Nexus 5X Teardown

Teardown of the Nexus 5X performed on October 21, 2015.

Written By: Geoff Wacker

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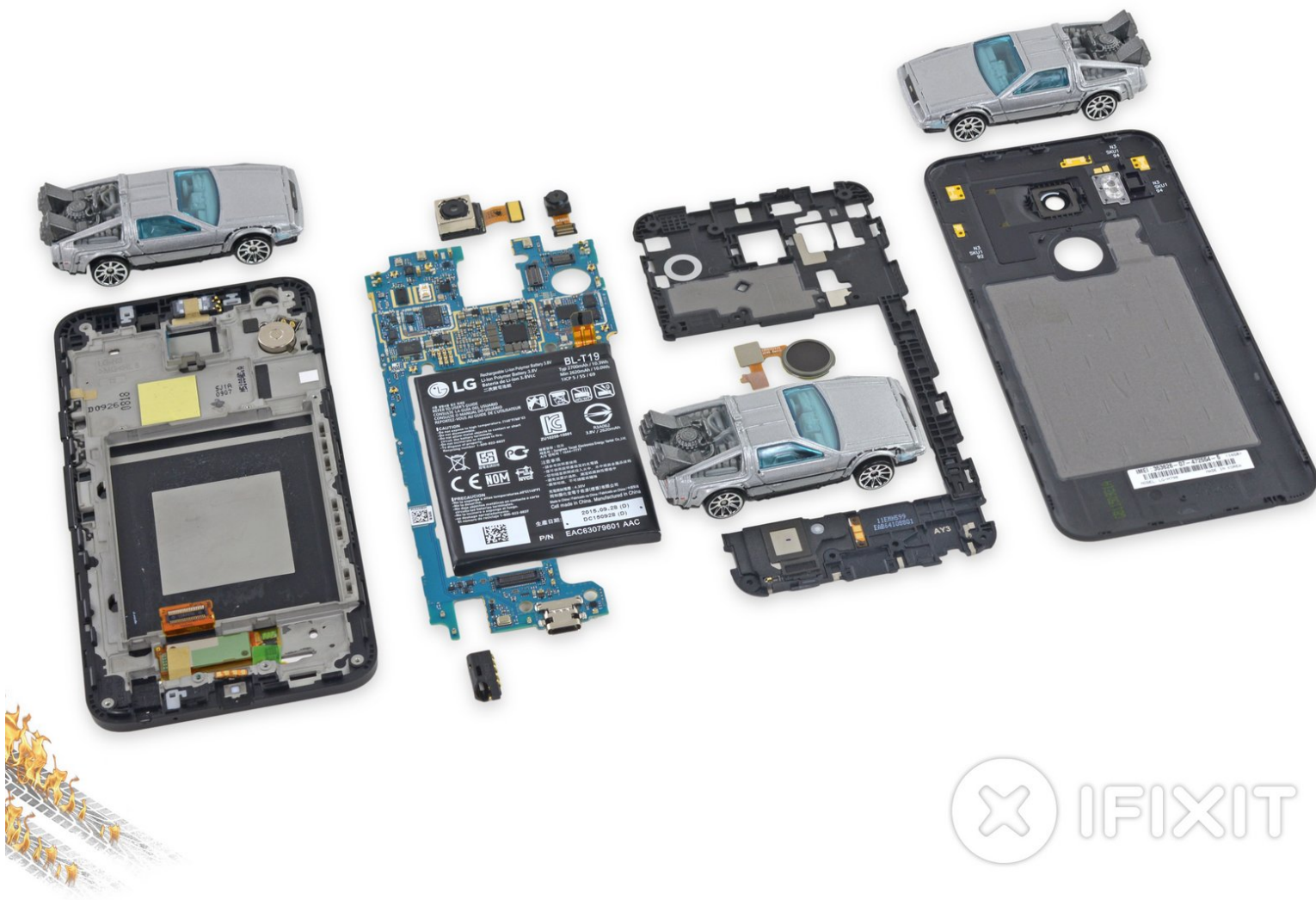
INTRODUCTION

It's been a couple years since Google unveiled its last 5" smartphone, the Nexus 5, and a lot has changed since then—the Nexus family's been augmented by a premium 6" phablet, a highly acclaimed 7" tablet, and even a full-fledged set top box. One thing remains constant though—we're still tearing down Nexii as fast as they (in this case, LG) can make them! Today we're looking at the Nexus 5X—successor to the Nexus 5 which impressed us with its modular design and ease of access. Will the 5X earn the same high marks? Join us 'round the teardown table as we find out!

Don't want to miss a beat? Follow us on Facebook, Instagram, and Twitter for the latest updates from the repair world!

