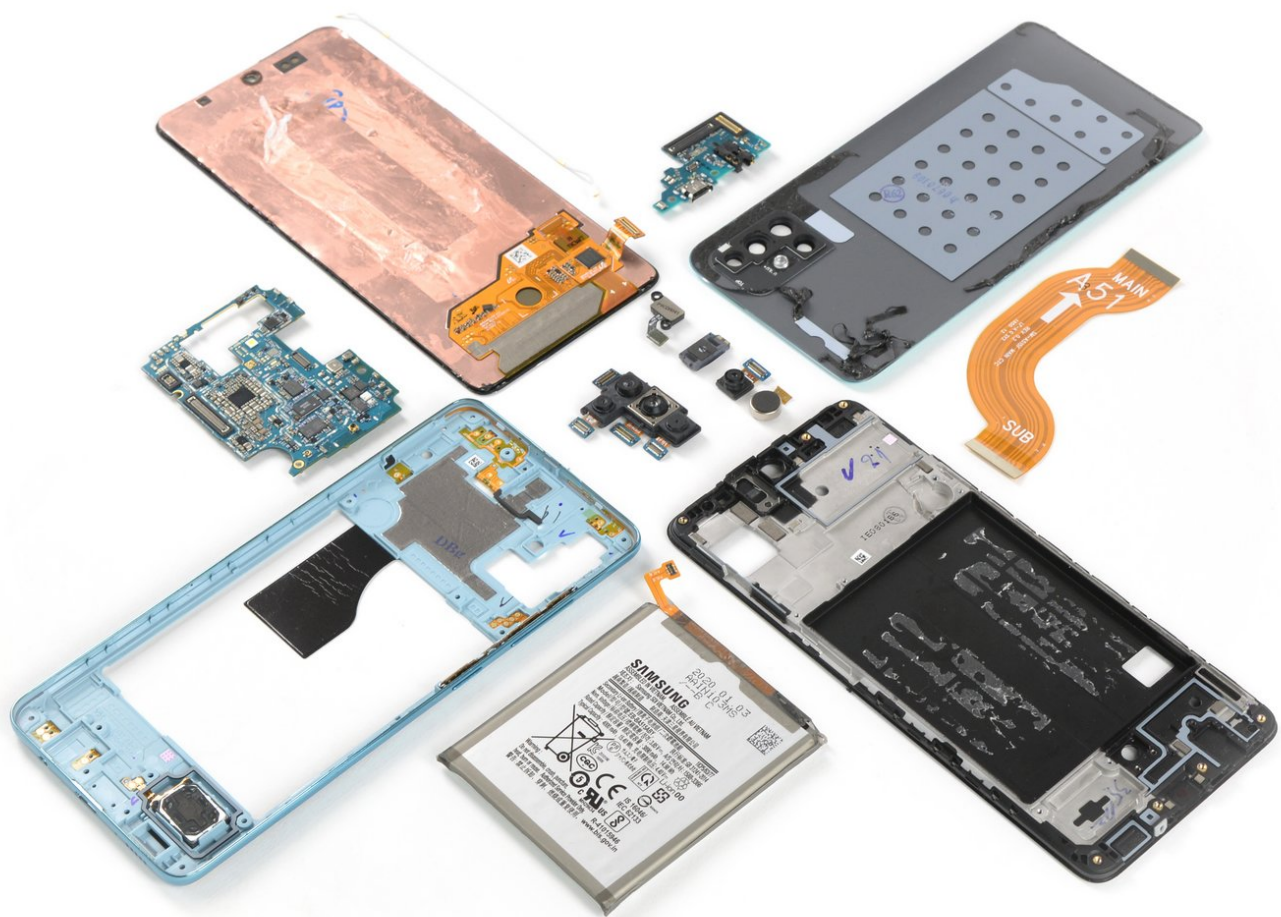




Samsung Galaxy A51 Teardown

Teardown of the Galaxy A51, performed February 2020.

