Topfield TF5800PVR Power Supply Repair

This page provides an account with photographs of my repair to the power supply on my Topfield TF5800PVR, known to owners as a 'Toppy'. This was my first attempt at anything like this, and so I recorded the steps in order to give encouragement to anyone else who might be considering doing the same thing.

Background

The Topfield TF5800PVR is a hard-drive video recorder with twin Freeview tuners, one of a product category know as a Personal Video Recorder (PVR). The Toppy is unique among PVRs in that it supports software extensions known as Topfield Application Programs (TAPs). It may be this extensibility that attracts a particular type of owner. Certainly the user community does seem to be richly populated with extremely helpful and competent people more than willing to exchange ideas and help each other out.

There is a web site dedicated to all things Toppy where owners gather to exchange hints and tips. It was through the forums on this web site that I received the encouragement to have a go at repairing my own Toppy when it developed a problem.

I received advice from several people, but in particular I am indebted to Mike Powell (MikeyP on the forums) for providing parts and offering detailed advice.

The Symptoms

After nearly four years of trouble-free ownership my Toppy started to be reluctant to bring up certain menus related to viewing recorded programs, and related to recording programs. Intermittent at first, these problems became more persistent until I was no longer able to access anything on the hard drive.

I had a spare 40Gb hard drive to hand so I swapped out the original 160Gb drive and installed the 40Gb drive. This fixed the symptoms, but while I was inside the box I measured the voltages at the molex connector for the hard drive, on the advice of folks on the Toppy forums. The molex has a 12v and a 5v connector. On my Toppy these were registering 14.98v and 4.57v respectively - not good.

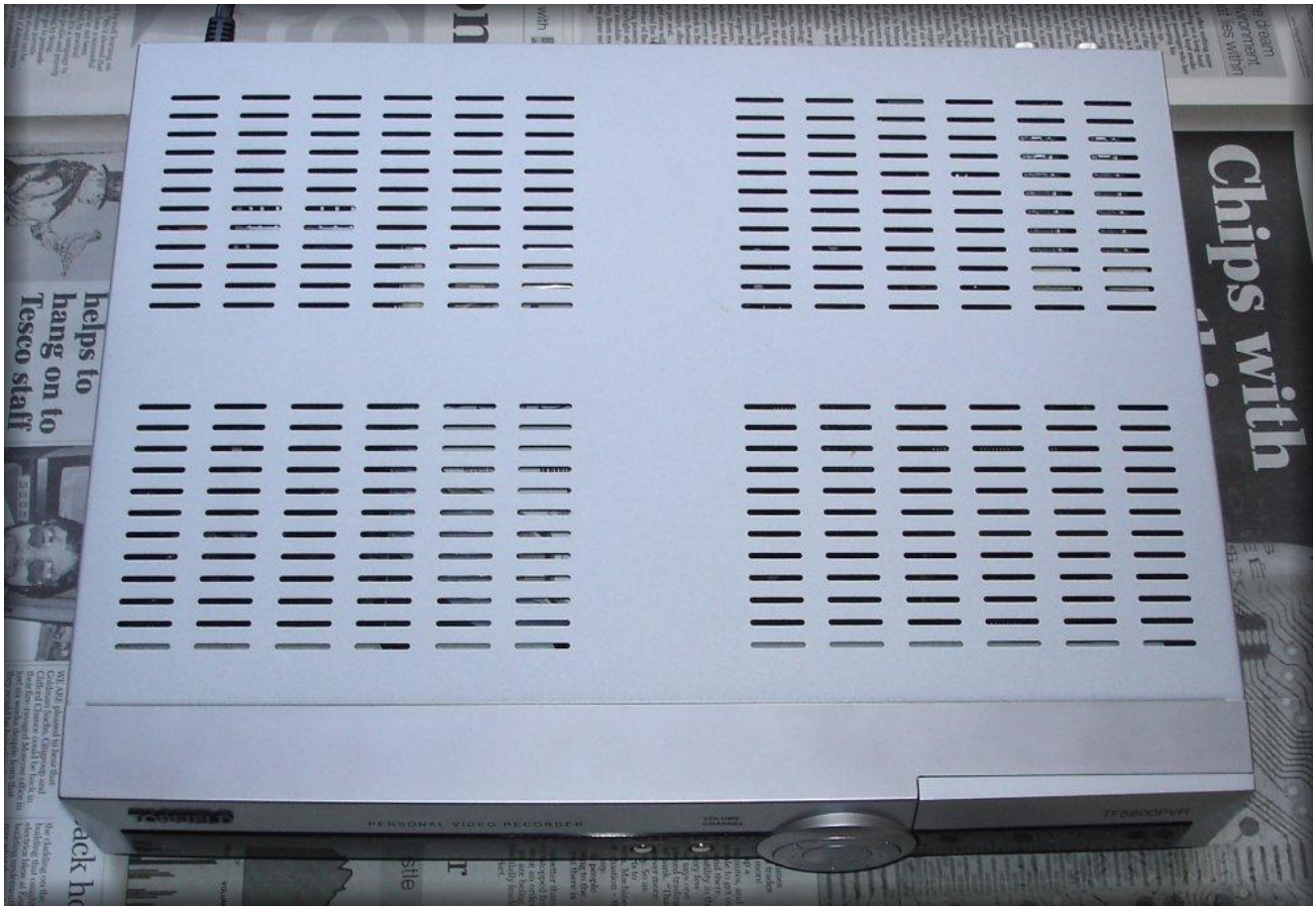
The advice on the forum indicated a relatively common failing with six of the capacitors on the Toppy power supply. Not having ever repaired electronics of this sort I was a little nervous about attempting a repair. MikeyP offered to replace the capacitors for me if I sent him the power supply board, but emboldened by reports of successful repairs of done by others with a similar lack of experience I decided to have a go. MikeyP sent me six capacitors and some useful tips on soldering technique. I invested in a new soldering iron and was ready to go.

