# KiwiSDR Quick Start Guide

Version 1.3

**Please check** kiwisdr.com/quickstart **for the latest information.**

**Ask questions on the forum. Check** kiwisdr.com **for link.**

# Important

If you purchased the KiwiSDR "kit" that included a BeagleBone Green:
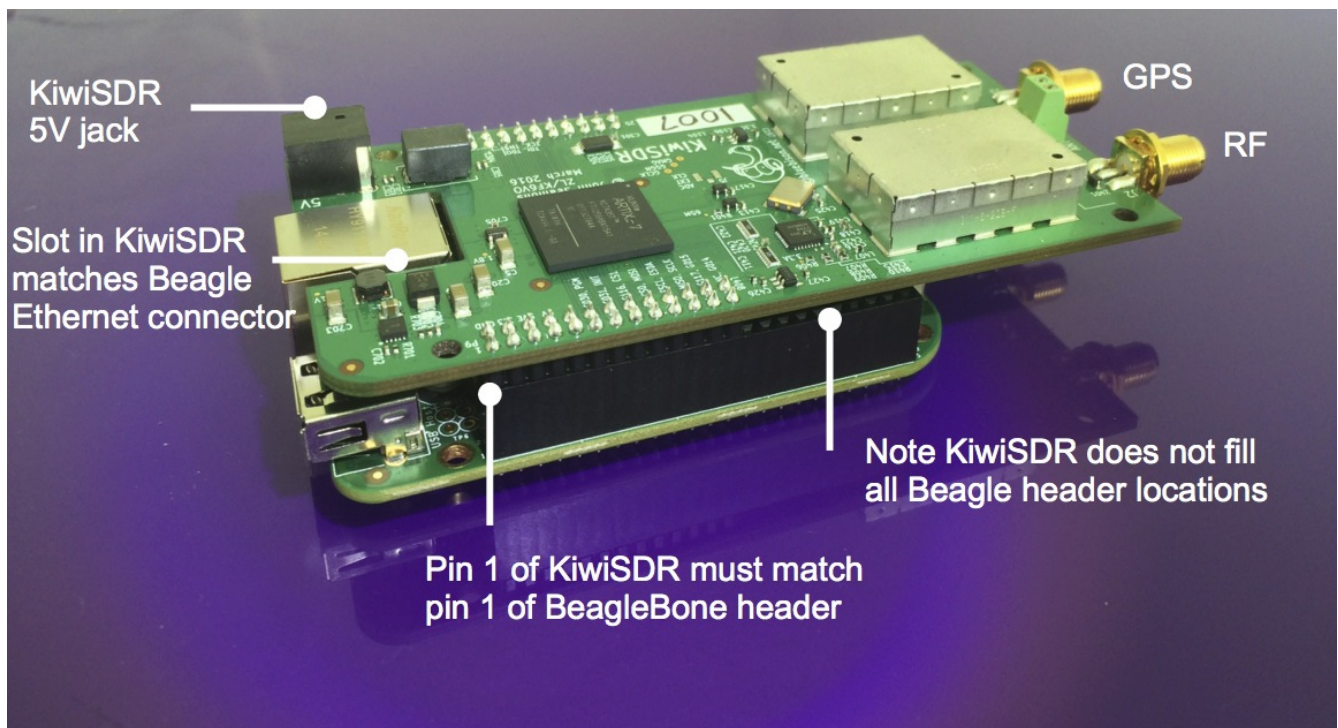
    **Do NOT** insert the micro-SD card into the Beagle.

    The Beagle has already been pre-loaded with the Kiwi software.

    Only use the micro-SD card when re-installing the Beagle software after a problem.

If you purchased the KiwiSDR "board only" and are supplying your own BeagleBone:

    Follow the instructions below to install the Kiwi software on your Beagle.

