

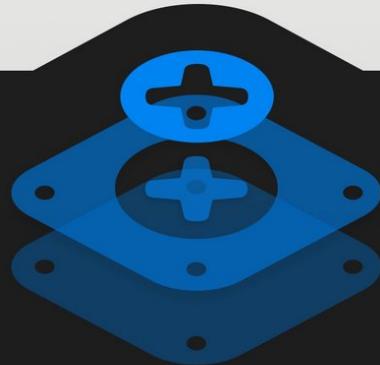


iMac Intel 21.5" Retina 4K Display Teardown

Teardown of the 21.5" Retina 4K iMac on October 16, 2015.

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iMac 21.5"
Retina 4K



TEARDOWN

INTRODUCTION

Christmas came early for the 21.5" Intel iMac, for today it receives the gift of high definition in the form of a 4K display. If you're asking Santa for this pixel-powerhouse, be sure to specify you'd like the 4K and not his evil twin brother—the [iMac Intel 21.5" EMC 2889](#). And now for everyone's favorite part, time to unwrap the goods!

Want more teardowns in your life? No need to ask Santa, we've got you covered! Follow us on [Twitter](#), [Instagram](#), and [Facebook](#)!

[video: <https://www.youtube.com/watch?v=8GFPiCVM59Q>]

TOOLS:

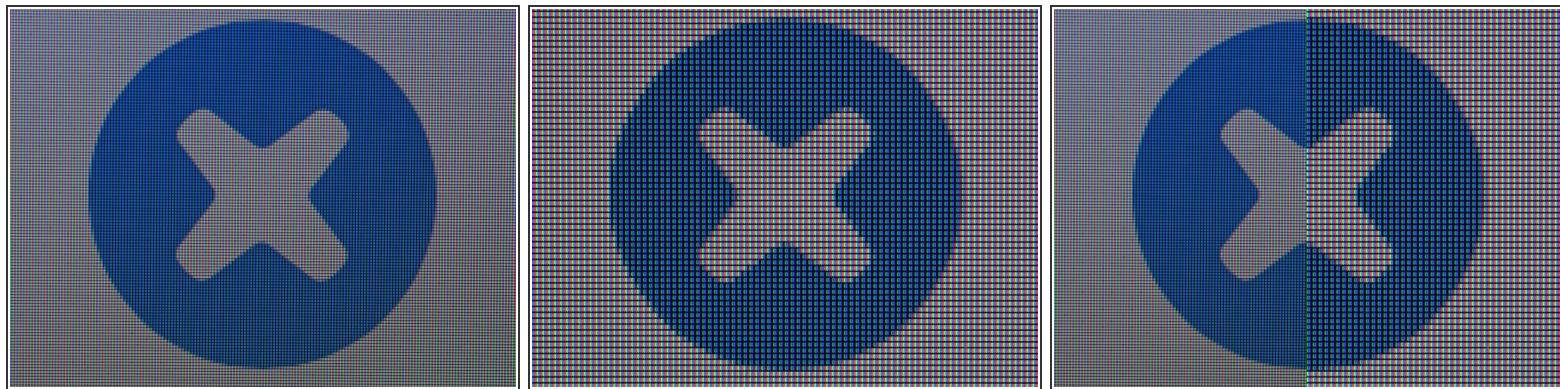
- [iMac Opening Tool](#) (1)
- [T5 Torx Screwdriver](#) (1)
- [T8 Torx Screwdriver](#) (1)
- [T10 Torx Screwdriver](#) (1)
- [Spudger](#) (1)
- [iMac Service Wedge](#) (1)

Step 1 — iMac Intel 21.5" Retina 4K Display Teardown



- Along with a spectacular display, the 21.5" Retina 4K iMac has some new age specs:
 - 3.1 GHz quad-core Intel Core i5-5675R (Turbo Boost up to 3.6 GHz)
 - 8 GB of 1867 MHz LPDDR3 RAM
 - Intel Iris Pro Graphics 6200
 - 1 TB (5400-rpm) hard drive, configurable up to 2 TB Fusion Drive or 512 GB of flash storage.
 - 802.11ac Wi-Fi + Bluetooth 4.0
 - Shiny new EMC number, 2833 (same ol' model number A1418)

Step 2



(i) The colors, Duke! [The colors!](#)

- This new display (first image) packs quite a punch, especially compared to the non-Retina iMac (second image). The difference is like pixelated night and seamless day.
- We got up-close and personal with the a few of the (over 9 million) pixels in the 4K IPS display. Each is made up of a red, green, and blue strip—vary those and you get a colored pixel.
- This 4,096 x 2,304 pixel display packs more than *4.5 times* the number of pixels in a [standard 21.5" iMac display](#).

