



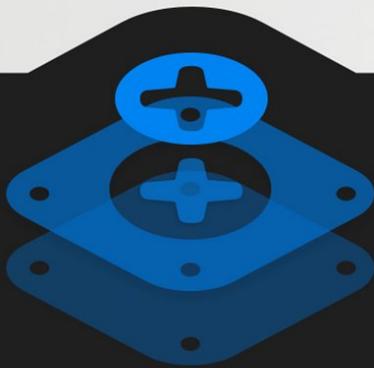
# LG G4 Teardown

Teardown of the LG G4 performed on June 4th, 2015. With X-rays!

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LG  
G4

with X-RAYS!



# TEARDOWN

## INTRODUCTION

The LG G4 is all about luxury, with its touted camera and genuine leather rear case options. But will LG afford us the luxury of repair? Join us as we tear down the G4 and **shoot it full of X-rays**—courtesy of our friends at [Creative Electron](#).

Loving the X-ray imagery? Don't miss our [Apple Watch X-ray teardown](#).

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### TOOLS:

- [Phillips #0 Screwdriver](#) (1)
  - [Spudger](#) (1)
  - [iFixit Opening Picks set of 6](#) (1)
  - [Tweezers](#) (1)
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## Step 1 — LG G4 Teardown



- The LG G4 isn't powered by [g-forces](#) or [guinea pigs](#); here's what it's actually packing:
  - 5.5" IPS "Quantum" display with 2560 x 1440 resolution (538 ppi)
  - 6-core, 1.8 GHz, 64-bit Qualcomm Snapdragon 808 processor
  - 3 GB RAM
  - 32 GB on-board storage, expandable up to an additional 2 TB via microSD card
  - 16 MP, f/1.8 rear camera with OIS and laser-guided autofocus, and 8 MP f/2.0 front camera
  - 802.11 a/b/g/n/ac wi-fi, Bluetooth 4.1 BLE, and NFC connectivity
  - Android 5.1 Lollipop

## Step 2



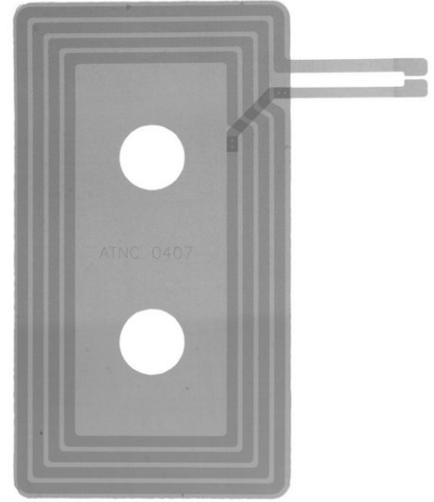
- No tools required here! The G4 includes a handy notch for easy back panel removal.
  - As far as repairability goes, this is looking promising.
- i** It warms our hearts (and, pleasantly, not our [iOpeners](#)) to see such a simple opening procedure—especially compared to the adhesive-laden opening numbers in many phones.
- We don't need X-ray vision to see that this battery is user-replaceable.
  - But X-rays are just so much fun!

## Step 3



- The G4's 3.85 V lithium-ion battery is rated for a minimum of 11.2 Wh. While LG's marketing department doesn't make any specific claims about battery life, they've made sure to let us know that the 3,000 mAh battery [lasts and lasts](#).
  - The [Galaxy S6](#) ranks close behind at 3.85 V, 9.82 Wh.
  - The [iPhone 6](#) features a 3.82 V battery with an energy rating of 6.91 Wh.
- Despite the impressive specs, we think the most exciting feature of this battery is the fact that it's easily removable.
- ⓘ Recently, we've seen an unsettling trend of [flagship phones](#) with [difficult-to-remove](#) batteries. Even Samsung buckled with their [newest flagship series](#).
- It's refreshing to see that LG seems to be one of the few holdouts in the corporate war against user-replaceable batteries...since, you know, [batteries eventually die](#).