KiwiSDR 5V jack

Slot in KiwiSDR matches Beagle Ethernet connector

Pin 1 of KiwiSDR must match pin 1 of BeagleBone header

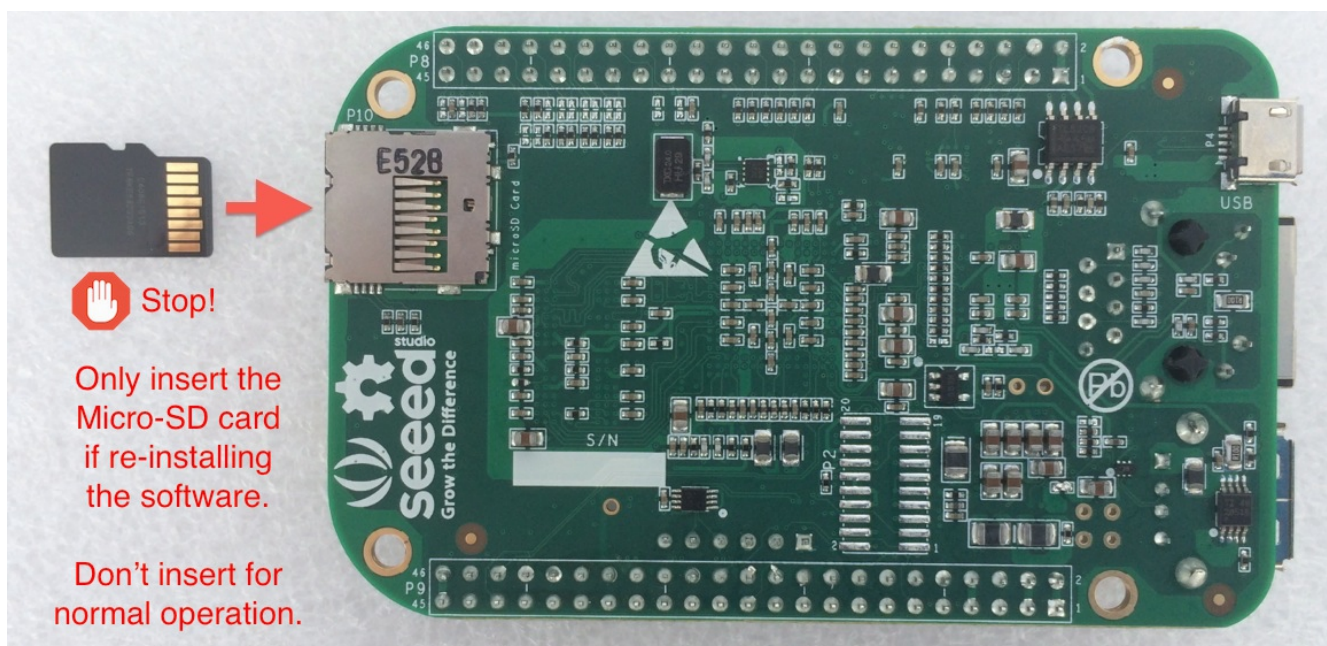Note KiwiSDR does not fill all Beagle header locations

GPS

RF

## To install the KiwiSDR hardware follow these instructions.

- Connect the KiwiSDR to a Seeed BeagleBone Green or CircuitCo BeagleBone Black.
- Plug the KiwiSDR into the Beagle if not already done. Be extremely careful to align the KiwiSDR pins into the correct header sockets of the Beagle (see picture). The cutout in the KiwiSDR board should wrap around the Beagle Ethernet connector with equal clearance on all sides.
- Attach an RF (shortwave) antenna to the left SMA connector or 2-pin terminal block (antenna connection on left, ground on right). The PCB silkscreen identifies the connectors.
- Attach an optional 3.3V active GPS antenna to the right SMA connector.
- Attach an Ethernet cable from your network switch, router, modem or firewall.
- Plug a 5V, 2A, center-pin positive power supply into the KiwiSDR 2.1mm power jack. Do not connect power to the Beagle. The KiwiSDR powers the Beagle through the header connector.

## Using the KiwiSDR

- Your network must run a DHCP server to assign an IP address to the Beagle Ethernet interface. It is likely your router, modem or firewall already does this. Ask your network administrator.
- Use an up-to-date browser version of Firefox or Chrome. Internet Explorer is not supported.
- In a web browser connect to kiwisdr.local:8073 Your computer must be connected to the same local subnet as the KiwiSDR.  If your computer does not recognize the kiwisdr.local hostname then see the kiwisdr.com/quickstart for alternatives (this is generally true for Windows).
- Various configuration settings may be changed using the administrative interface at kiwisdr.local:8073/admin
- You may have to change the configuration on your router, modem or firewall to allow the public to access your KiwiSDR from the Internet. Connect to kiwisdr.local:8073/admin for information you will need to:
  - Permanently associate a fixed local IP address with the unique MAC address of your Beagle Ethernet interface.
  - Translate a connection to the KiwiSDR port (typically 8073) on your public IP address to the fixed local address assigned in the previous step using NAT.
  - Optional: Add a sub-domain to a domain you already own and point it to the public address of the KiwiSDR, e.g.  kiwisdr.mydomain.com:8073/
- Please consider listing your KiwiSDR on the sdr.hu website so others can find it. Complete instructions are at  kiwisdr.com/quickstart.
- To login to Debian Linux running on the Beagle use the "ssh" program (or equivalent, e.g. "PuTTY" on Windows) on another computer. Login with the username "root", e.g. "ssh root@kiwisdr.local". No password has been set. It is not possible to connect an HDMI monitor and keyboard to the Beagle. See kiwisdr.com/quickstart.
- You can also get a Debian console shell by using the "console" tab on the admin page at kiwisdr.local:8073/admin.

**Stop!**

Only insert the
Micro-SD card
if re-installing
the software.

Don't insert for
normal operation.

**To install (or re-install) the software follow these instructions. Note that any software previously installed on the BeagleBone will be completely overwritten.**

If your KiwiSDR included a BeagleBone then the software is already installed.

