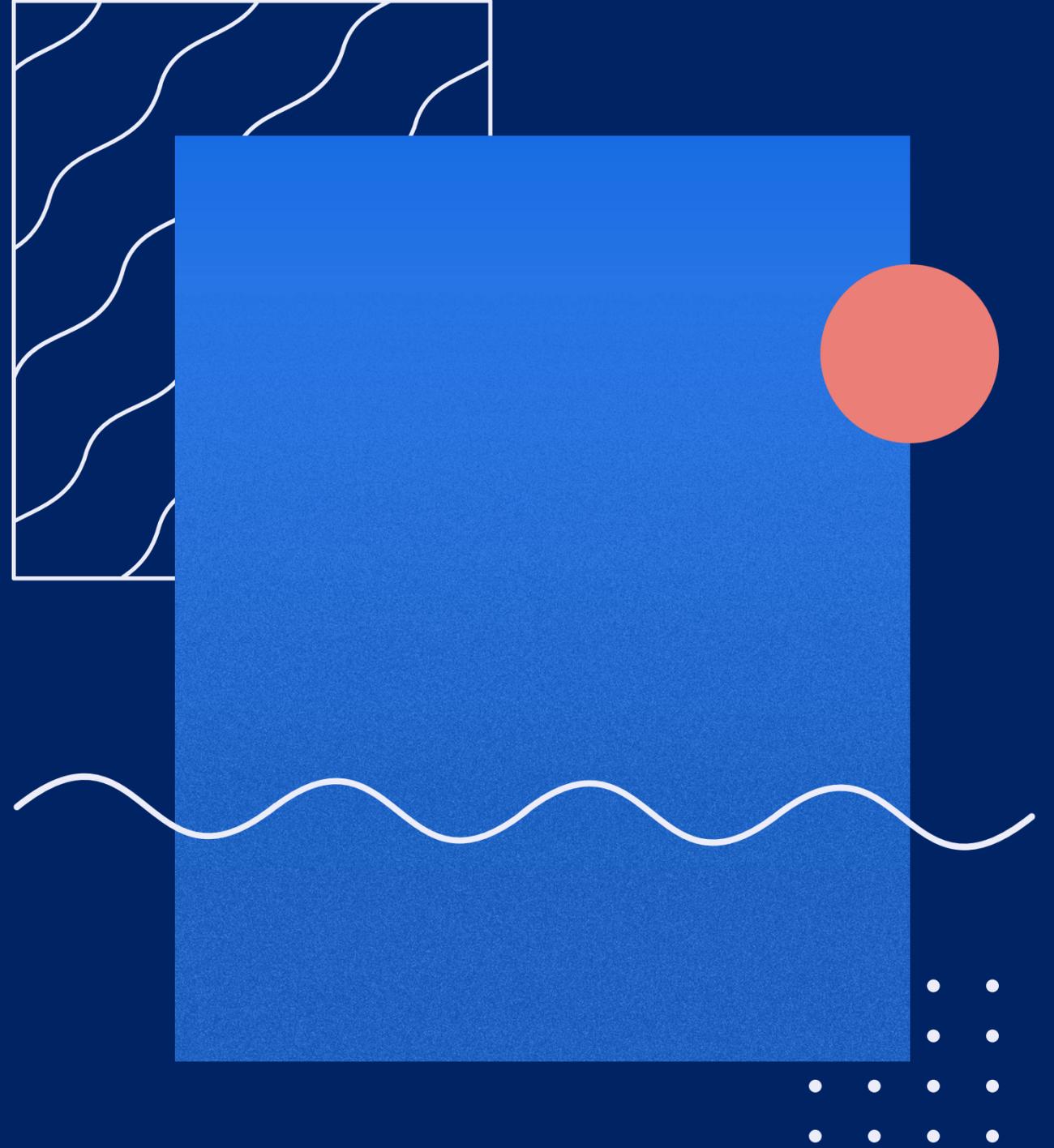


Electronics Online Challenge

Sponsored by Texas Instruments

Kennedy Middleton
Team 74177R
Motorola MPx220



I chose a Motorola flip phone. I found it sitting around our house and I had never seen a phone like this before. I thought it would be cool to take it apart.