## Step 4



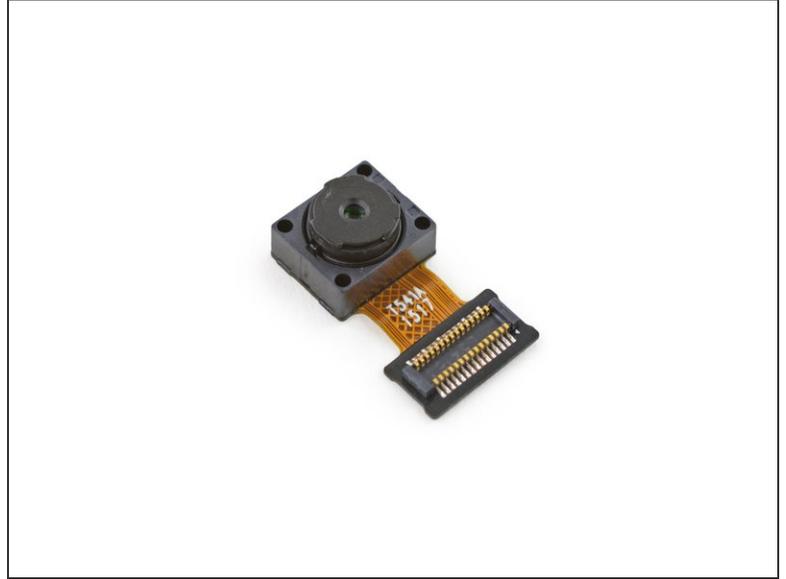
- It may look like an ordinary slab of plastic, but this, dear friends, is what freedom looks like! The wee plastic tabs on the rear case allow it to snap off with ease—a simple technology that we thought was as lost to us as [Roman concrete](#).
- But wait, there's more! We see some contacts peeking out of the plastic.
- A few X-rays later, we uncover the camouflaged NFC antenna, *not* a wireless charging coil.
- ⓘ For those of you hoping to use your Qi charger right out of the box, this G4 won't support wireless charging [without a specialty case](#).

## Step 5



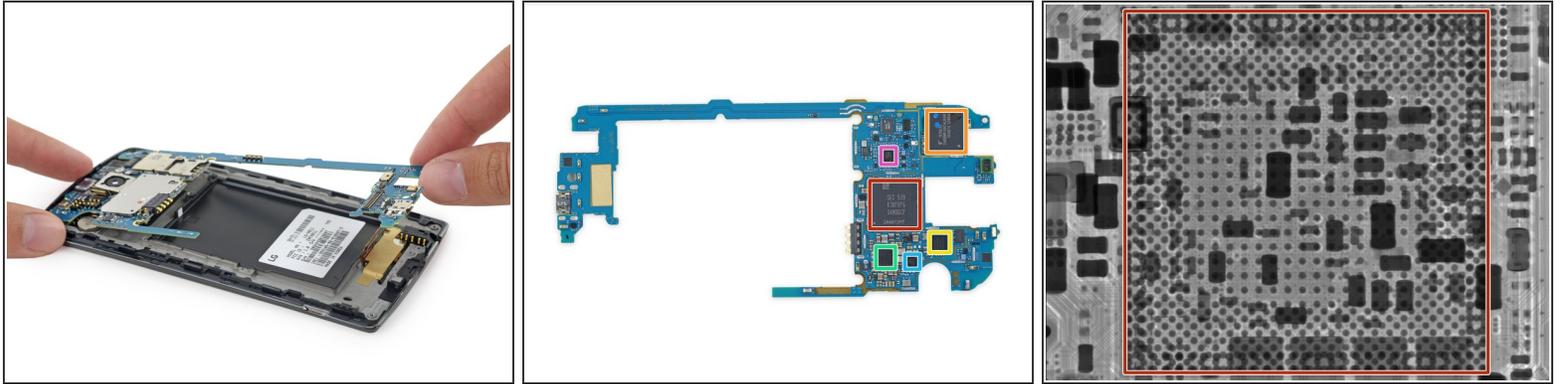
- We got all the way to the midframe before needing to so much as open our tool bag. First out of the bag is our Pro Tech Screwdriver Set with the handy, standard Phillips #0.
- Next, we grab an opening pick and tease up the midframe, revealing the heart of the G4.
- We take a quick note of the G4's model number—LG-H811— before ~~rending it asunder~~ moving forward.
- ⓘ The ease of opening and simplicity of components remind us of the good old days of [easily repaired Android phones](#). The G4 seems to be a great showcase for slim luxury *and* repair friendliness.