- With the power disconnected, insert the supplied micro-SD card with the software distribution into the Beagle. The card contacts face away from the board and the card should "click" when seated (see picture).
- Plug the KiwiSDR into the Beagle if not already done. Be extremely careful to align the KiwiSDR pins into the correct header sockets of the Beagle (see next picture). The cutout in the KiwiSDR board should wrap around the Beagle Ethernet connector with equal clearance on all sides.
- Plug a 5V, 2A , center-pin positive power supply into the KiwiSDR 2.1mm power jack.
- The LEDs mentioned below are the four status LEDs grouped together, not the single power LED.
- The LEDs on the Beagle will flash briefly then start a "back-and-forth" pattern as the software is copied from the micro-SD to the eMMC flash on the Beagle. This takes about four minutes.
- If the LEDs "freeze", or nothing happens after one minute, try again, holding down the "boot" button on the top of the Beagle PCB above the micro-SD connector before power is applied. Release the button when the first LEDs light. The button is difficult to reach when the KiwiSDR is installed. So remove it first and apply power to the Beagle instead. The KiwiSDR does not have to be attached for software to be installed on the Beagle.
- When the copy is complete the Beagle will power itself off (none of the LEDs will be lit).
- Remove the 5V power and micro-SD card (push in slightly to release the spring latch).

## Assembly of enclosure

If your KiwiSDR includes an enclosure assemble it as follows. You will need a Phillips screwdriver.
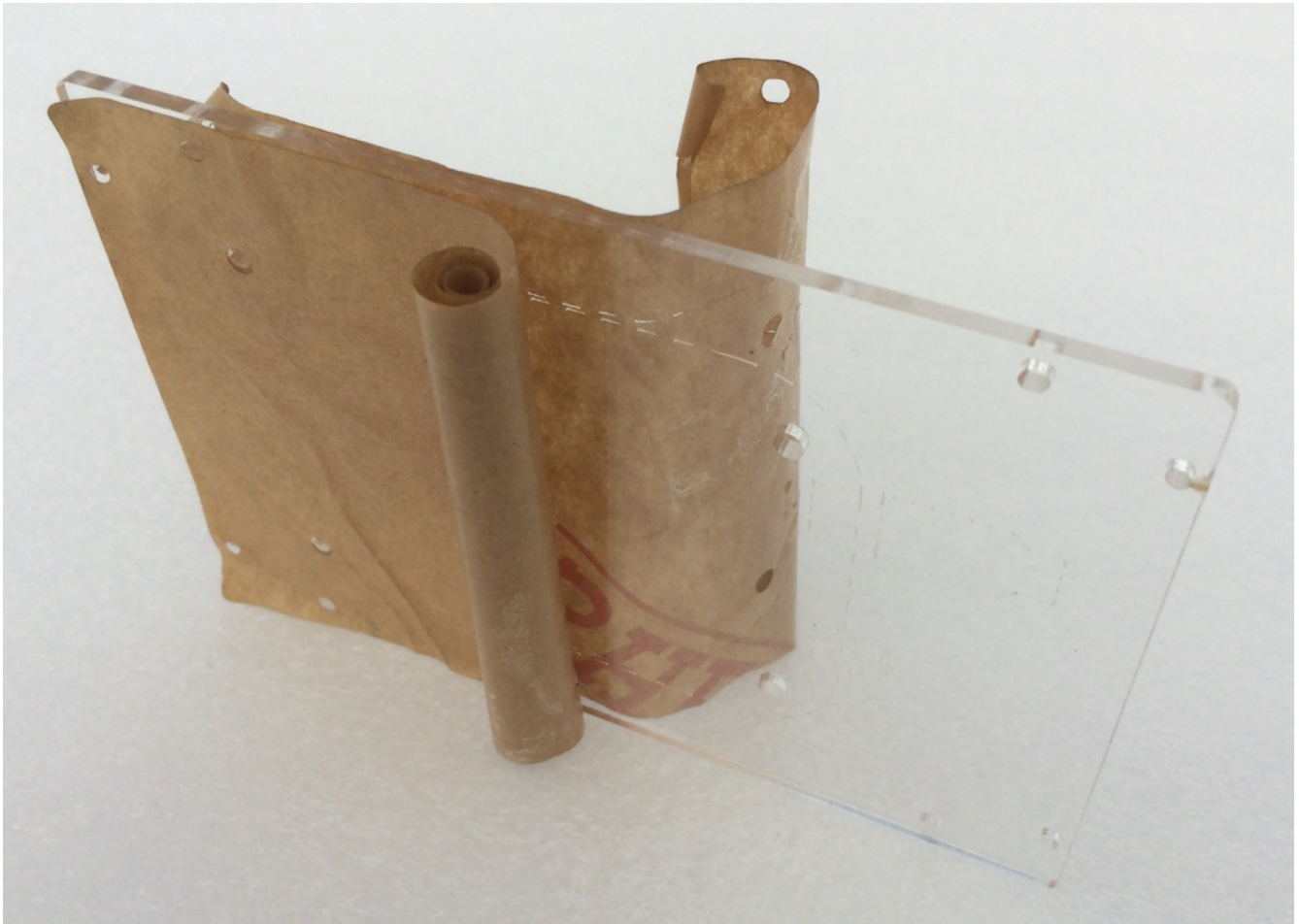


