



Fairphone 3 Teardown

We tear down the modular Fairphone 3 with a giant grin on our faces! It's not perfect, but this is just about all we can ask for from a smartphone in 2019.

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INTRODUCTION

“All good things come in threes” is what the Dutch social enterprise must have thought when they were planning the Fairphone 3, their newest ethically-made mobile device, sporting a modular and repairable design. The [Fairphone 2](#) from 2015 already set the bar high for smartphone repairability—only a teardown will tell if its successor can raise that bar further, as other big manufacturers continue to offer phones that are glued shut and increasingly hard to repair.

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TOOLS:

- [Phillips #00 Screwdriver](#) (1)
 - [iFixit Opening Picks set of 6](#) (1)
 - [T5 Torx Screwdriver](#) (1)
 - [Mako Driver Kit - 64 Precision Bits](#) (1)
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Step 1 — Fairphone 3 Teardown



- It's the inner beauty that counts, but we'll get to that shortly. First, let's look over this smartphone's specs:
 - 5.65" IPS display with 1080 × 2160 resolution
 - Qualcomm Snapdragon 632 SoC
 - 4 GB of RAM and 64 GB of storage
 - 12 MP rear camera with $f/1.8$ and a front-facing camera with 8 MP $f/2.0$
 - 3,060 mAh battery
 - Fingerprint sensor, headphone jack, and IP54 rating
- A huge *thank you* to [Fraunhofer Institute for Reliability and Microintegration IZM](#), who provided us with this x-ray image of the Fairphone 3.

Step 2



- The Fairphone's line of succession (from left to right): Primus, Secundus, and Tertius, as the Romans might have said, if they could count smartphones.
- Note the evolution not only in size and style, but also in tech: this iteration features a USB-C port instead of the old Micro-USB connector, as well as a fingerprint sensor on its back for increased convenience.
- Just how much bigger is it? The Fairphone 3 comes in at 158×71.8×9.89 mm and weighs 189 g.

Step 3



- We start off by simply removing the back cover—no tools needed.
- Compared to the [bumper-like casing](#) of the Fairphone 2—as well as the two-piece 'slim' version that replaced it midway through the product cycle—this is definitely an improvement.
- ⓘ If you liked the added protection offered by the bumper, no worries—it's included in the box.

Step 4



- Removing the battery is also easy as [Android 9](#)—it lifts right out using the notch at the bottom.
- ⓘ With its recessed contacts and sturdier plastic casing, this battery is a well-protected throwback we're happy to see.
- At 11.781 Wh (3,060 mAh at 3.85 V), this juice box is not the *biggest* around these days. But it should get you through the day—and if it doesn't, you can just carry a spare and swap it out!
 - It beats the [Google Pixel 3a](#) in capacity (11.55 Wh) but cannot quite touch the [iPhone Xs Max](#) (12.08 Wh), let alone the [Shift 6m](#) (16.3 Wh).
- The underside of the battery bears an encouraging message: " *Well done. You're what progress looks like.*" Speaking of which, it's time to make some more teardown progress. Onward!

Step 5



- Fairphone decided to forgo the nifty [display lock mechanism](#) from the previous iteration, opting for standard Phillips #00 screws instead.
- ⓘ Fairphone even provides a tiny screwdriver—although hopefully they'll forgive us if we prefer the larger handle from our [Mako Driver Kit](#) for a bit more comfort.
- With the screws gone, we unsnap the display from the frame—revealing the same pogo pin connector plus breakout board configuration [seen in the Fairphone 2](#).
- Note the map of the Democratic Republic of Congo in this spot, illustrating the [conflict-free sourcing](#) of minerals like tantalum, tin, tungsten, and gold.

