Framework AIO Assembly

by whatthefilament

3D Printable Case for Framework Laptop that converts it into an AIO style Desktop Computer

Supplies:

To help organize parts for this project, feel free to check out my [Framework parts tray] (https://www.printables.com/model/253099-framework-parts-tray)

For assembly, you will need the following:

- 14 - M3 heat inserts (short)
- 10 - M3 x 4mm screws
- 4 - M3 x 8mm screws
- 1 - M2 x 6mm self tapping screw
- 30 - 6mm x 3mm Magnets

- A small mallet/hammer to press in magnets (They are designed to be tight)
- M3 hex key
- Small head Phillips screwdriver (the one that comes with the Framework laptop works great)
- Soldering iron or other similar heat press insert tool

From the laptop itself you will need the following:

- Mainboard
- Expansion Cards
- Audio Board
- Wi-Fi Module
- Wi-Fi Antenna (Highly recommended that you buy a new one from Framework for the build, the antennas are very thin and break easily when attempting to remove from the display housing)
- Speakers
- Display
- Webcam and webcam ribbon cable

- Display Hinge (Specifically the left one with the L stamped onto it) I havent tried the new high weight hinges so I don't know if they work. I designed using the original hinges.

Step 1: Heatset Inserts

Using a soldering iron or other tool capable of setting a heat set insert place the 14 heatset inserts. (

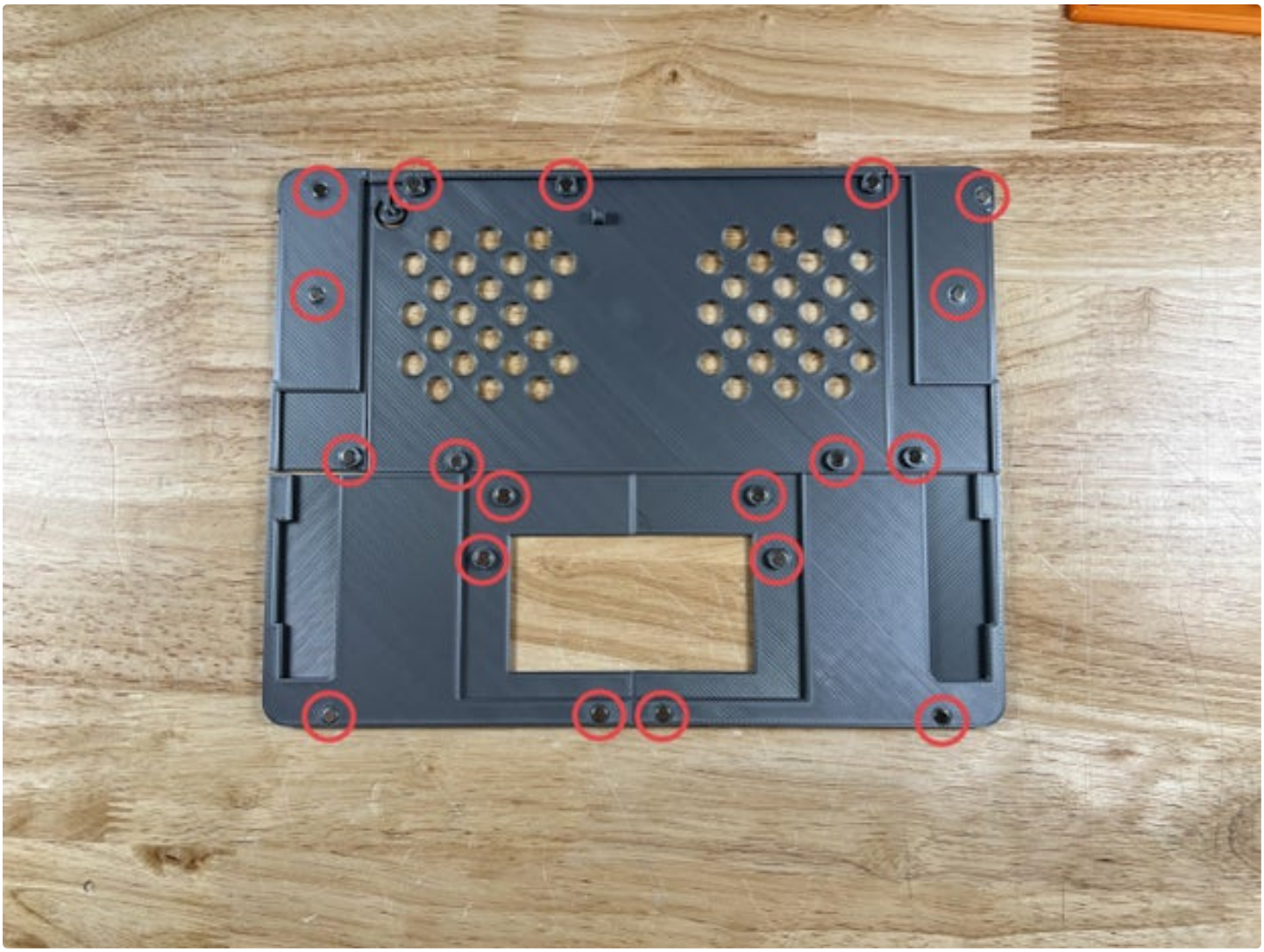
13 in the main chassis and 1 in the desktop stand. See each location highlighted in the images above.

