

Reverse Engineering Report 2023/2024

The Advancement of iPhones



5225A
The PiLons
Burlington, Ontario



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Word Count: 500/500


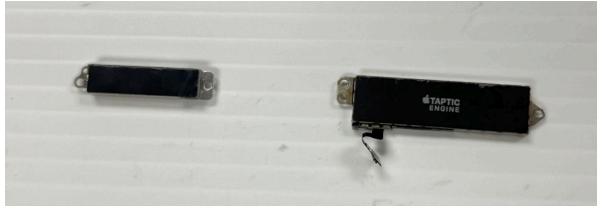


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Introduction

Our team, 5225A, is made up of 8 dedicated members who always strive to improve the team. When we first began the Reverse Engineering Challenge, we considered a variety of devices. We originally were looking at potentially deconstructing an Xbox, radio, iPhone, 3D printer, EV3 or an NXT. After much deliberation, we decided on iPhones. Due to the popularity of iPhones and their continuous presence in our lives, we sought to understand their inner workings, more specifically, how they improve over time.



Device Summary

Key Parts:	Photo:
<p>iPhone 6: Lightning Connector, Audio Jack</p> <p>iPhone 7: Lightning Connector/Audio Jack</p> <p>The lightning connector serves as a mode of charging both iPhones and an audio jack for the 7.</p>	 <p>Top iPhone 7, Bottom iPhone 6</p>
<p>Taptic Engine</p> <p>The Taptic Engine serves as a way to give users haptic feedback to aid with actions such as touch.</p>	 <p>Left iPhone 6, Right iPhone 7</p>
<p>Home Button</p> <p>The home button allows users to interact with the iPhone as well as open it utilizing TouchID.</p>	 <p>Left iPhone 6, Right iPhone 7</p>
<p>Rear Camera</p> <p>The rear camera can be used to take quality pictures and videos.</p>	 <p>Left iPhone 6, Right iPhone 7</p>

Battery

The battery on the iPhones provides power for the iPhones to stay active for the majority of the day.



Left iPhone 6, Right iPhone 7

Outer Case & Touchscreen

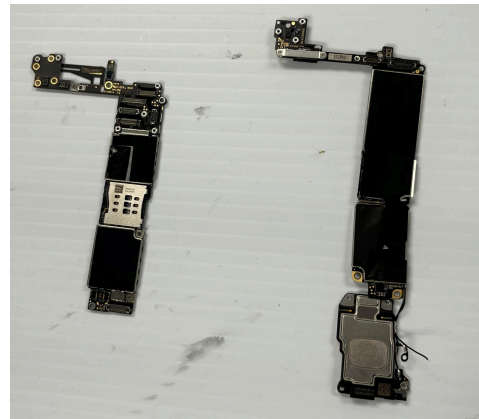
The outer case of the iPhone protects the hardware of each iPhone and holds the volume and power buttons. The touchscreen allows the users to interact with and use the iPhone.



Left iPhone 6, Right iPhone 7

Motherboard

The inner workings of the iPhone, including RAM, CPU, GPU, etc. Each part is soldered/connected to the motherboard.



Left iPhone 6, Right iPhone 7

Front Camera & Microphone

The front camera gives users another perspective to take photos and videos. The microphone allows for the transmission of input audio.



Left iPhone 6, Right iPhone 7

Conclusions/Lessons Learned

The 6 and 7 both have a Lightning port, but only the 6 has an audio jack. The 7 freed up space and discovered that the Lightning port was a better standard for sound.

Due to the haptic home button, the Taptic Engine is significantly bigger on the 7 than on the 6.

The home button on the 6 functions uses an actual button, which can cause a variety of issues in the case of malfunctioning. The 7 transitioned to a haptic button to reduce any malfunctions as well as allow more customization for its users.

The 6's rear camera has an 8-megapixel sensor. The 7's rear camera has a 12-megapixel wide-angle sensor.

The battery on the 7 changes little compared to the 6. The 6's capacity of 1810mAh is increased to 1960 mAh on the 7.

The 6 and 7 have the same 4.7-inch LED screen, however, the 7 has a 3D touch and better underwater tolerance.

The motherboard on the 6 uses an Apple A8 dual-core CPU, quad-core GPU, and 1GB of RAM. The 7 improves upon this by upgrading from the A8 to the A10, boasting a quad-core CPU, six-core GPU, and 2GB of RAM.

The front camera on the 6 has a 1.2MP, 720p camera, while the 7 has a 7MP, 1080p camera.

Overall, the 7 seems to have significant improvements compared to the 6.



Tournament Finalist

Team 5225A, E-Bots PiLons
Team 81208X, LeRoi Xenon

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VEX
ROBOTICS
COMPETITION

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