The phone is a MPx 220. It was made in 2005 and was considered a "smartphone." This was before Apple invented the iPhone and what we think of as a smartphone today.





The phone used a Microsoft operating system and could do email. It had two displays a small one on the front and a bigger one when you flip it open. The phone also had a small camera.

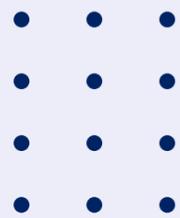


DISASSEMBLY

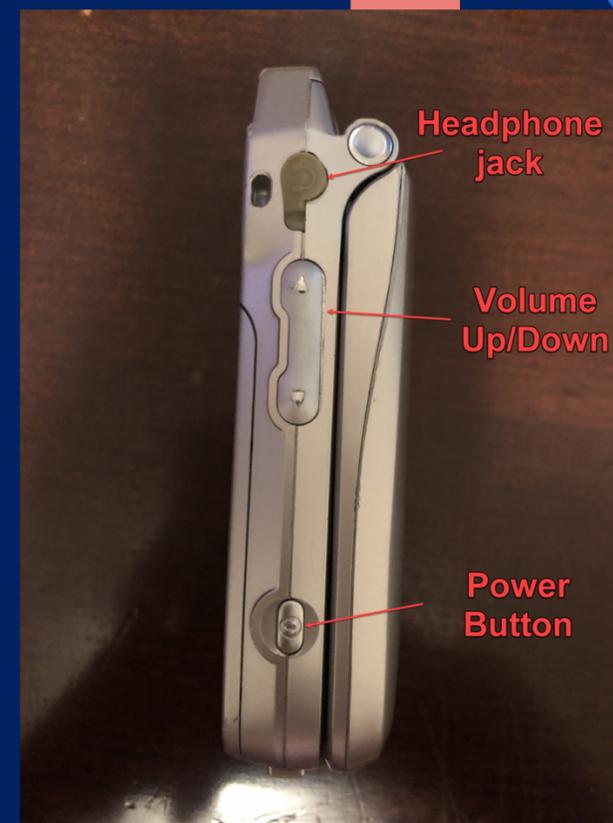
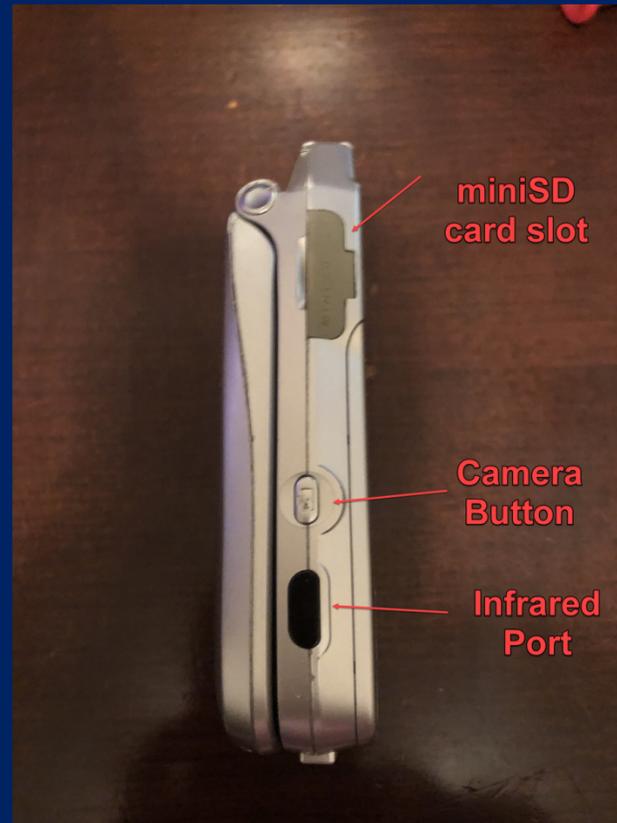
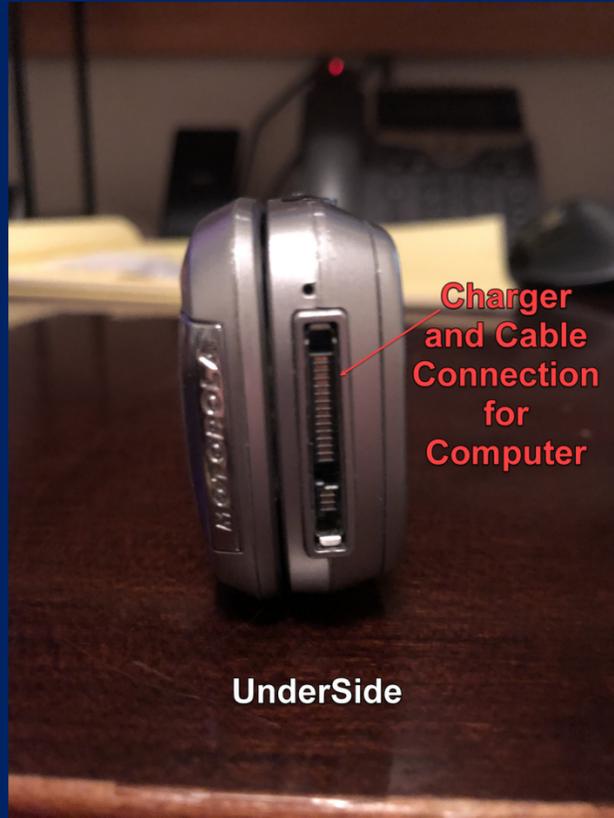
Tools List