Optional: Remove the protective paper from the two plastic plates. Tip: if the paper adhesive is difficult to remove try warming it first with a hair dryer.
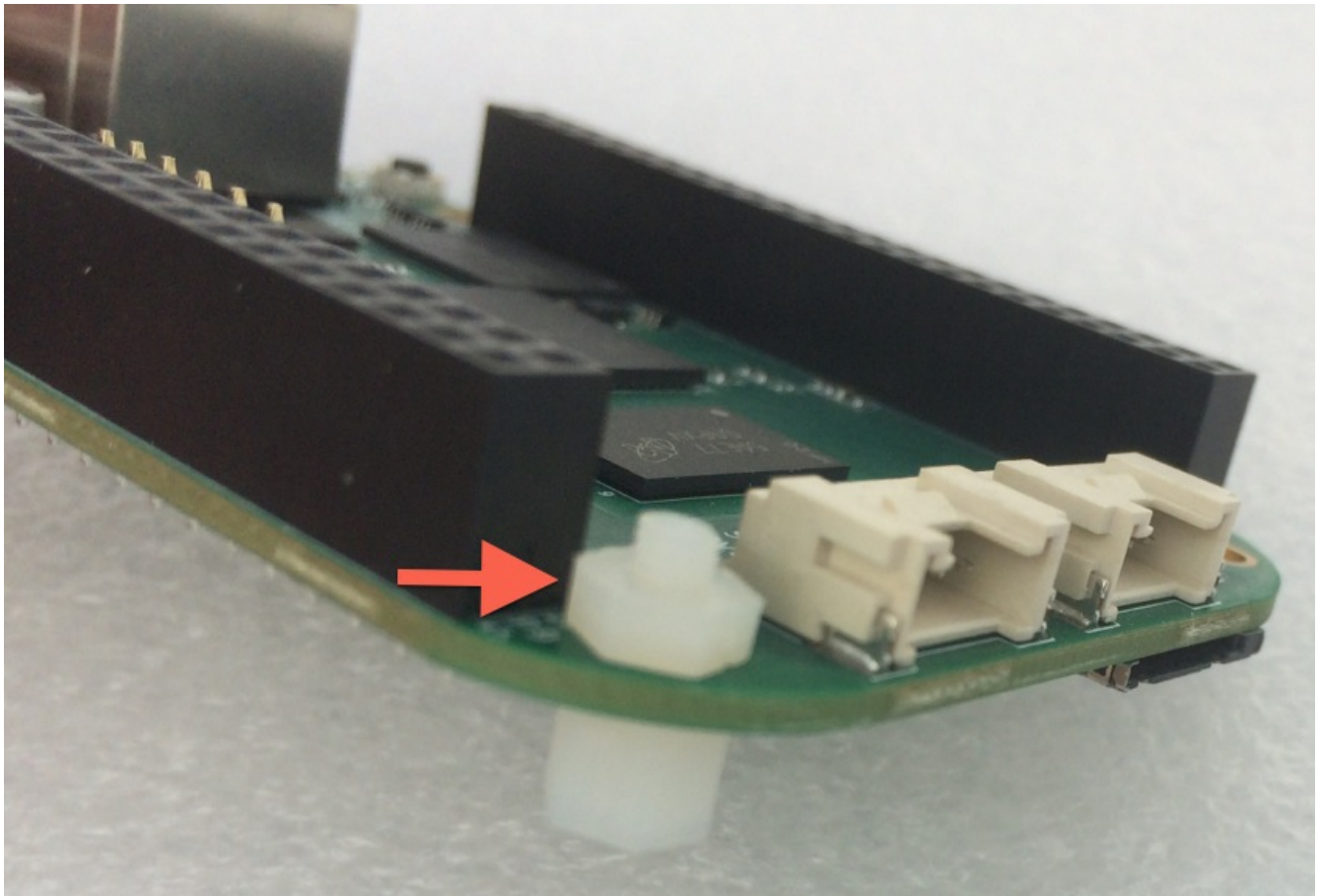
Attach plastic spacers to the BeagleBone at the four mounting holes in the corners. Tighten only finger-tight. Do not use the metal screws on the BeagleBone as they may short the circuit board traces.
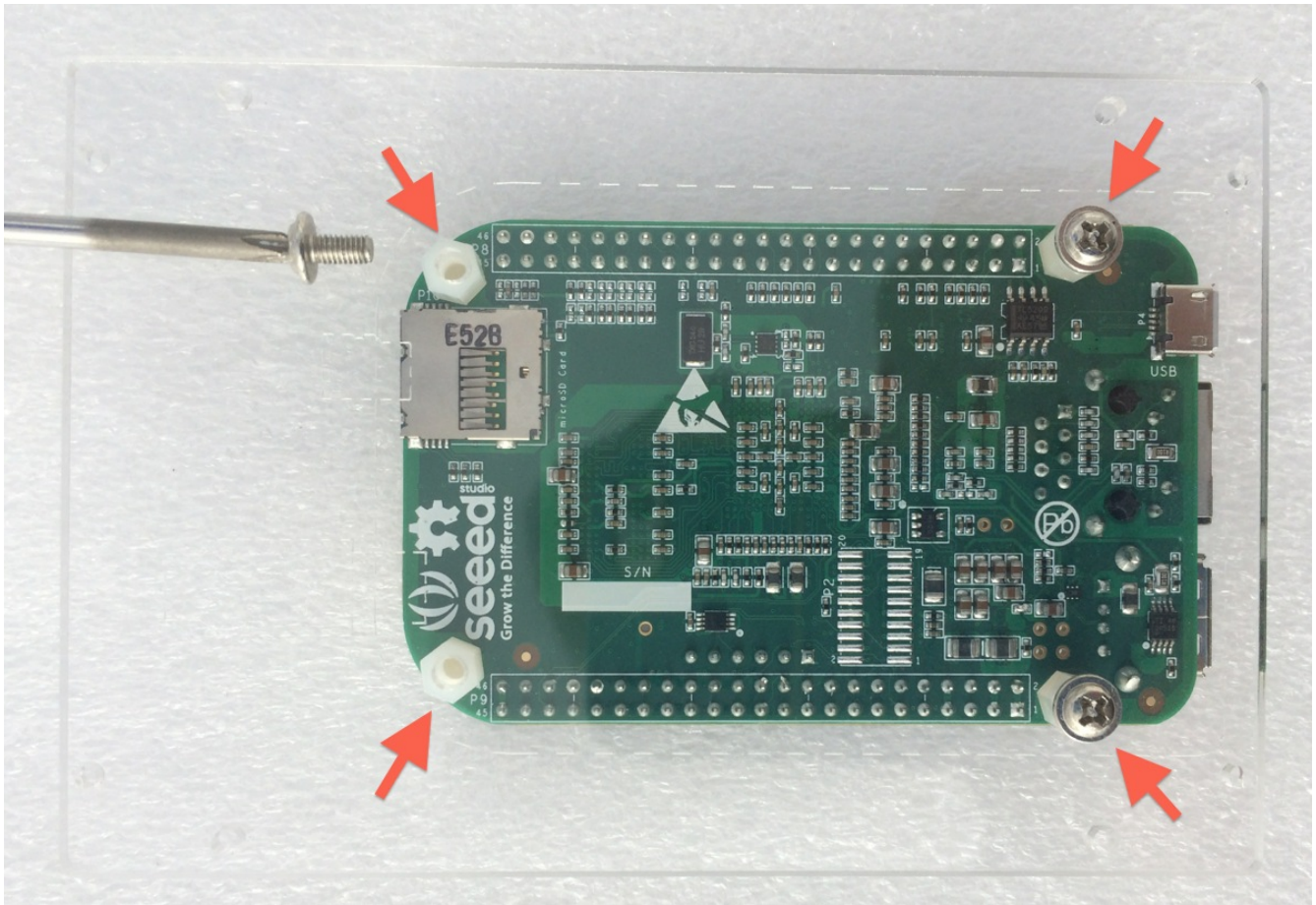
Attach BeagleBone to the bottom plastic plate with four metal screws using a Phillips screwdriver. Observe the etched markings on the plastic for correct orientation. An outline drawing of a micro-SD card and USB connector is etched into the plate. The Beagle Ethernet connector should be at the outside edge of the plate.

