Samsung Gear 2 Teardown

Samsung Gear 2 smartwatch teardown on April 8, 2014.

Written By: Sam Goldheart

INTRODUCTION

Ring ring! Ring ring!

Your cell phone rings. You know you *should* answer it, but it's *all the way* in your pocket, and the thought of reaching down, pulling it out, tapping a button, reaching up to your ear, *and* talking just sounds plain exhausting. But never fear! Samsung comes to the rescue.

Introducing the Gear 2, Samsung's revamped smartwatch. Join us as we tear down the future of wearable tech and attempt to answer the question: can a device be smart, wearable, **and** repairable?

Only time will tell…

Stay on time with the latest teardowns and developments by following us on Instagram, liking us on Facebook, or tweeting us on Twitter.

[video: https://www.youtube.com/watch?v=J1Sis0-qGEg]

TOOLS:

- T5 Torx Screwdriver (1)
- iFixit Opening Picks set of 6 (1)
- Tweezers (1)
- iFixit Opening Tools (1)

Step 1 — Samsung Gear 2 Teardown

- One of this gadget's most innovative features is that, at any moment, you can look at your wrist and know the exact time. Phenomenal.
- Other tech specs include:
  - 1.63" Super AMOLED display (320x320 pixels)
  - 4 GB internal memory
  - 2.0 MP camera with 720p video at 30 fps
  - 300 mAh battery (2-3 day battery life)
  - Bluetooth 4.0 LE

For fun, we removed the band and weighed this little timepiece: 41 grams (less than 33% the weight of a Rolex Daytona—in the tech world, we're pretty sure that makes it three times better).

Step 2

- Once upon a time, smartwatches were only for superspies and TV heroes.
- Despite all the tech underneath, the Gear 2's only visible gadget is its 2-megapixel camera, nicely nested into the brushed metal surface.

  Samsung's 1st-gen Galaxy Gear housed its camera in the wristband—a less-than-ideal setup that made for a less-than-replaceable band. This new location is a good sign.
- The main issue we see with this design is that having a camera constantly facing away from your body makes selfies nearly impossible.

  Is this a fatal flaw of the Gear 2? It's a bold strategy, Samsung; we'll see if it pays off for 'em.

Step 3

- Our Gear 2 may not be spy-issue, as it still exhibits identifiable markings: Model No. SM-R380.
- The backside bears a row of contacts for the cradle charger, as well as a teeny tiny sensor. More on that later in the show.
- Before we even begin searching for a way into this quintessential smartwatch, a quartet of quaint Torx screws catches our quizzical eye.
  - Screws are good news. Glue makes us blue. Could this device be a repair enthusiast's Xanadu?

Step 4

- Ejecting removable wristband in 3…2…1…
- Free at last! A replaceable wrist strap is a right, not a privilege. We're glad to have the opportunity to change a band up a bit.
  - A band is likely to break up—er, show some wear and tear over time. It is nice to know that no matter how much time has passed, this Gear can always get back together.

Step 5



- Here it is—the moment of truth is upon us. Will this device truly be smart, wearable, *and* repairable?
- Oh my flying spaghetti monster! We cannot believe it! Just look how beautiful that opening pick is. If that doesn't make you want to smash a 20 minute air guitar solo, *we don't know what will!*
- Side note: the Gear 2 came apart extremely easily. A small Torx driver and a bit of light prying split this watch in half with ease.
  - "No cables, no problems," that's what we say. The halves communicate solely via spring contacts.
  - Never before has a device been so repairable that it comes pre-loaded with markup.

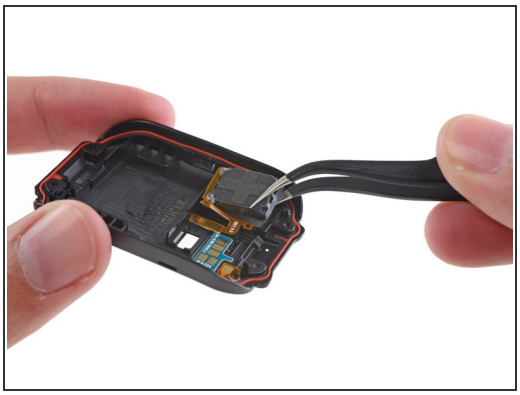
Step 6

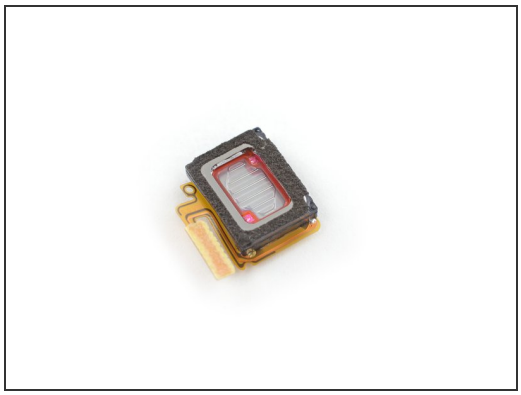
- The battery springs willingly from its seat, with help from an instructional pull tab.

