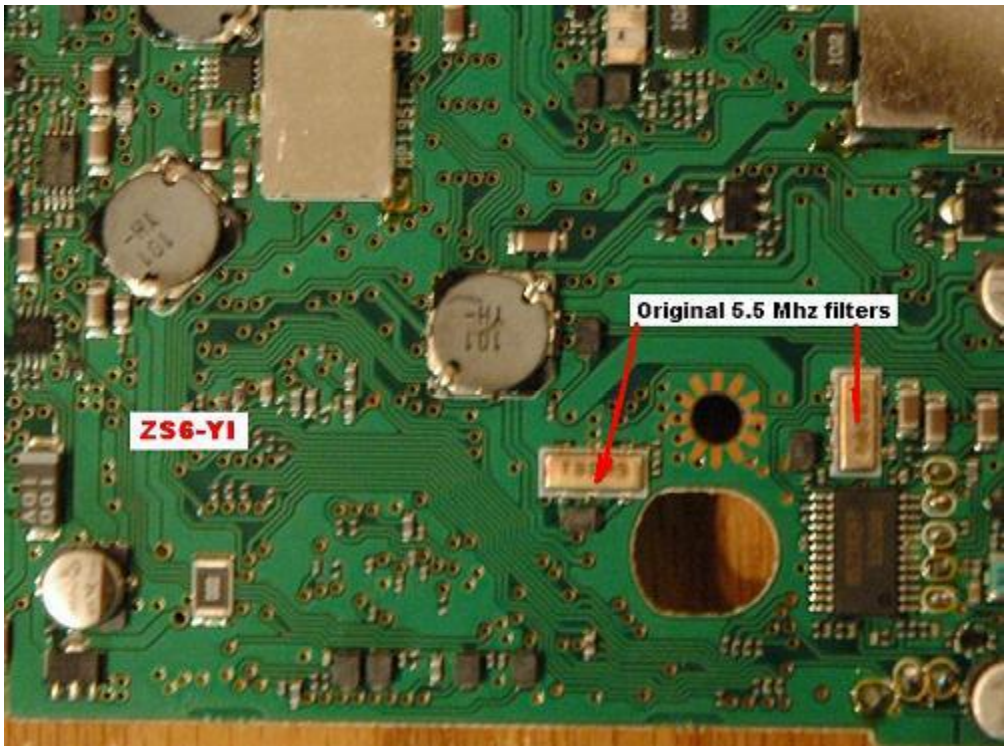
Step 2

Remove the DDR unit first then the main board

Step 3

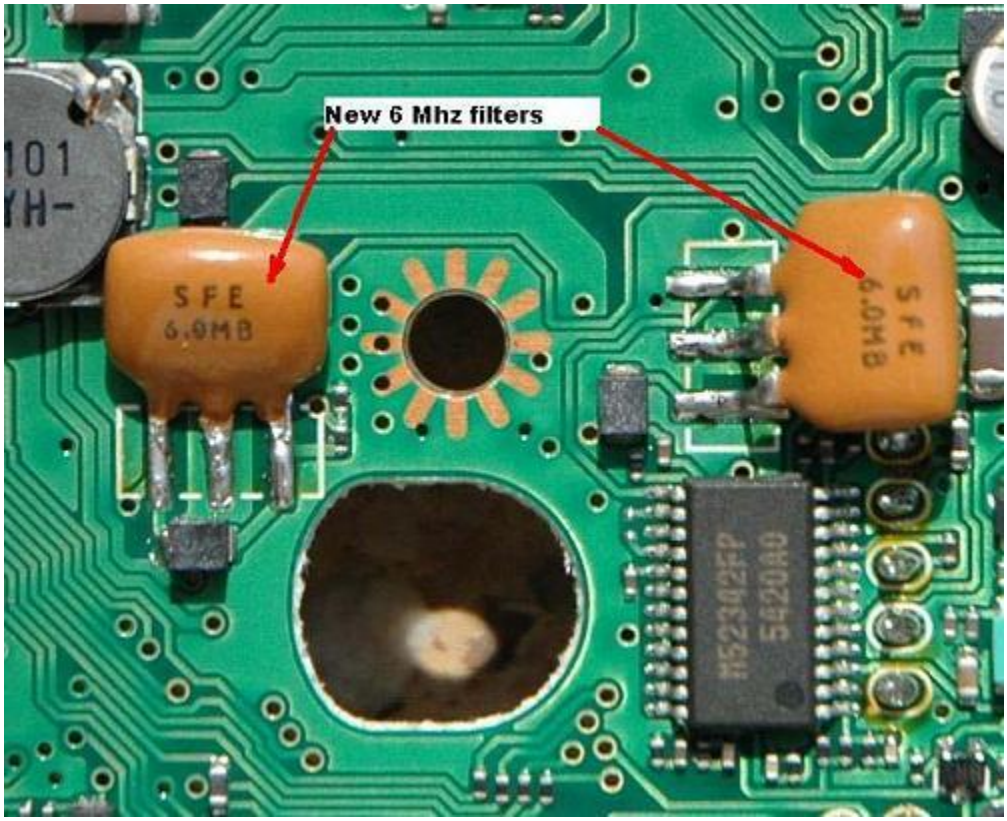
Very carefully unplug ribbon cables. Don't pull on them!