Step 3



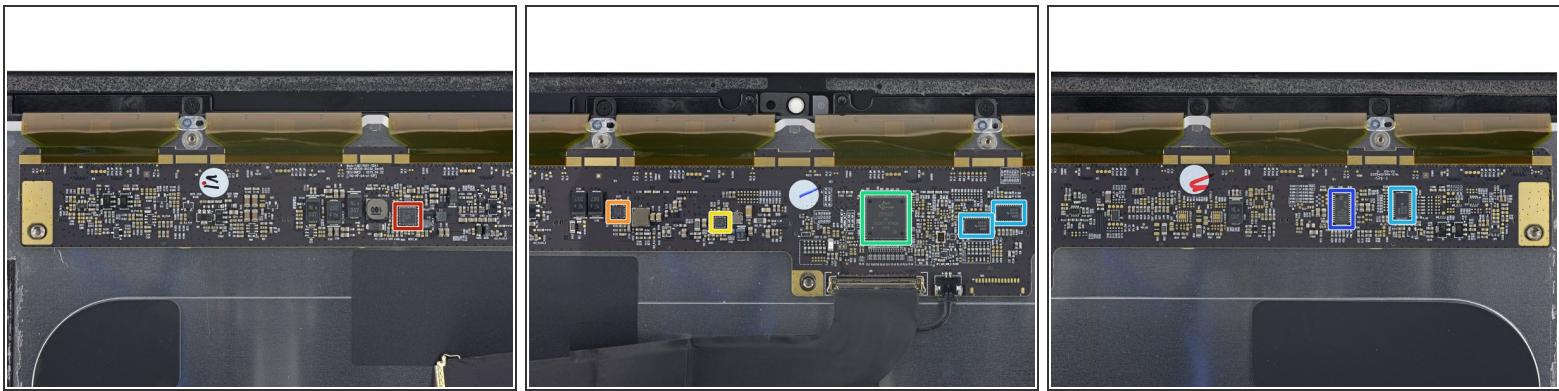
- Double the [opening tool](#), double the opening speed! We've done so many of these we figure we gotta step our game up a bit.
- The display cable is now *slightly* wider to support all those extras pixels. 16.4 mm over the 12.4 mm of the non-Retina 21.5".
- We also note a new rubber bumper stuck to the fan's top screw—likely to provide a little extra support for all those heavy new pixels.
- **(i)** The additional pixels' weight is actually negligible - in reality the bumper is additional support and cushion for the newer, and better (and more expensive) display assembly.

Step 4



- ⓘ This screen was manufactured by LG—Apple's go-to for both [standard](#) and [super high resolution](#) iMac displays.
- *Unlike other iMacs, this one's packing a [DCI-P3](#) display—one of the first available to consumers—so we're quick to dispatch this shiny metal cover so obviously concealing some delicious chips.*

Step 5



- Like its siblings, this 4K display has some control hardware tucked away behind the front panel:
 - Texas Instruments [TPS65168](#) High Resolution, Fully Programmable LCD Bias
 - Texas Instruments [TPS54320](#) 4.5 V to 17 V Input, 3 A Synchronous Step-Down SWIFT Converter
 - Texas Instruments [TPS54218](#) 4.5 V to 17 V Input, 3 A Synchronous Step-Down SWIFT Converter
 - Parade Technologies DP665 LCD Timing Controller (the same found in last generation's 27" 5K model)
 - *(i)* We assume this is an Apple modified version of the [DP663](#)
 - Texas Instruments NH245 55K G4
 - Texas Instruments [BUF16821](#) Programmable Gamma-Voltage Generator and Vcom Calibrator