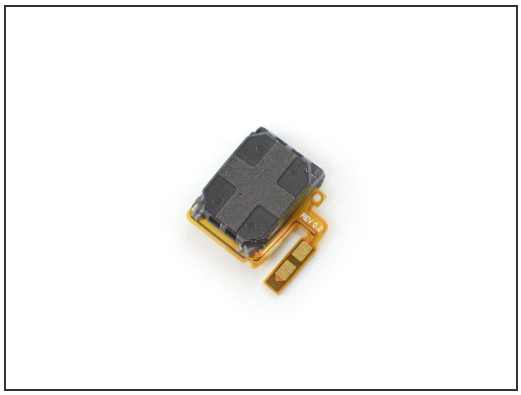
  The Gear 2 is slowly winning us over with this repairability business. Samsung, you may continue wooing us.

- Samsung claims the 300 mAh battery is good for 2-3 days of normal ~~spying~~ use. Charge cycles are a huge factor in Lithium ion battery health, so a multi-day charge makes us happy to see.
  - The quartermaster would like the equipment returned with a full charge, please.

Step 7



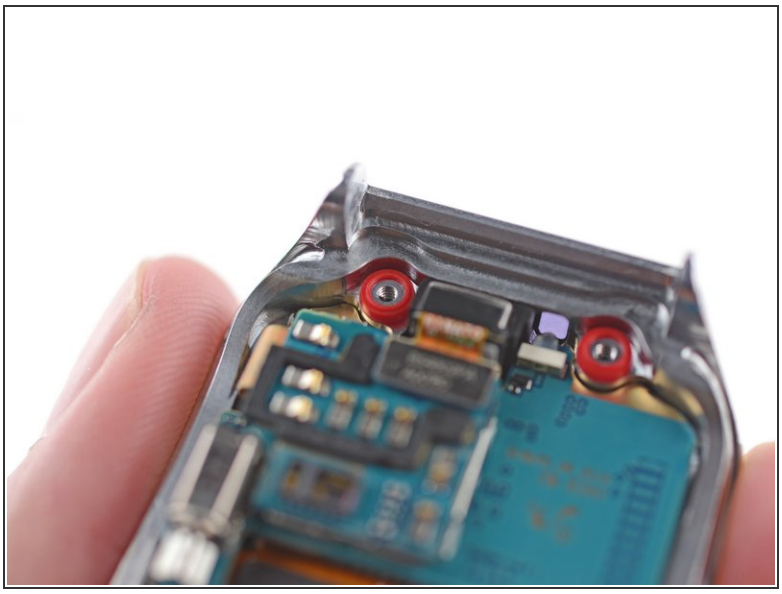




- This watch makes us feel a little like a certain inspector… Let's take a closer look at some components.
- *Go, go, gadget speaker!* Out goes the music/speakerphone speaker, simply secured with light foam tape.

ⓘ The repairability of this device impresses us more than another inspector in a bright red blazer.

