Kobo/XCSoar Internally Mounted GPS Chip Notes - www.50k-or-bust.com

These notes relate to the use of a Kobo mini ebook reader modified to run XCSoar. They are my best shot at the time of writing. I cannot guarantee they are correct or represent ideal solutions but will correct and update them as and when I can. Please inform me of any errors or better solutions you may find. The index for other Kobo/XCSoar notes can be found at:

http://www.50k-or-bust.com/Kobo XCSoar/Kobo XCSoar.htm

Internally Mounting The GPS Chip

Against my better judgement I agreed to make a Kobo/XCSoar unit for a friend of mine who insisted he would prefer GPS chip mounted inside. I took the opportunity to to make these notes which should be used in conjunction with the hardware notes for the externally mounted version.

Warning!

Before you choose this method note that, as described in the hardware notes, GPS reception in units constructed this way is significantly poorer than units with externally mounted GPS chips.
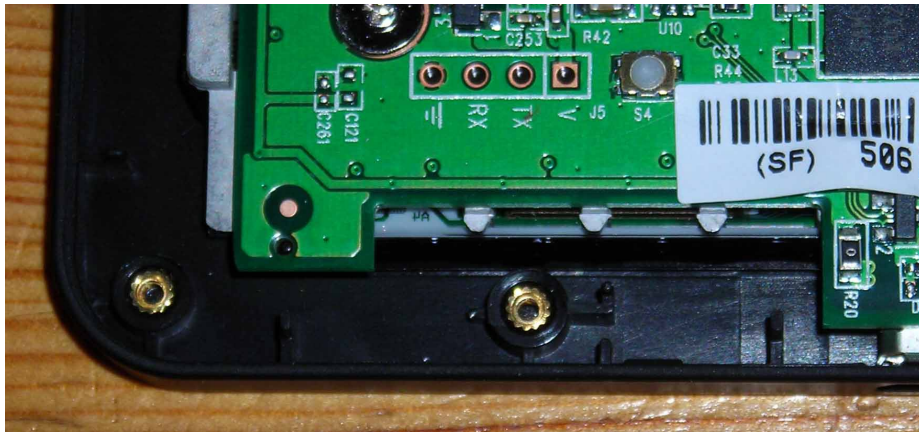
Chip Type

The GPS chip required for this version is the GlobalTop Gms–u6b .

Preparing the Kobo

After opening the Kobo and disconnecting the battery the metal tab marked "X" in the picture below must be removed.
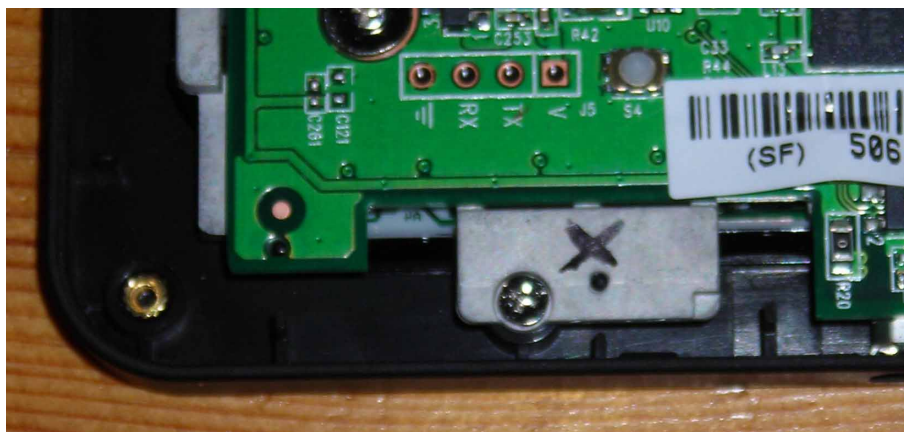
Remove the screw and then, using some small long nosed pliers bend the tab towards you so it snaps off. This should not take much force at all.