Written By: Adriana Zwink



INTRODUCTION

Samsung Electronics launched a new family member for its Galaxy A series: The Galaxy A51. The expectations for this new mid-range smartphone are huge, after all the predecessor—[Galaxy A50](#)—was one of the [most successful smartphones](#) Samsung released in 2019. Can the successor keep up? A teardown might be the only way to find out!

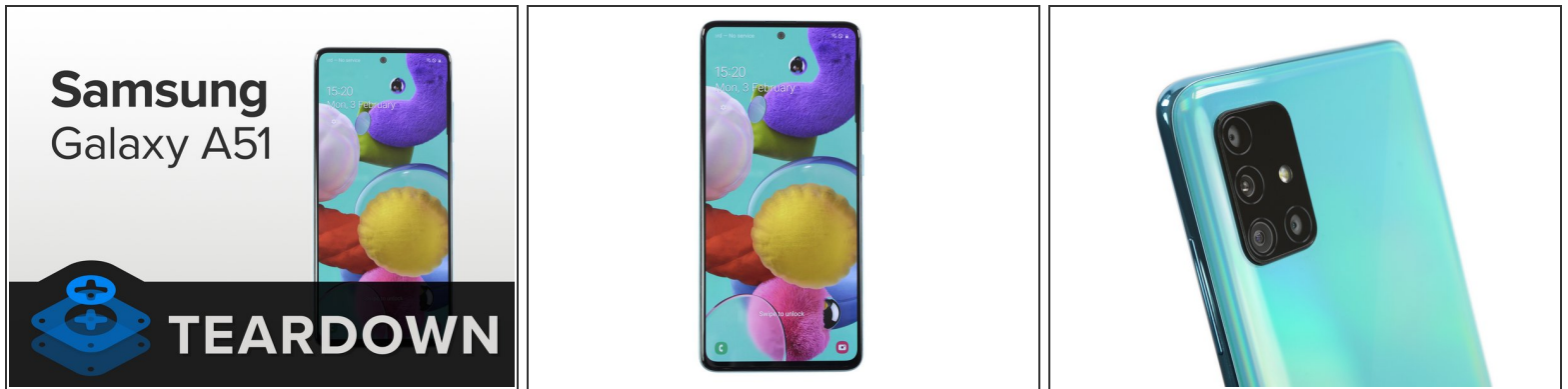
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TOOLS:

