Microsoft Surface Go Teardown

Microsoft just revealed a 2-in-1 for those on...

Written By: Jeff Suovanen



INTRODUCTION

Microsoft just revealed a 2-in-1 for those on the move—those wanting a Surface with a little less pro, and a little more go. This Surface might have a lot going for it, but there's only one thing we care about: can you service it on the go, or will it be stopped in its tracks by tired batteries and shattered screens? Only one way to find out—ready, set, teardown!

You never know when the next teardown might surface! Stay in the know by linking up with us on Facebook, Instagram, or Twitter—or, if you prefer a good old-fashioned email, sign up for our newsletter.

TOOLS:

iOpener (1)
Suction Handle (1)
iFixit Opening Picks (Set of 6) (1)
Tweezers (1)
Spudger (1)
Phillips #00 Screwdriver (1)
iFixit Adhesive Remover (1)
Plastic Cards (1)

Step 1 — Microsoft Surface Go Teardown





- As always, our teardown begins with a cursory in-*spec*-tion:
  - 10” IPS multi-touch display with 3:2 aspect ratio and 1800 × 1200 resolution (217 ppi)
  - Dual-core 1.6 GHz Intel Pentium Gold 4415Y processor with integrated Intel HD Graphics 615
  - 4 GB RAM (8 GB optional)
  - 64 GB eMMC storage (128 GB NVMe SSD optional), with additional storage via microSDXC
  - 8 MP primary camera with 1080p video; 5 MP / 1080p selfie camera

Step 2







- Compared to the Pro, the Go looks to have smoother curves, rounder edges, and a vaguely more iPad-y aesthetic.

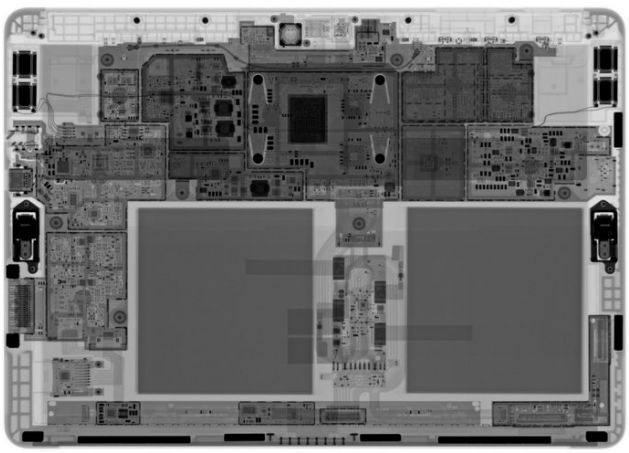
- The Surface Go doesn't believe in the fewer-ports-is-more-ports trend. This tablet packs a USB-C port, headphone jack, a couple proprietary connectors, *and* an SD card reader.

  Hunting for that SD port, we accidentally woke the sleeping Go—presumably a magnetometer notices when the magnet-toting kickstand moves.

- Peeking between the slightly redesigned hinges, we spy FCC info, the model number (1824), and storage and memory specifications.

Step 3





- There's more than one way to teardown. Our way takes a while, so our friends at Creative Electron give us the X-ray version.

- Preliminary intel: two battery cells, lots of circuit board—and no visible heat pipes! Looks like the Surface has been on a low-copper diet.

Step 4



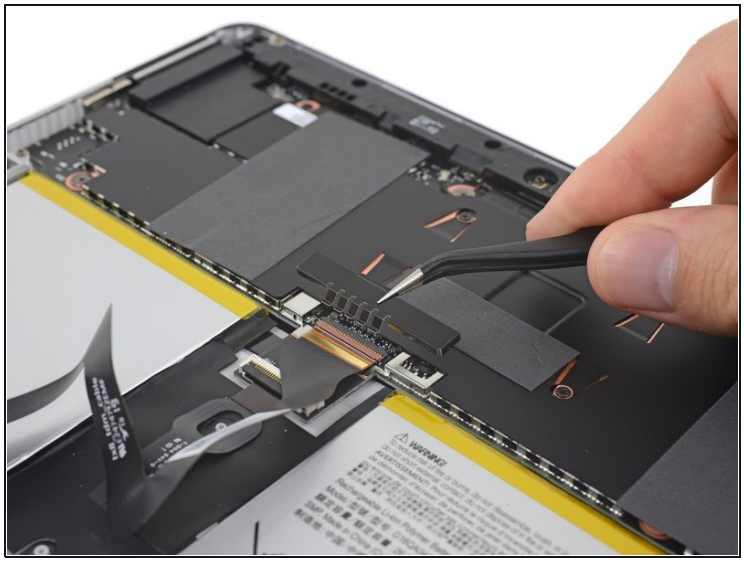



- If we've learned one thing after five years of Surfacing, it's how to open these things.

