



iPad Pro 10.5" Teardown

Teardown of the iPad Pro 10.5" performed on June 13, 2017.

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INTRODUCTION

Apple is at it again, trying to win over the workforce with yet another iPad Pro (this time with a brand-new 10.5" screen size). We expect to see Apple put points on the board with some silicon slam dunks, but what else puts this Pro in the big leagues? Is this new iPad a knock out of the park or is it just KO'd? Only one way to know! Let's ~~play ball~~ tear it down!

Care to keep up? We do move fast, but we love our teammates. Stay in the race by following us on [Facebook](#), [Instagram](#), or [Twitter](#) for the latest teardown news.

[video: <https://www.youtube.com/watch?v=DepdFt8ZxNc>]



TOOLS:

- [iOpener](#) (1)
 - [Suction Handle](#) (1)
 - [iFixit Opening Picks set of 6](#) (1)
 - [Phillips #00 Screwdriver](#) (1)
 - [Halberd Spudger](#) (1)
 - [Plastic Cards](#) (1)
 - [Tweezers](#) (1)
 - [iPad Battery Isolation Pick](#) (1)
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Step 1 — iPad Pro 10.5" Teardown



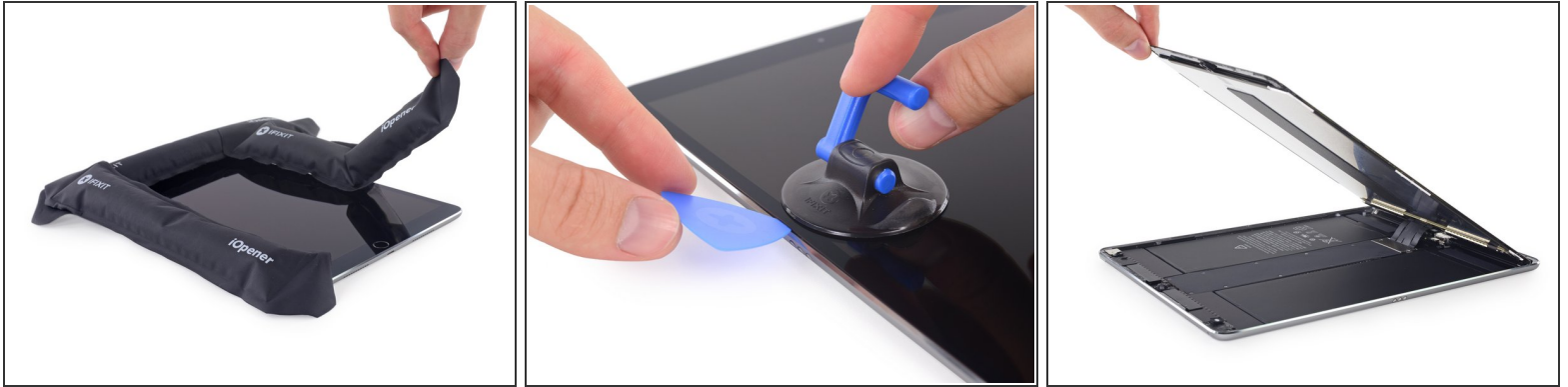
- [You can relax now](#)—this iPad is a *professional*. All kidding aside though, this thing boasts some impressive specs:
 - Fully laminated, 10.5", LED-backlit, Oxide TFT "True Tone" display with 2224 × 1668 resolution (264 ppi), featuring ProMotion Technology
 - 4th-generation 64-bit Apple A10X custom processor, with M10 motion coprocessor
 - 12 MP OIS rear camera with 4K video recording at 30 fps, and 7 MP FaceTime camera with 1080p video
 - Self-balancing, four-speaker audio
 - Touch ID sensor, 2 microphones, ambient light sensor, accelerometer, barometer, and 3-axis gyro
 - 802.11a/b/g/n/ac dual band MIMO Wi-Fi + Bluetooth 4.2
 - 64, 256, or 512 GB of on-board storage

Step 2



- Along with all-new performance specs and screen size, Apple launched a new model number, giving us a fresh **A1701**.
- How much bigger is bigger? Yesteryear's iPad Pro 9.7" measured in at 9.4" x 6.6", while the new Pro is 9.8" x 6.8". (And at 0.24", they are both equally ~~thick~~ thin.)
 - In short: [not much bigger](#).
 - ⓘ That being said, the bezels have been significantly reduced. So, the new Pro won't feel bigger in your hands, but it will *look* bigger where it counts.
- Other changes include: a microphone-hole migration, from beside the rear-facing camera to the selfie camera zone.