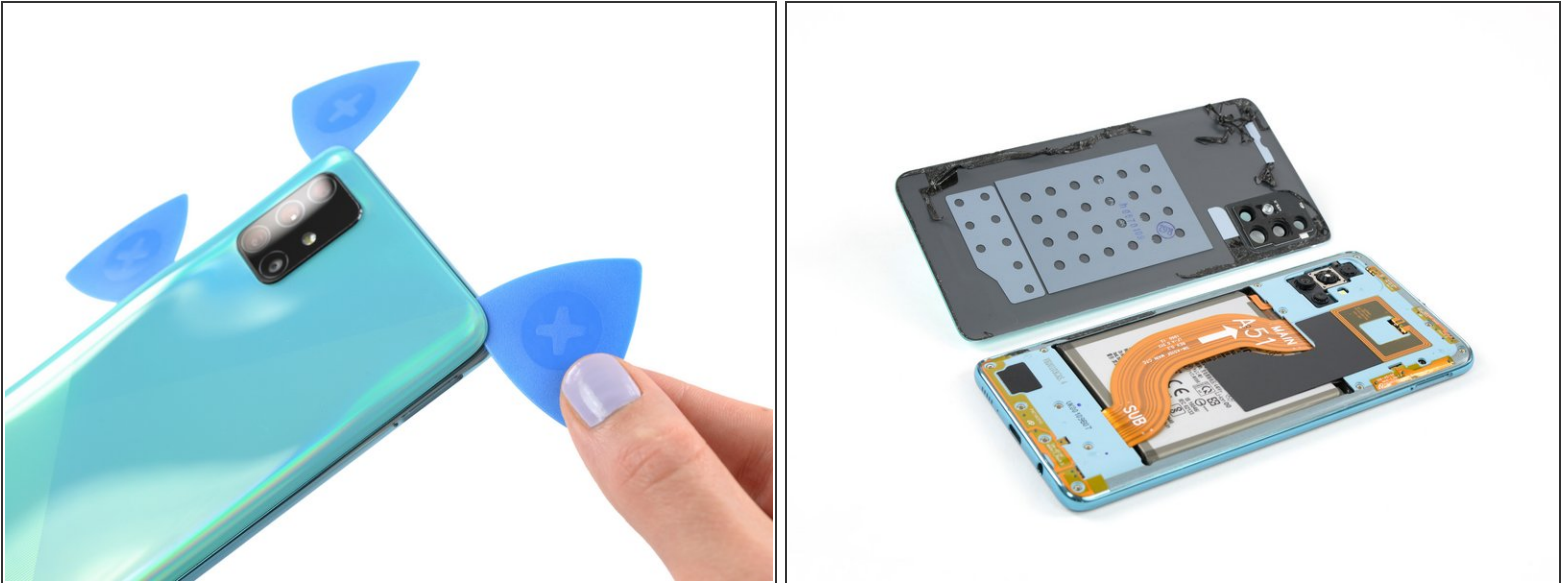
- [Tweezers](#) (1)
- [iOpener](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [Spudger](#) (1)
- [Phillips PH000 Screwdriver](#) (1)
- [Suction Handle](#) (1)
- [Plastic Cards](#) (1)

Step 1 — Samsung Galaxy A51 Teardown



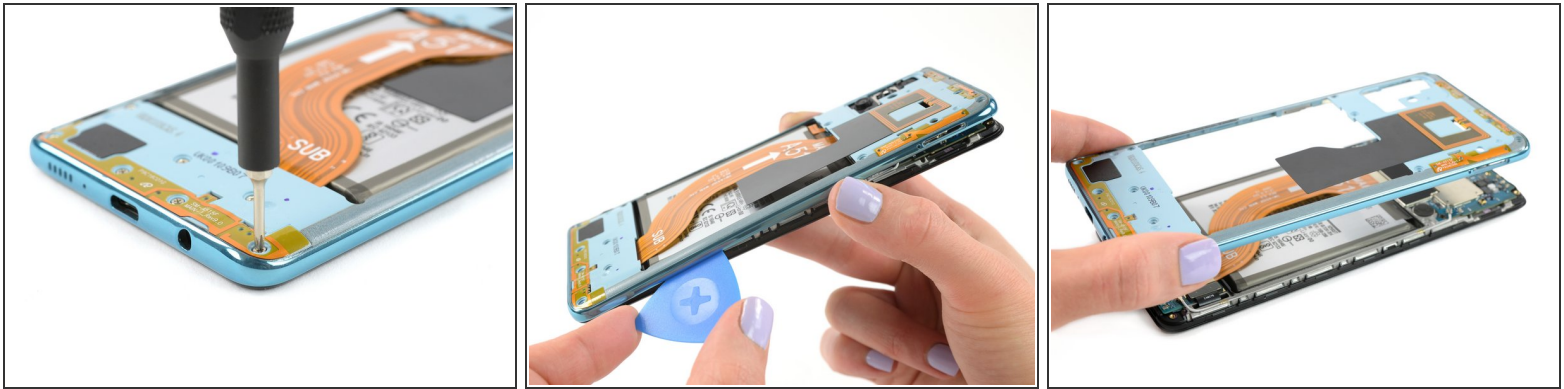
- The specs may not impress at first sight, but there's quite a lot here for the price:
 - 6.5" Super AMOLED capacitive touchscreen (1080 × 2400px) and Infinity-O Display
 - 48 MP *f*2.0 main camera, 12 MP *f*2.2 ultra wide camera, 5 MP *f*2.4 macro camera for close-ups and a 5 MP *f*2.2 depth camera for multiple live focus effects; 32 MP *f*2.2 front-facing camera
 - Exynos 9611, octa-core (4×2.3GHz Cortex-A73, 4×1.7GHz Cortex-A53)
 - Built-in storage: 64GB/4GB RAM, 128GB/4GB RAM, 128GB/6GB RAM
 - Android 10.0
 - Fast wired charging with 15W
 - USB-C and a nearly extinct 3.5 mm headphone jack

