



Nexus 6 Teardown

Nexus 6 teardown on November 21, 2014.

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INTRODUCTION

The phablet wars continue. Today we welcome the Nexus 6. A joint collaboration between Google and Motorola, the Nexus 6 is being hailed as the iPhone 6 Plus's brother from an Android mother. What innovations lay hidden inside the Nexus 6? Join us as we find out!

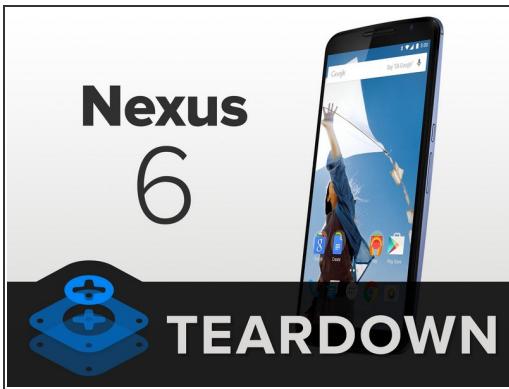
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[video: https://www.youtube.com/watch?v=tsvFDdoF_h0]

TOOLS:

- [iFixit Opening Picks set of 6 \(1\)](#)
- [T3 Torx Screwdriver \(1\)](#)
- [Spudger \(1\)](#)
- [Tweezers \(1\)](#)

Step 1 — Nexus 6 Teardown



- Nexus 6 Tech Specs:

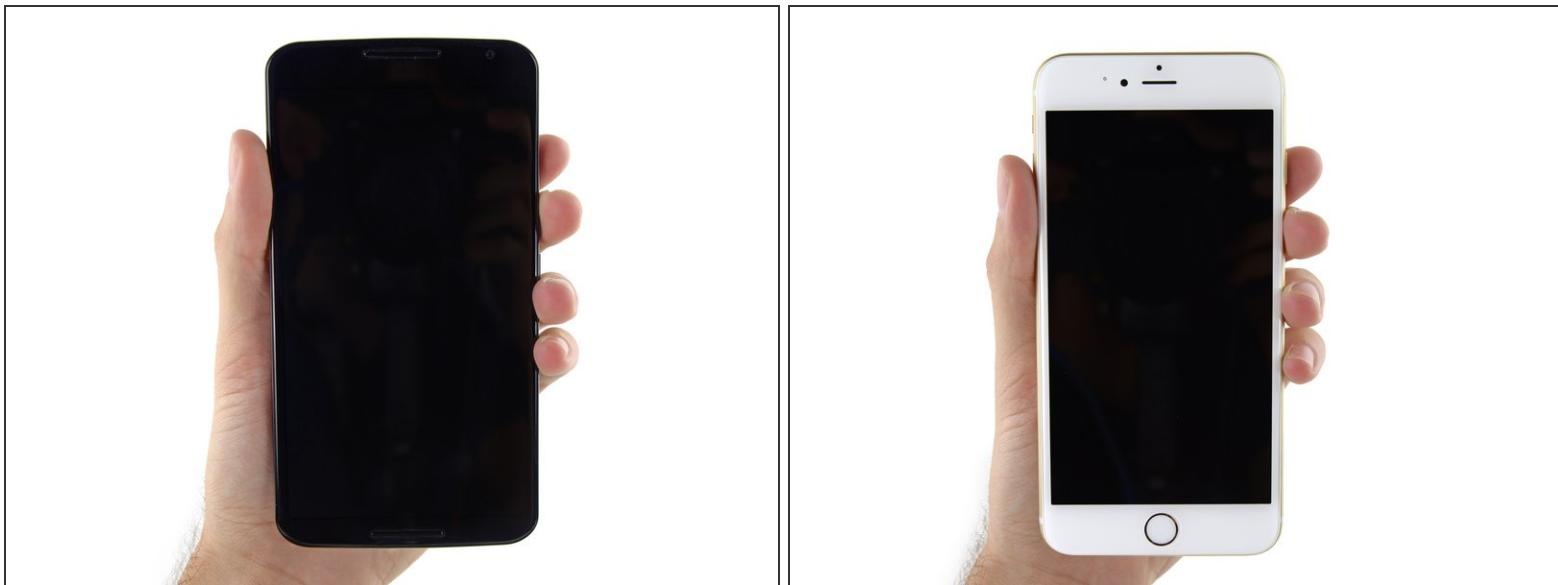
- 5.96" display with a resolution of 1440 x 2560 pixels (493 ppi)
- 2.7 GHz Quad core Krait 450 CPU (Qualcomm Snapdragon 805 SOC) + Adreno 420 GPU, with 3 GB RAM
- 32 or 64 GB of internal storage
- Android 5.0 Lollipop
- 802.11ac 2x2 (MIMO) + Bluetooth 4.1 + NFC
- 3220 mAh "non-removable" battery
- 13 MP rear-facing camera with Optical Image Stabilization + 2 MP front-facing camera