## Step 6



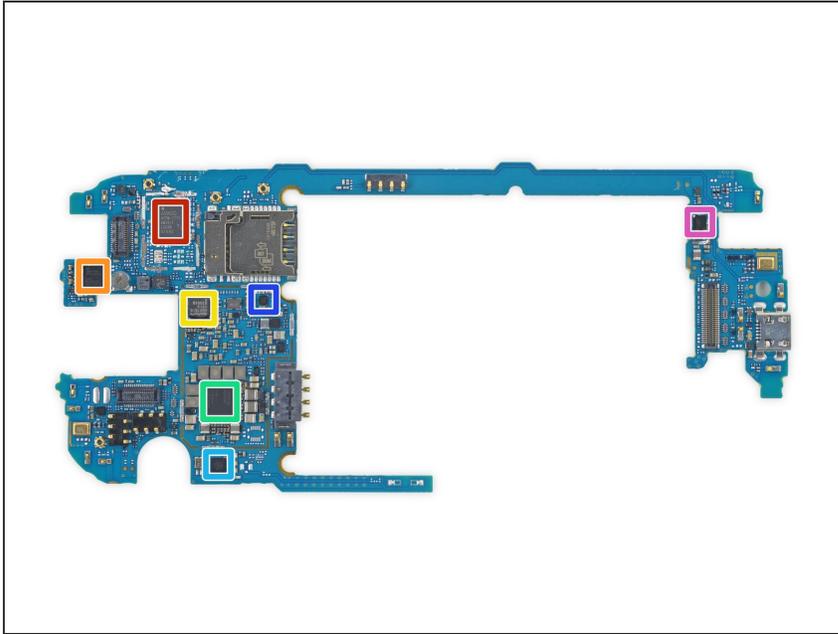
- The 8 MP selfie cam is no match for our spudger.
- Most notable about this little camera is the somewhat controversial [smoothing effect](#), which seems to be helpful in common shooting situations—if you don't need [sharp details](#).
- ⓘ While it is not visible to us, the G4 is also supposed to have an ultra-thin 0.1 mm blue IR filter to block out infrared interference, giving photos a more "natural" look.
  - LG is trying to help out its Instagram fans: better photos, and you still get to say #nofilter. Technically.