[video: https://www.youtube.com/watch?v=VYFbSpvSE-w]

TOOLS:

- iFixit Opening Picks (Set of 6) (1)
- Phillips #00 Screwdriver (1)
- Spudger (1)
- Tweezers (1)

## Step 1 — Nexus 5X Teardown

- Before we shuck the 5X's housing, let's see what it has in store for us:

  - 1.8 GHz Qualcomm Snapdragon 808 hexa-core 64-bit processor with Adreno 418 GPU and Android Sensor Hub

  - 12.3 MP/4K rear camera with laser-assisted autofocus, and 5 MP front-facing camera

  - 2 GB LPDDR3 RAM with 16 GB or 32 GB internal storage

  - 5.2" full HD 1920 × 1080 IPS LCD at 423 ppi

  - USB Type-C Port with support for fast charging

  - Nexus Imprint Fingerprint Scanner

  - Android 6.0 Marshmallow

Step 2

- **Great Scott!** Google's latest Nexus offering sports a reversible USB-C charging port alongside the headphone jack.

  - (i) However, despite the fancy new look, this USB-C port only supports USB 2.0 transfer speeds—just like the OnePlus 2. Bummer.

    - What's not a bummer is the increased charging speed (5V/3A) that the USB-C port provides.

- The RGB LED notification indicator is hidden away underneath the lower speaker grille making a totally sweet 3x3 notification grid. Too bad it doesn't move...

- The rear of the Nexus 5X is home to the all-new Nexus Imprint fingerprint reader, 12.3 MP camera, dual flash, and laser rangefinder.

Step 3
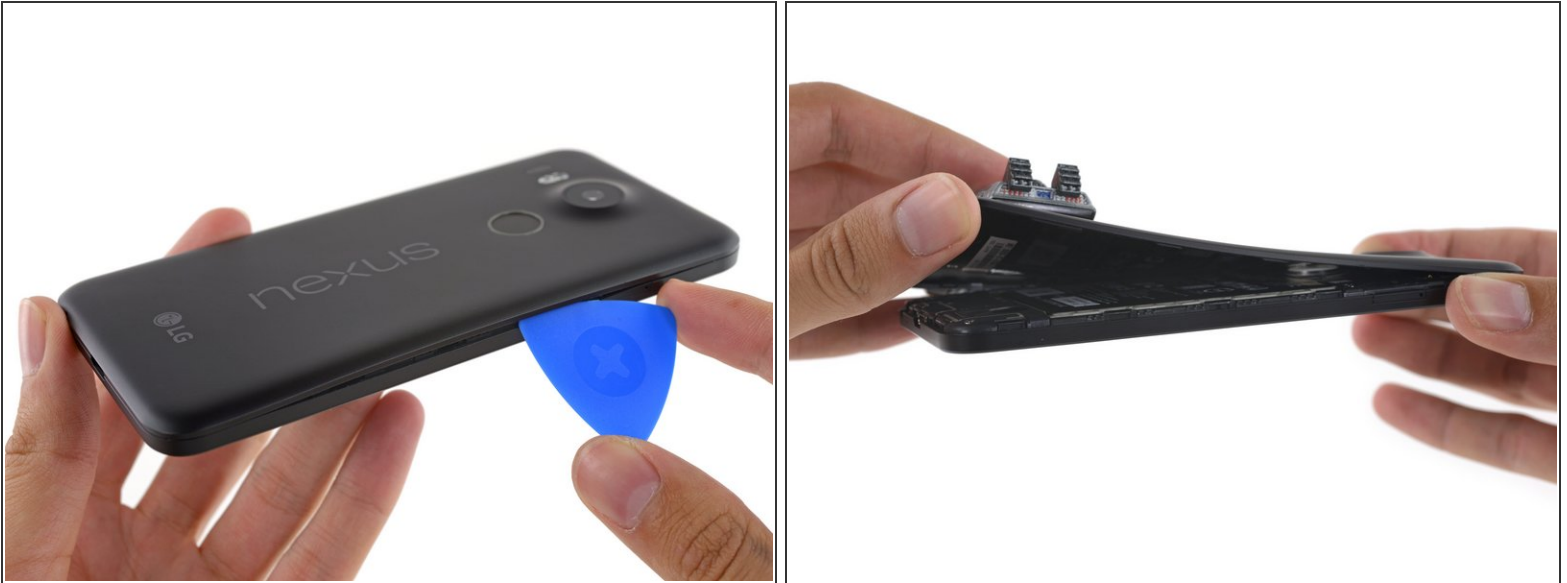
- Just like its older sibling, the 5X uses clips to secure the rear case to the rest of the phone.

- ⓘ The similarities end there, however, as the adhesive strips found on the Nexus 5's rear case are nowhere to be found in the Nexus 5X.

  - LG seems to have gotten the message about our feelings on adhesive.