Step 2: Magnets

Using 30 6x3mm magnets set a magnet in each of the highlighted spots from the images above.

Please remember to keep polarity in mind. When attaching the display bezel and back panels the polarity needs to be correct so that they aren't repelled.

Note, each magnet mounting spot is designed to be snug enough that the magnets will hold in with friction. Depending on your printer you may need to add a dab of glue if the magnet doesn't hold in place on its own.



Step 3: Add Display Panel and Webcam

Set the display panel face down into the bezel. Ensure each of the 4 tabs line up and sit properly in the frame.

After placing the display we will add the webcam module. To get correct orientation from the webcam output you will need to place it so that ribbon cable is point towards the top of the bezel and rapped back around.

- If placed with the ribbon cable facing down the camera feed will be upside down and I haven't found a way in Windows to rotate it.

Once placed in the bezel bend and route the ribbon cable as shown in the picture above. This will leave enough slack to connect the cable to the mainboard while not filling up the back compartment with unnecessary cable.


BOE


BOE

Step 4: Attach Display to Chassis

Once the display and webcam are properly set in the bezel. Run the webcam cable in display cable through the holes highlighted above.

After pulling the cables through align the magnets and set the chassis down of the display. Everything should snap into place.

If the bezel doesn't sit flush you just need to pull the cables a little to get them to sit in their channels. There is not a lot of spare room so just play around with them till it sits right.

Step 5: Add Mainboard and Expansion Cards

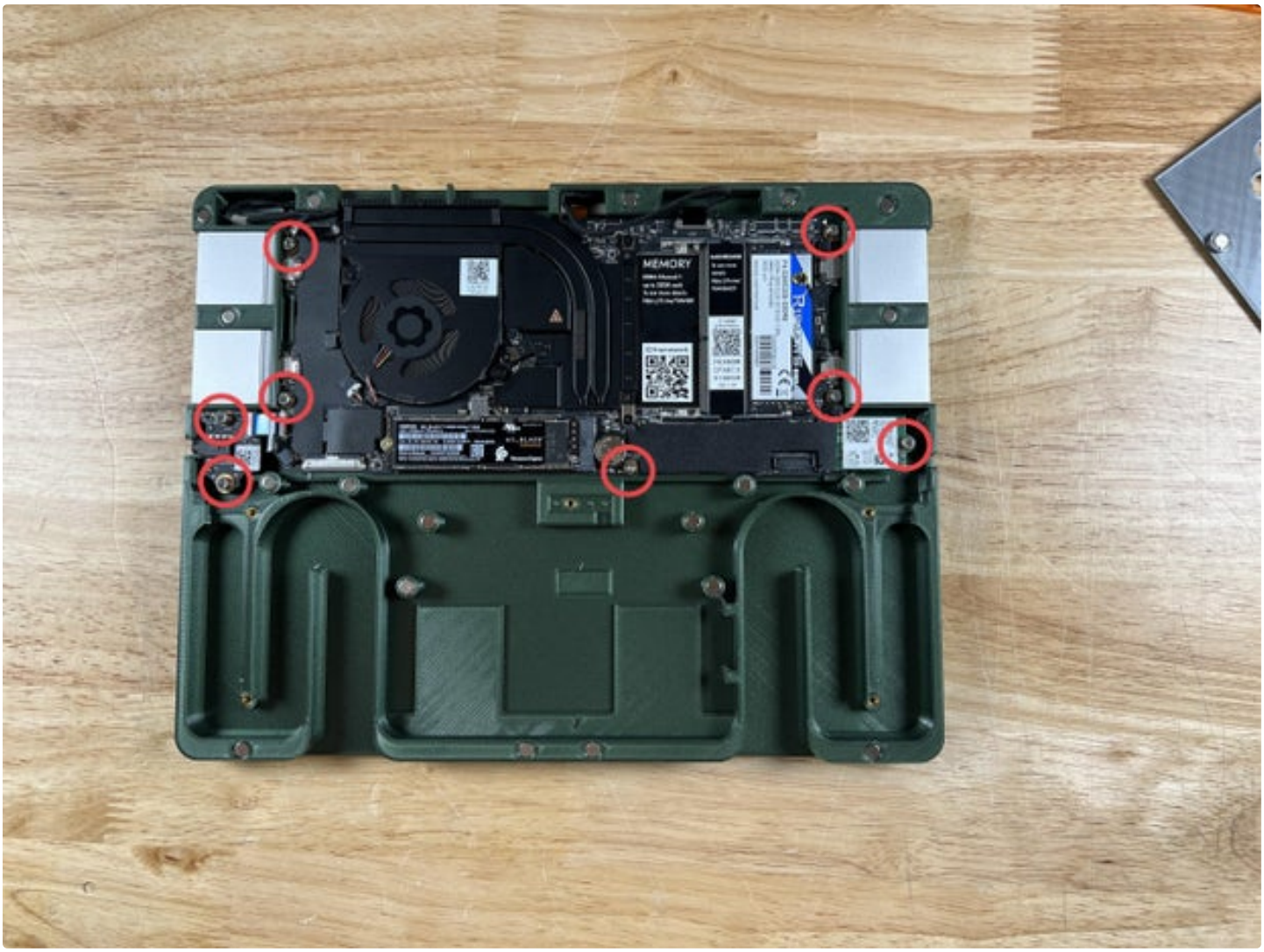
Once everything is properly situated with the display bezel. Set the mainboard in the chassis as shown above making sure to align the audio board with its mounting studs. Everything should fit snug in place.

