

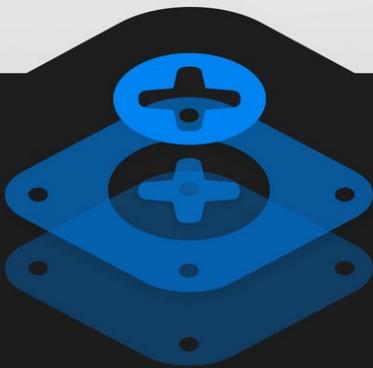


Magic Mouse 2 Teardown

Apple Magic Mouse 2 teardown performed on October 15, 2015.

Written By: Ron Davis

Magic Mouse 2



TEARDOWN

INTRODUCTION

This week, Apple refreshed their lineup of peripheral input devices, so we're summoning all the teardown strength we can muster. Thus far, we've cracked open the second generation [Magic Trackpad](#) and the first ever [Magic Keyboard](#), and now we're turning our attention to the Magic Mouse 2. Will this new design stand the test of time? Join us as we find out!

Does this teardown just *click* with you? Stay up to date with our latest investigations by following us on [Twitter](#), [Instagram](#), or [Facebook](#)!

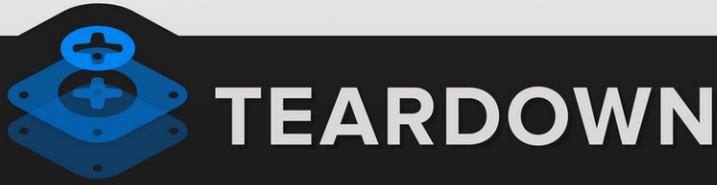
[video: <https://www.youtube.com/watch?v=801l3oz3fls>]

TOOLS:

- [iOpener](#) (1)
 - [Spudger](#) (1)
 - [iFixit Opening Picks set of 6](#) (1)
 - [iFixit Opening Tools](#) (1)
 - [T5 Torx Screwdriver](#) (1)
 - [Tweezers](#) (1)
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Step 1 — Magic Mouse 2 Teardown

Magic Mouse 2



- This mouse promises to be the most functional yet. Let's see how the specs stack up:
 - Multi-touch gesture control
 - Bluetooth wireless connectivity
 - Lightning port (for charging and pairing)
 - Internal lithium-ion battery

Step 2



- We find a new model number tucked in among the FCC markings and Lightning port: A1657.
- We're pretty excited to see Apple's first rechargeable mouse—but we have to say, that's a funny place for a Lightning port.
- ⓘ The Magic Mouse 2 is temporarily useless when wired—unless you plan to use your forehead as a mousepad.

Step 3



- At first glance, the new Magic Mouse (left) looks just like its older sibling. [Mouse twins!](#)
- However, with the two mice on their backs, the differences are more readily apparent.
 - Naturally, the rechargeable Magic Mouse 2 has forgone the battery door and traded a battery latch for its new Lightning port.
 - Apple also changed the color of the printing, and removed the status LED, maybe to match the rest of the peripherals.

Step 4



- This isn't our first time *around a [Magic Mouse](#)*, so we know we'll have to take our iOpener for a *spin*.
- In the previous model, strong adhesive secured the aluminum belly to the mouse. We don't expect this model will be any different in that regard.
- ⓘ If the other "Magic" peripherals have taught us anything, it's that Apple *loves* their adhesives.

Step 5



- Apple has mentioned that their mouse has an "optimized foot design." We thought we'd peel off those feet on the off-chance that the new model hides screws underneath.
 - ⓘ We can dream, can't we?
- After lots of heat and half a dozen prying tools wedged under the casing, the mouse is partially released from the gluey mess beneath.
- Aeons later, we finally separate the lower casing from the mouse and get our first view of its (still sticky) midframe.