- *Adhesive? Where we're going, we don't need adhesive.*

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Step 4

- That wasn't so bad! Things are looking up for the 5X as we get our first glimpse at the interior of the phone.

- ⓘ The Wi-Fi, MIMO, and GPS antennae still reside on the rear case, along with the NFC antenna which formerly lived on its own control board. Unfortunately, those super convenient labels from the Nexus 5 have transformed into cryptic codes.

  - Luckily, this sticker on the inside of the back panel has all the essentials: IMEI, country of origin, and the model number: LG-H790.

- Our spirits soared as we spied the 2700 mAh battery sitting in plain view—a removable battery is hard to come by these days.

  - But alas, it was not to be. The battery connector is squirreled away beneath the midframe, and it's totally inaccessible *for now*.

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Step 5

- Our 64 Bit Driver Kit makes short work of the 10 Phillips screws holding the midframe captive.

- The midframe comes *piecefully* (two pieces to be exact):

    - The lower half contains a few antennas and the phone's front-facing speaker.

    - The upper half contains the Nexus Imprint fingerprint reader.

Step 6
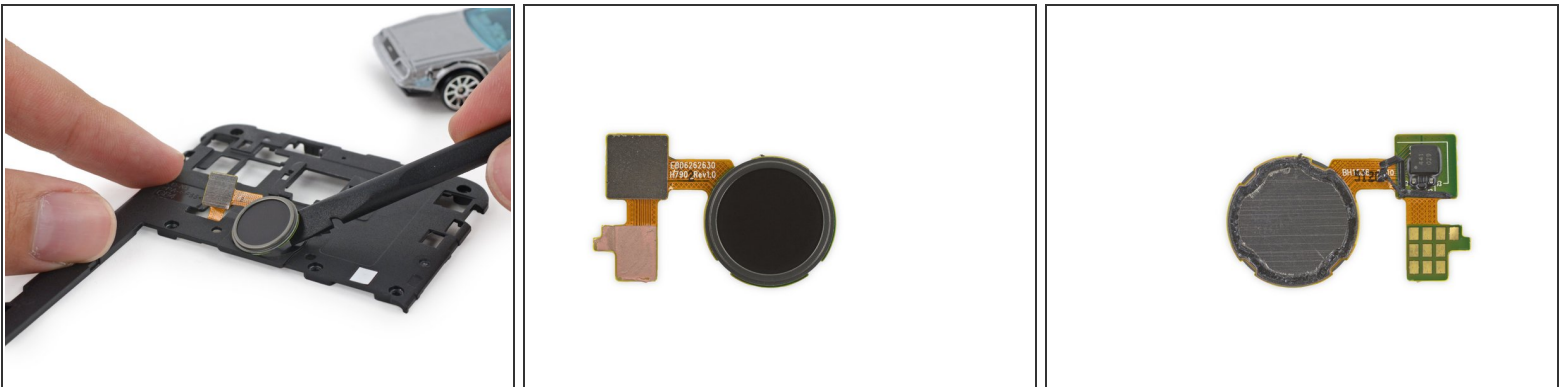
- Piggybacking on the midframe, we find the ~~Touch ID~~ Nexus Imprint fingerprint reader.

    - ⓘ Google claims Imprint can recognize a fingerprint in just 600 ms—quick enough to skip the lock screen entirely.

- Flipping the Imprint over reveals an unidentified control chip and our favorite, spring contacts! These connectors are much more durable than traditional connectors that snap into place, and they're much easier to work with during repairs. Win win!

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Step 7

- Some light adhesive secures the battery, but it's nothing that a little spudgering can't handle.

- The 5X packs a 3.8 V, 2700 mAh battery—a 400 mAh increase over the Nexus 5.
  - (i) Again, the pack warns us to avoid feeding the battery to a dog and to resist any urges to cut into it with a screwdriver.

- Although the 5X doesn't officially support Quick Charge 2.0, Google claims that USB-C will provide "four hours of use after only ten minutes of charging."

Step 8

- *Where are we? When are we?*

- We're almost to the motherboard, but we stop to get a better look at the rear-facing camera.

- The 5X's rear camera is packing a Sony IMX377 12.3 MP sensor, that sits behind a *ƒ*/2.0 lens—a feature common to both the 5X and the 6P.

- Unlike previous generations, this new camera doesn't include Optical Image Stabilization.

  - The Nexus team claims this is no longer necessary, thanks to the increase in pixel size (from 1.4 µm to 1.55 µm).