Step 6



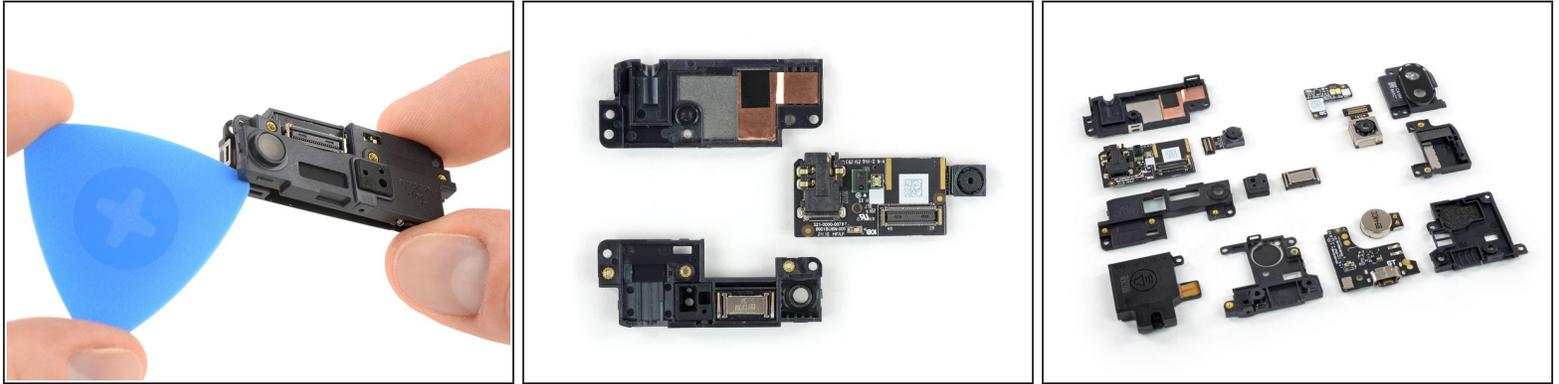
- While the Fairphone 2 modules all made use of pogo pin connectors, the Fairphone 3 modules switch to easily accessible regular press-fit sockets.
- A simple pry with the spudger and the modules are liberated.
- ⓘ The connectors and modules are helpfully labeled, and the [puzzle pieces align easily](#) even if you can't read them.

Step 7



- The Fairphone 3 comes with this family of modules:
 - The top module, camera module, and bottom module are all here, much like in the Fairphone 2.
 - The loudspeaker now gets its own closed module (as opposed to being part of the bottom module), and connects to the rear of the bottom module.
- ⓘ If you hope to upgrade your Fairphone 2 with *these* modules, we have bad news. Modules and their inner parts are not compatible. But their housings are said to be produced from 50% recycled polycarbonate, so there's at least some reuse!

