



Install Series 2 Display on a Series 3 with Apple Pay

How to replace your broken Series 3 display with a Series 2 and still have NFC working. You will need the broken S3 Display to complete this repair.

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INTRODUCTION

Series 3 Displays are hard to find and expensive. Plus, when you buy one you'll discover that after installing it everything works except Apple Pay. Apparently Apple has decided to pair the NFC hardware in the Display to the mainboard, similar to TouchID on iPhones and iPads.

It looks like a Series 2 Display would fit, but if you try it you'll find that the Watch gets very hot and the battery runs down super fast. The connections are not compatible even though the connectors all line up.

Turns out the compatibility problem is just the NFC module, and so if you move the S3 NFC from the broken Display to a working S2 Display, all is well.

I took photos while doing this repair at work. The company closed down last week and so now there's nobody to tell me I can't post them for your benefit :-)



TOOLS:

- [Xacto #17 blade](#) (1)
- [iBus S2 programming adapter](#) (1)



PARTS:

- [Z Tape](#) (1)

Step 1 — Meet the patient



- Here we have a Series 3 Apple Watch with a broken Display.
- Sad.

Step 2 — Open 'er up



- Remove the broken Display. The worse they're busted up, the easier they come off!
- Remove any adhesive residue and tape from the Force Touch Sensor, and inspect it for damage. Replace if necessary.

Step 3 — Prepare the donor



- The right-hand module contains the NFC and Light Sensor. It's attached by some adhesive dots, two solder bumps (for the NFC antenna connection), and some copper tape.
- Cut the copper tape from the NFC module.

Step 4 — Save the NFC, save the world



- Using an Xacto #17 blade, chisel the NFC module from the damaged Display.
- Keep the blade as parallel as possible to the Display.

Step 5 — Successful donation



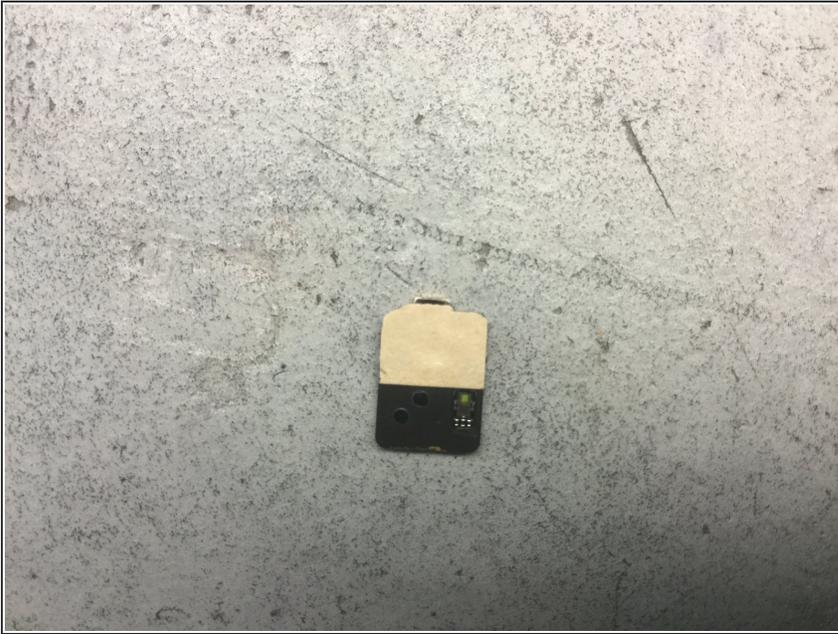
- Now the NFC module is free. There's some tape on the back of the module; you can peel it off with tweezers.
- You can see there are two solder bumps under here. These are the connections to the NFC antenna.
- If you use alcohol or some other solvent to help clean up, use it very sparingly. We don't want to mess up the Light Sensor.

Step 6 — Meet the New Guy



- Here is a "new" (probably harvested) Series 2 Display I bought online. I marked it with a "2" just because.
- Remove the NFC module from this display. You can discard it or sprinkle it on your breakfast cereal.
- I got a little over-aggressive taking this off so you can see I removed some of the black tape covering the NFC antenna. No harm done, though, and it let me show a corner of the NFC antenna.

Step 7 — A sticky situation



- Now we apply a bit of "Z Tape" to the back of the module. Z Tape is nifty stuff that conducts electricity through its thickness but not sideways.
- In this photo the release layer is still on the Z tape. We'll take it off before sticking the module onto the Series 2 Display.

Step 8 — Frankenstein's Monster



- Yup, that's our Series 2 Display with the NFC module from the broken S3 Display attached. Alignment here is fairly important so don't just slap it on all willy-nilly.

Step 9 — Reprogramming



- Sometimes it just works, and sometimes you need to reflash the OS to make everyone play nice

together. Good luck finding the magic IPSW files.

Step 10 — It works!



- After all this, Apple Pay can be configured on the Watch and you can see that it talks to the NXP TagInfo app.
- I had to use an Android phone to test the NFC because Apple doesn't let apps get deep enough into iPhone's NFC to read this stuff.