Step 4



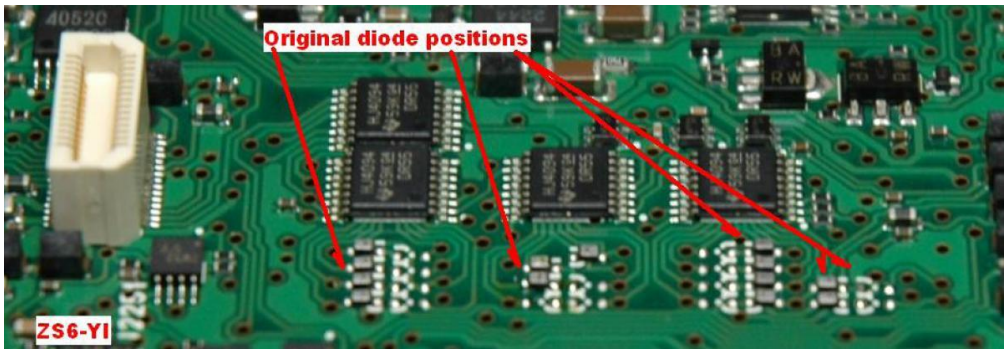
Original 5.5 MHz SMD ceramic filters

Step 5



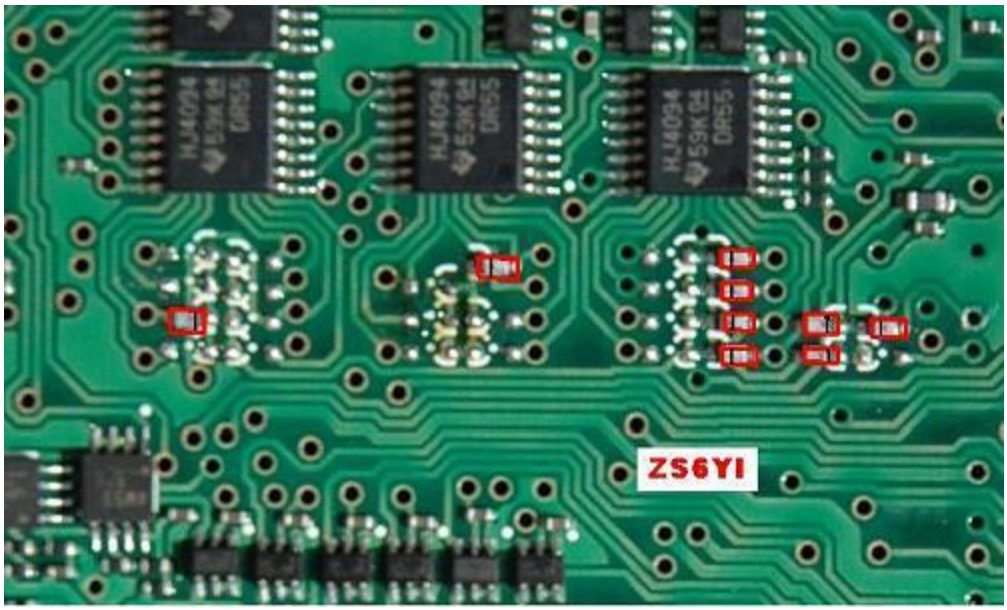
New 6 MHz Ceramic Trap Filters

Step 6



Original Diode Positions

Step 7



New Diode positions

Step 8

OPERATION

Connect the power supply to the radio and couple a TV antenna terminated in a PL259 plug to the VHF antenna socket of the radio. (Right hand side of the radio as seen from the front looking towards the back).

When you switch the power on a warning message will appear on the blue screen. Press Yes that you acknowledge the warning.

The radio reverts to the original frequency you had the radio on before embarking on the modification.

To activate the TV receiver push and hold in the set button (Volume control situated at the top left hand side of the radio). If the TV receiver does not come on, push the set button (volume control) once again. The TV receiver will now come on.

It is advisable to switch on the preamplifier.

By using the Band up and down buttons you can change TV channels, select a channel.

To change the frequency press the ADJ button and tune in the station using your VFO knob. You can do quick frequency movements by pressing the TS button.

Once you have found a station (audio only) press SET at the bottom of the screen. You should now see a picture.

You can now fine tune the picture by rotating the VFO knob.

Once everything is tuned perfectly press the volume control (set) button to store the station into the channel number previously selected.

ACKNOWLEGEMENTS

I wish to thank my son Quintin ZS6IY for his help with the soldering of these minute components using his hot air soldering station (surface device soldering station).

OM Eddie Leu ZL3TEL for his assistance and photos of the New Zealand expanded frequency range.

OM Paul Hayden VK4ZBV for information on the Australian and South African audio frequencies.

Finally OM Ken G3SDW who initially discussed changing the sound filters with me. His email inspired me to get cracking.

In Conclusion

For those South African Hams who have purchased the American model. I am working on a modification to change the NTSC system to PAL. It involves changing a number of parts on the main board. It won't be difficult but procuring the parts may be a challenge.

If I can get hold of the oscillator and coils I will do the modification then update everyone as to its success.

A PDF file of the modification can also be downloaded here. (893 Kb)

73 Gary Immelman ZS6YI

Expanding TX Frequency Coverage for the IC-7000(#02)

