Mod Guide: Game Boy Pocket FunnyPlaying IPS LCD

This summer, as part of our activities with the Residual Media Depot, Alex Custodio and I are modding several videogame consoles while closely documenting our work. The goal of this project is to create a series of succinct, approachable modding guides that detail the tools and techniques needed for hardware modding.

Game Boy Pocket FunnyPlaying IPS LCD Installation

This week, we returned to the Game Boy Pocket to install an alternative backlight solution, an IPS LCD from FunnyPlaying. These letters stand for “in-plane switching liquid crystal display,” which refers to a type of screen technology, and it differs from the screen we used in last week’s tutorial, which was a TFT LCD or thin-film transistor liquid crystal display. At the end of this post, we talk a bit about each screen and compare the processes and the outcomes of these two mods.

This kit is sourced from FunnyPlaying and includes the IPS LCD with its attending ribbon cable, an adhesive gasket, and an optional touchpad to solder to the ribbon cable.

This mod is extremely straightforward and beginner friendly, and there is only a tiny bit of soldering involved.

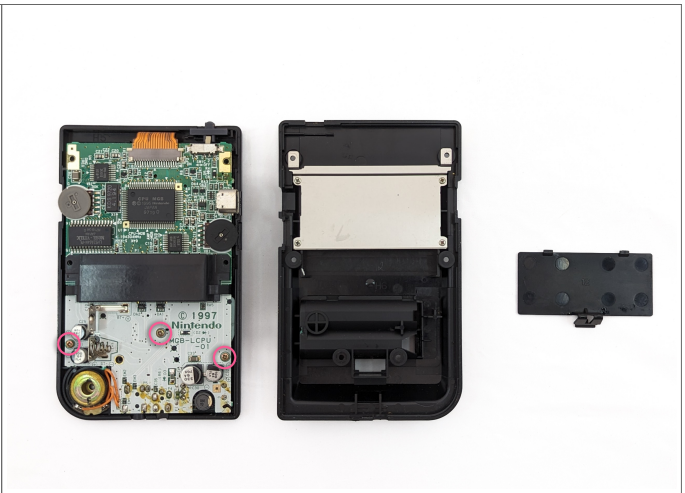
Materials

- Game Boy Pocket

- FunnyPlaying IPS LCD kit
- Tri-Wing and Philips Head screwdrivers
- Soldering iron
- Solder
- Thin-gauge wire
- Wire strippers
- Kapton tape
- Cotton swabs and isopropyl alcohol
- Compressed air
- Spudger (recommended)

Step 1: Disassemble the Game Boy Pocket

The 6 exterior screws, which require a Tri-Wing screwdriver.



The 3 interior screws, which require a Phillips Head screwdriver.

As usual, we start by taking the Game Boy Pocket apart. Using the Tri-Wing screwdriver, remove the six screws marked in the photo below. Note that the bottom two will require you to remove the battery door to access. Carefully remove the back half of the shell and set it aside.

Switch to the Philips Head screwdriver to remove the three

internal screws that keep the PCB fixed to the shell.

Note: we highly recommend placing the screws in a small container to keep from losing them!

Once you've removed all the screws, you can then take the hardware apart. Start by disconnecting the LCD from the PCB by lifting the small white tabs and carefully removing the ribbon cable.

Set the buttons and silicone pads aside to keep them out of the way while you work. You can place them with the screws to keep everything together.

Finally, lift the old LCD from the front of the shell. We highly recommend using a spudger around the edges to pry it loose. You might hear a loud snapping sound. This is normal; the screen is attached to the shell using almost thirty-year-old adhesive, after all.

A spudger is a tool with a wide flat-head screwdriver-like end that extends as a wedge, used to separate pressure-fit plastic components without causing damage. If you don't have a spudger, try to find a piece of stiff plastic (metal and other hard substances will more readily scratch the Game Boy).

Step 2: Clean the Game Boy Pocket

Energizer recommends white vinegar or lemon juice for cleaning battery acid; either would work in a pinch!

