# Kindle 2 Teardown

Written By: Luke Soules

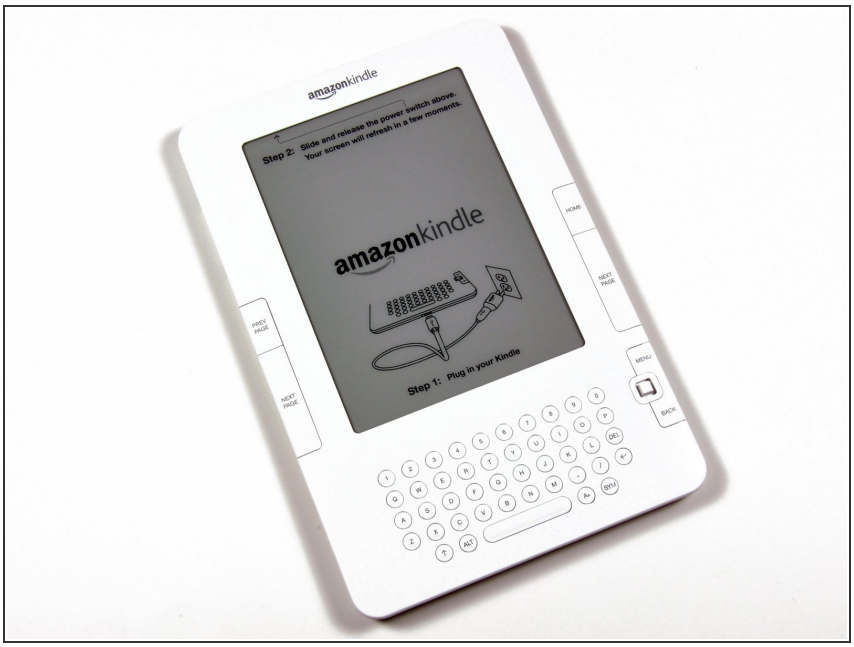
## INTRODUCTION

Our Kindle 2 shipped on Monday, February 23rd, a day early. Thanks to UPS Next Day Air, we have the reader in our hands Tuesday morning.

## TOOLS:

- Phillips #0 Screwdriver (1)
- iFixit Opening Tools (1)

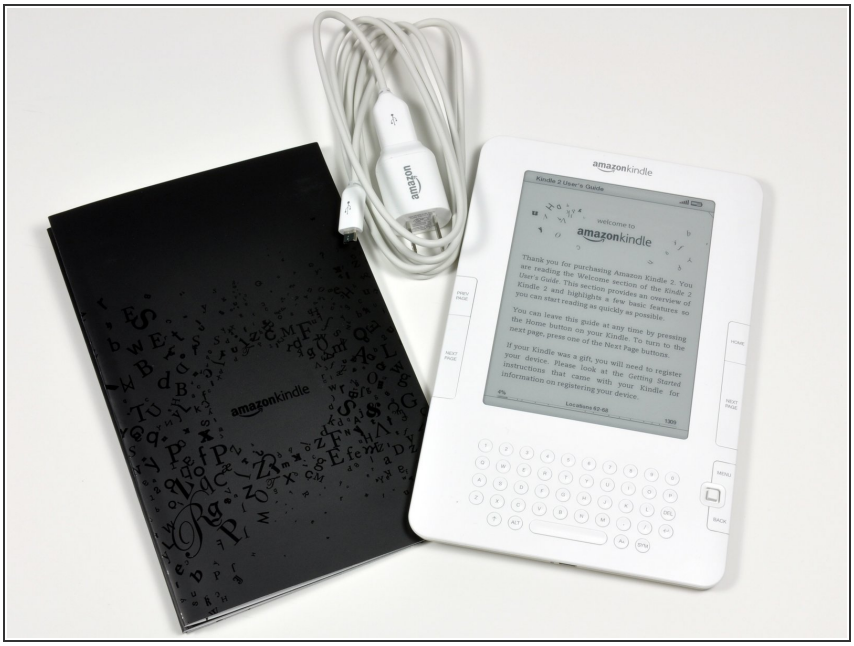
## Step 1 — Kindle 2 Teardown




- It's here!
- Thanks to the magic of E-Ink, the Kindle comes with setup instructions displayed on the screen itself. No plugging in is required.

We'll post updates on twitter about interesting things that we discover as we go.

## Step 2




- What comes in the box:
  - A quick start guide, complete with embossed letters
  - An AC adapter
  - The Kindle 2

Conveniently, the AC adapter can be used with either a wall outlet or a USB port.

## Step 3


- Size comparison: Definitely not as big as a 17" MacBook Pro Unibody.
- The Kindle 2 weighs only 10.2 ounces. Per pound, that makes the Kindle 2 even more expensive than the $2,799 MacBook Pro 17" Unibody we took apart last week.