Contact author: Stephane

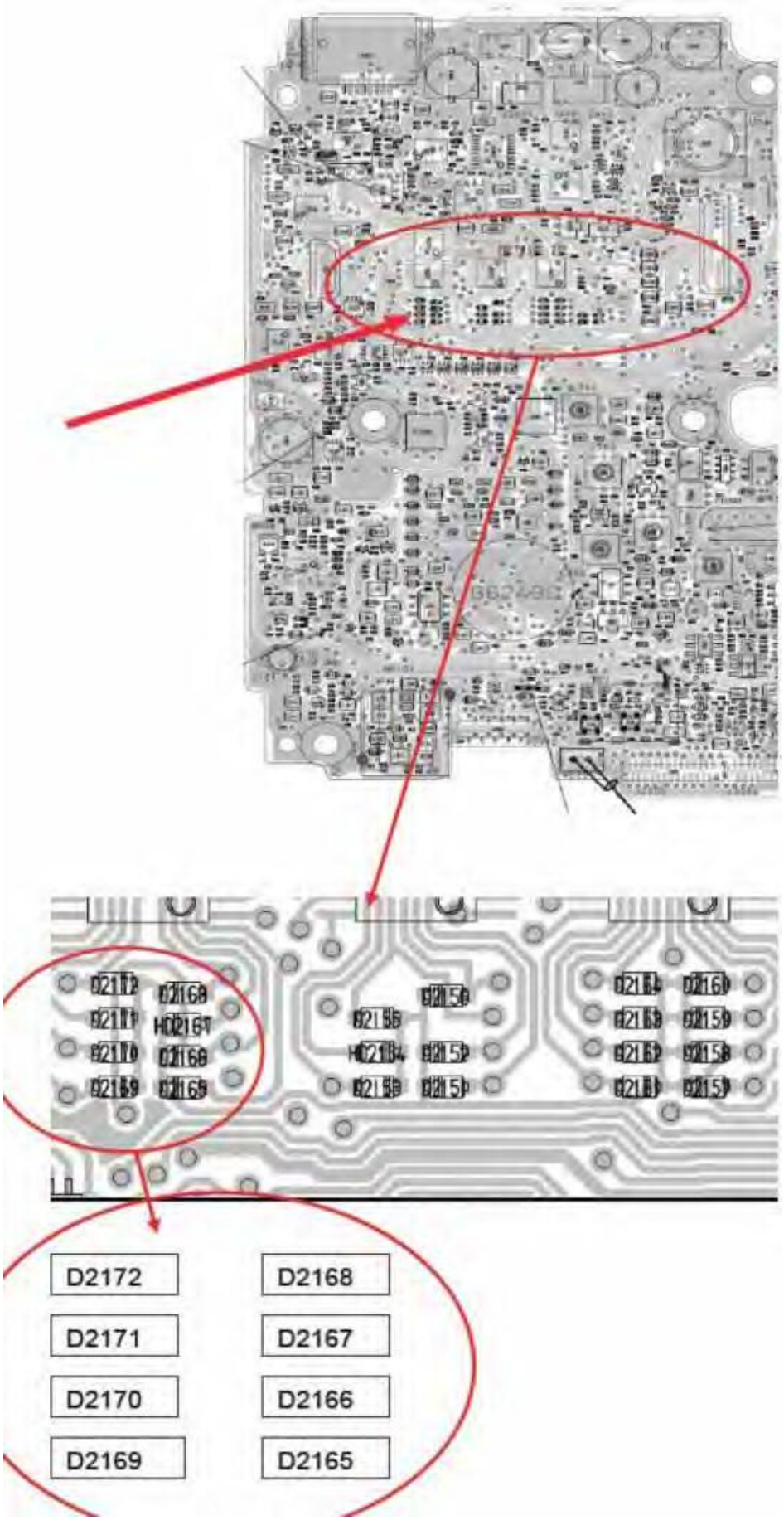
Technical Information (Ref No. : ZSL00006 / date : November 28, 2005)

Following information is regarding the modification of expanding the TX frequency coverage of the IC-7000

- Remove the 8 screws from the upper cover (not the screws of the loudspeaker)
- Remove the 2 screws of the module (down left and up right) and remove the module
- The diode-matrix is visible with D2168, D2169, D2170 en D2172 in place
- Remove all diodes (3) except D2170

	D2168	D2169	D2170	D2171	D2172	
1	NO	NO	NO	NO	NO	1.6 - 25.999999 MHz 28.0 - 29.999999 MHz 50.0 - 54.000000 MHz 144.0 - 146.000000 MHz 430.0 - 440.000000 MHz
2	NO	YES	NO	NO	NO	1.6 - 54.000000 MHz 118.0 - 174.00000 MHz 400.0 - 470.000000 MHz
3	NO	NO	YES	NO	NO	0.1 - 199.999999 MHz 400.0 - 470.000000 MHz
**********Initial Diode Matrix geleverd in Europa********** Diode Matrix Condition on the MAIN UNIT						
	D2168	D2169	D2170	D2171	D2172	
	YES	YES	YES	NO	YES	


D2170-


D2172
D2168
D2171
D2167
D2170
D2166
D2169
D2165

Modifying the Icom IC 7000 Export version No 8 to receive PAL TV in South Africa and to open up the TX frequency range.