- Small Torx Screwdrivers
- Small Phillips Screwdrivers
- Tweezers
- Spludger

I used the little screwdrivers to start removing screws. Then I used a spludger to pry the case open. From there i was able to start unplugging little cables and remove parts.



EXTERNAL ANATOMY



INTERNAL ANATOMY



Inside of Top



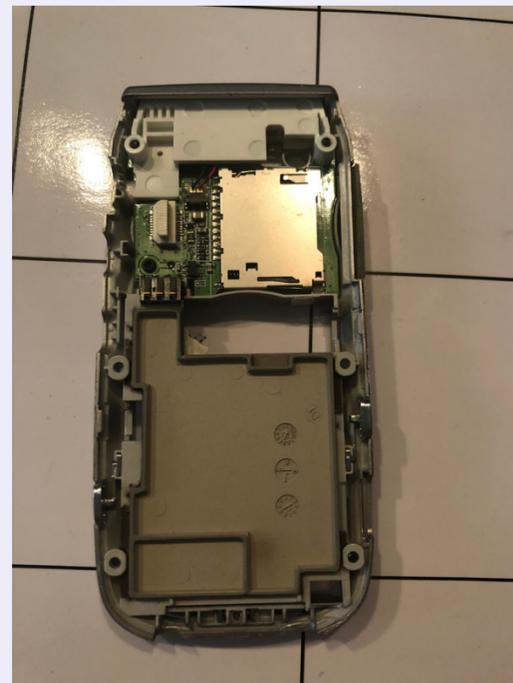
Back



Screen



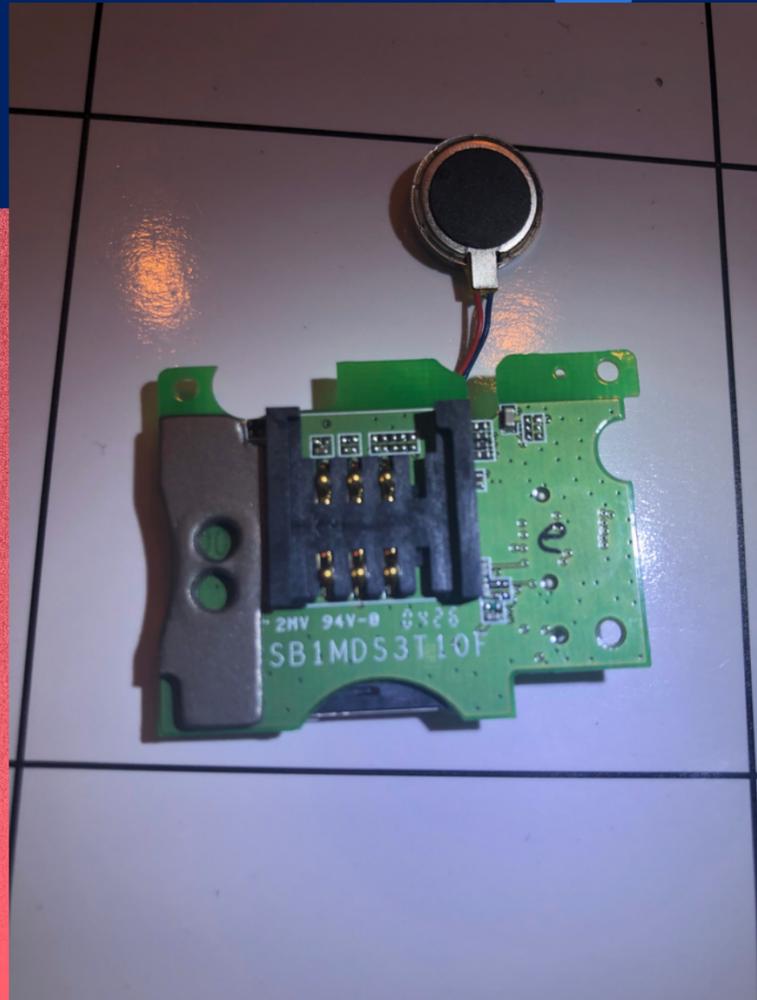
Front



Back Inside



I was able to
google part numbers and identify manufacturers and usage.



SB1MDS3T10F

SIM Card Reader

SIM means subscriber identity module which stores the phone number of the phone. The round thing is a little speaker.

- • • •
- • • •
- • • •
- • • •

MODEM

I found six chips on this board. I was not able to find all of the part numbers and identify what they do though.

RF means Radio Frequency

GPRS means General Packet Radio Service

GSM stands for Global System for Mobile Communications

Based on this I think this board is some kind of radio in the phone

Texas Instruments

1 - TWL3014C - GPRS Chip set

2 - 0751992AGPH - ????