Slot in KiwiSDR matches Beagle Ethernet

Pin 1 of KiwiSDR must match pin 1 of BeagleBone header
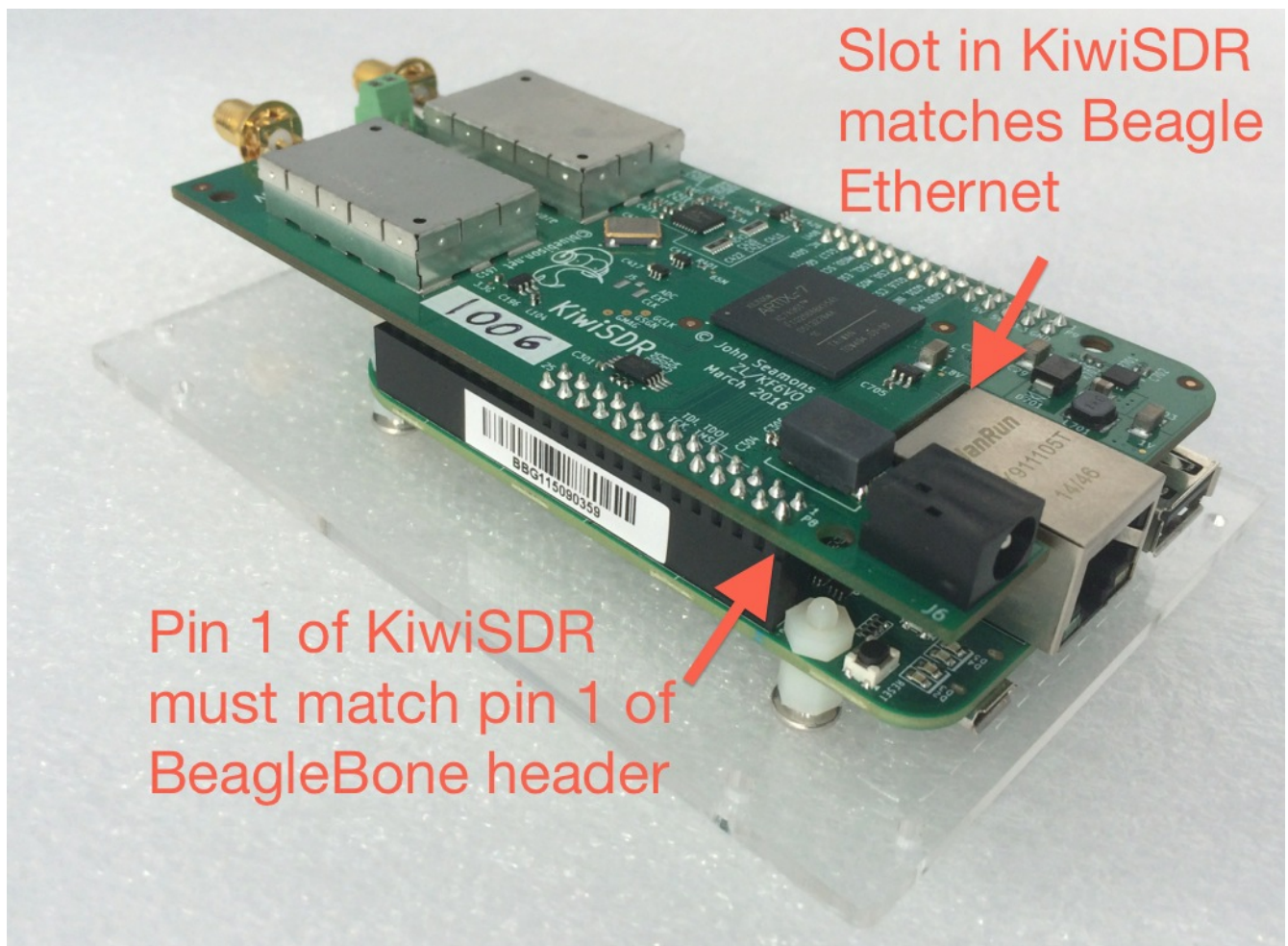
Attach KiwiSDR to BeagleBone. Be extremely careful to align the KiwiSDR pins into the correct header sockets of the Beagle. The cutout in the KiwiSDR board should wrap around the Beagle Ethernet connector with equal clearance on all sides. Push the KiwiSDR all the way down onto the Beagle headers as far as it will go. This allows enough clearance for the top plastic plate installed later on.