Step 6

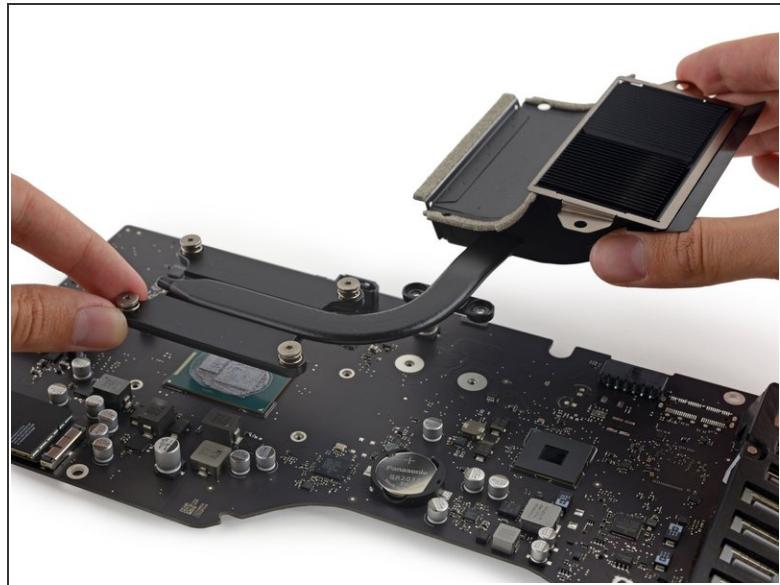
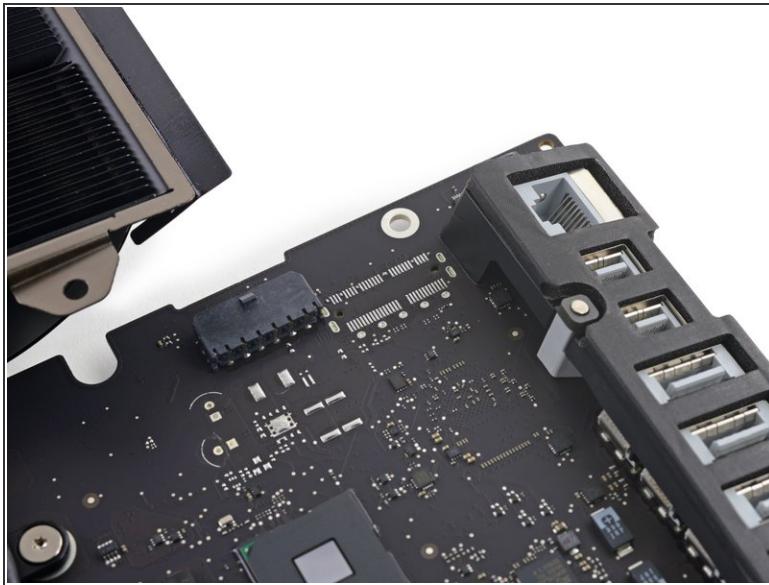


- Turning our attention to the interior of the iMac, we find exactly what you would have found in last year's 21.5" iMac—how dull.
- As usual, Apple sticks to its guns on its hard drive, fan, and speakers—retaining their designs between generations.

i This model again includes a mediocre 5400 RPM hard drive—maybe they're encouraging us to get that Fusion drive upgrade?

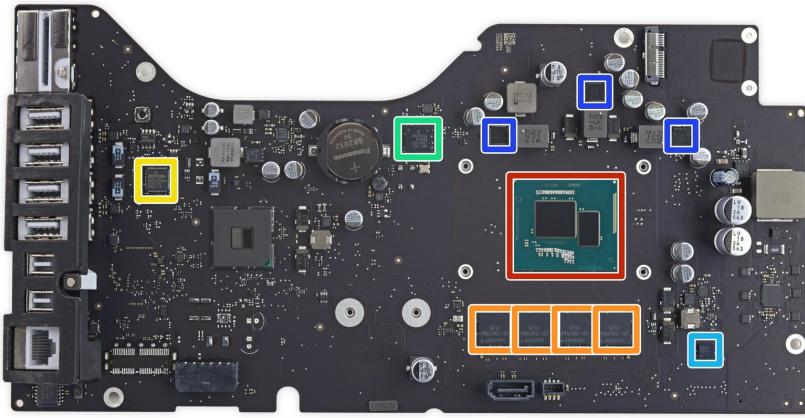
i To avoid boredom, we've made this step into a montage to fast-forward through these boring bits.

