



Palm Pre Teardown

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INTRODUCTION

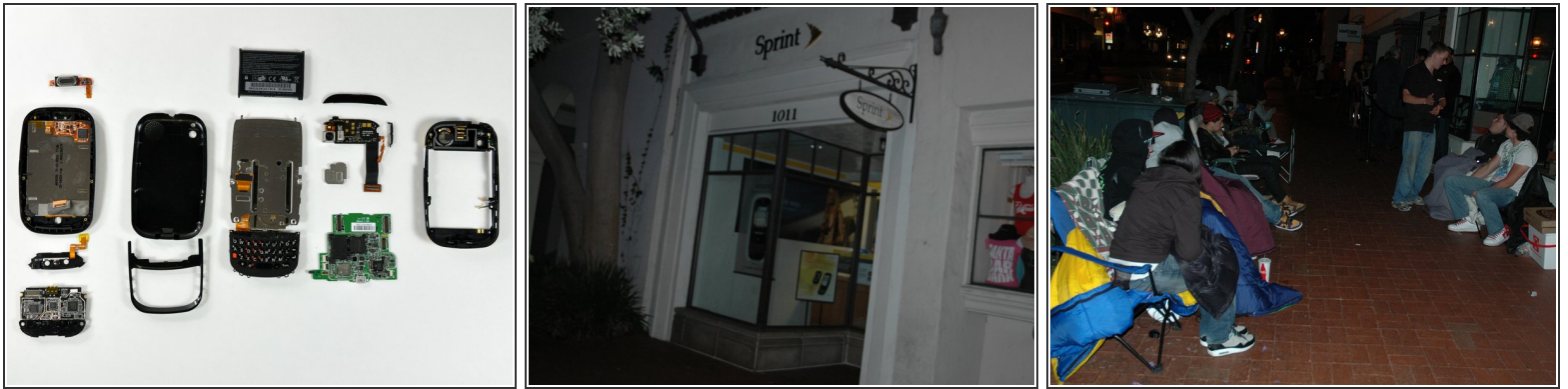
We got our hands on the new Palm Pre from Sprint! Oh joy, our all-nighter in front of the Sprint store paid off! We're finished disassembling it now. Follow our updates [@ifixit](#) on twitter.



TOOLS:

- [Spudger](#) (1)
 - [T5 Torx Screwdriver](#) (1)
-

Step 1 — Palm Pre Teardown



- ① Welcome to another exciting teardown brought to you by iFixit. Today we will be disassembling the newest sensation in the mobile phone market, the Palm Pre from Sprint.
- ① You can write a teardown just like this! Take something apart and wow the world with [what you find!](#)
- We arrived at the Santa Barbara Sprint store at 2am and were first in line!
- Two blocks down the street at a local shoe store were 18 people stolidly entrenched in line for Kanye West's new [Air Yeazy](#) shoe. Some of them had been in line since **Monday!**

Step 2



- By the time we got our Pre at 8 am, there were about 25 others waiting.
- It took several tries to activate the phone (about five minutes total), but no where near as bad as Apple's iPhone 3G [launch activation woes](#) last summer.
- We tested out Sprint's 3G EVDO network on the road home and didn't notice any interruptions. Uploads and downloads were fast, and Pandora's application ran like a champ.
- WebOS is so cool! We love how natural it feels to swipe between applications and multitask with Web, Twitter, AIM, and Pandora.

Step 3



- Contents of the box:
 - Palm Pre phone
 - AC Phone Charger, Standard Li-Ion Battery
 - Stereo Headset, Carry Pouch
 - Micro USB Sync Cable
 - Get Started Guide and Features Guide
 - A prepaid plastic recycling envelope in the box, making it easy to recycle your newly obsolete phone. This is a fantastic move on Palm's part, but of course [recycling](#) is a last resort if you can't fix it.
 - And a partridge in a pear tree...

