

Instruction manual for A140X antenna.

Thank you for purchasing the Raptor XR Antenna designed for the DJI RC PRO Controller!

Installing the antenna requires you to modify the controller first. The process requires to remove the stock OD antennas as well as the internal antenna modules, and then installing an antenna adapters in their place, leading the signal outside the transmitter case.

Attention! Modification process involves both, opening the controller housing as well as drilling two holes on its top panel (needed to lead out the SMA connectors).

Before modifying, look trough this pictorial installation guide, read the step-by-step instruction, and make sure you have the right tools and time to modify the controller.

You should equip with the set of high quality tools for disassembling the electronic devices (like cell phones / tablets etc.). These are extremely helpful, and will significantly speed up the disassemble process. Prepare a set of thin-tip screwdrivers with both phillips and hex tips as well.

If you disassemble the controller for the first time, prepare for a tough challenge - both halves of the case are sealed almost perfectly, and it may take some time to open it. Do not rush yourself, do not use excessive force and tools with sharp tips as you may damage the case. Use softpad (best if made from soft, thick foam) when you put the controller on your desk to protect the LCD screen. It's also a good idea to group and mark the removed screws in a separate bags to avoid loosing any, or using it in a wrong place.

Ready ? then let's go!

STEP 1

Remove 2 screws with the battery cover to reveal the battery compartment.



STEP 2

Remove 2 screws at the both sides of the battery compartment. Careful ! The left one is usually sealed with silicone! These won't probably flip out by themselves, so use the sharp tweezers to remove it.



STEP 3

Remove 2 screws from the bottom holes.



STEP 4

It's time to open the case. Use some soft plastic tools to lift the case parts and "click-out" the hooks that holds the case from inside. Start from the middle-part, where the HDMI and USB ports are located, and move left and right consistently and simultaneously.



STEP 5

Now press the soft plastic tool between the hand grip and case at the side sealing to lift it up. While keeping the tool in, use another one to lift up each next hook. Move downside towards the HDMI and USB ports at the bottom side of the case. Move forward consecutively, hook after hook, trying not to scratch the case and the screen.



STEP 6

Open the backcase to the line just above the "DJI" logo at the back. Move from one side to another, releasing consecutively one hook after another.



STEP 7

Open the backside - careful! there's a 3-strand wire connected!



STEP 8

Detach the wire. The port is just under the right battery cell. Put the detached backside in a safe place.



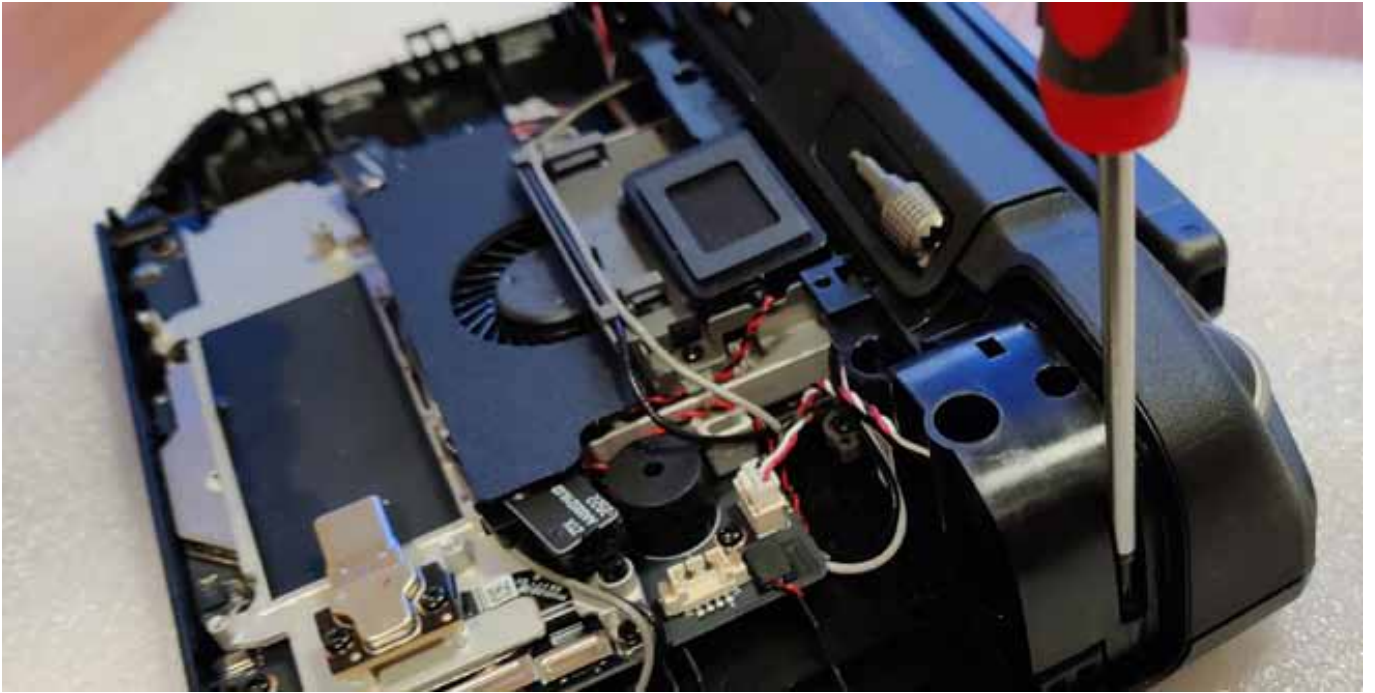
STEP 9

Remove both battery cells. Pay attention to the hooks that holds the wire connecting both cells - remove it carefully. The port connecting the batteries to the PCB is under the left cell. Put the detached batteries in a safe place.



STEP 10

It's time to remove the top panel of the controller. First, remove 2 screws from left and right edge.



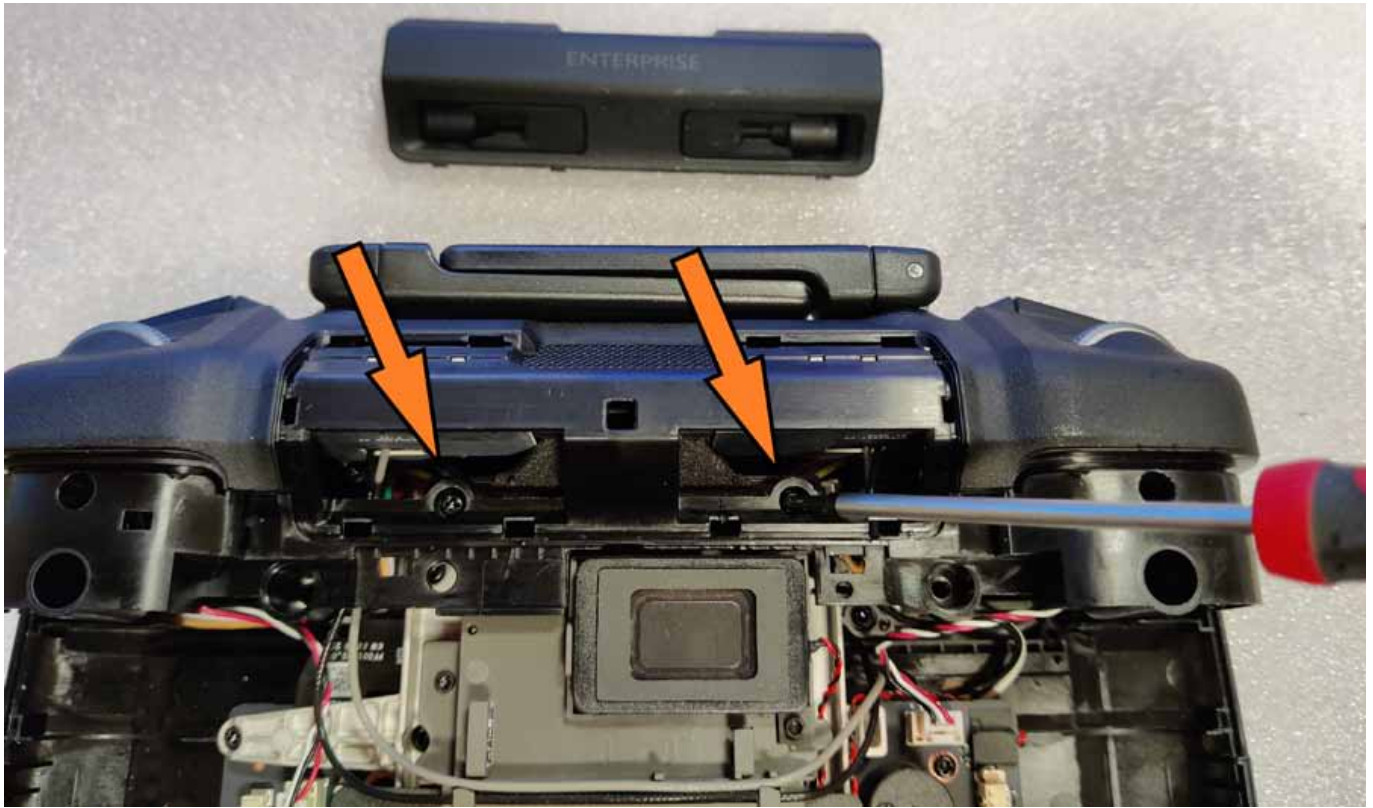
STEP 11

Remove the two screws securing the top controller panel.



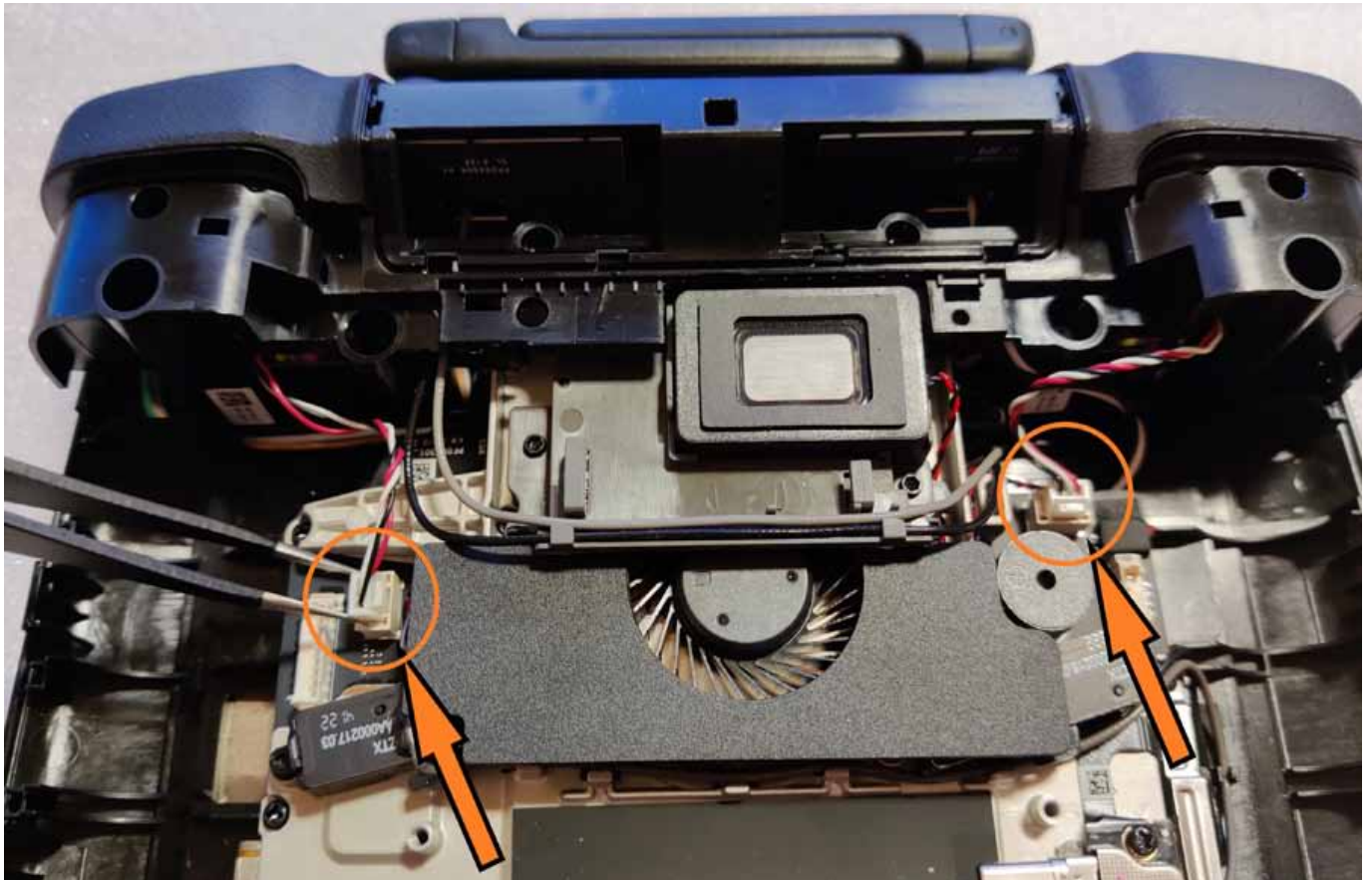
STEP 12

After removing the part with the rubber stick holders, remove the 2 screws revealed below.



STEP 13

Detach 2 wires at the left and right side. Pay attention not to damage the thin wires when pulling out these from their ports.



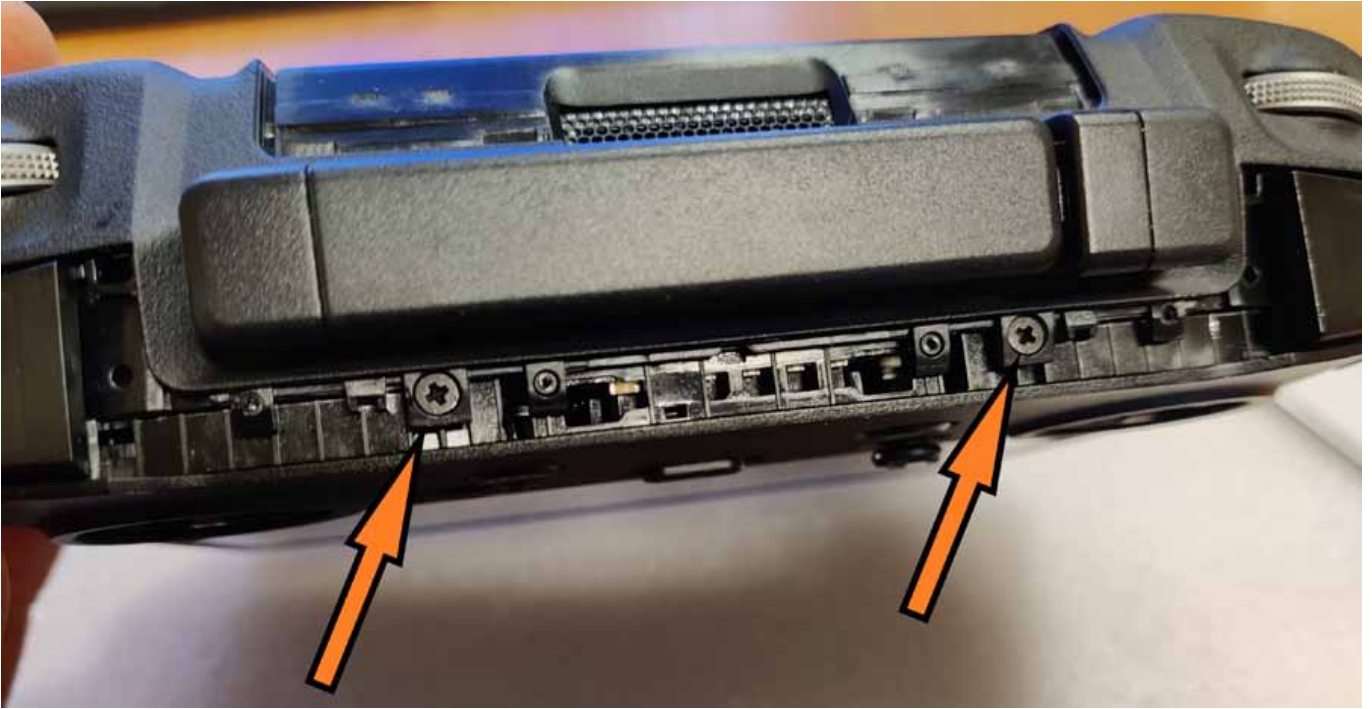
STEP 14

It's time to remove the top panel (holding the antennas). Start with the LED indicator panel by lifting it at the both sides. It sits quite tight, so you'll have to pull it out from both sides simultaneously. Careful not to break or bend it at its thinnest spot.



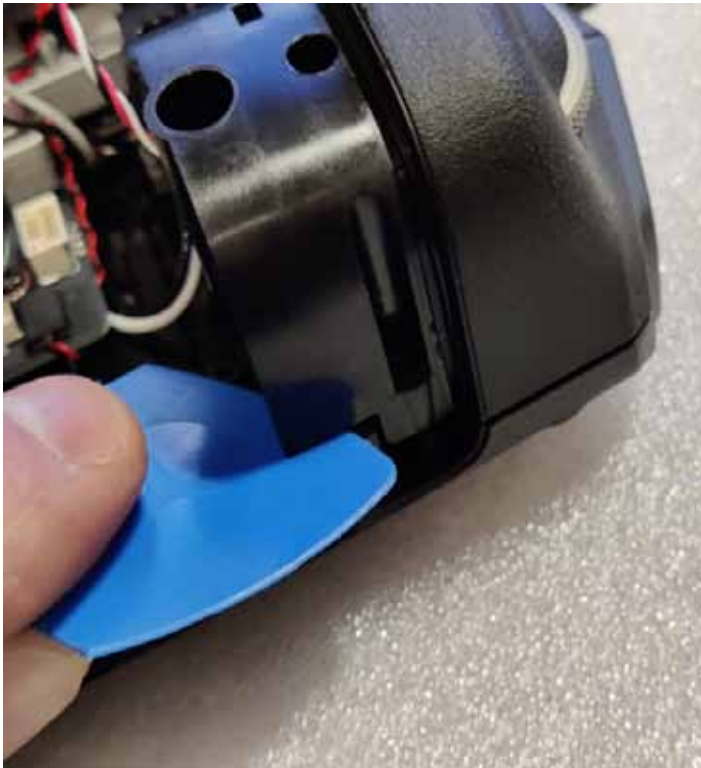
STEP 15

Now remove 2 screws located under the LED panel.