The job took me about two hours in all, and has succeeded in moving the voltages more in line with specification. The original hard drive still doesn't work in the Toppy, but I am able to read the recordings from it in my PC using a utility linked to from the Toppy web site. I will attempt to reformat this drive and try again once I have retrieved the recordings I want. If that works, great. If not then a new hard drive at about £35 for 400Gb doesn't seem like much to pay to extend the life of my Toppy.

The Repair

Before starting

I disconnected the Toppy and used an uncluttered desk with good light as my workbench. I left the Toppy unplugged for about five minutes before taking off the cover, to allow any residual charge to disperse.



Cover off

The cover is held on by five screws - one on each side and three on the back. First time in you have to break a seal that invalidates the warranty. No problem on a four year old box.

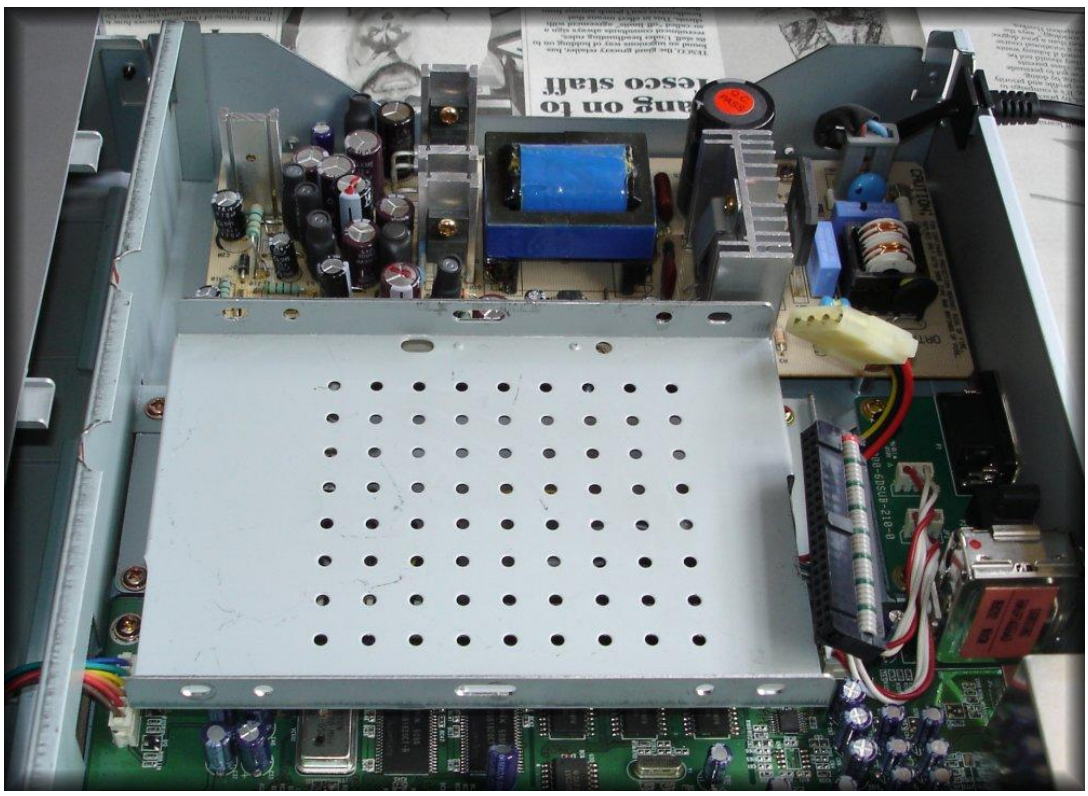
You can see the power supply on the left, then the hard drive centre-left, then the main circuitry on the right. The top-up TV slots are bottom right, and the aerial sockets top right.

