A safe, easy, solder free way to get serial access to your BT HOME HUB 5a.

- Dermot McDonnell, Jan, 2018

This method will permit flashing of OpenWRT (aka LEDE) Open Source firmware fairly easily for many folk. I do not explain flashing here. See the excellent detailed Guide - a .zip containing the PDF - made by ‘Bill’ (of eliban.co.uk) and Mathias Kresin, (LEDE/OpenWRT Developer). The method described here sets up serial access to the bthh5a, the essential first step in flashing new firmware. The existing method is tedious and risky. It also requires skills and tools most folk do not have. There are tens of thousands of BT Home Hub 5a units in the UK and they are available at very low cost on ebay. I hope that by making firmware flashing easier more folk will try building their own router. Viva Wireless Freedom!

You will need:

1. Masking tape. Sellotape will do just fine.
2. Some Aluminium Foil. If you don’t have any, buy yourself a bar of chocolate and use the foil wrapper instead.
3. A pair of sharp scissors.
4. Some Blu Tack or similar sticky stuff. (Chewing gum will do).
5. A Safety Match.
6. A Bulldog Clip.
7. Some Crocodile Clips and lengths of wire that suit your needs.

Step 1.

You must remove the front cover of your BT HOME HUB 5a. The best way to do that, without damaging the device, is to follow this Youtube VIDEO. (Thanks to James Finnie).

Once the case is open, do NOT remove the circuit board.
Step 2.

Identify the Serial Transmit (r77), and Receive (r78), pads on the circuit board, also the boot select (r45) and a suitable Ground (USB port casing). Below is one of the excellent photos on the OpenWRT Table of Hardware entry for the BTHH5a.
Step 3.

Use the Masking Tape to isolate the 3 pads of interest. Cut 2 thin 6cm long strips of Aluminium Foil. Position the strips with the tips over the pads, r77 (tx) & r78 (rx). Secure them in place using Blu Tack. Attach the Crocodile Clips to the foil at the case edge. No need to prepare a foil strip for r45, boot select, as it needs to touch ground exactly once, at Power On, when installing OpenWRT or Lede (see Step 5 for Ground source). Note: The LEDs are bright GREEN on Power Up, UNLESS you ground r45. You will know for sure you have achieved boot mode CFG 04, required for flashing firmware, if the LEDS flash BLUE very briefly at Power Up and then remain off.
Step 4.
Position one half a length of a Safety Match and a Bulldog Clip to ensure good contact between the foil strips and the solder pads.
Step 5.
Make a connection to Ground, I use the USB casing as shown:

You should now have a stable serial connection ready for use with your FTDI cable. Good luck!