- Our well-used iOpener brings the heat, then a suction handle and opening picks (just a few this time) attack the ample adhesive.
  - We encounter the same kind of goopy glue as before, but the smaller, sturdier display makes the opening procedure seem a little less scary.

- The display's off, and we're pleased to see that Microsoft allowed it a fairly long leash.
  - A long display cable makes it easier to disconnect the display without damaging the cable, for safer and easier display removal.

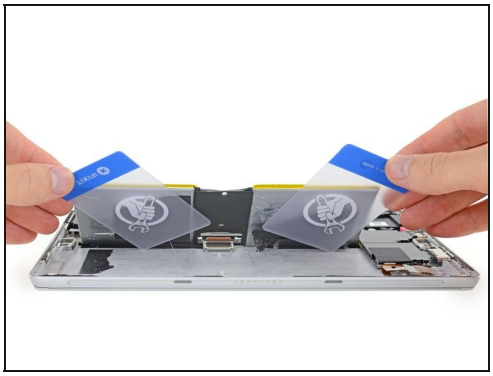
Step 5





- One last obstacle before the display is free—an EMI ~~claw~~ shield guarding the display ZIF connector.
- With the display free, we turn our attention toward the bottom edge, and discover a few display chips in their natural environment:
  - Likely MegaChips S15 series LCD timing controller
  - i7248 H717690
  - 18996MB N746547
  - KTH6212MAYS

Step 6

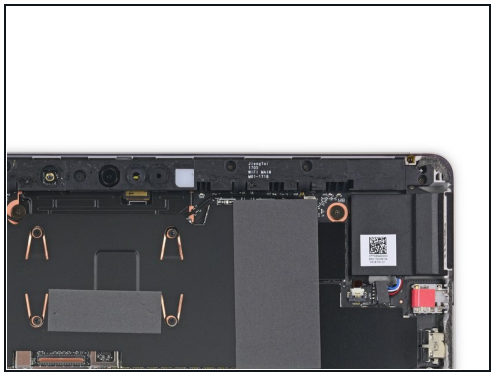

- To our great surprise, the Surface Go has an immediately disconnectable battery! With no need to fully remove the motherboard, repairability is looking up.

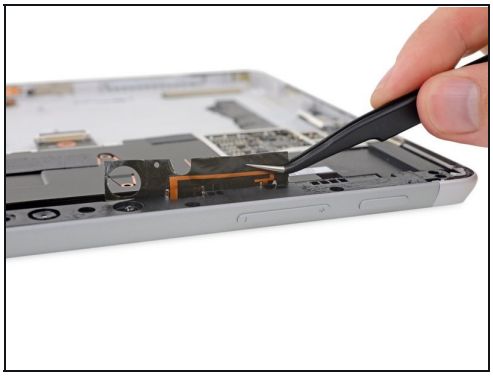
- Or is it? Removing the battery is just like the bad ol' days—two giant pads of adhesive put up a staunch fight against our adhesive remover and plastic cards.

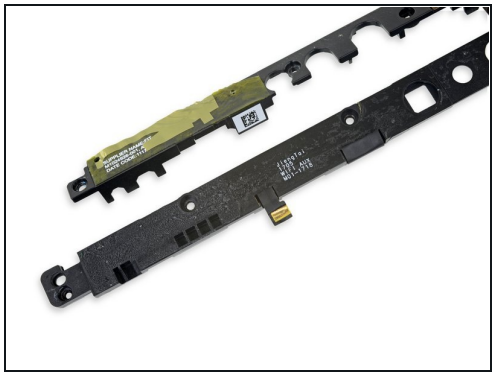
Glued-in batteries prevent consumers from easily extending the life of their device, and they increase costs for recyclers at the end of the device's life.

