# Directions to Assemble 3D-Printed Enclosure for Specter-DIY & Secondary Shield Board

Below are the components you will need; they are:

STM32F469I-DISCO developer board
Specter-DIY "Shield" DevKit Board
Main enclosure body (3D-printed)
Upper rear panel (3D-printed)
Lower rear panel (3D-printed)
Camera stabilizer (3D-printed)
Power button (3D-printed)
Upper rear panel spacer (3D-printed)
4 (four) x 6 mm "M3" flathead screws
2 (two) x 8 mm "M3" flathead screws
2 (two) x 10 mm "M3" flathead screws
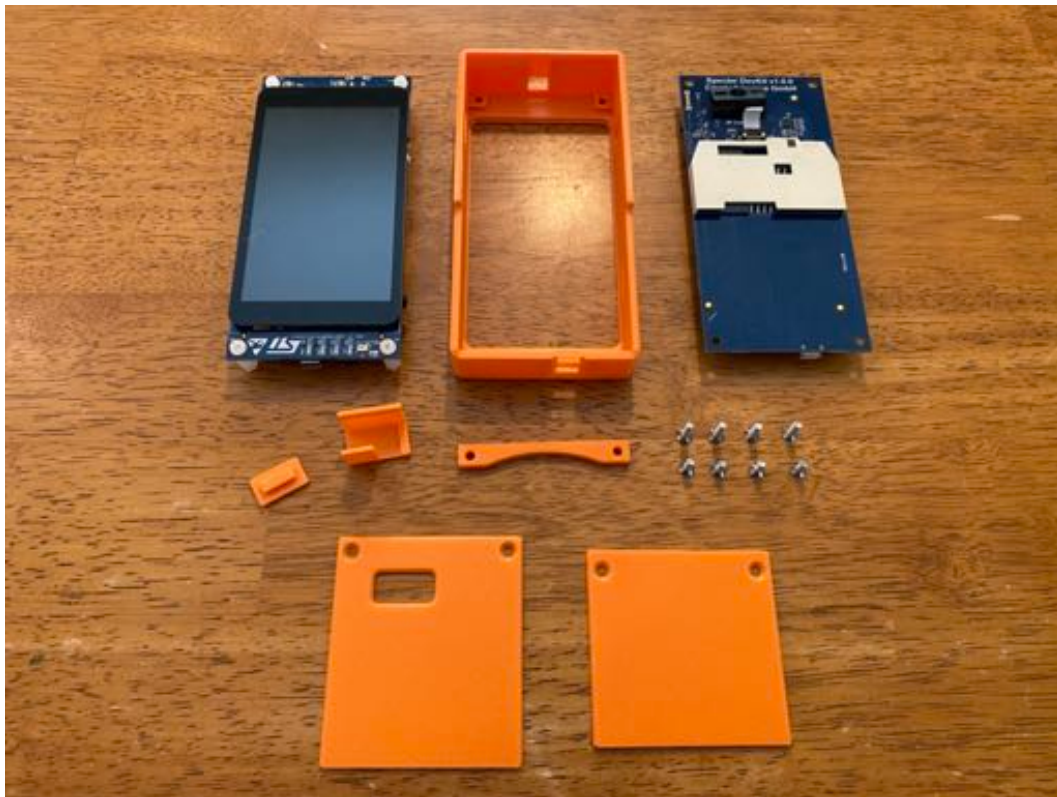
The design files for the 3D-printed components can be found at:
https://www.thingiverse.com/thing:4733846

Position the developer board and the Shield board next to one another as pictured below, ensuring that the connecting pins are mirrored to one another:
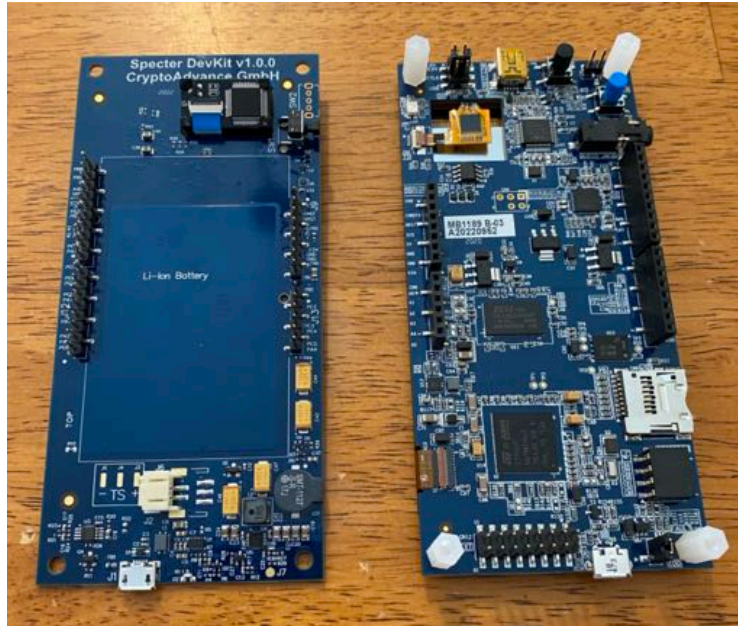

Bring the two boards together, ensuring that each of the Shield board pins is placed in the appropriate female portion of the developer board, like this:

(Note that these instructions do not include a battery module, however one can be easily installed between the two boards and secured with double-sided tape.)