It's likely that your Game Boy Pocket has accumulated a little bit of grime over the years, especially around the battery contacts. Use a cotton swab dipped in rubbing alcohol and carefully wipe the PCB. Be careful not to get it inside the speaker. Use compressed air to blow dust and debris away.

Note: Make sure to wash your hands carefully if you touch battery acid!

Step 3: Prepare the Shell

The OEM case, which requires the removal of the plastic bracket.

Aftermarket Game Boy shells.

The IPS LCD requires slightly more space than the Game Boy Pocket screen. The injection-molded OEM (i.e. original equipment manufacturing) shell has plastic brackets that hold the screen in place, so you'll have to remove these to make room for the new screen.

If you're planning to use the original shell, you'll have to remove some of the plastic. We recommend using flush cutters to clip the sides, then carefully sanding down any remaining plastic to the shell.

Alternatively, you can look for aftermarket shells intended for IPS installs.

Note that we don't recommend using transparent shells unless they've been specifically manufactured for this mod. Clear shells will reveal any messy cuts.

Step 4: Place the LCD


IFPHC V2.2 220209
2252
J3
J5

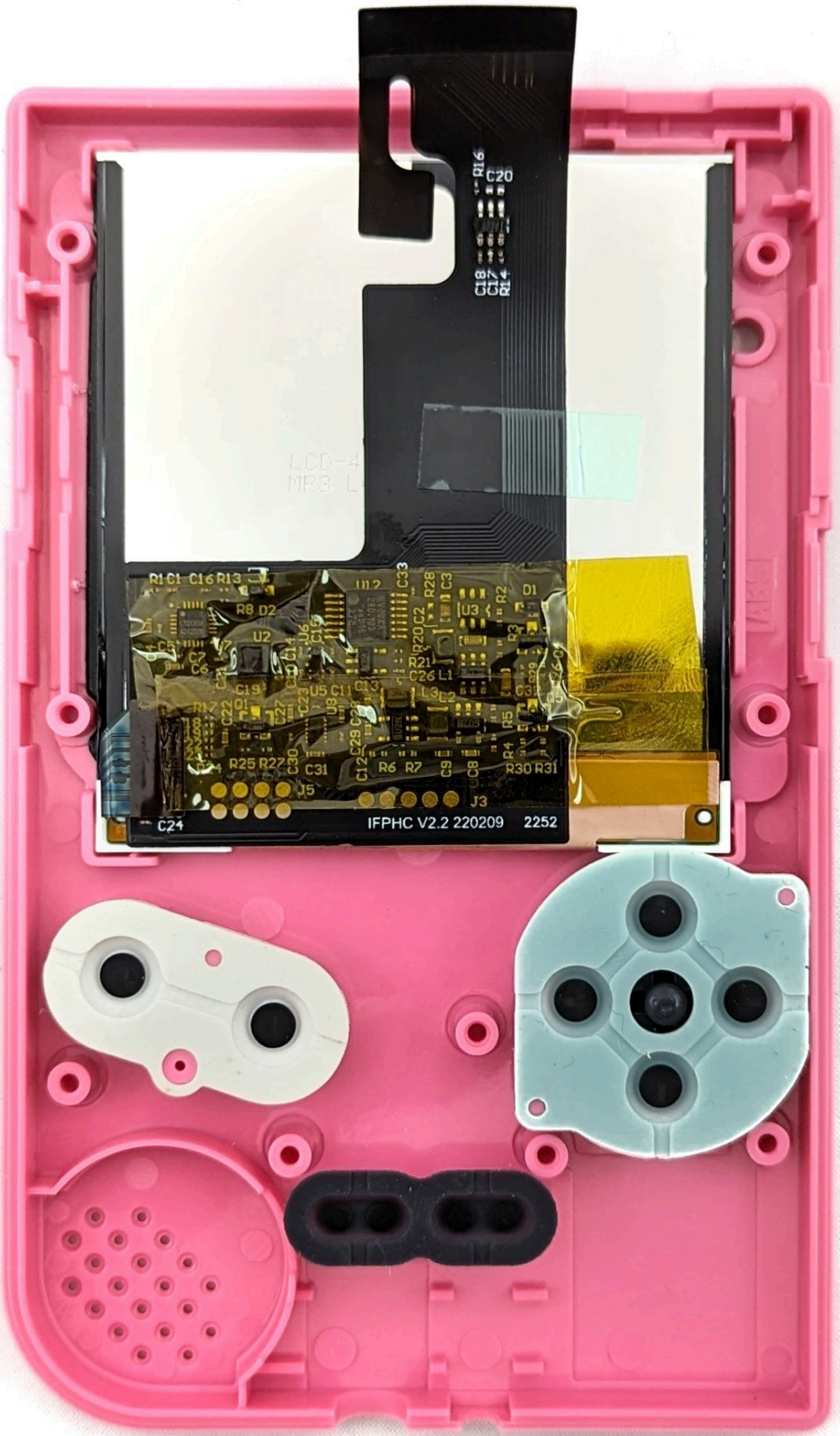
Use the double-sided adhesive included in the kit to fix the screen in place. Peel one layer of backing from the adhesive and stick it in the shell. Ensure that it’s not bubbling (you can use the spudger again to do so). Then, peel the backing from the other side of the tape.