Step 7



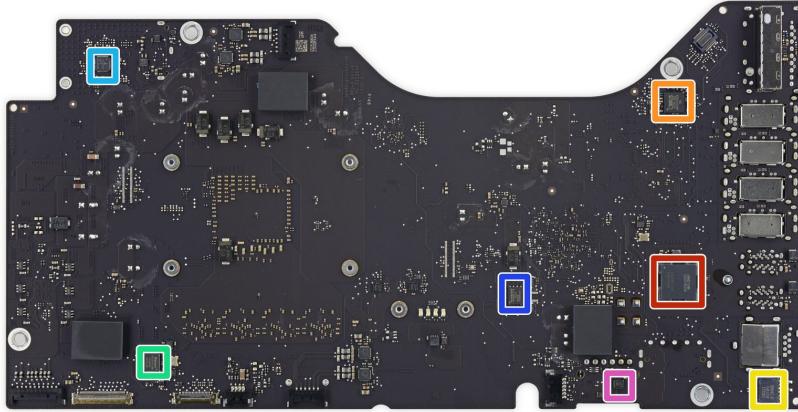
- Apple is back to their old ways: In 2012, when Apple launched the thin-edged iMac, our [base-level iMac](#) had empty solder pads where a Fusion Drive's SSD slot might live.
- The following year, our [teardown unit](#) arrived with an empty slot, ripe for the upgrade.
- **(i)** We're back to empty pads, and the death of any dreams of buying cheap and upgrading on your own. If you want Fusion Drive, you'll have to configure it at purchase, or be handy with a soldering iron.
- The curved heatsink is a bit beefier than we saw [earlier this week](#), and a return to the 2013 design; perhaps helping that new Broadwell CPU find cooler pastures.

Step 8



- This little machine has plenty of brawn, but we're itching to check out its brains too:
 - Intel [SR2AJ](#) Core i5-5675R 3.1 GHz Processor (4M Cache, TurboBoost up to 3.60 GHz) with Intel Iris Pro Graphics 6200
 - Samsung [K4E6E304EE-EGCF](#) 16 Gb LPDDR3 1867 MHz SDRAM (4 chips for a total of 8 GB)
 - Broadcom BCM5776 Gigabit Ethernet Controller
 - Texas Instruments [LM4FS1EH](#) SMC
 - Texas Instruments [HD3SS213](#) 5.4Gbps DisplayPort 1.2a 2:1/1:2 Differential Switch
 - Fairchild FDMF6808N Extra-Small, High-Performance, High-Frequency [DrMOS Module](#) (presumably a new iteration of [FDMF6708N](#))

Step 9



- Intel [DSL5520](#) Thunderbolt 2 Controller
- Cirrus Logic 4208-CRZ Audio Controller
- Delta 8904C-F Filter
- Vimicro [VC0359](#) Camera Processor
- Intersil ISL6372CRTZ PWM Controller
- Winbond 25064FVIQ
- International Rectifier [IRFH3702](#) 30V Single N-Channel HEXFET Power MOSFET

Step 10



REPAIRABILITY SCORE:



- iMac Intel 21.5" Retina 4K Display Repairability Score: **1 out of 10** (10 is easiest to repair)
 - Cutting the tape to open the iMac isn't too hard (with the right tools), but it must then be replaced to complete any repair.
 - The RAM is still soldered to the logic board—you're stuck with what you bought.
 - The Fusion Drive connector is missing from the logic board, killing all hope of storage hacking.
 - The CPU is soldered to the logic board, and cannot be replaced or upgraded.
 - The glass and Retina Display are fused together, increasing the cost of replacement.