Now remove the plastic pillar and brass bush which has just been exposed. This can be ground away using a mini drill but I just nibbled it out with small sidecutters.
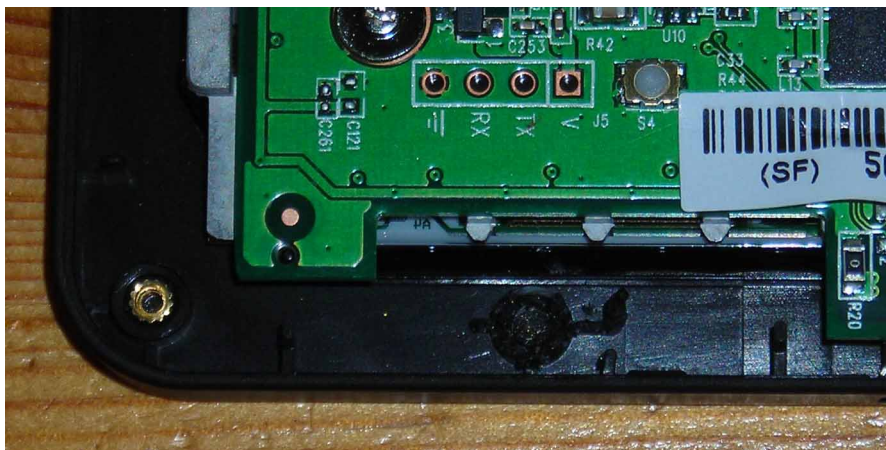
Next solder the GPS chip in as the picture below. First solder the resistors and wires to the chip and then solder it to the motherboard serial port. The wiring is the same as for the externally mounted chips.

Note the resistors and wires are routed so they are not crushed onto the micro SD card when the back is put on.

Note the heat shrink insulating sleeving on the wires soldered to the resistors.
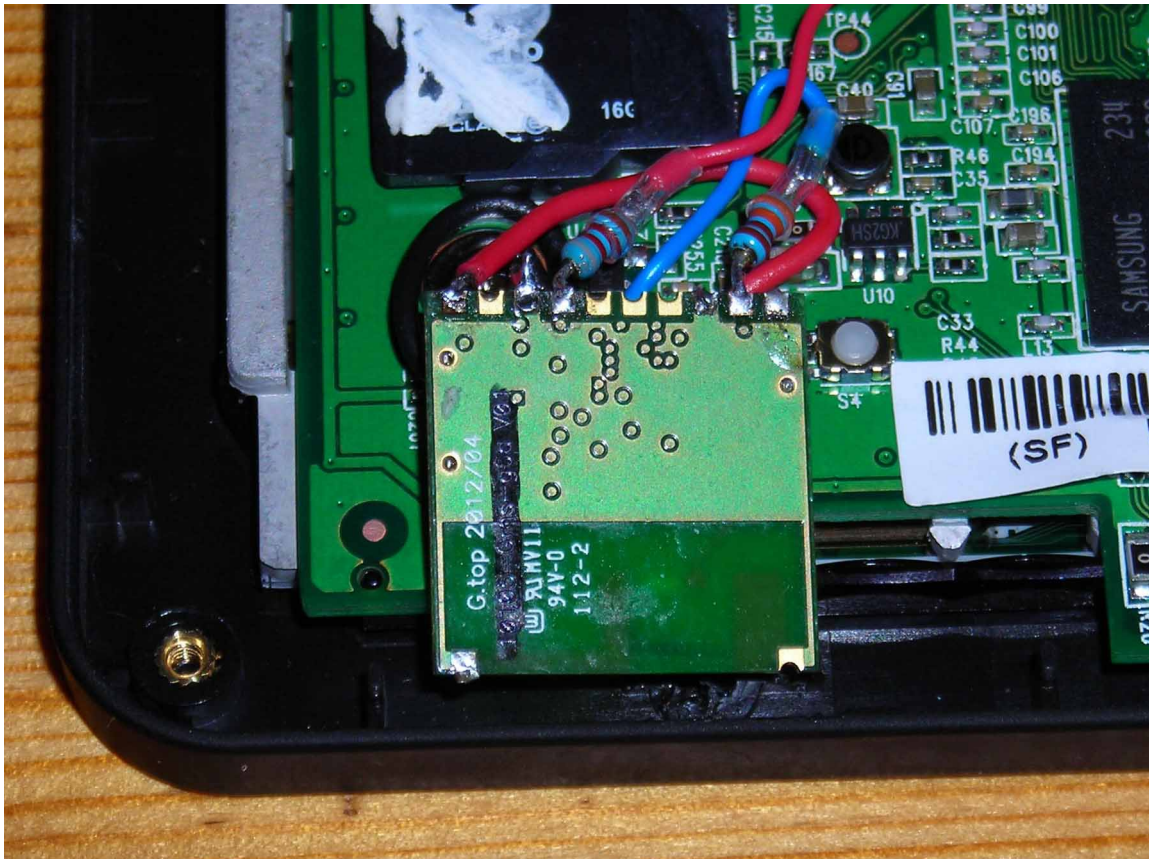
Although the chip is only in contact with the edge of the motherboard, as a precaution against shorting a piece of electrical insulating tape may be placed between the chip and the motherboard (not shown in the picture). This will also provide a little cushioning if the GPS chip is crushed against the motherboard.