Micron

4 - M28W320E -32mb Flash Memory

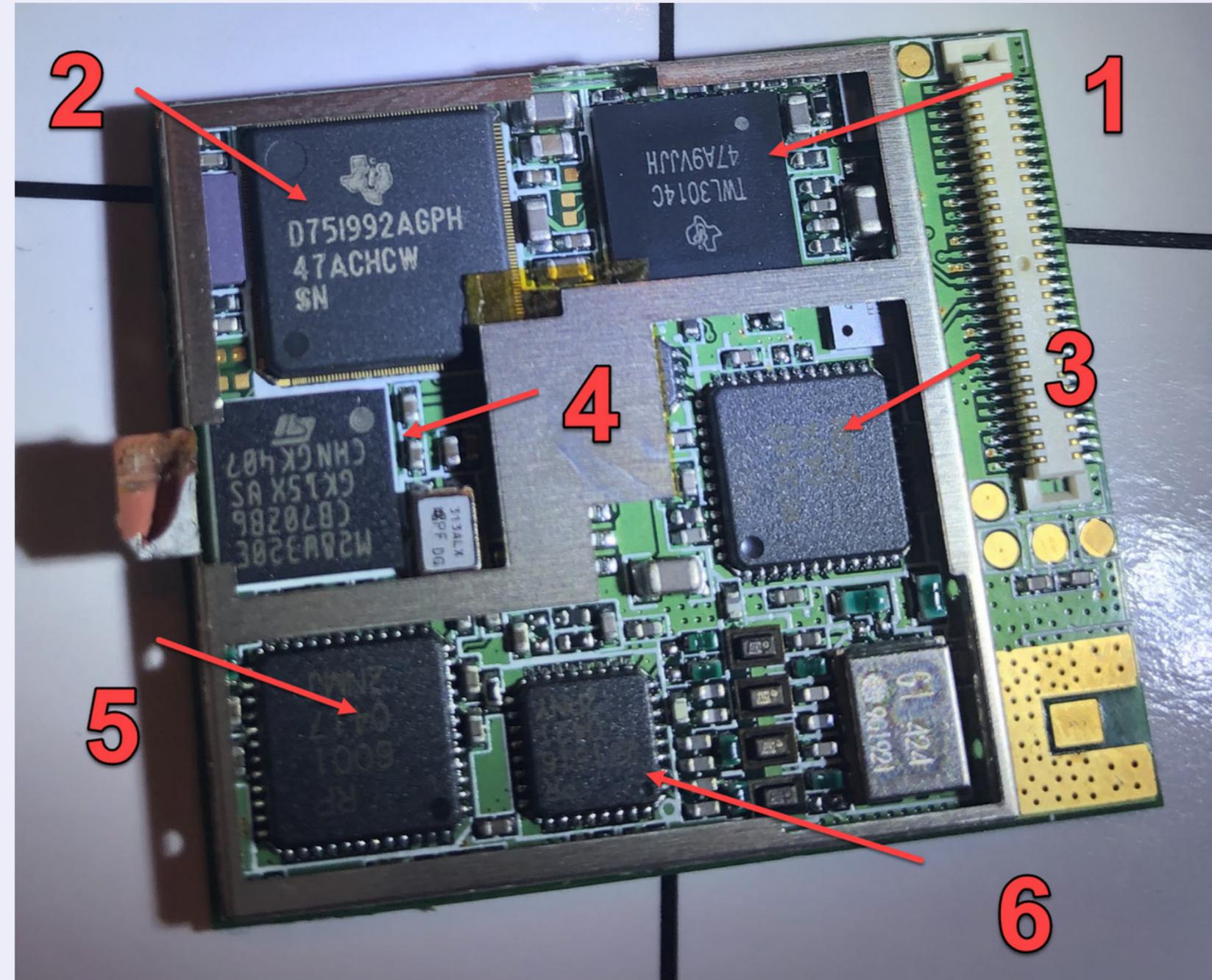
Parker Hannifin

6 - PR271616 - ???