Step 9
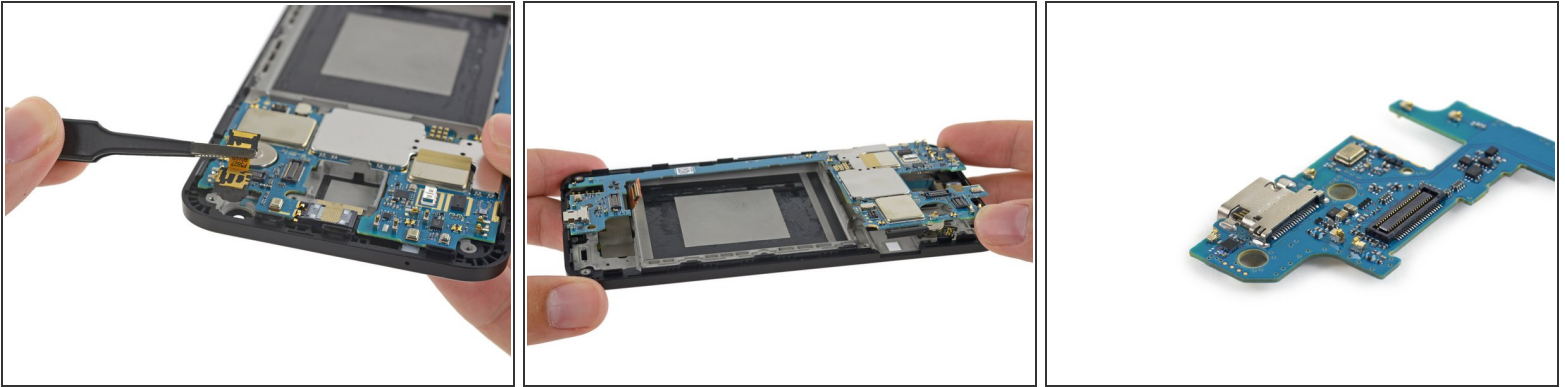
- The 5 MP front-facing camera is the last component preventing us from relieving this phone of its motherboard.

  - *(i)* *So, why don't you make like a tree and get outta here?*

- Off comes the motherboard, leaving behind the screen and I/O ports... Well, all except the USB-C port. This doesn't look good.

- Similar to the LG G4, the USB-C port is soldered to the motherboard—not an easily replaced daughterboard. Unless you know how to microsolder, you'll need to replace the motherboard when the port fails.

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Step 10
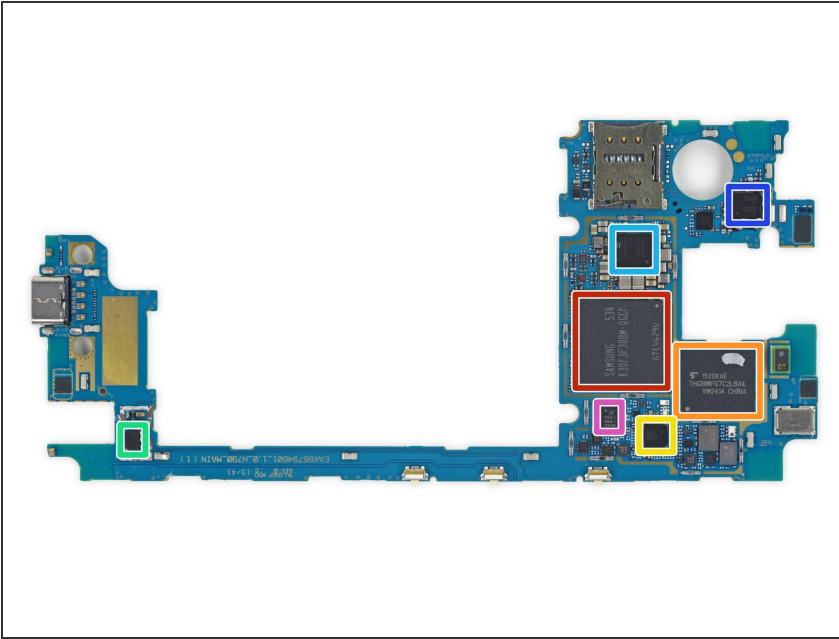
- Much to our disappointment, the motherboard *isn't* powered by a Mr. Fusion:

  - Samsung K3QF3F30BM-QGCF 2 GB LPDDR3 RAM, with the Qualcomm Snapdragon 808 layered beneath

  - Toshiba THGBMFG7C2LBAIL 16 GB eMMC 5.0 Flash Memory

  - Qualcomm WTR3925 LTE Transceiver (Also found in LG G4/HTC One M9)

  - Qualcomm SMB1358 Quick Charge 2.0 IC

  - Qualcomm PMI8994 Power Management IC (Also found in LG G4, HTC One M9, and OnePlus Two)

  - Qualcomm WCD9330 Audio Codec (Also found in LG G4 and OnePlus Two)

  - Skyworks SKY77814-11 power amplifier module for LTE (Also found in OnePlus Two)