The battery can now be connected and the unit tested.

Preparing The Inside Back Cover

The picture below is of the externally mounted chip version. This picture was used because the internal version I built was black and detail is very hard to see in pictures of the actual one.

As with the external chip version the web inside the inner rear cover has to be cut away to clear the backup supply wire at the position shown by the single arrow.

The horizontal web section indicated by the two arrows has to be removed completely so that the GPS chip itself can sit in the gap left. Do not remove the two vertical webs either side of it. The space between them is just right for the width of the GPS chip which will sit between them.
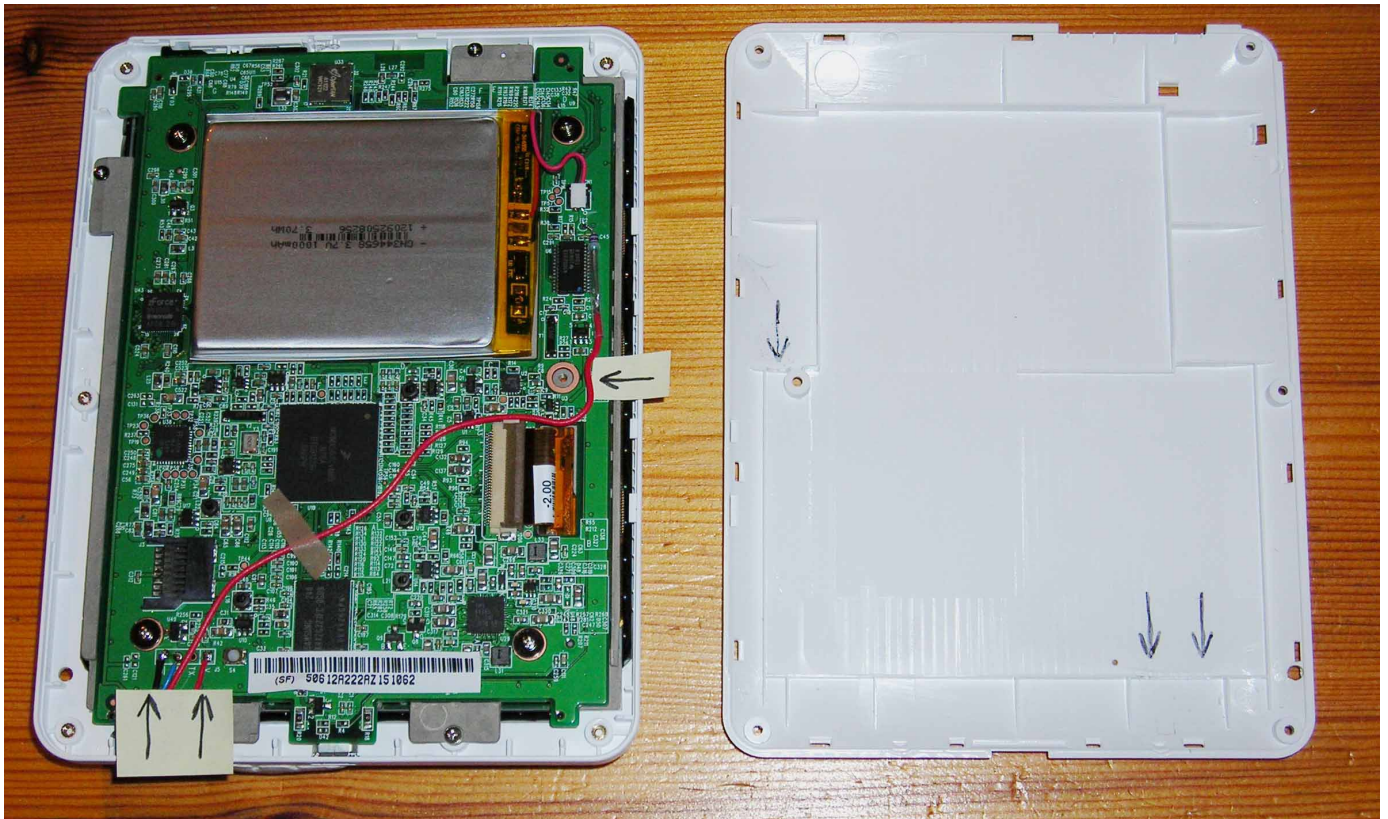
A rectangular hole is now cut as shown below. This has to be big enough such that the upper edge of the GPS chip and its wiring can sit in it when the back is fitted.