Before screwing down the mainboard. I suggest plugging in your expansion cards. They will help make sure everything is properly aligned.

- *If you're struggling to get the expansion cards to plug in feel free to cut out the alignment rails along the sides of each expansion slot on the chassis. They are designed to allow the expansion cards to slide into the chassis as they do in the laptop but depending on your printer calibration they can be tough. With them removed it becomes much easier to plug in the cards. They are just a bit looser and have the potential to harm the USB C slot mounted to the mainboard if torqued the wrong way.*

After adding the mainboard and plugging in the expansion cards go ahead and screw down the mainboard, audio board and Wi-Fi module with the 8 M3x4mm screws highlighted in the picture above.


MEMORY



Step 6: Add Wi-Fi Antenna

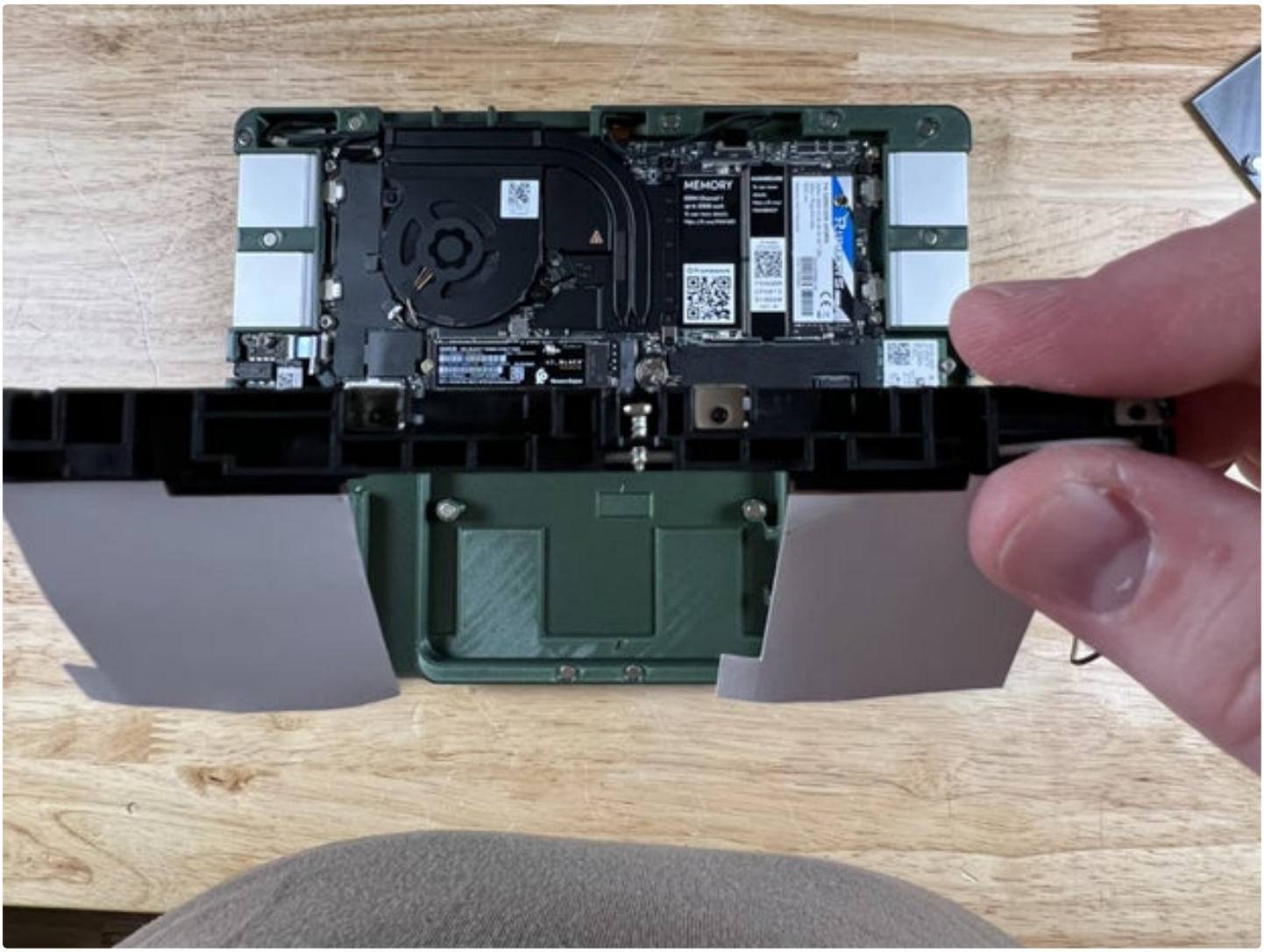
Before setting the Wi-Fi antenna in the chassis. Start the M2x6mm self tapping screw to the middle antenna hole.