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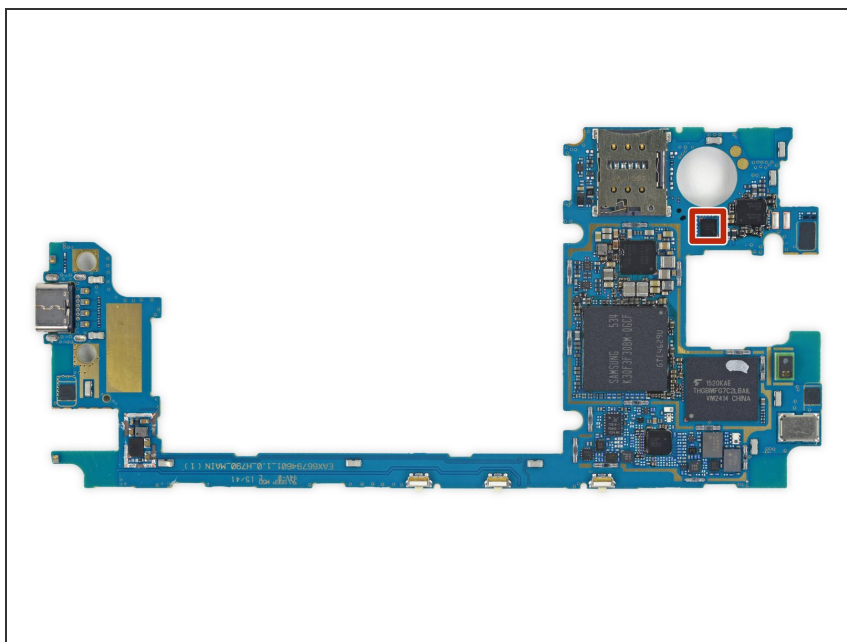
Step 11

- STMicroelectronics STM32F411CE 32-bit 100 MHz ARM Cortex-M4 RISC microcontroller
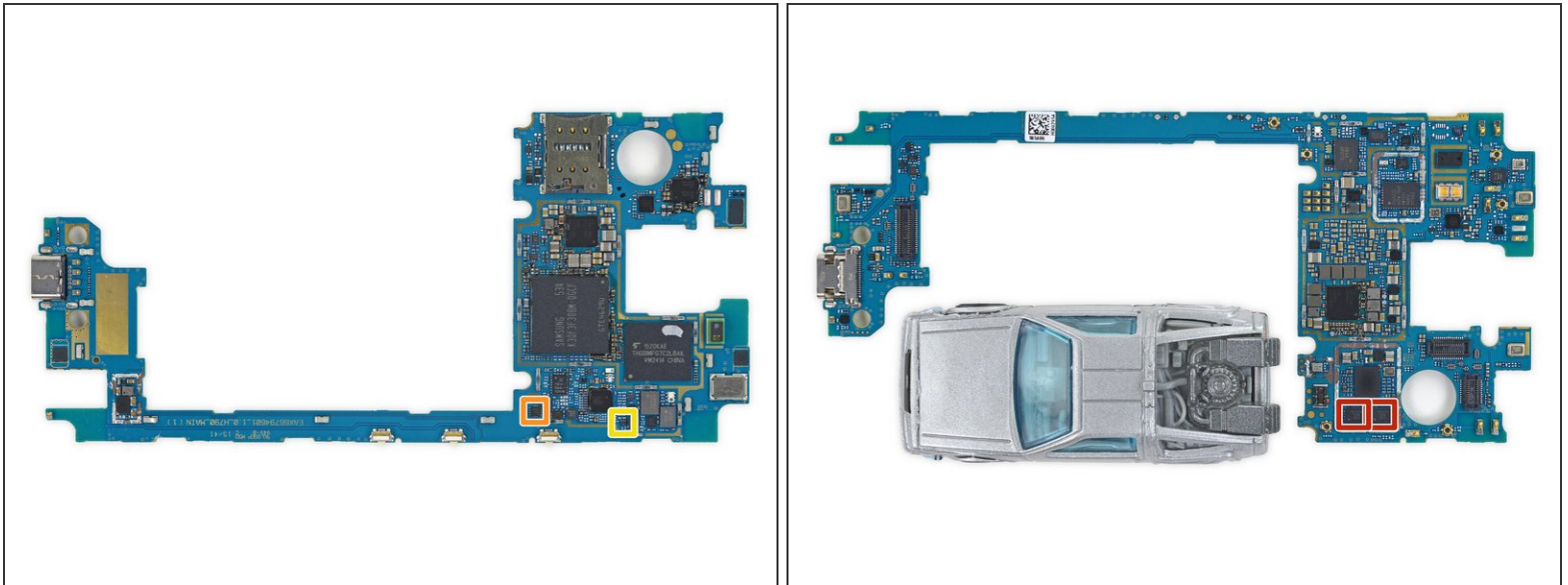
Step 12
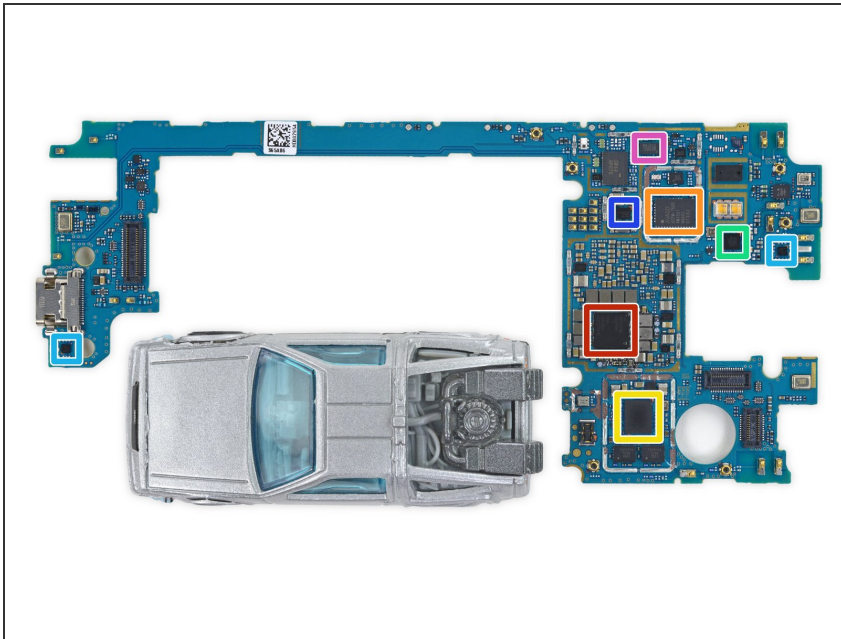
- And on the flip side...
  - Qualcomm [PM8994](#) power management IC
  - Avago [ACPM7800](#) Quad-band GSM/EDGE and Multi-mode power amplifier (as seen in the HTC One M9)
  - Qualcomm [QCA6174](#) 802.11ac Wi-Fi 2x2 MIMO combo SoC
  - NXP Semiconductor [PN548](#) NFC controller
  - RF Micro Devices [RF1149A](#) routing switch
  - Qualcomm [QFE1100](#) envelope tracking IC
  - Avago BFI523