Step 2



- The Nexus 6 has a central rear-facing camera that looks like it might have some interesting flash action hidden alongside.
 - More on this later...
- The top of the phone is decked with a 3.5 mm headphone jack and a seemingly out-of-place nano SIM card slot.
- The bottom houses the Micro USB port, along with the obligatory FCC markings, leaving the back of the phone jargon free.

Step 3



- [Begun, the Clone War has.](#)
- Three companies produce two phablets and we hold them up in the same hand to compare their size. Thanks to a thinner bezel, you get more screen real estate with the Nexus 6, with only a slightly larger chassis.
 - Nexus 6: *82.98 mm x 159.26 mm x 10.06 mm*
 - iPhone 6 Plus: *77.8 mm x 158.1 mm x 7.1 mm*

Step 4



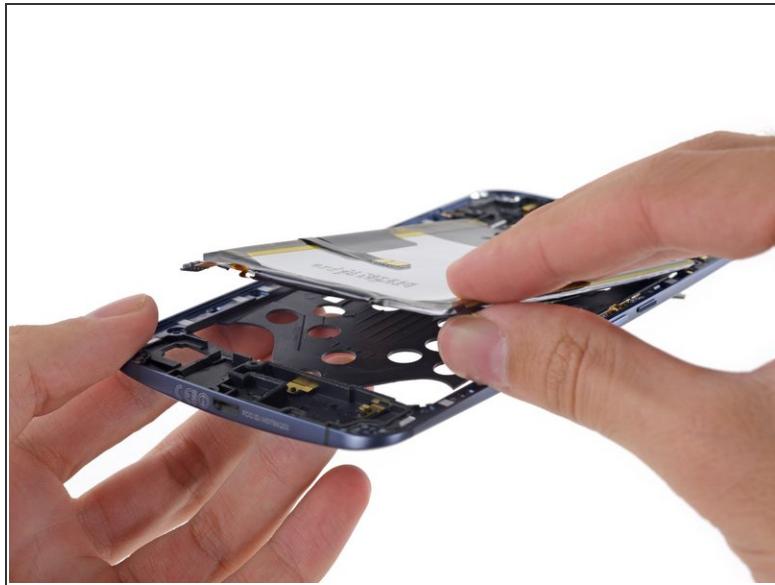
- With no visible screws on the rear cover, we resort to opening picks to pry or slide our way in.
- *The bad:* No simple clips on this cover, looks like your fingernails won't be enough for this job.
- *The good:* The adhesive securing the cover is relatively mild, once the pick sneaks into the seam, the cover can be peeled up.
- *The ugly:* Removing the rear cover still doesn't provide access to internal components. At least we now have visual confirmation of screws, a whole legion of them.

Step 5



- Time to take out the (oh-so-many) screws. 22 T3 Torx screws present themselves, and silently await our [precision driver](#).
- We've spotted a secret door! With a secret connector!
(i) We've learned to [check for these](#), and disconnect them in advance, just in case.
- A shiny copper coil catches our eye through the holey midframe. We'll be sure to investigate that once we get it cracked...