Before screwing it into place route the antenna wires through the retainers as shown in the picture above.

With the wires run you can now set the antenna module in place and screw fasten it.

After you fasten it, connect the white and black wires to their respective pins on the WiFi module. Be careful, the pins are delicate.

After all steps above are done, route the antenna wire slack as shown in the picture above to keep it safe and out of the way.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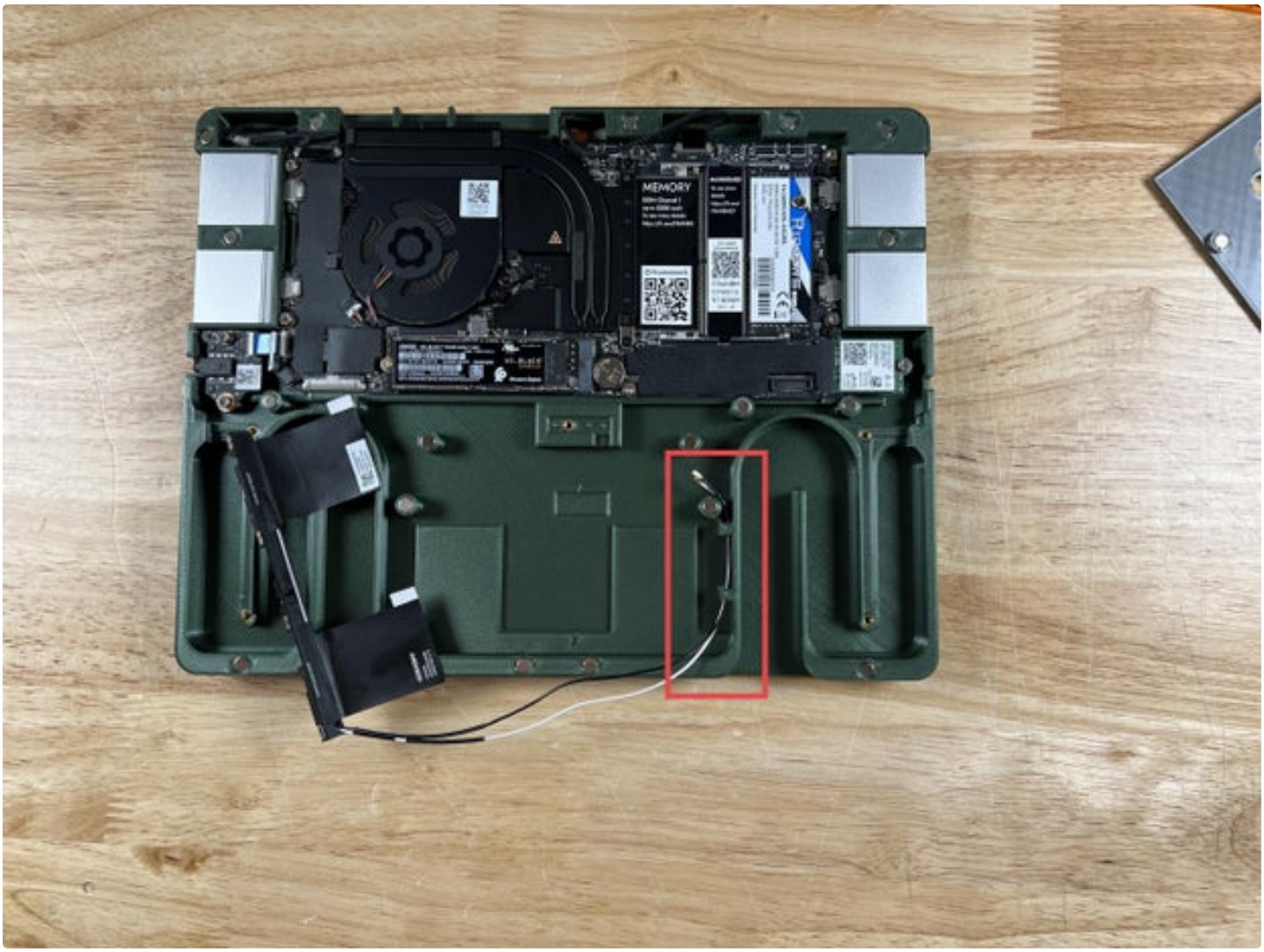
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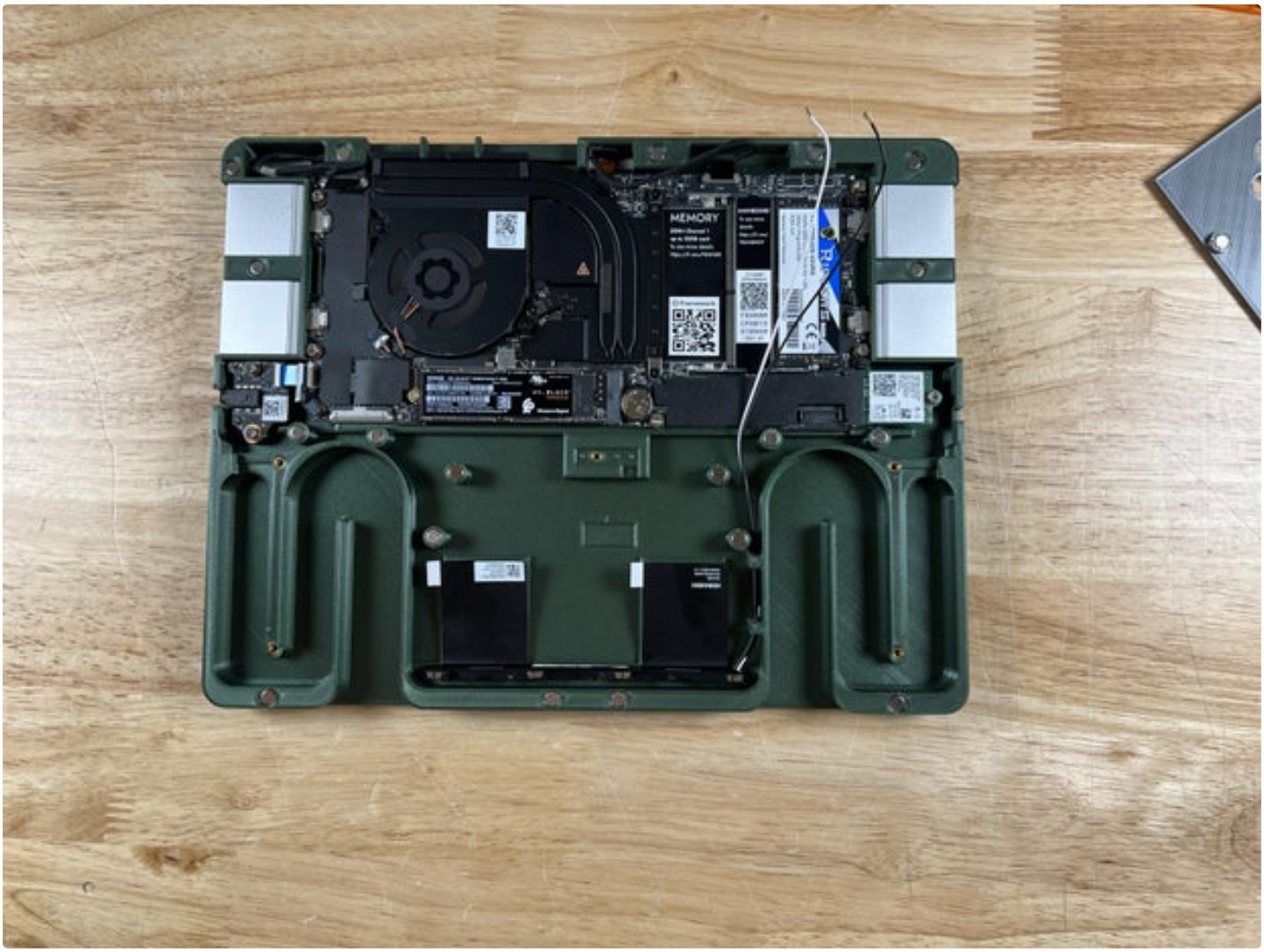
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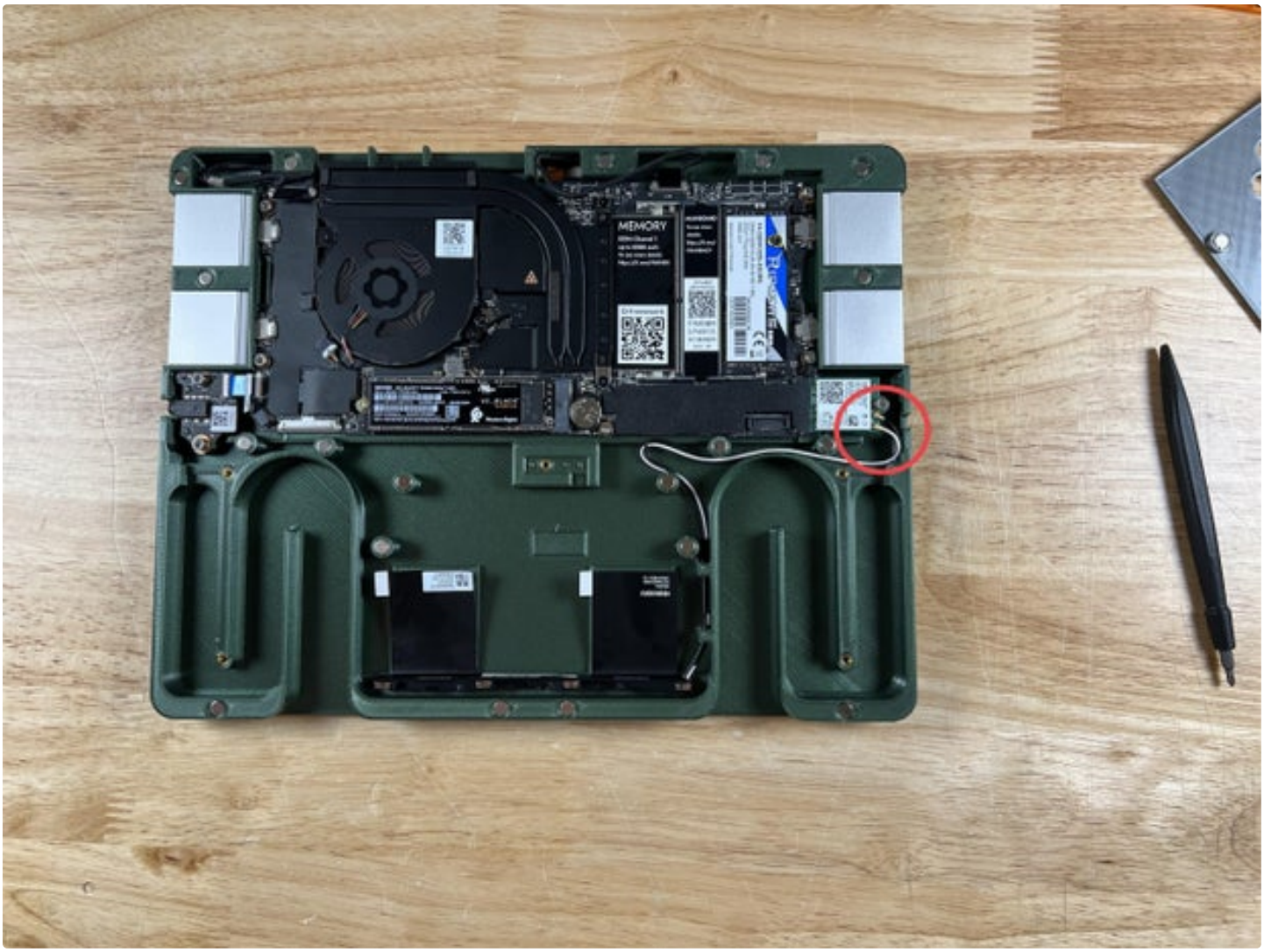