- The battery in the Go is a lot smaller, at 26.12 Wh, than any of its pro-level predecessors—even the similarly sized iPad 6 packs a 32.9 Wh powerbank.
  - A Texas Instruments BQ40Z50 series Li-ion battery pack manager is the brains of this operation.

Step 7

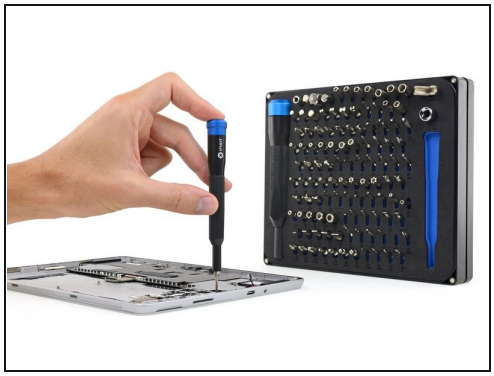
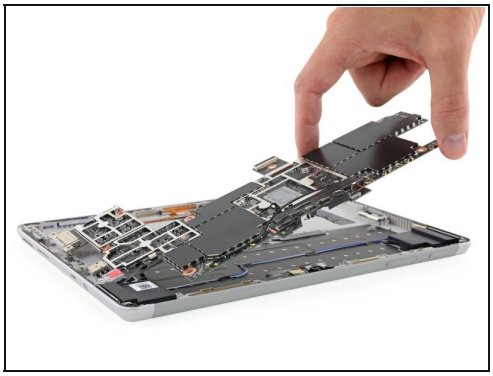
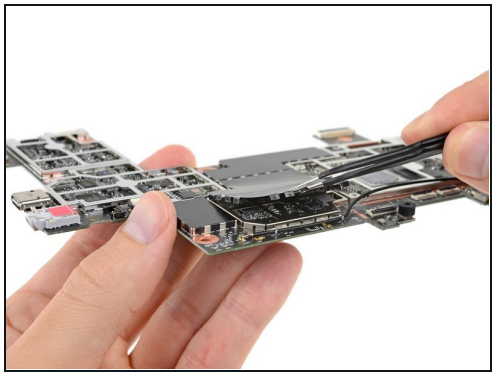






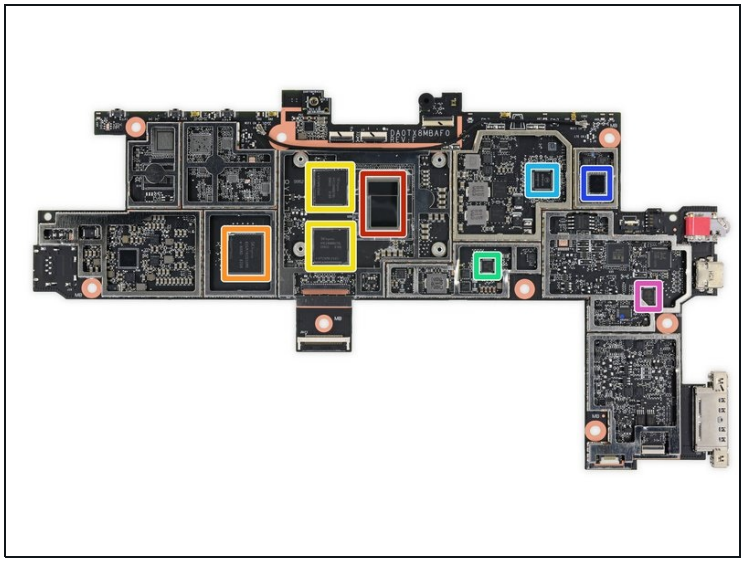
- Turning our attention to the Wi-Fi antennas, we fully expect to find them mangled after that hack-and-slash display separation.
- Having the display cover glass glued right over the top of the Wi-Fi antennas has wreaked havoc on many a Surface Pro repair attempt. Most times, the antennas don't survive display removal.
- This time, we have to keep looking... and looking.
- These antennas are actually tough to spot, and seem miraculously unscathed. That's one of our poor 5th-gen Surface Pro antennas up top, for comparison.
- They've definitely been redesigned—perhaps with slightly less of a nail-biting repair experience in mind?