Step 3



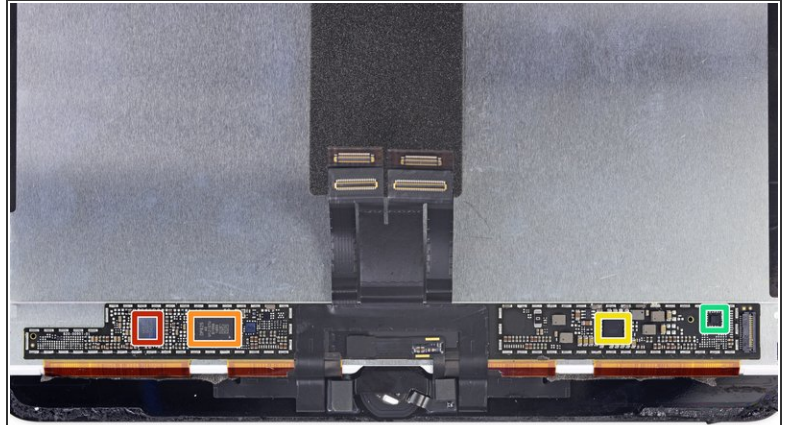
- [Like most iPads](#), entry into this unit is guarded by strong adhesive—but the thinner bezel means it's easier than ever to accidentally jam a pick between the display and laminated glass.
 - ❗ Luckily, we're seasoned teardowners, well-equipped with [the proper tools](#) for the job.
- Still, slicing blindly into a new iPad is always scary, since there's always the danger of cutting through a random display cable ...
- ... except when there's not! Apple put the display cables right down the center, out of harm's way.
- We've seen this arrangement in an iPad [only once before](#), and it appears Apple finally managed to unify the Pro line around this somewhat more symmetrical design.

Step 4



- Right about now, Apple's earning a pat on the back for using Phillips screws over the display cable bracket—unlike those pesky tri-point screws we uncovered in the [iPhone 7 \(Plus\)](#).
 - ❗ They also connected the display cable near the Lightning port instead of [dead center](#), making repairs slightly less awkward.
- But it does look as though we'll have to remove another *heavily* glued-in logic board. Let's cross our fingers for [battery pull tabs](#)!
- While planning our attack, we flip the switch on our X-Ray vision (courtesy of our friends at [Creative Electron](#)) to peek behind all those black boxes.