Step 6



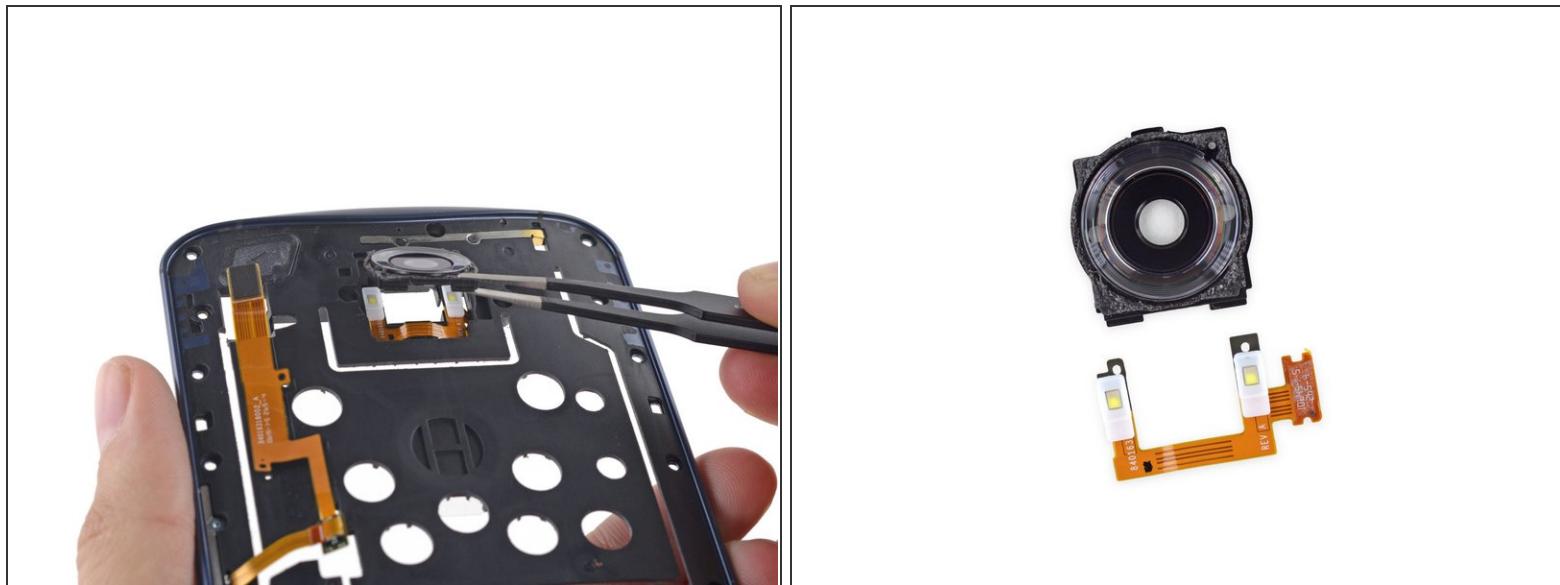
- The Nexus is finally ready to reveal its secrets. Looks like that mystery connector belonged to the battery!
- With cables decoupled, it's suddenly delightfully apparent why there were so many screws in the midframe. The Nexus 6 practically falls apart into two halves; the midframe/battery assembly, and the display/motherboard assembly.
- **ⓘ** Thanks to loads of screws, we don't have to deal with any adhesive, or even any tricky plastic clips.

Step 7



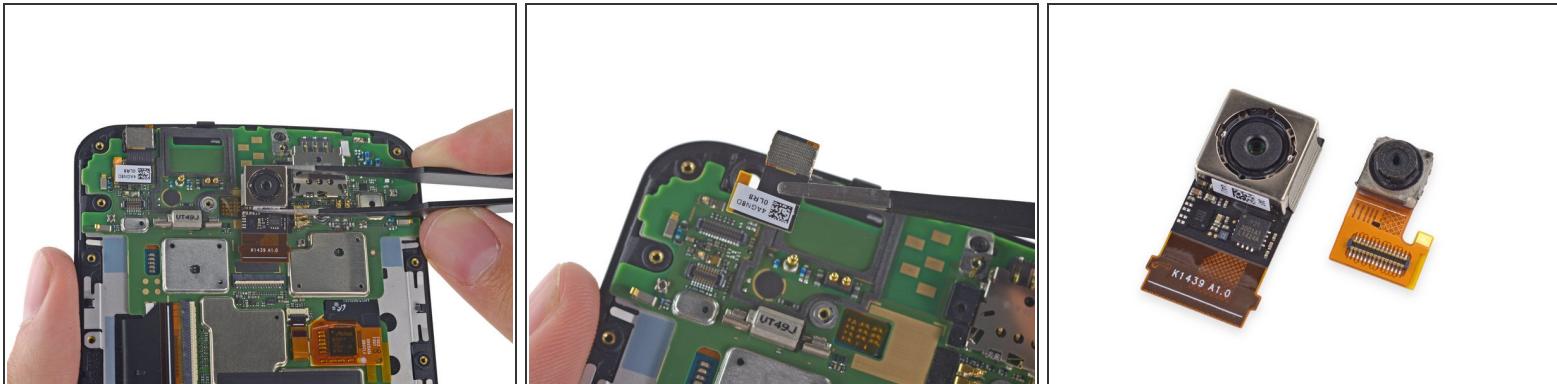
- Would you look at that! The shiny copper from before is an inductive charging coil! (Maybe this'll catch on after all).
 - ↗ Quick inductive charging refresher: an inductive charging station drives an alternating current through a coil. The current moving back and forth in the base coil generates and collapses a magnetic field, which induces a current flow in the coil in the device. This AC current is then rectified into DC power to charge the battery.
- Peeling the coil off lets us get a look at the 3.8 V, 3220 mAh (12.2 Wh) battery.
- That's a step above the [iPhone 6 Plus's](#) 11.1 Wh, but it looks like [the Nexus battery life doesn't benefit much.](#)
- For a "non-removable" battery, that wasn't so hard.