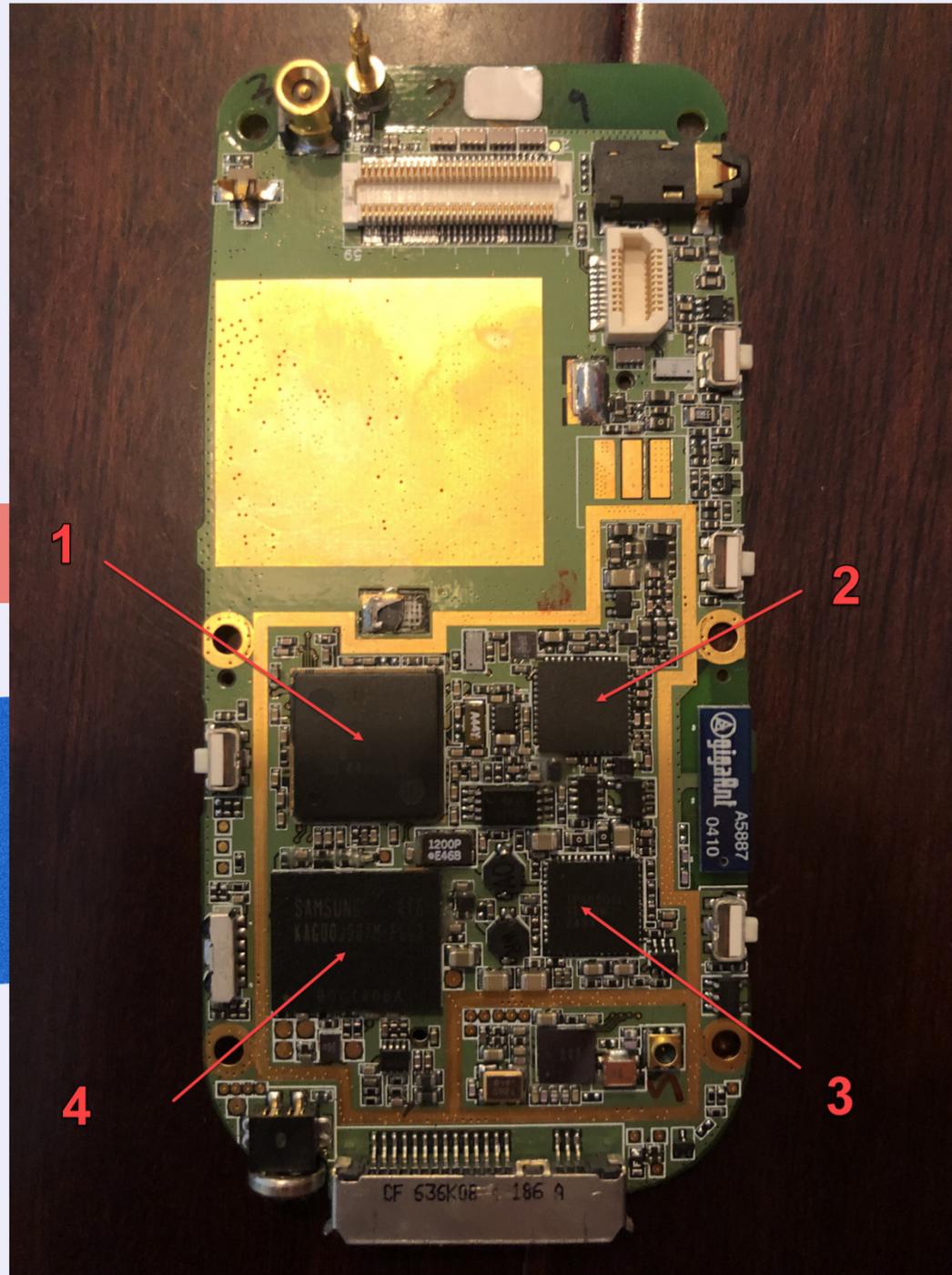
RF Micro Devices

3 - RF3146 - GSM Power Amplifier

5 - RP6001 RF Synthesizer with Modulated and Digital IF Filter



MAIN BOARD



There were four large chips on this board that I could read part numbers from. Based on those part numbers, this is the main board of the phone with connectors for power, headphones, keypad. You can also see the large brass connectors for RF antennas.

Texas Instruments

