



The Nintendo Switch Lite... *Reversed*

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SUMMARY REPORT

Introduction

We came across various electronic devices to take apart and learn about, including a handheld camera, a clock-radio, a video doorbell and a Nintendo Switch Lite (Lite). We decided to choose the Lite because taking something like this apart and identifying each of the components, would result in us gaining a further understanding of the mechanism and how technology is used in the world around us. We wanted to challenge ourselves with something that contains numerous interesting parts to talk about.

What is a console?

A device that allows a user to input commands and receive visual output from a computer or computer system. Examples include: Mobile Phones and laptops. The term “Console” is most commonly used to describe devices used for gaming, such as the Play Station 5 or Nintendo Switch (Switch).

Gaming is a huge part of our lives. As it develops, the consoles used become higher in demand. They need to function properly with sufficient controls, functions and specifications to suit the gamers’ expectations. We decided to investigate what makes these gaming consoles so popular by viewing the contents and parts on the inside, rather than what is shown on a screen.

Lite v Switch

The Lite is an affordable version of the original Switch (released in March 2017). Due to a strong competitor in the market (Play Station), the Switch was not as successful as the manufacturers had intended and so Nintendo released the Lite. Both have the same software however the main differences are: the Lite has a smaller screen, it only supports handheld gameplay whereas the Switch has detachable controllers and the Switch can be connected to a monitor for easier gaming.

We were interested to examine the Lite to understand its components and at the same time its similarities and differences to the Switch.

The Lite in detail

The Lite (Model Number: HDH-001) is 3.6 inches high, 8.2 inches long, and 0.55 inches deep. It weighs 276.6913g, has a capacitive LCD touchscreen that is 5.5 inches with a 1280x720 resolution with 32GB of internal storage, impressive for a handheld device. With a MicroSD Card this storage can be extended to 2TB. The CPU is a Custom Tegra NVIDIA processor allowing high performance through graphics with low power. It has a lithium ion battery that is charged using a USB Type-C cable and is used for charging only with a total 3-7 hours of battery playback.

Dismantling the Lite

This process required removing tri-point screws off the back panel to access the motherboard and battery and removing further screws to access the smaller compartments that enable the Lite function as designed.

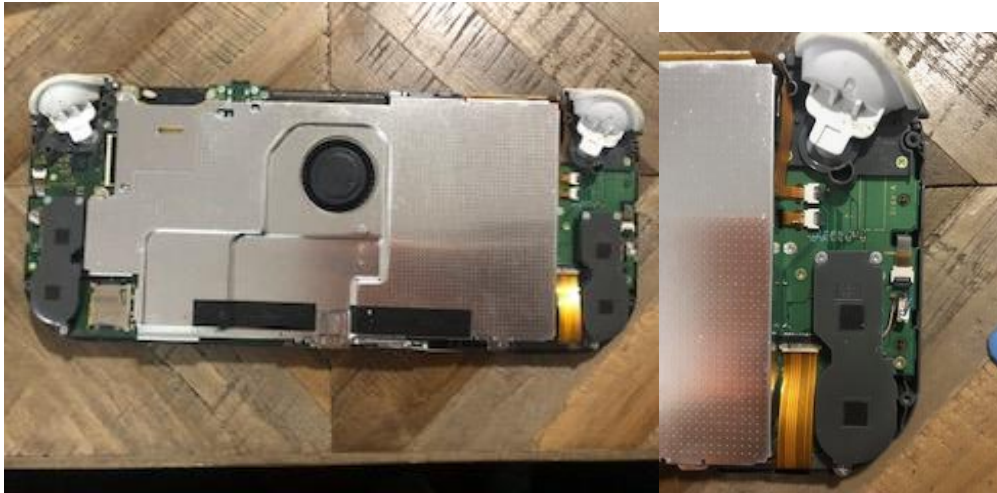
Conclusion

A key lesson learnt from this project is understanding how an advanced piece of technology used in everyday life works, which will definitely help with the understanding of unknown devices in the future. Another lesson is we have built on our deconstruction skills that require careful removal of fragile parts and actually recognising the correct method to remove them.

Importantly, we have enjoyed this process, which encouraged team work and helped enhance clear communication skills.

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The picture below shows how after removing the back piece you can see a metal sheet which protects the hardware underneath it.



The picture below shows the sheet when it is removed by unscrewing more cross-head screws to access the elements as explained.



This is the **battery**. It is made from Lithium Ion and is a 3570mAh battery and has a total battery life of 3 hrs 50 minutes.

This is the **fan** and is the same one that is used in the Switch. It is only used when the battery starts heating up, as opposed to other fans that are constantly on while the device is on.

This pink sticky substance is **thermal glue**, used to attach a heat sink to other electronic components. Once heat is applied to the glue, it becomes rigid with a strong bond. Without a heat source, this glue acts like normal PVA glue. In addition, this glue removes any air gaps. And removes any heat as well.

The green background is this product's **motherboard**, giving the Lite its amazing software and letting it function smoothly. All commands are sent and received here.

THE FAN + COOLING SYSTEM



The cooling system works to regulate the immense temperatures that the device can reach, with games and other programs running through it. The system comprises of a large fan, a heat pipe and a metal plate that acts as a heat sink, to prevent spots from forming on the cover of the Lite, or even burning the plastic. This particular gaming system has a cooling system that is cleverly able to recognise when it needs to be cooled and when it doesn't. This quality made the Lite, and the Switch better options to buy, as opposed to competitors such as the PS3, a gaming console which received a lot of negative feedback from the public because of its noisy fan that was always on.

THE HEADPHONE JACK PORT AND AUDIO SYSTEM



The image on the left shows a headphone jack port that can be used for a better gaming experience with better quality sound. The yellow sheet on the left of the port is the slot for game cards. Having it conveniently next to the headphone jack port means that any program for sound can be sent straight to the audio device without any delay.



This picture shows what the Lite looks like once the two systems have been removed.



These two black sections of the board are responsible for the smooth touchscreen that this console has. It has a wired connection that attaches directly to the screen behind it (microelectronic touch screen controllers).

This is the centre of the motherboard, the processor. It is an NVIDIA processor. It manages 1058MHz and has 384 CUDA Cores. It lets the various functions within the Lite work properly and smoothly.



This is the joystick used in the Lite. The one used in the Switch received many negative reviews because they were programmed to carry on moving without any human input as an attempt to make gaming easier, but many people disliked this. To address this, Nintendo released this new joystick that is said to run smoothly using a new system underneath it.

All the parts we were able to find in the Lite are shown in the image below.