Step 4



- Users preferring physical keyboards will be satisfied, but iPhone veterans may be left disappointed at the lack of a software keyboard option.
- Revealing the keyboard feels awkward and interrupts the smooth WebOS experience. Try before you buy, because this keyboard could be enough to deter picky users.
- The Pre comes with a stylish and rugged case, a slide-out QWERTY keyboard, earbuds and USB cable.
- The Pre is *"Inspired by and designed in California,"* while the iPhone is merely *"Designed by Apple in California."*

Step 5



- The battery came only partially charged, and we managed to drain it on the 1.5 hour drive back from Santa Barbara.
- We'll just charge it briefly with the MicroUSB connector before ripping it apart. :)
- You get a full one year warranty on hardware, but for software Palm only promises "software will perform in substantial conformance to their program specifications for a period of ninety (90) days."

Step 6



- The lineup: Apple iPhones vs. Palm Pre
- We love the feel of holding the Pre in our hands. In its closed position, it feels much more comfortable to hold than the iPhone.
- ⓘ Notice the extra thickness of the Pre compared to the iPhone (17mm vs 12mm). Not only does this allow the engineers more flexibility in designing the physical layout of components, but it also makes the Pre conform really well to our palm.

Step 7



- To see your face better while taking photos for MySpace, the Pre includes a mirror on the back.

⚠ Unfortunately, the mirror distorts everything in sight-- it conforms to the slight curve of the phone. It also gets easily covered in fingerprints. Your digits will gravitate to this region while holding the phone open.

i Cheese does not cut Pre. Evidently it only works [the other way around](#).

- The 3 megapixel camera does take great pictures though (we took the last photo here using our Pre in the car).

Step 8



- The back panel snaps off easily to reveal the battery.
- The Pre's battery capacity is 1150 mAh, exactly the same as the iPhone 3G, though the Pre is reported to have slightly worse battery life due to its background process capability (but we don't mind).
- ⓘ Though Sprint will eventually sell replacement and/or backup batteries, our store did not have them available today.

Step 9



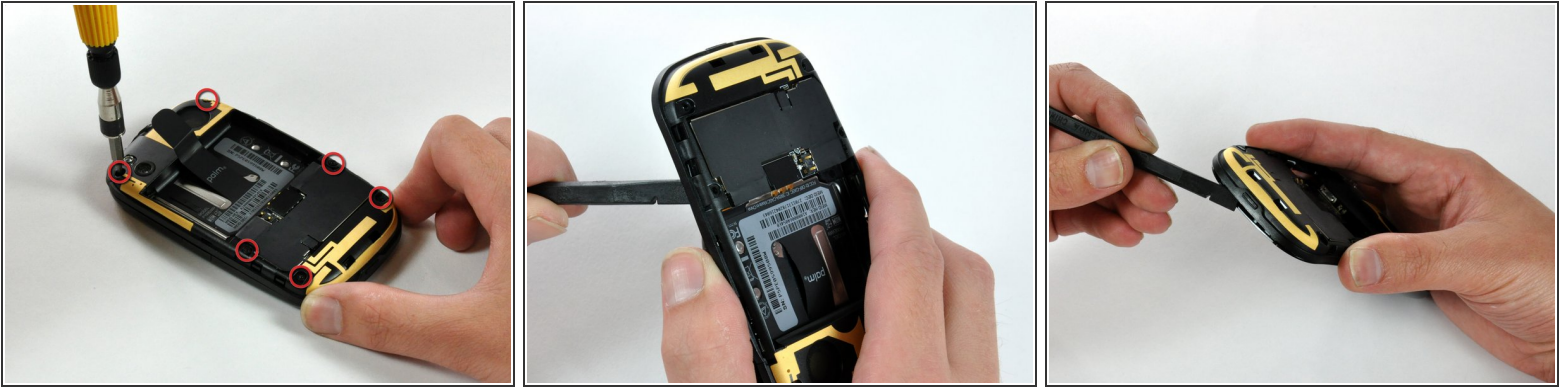
- The battery from the Pre on the left, and the iPhone 3G on the right. Although they're different shapes, both weigh in at 23 grams.
- In contrast to Apple's iPhones, the battery on the Pre is user-replaceable. Thanks Palm!