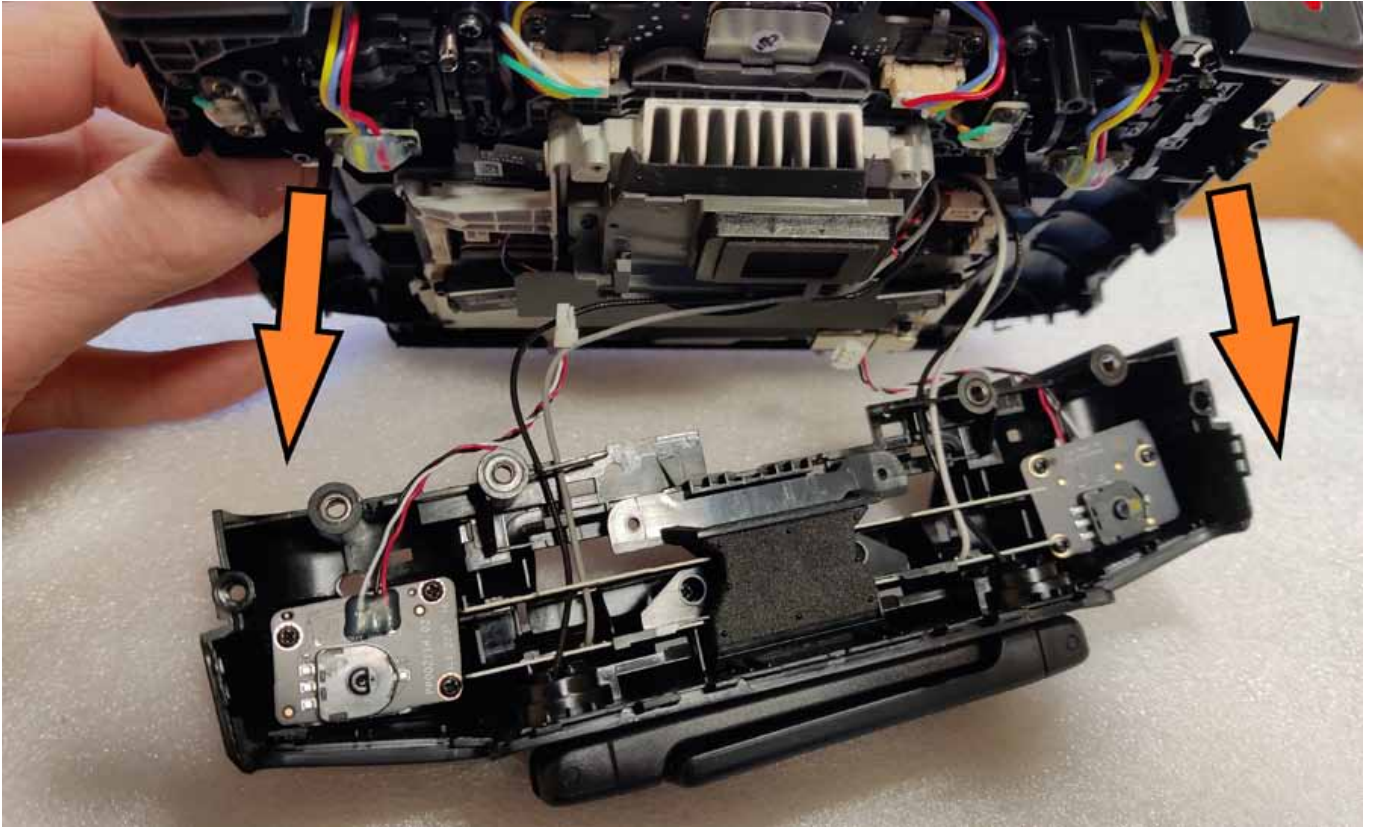
STEP 16

Keep removing the top panel. Start at the left or right side, gently lifting the panel up. Like each time, use soft plastic leaves as the wedges when lifting another hooks up. When you'll lift up the left part - lift up the right one.



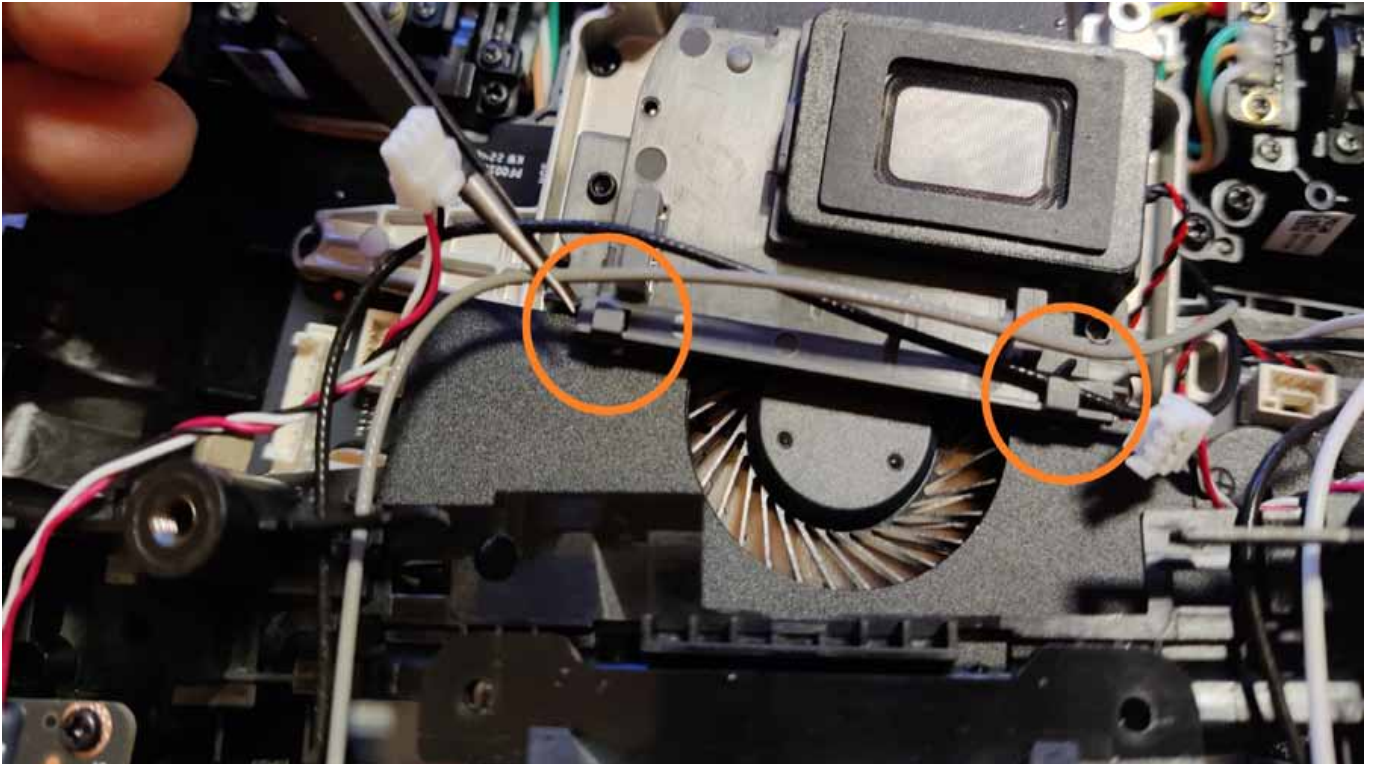
STEP 17

When there's no more hooks and screws holding the top panel - gently detach it from the main case.



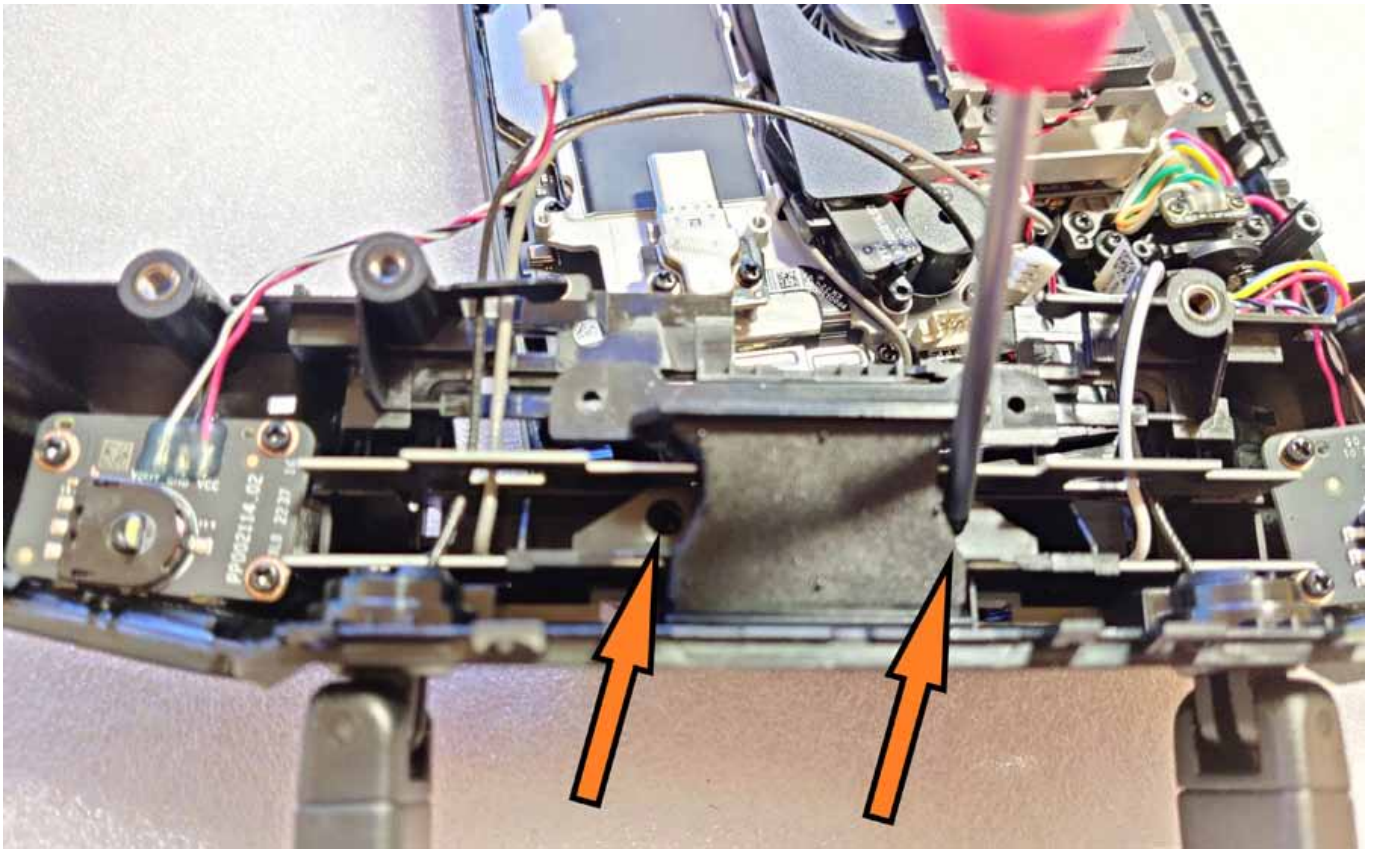
STEP 18

Pay special attention to white (x1), gray (x1) and black (x2) antenna cables when lifting up the top panel! These are firmly attached, and you may accidentally pull these out when using too much force. Help yourself by pulling out the gray and black cable from the hooks first.



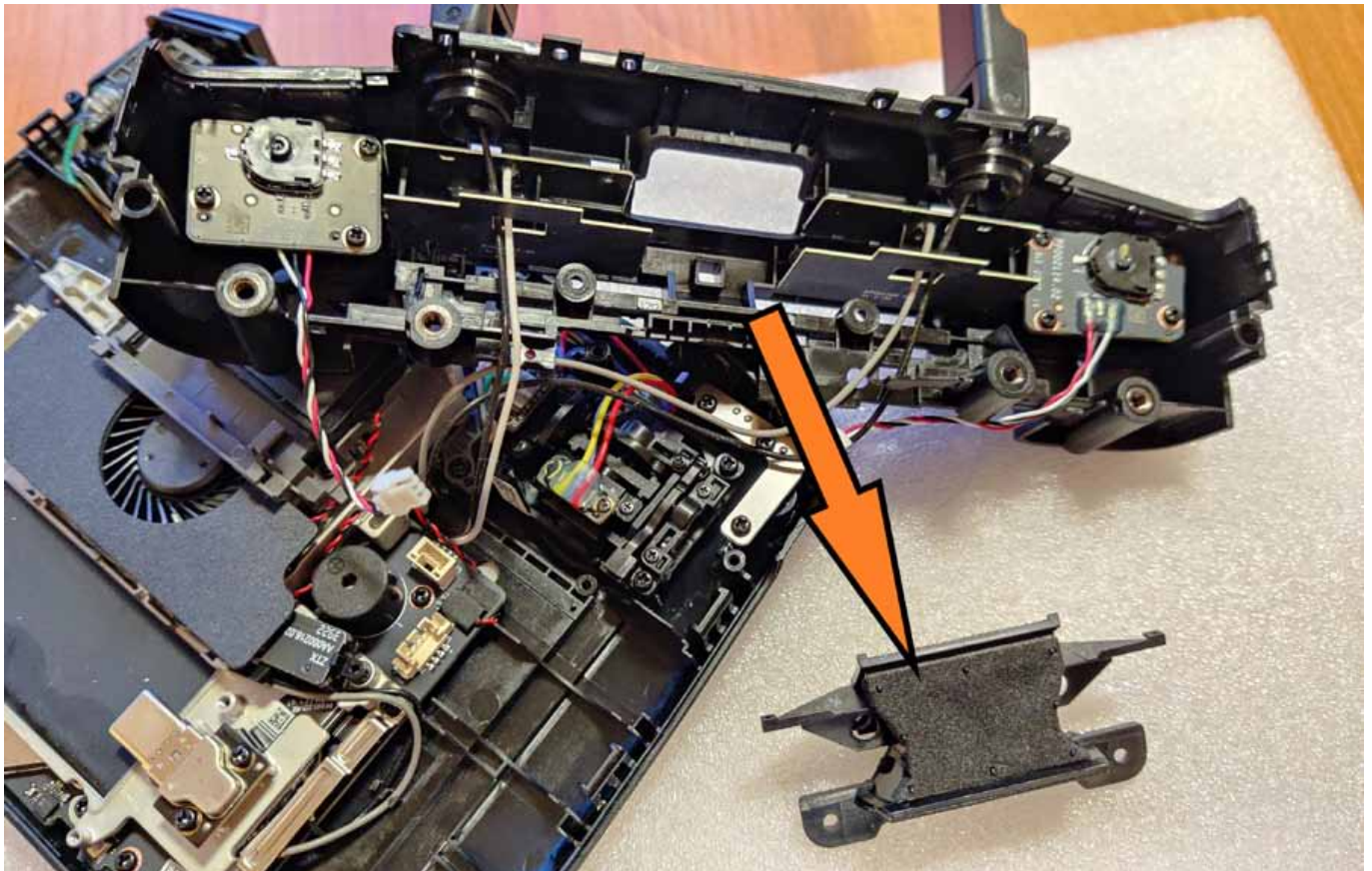
STEP 19

Remove 2 screws from the antenna module in detached top panel...



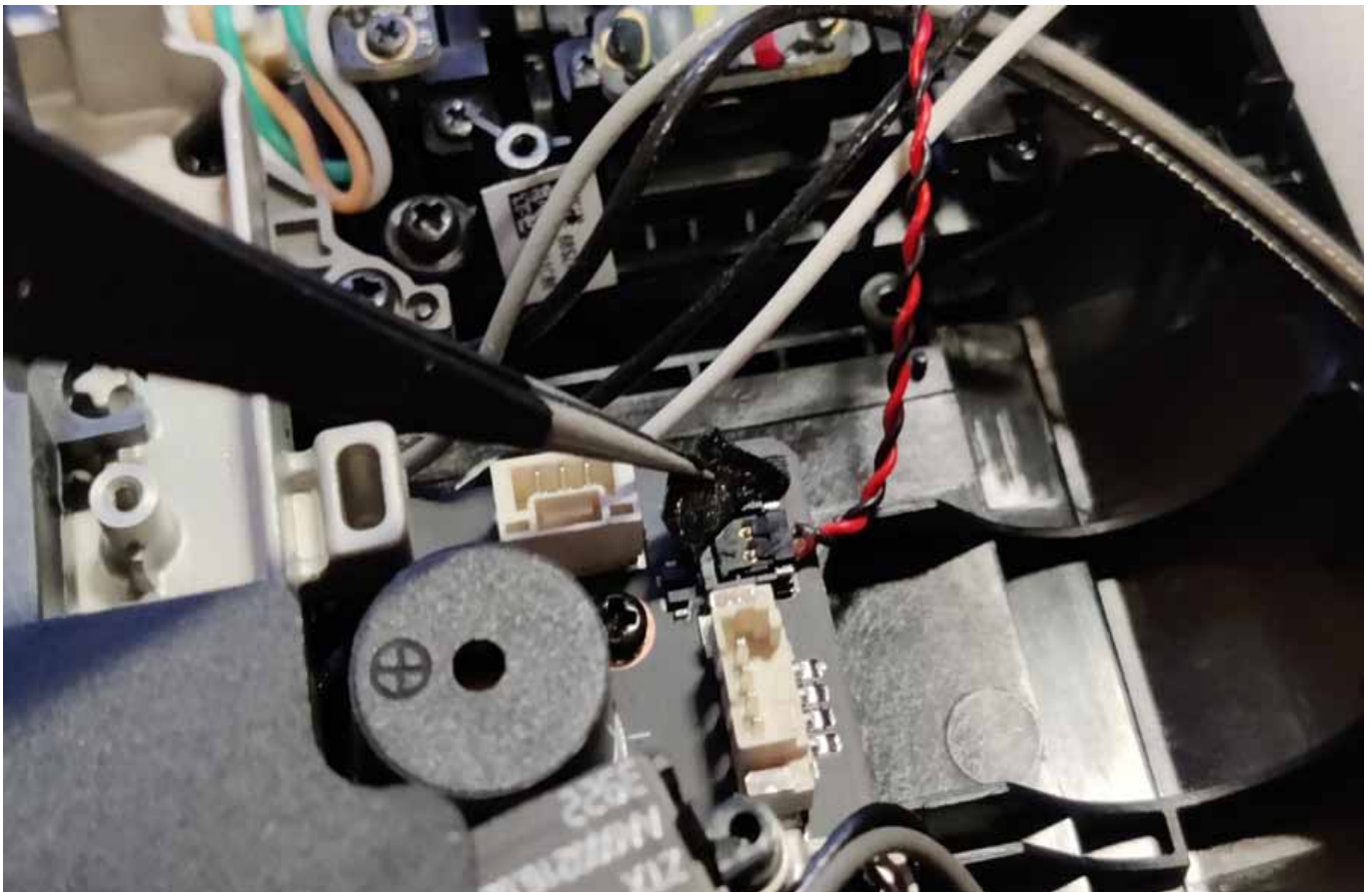
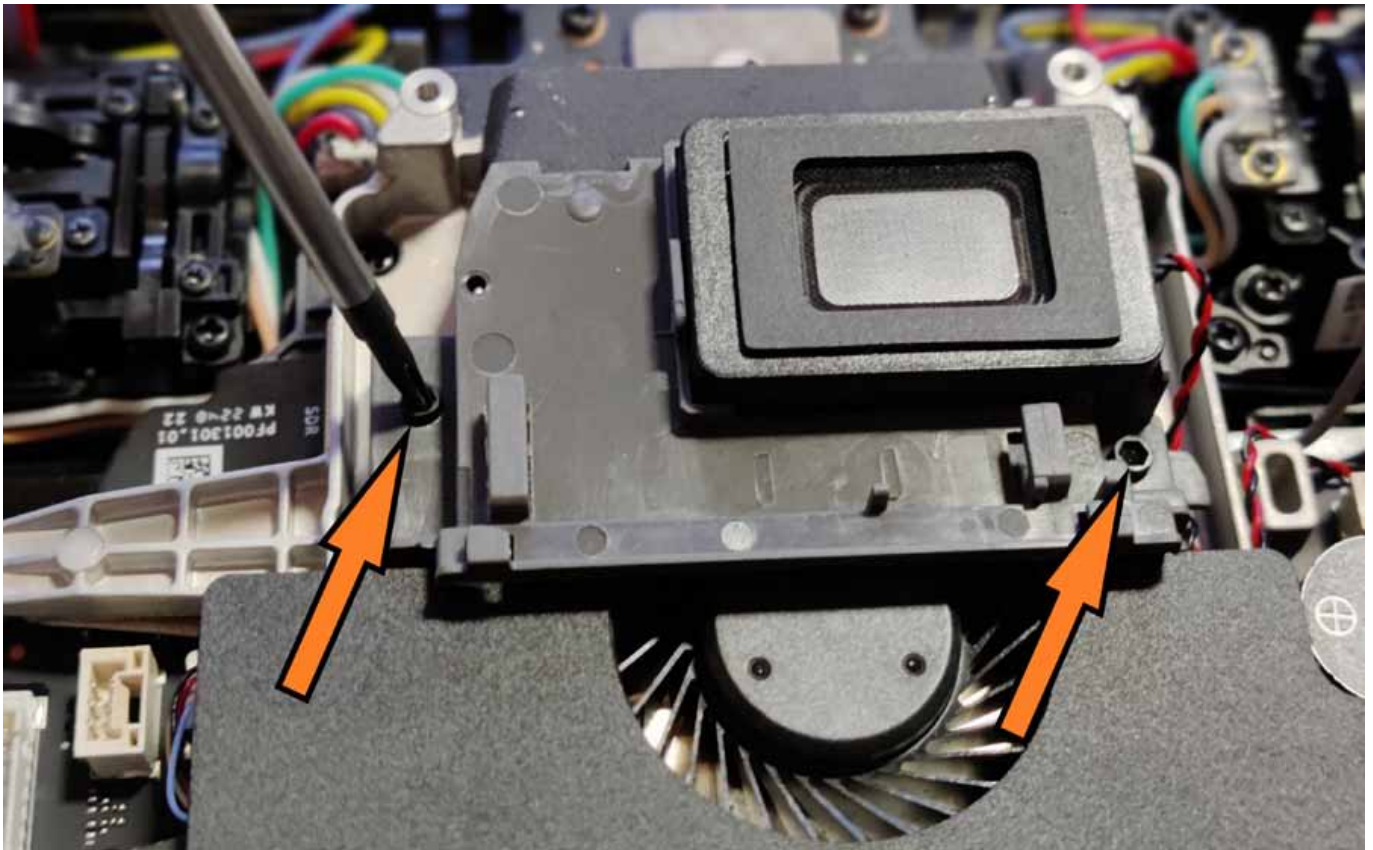
STEP 20