Step 5



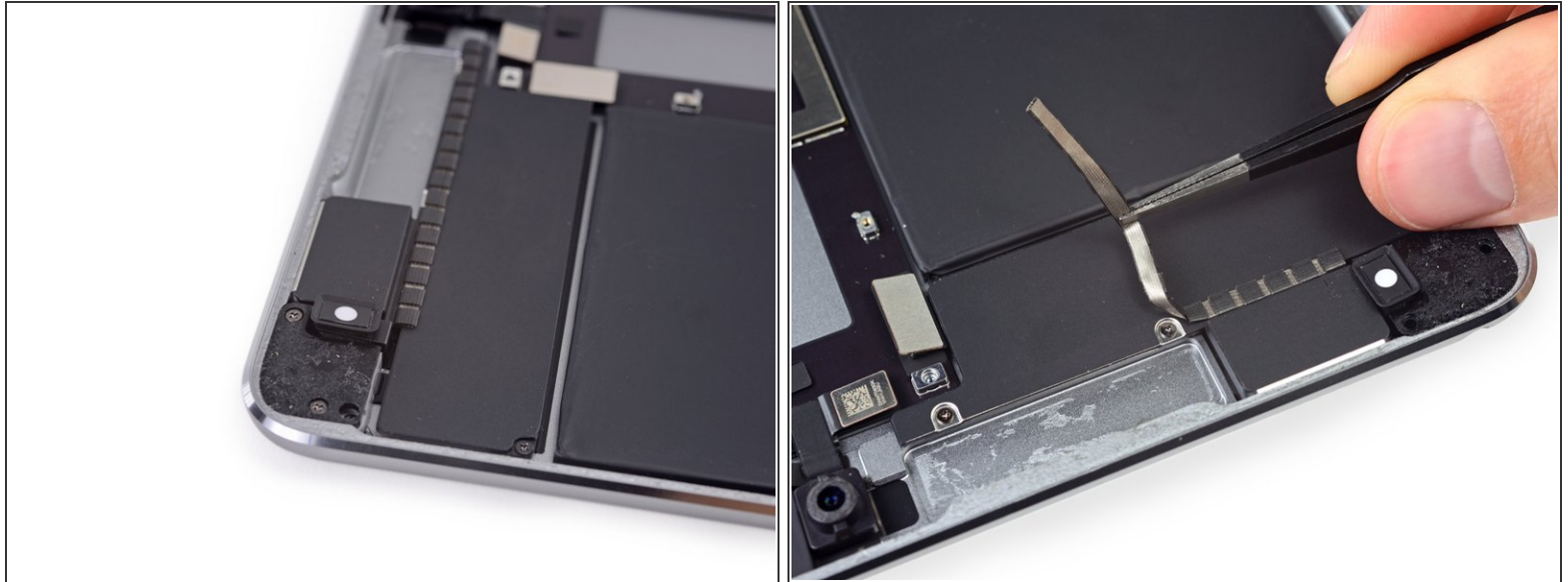
- To the naked eye, this display doesn't look [all that different](#) from previous generations. And with a resolution of 264 ppi, it's not the first Retina display iPad.
- All the same, 120 Hz is a blisteringly fast refresh rate for this many pixels, which is probably why it needs *four* (!) connecting cables. (Its ginormous older brother got by with just two.)
- The slimmer bezel and True Tone tech also set this display apart—but we're here for the guts. After melting off a couple shields, we find:
 - Intersil ISL24882B TFT-LCD Vref generator/programmable gamma buffer (likely)
 - Parade Technologies DP825 timing controller (likely an upgraded version of Parade ICs we've spotted in previous [iPad Pros](#))
 - Texas Instruments TPS565158 display power management
 - Texas Instruments [TMP456](#) remote/local temperature sensor

Step 6



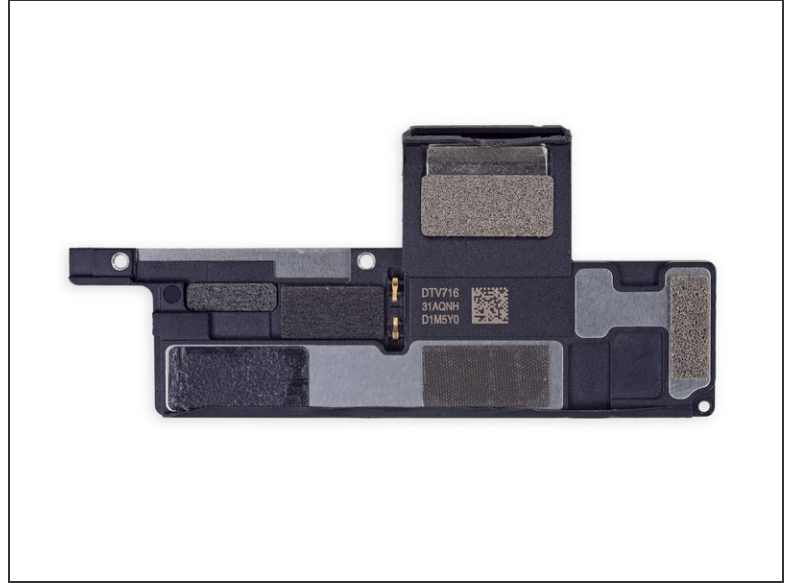
- In our Wi-Fi version of the 10.5" Pro, Apple left some mysterious plastic blocks where the LTE antennas might be found.
- To add to the mystery, these weren't present in [the Wi-Fi 12.9" iPad Pro...](#)
- ☑ We are speculating that it adds support to the display assembly, as opposed to being empty space as seen in earlier iPads.
- Nothing much to see until we remove the large shield covering the logic board. Time to unzip it and see what we find.

Step 7



- As we delve deeper into the shallow device, we realize we haven't spotted any internal cabling yet.
- We find this 3.5 mm headphone jack and speaker driver right where we expect ...
- ... but instead of routing their ribbon cables over the top of the speaker resonance chamber like in their [12.9" counterparts](#), Apple has tucked the cables rather inconveniently *underneath*—that is, sandwiched between the speaker and rear case.
- Lifting up a strip of padded conductive tape, we find screws! [Last time](#) we had a sad time removing Pro speakers, so screws are a good sign.
- *Psych*—those screws didn't save us from fighting through nasty adhesive to remove the speakers.