Step 7: Speakers

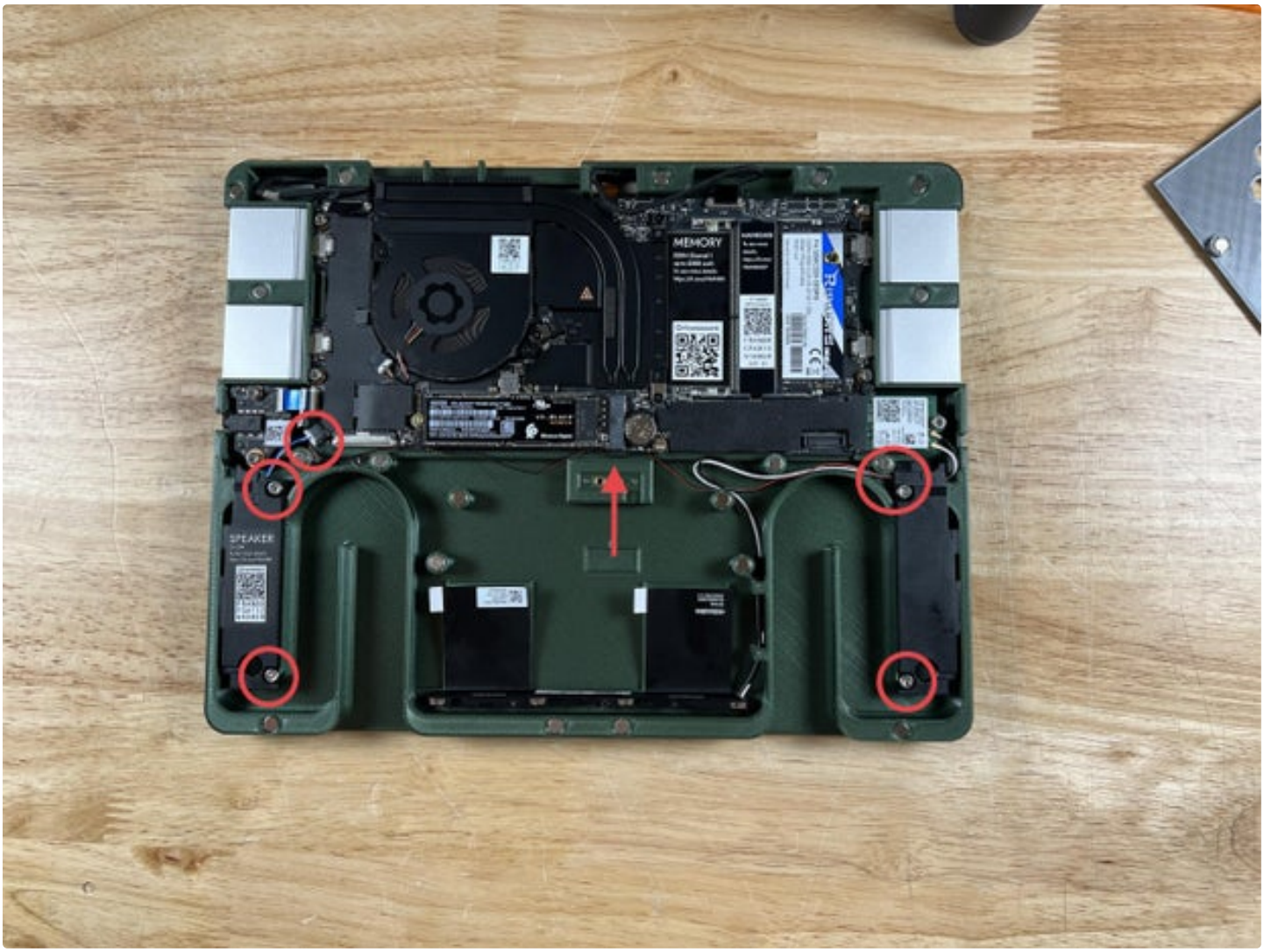
With the Wi-Fi installed and out of the way. We can now move on to the speakers.