## Step 4


- The back. Nothing special about it.

Note the speaker holes on the bottom. We briefly tried the Text-to-Speech feature and were very impressed by the Kindle 2's ability to read the text displayed on-screen. But the honeymoon was quickly over and we started tearing into it.

- Hopefully the insides will be more exciting... We'll let you know as soon as we can!

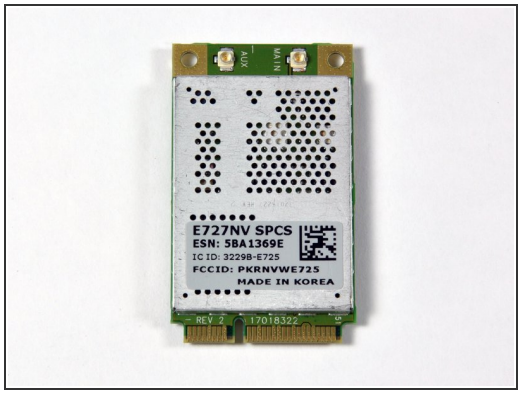
## Step 5


- Prying the back off...
- Getting inside is easy once you know how. We used some plastic opening tools and a metal spudger, and finally managed to get in.
- The matte-gray top cover comes off first.
- There are two Phillips screws to remove before the Aluminum back can be removed entirely.

## Step 6

- We're in!
- It's still not very pretty; just more white plastic.
- Twenty Phillips screws hold the white plastic paneling in place.
- Interestingly, nothing was attached to the large white and brown connector near the top of the board.

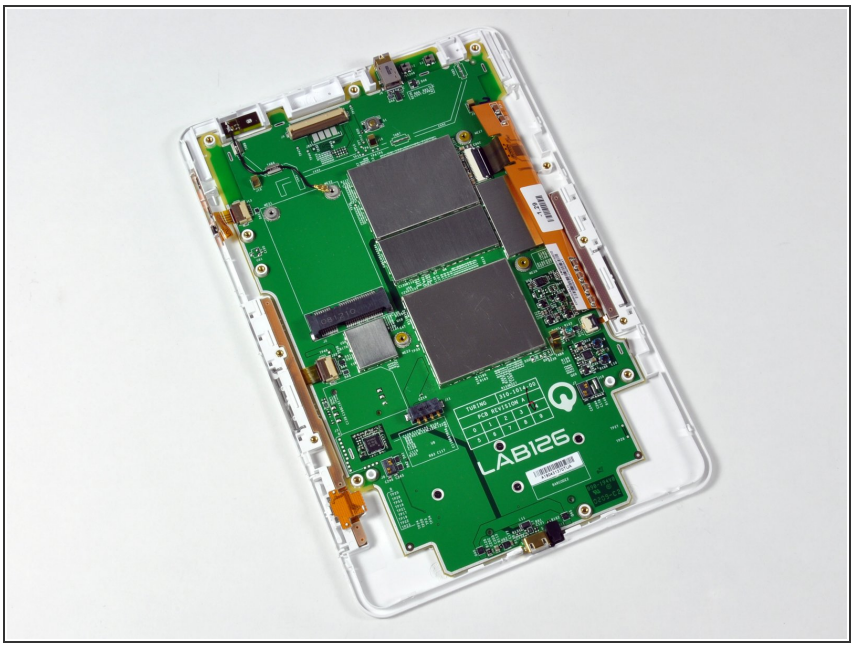
## Step 7


- Remove two Phillips screws and the battery lifts out easily.
- The battery is Model No. S11S01A. It's a 3.7 V, 1530 mAh lithium polymer battery. The battery weighs in at 31 grams, just over 10% of the Kindle's total weight.
- The wireless card is also easily removable by removing two Phillips screws.