Step 10



- The back of the phone and speaker.
- The speaker in the Pre is substantially better than the one in the iPhone.
- Palm didn't skimp on antennas. They're exposed for all to see as soon as you remove the back panel.
- The [antenna design](#) is three dimensional to optimize signal quality. The iPhone's antennas also use this technique.
- The small sticker labeled **palm** visible in the third image is probably there to prevent people from doing what we're about to do...

Step 11



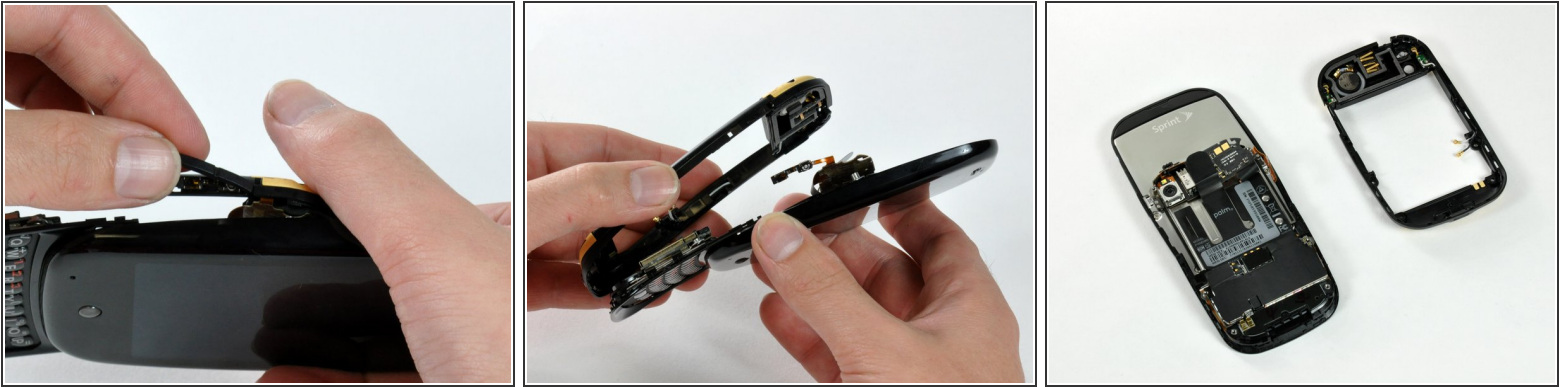
- Removing one of the six T5 screws required to separate the backplate from the phone.
- The screw in the upper right corner is covered by a sticker labeled "Palm."
- There are interlocking tabs securing the backplate.
- Carefully work around the phone releasing the tabs as you go.