Step 2



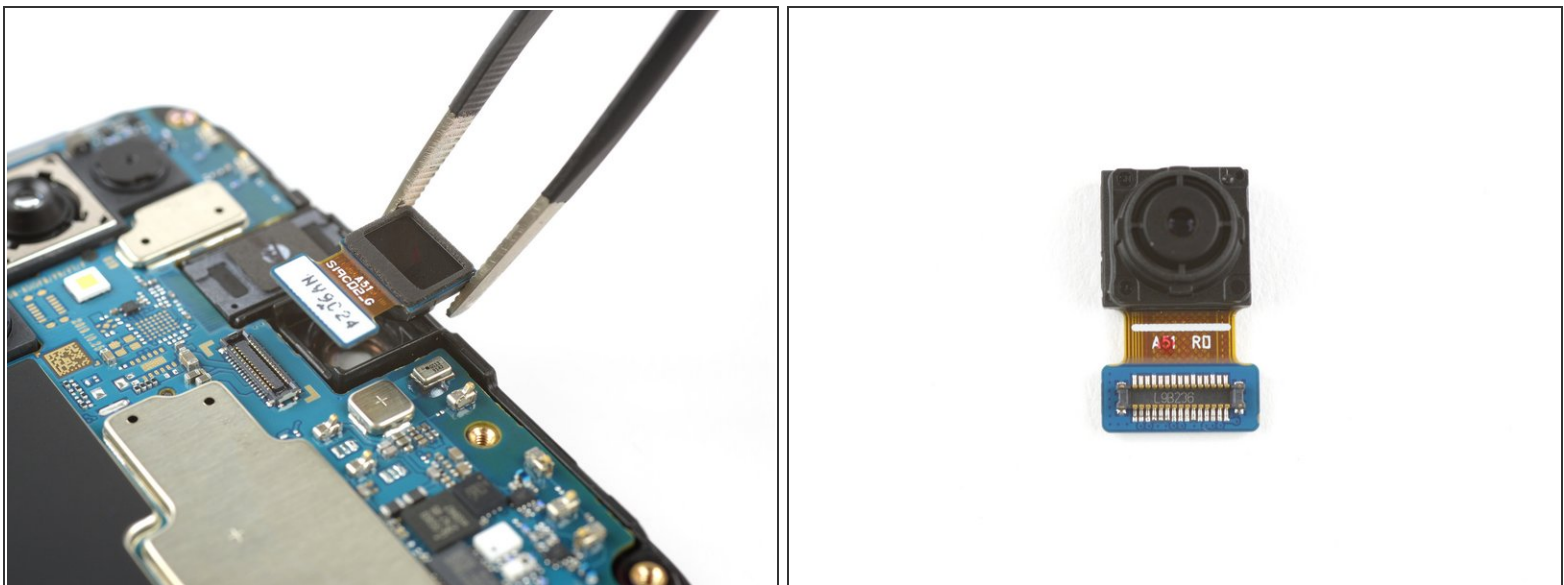
- The back cover shines like glass, but it's a ruse! It's plastic—perhaps a cost-saving measure? Whatever the reason, we're happy to see it. This plastic makes the A51 less shatter-prone than [the glass-backed Galaxy S phones](#).
- Plenty of heat from our [iOpener](#) softens the adhesive and we can start battling our way in.
- And we come through it unscathed! The back side lifts off cleanly (with a little gentle force). No booby-trap cables here.