Hard drive fixings

You can see three screws on the facing side of the hard drive in this photo. There are three on the other side as well. A long screwdriver helps get a better angle on these.

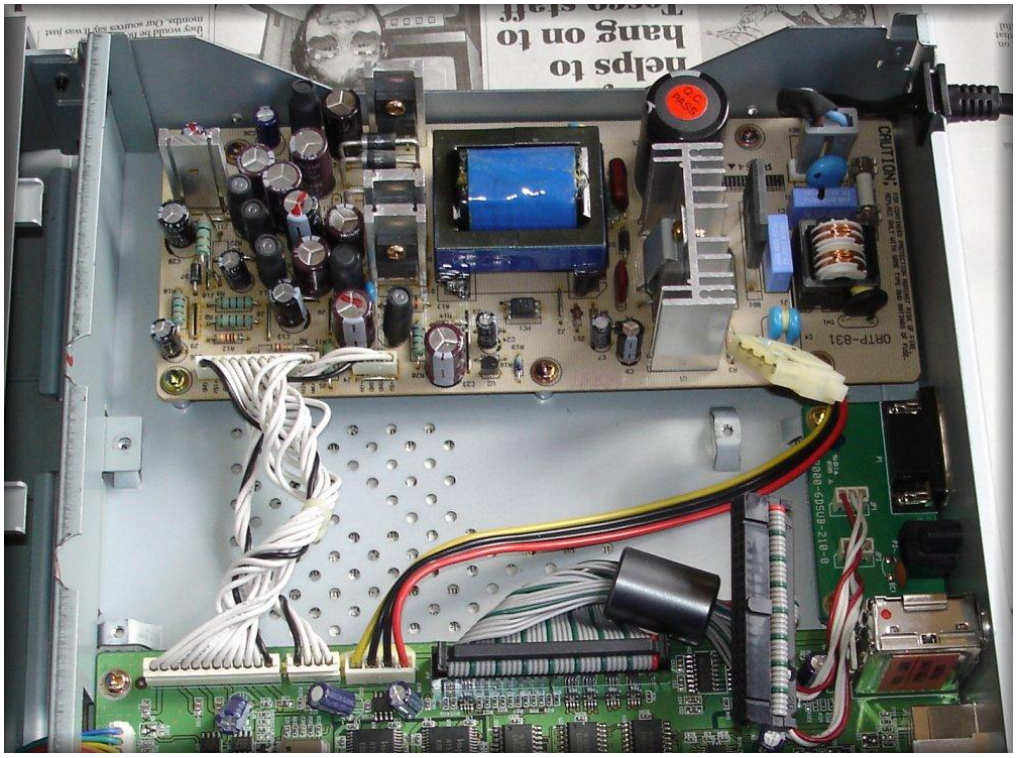
Hard drive removed

With the hard drive removed the molex and IDE connectors are clearly seen. Next the hard drive bay comes out to give access to the connections from the power supply.