Step 12



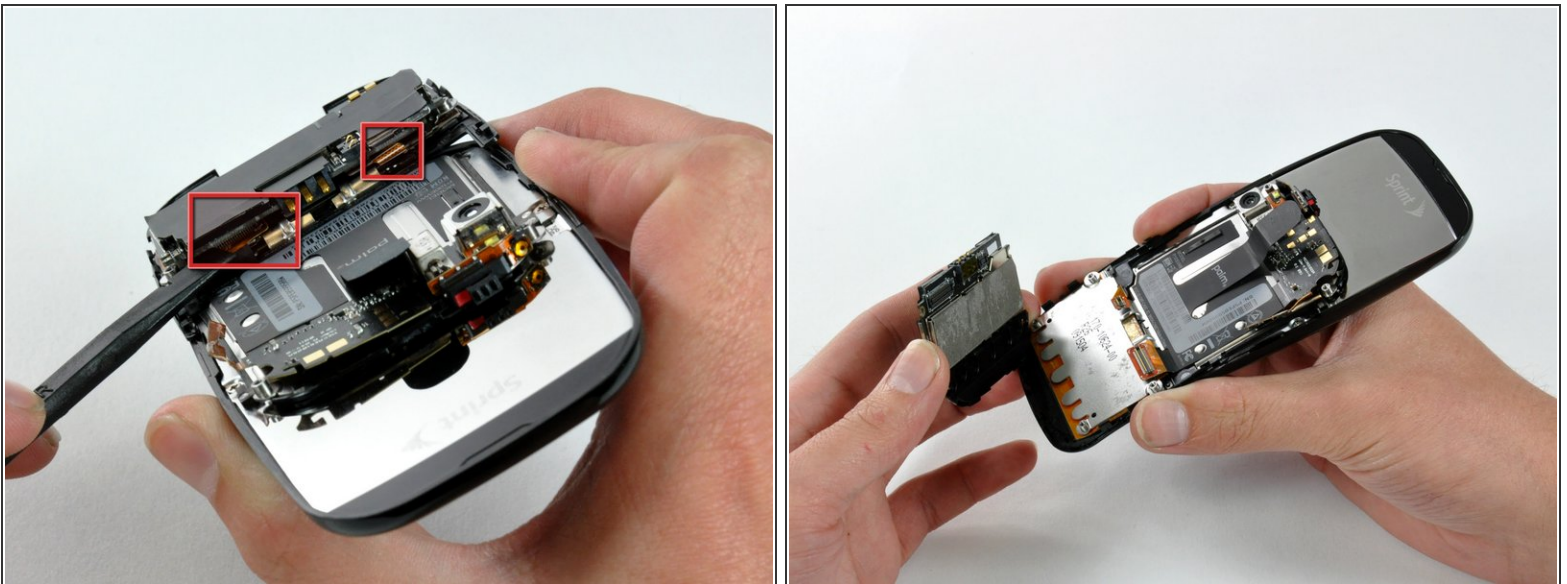
- i** We found two antennas.
- One was labeled GPS (its obvious what its for) and the other one was labeled DIV (for [diversity antenna](#) - thanks microbreak!).

Step 13



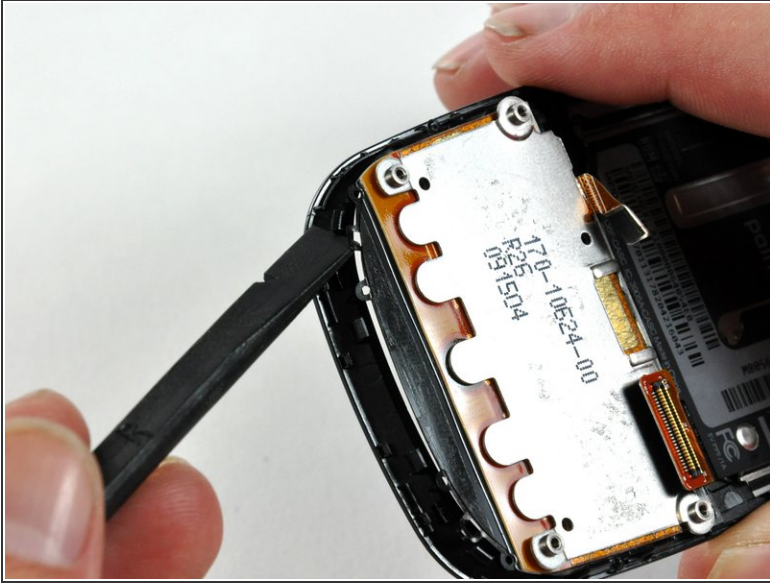
- The two volume buttons are still connected to the front half of the phone. Completely separating the two halves requires first removing the plastic volume button cover, then peeling up the volume button electronics.
- The back frame separated from the rest of the phone.

Step 14



- Two connectors need to be disconnected in order to remove the black PCB.
- The PCB is glued to the rest of the Pre. A gentle pry with the spudger separates the two.