Place the LCD inside your shell, ensuring that it fits properly in the top-right and top-left corners before pressing down. Once it’s in the right spot, gently run your fingers along the edges of the screen to ensure that it sticks to the adhesive.

Do not put too much pressure on the screen as it’s fairly fragile.

Note: you only have one shot to place the screen in the correct position, so be careful and attentive!

Step 5: Insulate the LCD


IFPHC V2.2 220209 2252

When working with electronics, you want to avoid stacking conductive materials on top of one another in order to avoid shorting. To that end, we recommend insulating the LCD with a layer of Kapton tape before connecting the Game Boy Pocket PCB.

Step 6: Connect the PCB

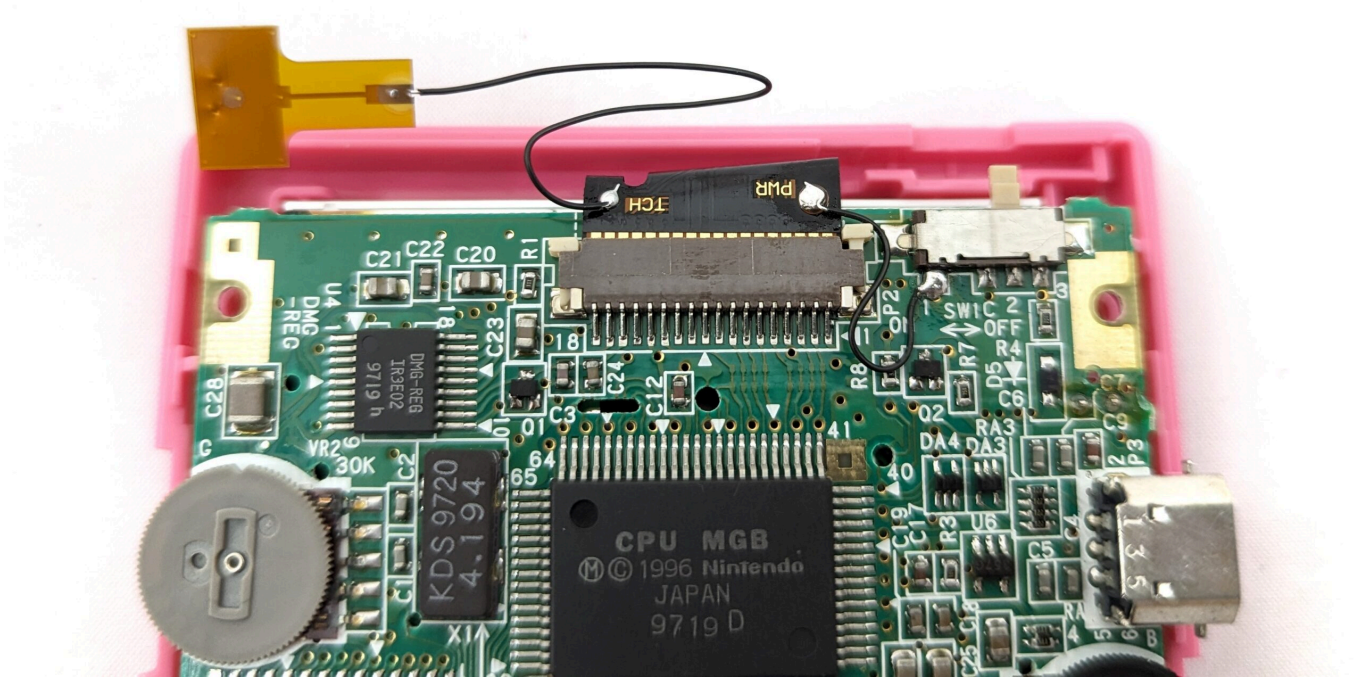
Ensure that the connecting tab of the ribbon cable is outside the shell. Then, place the buttons in the shell and put the PCB in place. Screw it into the shell with the three Philip’s Head screws.