Step 8



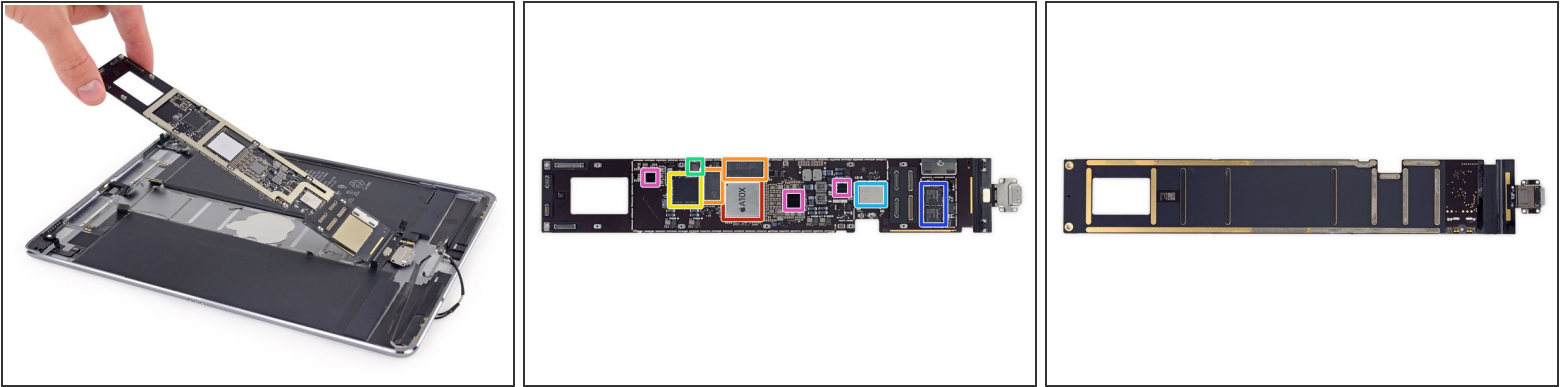
- Sure enough, *allllllll* the connecting cables are hiding out under this ~~overturned rock~~ speaker chamber.
- At least the speaker chamber itself comes out intact, with the driver attached— [unlike in the 12.9" Pro](#), this is a nondestructive process. The speaker even has little spring contacts, so it lifts out cleanly.
- Not so for the ribbon cables that remain glued to the rear case, however.