...and remove the middle plastic part, that is holding the antenna boards.



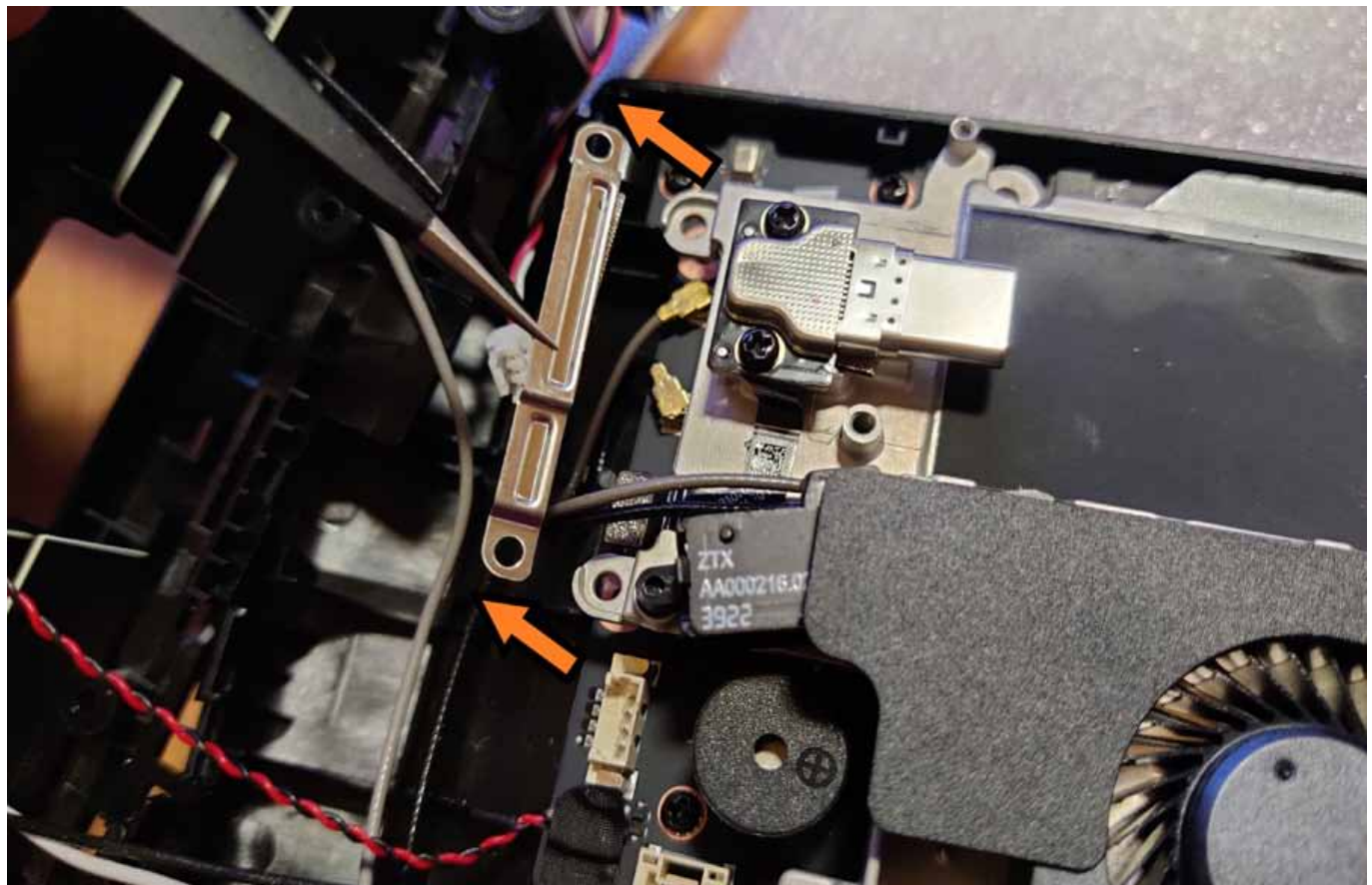
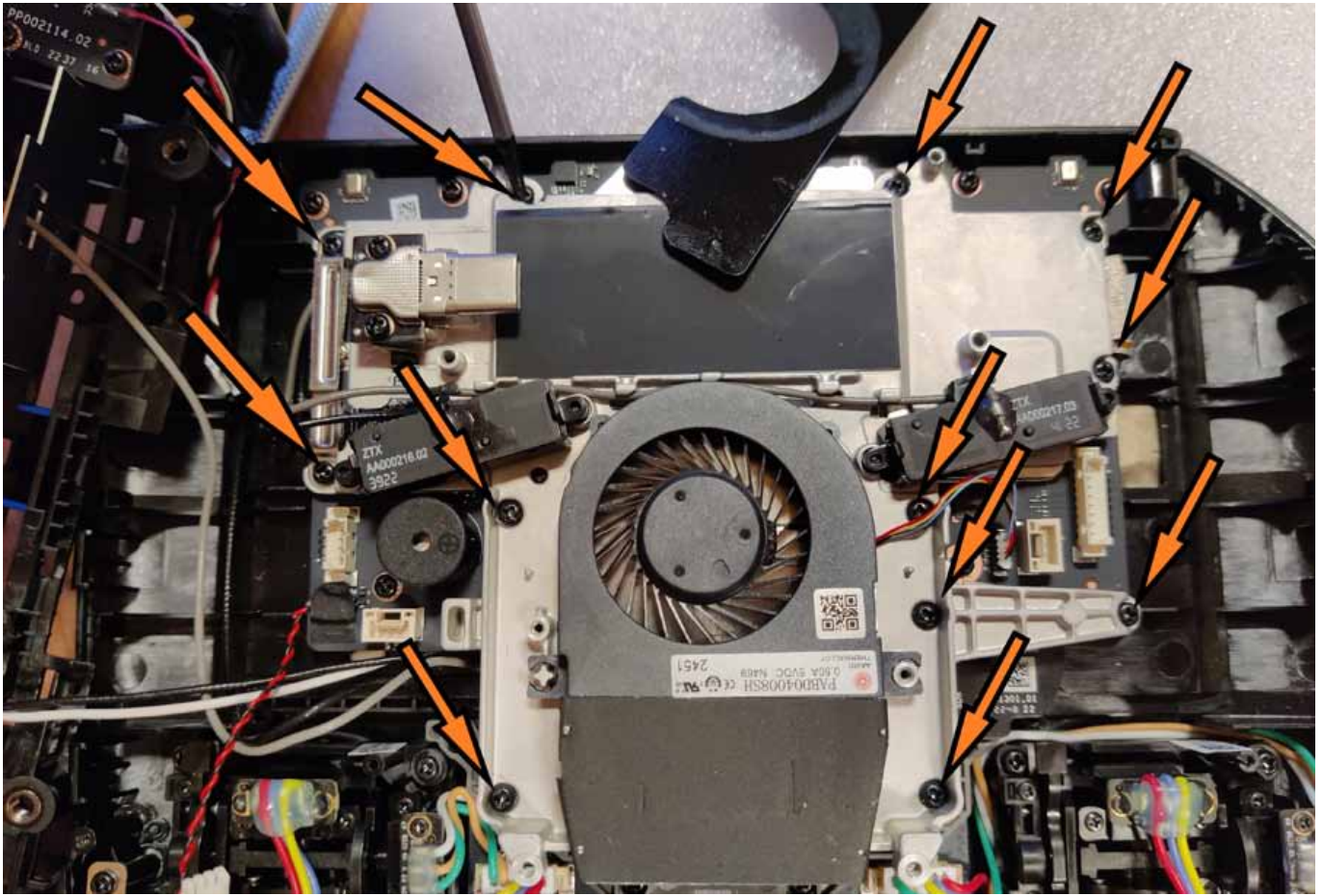
STEP 21

It's time to remove the antenna cables from the antenna module located in PCB. First, remove the gray fan cover by removing 2 small hex screws. Careful about the red/black cable! You may detach it completely by removing the plug from the port hid under the protective cloth (but you may leave it there as well if it doesn't disturb your work).



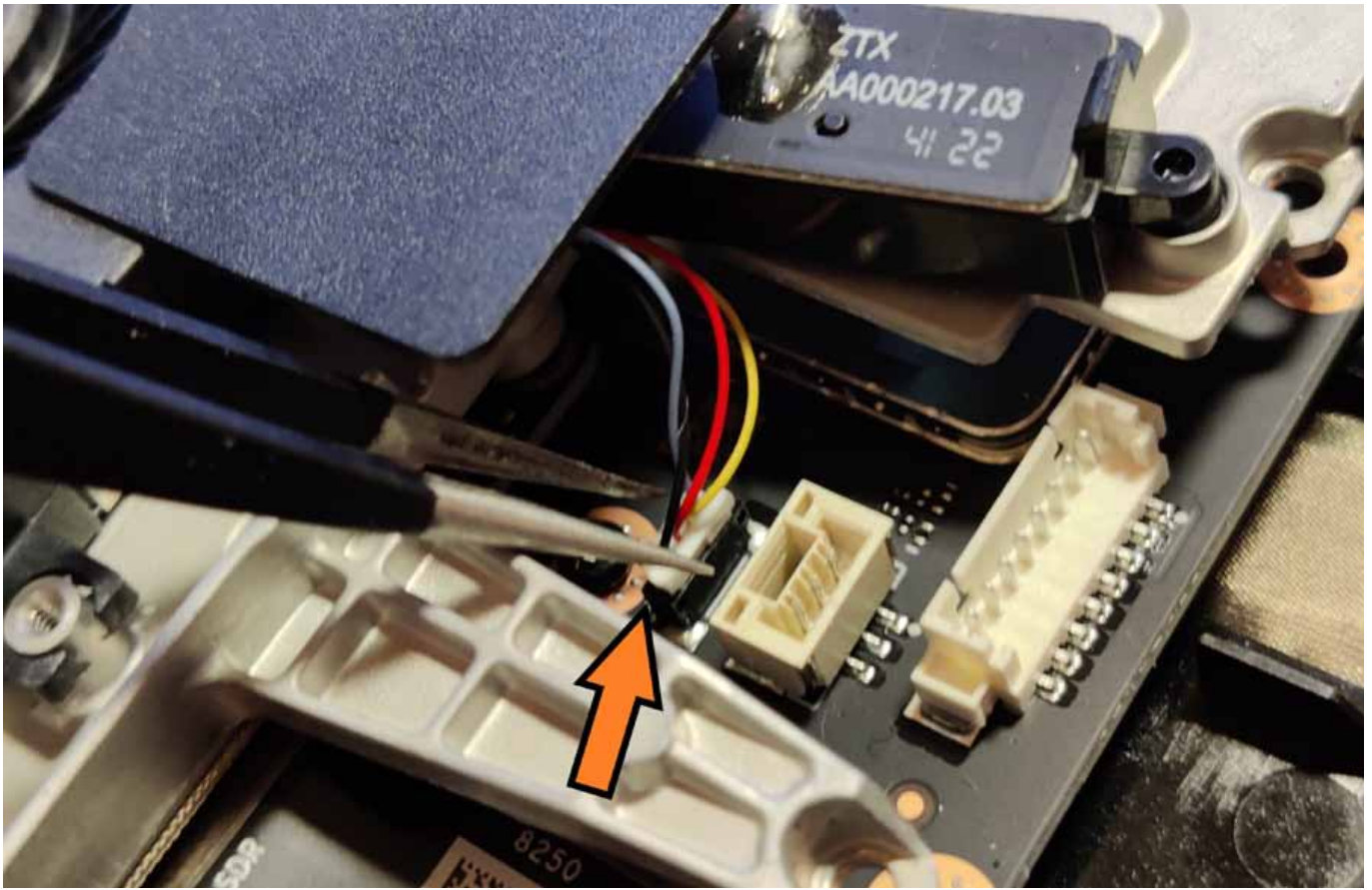
STEP 22

Remove the fan with its chassis - there's total 12 screws holding this part (two of them stays hid under the plastic cover !). Pay attention that 2 screws also mounts the metal protective bracket, that covers the 2 U.FL ports. Remove it gently and keep it in safe place.



STEP 23

After removing all 12 screws, gently pull out the 3-strain cable from its port at the right side.



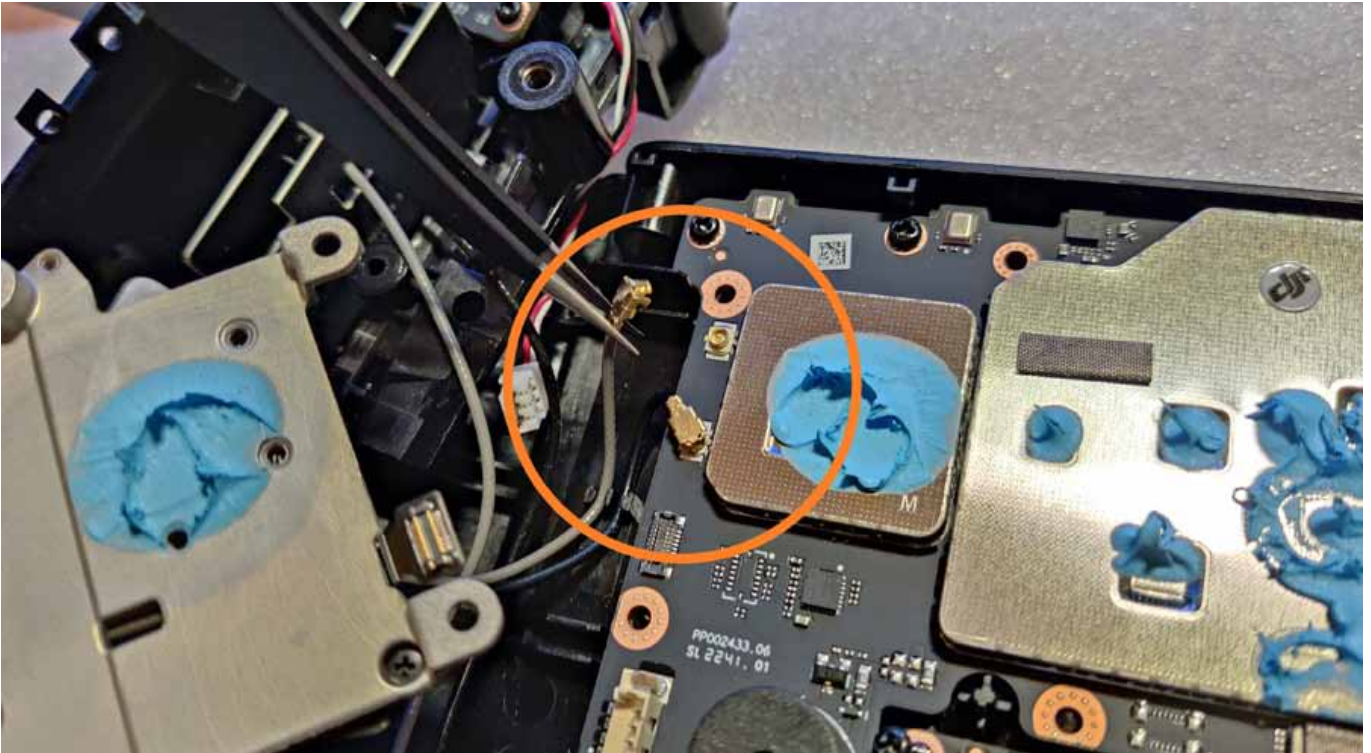
STEP 24

Now lift up the part with the fan up (carefully! There's a thermal paste below).