One by one, remove the four nylon screws from the developer board, replacing the12mm nylon spacers between the boards with the slightly longer 12.7mm nylon spacers that were provided with the Shield board. As you replace the spacers, re-secure them with the nylon screws, but this time to the Shield board, like this:
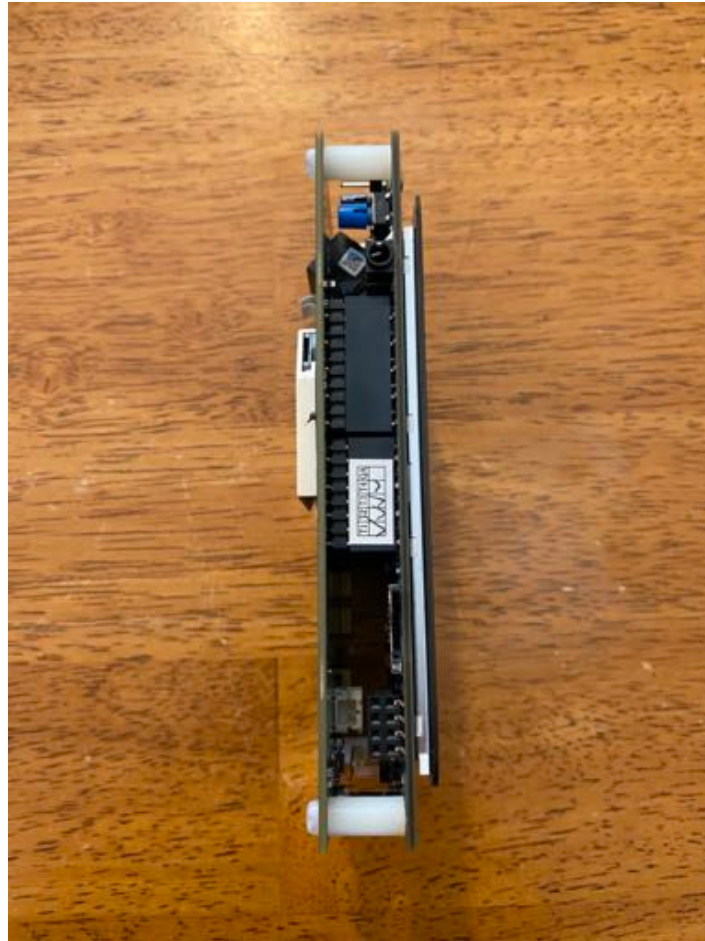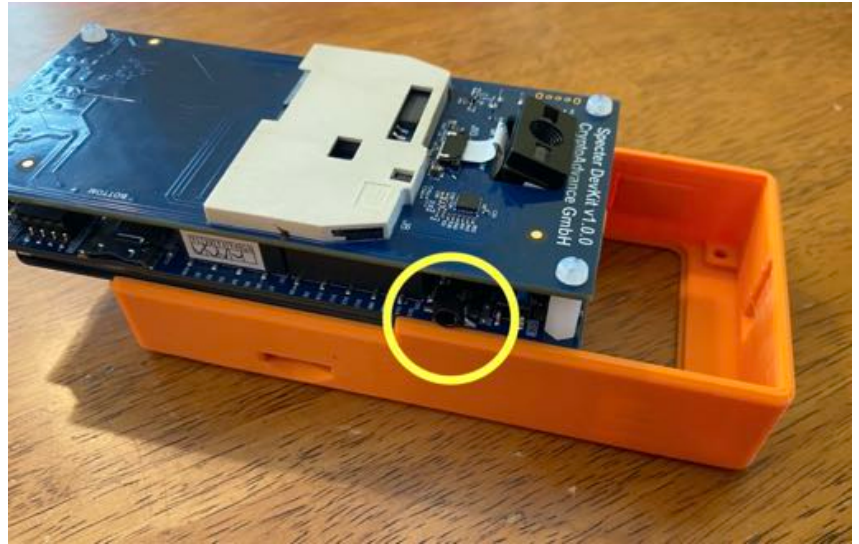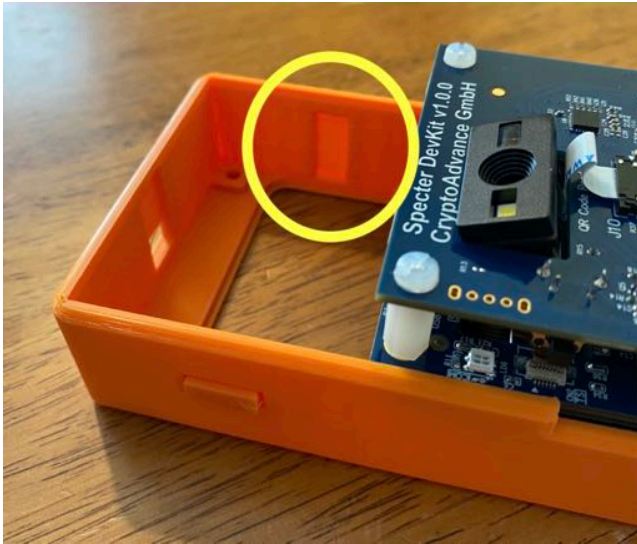