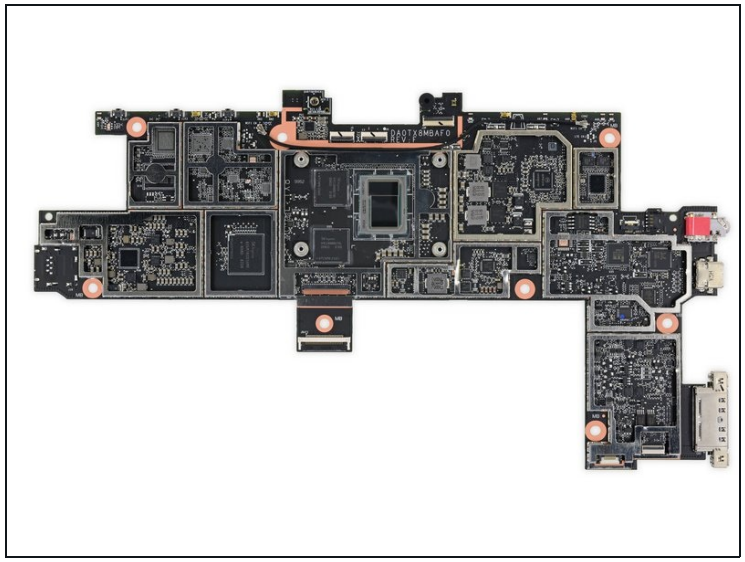
Step 8

- Our journey beneath the Surface doesn't get any easier as we move on to the motherboard.
- Thankfully there's no glue here, but we're forced to excavate our way through seemingly endless layers of shields, tape, and hidden screws in order to unearth the board.
  - Luckily, we have our Manta Driver Kit to keep us company, and to deal with any fasteners we find.
- Finally, we relieve the motherboard of the last of its restraints, and free it from its metal and plastic prison.
- Even with the motherboard free, we keep digging, through shielding and fabric stickers, to find the silicon that lies hidden underneath.

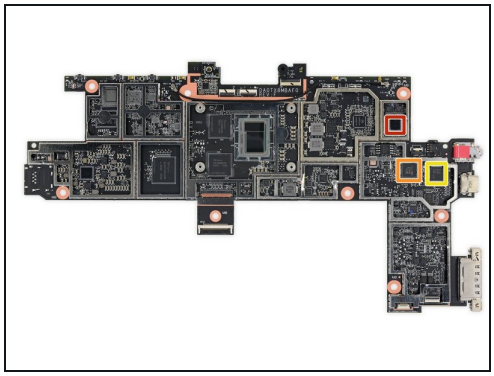
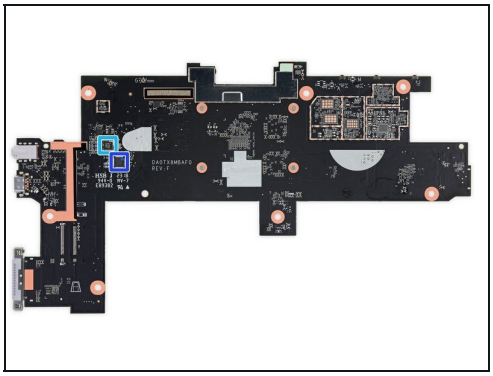
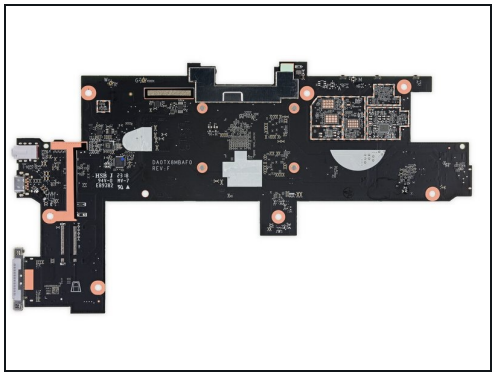
Step 9