STEP 25

Remove 2 U.FL plugs from their sockets, and put the fan part aside in a safe place.



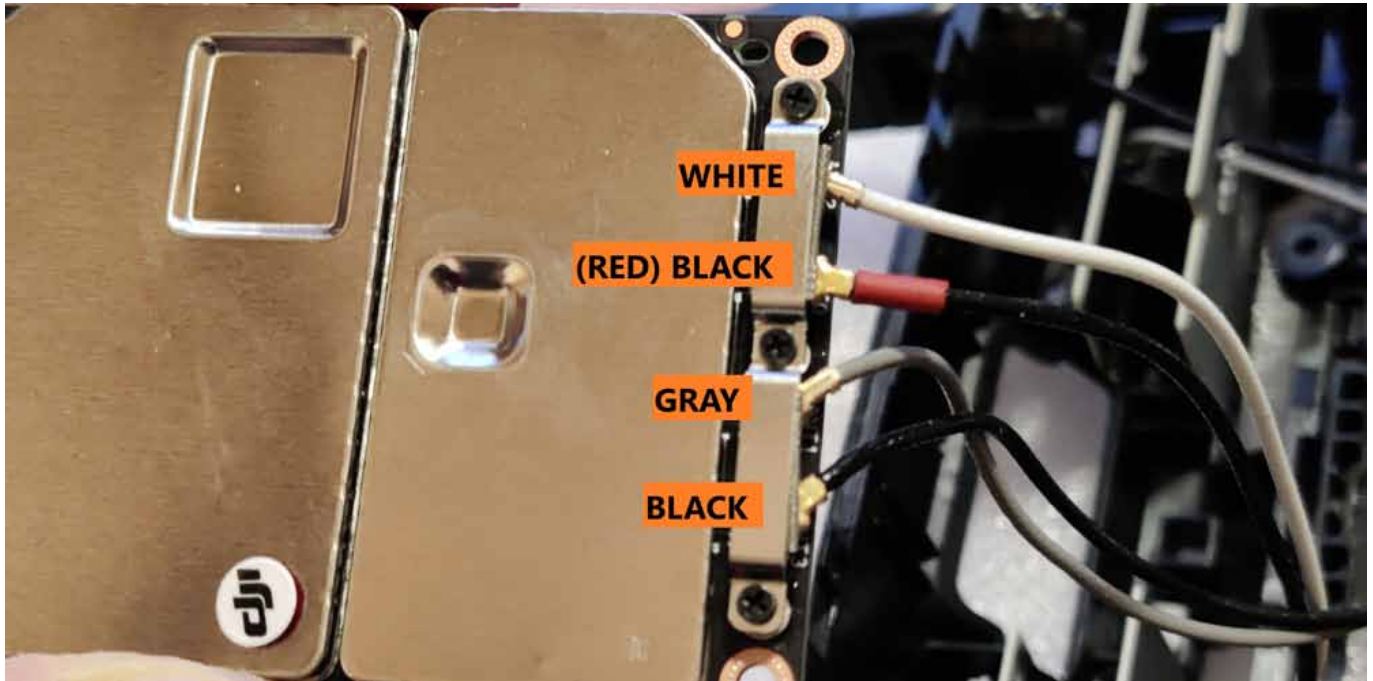
STEP 26

Remove the transmission module from the PCB. Pay attention to the port under the metal protective sheet at your right. Lift it gently, carefully leading the cables on your left from under the PCB.



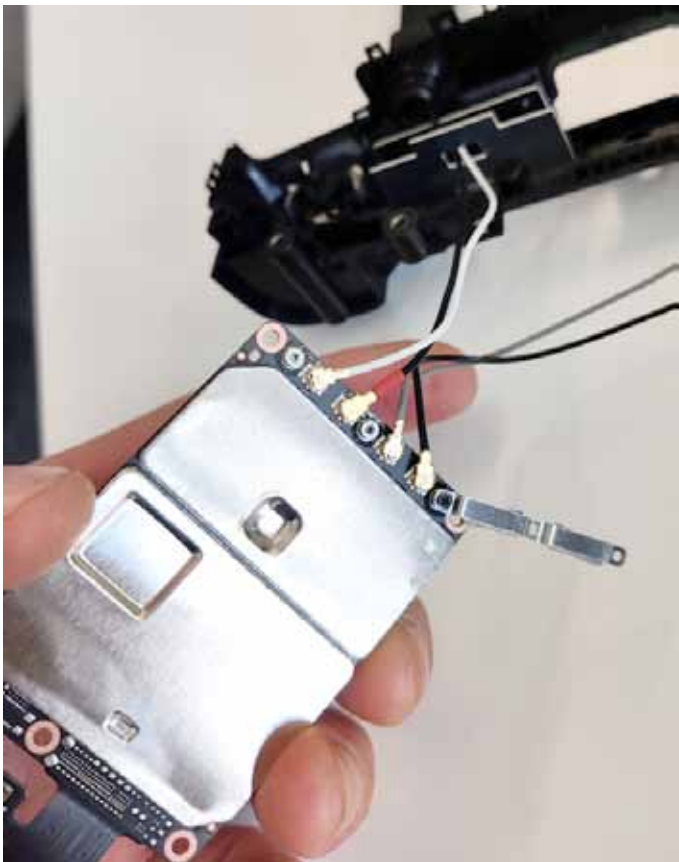
STEP 27

The antenna cables are located under the transmission module, secured with a metal bracket. Make a picture to remember the order of cables plugged in 4 ports.



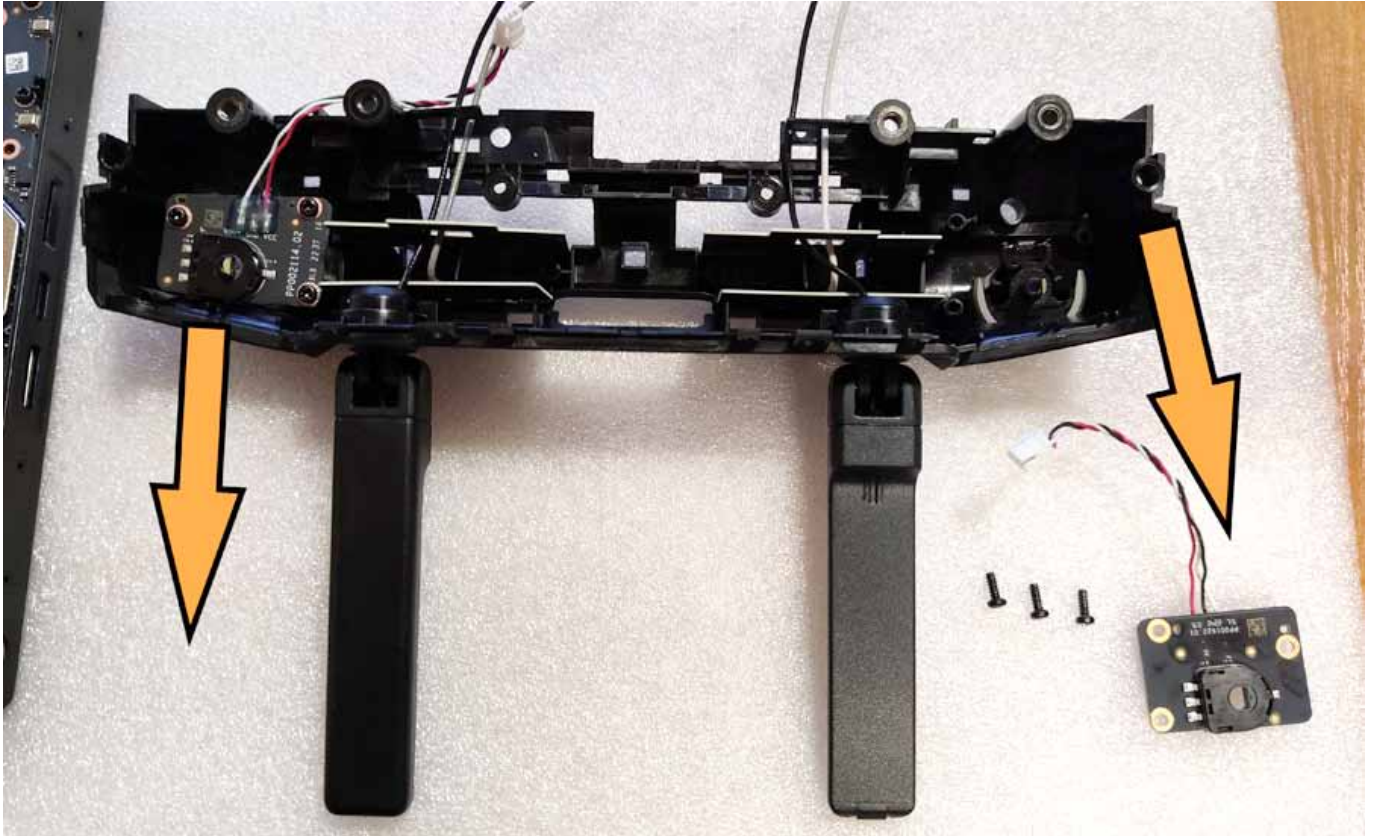
STEP 28

Removing 2 out of 3 screws should already allow you to remove all 4 U.FL connectors from their sockets. Take a picture or note the order of cables attached to ANT0, ANT1, ANT2 and ANT3 ports, as it will be important later.



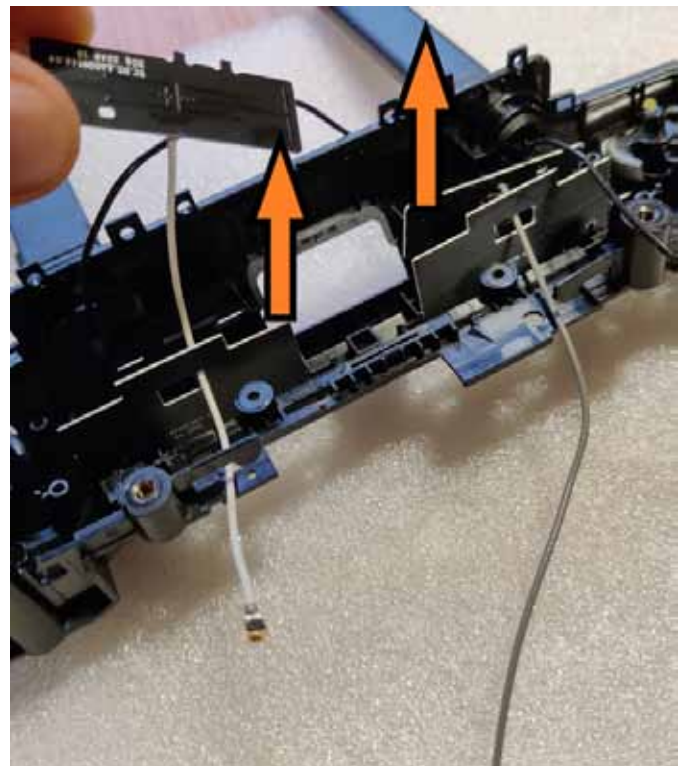
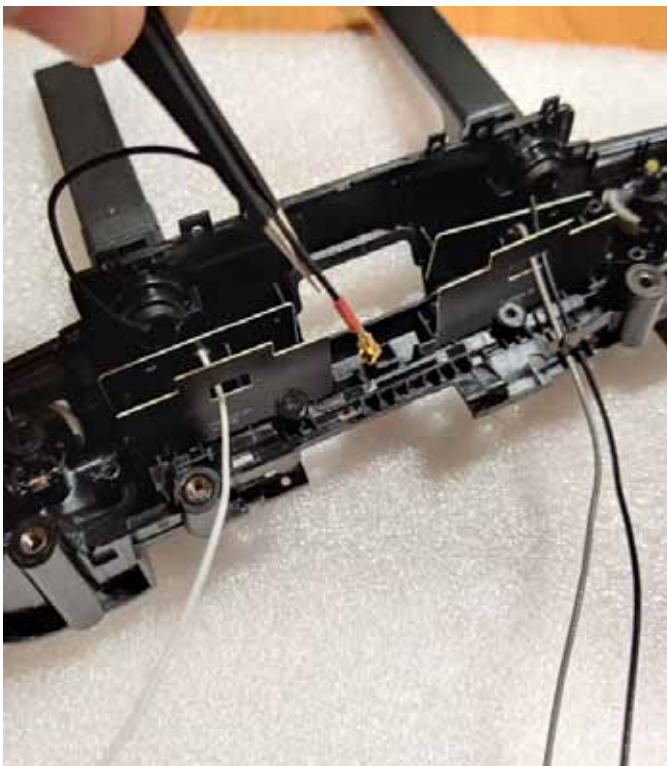
STEP 29

It's time to remove the internal antennas and their screens. In order to remove these, first you'll have to remove the PCB under the control wheels on the top-left and top-right panel. Put the removed PCB's in a safe place.



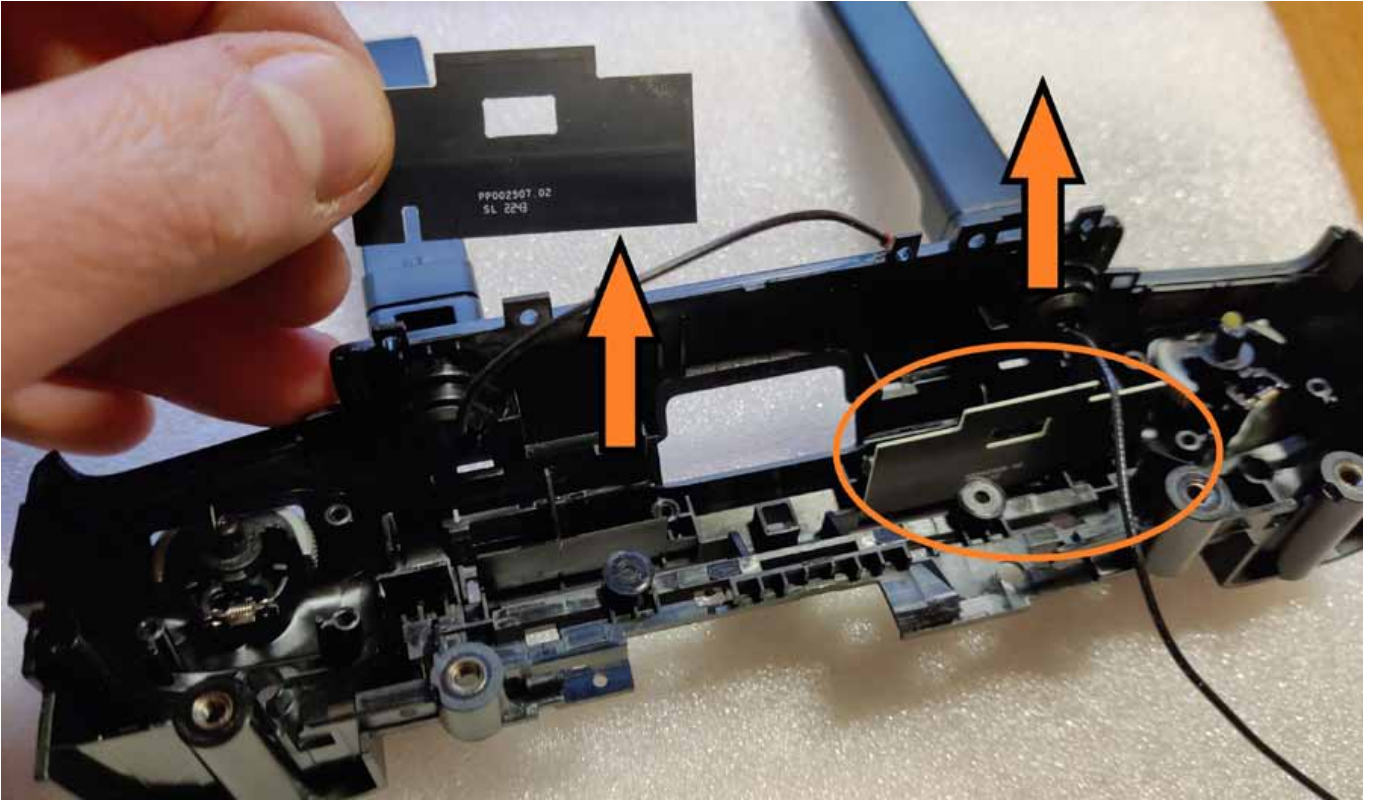
STEP 30

Carefully put the black cables through the screen holes, and remove the internal antennas (equipped with white and gray cables).



STEP 31

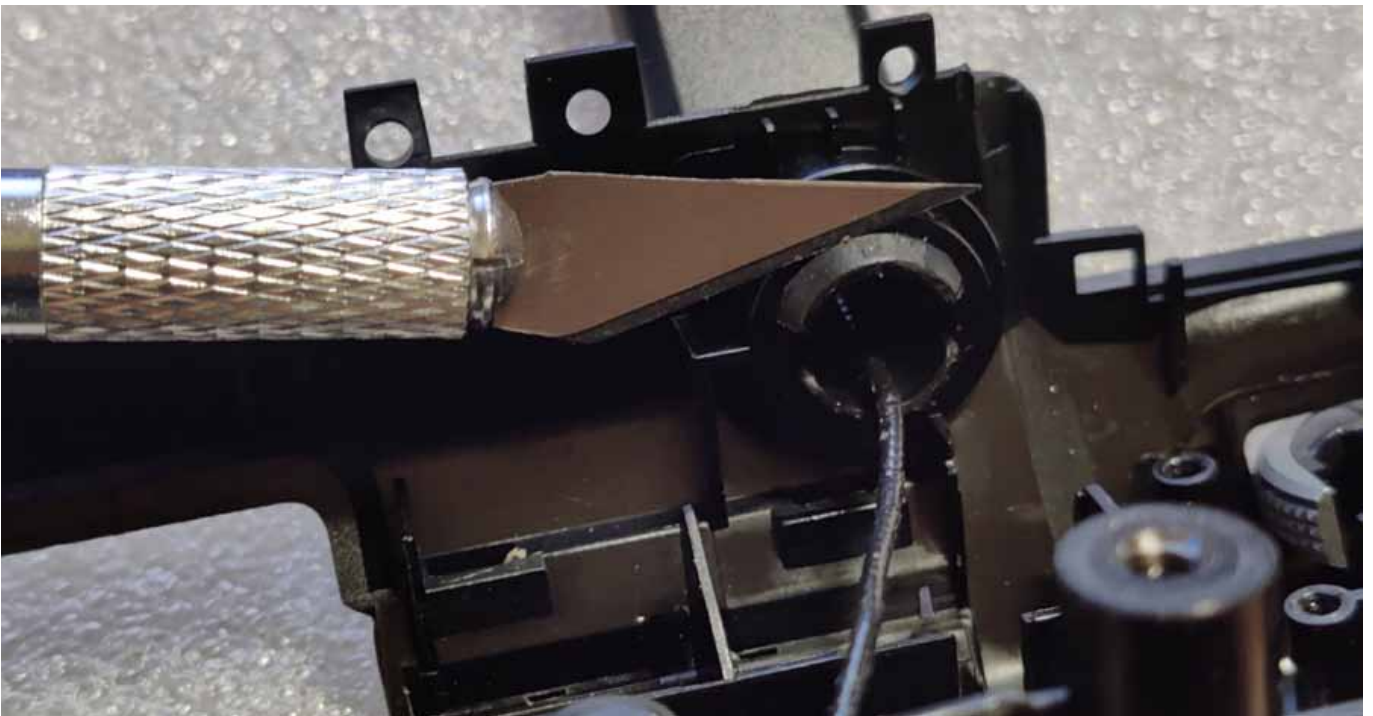
Remove the internal screens out (careful - these are glued with a double-sided tape!)