Important:
Metal side pieces go
on top of bottom plastic plate.
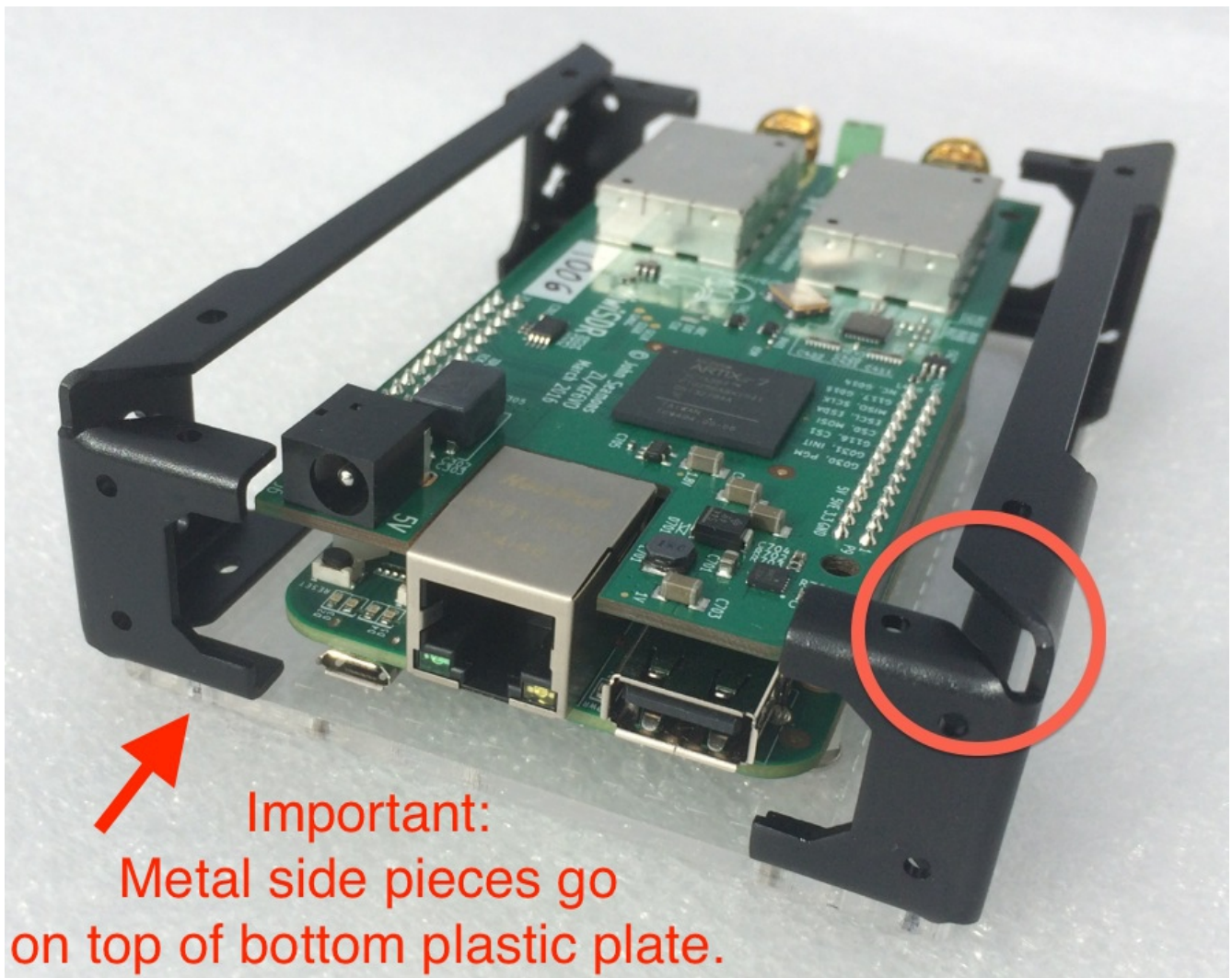
Position the metal side pieces. Note that the top of the side pieces have a slot for the insertion of the top plastic plate. Do not incorrectly exchange the left and right metal pieces so the slot ends up on the bottom.