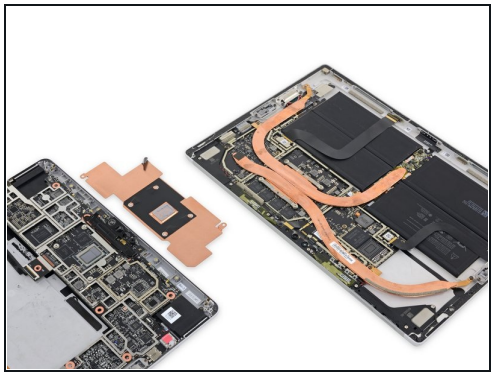
- At last, we're rewarded for our hard work with a treasure trove of silicon:
  - Intel Pentium 4415Y processor
  - SK Hynix H26M74002HMR 64 GB eMMC5.1 NAND flash memory
  - 2x SK Hynix H9CCNNNBKTAL 16 Gb LPDDR3 SDRAM (4 GB total)
  - Texas Instruments BQ25700A battery buck-boost charge controller
  - ON Semiconductor NCP81216 phase controller
  - Qualcomm QCA6174A Wi-Fi/Bluetooth SoC
  - Parade Technologies PS87430 (likely USB host switch)

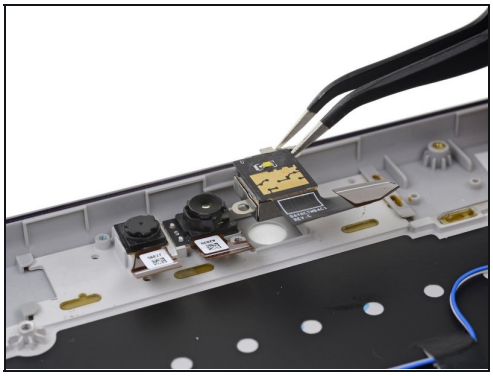
Step 10

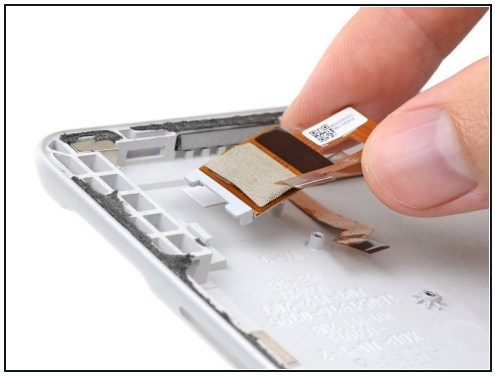




- More front-side chips:
  - Qualcomm QCA6174A Wi-Fi/Bluetooth SoC
  - ITE Tech Inc. IT8987 LPC bus controller
  - Realtek ALC298 audio codec
- Back-side chips:
  - NXP P3003
  - Atmel ATSAMD20E ARM microcontroller

Step 11







- All that silicon, and yet this Go is fan-less and heatpipe-less. This thin copper shield and some thermal paste will have to do the heat sinking for this would-be PC. (Then again, you can always run it in a freezer...)

- It's certainly a radical departure from those thick copper tentacles we found on the 5th-gen Pro, on the right. Hopefully it'll be enough for the Go's power-sipping, non-Turbo'd processor.

- Now to pluck the final strings of this teardown. Such as: the Windows Hello camera, the 5 MP front-facing camera, and the 8 MP rear-facing camera (complete with piggybacked LED) all sitting in a row.

- Finally, the modular microSDXC port with Realtek 5227S card reader controller—which is *technically* upgradable storage!

ⓘ Not exactly the kind of upgradability we were hoping for, but we'll take what we can get.

Step 12



- Here are all the bits lurking beneath the Surface. Thanks for joining us!

And thanks as usual to Creative Electron for their X-tastic imagery!

Step 13 — Final Thoughts



- The Microsoft Surface Go earns a **1 out of 10** on our repairability scale (10 is the easiest to repair):
  - The smaller form factor seems to make the glass easier to remove without breaking, but it's still terrifyingly hard.
  - If this is expected to replace a PC, the lack of upgradability will severely limit the device's lifespan.
  - The lack of modularity, especially on high-wear ports, makes repairs unnecessarily expensive.
  - Adhesive holds many components in place, including the display and battery.
  - Replacement of any part requires removal of the display assembly, an easy (and expensive) part to damage.