## Step 7



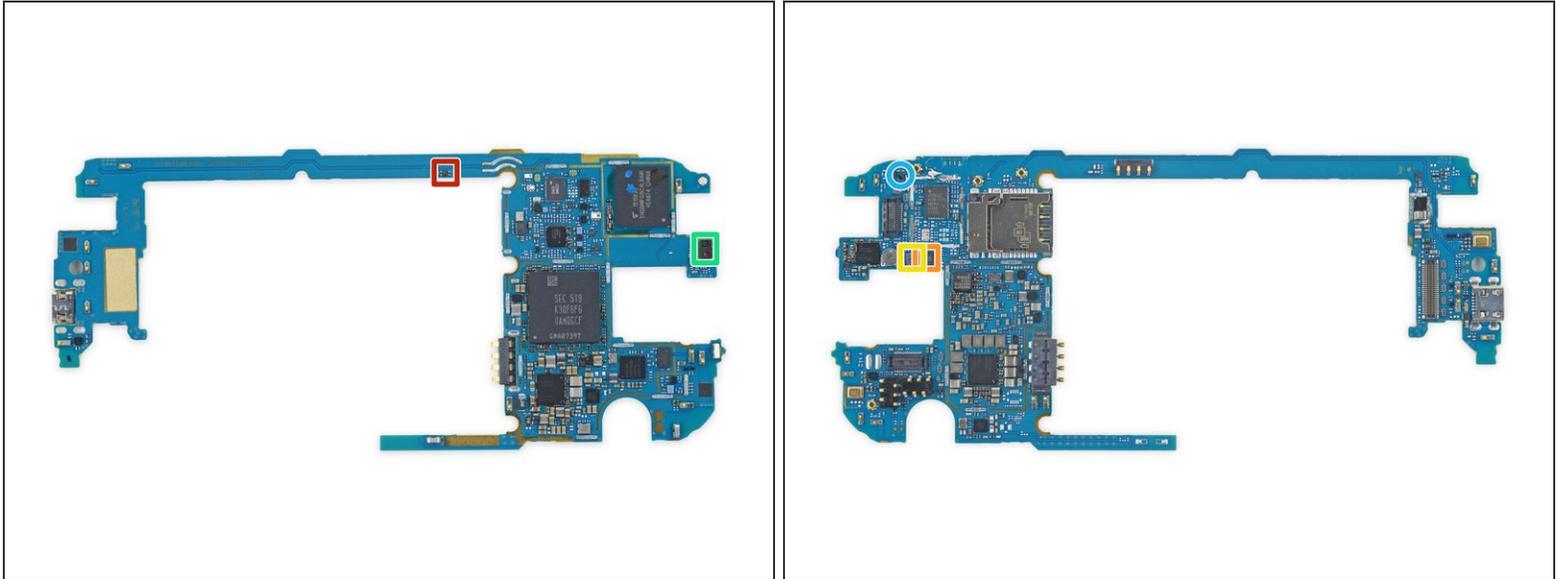
- We pull out the G4's motherboard and get a better view of its silicon. Check out these ICs:
  - Samsung [K3QF6F60AM](#)-QGCF 3 GB LPDDR3 RAM
    - The Hexa-Core, 1.8 GHz Qualcomm [Snapdragon 808](#) SOC is layered beneath the RAM.
  - Toshiba [THGBMFG8C4LBAIR](#) 32 GB NAND Flash
  - Broadcom [BCM4339HKUBG](#) 5G WiFi Client
  - Qualcomm [PMI8994](#) Power Management IC
  - IDT [P9025A](#) Qi Wireless Power Receiver IC
  - Qualcomm [WTR3925](#) LTE Transceiver

## Step 8



- Rear-facing chips:
  - Avago [ACPM-7717](#) Multiband Multimode Power Amplifier
  - Qualcomm WCD9330 Audio Codec
  - SlimPort [ANX7816](#) Ultra-HD Transmitter
  - Qualcomm PM8994 Power Management IC
  - NXP [47883](#) NFC Controller
  - Qualcomm QFE2101 antenna tuner (likely)
  - Texas Instruments [TAS2552](#) 4 W smart amplifier w/ speaker protection