Step 3



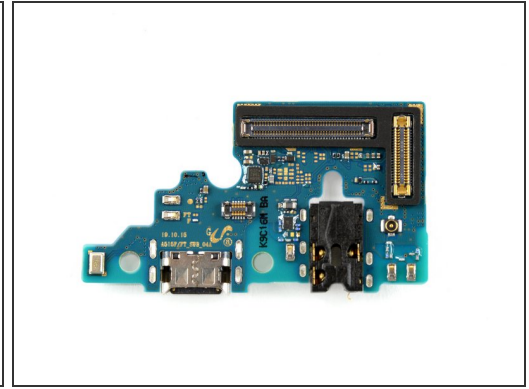
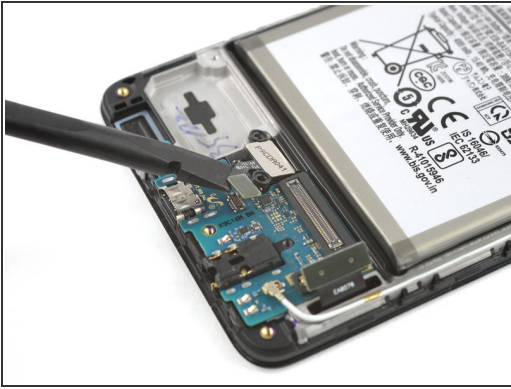
- An unlucky 13 [Phillips screws](#) later we can release the midframe from its captivity.
- This plastic midframe houses the NFC antenna (among a handful of other antennas), the volume and power buttons and the speaker on the bottom.

Step 4



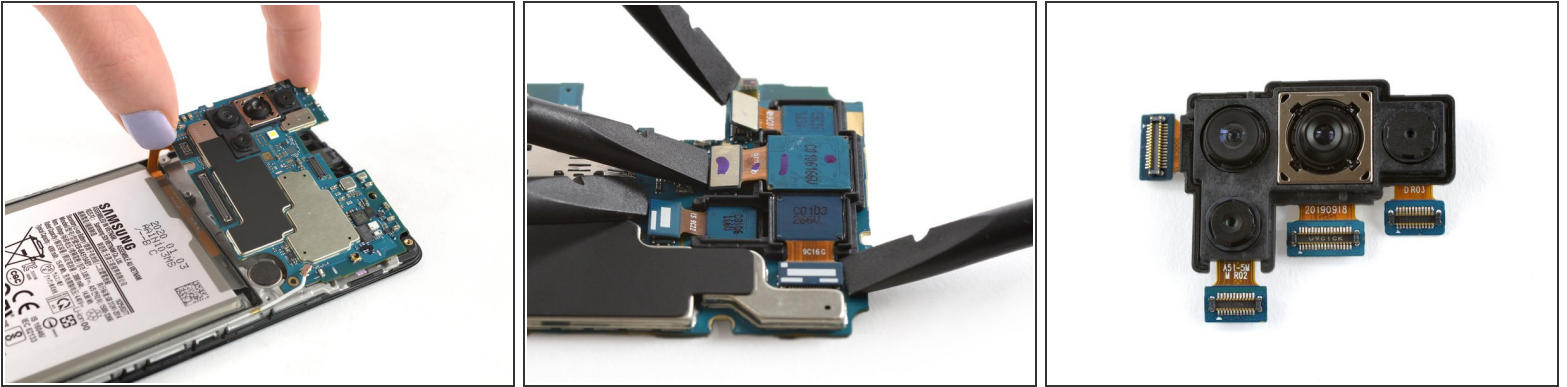
- Samsung sends the A51 into the selfie-race with a 32 MP $f2.2$ front camera. That's a 7 MP increase from its predecessor—quite instagrammable.
- ❗ For comparison: The [iPhone 11 Pro Max's](#) rear and selfie cameras provide 12 MP each while the [Samsung Galaxy Note 10+](#) offers 16 MP/12 MP for the rear cameras and 10 MP on the front. But more doesn't always mean better.

