Electronics Online Challenge

Austin Pewitt
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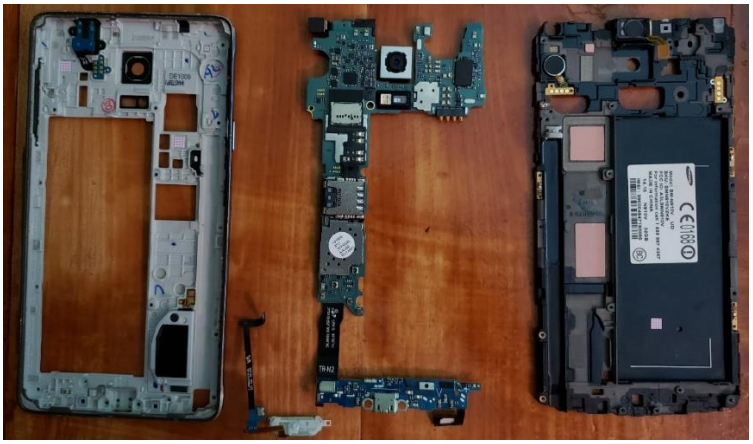
For my teardown I selected the Samsung Galaxy Note4. I chose this phone because it was the last of the mainstream galaxy phones to feature a removable back and user replacable battery which as someone who values repairabilty and user upgradability this was the last great Galaxy Note.

Starting with removing the back, battery, and then midframe screws.

Next using a hair dryer/heat gun to loosen adhesive between the display/motherboard and the midframe the push the two pieces apart



Then remove the motherboard from the display frame to give us access to the main components

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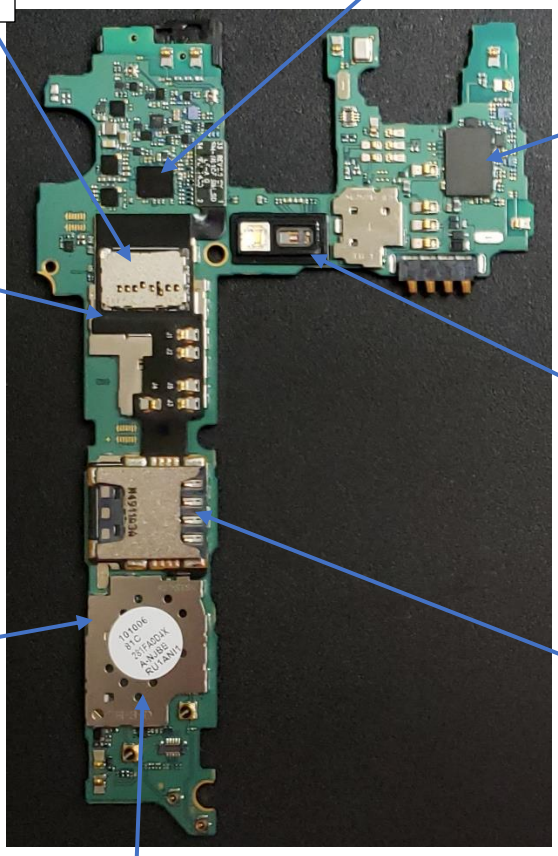
Wolfson Microelectronics WM5110E Audio Hub CODEC with Voice Processor DSP. This is for processing phone calls and mic input

SD Card Slot. Allows an SD card be inserted to add additional storage to the phone



E825B1 WiFi/Bluetooth/ ANT+ Module. This IC lets the phone make communications through WiFi, Bluetooth and ANT+ which is for radio transmissions

Broadcom BCM47531 GPS/GNSS Receiver. Gets GPS signals for mapping functionality

Heart Rate Sensor. This Lets the phone read heart rate from a fingertip.

Texas Instruments LMV221 RF Power Detector. The one Texas instruments component in the phone acts to detect radio waves to switch the antenna on and off accordingly.

SIM Card Tray. Is where the SIM Card is Put in to tell the phone the devices phone number

This gives us access to the motherboard by itself which contains all the chips that we are looking for

Murata LMSWXXGRG28 RF Antenna Switch. Receives and 4G signals and is also paired with Shannon K48ADC RF Transceiver to interpret the 4G data for the phone

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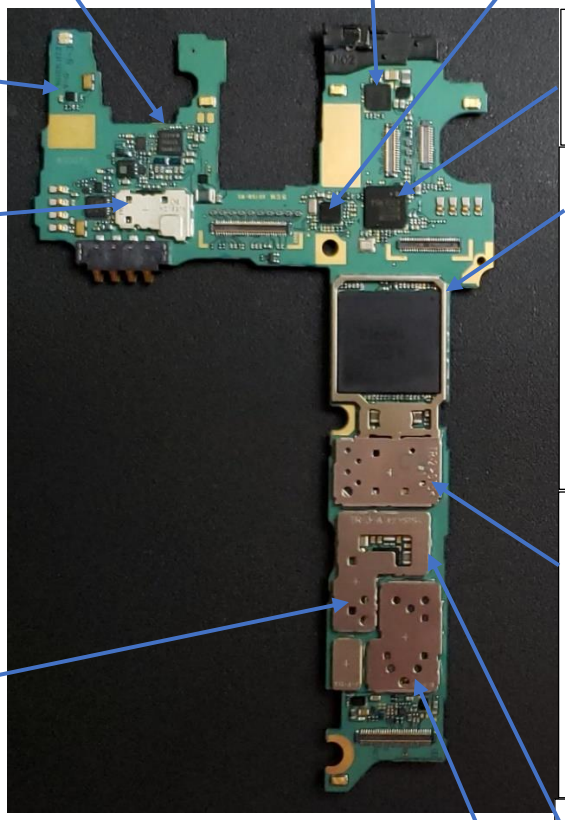
Samsung S3FWRN NFC Controller. This allows the phone to send and receive NFC signals which allows for easy pairing with Bluetooth devices and sending and receiving data through Near Field Communication

Samsung S5C72C1A01 Image Processor This Decodes the data from the camera and turns it into understandable images

Bosh Sensortec BMP180 Digital Barometric Pressure Sensor. This is a self-explanatory part that gets Barometric Readings for weather data on the phone

Yamaha YAS532B 3-Axis Electronic Compass. This acts a compass for a phone



Wacom W9012 Digitizer Controller. This part allows the touchscreen to interpret touch input properly

Exynos 5433 5 Processor. This acts as the main processor for the phone. This chip is also combined with the Samsung KMR21000AM Multi-Chip Memory which contains 3GV OF LPDDR3 RAM and 32 GB of flash storage.

Maxim MAX77843 USB Interface Li-Ion Battery charger. These parts control how the phone interacts when plugged into USB for data and controls how the battery receives charging power for fast and regular charging

Shannon 303 Baseband Processor. This receives and processes radio signals. This chip also has a set of Samsung K4P1G324EQ Mobile DDR2 SDRAM 128 MB that acts as a cache.

Avago ACPM-8117 RF Power Amplifier. This circuit turns lower power radio into a higher power radio and is used to drive the antenna for transmitting RF data

Shannon 60X6R8 Power Management. This chip is Samsung Made and as the name implies helps to control power delivery to various components

The backside of the motherboard

Maxim MAX98504 Audio Amplifier. This is an amp that has five different gains and produces stereo audio.

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This teardown helped to teach me about how a phone motherboard is laid out what all the components in a phone are. This helped me learn how to take apart a mobile device and how we can maybe get back to making mobile devices that can be upgraded and repaired over time.