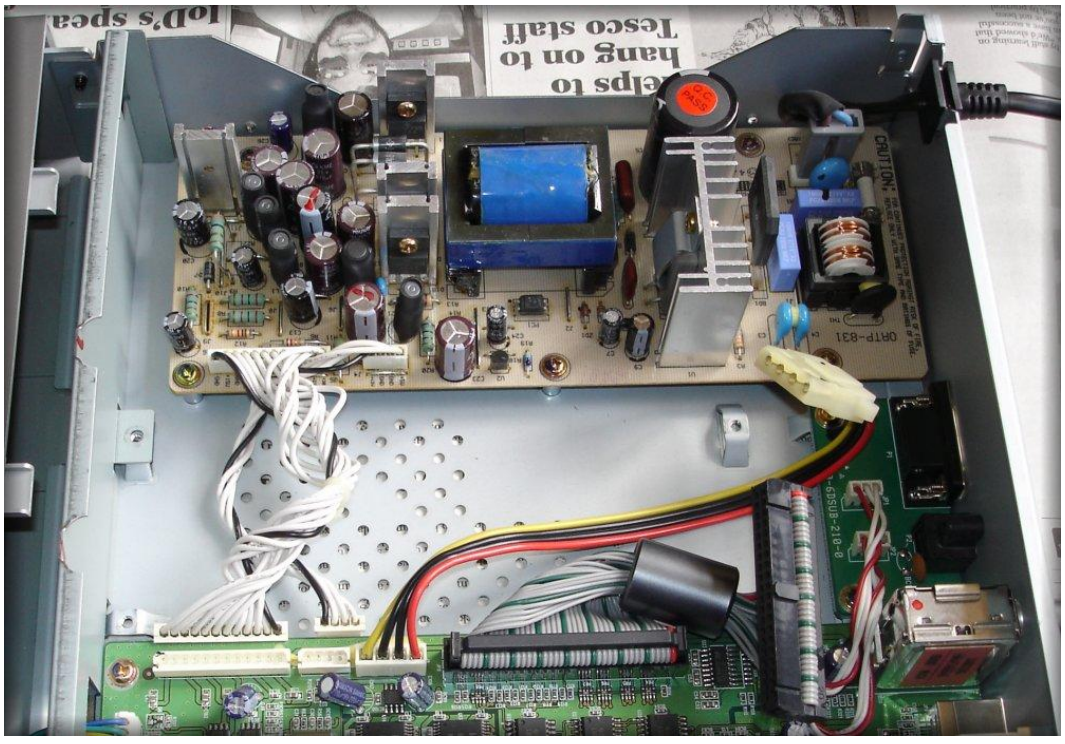
Power supply leads

At first glance the leads from the power supply to the main circuit board look like they might unplug from the power supply board, but the plugs are actually on the main circuit board.