Step 15



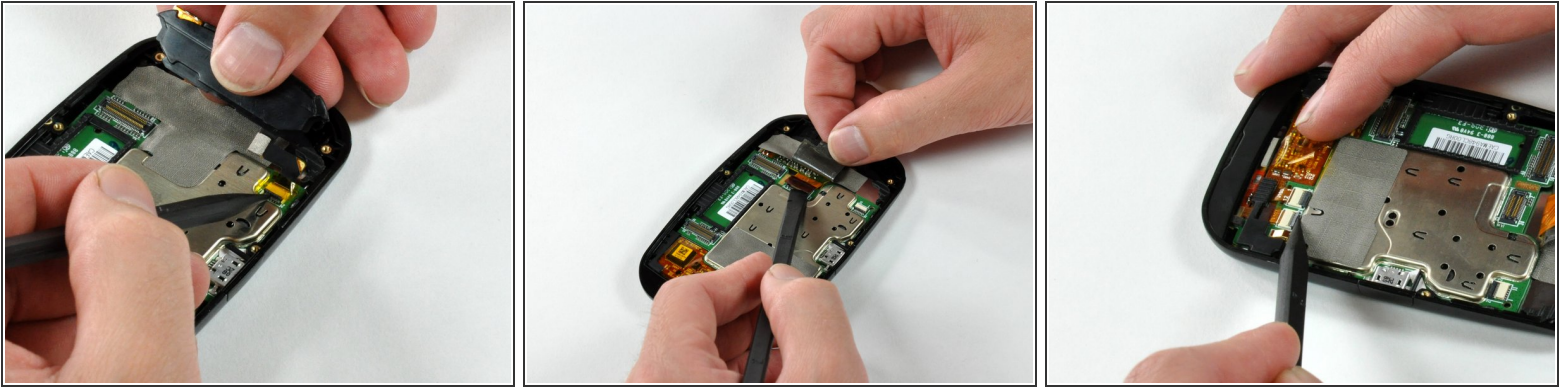
- Removing the keyboard bezel.
- The hardware keyboard and its associated sliding mechanism weighs 32 grams. That's nearly 25% of the weight of the phone! Even if you're not a fan of a hardware keyboard, there's no denying that packing the keyboard into a device that's not much larger or heavier than the iPhone is a very impressive engineering feat.

Step 16



- The Palm Pre is the first phone using Texas Instrument's new [OMAP3](#) (Open Media Applications Processor) platform.
- The processor is a 600 MHz ARM Cortex A8 + PowerVR SGX 530 GPU + 430MHz C64x+ DSP + ISP (Image Signal Processor)
- The chip covered by a white sticker on the LCD is CP6944BA 0907 A 04 KOR 604022.
- We found a water damage sensor on the logic board, just below the Micro USB port, indicated by the red box on the second image.