**It is very important that the bottom plastic plate is on the bottom of the stack, i.e. the metal sides pieces sit "on top" of the bottom plastic plate.**

**Do not slide the bottom plastic plate "inside" the metal side pieces. Otherwise the top plastic plate will not clear the Kiwi board when it is slid inside the metal side pieces in a later step.**
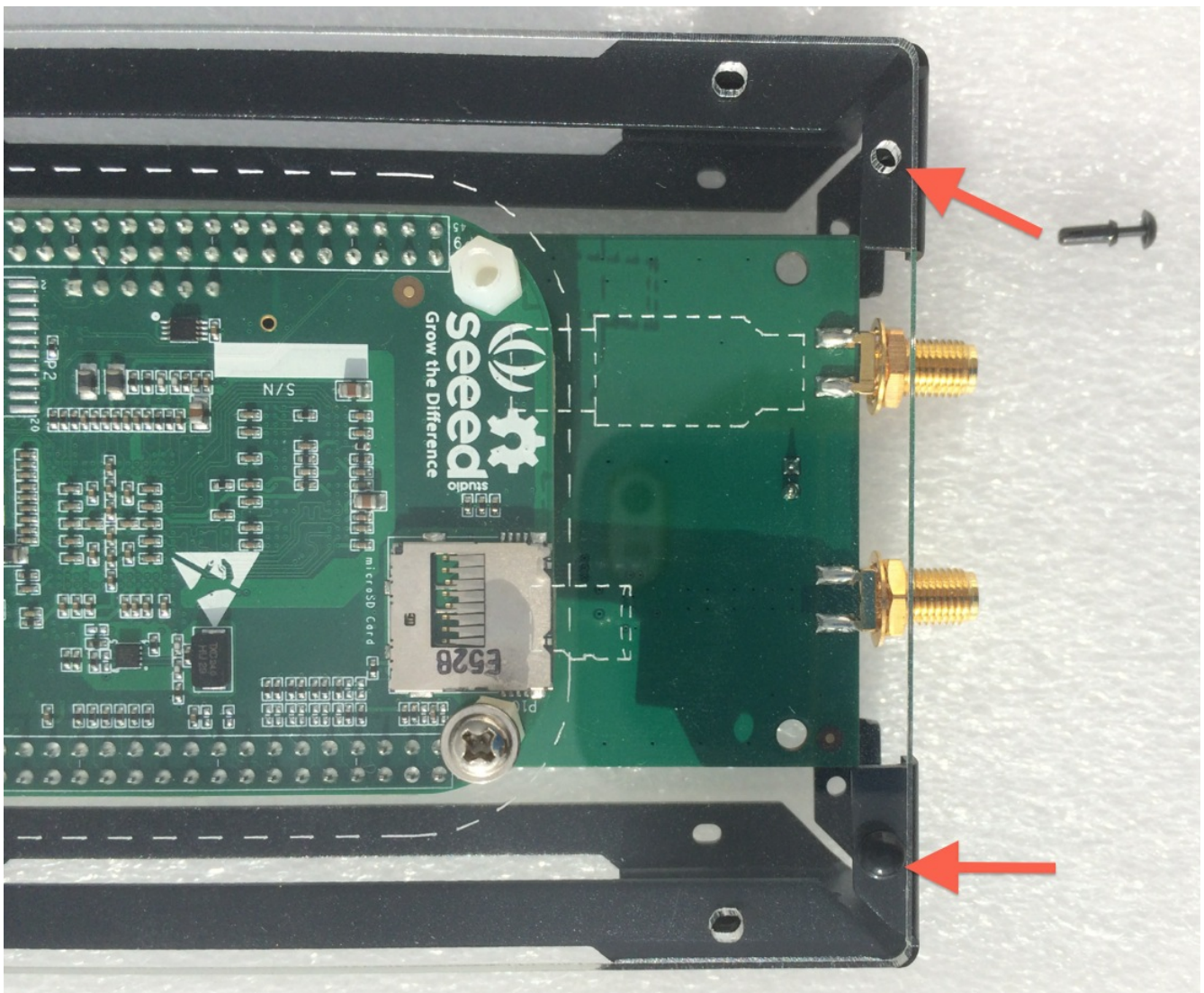
**Note how the plastic plate is on the "outside" here. It is very important to get this correct before installing the rivets.**

Use four plastic rivets to attach the metal side pieces to the bottom plastic plate. Use the smaller holes at the ends of the plastic plate as shown.