Step 9



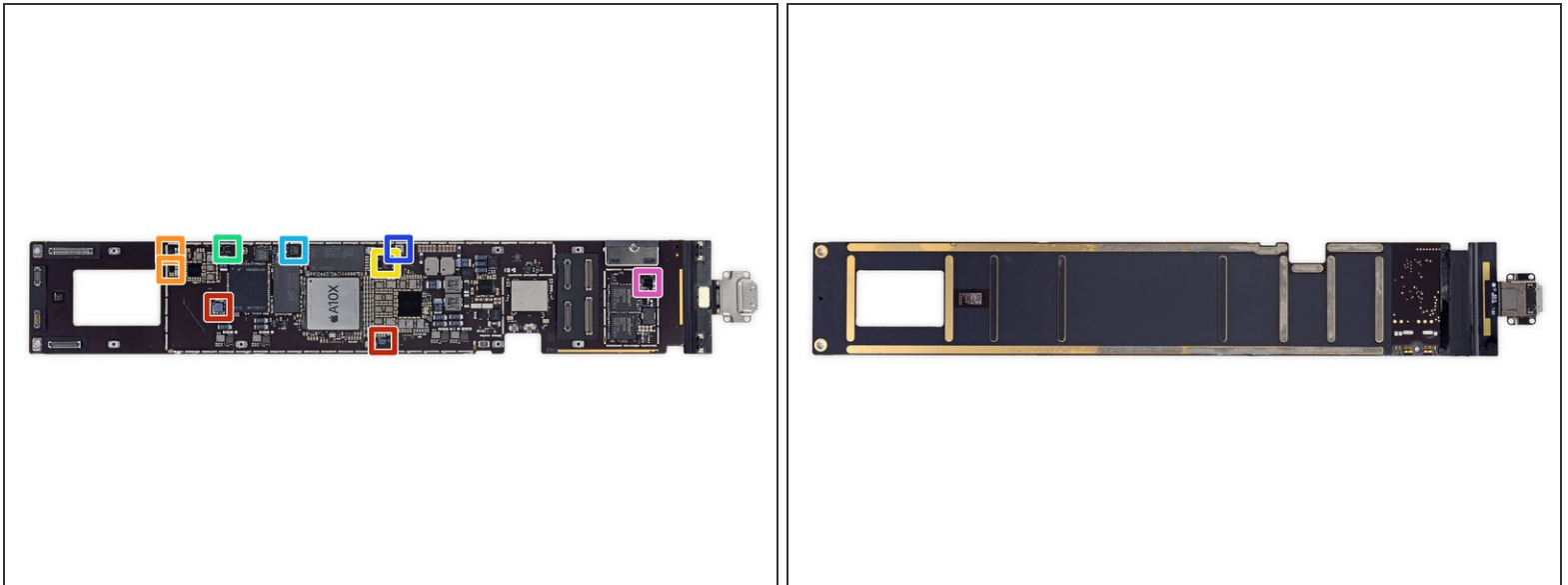
- The fight with the speaker adhesive on the opposite side rewards us with access to the rear-facing camera and light sensor.
- The light sensor is covered by a green/white/clear filter that might help with the True Tone system.
- The 10.5" Pro adopts the same formidable cameras found in the [iPhone 7](#).
- ① The rear-facing camera now shoots up to 12 MP stills and 4K video at 30 fps, all with the benefit of optical image stabilization. This is up from the 8 MP stills and 1080p video capable [cameras found in the 2015 12.9" Pro](#).
- The front-facing selfie camera is no slouch either, as it can take 7 MP photos and has 1080p video recording.

Step 10



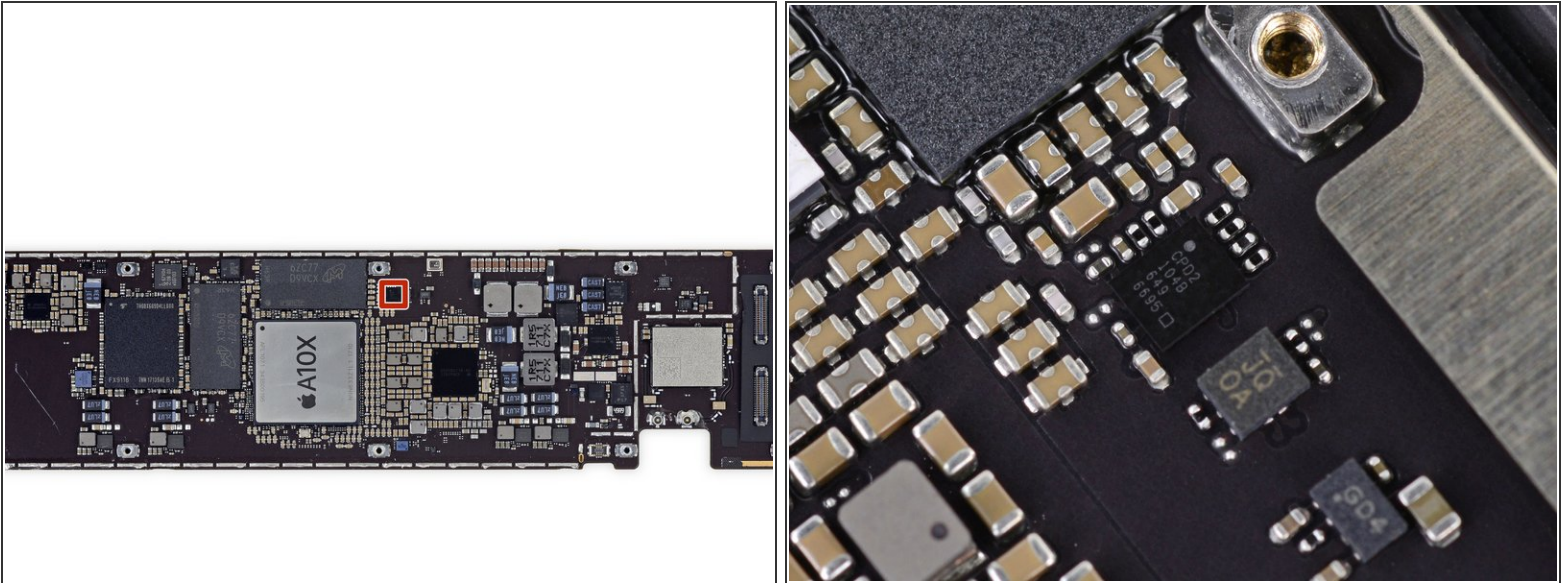
- A tablet is only as powerful as its processors. Here's what's powering this one:
 - Apple [APL1071](#) Apple A10X Fusion chip with 64-bit architecture and embedded M10 coprocessor
 - Micron [MT53B256M64D2PX-062](#) 1600 MHz 2 GB LPDDR4 (2 chips for 4 GB of RAM)
 - Toshiba THGBX669D4LLDXG 64 GB NAND flash memory
 - NXP 67V04 (PN67V) NFC controller (as seen in the iPad 5, iPhone 7, and Apple Watch Series 2)
 - Murata/Apple 339S00249 wireless module
 - 2 x Broadcom [BCM15900B0](#) touchscreen controller
 - Apple 343S00118-A0, 343S00120-A0, and 343S00121-A1 power management