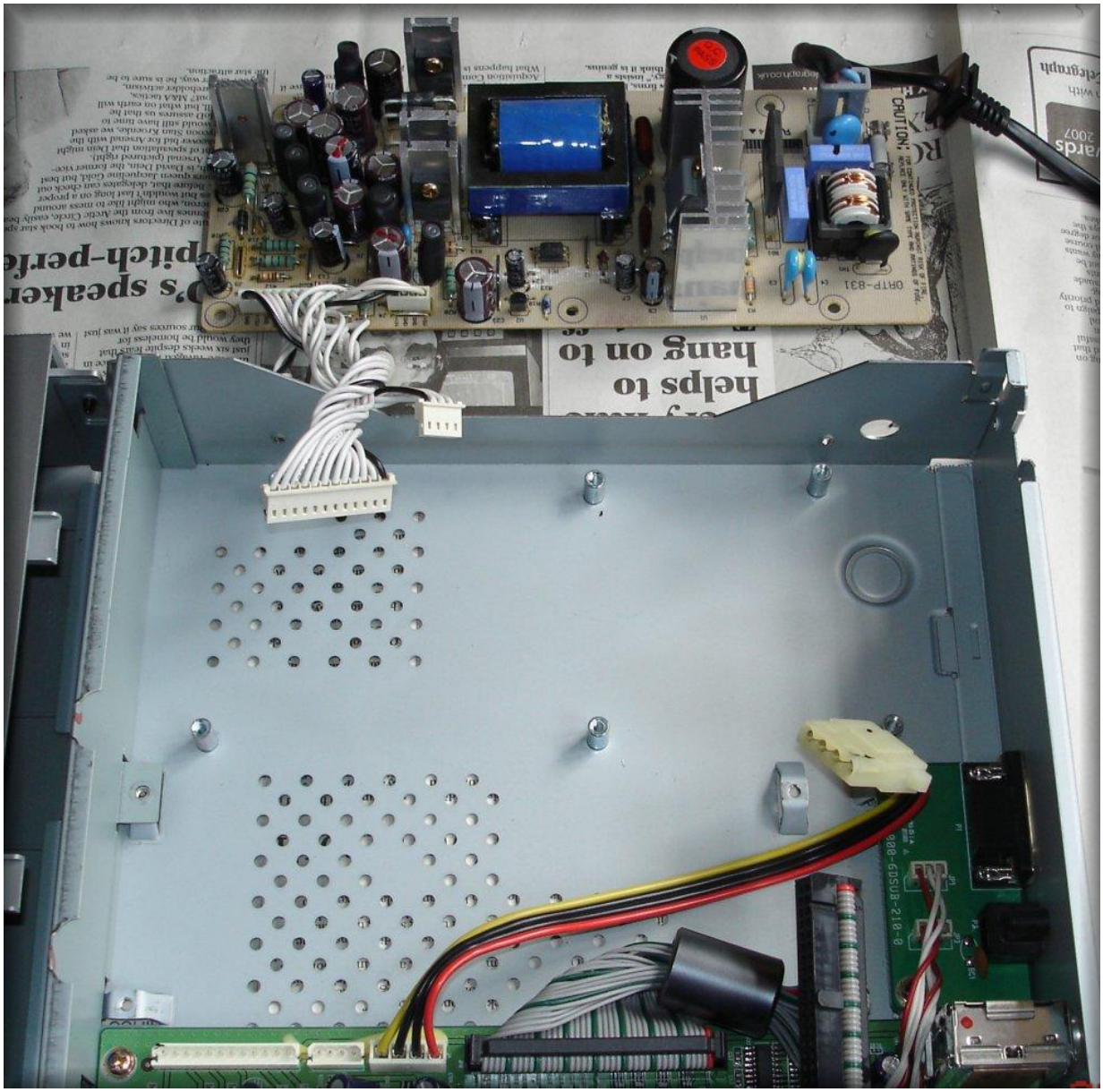
Power supply leads unplugged

This photo shows the power leads unplugged from the main circuit board. Now the power supply can be removed by unscrewing the board at the mounting points. The screws on the near side of the board are clearly visible.