- 1 - TI OMAP P3308 ZZG - Open Mobile Application Processor. This is the Brain of the phone.
- 2) TSC2101 - Audio Codec with Integrated Headphone, Speaker Amplifier, and Touch Screen Controller
- 3) TSP65011 - Power and Battery Management IC for Li-Ion Powered Systems

SAMSUNG

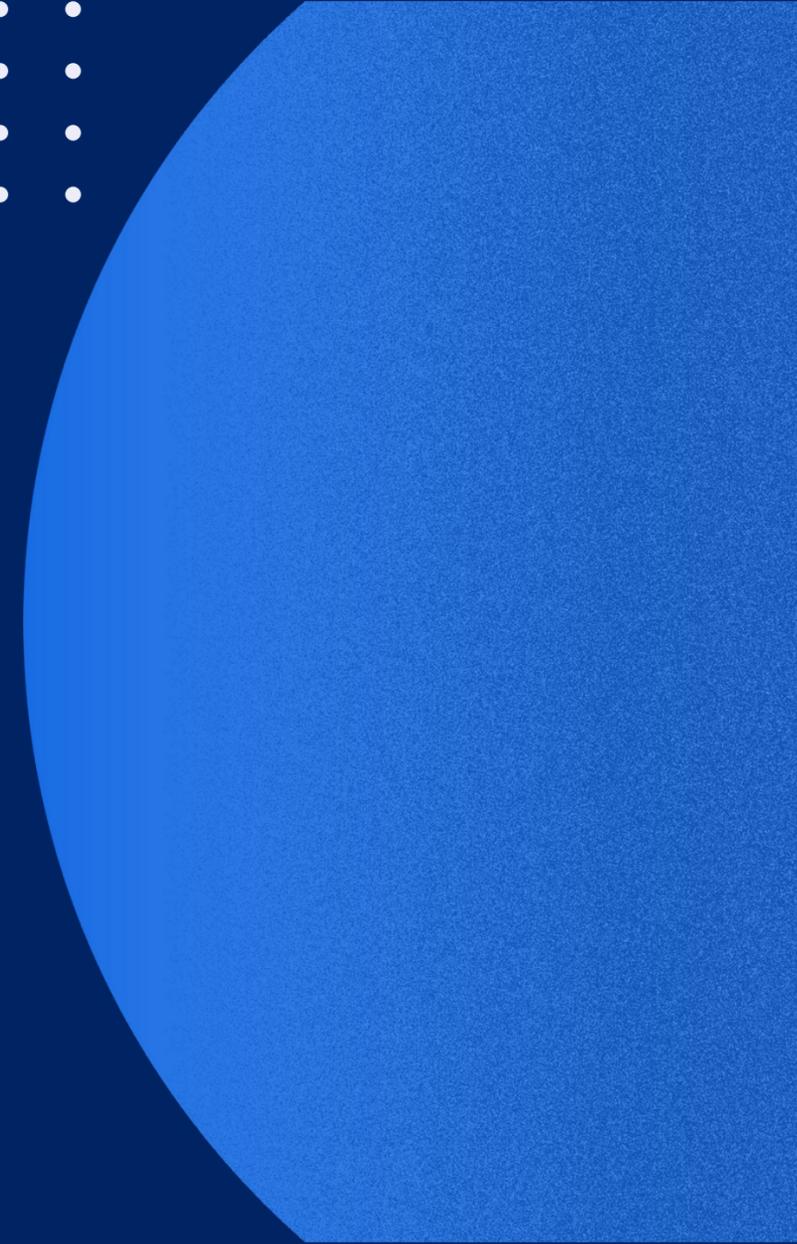
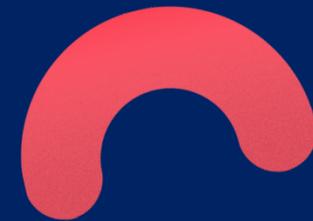
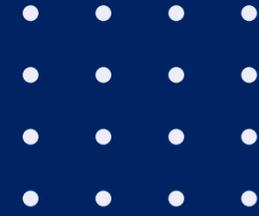
- 4 - 416 KAG00J007M - IC Speciality Memory Circuit