Step 8



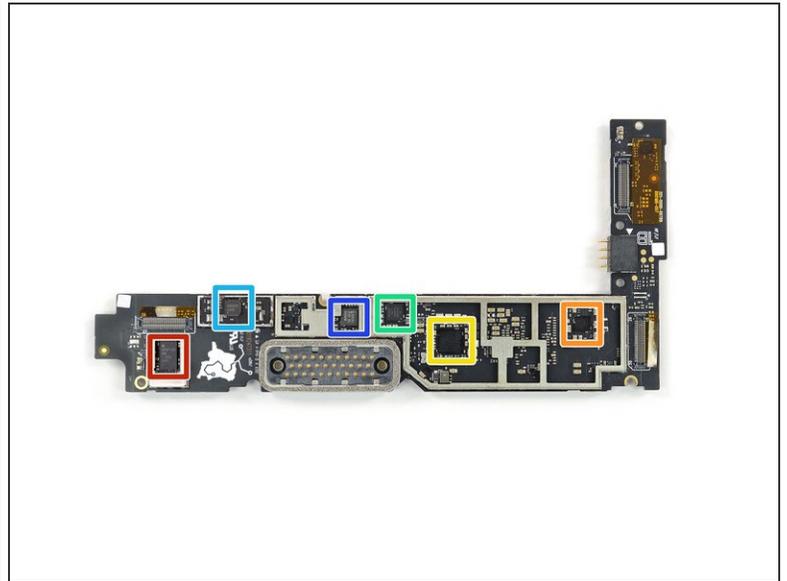
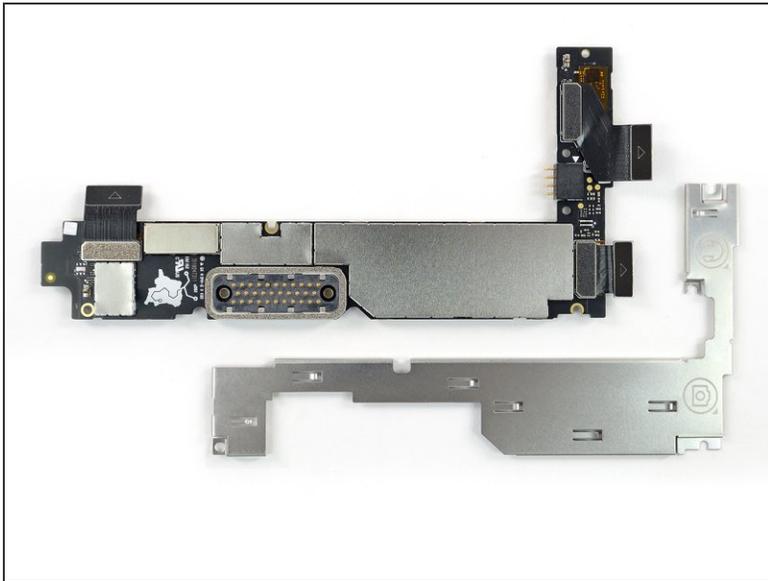
- Not satisfied with merely removing the modules, we bust out our [Torx T5](#) screwdriver and an opening pick and tear down even more.
- Starting with the top module:
 - The 8 MP *f*2.0 selfie camera and earpiece speaker are both removable.
 - The headphone jack as well as the proximity and ambient light sensors are soldered onto the breakout board.
- The camera module carries a modular 12 MP *f*1.8 camera with a SONY IMX363 Exmor RS sensor. The flash LEDs are soldered onto the breakout board.
- The bottom module contains the vibration motor, and a soldered-on USB-C port and microphone.
- The loudspeaker module is the loneliest of the bits clinging onto the bottom module with its two contacts.

Step 9



- Removing the motherboard, we discover a bunch of spring contacts, which connect to the fingerprint sensor, the volume and power buttons, and a few antennas.
- Pulling off the shields reveals:
 - [Qualcomm Snapdragon 632 SoC](#)
 - [Samsung KMRH60014A-B614](#) LPDDR3 with 64 GB
 - Qorvo QM57508 RF front-end module
 - Qualcomm WTR3925 RF transceiver
 - Qualcomm WCN3680B WiFi module

Step 10



- On the front of the motherboard we find:
 - Qorvo QM56022 RF Flex
 - Qualcomm PMI632 power management IC
 - PM8953 power management IC
 - Qualcomm WCD9326 audio codec
 - Awinic [AW88980](#) audio amplifier
 - NXP Q31A1

Step 11



- That's all for the Fairphone 3, right down to the screws and individual components. To sum up our findings:
 - The new enclosure is easy to open and showcases the transparency of the project.
 - An even more modular design makes for a tidy phone on the inside, with another layer of disassembly for repairing individual components.
 - Reassembling this phone won't be much of an issue, and we're very confident it'll still work.
- Let's see what this means in terms of repairability...

Step 12 — Final Thoughts

REPAIRABILITY SCORE:



- The Fairphone 3 earns a **10 out of 10** on our repairability scale (10 is the easiest to repair):
 - Key components like the battery and screen have been prioritized in the design and are accessible either without tools or just a regular Phillips screwdriver.
 - Visual cues inside the phone help with disassembling and replacing its parts and modules.
 - Replacing complete modules is very easy. Going for their internal parts is also possible and requires a Torx screwdriver.
 - Replacement guides and spare parts are available via the manufacturer's website.
 - Most components inside the modules are individually replaceable though some are soldered on.