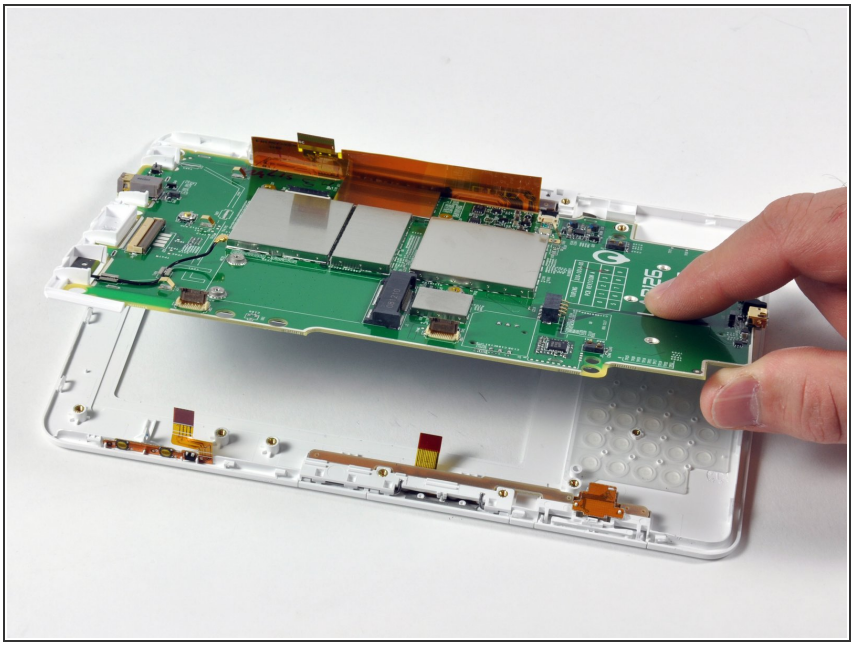
There are two antenna ports on the wireless card, but there was nothing connected to the AUX port in our Kindle.

## Step 8



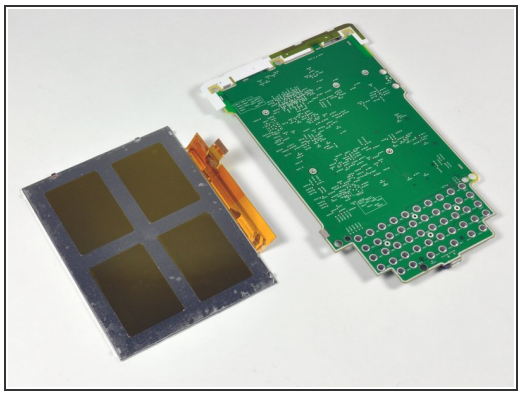

- After removing sixteen more screws, we've made it to the main PCB.
- Everything exciting is still beneath silver EMI shields.
- The Kindle was designed by Lab126, a secretive Amazon subsidiary based in Cupertino that designs consumer devices. Thus far, they have only released the Kindle 1 and 2.

## Step 9



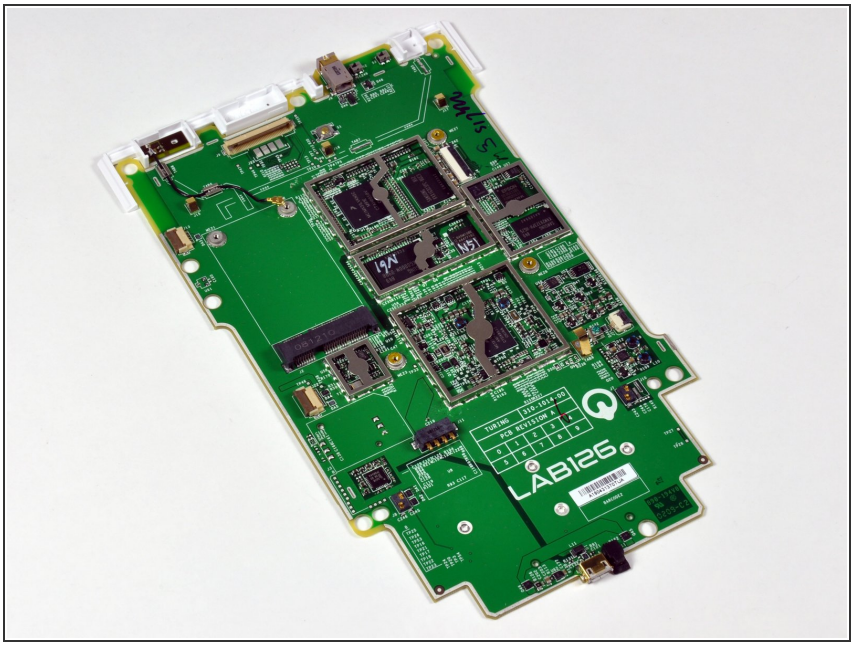
- Lifting the logic board and display assembly out of its plastic housing.
- There is no protective covering over the display. The display seen from the outside is the actual E-Ink panel.

## Step 10

- Even with the battery completely removed, the screen displays a crystal clear image.
- The display is held by a "window frame" of adhesive. Gentle prods and twists from all sides with a plastic opening tool separated the display.
- Removing the display reveals a bunch of vias on the PCB. Nothing too terribly exciting.