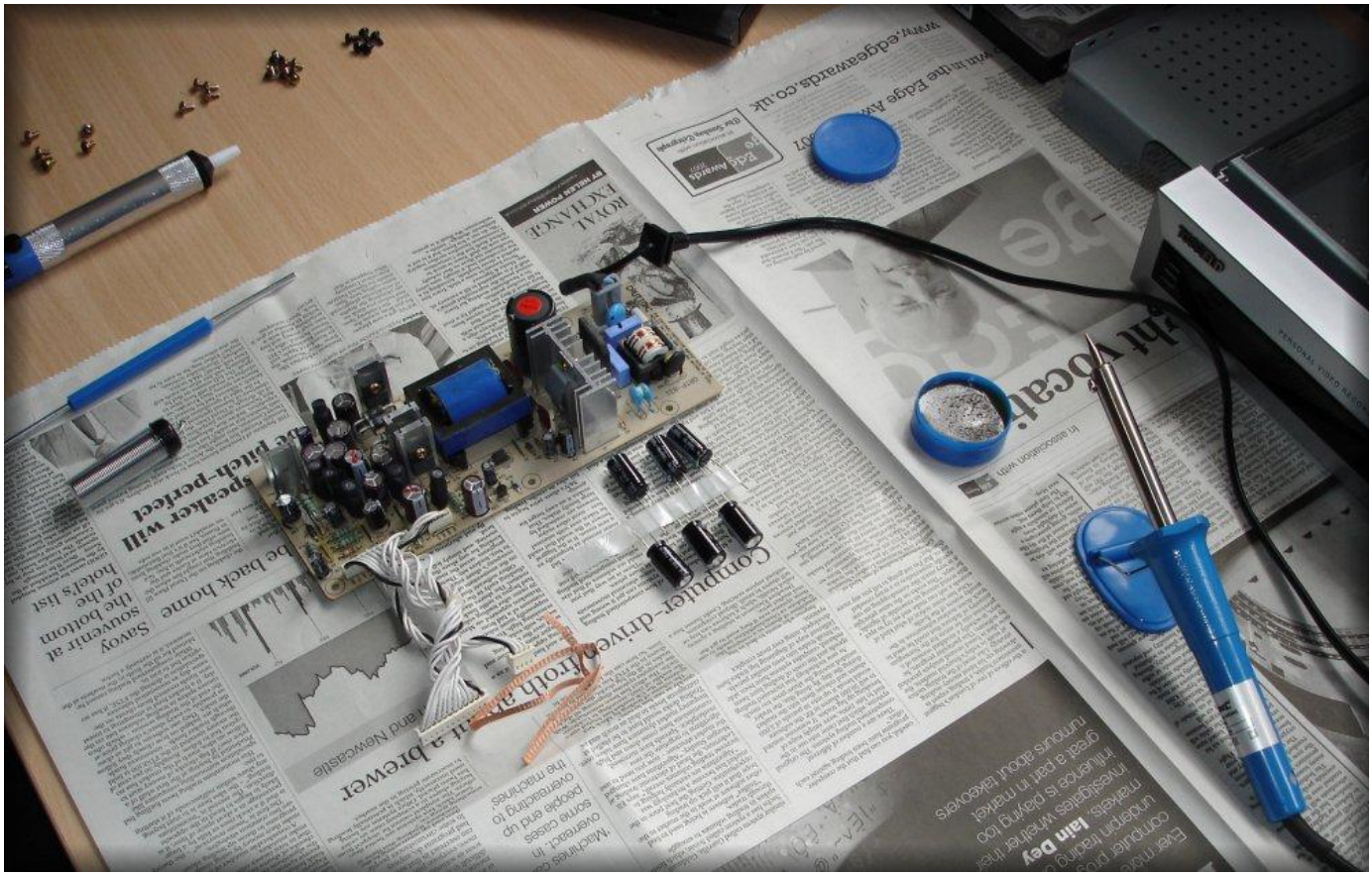
Power supply removed

The easy bits are all done. The job has only taken ten or fifteen minutes so far. Now for some soldering.



Preparing the work area

With the chassis out of the way just the bits needed are left. The new capacitors are lying next to the power supply board. The copper coloured ribbon is copper braid which MikeyP provided with the capacitors. More on that in a bit.