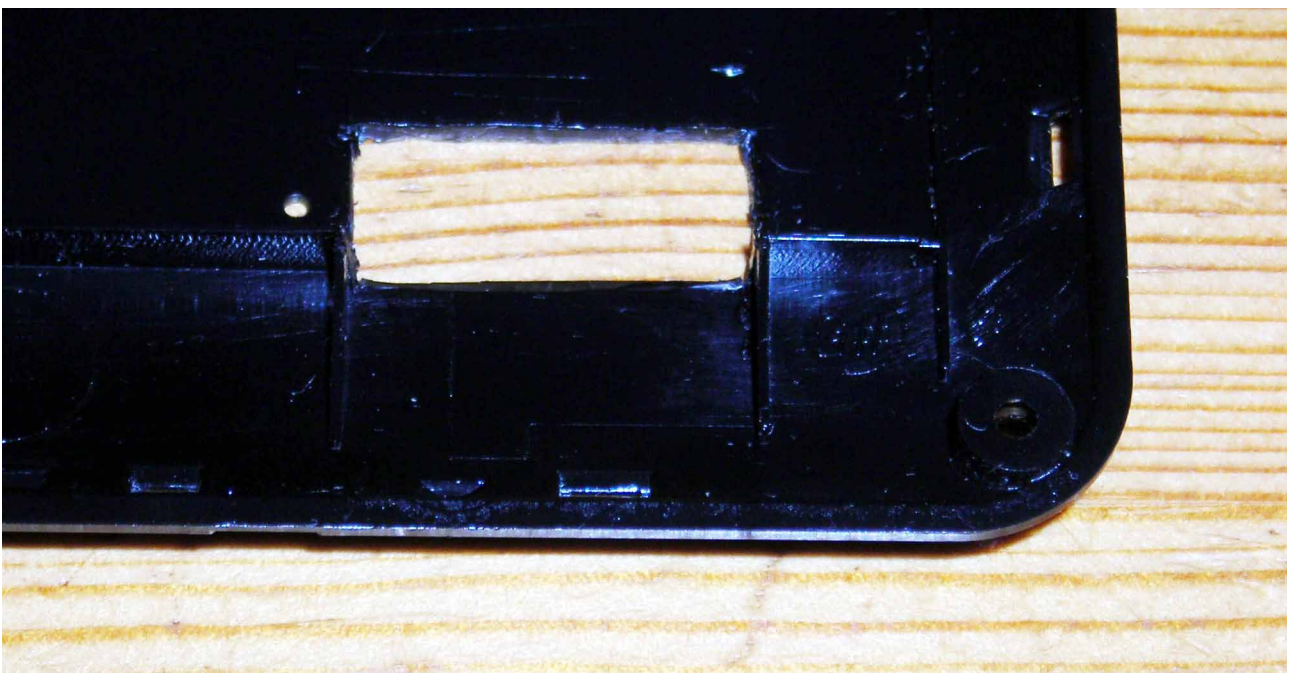
I use a scalpel for this although it can be done with a mini drill. Now carefully try the inner rear cover for fit. Jiggle the GPS chip into the the space between the webbing so that the edge of the chip and its wiring sits in the aperture you have cut. Don't force it. If it does not fit easily check to see what is jamming and correct it by trimming the cover or bending the wires.

The GPS chip, resistors and wiring should not stick up above the outer surface of the inner cover so that when the outer cover is fitted they will not be crushed. When you are happy that the fit screw down the inner back cover. I stuck a piece of insulating tape over the aperture to discourage any dirt which might get under the outer cover from getting inside (not illustrated).

Fit the outer back cover and test the unit.

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