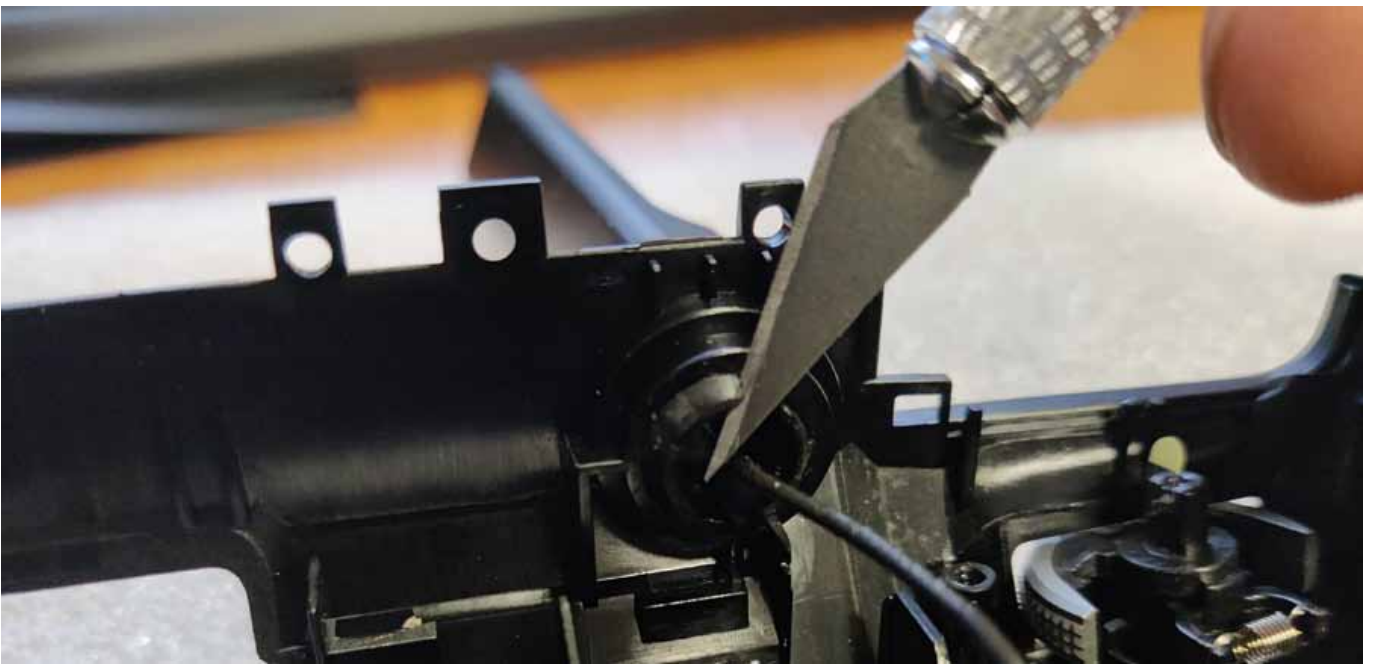


IMPORTANT - PLEASE NOTE! This is the last step in installation process before you'll irreversibly modify your controller. Once done - you will not be able to reverse the process and re-install the original antennas again.

STEP 32

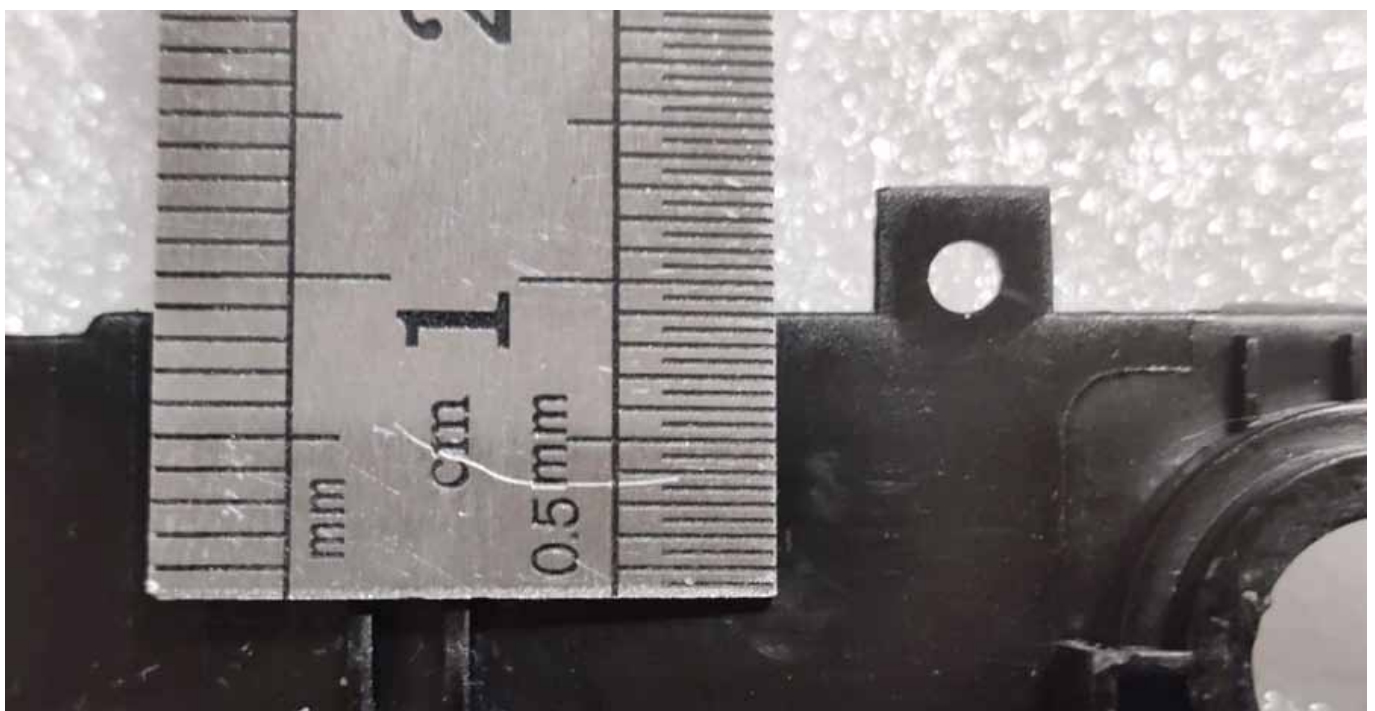
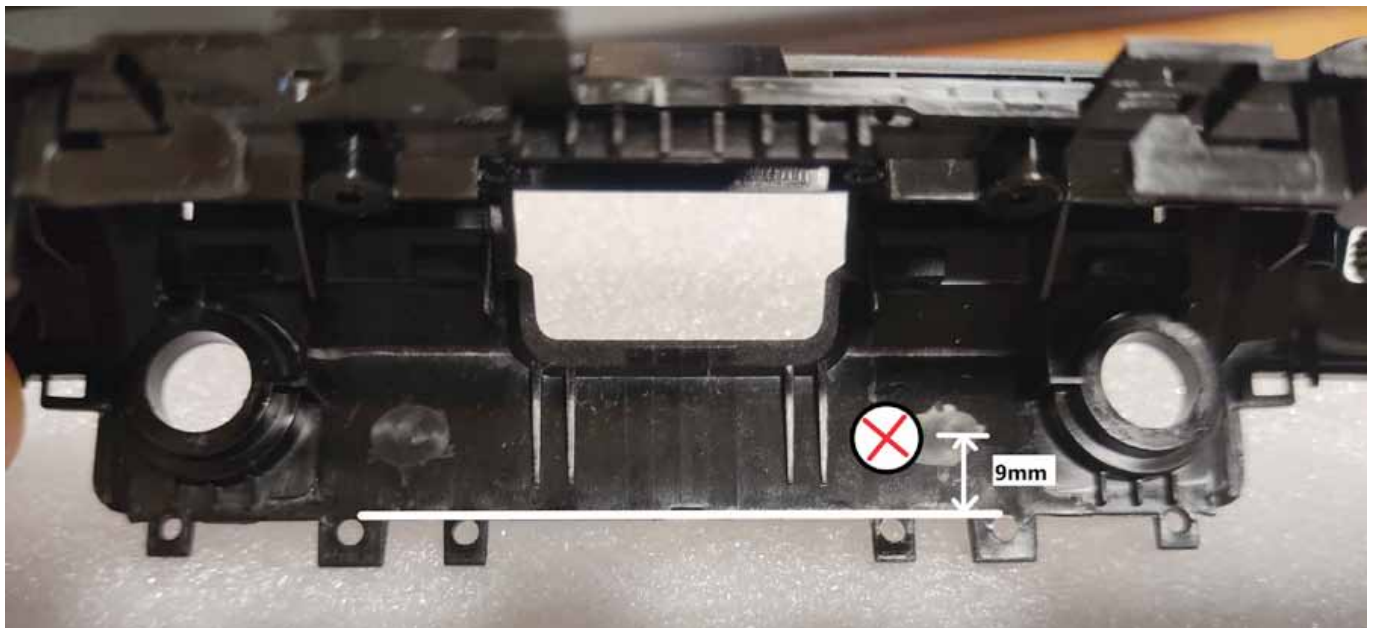
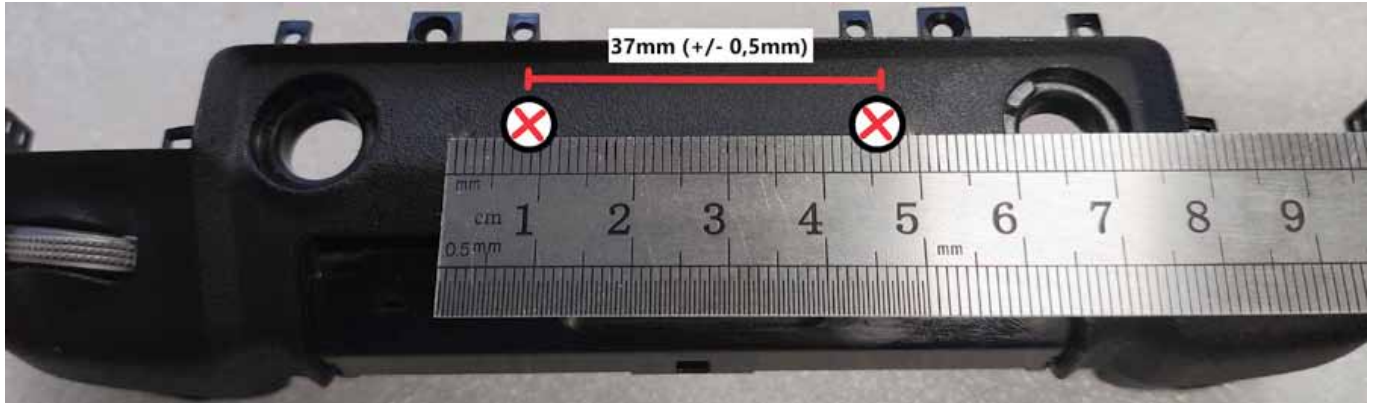
Now it's time to remove the stock OD antennas. There are 2 hatches at the inner side of the antenna holes that must be removed (and automatically - damaged) mechanically. Best method is to cut these out with some sharp knife, or push these in using a thick flat screwdriver. Be careful not to damage the antenna wire!





STEP 33

After removing the antennas, mark two spots on the flat surface on the top panel, where the 6mm holes are about to be drilled. The distance between the centers of the two spots should be 37mm (+/- 0,5mm) - make also sure, that these are perfectly centered (and the distance to the currently existing holes is the same both sides). Looking from the inner side - the best point to set the center of the hole would be approx. 9mm down from the edge.



STEP 34

First, make a positioning holes with a smaller diameter drill bit (we recommend 3mm). Remember to use a low-RPM drilling mode.



STEP 35

Using a drill bit with a larger diameter, ream the hole (but do not use the drills bigger than 6mm diameter !). We recommend to use a conical drill bit or drill bit for ceramics, that should work well here.



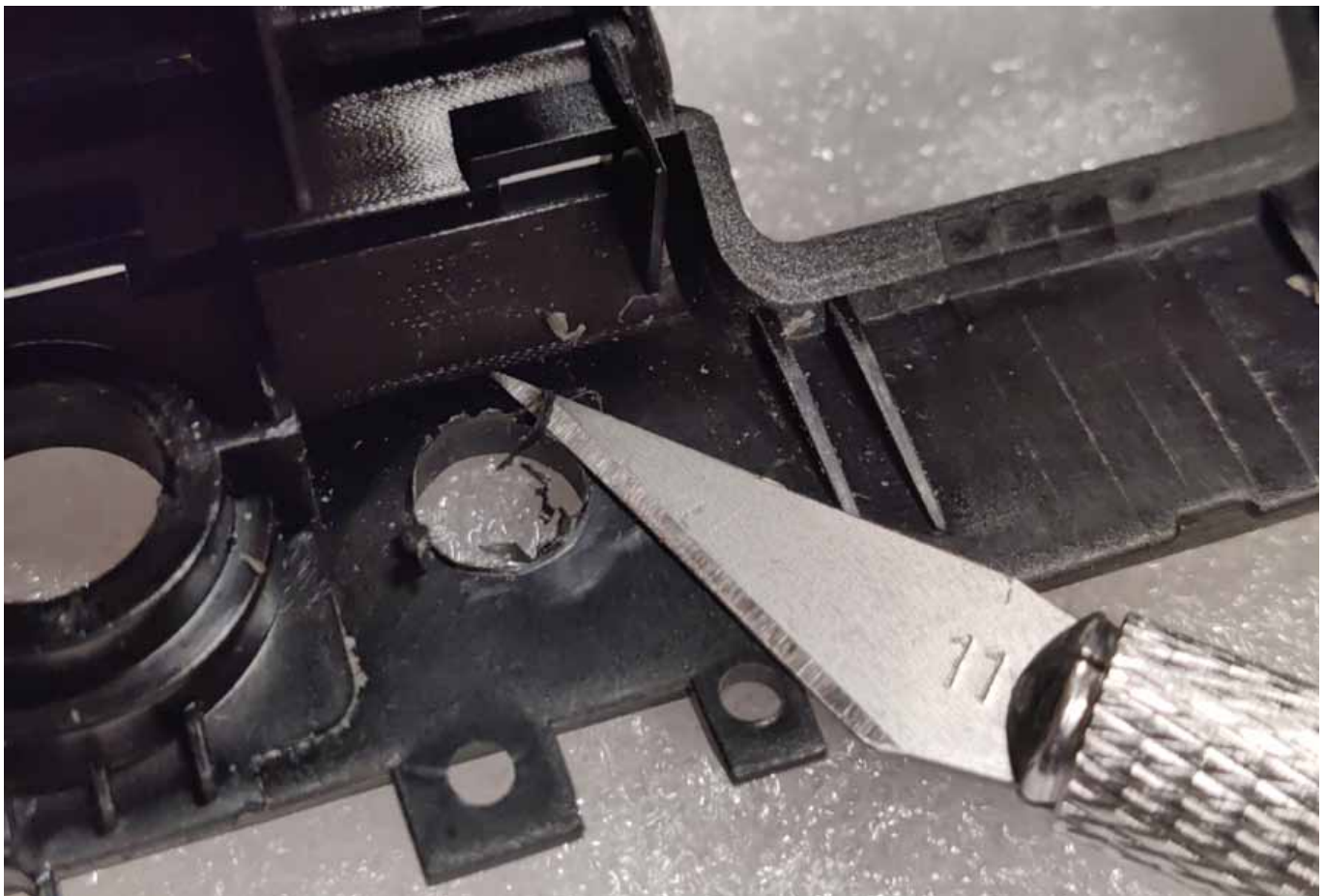
STEP 36

In order to receive the smooth, conical hole profile, use the wood countersink conical bit.



STEP 37

The final diameter of the drilled hole should be 6mm (max. 6,1mm). Remove the debris from the inside, and soften the sharp edges with a round file if needed.



STEP 38

Install 4 pigtailed delivered with the antenna. Use the gray ones outside (place the tooth-washer on the thread before leading it through the holes). Black pigtailed should be installed inside (with the spring washers instead).



STEP 39

From the outside place the tooth-washers first, and then lock it with the nuts (the same at all 4 SMA threads).