Fold the LCD’s ribbon cable down so that it can slide into the tab on the Game Boy Pocket mainboard. Insert it into the slot until it won’t go any further and then press down on the two white tabs to lock it in place.

Note: don’t forget the buttons! If you do, you’ll have to unscrew everything to put them back!

Step 7: Solder the Power and Touch Controller

With the ribbon cable folded down, you can now see the two solder points. The right pad is the power pad. Solder a fine-gauge wire from this solder pad to the first pin of the power switch (see image below).

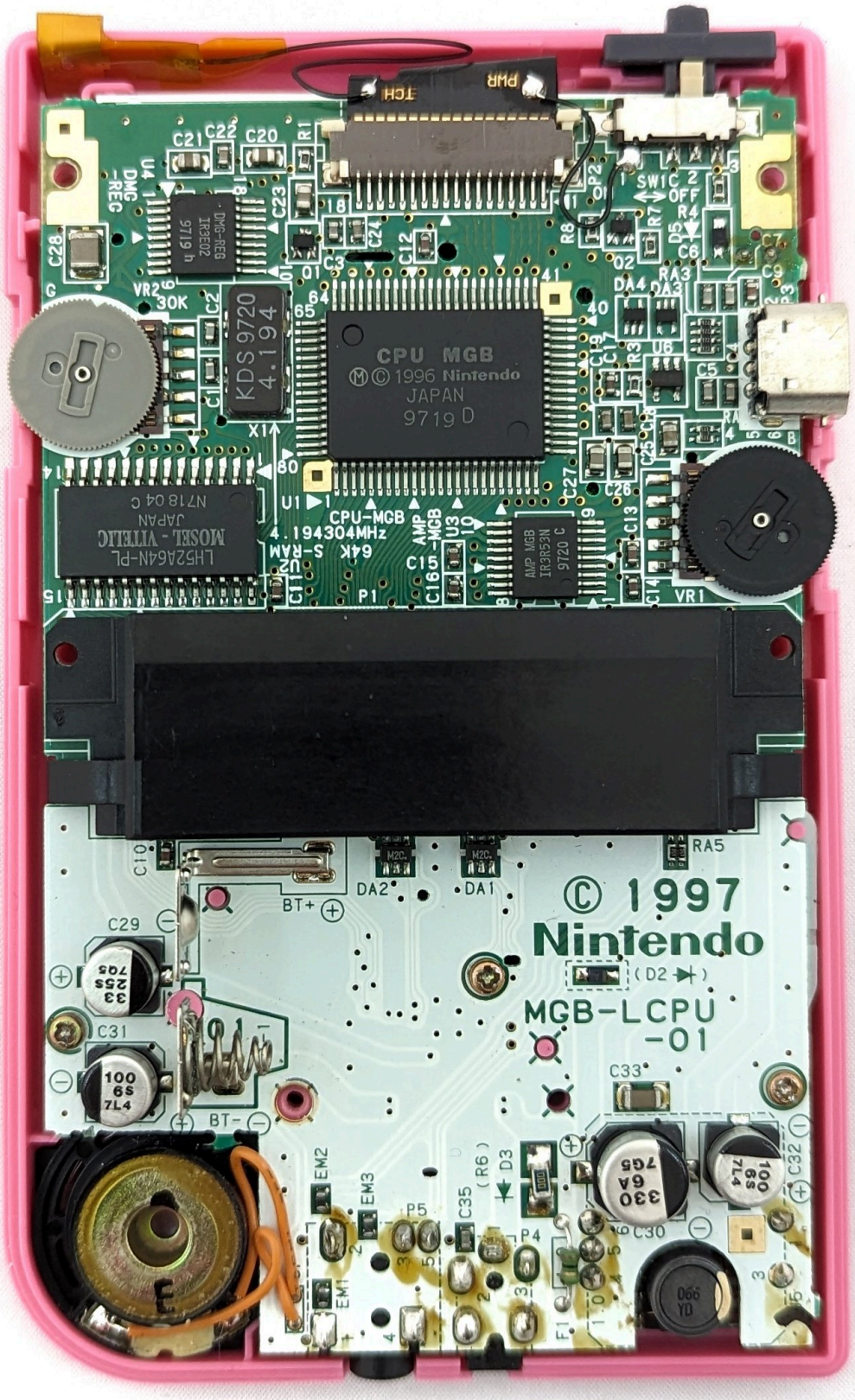


The left pad is for the optional touch controller. Solder a wire from the ribbon cable to the bottom of the touch sensor. There isn't a dedicated space for the touch sensor to go, so you can tape it to the top or side of the shell. It will accept input through the plastic (see GIF below).

We recommend placing a bit of flux on each solder pad and then tinning them by applying a small amount of solder to each pad. This work is fairly delicate, and tinning the pads ahead of time will make the process more forgiving.

Step 8: Reassemble the Game Boy Pocket

With the kit installed, it's time to close the case. Place your power slider in place, close the shell, and screw everything closed using your Tri-Wing screwdriver.


CPU MGB
©1996 Nintendo
JAPAN
9719 D
KDS 9720
4.194
CPU-MGB
4.194304MHz
AMP-MGB
64K S-RAM
MOSEL - VITELIC
JAPAN
AMP MGB
IR3R53N
9720 C
© 1997
Nintendo
MGB-LCPU
-01
BT+
BT-
DA2
DA1
RA5
SW1
OFF
PWR

Using double-sided tape, place your lens on the front of the Game Boy Pocket. Ensure there is no dust and debris around the screen before placing the lens.

Step 9: Enjoy Your Backlit Game Boy Pocket