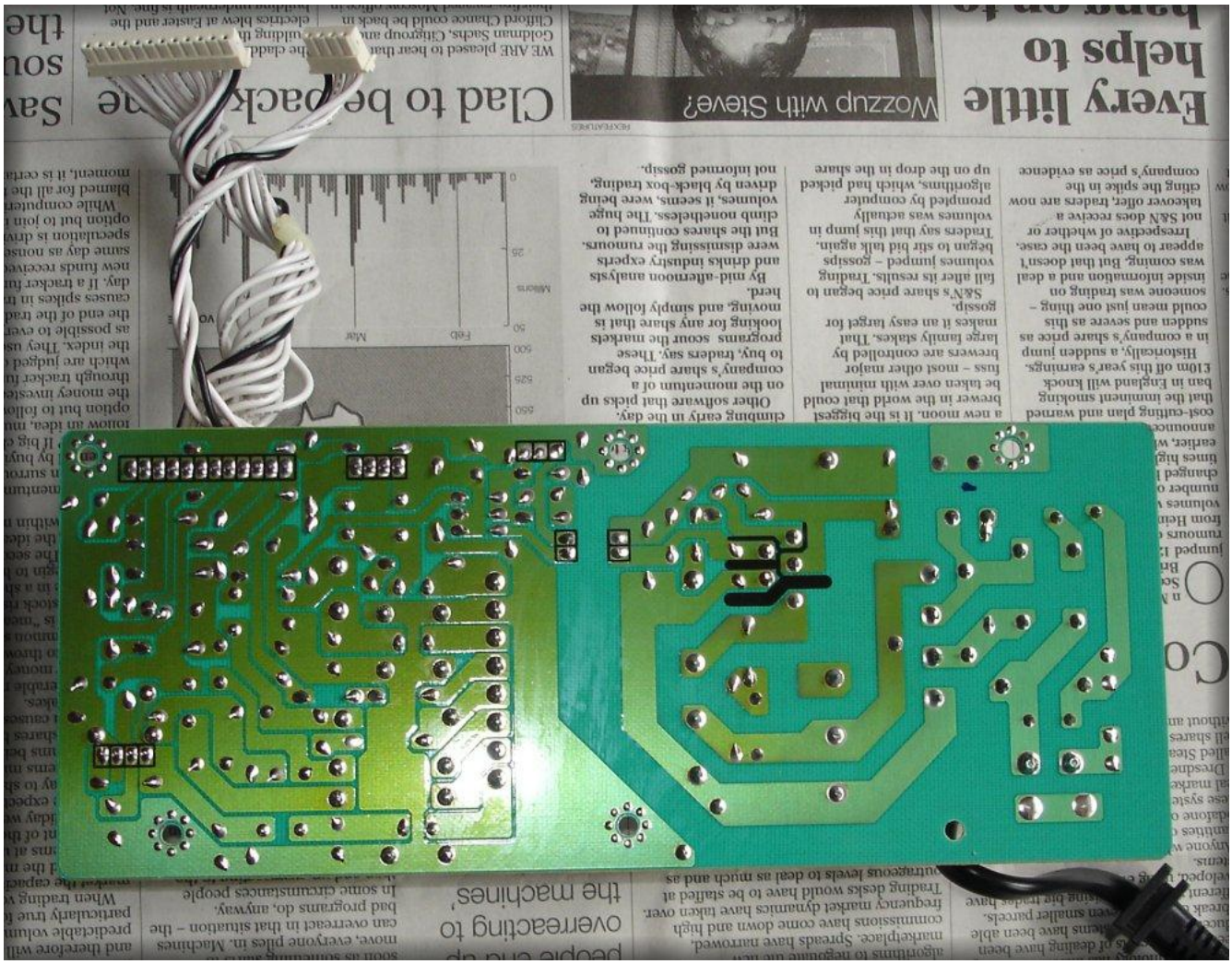
Soldering

This is the underside of the power supply board. As you can see, there is little to identify what's what. Care is needed to identify the connections for the capacitors to be replaced. It isn't too difficult as you turn the board over to match up the connections, but you certainly don't want to rush it. I used a fibre pen to mark the negative connection for each of the six capacitors.

MikeyP had given me the circuit board identification numbers for the six capacitors to be replaced. However, with some of the centrally positioned capacitors the labelling on the board is slightly ambiguous. Fortunately, on one of the Toppy forums I found a link to a detailed picture with each of the capacitors clearly marked. Polarity of the capacitors is important. The capacitors MikeyP supplied had negative markings on the side with the shorter wire, as did the originals. The circuit board also identifies the polarity with a bold semicircle around the negative connection point.

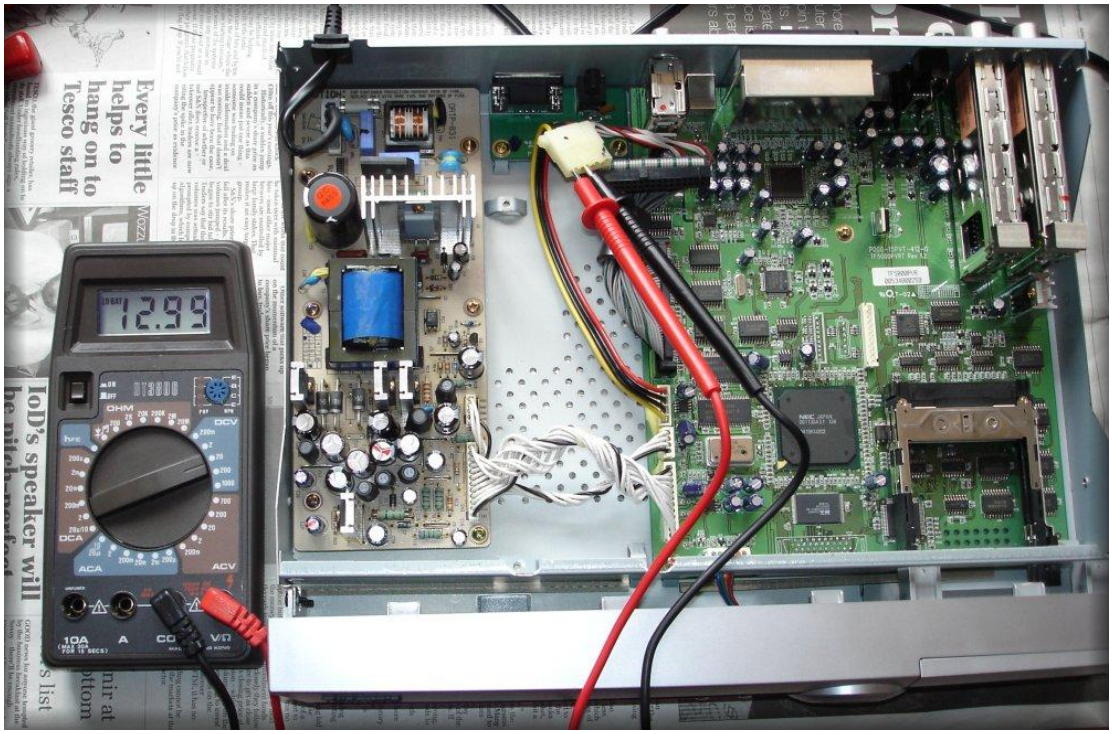
I can't show you pictures of the soldering itself as it isn't advisable to solder with one hand and take pictures with the other, and my attractive assistant was busy walking the dogs! The copper braid worked very well in removing the existing solder. By placing this on the connection and then the iron on the braid the solder was drawn into the braid as it heated to melting point. Even so, this was the trickiest part of the operation. I very carefully straightened the connectors if they were bent over and eased the capacitors out one by one. On one I had to have a second go at removing the solder before it would come out.