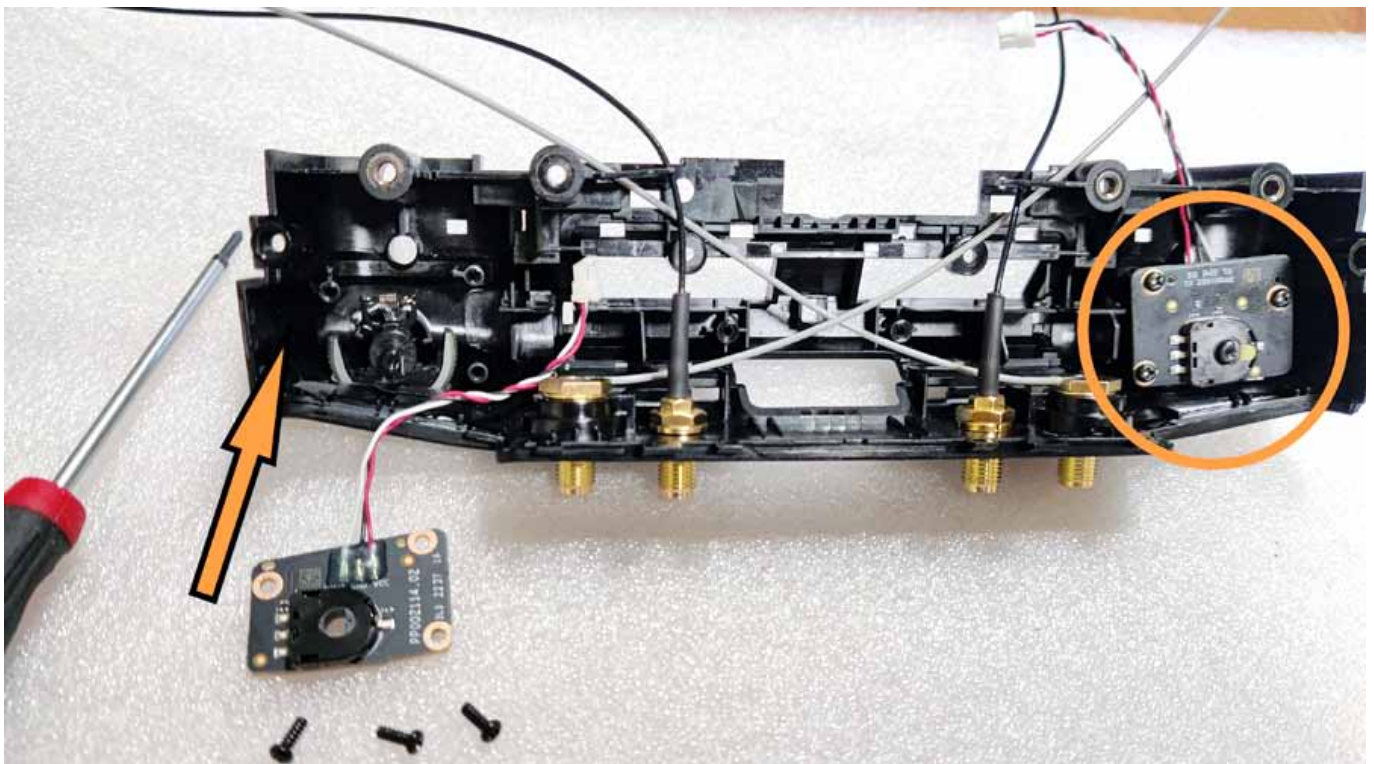
STEP 40

Use the included wrench to firmly lock tight all 4 nuts. None of the SMA ports should twist here - it is important to leave these locked well.



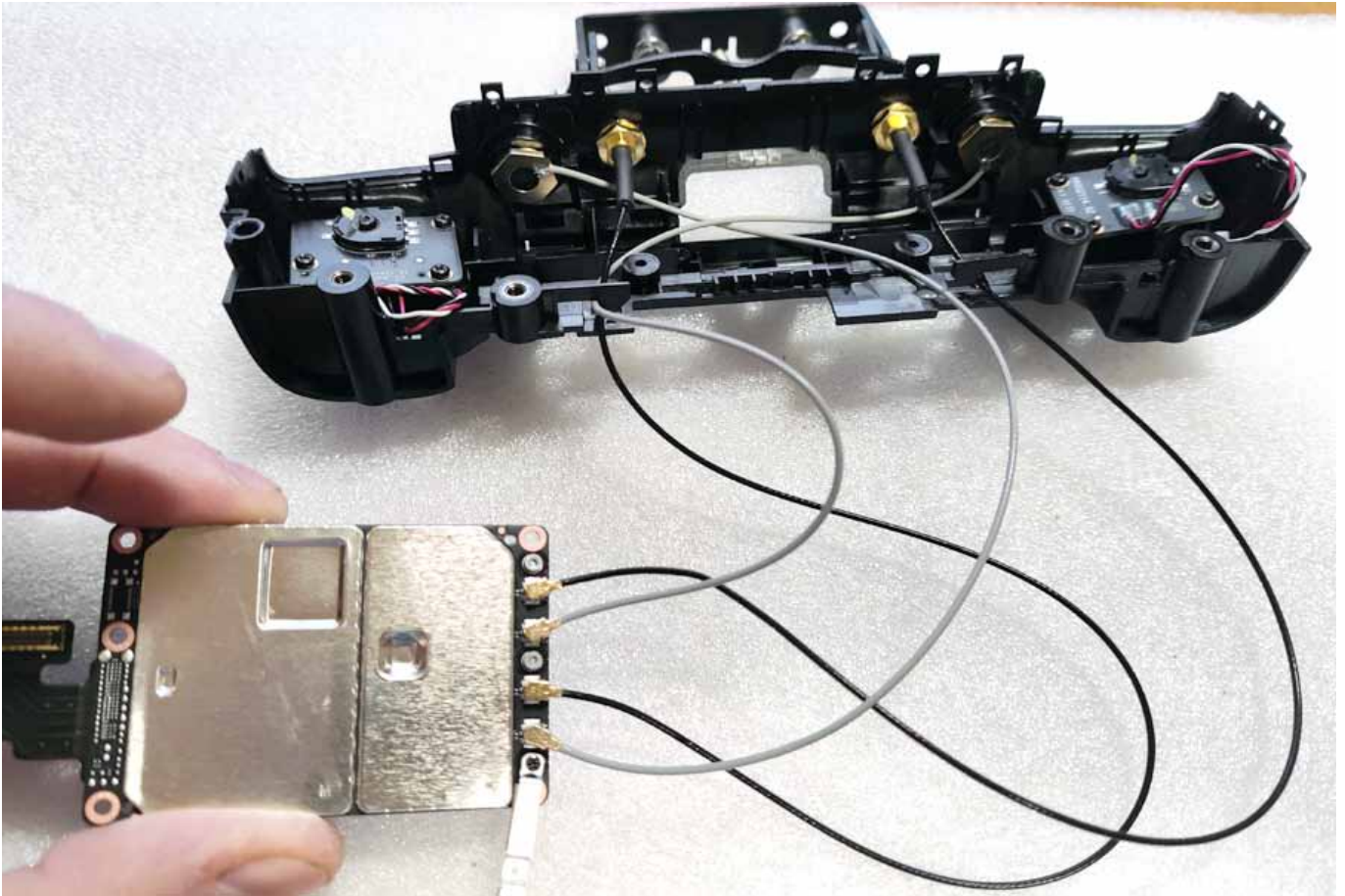
STEP 41

Re-install the PCB's controlling the side wheels inside the top panel.



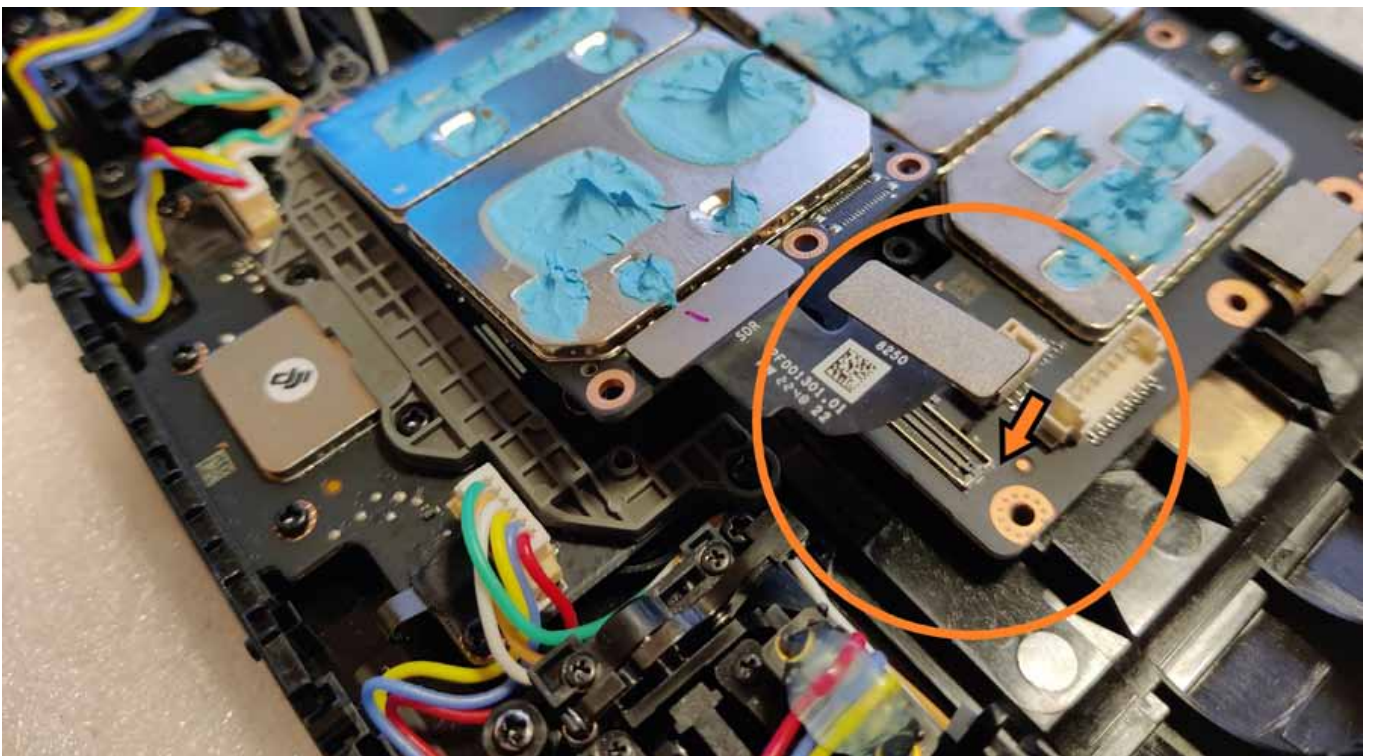
STEP 42

Connect the U.FL connectors to their sockets in the transmission module. There are 4 ports: ANT0, ANT1, ANT2 and ANT3. Use the scheme below to connect the pigtailed to their ports, and secure the connection with the metal bracket (3 screws).



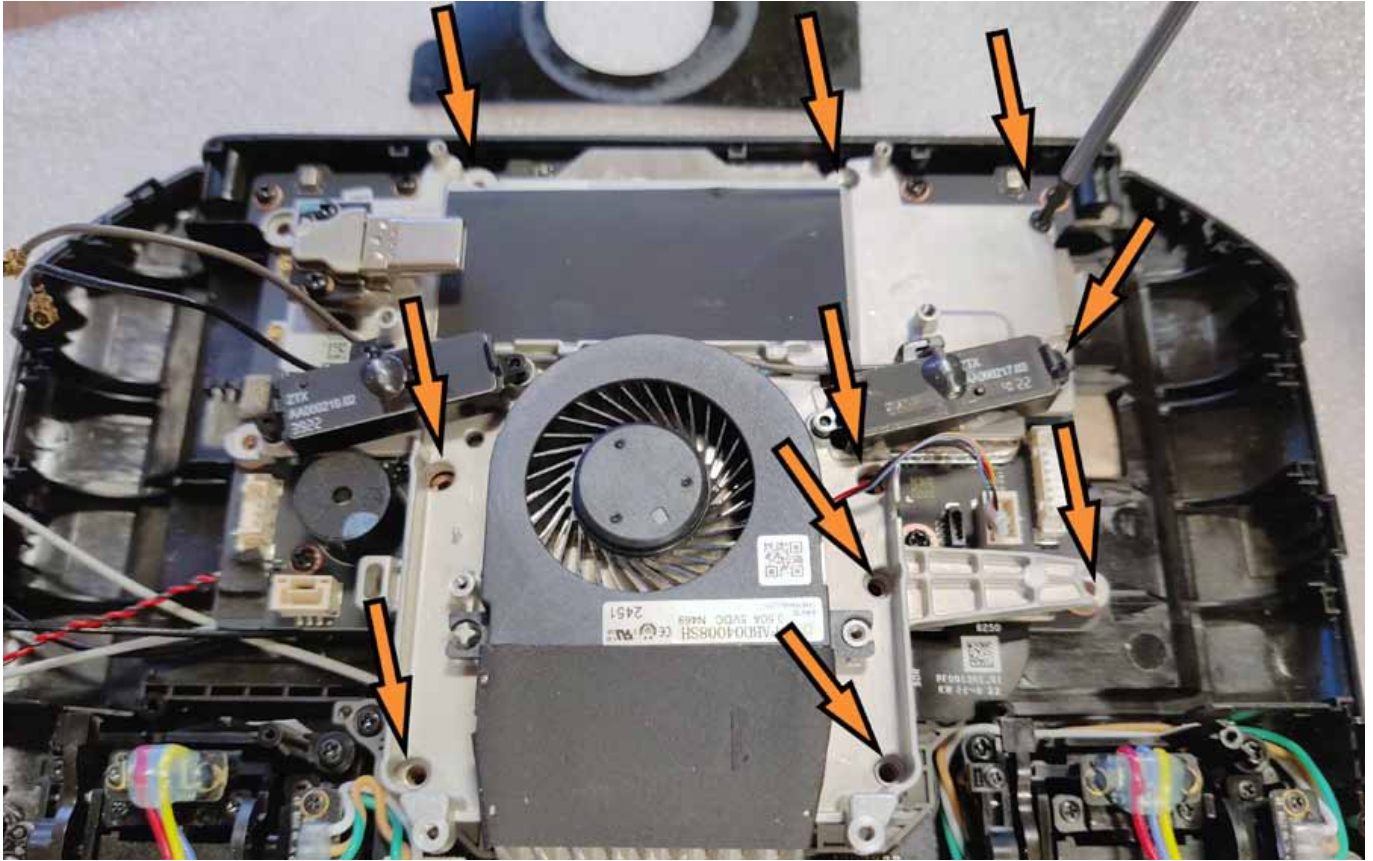
STEP 43

Position the transmission module with connected pigtailed to the PCB (but do NOT use the screws yet!). Remember to "click" on the tape-connector with metal protector plate to its socket too (carefully).



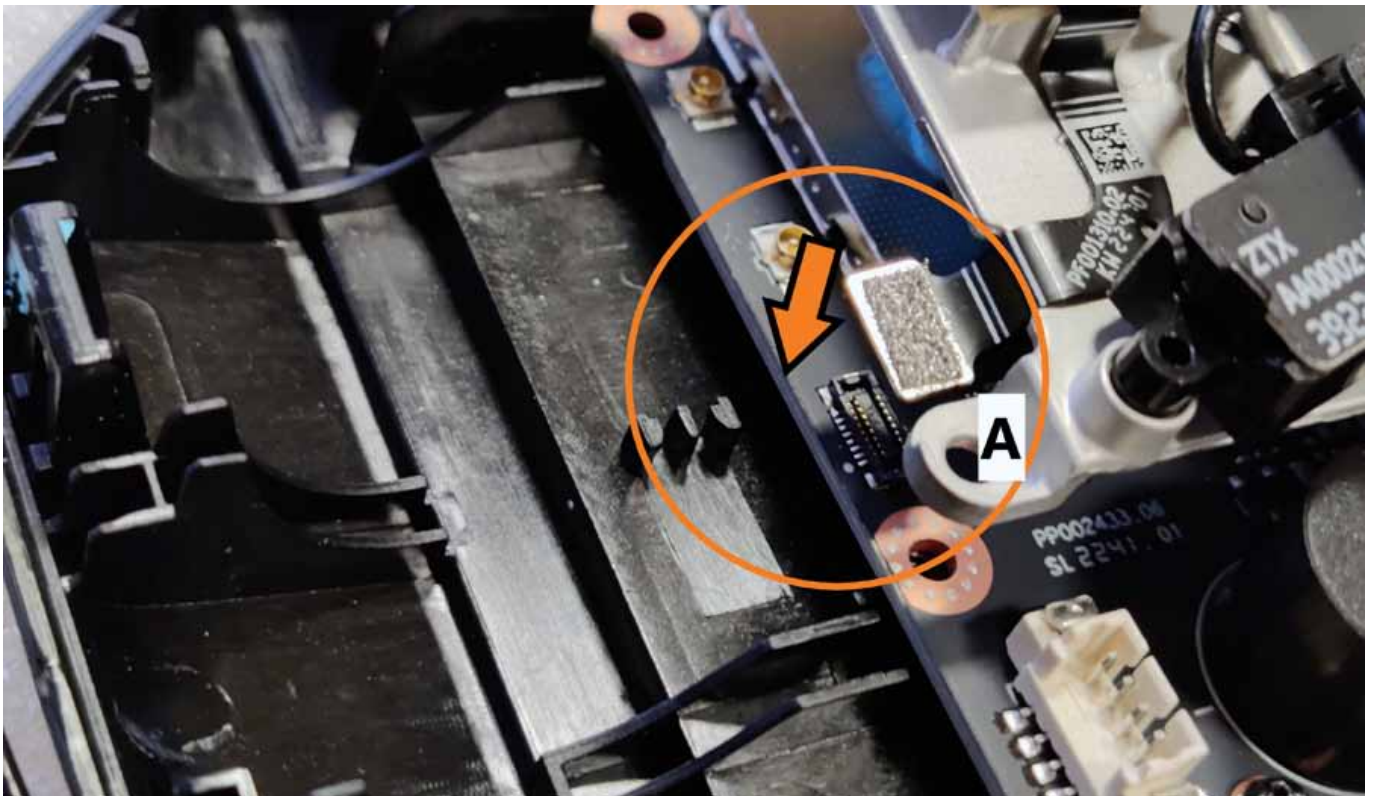
STEP 44

Position and fix the fan module with 10 screws.