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Step 13
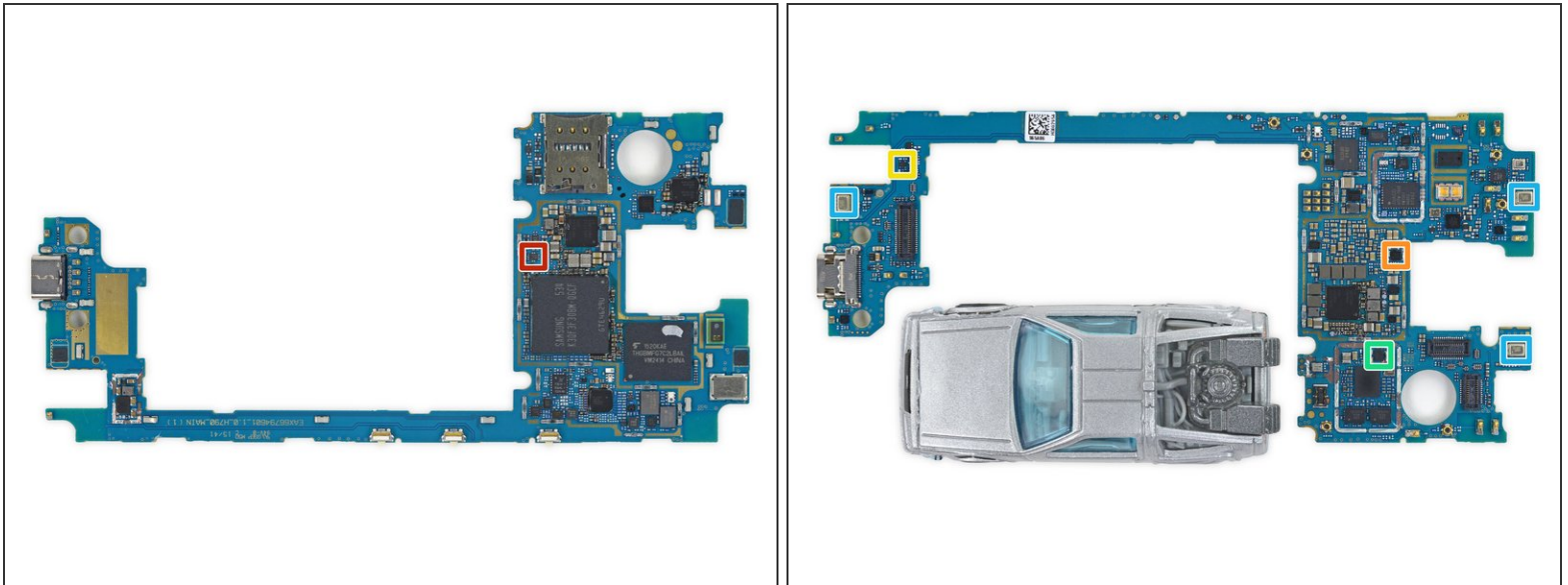
- IC identification, pt. 2:
  - ON Semiconductor [FSUSB104UMX](#) USB 2.0 high-speed analog switch
  - ON Semiconductor [FAN48623UC35X](#) 2.5 A synchronous regulator
  - NXP Semiconductor [NCX2200](#) comparator
  - Ricoh [RP602Z330C](#) 1.5 A / 3.3 V buck-boost DC/DC converter
 - Knowles MEMS microphone