Step 11



- IC Identification, continued:
 - Cirrus Logic CS42L83A audio codec and likely [CS48L10A0](#) voice/audio digital signal processor
 - Texas Instruments LM5662A0 backlight LED driver
 - Diodes Incorporated [PI3USB102E](#) 480 Mbps USB 2.0 switch
 - Analog Devices [ADAU7002](#) Stereo audio converter
 - Invensense accelerometer
 - Bosch Sensortec pressure sensor
 - NXP Semiconductor CBTL610A38, likely a display port multiplexer

Step 12



- **Teardown Update**—A closer look at the logic board reveals something interesting:
 - Cypress [CYPD2104](#) USB Type-C Port Controller
- What's a USB-C controller doing in here? The iPad doesn't have a USB-C port.
- ⓘ Ah, but if you pair this little chip with a Lightning-to-USB-C cable and Apple's 29W USB-C charger, you unlock a bonus feature: [USB Power Delivery](#), a.k.a. *fast charging*.
- Previously featured only on the 12.9" iPad Pro, fast charging cuts your battery charging time in half. (This was an especially big deal on the 12.9" model, which otherwise needs up to *five hours* to drink enough electrons for a full charge.)


Step 13



- Because of the pull-tab adhesive securing its battery, we deemed the original iPad Pro the [first really recyclable iPad](#). Hoping for lightning to strike twice, we apprehensively peel up some tape on the edge of the battery.
- [Foiled!](#) More plastic spacers, and only nasty gooey adhesive instead of nice clean peel-out stickums.
 - How about next time Apple? Cherry on top?
- This Pro gets a 3.77 V, 8134 mAh, 30.8 Wh battery—a slight downsize from the 38.8 Wh battery found in the [12.9"](#), but an upgrade from the 27.91 Wh battery in the [9.7"](#).

Step 14



 Oh, and one more thing.

- The last time we tore down one of Apple's smart keyboards, it [didn't go so well](#). This time though, things are different—we've got *superpowers*. (Okay, we've got [friends](#) with superpowers.)
- The Smart Connector is that dark bar at the top of the stand roll. Also featured in black: the various magnets that keep this guy in position.
- Hopefully the single switch on that spacebar doesn't make it a pain to use, but look at that lovely tracery. *Sigh*.

Step 15



- That's all folks!
- Special thanks to [Creative Electron](#) for lending us their X-ray goggles!

Step 16 — Final Thoughts

REPAIRABILITY SCORE:



- iPad Pro 10.5" Repairability Score: **2 out of 10** (10 is easiest to repair)
 - While not soldered in place, the battery is very solidly adhered—no more pull tabs like we saw in the iPad Pro 12.9".
 - The Smart Connector port is virtually impossible to replace—but incorporates no moving parts and is unlikely to fail.
 - The LCD and front panel glass are fused together. This slightly simplifies the opening procedure.
 - The fused front panel increases the cost of screen repair, and the risk of damaging the LCD when opening.
 - Gobs of adhesive hold everything in place, making all repairs more difficult.