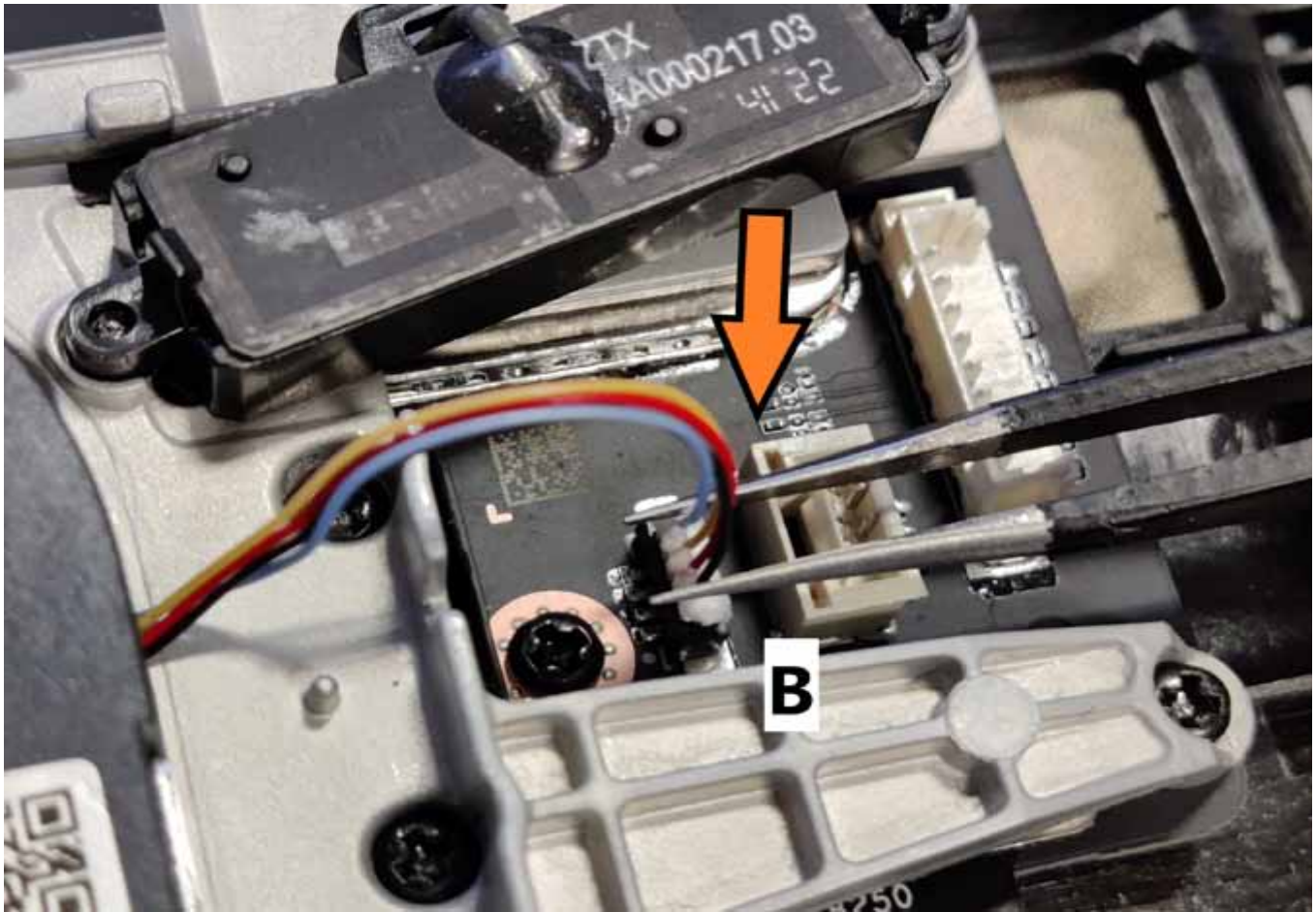
STEP 45

Remember to connect the tape to the PCB ("A")...



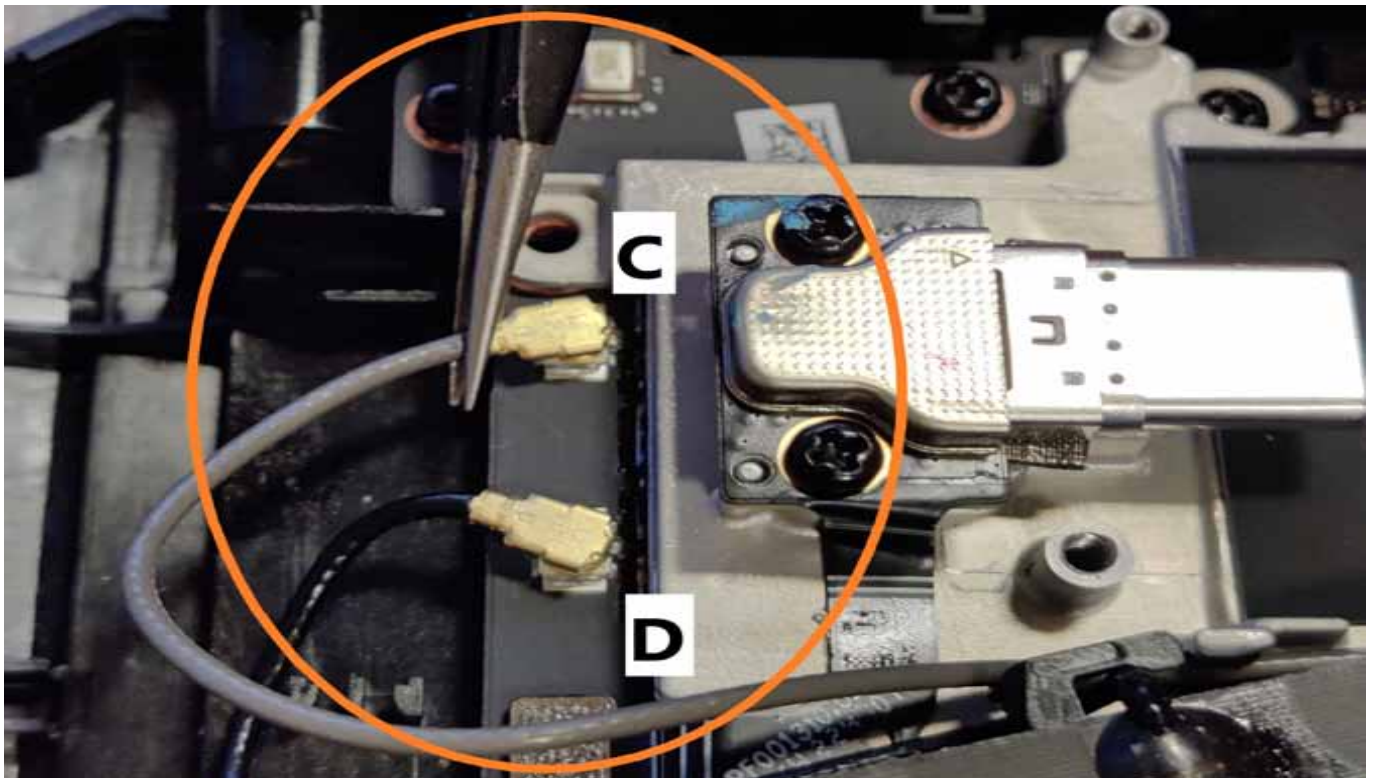
STEP 46

...the 4-wire cable to the socket ("B")...



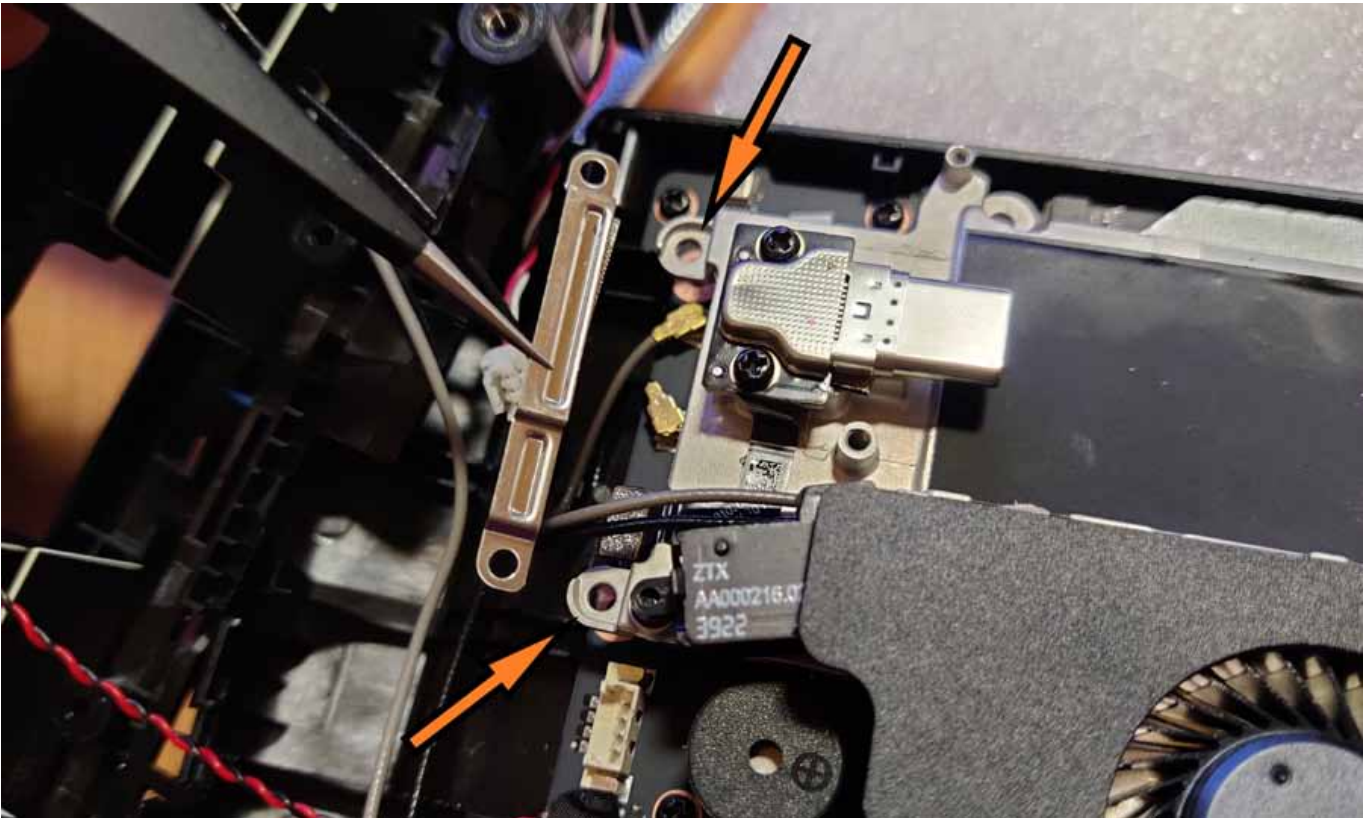
STEP 47

...and two U.FL connectors to the PCB ("C" & "D").



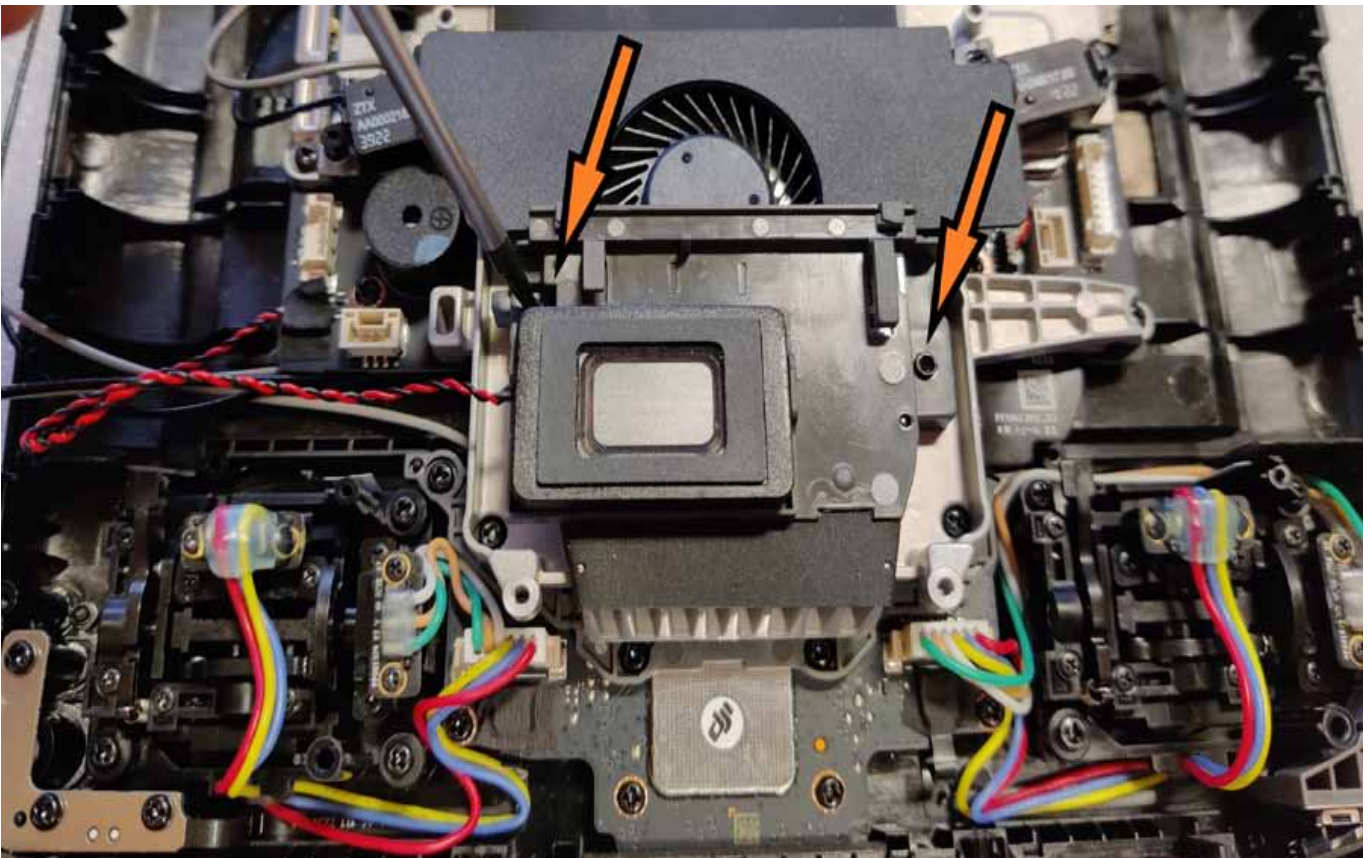
STEP 48

Last 2 screws that mounts the fan module automatically fix the metal bracket over the U.FL connectors.



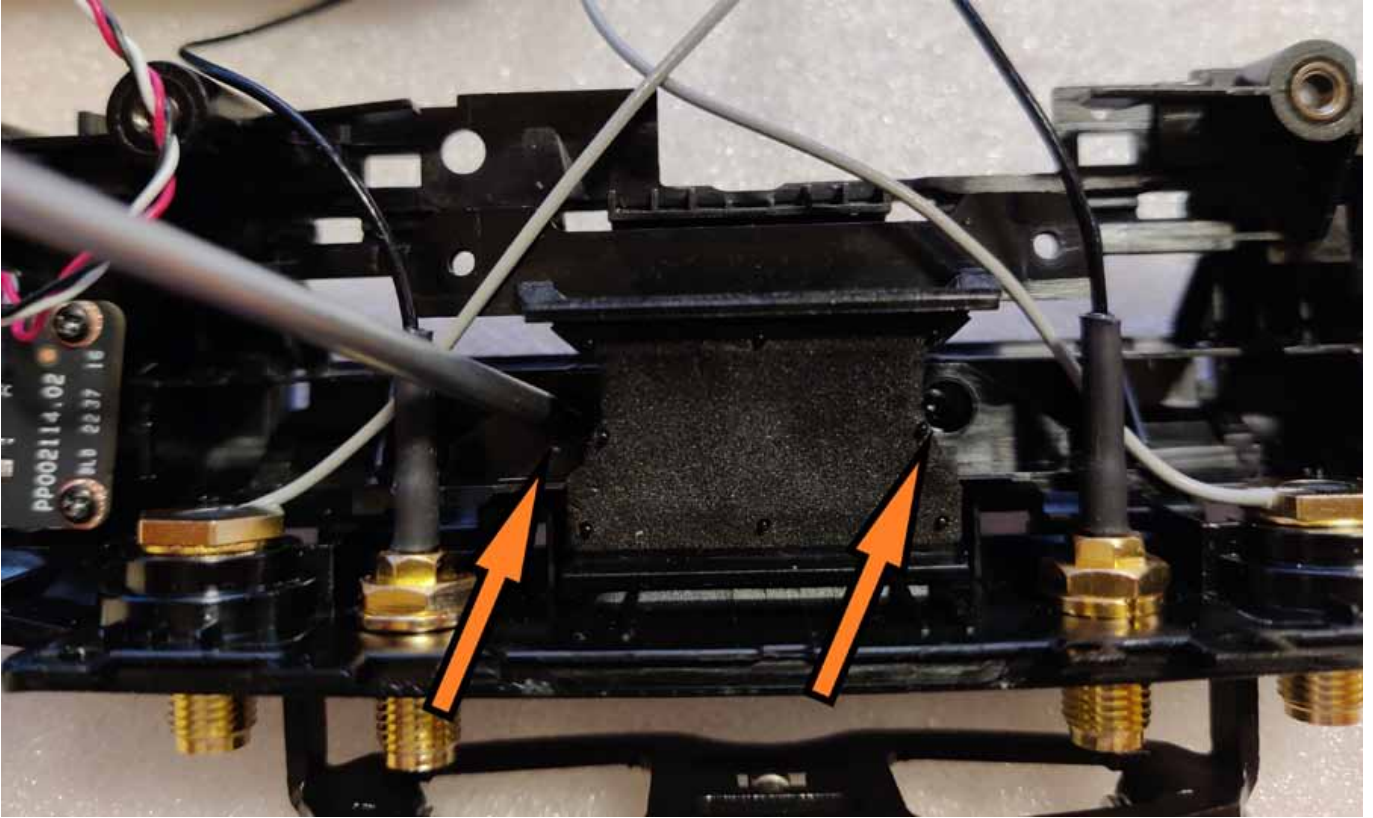
STEP 49

Position and fix the fan cover with 2 screws.



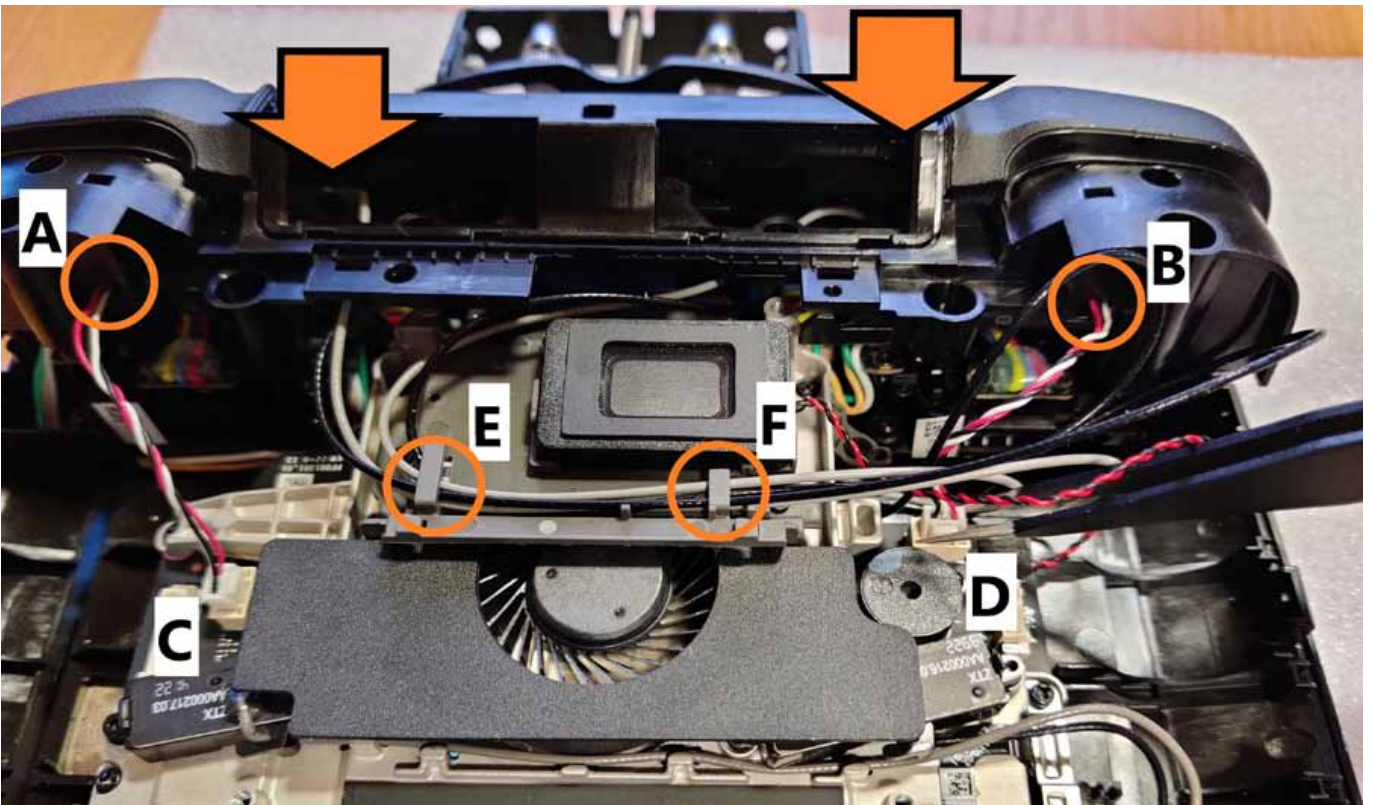
STEP 50

Position and fix the fan intercooler channel with 2 screws (in the middle of top panel). Be careful and pay attention not to damage the antenna cables.