Gary Immelman ZS6YI

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The ceramic trap filters have to be replaced. They are situated at the bottom of the Main Board. This board needs to be completely taken out of the radio then obviously replaced once the new filters have been fitted.

The shift register diodes need to be changed in order to open up the frequency range and enable the television tuner. A number of diodes are removed and one diode installed where no diode originally existed.

METHOD

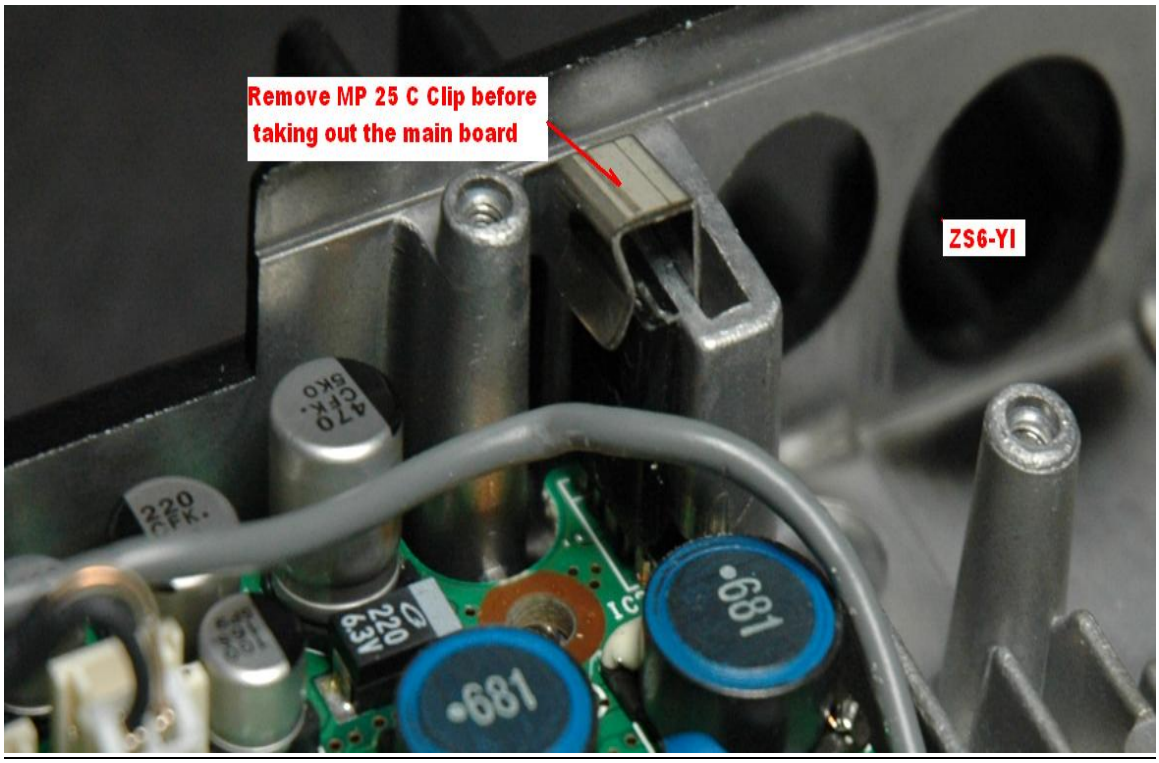
1. Remove the top cover of the radio and unclip the speaker plug.
2. Remove the CPU/Logic unit. (Silver box)
3. Remove the DDS unit.
4. Remove all coaxial plugs and ribbon cables from the board. Be extremely careful when removing the two ribbon cables at the front of the radio as they can be pulled out of the PA unit. It is extremely difficult to reinsert them into the PA unit.
5. Remove the spring clip at the back of the Main board holding IC 2602 to the chassis.
6. Remove the Main Unit – This is the unit to be modified.
7. Remove the two SMD ceramic trap filters situated underneath the board as seen from the top view.
8. Replace old filters with 6 MHz ceramic trap filters obtainable from any TV repair shop. Cost R8.00 each.
9. Remove shift register diodes. Fit one diode at right hand side of the board as viewed from the front of the radio looking towards the back, orientating it with the cathode to the left.