Step 17



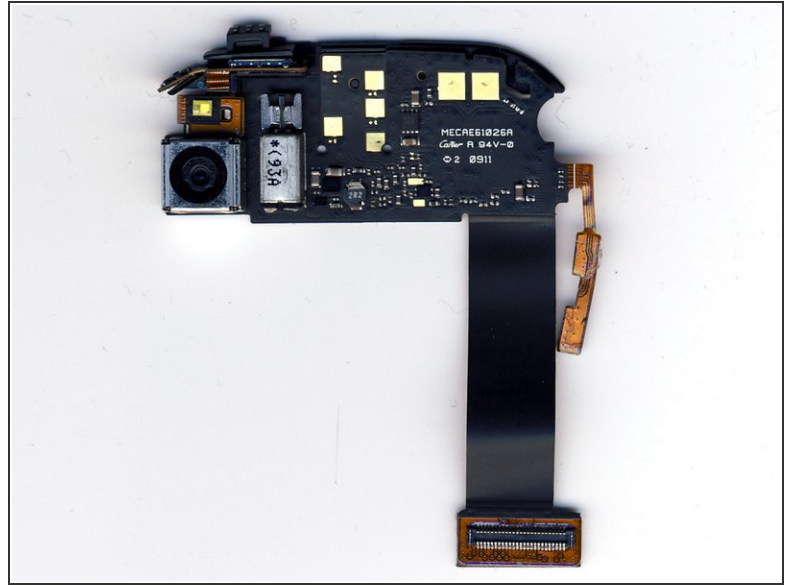
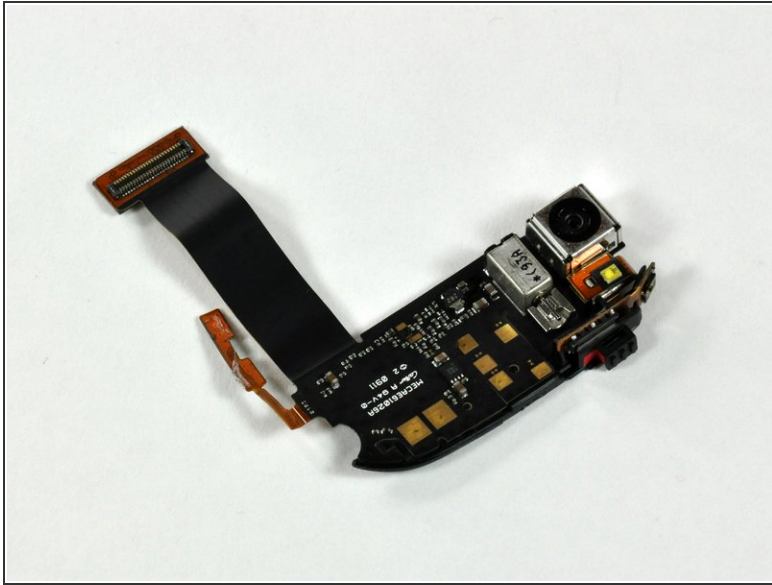
- Removing four more small connectors, and the main logic board is finally free.
- Like the original iPhone, the Pre has two main boards, the logic board and the communications board.
- Unfortunately, everything interesting is carefully hidden beneath metal EMI shields. Not only are the shields soldered to the board, there's epoxy holding them down as well. Palm definitely didn't make it easy to see what makes the Pre tick.

Step 18



- Finally, prying the logic board out.
- ❗ The Pre is definitely not an easy phone to service. There are lots of fragile and tricky tabs that will make putting the phone back together challenging.
- We wish manufacturers would put more effort into making their devices easily repairable.

Step 19



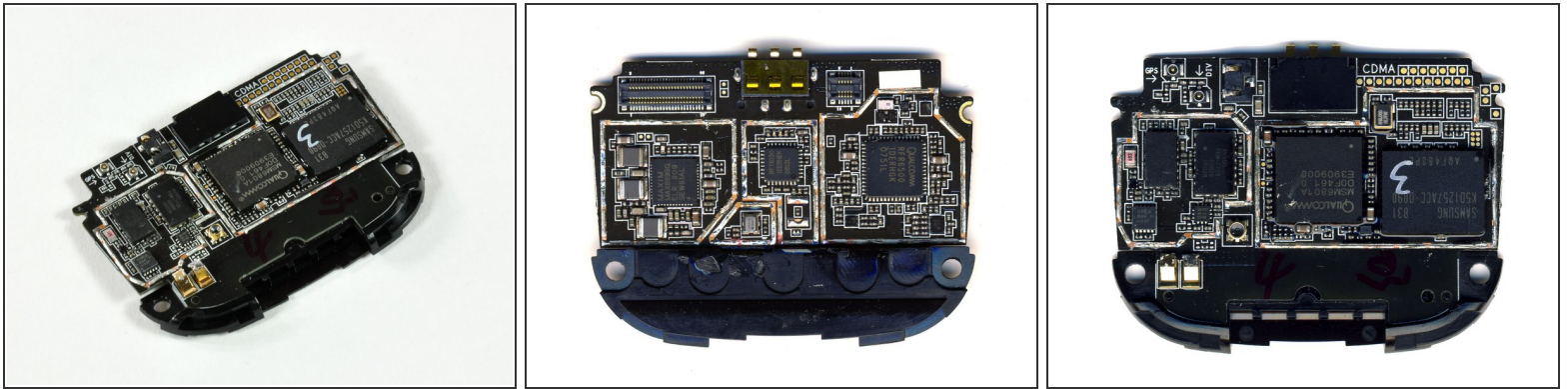
- This is an incredibly thin, flexible PCB.
- The Pre has an integrated 3 megapixel digital camera with LED flash.
- The camera is one of our biggest complaints with the iPhone. The iPhone suffers from both poor quality photos and a long shutter delay. While the quality is definitely improved on the Pre, it's still pretty slow snapping photos.
- You can see the standard phone vibrator next to the camera.