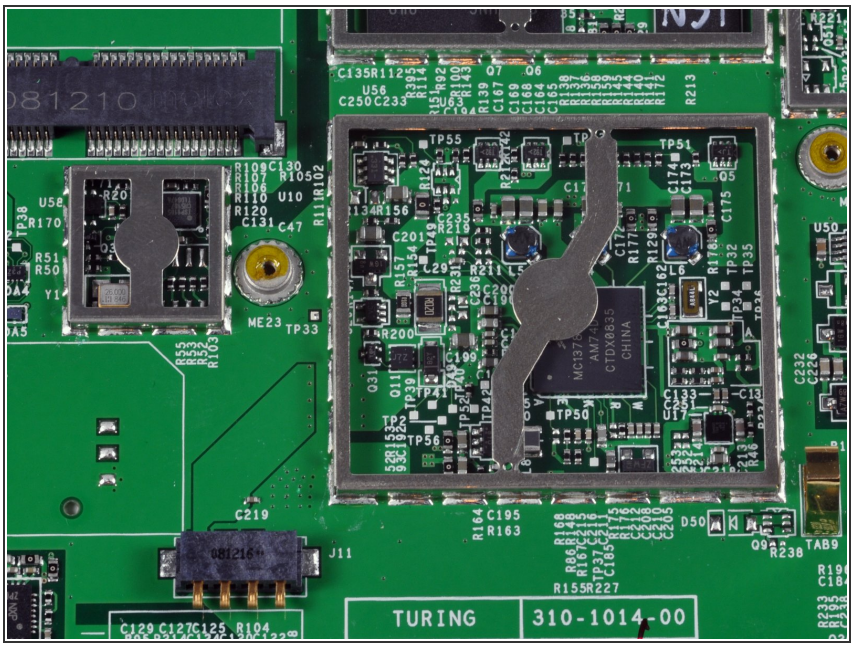
## Step 11




- The logic board after removing the silver EMI shields.
- The majority of the larger chips are made by Freescale, Samsung and Epson.

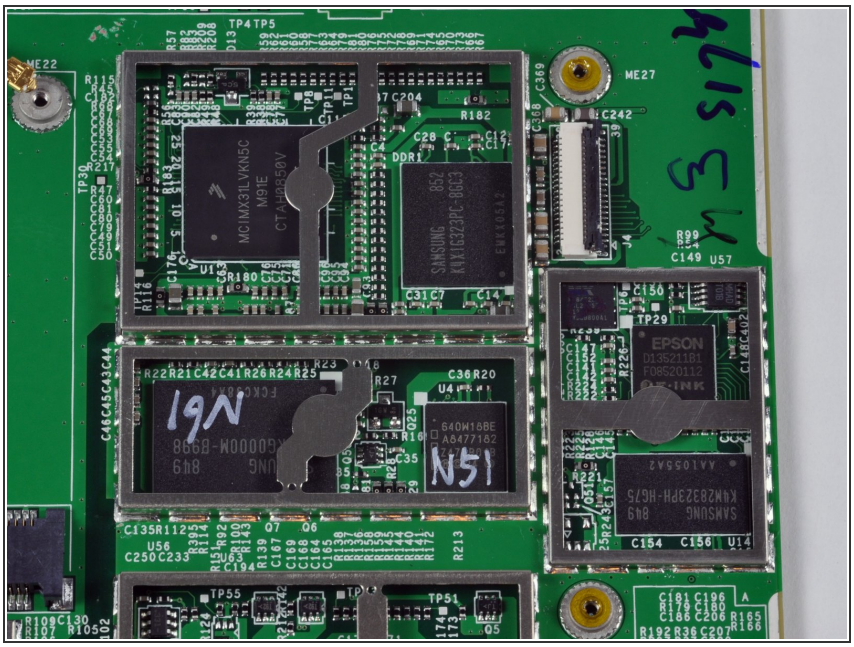
On the center-left side of the board is an outline of a SIM card with empty headers. Amazon left a opening in the plastic framework revealing this region. Was this left in for development and debugging?

## Step 12




- A close-up shot of the center area of the board.
- The large MC13783VK5 is a Freescale battery power management chip.
- The ISP1105 (smaller chip in the left enclosed area) is a USB transceiver.

## Step 13




- The main processor is in the upper left. The Freescale chip is labeled MCIMX31LVKN5C M91E CTAH0850V. It's a 532 MHz, ARM-11 90nm 14mm package.
- To the right of the processor, the Samsung K4X1G323PC is a 32MB mobile DDR SDRAM chip. There another Samsung SDRAM chip in the lower right.
- The large Samsung package in the lower left is the Kindle's main memory. It's a 2 GB moviNAND package, which includes both flash memory and the cotroller.
- The co-branded Epson and E-Ink chip on the right is the display controller. It is a PFBGA package that supports "high speed screen updates (2048x1536 at 50Hz+)."

## Step 14


- The complete disassembly of the Kindle 2.
- It seems to be the type of device that people will not bother modding... Or will they? Only time will tell.

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