STEP 51

Pre-position the top panel back on its place, but do not "click" it back yet. Lead the white/red/black cables from the side wheels trough their hooks ("A" & "B"), and place the plugs into their sockets ("C" & "D"). Lead the gray and black antenna cables trough their hooks ("E" & "F") to organize their way.



STEP 52

Paying attention to a proper cable routes, position and push-to-click the top panel on its place. All the hatches should "click" and lock the panel in place. There should be no play on any part of it, as well as the sealings at the sides and around the camera buttons should stay straight and thin. Lock the panel with 2 screws on the left and right side.



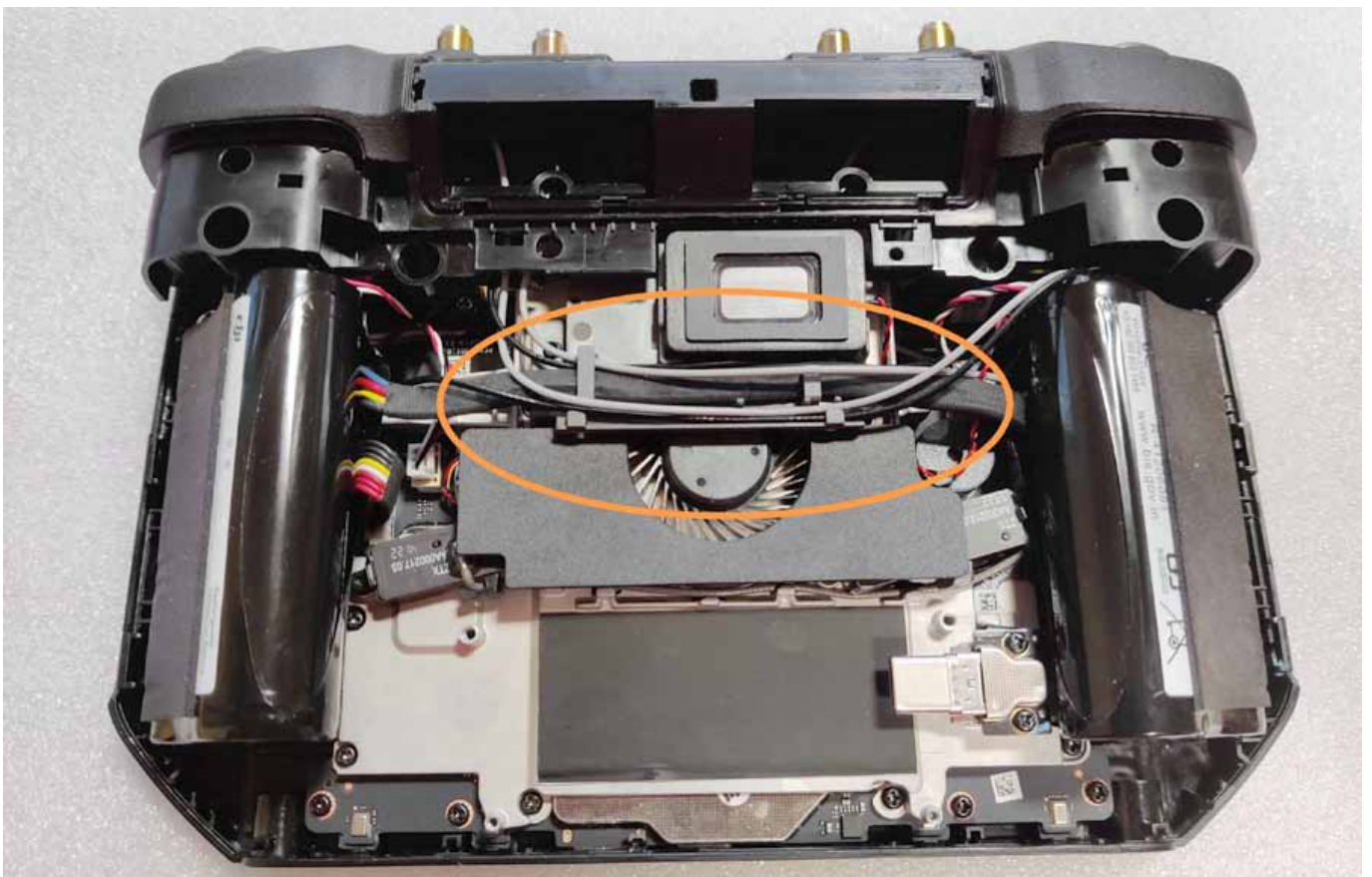
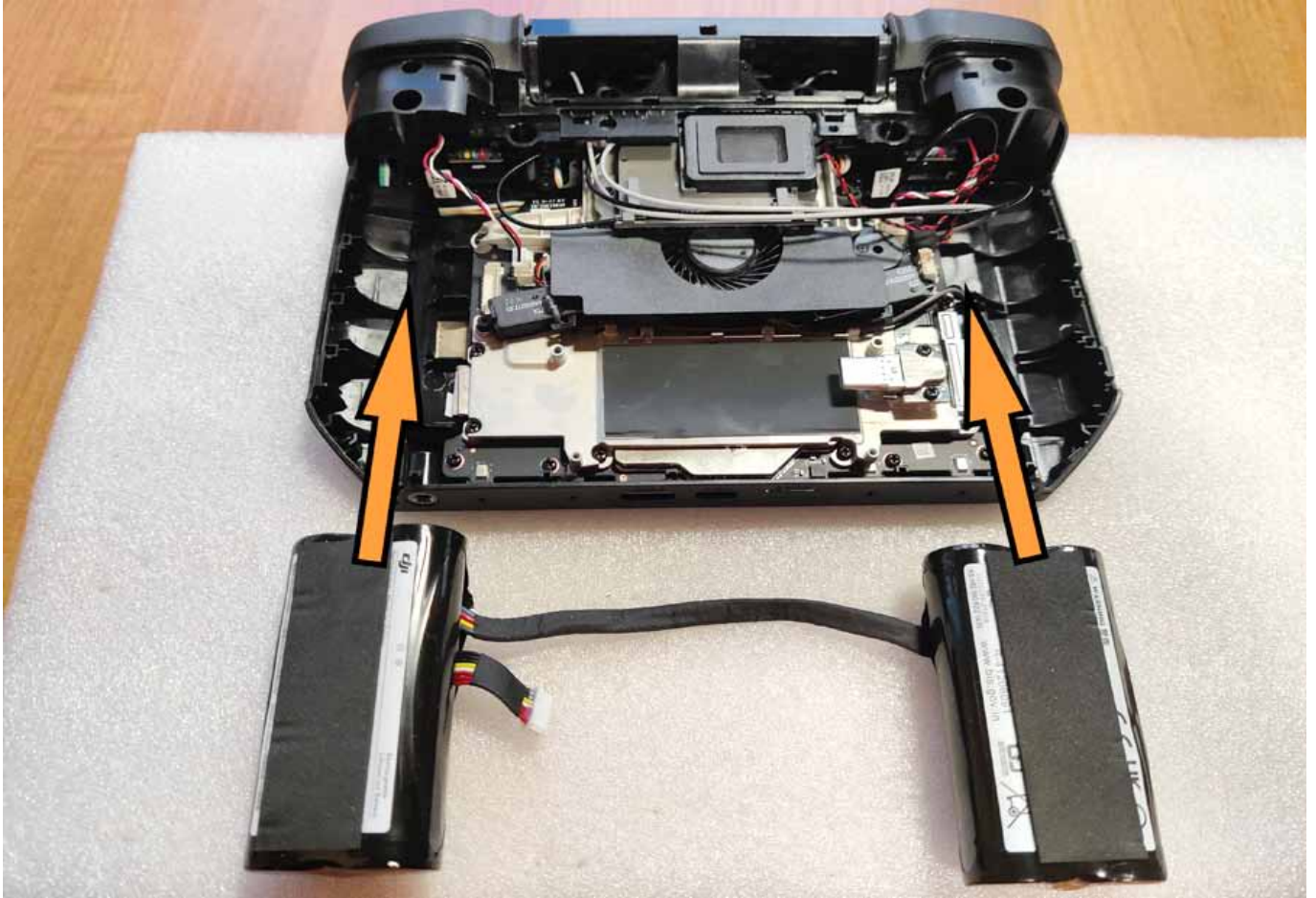
STEP 53

Install 2 screws on the top of the controller, and install the LED-indicator stripe. Make sure that the LED panel "clicks" properly, and that the sealing lines are straight.



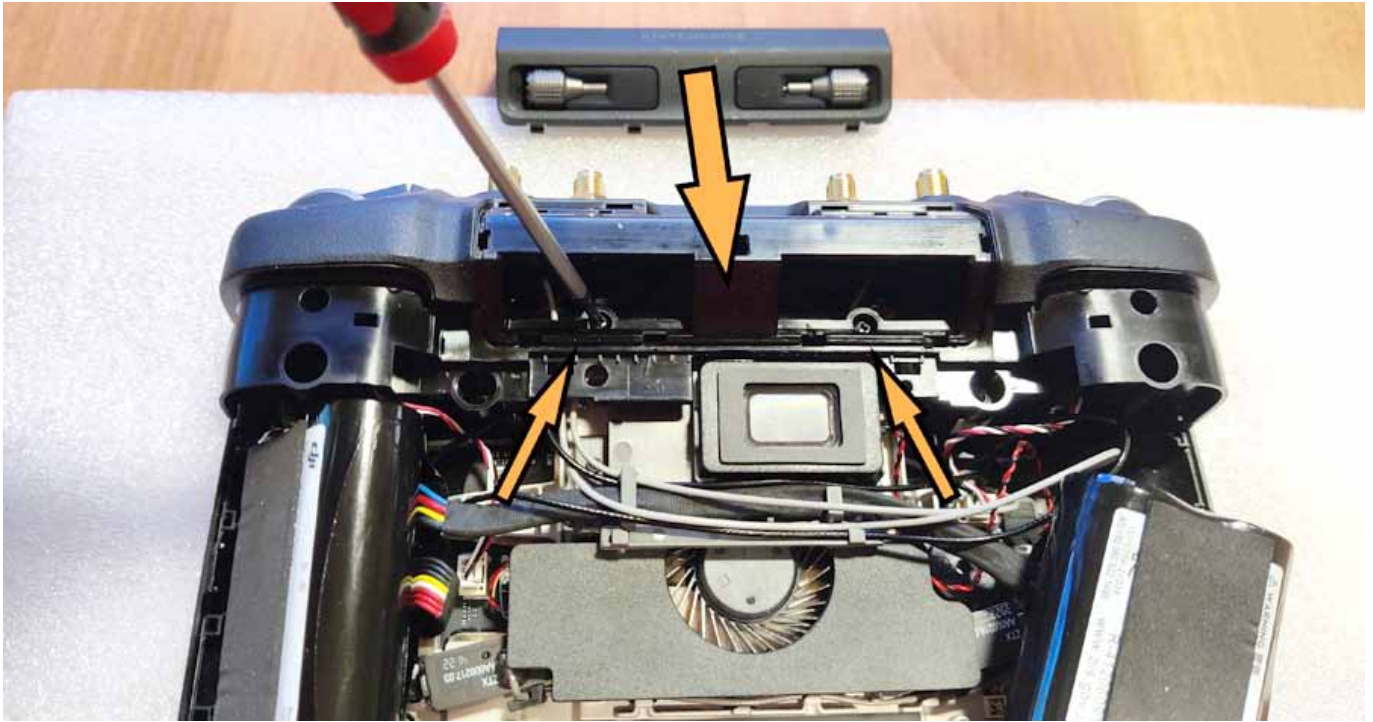
STEP 54

Now install the battery cells. Do not forget to attach the power connector to white port, located under the left cell, and lead the battery cord through the hooks. Take a moment to tidy up all the cables inside the controller's case. Make sure that none of them is covering the screw holes, and that there is no excessive tension.



STEP 55

Install 2 screws holding the top panel, and place the small cover that holds the control sticks. It should "click" few times.



STEP 56

It's time to install the back case. Lift the right battery cell and connect the wire to its port, and re-place the battery in its place again. Now carefully position the back cover, and sensitively press it down to connect all the hooks around. The case should "click" several times. Start near the C1 and C2 buttons, and then continue to consecutively "click" down the case left and right side, and finish at the bottom, near the USB and HDMI ports.





STEP 57

Re-install 2 screws located around the compartment at the back.



STEP 58

Install the compartment cover and lock it down with 2 screws.



STEP 59

Re-install 2 screws located at the bottom holes.



Nice work with the controller ! Now let's install the antenna:

STEP 60

4 SMA connectors were led out through the top panel. Let's call these "2 inner ports" (the ones led through the drilled holes) and "2 outer ports" (the ones placed where the original OD antennas once were installed). Use the attached mounting bracket and place it on 2 outer ports, then lock it down with the nuts (use the attached wrench if necessary). **CAUTION !** pay attention NOT to twist the SMA port together with the nut ! Do not overtighten the nut - just make sure that the mounting bracket is fixed well, and there's no play.





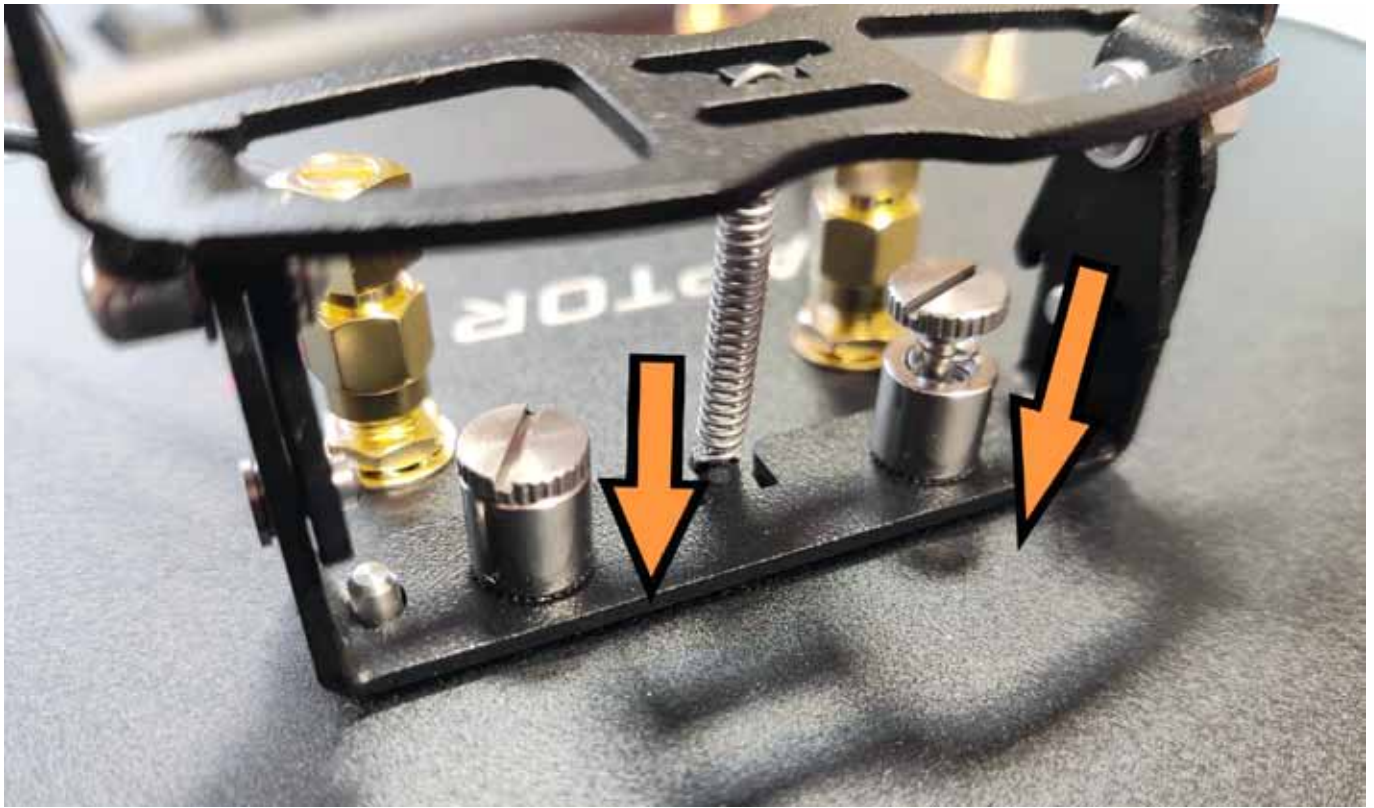
STEP 61

Using the attached 15cm RP-SMA -> RP-SMA cables, connect two outer ports on the controller with 2 outer ports at the antenna (marked as P1 and P2). Then connect two inner ports with two inner ports at the antenna.



STEP 62

Lock the antenna to the bracket using two spring-screws, and make sure that it's firmly fixed.



Well done ! Your controller is ready to work with your new 4Hawks XR antenna.



4Hawks sp. z o.o.
Iwiny, ul. Polna 1
52-116 Wrocław
Poland, PL

tel.: +48 577 667 761
www.4hawks.com
sales@4hawks.com
support@4hawks.com

