

## Modifying the Zinwell SUP-2400 as a 70cms DATV up converter

### G8GTZ and M0DTS

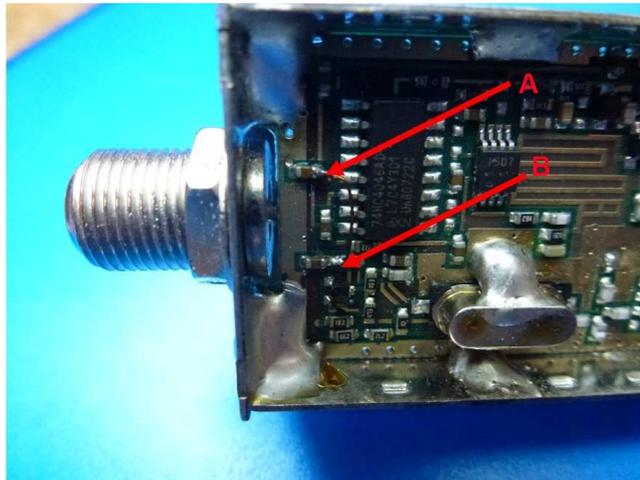
In order to receive 437 MHz (70cms) DATV on a standard satellite STB, you need to up convert the signal to L band. Luckily there is a consumer device available in the USA which is used on cable networks to up convert UHF signals to L Band where they are then received on a standard satellite box.

The units are made by a company called Zinwell and known as SUP-2400. They are available on ebay but only in the US and they do require modification, which involves SMD components, to work on DATV.

This article describes the modifications required to the unit which were developed by Rob, M0DTS, and published on his web site.

There are 4 relatively simple modifications to be done:

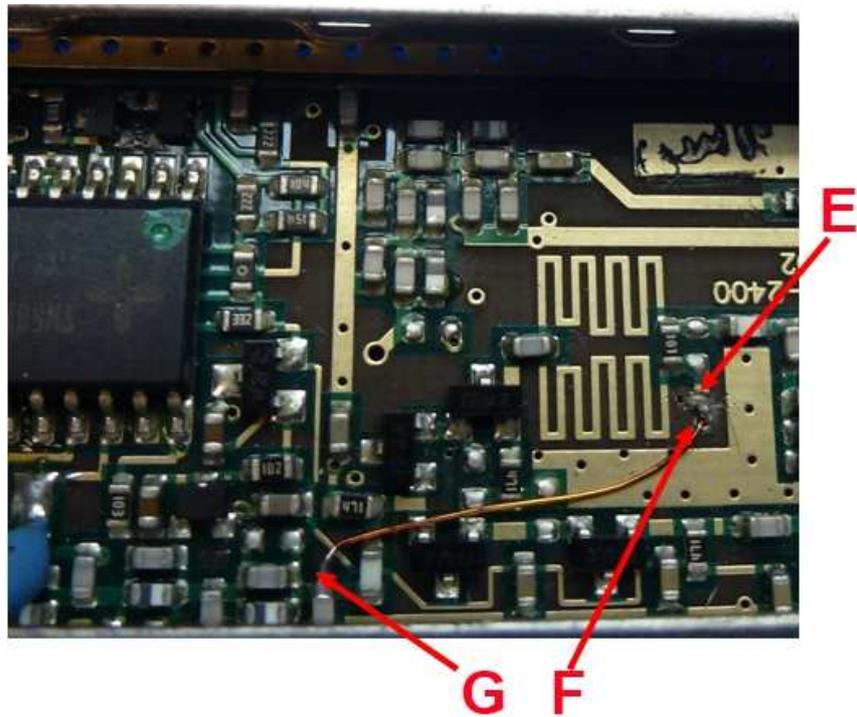
Modification 1 – put a wire link in place on the PCB side with the synth chip between point A and point B on picture 1.



Picture 1

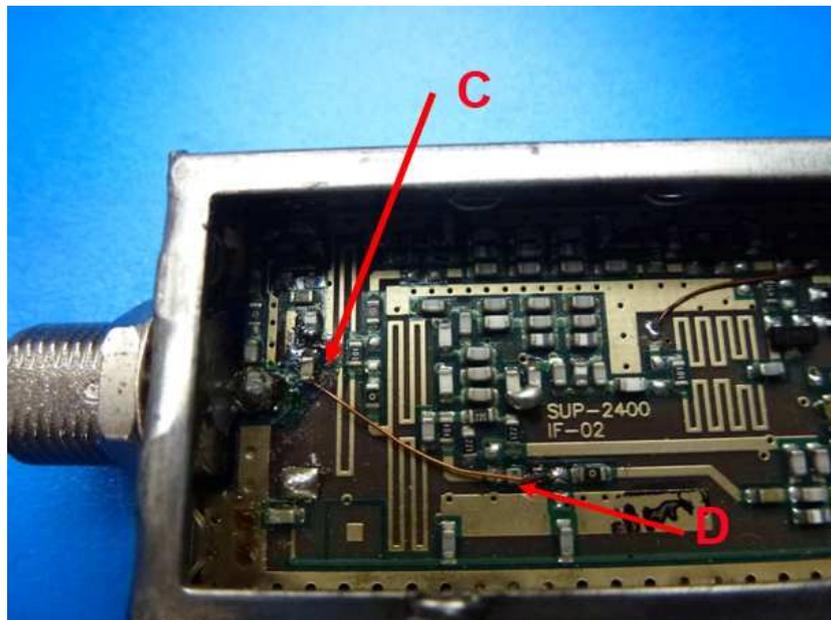
On the reverse side there are 3 links:

Modification 2 - Cut the track at point E just above point F where the link is going to be soldered



A wire link is then soldered between the points F and G as shown:

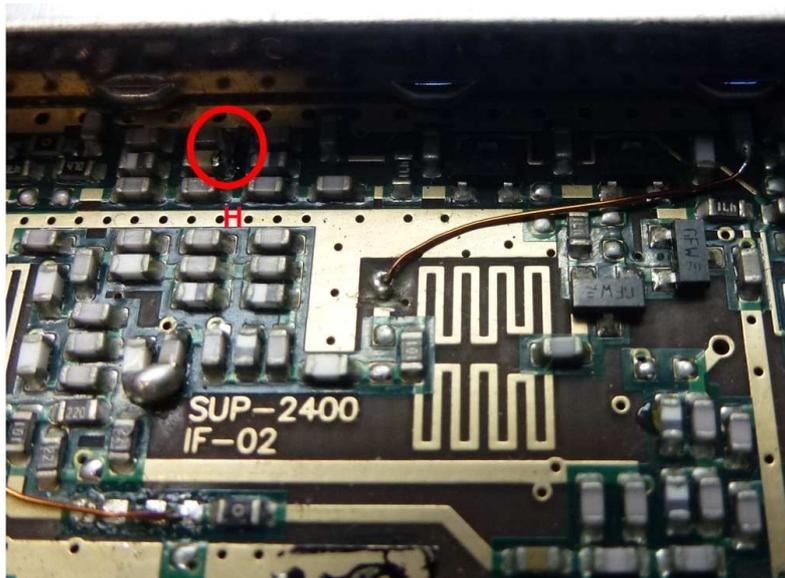
Modification 3 is more complex - turn the capacitor at point C between the 2 input lines through 90 degrees towards the bottom of the board which means only one end is soldered to the PCB.



Then remove the first 0 ohm resistor at point D on the line at the bottom of the board.

Then use a wire link between point C and D to join up the flying end of the capacitor to the far end of where the 0 ohm resistor was.

Modification 4 - put a blob of solder across the ends of the 2 surface mount capacitors at point H under the lip at the top of the PCB...



### Testing

The units are powered up the F type tail from the digital satellite receiver so make sure you enable LNB DC volts in the rxr menu.

The units also feed power out of the unit towards the aerial (LNB) to power a mast head pre-amp – be careful not to connect a DC short aerial or attenuator! If you do not need this, simply disconnect the DC feed via the existing ferrite core to the input F type connector. This wire can also be used to power the unit if you do not wish to use in line powering.

The units have a 2400 MHz local oscillator which means 436 MHz can be received on 1964 MHz. The unit can be tested using a wideband receiver / scanner and listen for your local UHF repeater – note the LO is high.

Some variation does occur with the LO, which has been designed for wideband digital signals so try tuning around + / - 250 KHz when receiving narrow band signals. Most units seem to tune approximately 200 KHz high – note this offset does not matter for DATV signals.

The units are quite sensitive and can detect -120 dBm (.2 microvolts) so should hear any repeater which is more than an S2.

<b>Repeater Channel RB</b>	<b>Repeater frequency</b>	<b>Approx output frequency</b>
0	433.000	1967.000
1	433.025	1966.975
2	433.050	1966.950
3	433.075	1966.925
4	433.100	1966.900
5	433.125	1966.875
6	433.150	1966.850
7	433.175	1966.825
8	433.200	1966.800
9	433.225	1966.775
10	433.250	1966.750
11	433.275	1966.725
12	433.300	1966.700
13	433.325	1966.675
14	433.350	1966.650
ATV 1	436.000	1964.000
ATV 2	437.000	1963.000

To receive 70cms DATV, the modified SUP2400 is put in line between your 70cms mast head pre-amp and the digital STB. As the up converters are very wide band it is possible a band pass filter will be required between the mast head pre-amp output and SUP-2400 input.

In order to help promote the use of 70cms DATV and to compliment the Digilite 70cms project, the BATC shop now has stock of these units either in un modified form or modified as described in this article. See the BATC on line shop for more details.