Inserting and soldering the new capacitors was a doddle by comparison. Taking great care to insert the connectors into the circuit board holes the right way round, simply bending the connectors over held the new capacitor in place firmly enough to solder. I held the tip of the iron against the connector at the connection point, and the offered the solder to the connector wire. After a few seconds the solder would run and form a neat ball around the wire. Before each connection I touched the iron in my flux to help prevent oxidation and to help the solder run. Finally, the excess connector wire is snipped off once the solder has cooled.



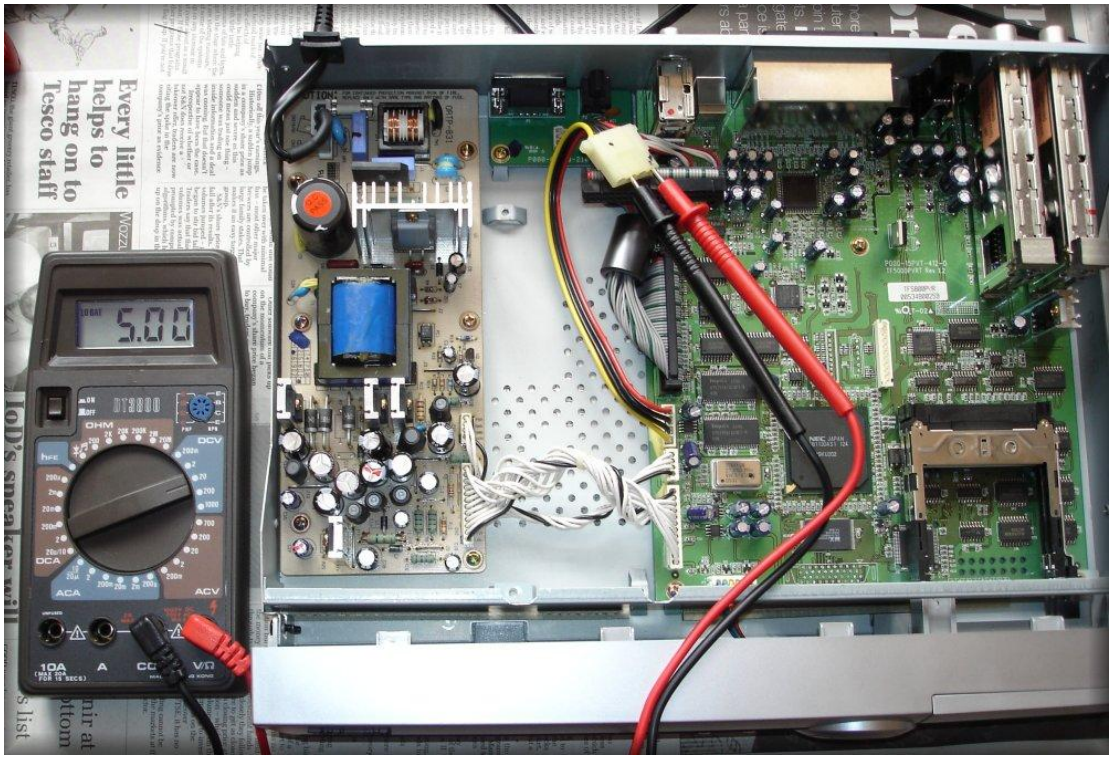
Time to test - 12v

With the board back in place it was time to test the voltages again. The 12v is still slightly high. Doubtless some gurus on the Toppy forums will tell me why this might be. Still, 12.99v is a lot better than 14.98v.



Time to test - 5v

The 5v connection looks spot-on.



Tools

Not many tools needed. I used the long-nose pliers to gently ease out some capacitors once the solder was removed.

Conclusions

Toppy people are generous with their time and advice. The encouragement I have received has been exceptional. If I can do it I reckon most people can, so if your Toppy starts to play up (out of warranty) don't be afraid to have a go at fixing it yourself.

At the time of writing FreeSat has recently launched. Once there are a few FreeSat HD PVRs available (hopefully including a Topfield version) it may be time to upgrade my PVR, and finally retire my faithful Philips CRT in favour of a shiny new full-HD flat screen. But for the time being my Toppy rolls on!