Step 5



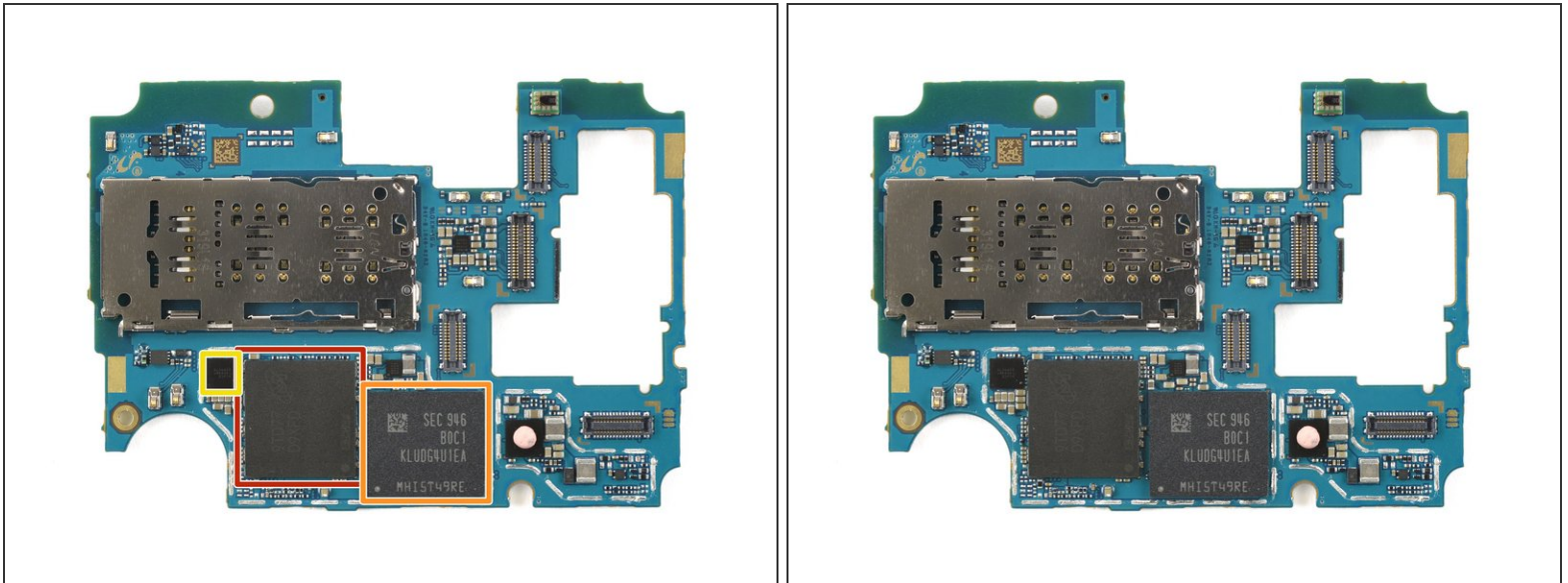
- Just like its predecessor, the A51 also features an optical in-display fingerprint scanner which is placed near the daughterboard.
- ① Optical fingerprint sensors work by illuminating the finger and taking an image of the bright and dark areas representing the ridges and valleys of the fingerprint. ([More on fingerprint sensor technology.](#))
- The daughterboard comes out without a fuss and brings the USB-C plug and the beloved 3.5 mm audio jack to light.
 - A dedicated audio jack reduces wear and tear on the USB-C port, which is nice. Both ports are soldered in place though, so replacing one individually will require soldering skills.
 - That said, this configuration is better than the [single-board Galaxy S10](#)! At least this tiny daughterboard can be swapped out with relative ease should one or both ports fail on you.