10. Plug in the two ribbon cables from the DDS unit into the Main board before fitting the Main board to the chassis.
11. Replace all screws and tighten.
12. Plug in all the cables, re-fit the CPU/Logic unit etc.
13. Replace the top cover. Don't forget to plug in the speaker.

Label on IC 7000 box #8 Export model

Remove the CPU/Logic unit

Step 1



Unclip the spring clip situated at the back mid right hand side of the radio

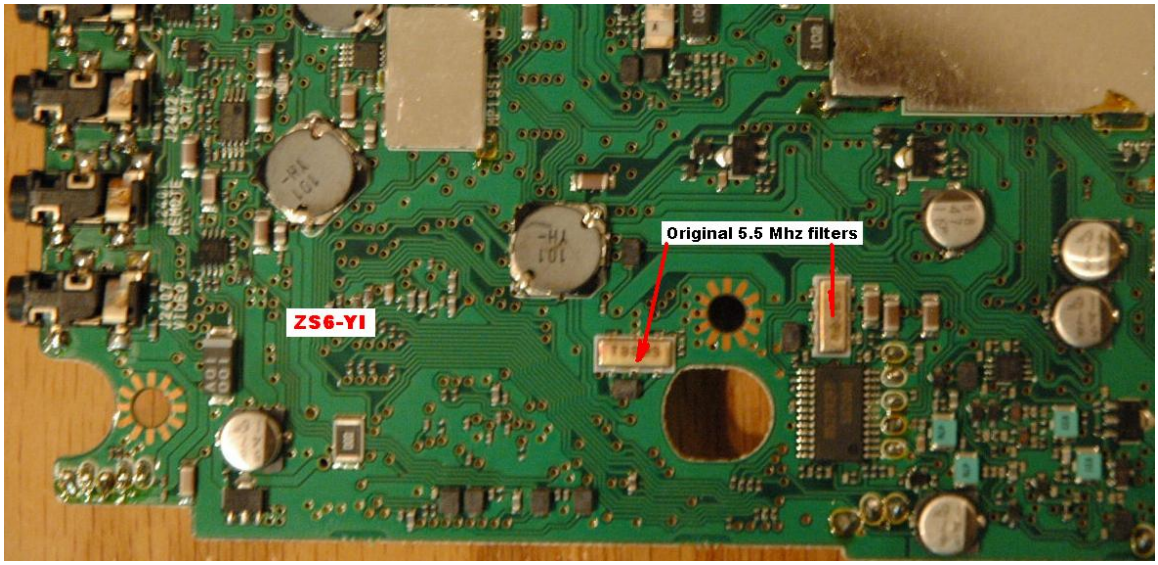
Step 2

Remove the DDR unit first then the main board

Step 3

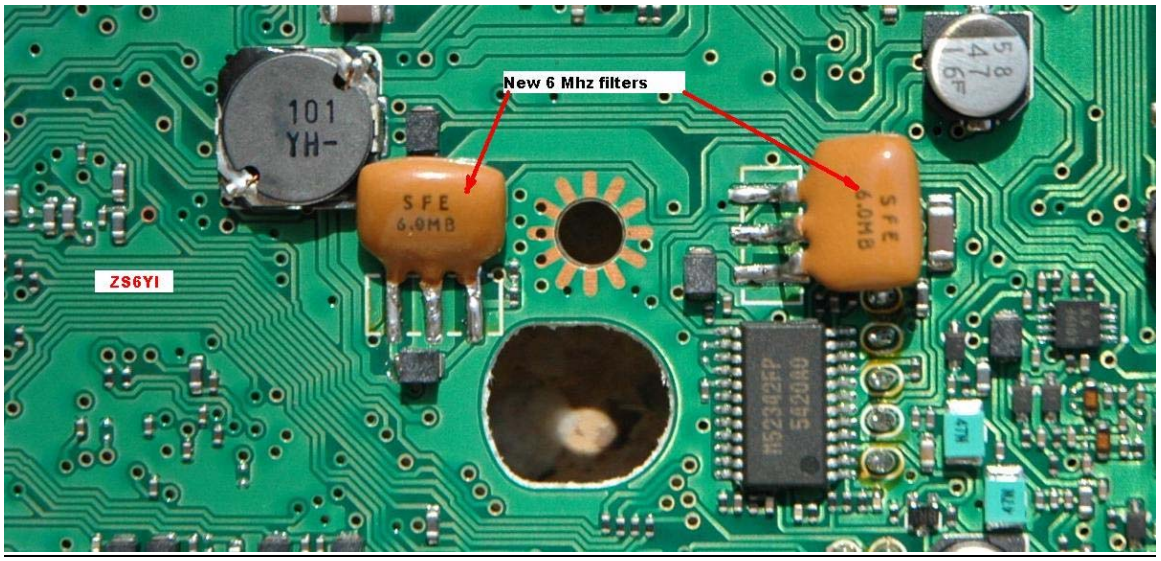
Very carefully unplug ribbon cables. Don't pull on them!