Step 8



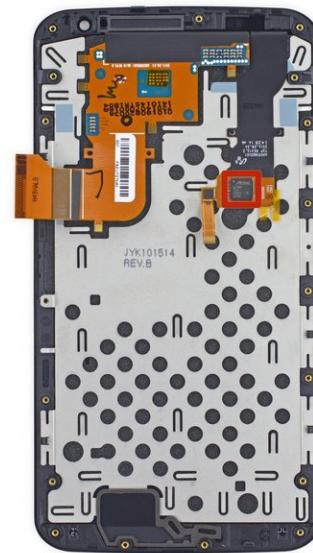
- As we continue our trek, we get to investigate that flash assembly a bit closer.
- The Nexus 6 takes the dual LED flash in a different direction—two *different* directions, really.
 - The circular camera lens cover acts as a light guide for two flanking LEDs, mimicking a [ring flash](#). Neat!

Step 9



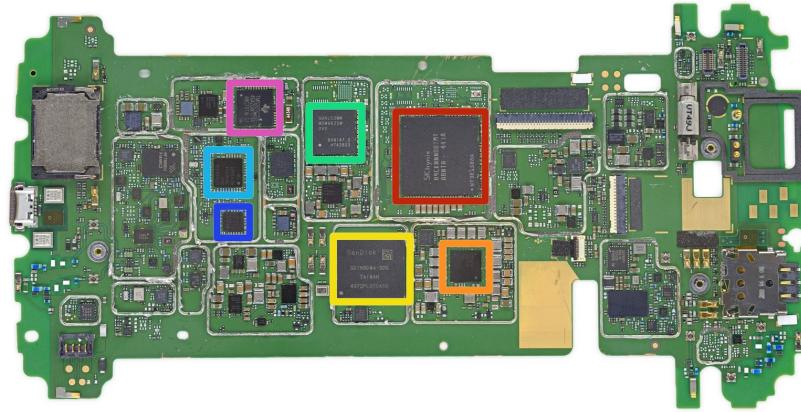
- First peek at the motherboard brings back memories of the [Moto X](#); big, green and lots of tiny EMI shields.
- We easily pluck out the rear- and front-facing cameras with a pair of tweezers.
- The Nexus 6 is certainly no slouch when it comes to cameras. The 13 MP rear-facing camera sports a [Sony Exmor IMX 214 CMOS](#) image sensor (Also found in the [OnePlus One](#)).
-  The Nexus 6 also features [optical image stabilization](#), just like the [iPhone 6 Plus](#), which makes for sharper photos.