Step 20



- Internal components, from left to right:
 - Earpiece speaker, LCD display and digitizer, microphone, communications board.
 - Original rear panel and plastic framework.
 - Battery, internal metal framework and spring mechanism, keyboard.
 - Camera board and main circuit board.
 - Main plastic framework containing antennas, antenna cabling, and the surprisingly excellent speakerphone.
 - Main plastic framework containing antennas, antenna cabling, and the surprisingly excellent speakerphone.

Step 21



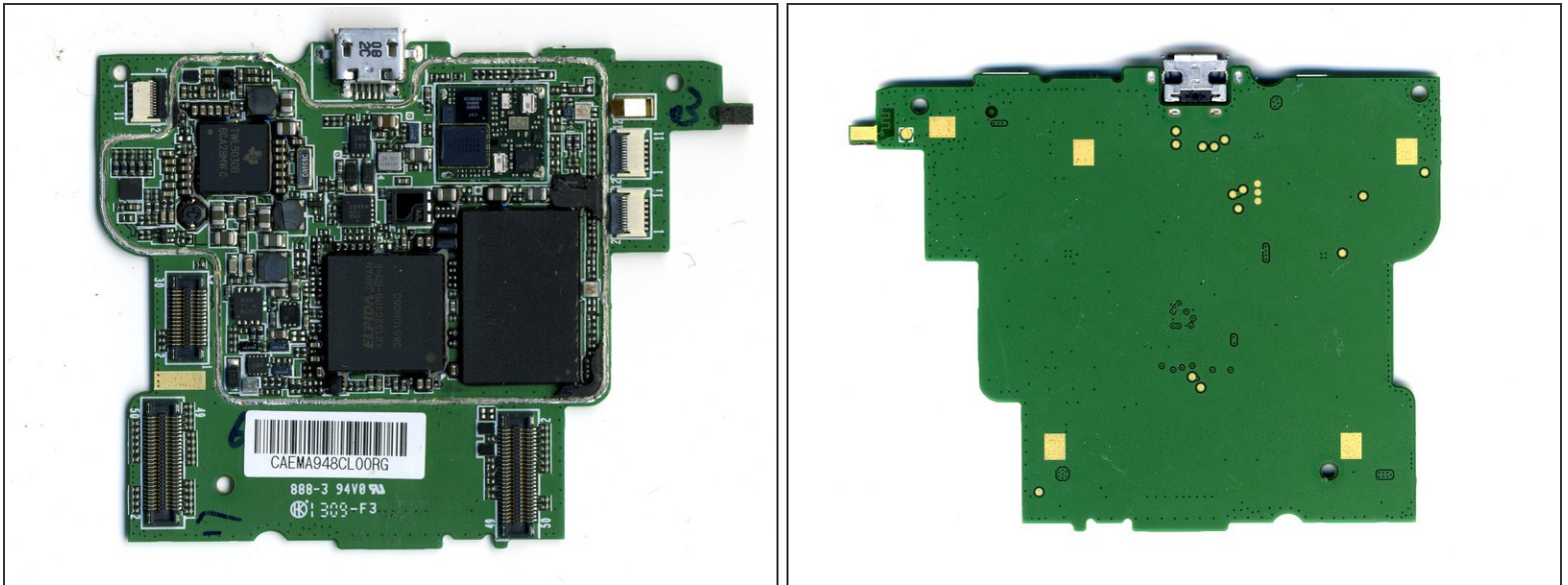
- Communications board with high-resolution shots of the [front](#) and [back](#).
- Samsung K5D1257ACC-D090
- Qualcomm MSM6801A
- AVAG0 FEM-7788
- 0CEQ 86K H33F

Step 22



- The back of the display, complete with what appears to be a manufacture date at the beginning of January.
- Unfortunately for repair, it doesn't look like the LCD and digitizer are easy to separate.
- Both the iPhone and the Pre sport a [HVGA](#) display. However, the iPhone's display measures 3.5" diagonally, while the Pre's is only 3.1"
- A [high resolution version](#) of this image.