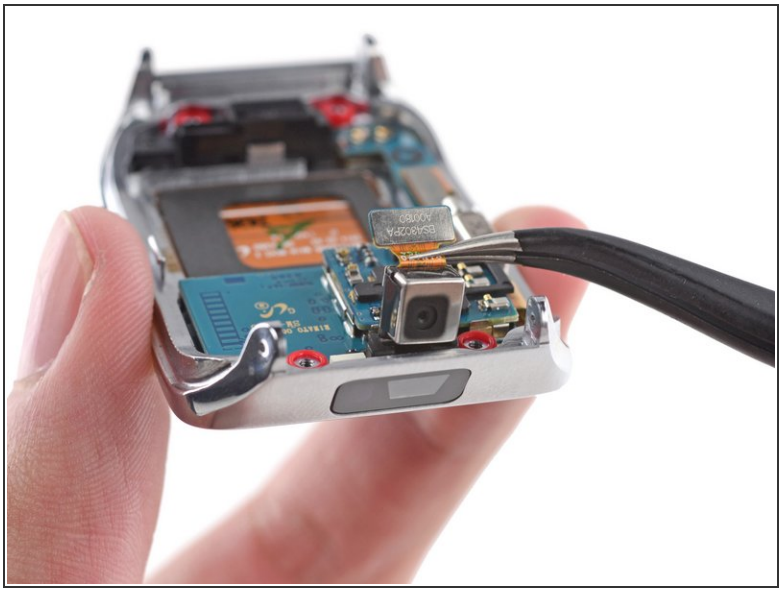
Step 8

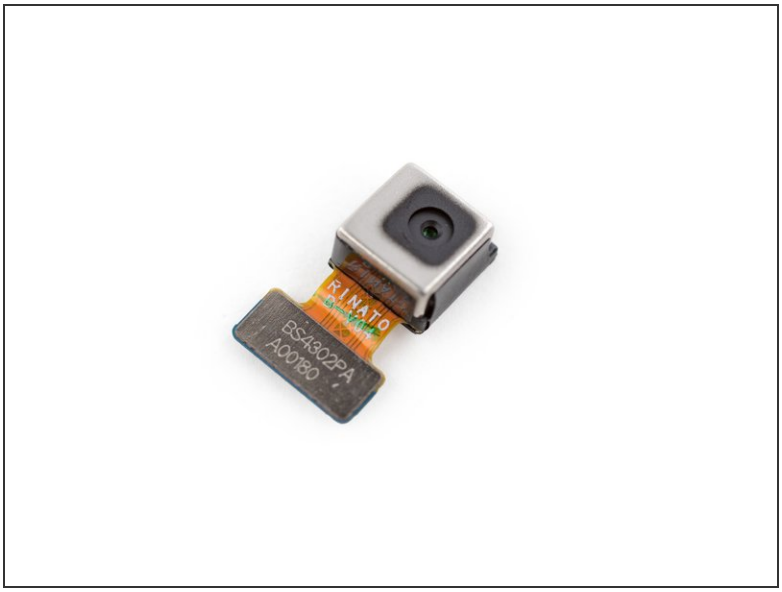


- Gasket lining the case: check.
- Gaskets around the screws: check.
- This modest arrangement is enough to garner the Gear 2 its IP 67 certification, making it safe for immersion in up to 1 meter of water for up to 30 minutes.

Underwater teardowns are not yet an approved part of the iFixit repairability scoring process. Stay ~~tuna'd~~ tuned.