Step 10



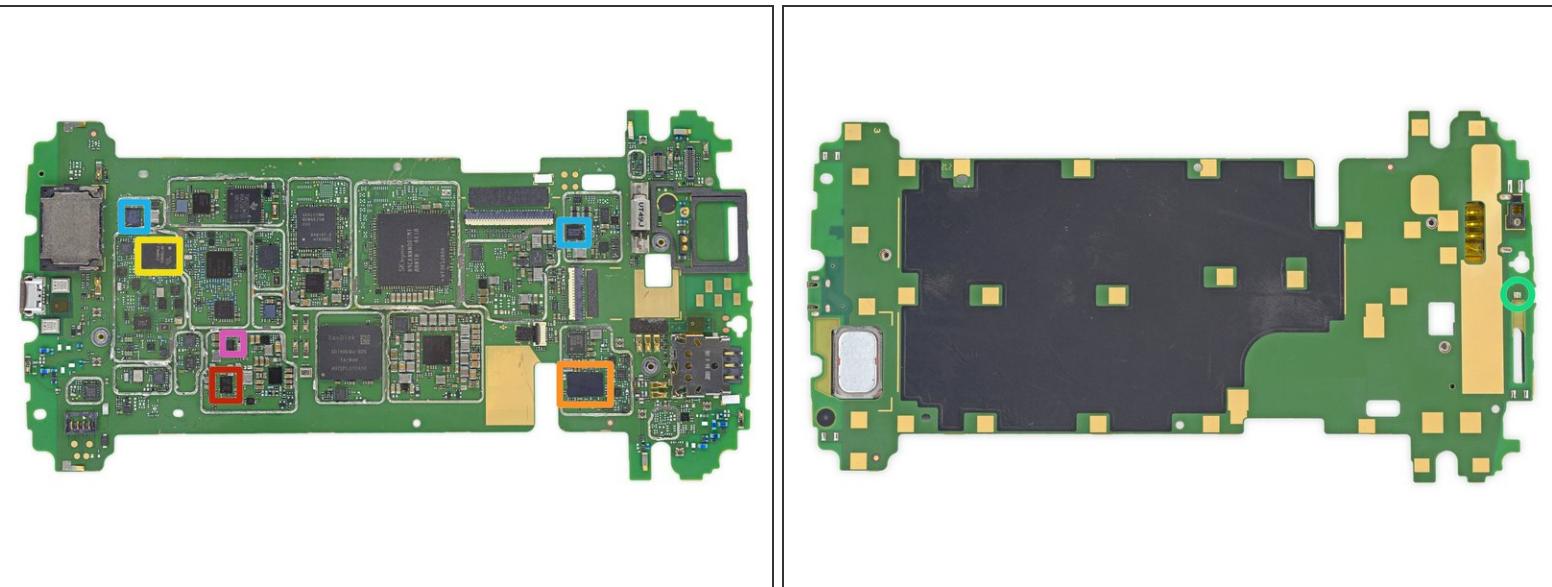
- After freeing the motherboard from the display assembly, we spy a lone IC:
 - Atmel [MXT640T](#) CCU 1424D TW QLR64 Touchscreen Controller
- And that's it! The display assembly is bare and free of extra components, after a fairly easy jaunt to the center of the Nexus.
- *(i)* Even though it was easy to get here, the display is still fused to the digitizer glass—it won't be a cheap replacement part if you crack your screen.

Step 11



- Finally, the part we've all been waiting for! Let's identify some of the ICs that power this Nexus:
 - SK Hynix [H9CKNNNDBTMTAR](#) 24 Gb (3 GB) LPDDR3 RAM, with Qualcomm [Snapdragon 805 SoC](#) layered underneath
 - Qualcomm PMA8084 Power Management IC
 - SanDisk SDIN9DW4-32G 32 GB eMMC NAND Flash
 - Qualcomm [MDM9625M LTE Modem](#)
 - Qualcomm [WTR1625L RF Transceiver](#)
 - Qualcomm WFR1620 Receive-Only Companion Chip
 - Texas Instruments [TMS320C55](#) Digital Signal Processor