Congrats on a successful mod!

We absolutely love this mod. Unlike the TFT LCD we installed last week, this screen isn’t too small for the Game Boy

Pocket. It’s actually a little oversized, but we were still able to use an aftermarket lens we had on hand. The touch controller is sensitive enough that we can use it through the plastic shell in order to cycle through 36 built-in color combinations, including a grayscale and inverted mode and the contrast dial allows you to adjust the brightness

IPS LCSs are known for their wide viewing angles and their crispness, and this one lives up to expectations; it’s not just bright but also sharp. This can, however, be a detractor; if you’re invested in preserving something as close to the original experience as possible, this screen might be a turnoff for how clean the pixels are. Comparatively, the TFT LCD we installed last week has a lower resolution and the image is consequently not as sharp as this one..

It’s worth noting that this kit drains the MGB’s battery much faster than the original unlit screen. If energy is a concern, this mod will not be ideal. That said, stay tuned for an upcoming tutorial on how you can use solar power to charge your handhelds!

As far as the process goes, this mod is extremely simple. There are only two instances of soldering, and everything is clearly labeled. The mod can be a bit tricky if you have to trim the case, but there are so many vendors circulating aftermarket shells made for this mod that you can easily sidestep that part.

For ease of cataloging (and because it’s fun) we name each of our modded handhelds. This one is Barbie Boy in a nod to the deliciously pink shell. Don’t tell Mattel™.