## Step 9



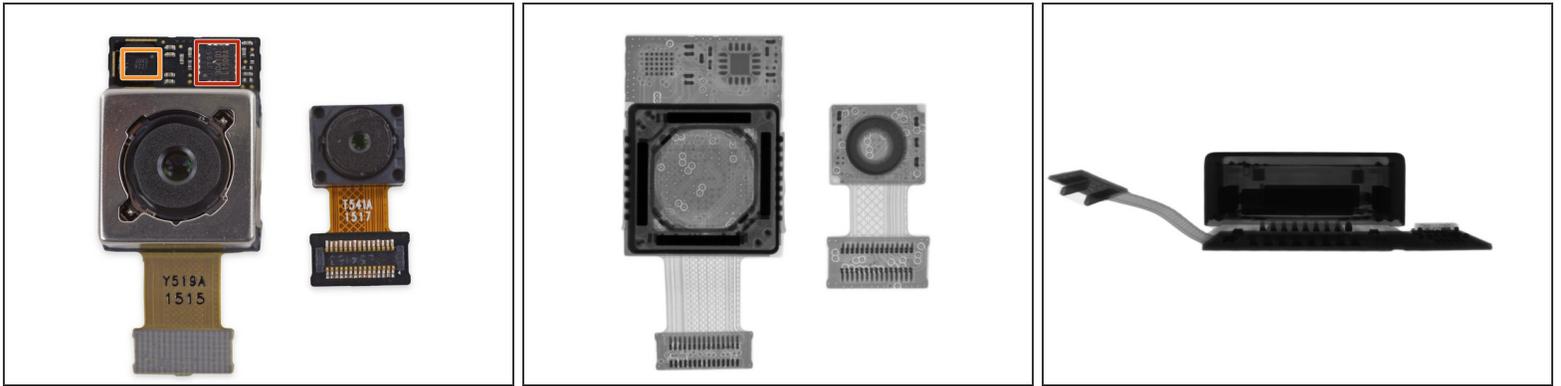
- And now, sensors:
  - Seiko Instruments hall effect sensor
  - Bosch Sensortec [BMI160](#) 3-axis accelerometer/gyroscope
  - Alps HSPPAD038 pressure sensor
  - AMS [TMD2772](#) digital proximity sensor/ambient light sensor w/ IR LED
  - AKM Semiconductor [AK0991xx](#) electronic compass

## Step 10



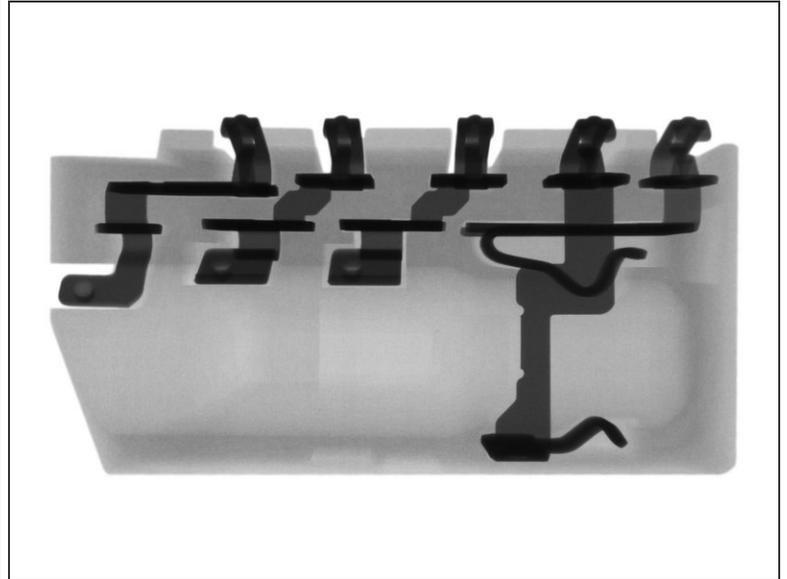
- Going back to the rest of the G4, we lift out the 16 MP rear-facing camera for a closer look.
- The camera sports a 1/2.6" image sensor as well as [laser autofocus](#) and optical image stabilization. The main [focus](#) of discussion, however, has been the camera's f/1.8 aperture.
- ⓘ LG has also added some advanced features—including exposure compensation, RAW image capture, and other settings—which can be manually adjusted.
- From this end of the G4, we're also able to catch a glimpse of its [IR blaster](#) (to the left of the microphone hole).
- Let's just hope that using this phone as a remote doesn't [doom it](#) to the couch cushions forever...