Step 14

- IC identification, pt. 3:

  - Qorvo (formerly TriQuint) [TQF6174](#) 802.11n/ac Wi-Fi front end module

  - Skyworks [SKY13560-485LF](#) SP4T LTE transmit/receive switch

  - Infineon [BGA8U1BN6](#) 4-6 GHz low noise amplifier

Step 15
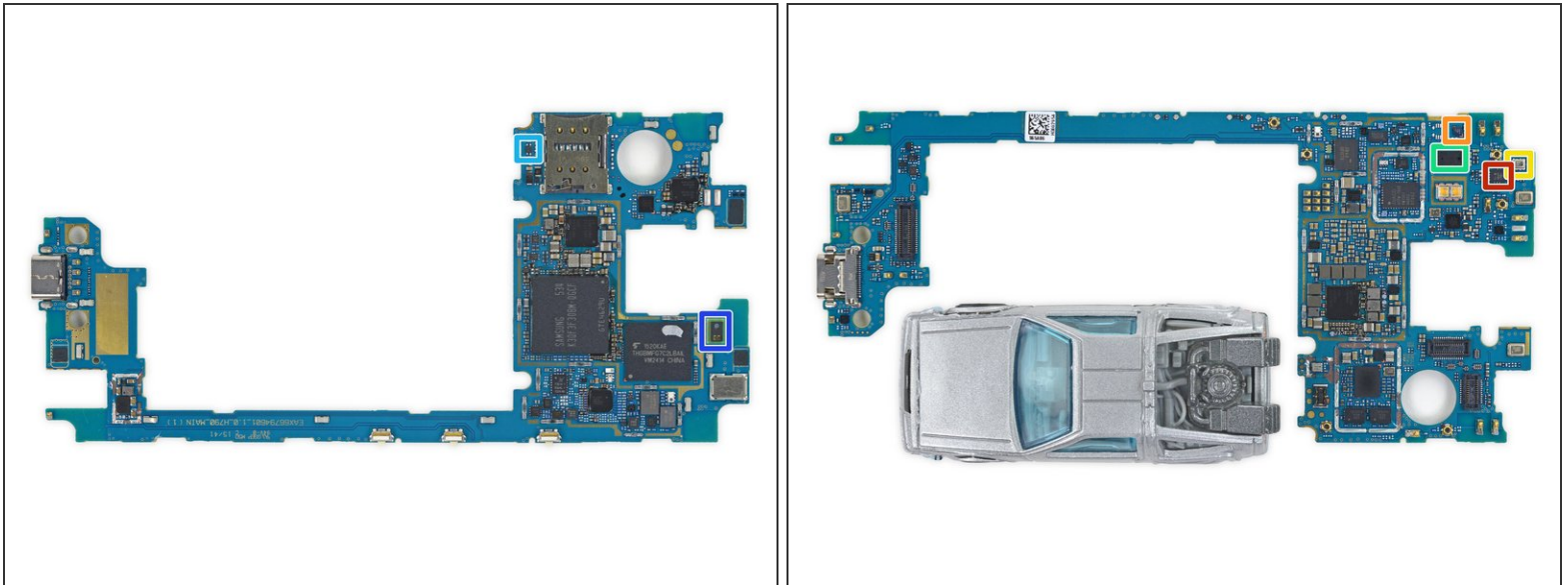
- IC identification, pt. 4 (sensors):
  - Bosch Sensortec [BMI160](#) 3-axis accelerometer/gyroscope
  - Bosch Sensortec [BMM150](#) 3-axis magnetometer
  - Bosch Sensortec [BMP280](#) pressure sensor
  - STMicroelectronics [VL6180](#) ToF proximity sensor
  - ABLIC, Inc. (formerly Seiko Instruments) [S-5717ACDL8-I4T1U](#) hall sensor
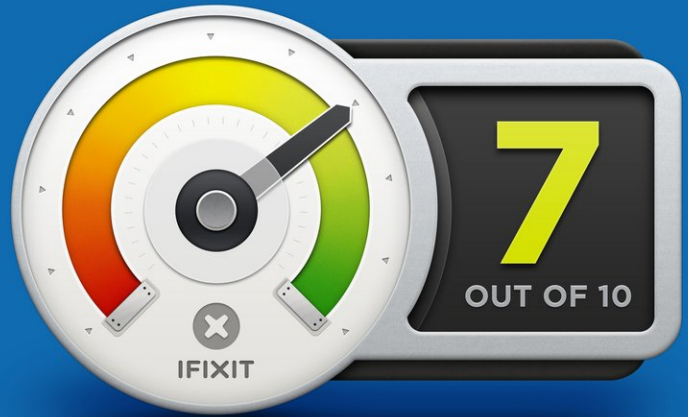 - Ambient light sensor (likely)