Step 23

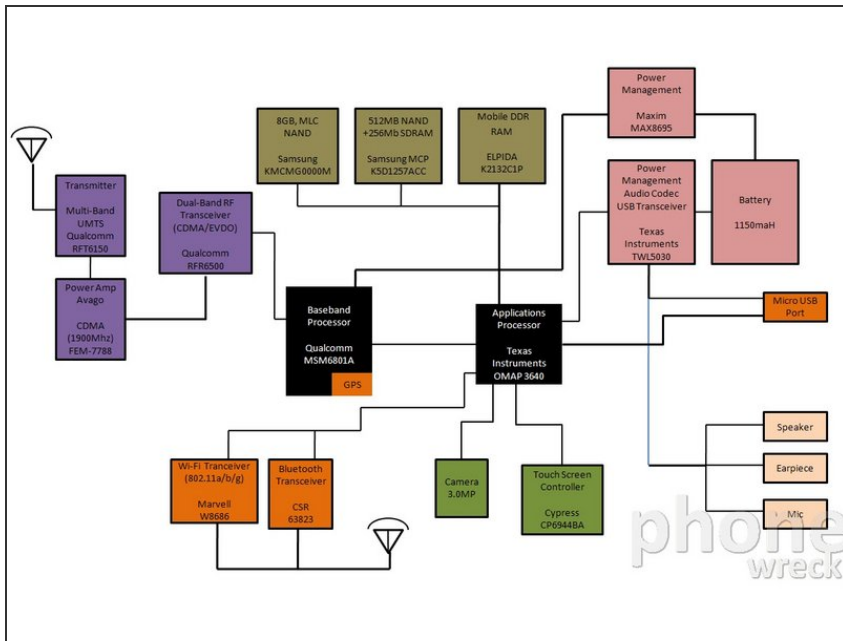


- Logic board with shielding removed ([high res](#)).
- Chip markings:
 - Texas Instruments TWL5030B 8CA28MWC
 - Marvell WiFi chip under the silver EMI cover, marked W8686B12. Directly above it is the CSR bluetooth chip. They're both on a daughterboard soldered to the logic board.
 - Samsung SDRAM KMCMG0000M-B998
 - ELPIDA K2132C1PB-60-F 08510N060. Another BGA chip underneath this one is Texas Instruments [OMAP3430](#).
 - Unbranded chips: 3335A ADJ RNX, 89A8 850. And the one hidden with epoxy above Samsung's SDRAM is Kionix [KXSD9](#) 3-Axis Accelerometer.
- The top of the board is labeled 888-3 94V0 1 309 - F3. The bottom of the board is bereft of chips or markings, something Apple has never done.

A collection of disassembled mobile phone components, including two smartphones (one with a screen, one without), various internal parts like batteries, cameras, and circuit boards, and a keypad.

- Component comparison between the iPhone and the Palm Pre.
- Hardware-wise, the Palm Pre is very impressive. Our only hardware complaint was the physical keyboard, although some people may appreciate the hardware keyboard.
- The Pre logic board is **substantially** smaller than the iPhone logic board, which is very impressive considering how renowned Apple's engineers are for shrinking hardware footprints. It's amazing the difference a year can make.
- In general, this Palm hardware reminds us a lot more of Apple's engineering style than any of hardware we've taken apart by other manufacturers (like Dell).
- For more technical analysis, see [the analysis](#) our partners over at PhoneWreck just posted of the Pre.

Step 25



- Component diagram from [phoneWreck's detailed chip analysis](#).

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