## Step 11



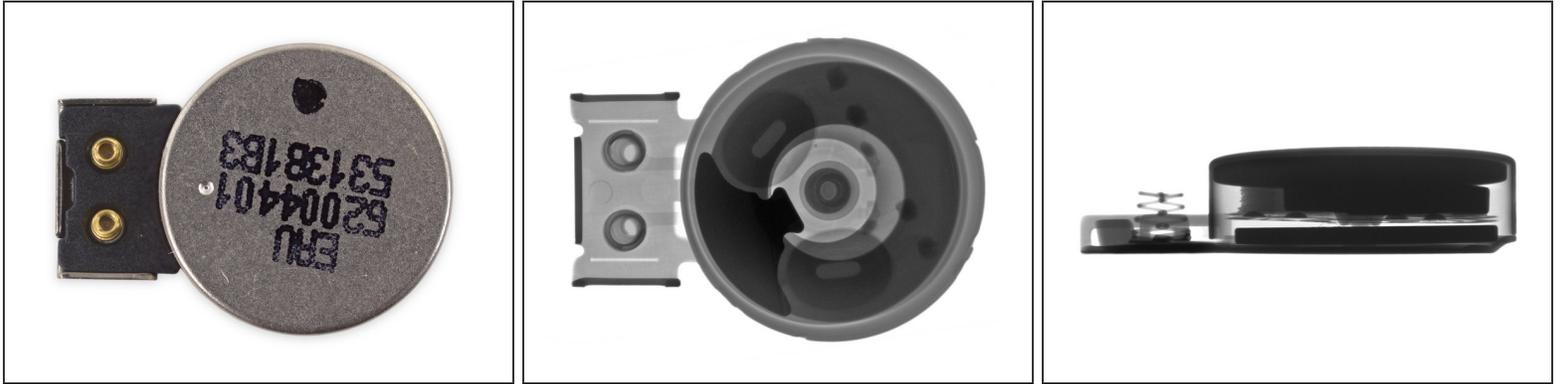
- The complexity of the rear-facing camera and its image stabilization is even more apparent under X-ray. That frame! Those chips!
- The wee camera next door is the front-facing camera; just a simple lens and image sensor, with no OIS mechanism.
- And on its side, the rear-facing cam kinda looks like [Nessie](#). Conspiracy? Probably not.
- Fantastic beasts aside, we do identify some real-life silicon:
  - TDK Invensense [IDG-2021](#) 2-axis MEMS optical image stabilization gyroscope
  - ON Semiconductor LC898122A optical image stabilization/auto focus driver

## Step 12



- We turn our attention to the headphone jack and tweeze it out of the chassis.
- ① Our teardown engineers note that the jack has cool spring contacts, which make for easy replacement.
- It's a good day when the headphone jack is easier to replace than most components in your [headphones, er, earpods](#).
- This audio jack is [footloose](#) and fancy-free.
- Spring contacts are a great way to connect components; no soldering, no fuss, and a snap to replace.
- The darkest portions of the X-ray are the metal of the contacts, which carry power and data to and from the audio jack to the motherboard. The rest of the gray is simply the plastic housing.

## Step 13



- Another spring-contact-applied component: the vibrator!
- The vibrator appears to be a [coin vibration motor](#). The two oblong 'O' shapes are coils of wire, and the dark anvil shape is a weight that spins, making the motor shake.
- From the side, the spring contacts get more volume, and you can even see the individual wire filaments in the coils. Neat.

## Step 14



- LG G4 Repairability Score: **8 out of 10** (10 is easiest to repair).
  - Rear panel and battery can be removed with no tools.
  - Many components are modular and can be replaced independently.
  - Standard Phillips #0 screws means a driver is easy to find.
  - Fused display assembly—glass and LCD will need to be replaced together if one or the other breaks.
- And lastly, we'd like to thank our friends at [Creative Electron](#) for their equipment and expertise!

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