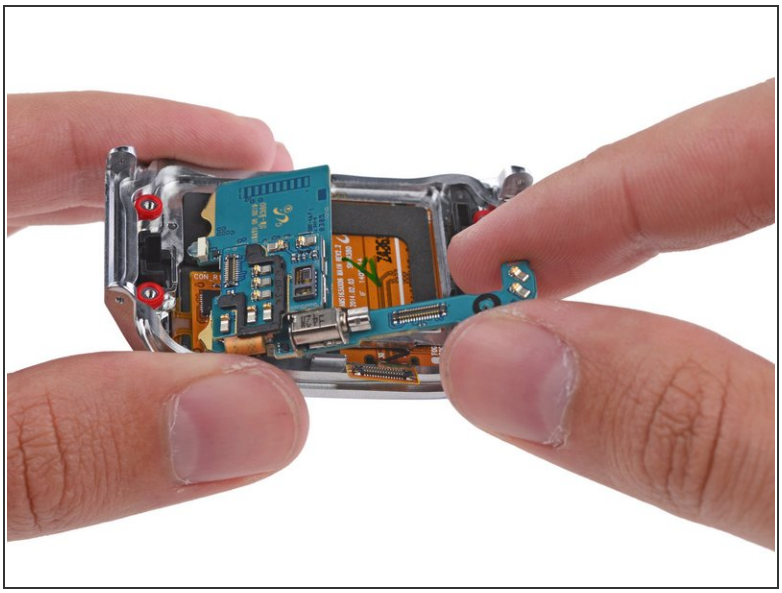
Step 9





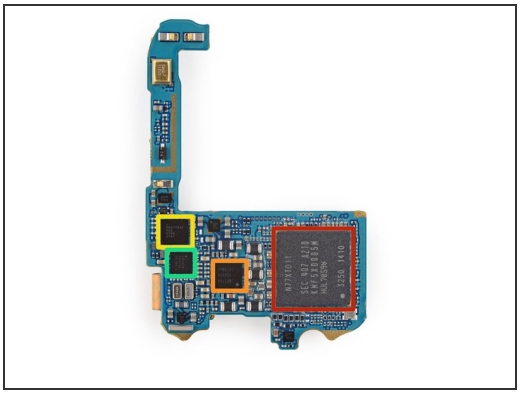
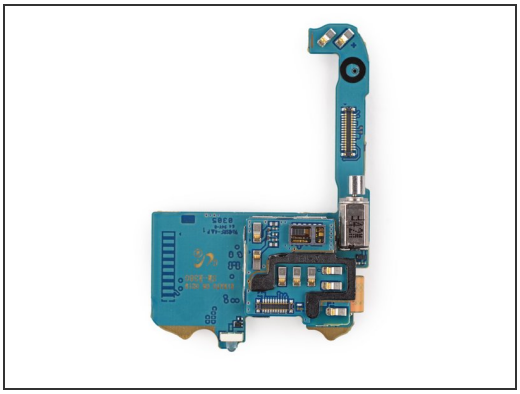
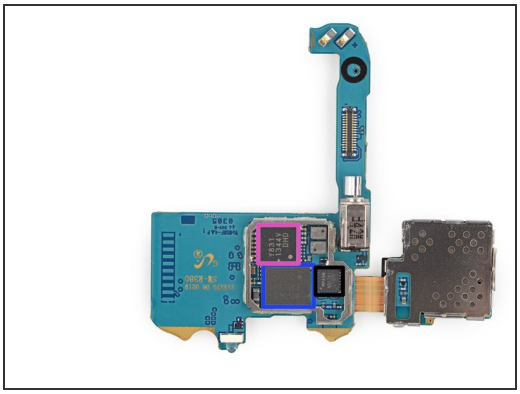
- This little spy cam will come out with ease, but first….
- Congrats! It's a 2.0 megapixel camera, capable of catching stills and 720p video at 30 frames per second. We don't know much else, except that "RINATO" means reborn in Italian.
  - All this, and it still tells time!

Step 10



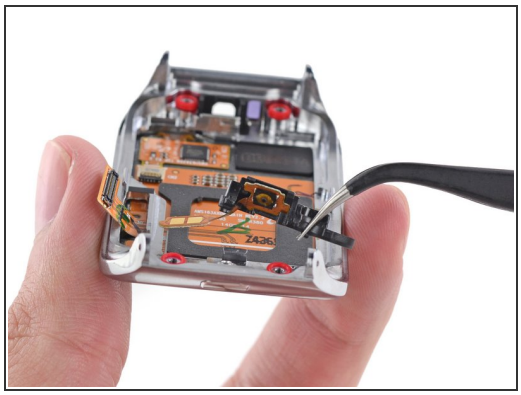
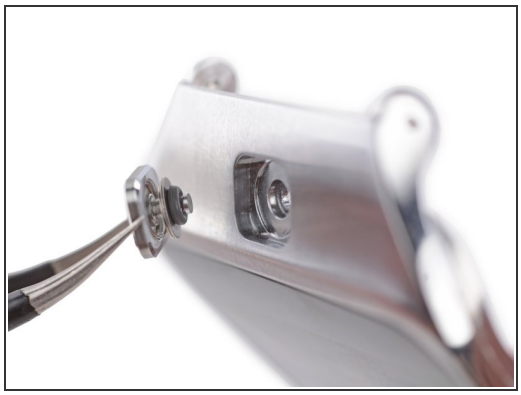
- The LCD and digitizer connect to the motherboard via a single cable, which also serves to hold the board in, like a cute little seatbelt.
- With the connector out of the way, the board is free to roam, with all of its efficiently-packed peripherals strapped in for the ride.
  - A few non-modular components are soldered to the board: IR LED (for TV remote functionality), heartrate monitor, and vibrator motor.

Step 11

- Small package, lotta power:
  - Samsung KMF5X0005M (likely DRAM package with 1 GHz dual-core CPU layered beneath)
  - Motorola MPS14X 60X5V3 1410WeC
  - Maxim Integrated MAX77836 Low-Voltage Input, 3V/3.3V/5V/ Adjustable Output, Step-Up DC-DC Converter
  - STMicroelectronics STM32F401B ARM-Cortex M4 MCU with 128KB Flash
  - 0225E8 E225B4
  - BCD Semiconductor Y831 audio codec
  - InvenSense MP65M 6-axis gyroscope / accelerometer

Step 12


- We can't help pushing the buttons of manufacturers—and Samsung is no different.
- We tweeze off the home button assembly, followed by its good, old-fashioned mechanical button.
- We've reached the end of time. All that remains is the fused back of the display assembly.
  - While we're sad to see this (relatively) large component fused, we're happy to know that a spiderwebbed display would be reasonably fixable by simply replacing the entire display assembly.
- The teeny tiny touchscreen is powered by a Melfas touch sensor chip.

Step 13

- Samsung Gear 2 Repairability Score: **8 out of 10** (10 is easiest to repair)
  - The watch band is super easy to remove, speeding replacements and upgrades.
  - Screws, clips, and spring contacts make up the trifecta of easy opening. Getting in through the rear case is a snap.
  - Once you're inside, the battery can be peeled out and replaced with no tools.
  - A fused display assembly, glued into the front of the device, makes screen replacement a little difficult and costly.

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