WHAT I LEARNED

I learned that every little detail in the phone matters or it wouldn't work. You also have to be careful handling little pieces. The screen cracked when I was trying to remove it. There are so many little chips and things on the board that I can't even see. It's like looking at a city from an airplane. They are so small they would have to be assembled by robots!

I also learned that even though the phone says it was made by Motorola, there are lots of different people who worked together from all over to create it. Googling part numbers I saw so many listings of chips from Texas Instruments and other manufacturers. It was very hard to find the right part numbers.



CITATIONS

“Micron Technology Inc. M28W320ECB70ZB6T TR. (n.d.). Digikey. Retrieved November 7, 2020, from https://www.digikey.com/en/products/detail/micron-technology-inc/M28W320ECB70ZB6T-TR/592204?utm_source=FindChips&utm_medium=buyNow

MOTOROLA MPX220 SERVICE MANUAL Pdf Download | ManualsLib. (n.d.). Www.Manualslib.com. Retrieved November 1, 2020, from <https://www.manualslib.com/manual/1371397/Motorola-Mpx220.html>

Motorola MPx220 specs. (n.d.). Phone Arena. Retrieved November 7, 2020, from https://www.phonearena.com/phones/Motorola-MPx220_id751#OMAP. (2020, October 1). Wikipedia. <https://en.wikipedia.org/wiki/OMAP>

PR271616 In-Stock, PR271616 Parker Hannifin Corp - Worldway Electronics. (n.d.). Www.Worldwayic.com. Retrieved November 7, 2020, from <https://www.worldwayic.com/pro/parker-hannifin-corp/pr271616/5172872>

RF3146 pdf, RF3146 description, RF3146 datasheets, RF3146 view::: ALLDATASHEET::: (n.d.). Pdf1.Alldatasheet.com. Retrieved November 7, 2020, from <https://pdf1.alldatasheet.com/datasheet-pdf/view/81904/RFMD/RF3146.html>

RF6001 Datasheet(PDF) - RF Micro Devices. (n.d.). Www.Alldatasheet.com. Retrieved November 7, 2020, from <https://www.alldatasheet.com/datasheet-pdf/pdf/189954/RFMD/RF6001.html>

Samsung - IT Hardware Parts List Page - 47. (n.d.). Www.Asap-Ittechnology.com. Retrieved November 18, 2020, from <https://www.asap-ittechnology.com/manufacture/samsung/page-47/>

SIM card. (2020, November 7). Wikipedia. https://en.wikipedia.org/wiki/SIM_card

TPS65011. (2014). Ti.com. <https://www.ti.com/product/TPS65011?keyMatch=TPS65011&tisearch=Search-EN-everything&usecase=GPN>

TSC2101. (2020). Ti.com. <https://www.ti.com/product/TSC2101/quality>