Step 6



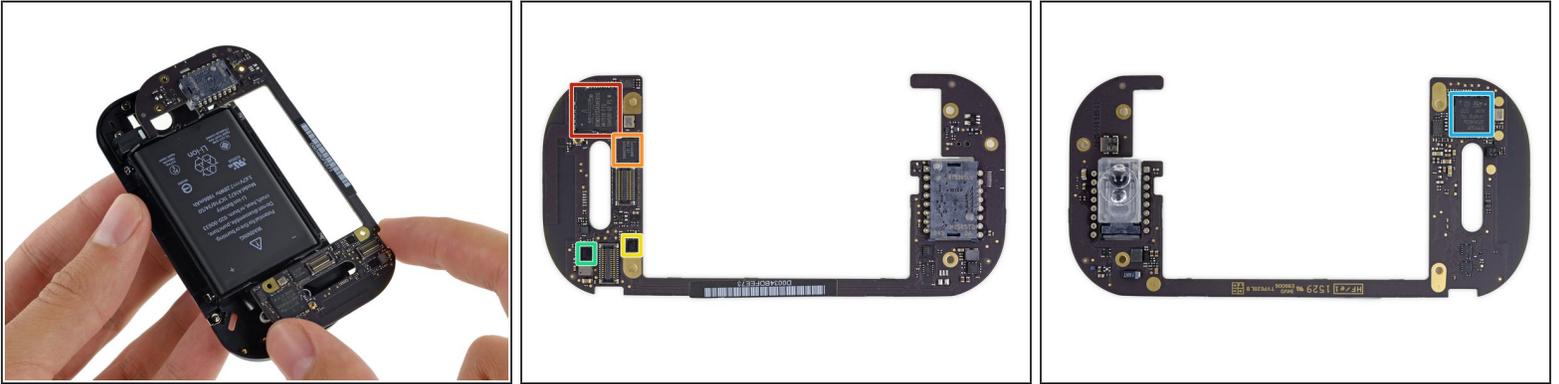
- Popping four plastic clips open lets us into the battery chamber.
 - ⓘ It turns out these clips are actually part of the rocking/clicking mechanism for the single top shell/button.
 - Also check that clear acrylic. It's only painted on the underside, leaving the top and sides clear —[so fetch!](#)
- With the upper casing lifted up, we get a clear view of what makes this mouse so *sense*-ational—that capacitive array.
 - ⓘ The capacitive array makes this mouse a bit of a trackpad hybrid, allowing it to detect touch on its surface, registering gestures made without even moving the mouse.

Step 7



- Finally something we understand! Screws! Unfortunately, they're holding down a bracket over a ribbon cable which prevents us from separating the mouse bits just yet—but hey, that ribbon cable seatbelt will make the mouse better withstand drops.
- Finally separated from the base of the mouse, the upper casing provides a clearer view of its capacitive touch-sensing array.
- A little spring provides some resistance and distributes force when the mouse is clicked, making it seem like the small button on the right occupies the whole width of the mouse. [Coooo!](#)

Step 8



- This lil' logic board looks ripe for the picking!
 - Broadcom [BCM20733](#) Enhanced Data Rate Bluetooth 3.0 Single-Chip Solution
 - Unknown 303S0499—probably a proprietary Apple touch controller
 - NXP [1608A1](#) Charging IC
 - Texas Instruments 56AYZ21
 - ST Microelectronics [STM32F103VB](#) 72 MHz 32-bit RISC [ARM Cortex-M3](#)

Step 9



- Hiding beneath the logic board, we find a teensy switch that makes the mouse click its click (no Taptic Engine just yet).
- Luckily, it's held in *only* by the board above, and is a welcome relief after wading through the rest of this tar pit.
- As a common failure part for computer mice, it's nice that Apple used a fairly standard and [easily-sourced switch](#)—although its replacement will require dealing with all of that glue (and soldering in the replacement switch).

Step 10



- We turn our attention to the battery, which sits snug as a bug in its little plastic box, making it annoying to extract.
 - As it turns out, that's not the only thing holding it down—there's a mess of glue to contend with as well. Removing the battery is even less fun than we feared.
- ⓘ The Magic Mouse 2's battery shares a common feature with the [Apple TV Remote](#)—the Lightning connector is soldered to the battery cable. Boo.
- This small accessory doesn't pack light—that 3.67 V, 7.28 Wh, 1986 mAh li-ion cell holds about 9% more juice than the one in the [iPhone 6s](#)!

Step 11



- The Magic Mouse 2 Repairability Score: **2 out of 10** (10 is easiest to repair)
 - The Lightning port and battery can be replaced (as a single component), independent of the logic board—if you can get the device open.
 - Replacing a malfunctioning switch requires prying through intense adhesive and soldering.
 - Excessive use of strong adhesive makes it very difficult to remove the rear panel, hindering access to every internal component.
 - Without a service manual, it is very difficult to open the mouse without damaging internal components such as the optical sensor and power switch.