Step 4



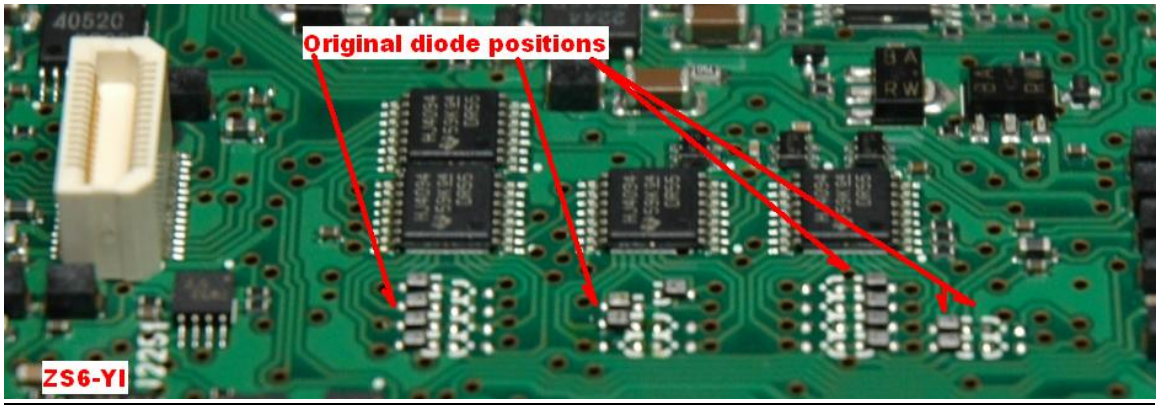
Original 5.5 MHz SMD ceramic filters

Step 5



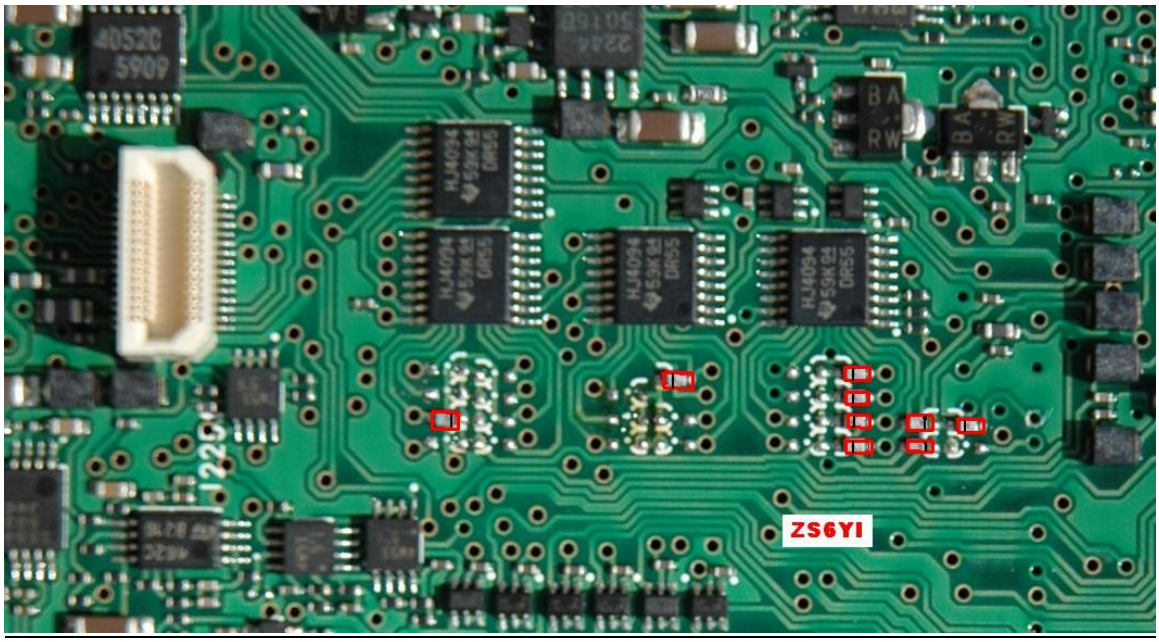
New 6 MHz Ceramic Trap Filters

Step 6



Original Diode Positions

Step 7



New Diode positions
Step 8

OPERATION

Connect the power supply to the radio and couple a TV antenna terminated in a PL259 plug to the VHF antenna socket of the radio. (Right hand side of the radio as seen from the front looking towards the back).

When you switch the power on a warning message will appear on the blue screen. Press Yes that you acknowledge the warning.

The radio reverts to the original frequency you had the radio on before embarking on the modification.

To activate the TV receiver push and hold in the set button (Volume control situated at the top left hand side of the radio). If the TV receiver does not come

on, push the set button (volume control) once again. The TV receiver will now come on.

It is advisable to switch on the preamplifier.

By using the Band up and down buttons you can change TV channels, select a channel.

To change the frequency press the ADJ button and tune in the station using your VFO knob. You can do quick frequency movements by pressing the TS button.

Once you have found a station (audio only) press SET at the bottom of the screen. You should now see a picture.

You can now fine tune the picture by rotating the VFO knob.

Once everything is tuned perfectly press the volume control (set) button to store the station into the channel number previously selected.

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OM Eddie Leu ZL3TEL for his assistance and photos of the New Zealand expanded frequency range.

OM Paul Hayden VK4ZBV for information on the Australian and South African audio frequencies.

Finally OM Ken G3SDW who initially discussed changing the sound filters with me. His email inspired me to get cracking.

In Conclusion

For those South African Hams who have purchased the American model. I am working on a modification to change the NTSC system to PAL. It involves changing a number of parts on the main board. It won't be difficult but procuring the parts may be a challenge.

If I can get hold of the oscillator and coils I will do the modification then update everyone as to its success.

73 Gary Immelman ZS6YI