Now take the main enclosure body, and place the power button in position:

Position the developer board / Shield assembly on top of main enclosure body as pictured below (Note the matching cutout in the main enclosure body for the headphone jack on the developer board):

Slide the developer board / Shield assembly into the main enclosure body. It may be necessary to slightly flex the main enclosure body to introduce the headphone hack to its corresponding cutout; sliding the developer board / Shield assembly in at an angle at first may help. Make sure to test the power button once the assembly is in place.

When finished, the assembled components will look like this:

Now secure the assembly to the developer board using the 4 x 6mm M3 flathead screws; the front / rear of the enclosure should now look like these images:
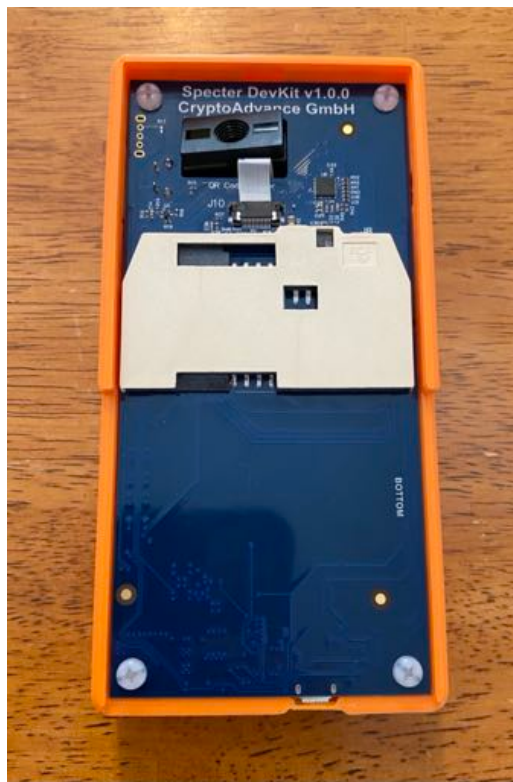

Next, remove the four nylon screws, leaving the assembly rear looking like this:

Gently dislodge the camera module from its corresponding cutout in the Shield board but leave the camera module's ribbon cable connected. Be careful not to put too much pressure on the camera ribbon cable. If there are any screws installed on the top/side of the camera module, make sure to remove them. Carefully place the camera module into the 3D-printed stabilizer. Then carefully seat the assembled camera & stabilizer in the Shield board. Use the images below as a reference:
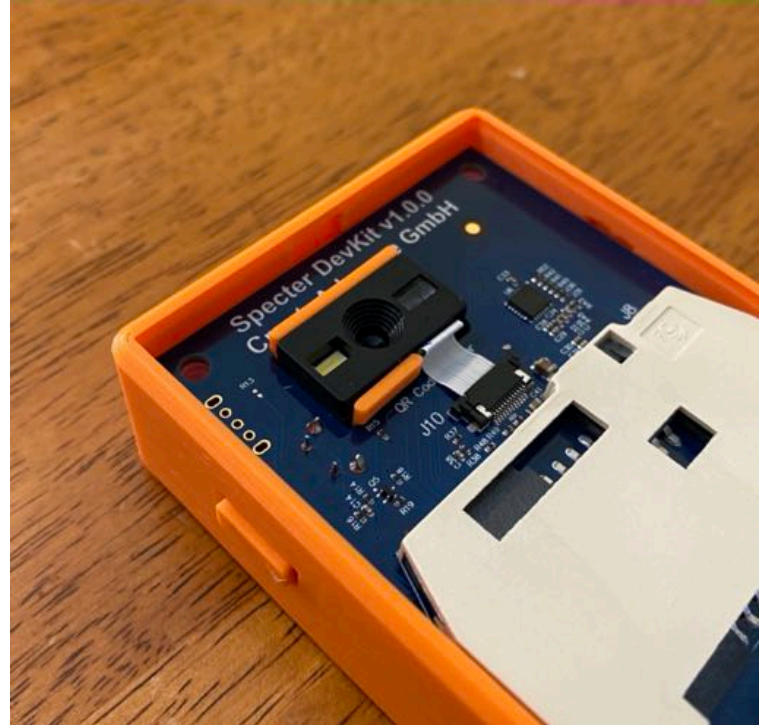
Now place the upper rear panel spacer into position like this:

Slide the upper rear panel into place and secure it with 2 x 10mm M3 flathead screws; once this step is complete the assembly should look like this:

Now slide the lower rear panel into place and secure it with 2 x 8mm M3 flathead screws, once this step is complete the assembly should look like this:

All done — enjoy your new signing device!