Using the rivets: push the larger outer shaft of the rivet completely into the hole before pressing on the top of the rivet to insert the smaller inner shaft. The rivets are not re-useable, so proceed carefully. The inner shaft will bend easily so slowly apply an even pressure. Extra rivets are supplied.

Note the orientation of the word "BeagleBone" etched into the top plastic plate. Slide the top plastic plate into the slots of the metal side pieces as shown. The plastic will just hit the KiwiSDR board at the circled locations. You should be able to lift the plastic plate very slightly and continue sliding it through the slots. This tight fit is why the KiwiSDR was pushed completely onto the Beagle headers in a previous step.

**If the top plastic plate doesn't come close to clearing the Kiwi then you have not correctly mounted the bottom plastic plate to the metal side pieces. Go back two steps and re-check.**
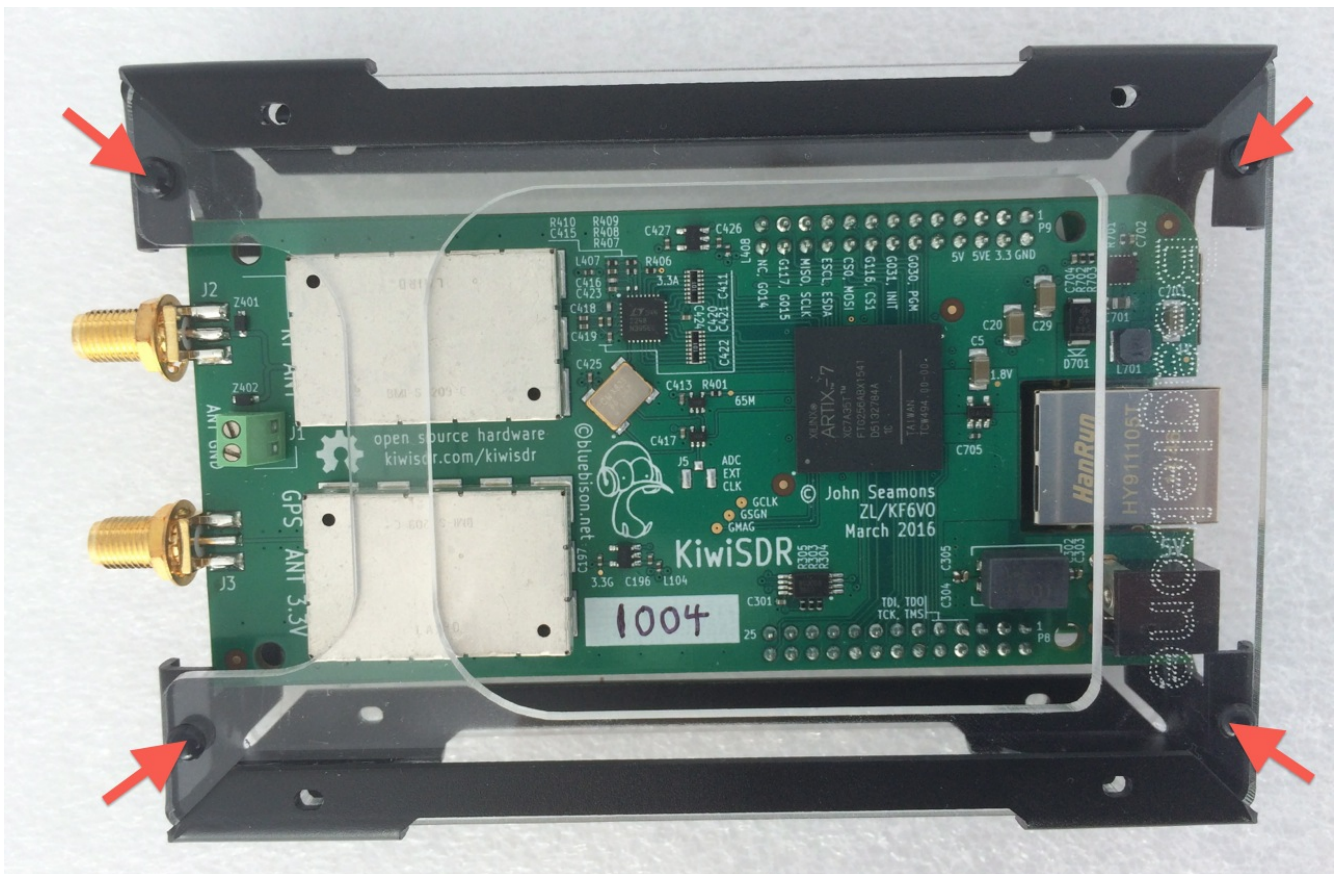
Insert plastic rivets at the four locations shown. This completes the enclosure assembly.