Step 16
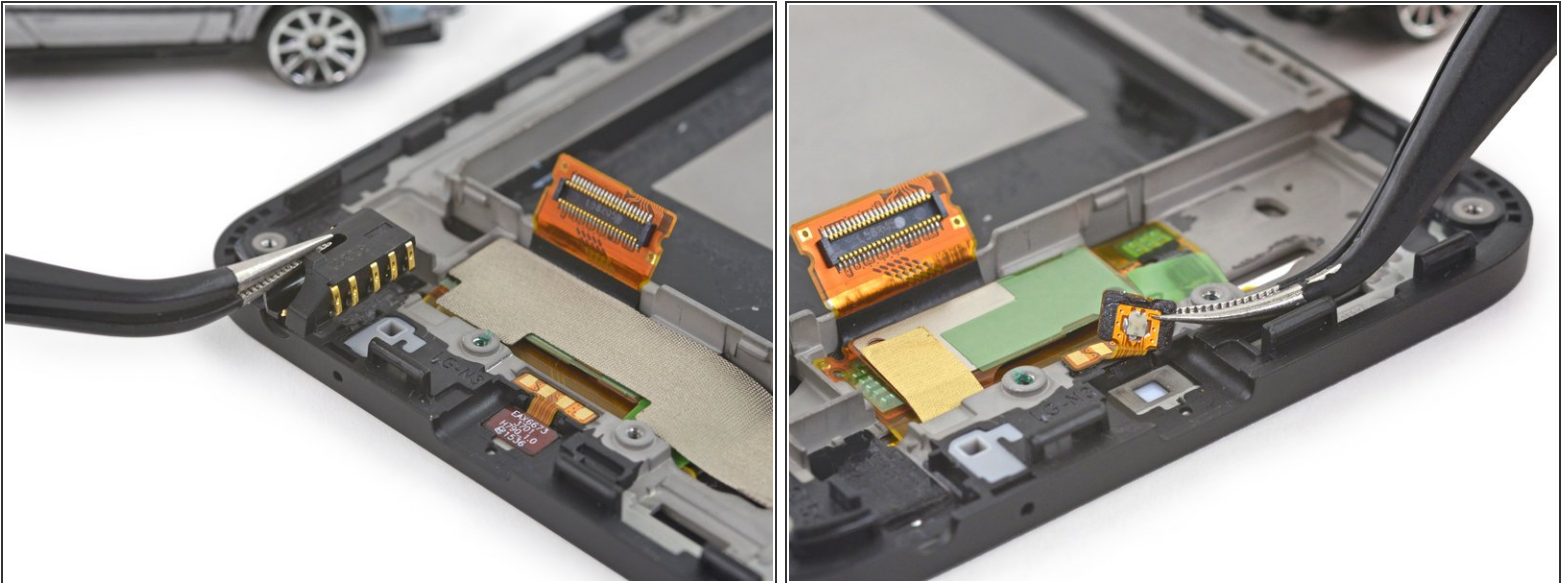
- The 5X revives an old favorite of ours—the spring contact headphone jack.

  - ⓘ Individually replaceable ports like this one simplify repairs and reduce part costs—just the way we like it. Wiggly headphone jacks *beware*.

- We also take a moment to admire that nifty notification LED and its simple gold contacts. Shiny.

Step 17

- Nexus 5X Repairability Score: **7 out of 10** (10 is easiest to repair).

  - Many components are modular and can be replaced independently.

  - Standard Phillips screws means a driver is easy to find.

  - The battery isn't immediately user accessible but isn't too challenging, or too adhered, to replace.

  - Fused display assembly—glass and LCD will need to be replaced together if one or the other breaks.

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