Step 12



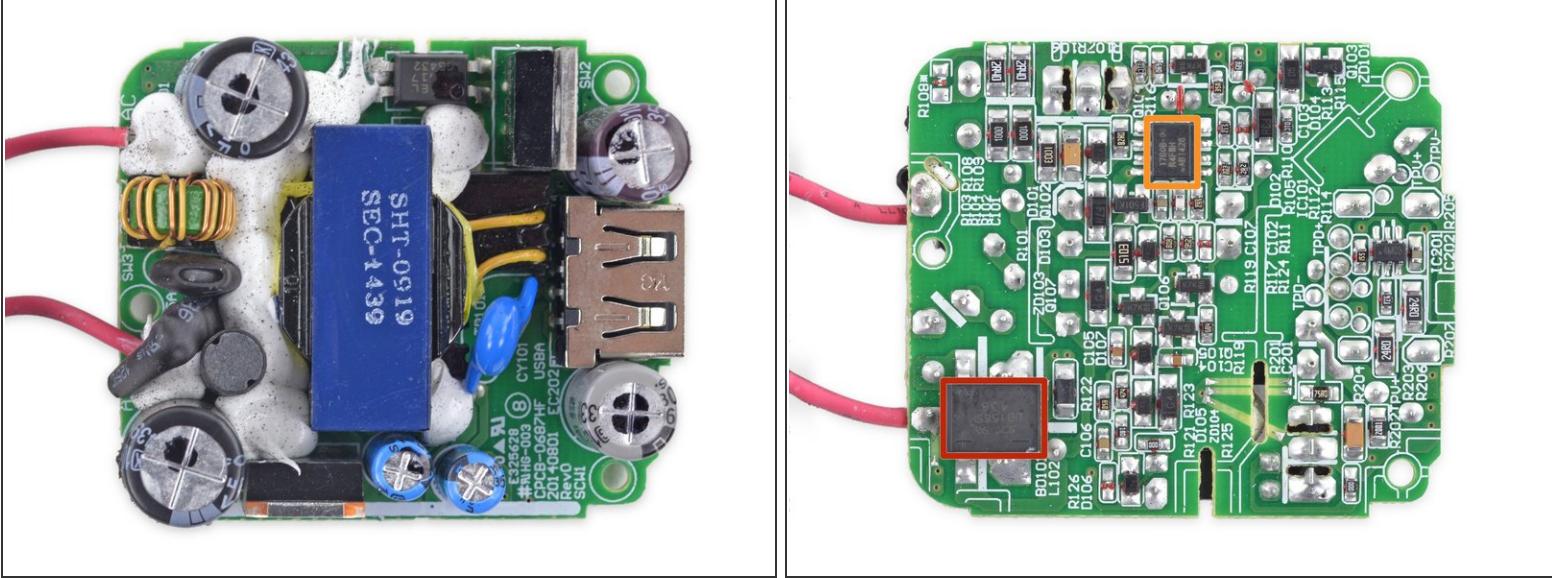
- Even more ICs:
 - Qualcomm SMB1359
 - Broadcom [BCM4356](#) 802.11ac + Bluetooth 4.1 IC
 - RF Micro Devices [RF7389EU](#) F14NRC2 Envelope Tracking Power Amplifier
 - Speaker Grille RGB LED
 - *(i)* For some reason, Motorola decided to keep this LED a [secret](#).
 - NXP [TFA9890A](#) Audio Amplifier
 - Qualcomm [QFE1100](#) Envelope Tracking IC

Step 13



- But wait there's more! Motorola is touting its Turbo Charger, boasting enough charge for 6 hours of use in just 15 minutes of charging.
- Compatible with Qualcomm's new [Quick Charge 2.0](#) tech, the Motorola Turbo Charger lists three different output options: 5 V at 1.6 A, 9 V at 1.6 A, and 12 V at 1.2 A.
- Sounds like there's nothing [snailish](#) about this Turbo, but really there's only one way to find out...
 - ...And that's by slicing our way in with a [rotary tool](#)!

Step 14



- On the one side, amidst wads of epoxy, we find a transformer surrounded by some plain jane capacitors, voltage regulators, and a USB port.
- On the other side, amid a sea of solder and surface mount components:
 - A [bridge rectifier](#), responsible for converting AC to DC
 - Dialogue [iW1760B](#) Power Supply Controller, clearly the brains of the operation

Step 15



- Motorola Nexus 6 Repairability Score: **7 out of 10** (10 is easiest to repair).
 - Pressure contacts and cable connectors make the modular components (cameras, buttons, headphone jack) easy to replace.
 - The Nexus 6 uses a single kind of screw, although it's a fairly uncommon size (T3).
 - Many many screws hold the midframe in place—this makes its removal somewhat tedious, but also means no clips or adhesive are needed to secure it to the front panel.
 - The glued-in battery is less accessible than we'd like, but it can be replaced.
 - Several components (vibrator, SIM slot, speaker, USB port) are soldered directly to the motherboard and will be more difficult to replace than if they were connected by cable.
 - The digitizer is fused to the display, increasing repair costs for a cracked screen, but it is easy to get to the bare display assembly.

To reassemble your device, follow these instructions in reverse order.