Set the speakers into the chassis as show, each speaker is held in place with 2 M3x8mm bolts.

DO NOT OVER TIGHTEN THE SCREWS. THEY HAVE RUBBER GASKETS THAT WILL MANAGE VIBRATION. THE SCREWS ONLY NEED TO BE TIGHTENED DOWN ENOUGH SO THEY CLEAR THE BACK PANELS.

With the speakers mounted, run the cables as shown in the picture above and connect the speaker cable to the mainboard.

- Ensure the speaker cable runs above the hinge mount but below the mainboard to keep from getting caught in the hinge.
- Using a spudger or other similar tool (the framework screwdriver works great) push the wire coming out of the speaker on the right down below the speaker. We don't want it to get caught between the chassis and panel when being snapped into place.



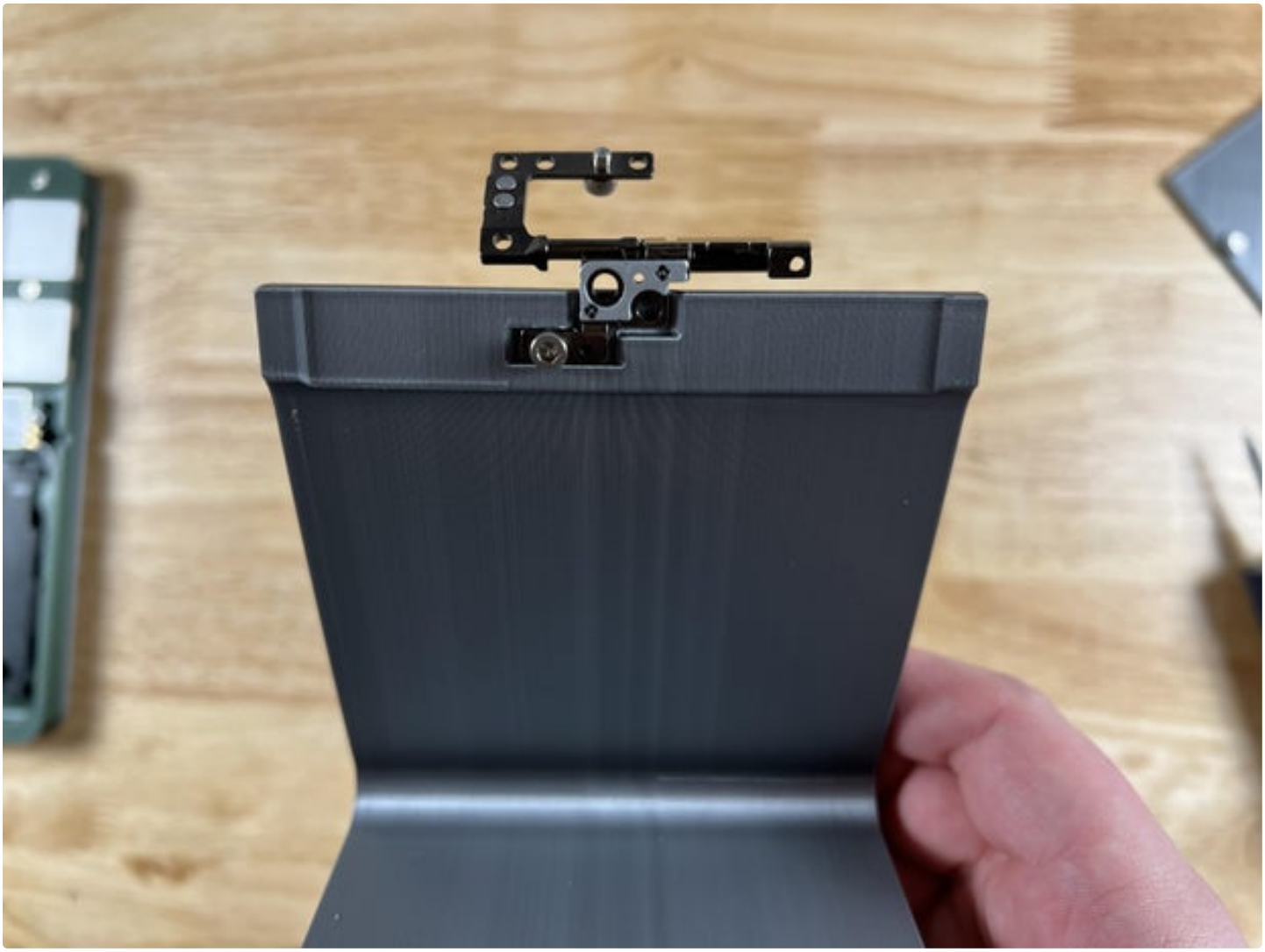
Step 8: Display Mount

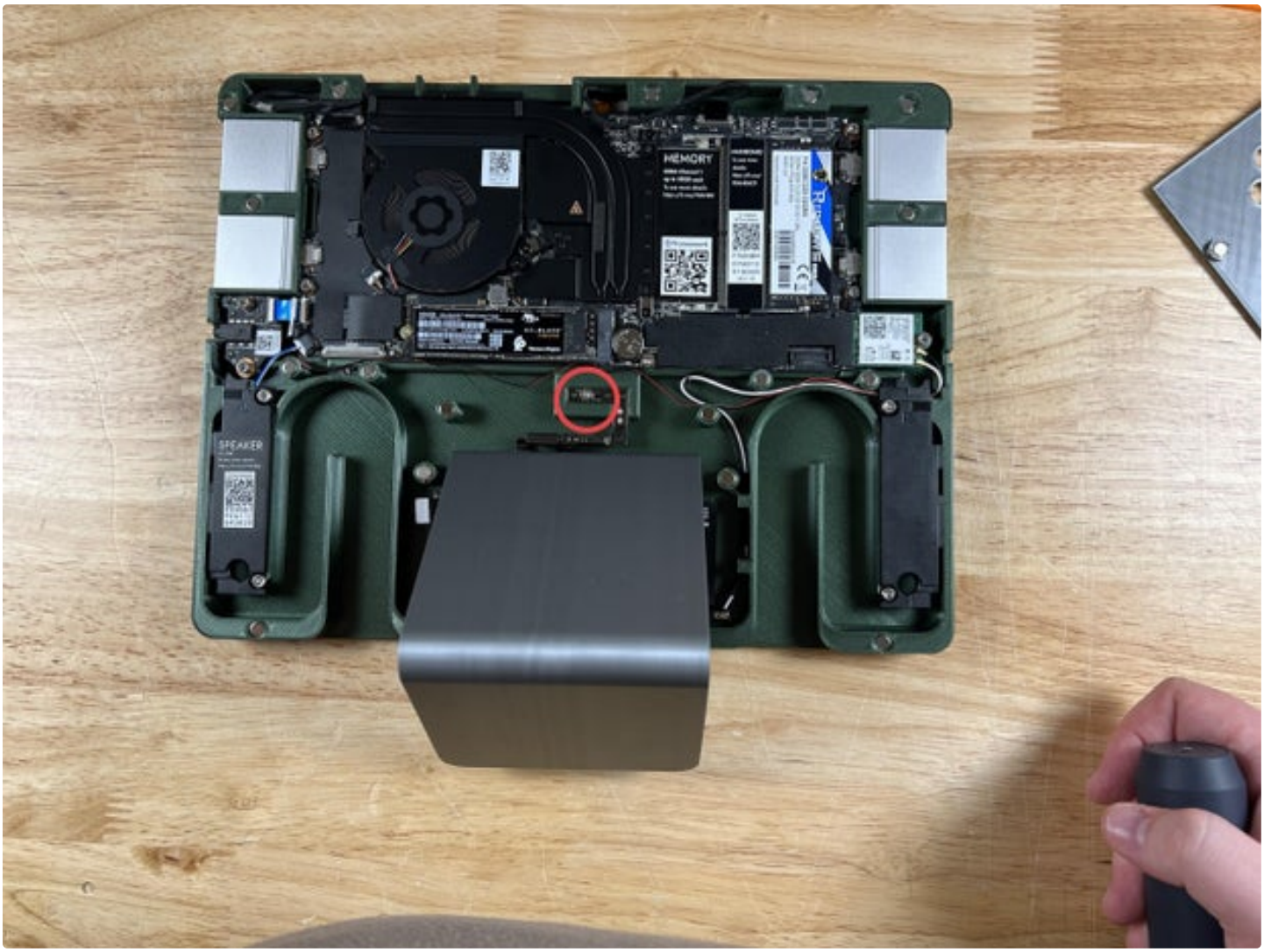
At this point, all electrical components are installed in the chassis and we can move on to the display mount.

You can choose to use either the desk stand or the VESA mount. For this assembly, we will be using the desk stand.

Screw the hinge into the stand using an M3x4mm bolt as shown in the picture above. We want to start with the stand as we won't be able to access this side of the hinge when mounting in the case.

After it is attached, align the other side of the hinge with its mounting point in the center of the chassis and secure it in place with the last M3x4mm bolt.





Step 9: Back Panels

At this point, we have a functional computer but we still want it to look nice, so we can simply add the panels to the back letting the magnets align each panel into place with a satisfying snap! If you decided to print an accent inlay for the logo now would also be a good time to glue it into place.


SPEAKER


SPEAKER


SPEAKER

Step 10: First Boot

We now have a beautifully assembled computer. Great job!

You can plug in any sufficiently powered USB-C cable to power the machine. Using the power button located on the back the machine will boot.

The only problem we have now is the display will be upside down. To fix this we can simply go into the settings menu on windows, display settings and set the orientation to flipped.


5:08

Step 11: Complete!

Great job! You have completed the assembly of your Framework AIO. I hope you like it! Let me know if you have any suggestions or improvements I can make to future iterations.

Special thanks to HJA for her help!