Step 6



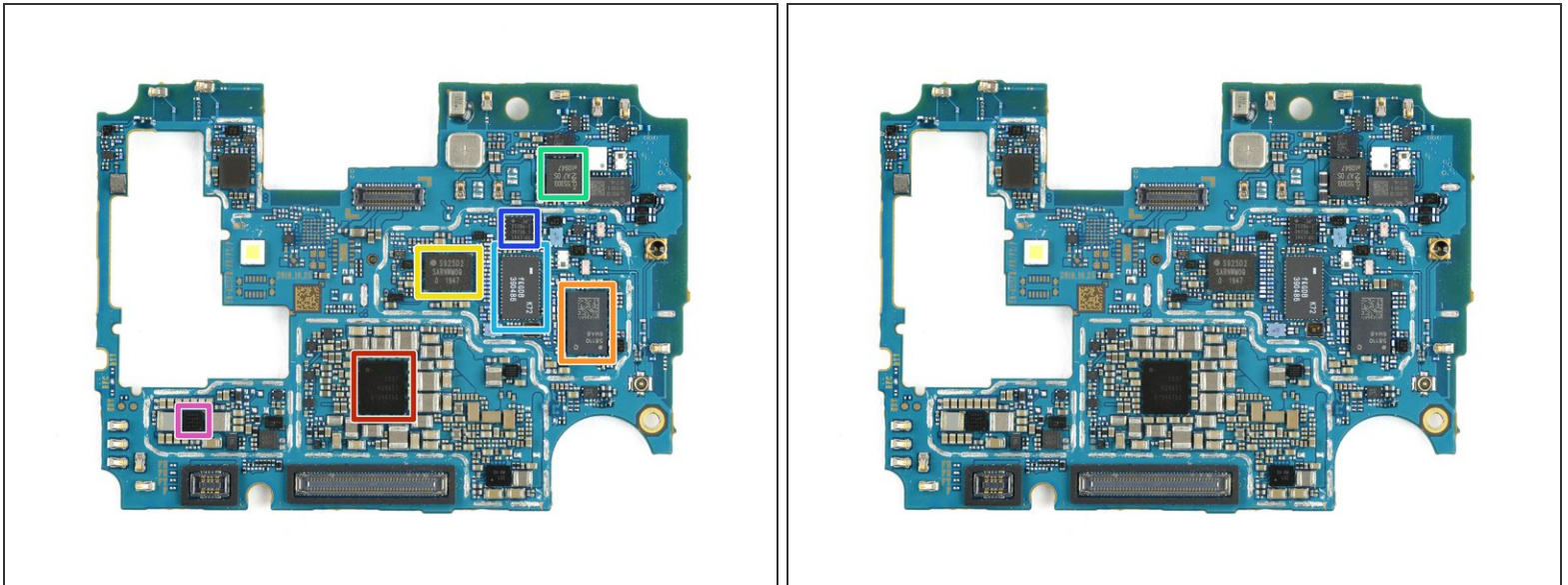
- The motherboard is held down by just one screw. Once it's out, we start plucking up the cameras right away.
- Although the A51 is a mid-range smartphone, its camera setup can supposedly keep up with the more expensive ones. Samsung claims that its four cameras ensure perfect everyday photography.
- Starting at top left: a 12 MP ultra wide cam, a 48 MP main cam, a 5 MP depth cam, and last but not least the 5 MP macro cam on the bottom left.

Step 7



- Let's see what goodies we can find on the motherboard:
 - Micron MT53D1024M32D4BD-046 LPDDR4 memory covering the Exynos 9611, octa-core CPU with Mali-G72 MP3 GPU
 - KLUDG4U1EA-B0C1 128GB UFS 2.1 flash storage
 - Realtek ALC5665 Audio Codec

Step 8



- The other side reveals:
 - S537 609651 G1944Y55 (likely a power IC)
 - Qorvo QM58110 Envelope Tracking
 - S925D2 Intermediate Frequency Chip
 - NXP PN553 NFC controller
 - fkGDB 390486
 - Skyworks [SKY77786-11](#) High Band Multimode Multiband Power Amplifier Module
 - Samsung S2DOS15 Display Power Management

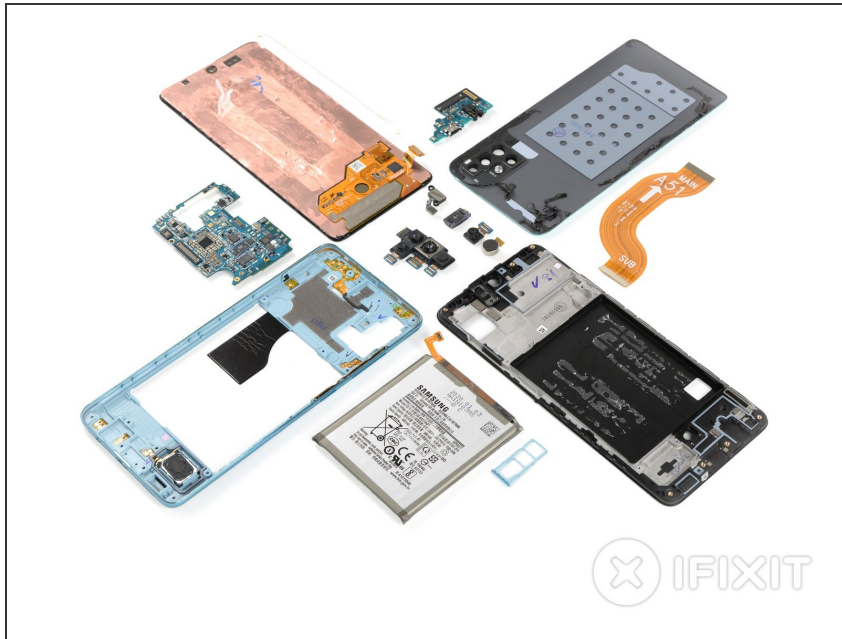
- In line with other recent Samsung phones, the battery squats in a little pit of glue-lined sadness with no pull tabs, but we quickly set to work digging it free with heat and a plastic card for some leverage.
- The A51 features a Li-ion 4000 mAh battery, the same as the A50!
- Now that the battery is out, we can compare it to its competitors! Fully topped off, this 3.85 V, 4000 mAh cell will deliver up to 15.4 Wh of power. That's more than the [iPhone 11 Pro Max](#) with 15.04 Wh and only slightly less than the 15.79 Wh battery in the [S10+](#).

Step 10



- With the phone empty we turn to the screen... and it puts up a real fight!
- After an initial round of heating, we didn't get very far with our [Opening Picks](#) before we heard that dreaded noise...
 - **Crack!**
 - Like all Samsung phones, the A51's screen is strongly glued to the frame. There's a reason that Samsung sells screen replacements pre-adhered to brand new frames, and this is it!
- The good news is once you crack it, you can't go back! The rest of our removal procedure is infinitely less stressful. We use a [Plastic Card](#) to carve away the rest of the screen.
- Once we finally break it free, we find the culprits: two thick adhesive strips that cover a large area of the screen.

Step 11



- This is it! The battle is over, the screen is broken, the adhesive is beaten. We retreat to our corner and prepare for the next battle.
- But no need to be sad. We've prepared a nice souvenir for you. Here you can download a see-through teardown [wallpaper](#) for your Galaxy A51.
- Feast your eyes on all the bits and stay tuned for a score.

Step 12 — Final Thoughts

REPAIRABILITY SCORE:



- The Samsung Galaxy A51 earns a **4 out of 10** on our repairability scale (10 is the easiest to repair):
 - A single Phillips driver takes care of all the screws.
 - Many components are modular and can be replaced independently.
 - The plastic back cover is glued in place, but can be removed fairly easily with heat.
 - The battery is accessible but heavily glued in place.
 - Screen repairs require a lot of disassembly while battling tough adhesive.