

New iPhone X teardown study estimates cost to build Apple's deluxe phone

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As the iPhone X has made the biggest technological leap for Apple smartphones in several years, a new study has done the math to figure out just how much it costs to build.

The United Kingdom-based analytics company IHS Markit tore apart the iPhone X to examine how much each part costs. It concluded the overall cost to construct an iPhone X at 64 gigabytes was \$370.25, the most expensive in iPhone history and \$75 more than its most expensive predecessor, the iPhone 8 Plus with 256 gigabytes. When compared to its direct competitor, the Samsung Galaxy S8 with 64 gigabytes of memory, the iPhone X costs \$68 more to construct.

While the \$370.25 bill of materials is the highest seen on an iPhone, the cost does not even represent half of iPhone X's \$999 retail price. The iPhone X's \$628.75 difference between the retail price and bill of materials per unit is still higher than that of the \$799 iPhone 8 Plus's 64 gigabyte model and the \$729 Samsung Galaxy S8.

These calculations are rudimentary and do not take into consideration engineering and research costs. Yet the increase in profit margins per unit for the iPhone X illustrates Apple's vision of creating a lucrative premium iPhone in its steady march toward potentially becoming the first publicly traded company with a \$1 trillion market capitalization.

"Typically, Apple utilizes a staggered pricing strategy between various models to give consumers a tradeoff between larger and smaller displays and standard and high-density storage," said IHS Markit's principal analyst for mobile devices Wayne Lam. "With the iPhone X, however, Apple appears to have set an aspirational starting price that suggests its flagship is intended for an even more premium class of smartphones."

When it comes to teardowns like these, make sure to take them with a grain of salt. Apple CEO Tim Cook in 2015 said that studies like this are "much different than the reality" and that he has "never seen one that is anywhere close to being accurate."

Longtime Apple watcher Neil Cybart dismissed these studies outright on

social media after the report made the rounds online.

In its anatomy, the iPhone 8 Plus and the iPhone X are quite similar with just two differences: the OLED screen display and the TrueDepth sensors added to the latter.

The highest-cost difference between the iPhone X and 8 stemmed from the changes in display screen. For iPhone X, Apple switched its screen from a high-definition Retina display to an OLED screen, which emits brighter resolution and deeper contrasts while using less battery power. The OLED display - which covers iPhone X's entire front screen - costs \$110, while the Retina display for the iPhone 8 only [costs](#) \$52.50, according to separate teardowns from IHS Markit.

The TrueDepth sensors, a new component which allows iPhone X users to unlock the phone using facial recognition technology called Face ID, cost a total of \$16.70, according to IHS Markit. The sensors are composed of an infrared camera, flood illuminator and a dot projector. These components work to detect a human face, shine 30,000 dots onto the face that are invisible to the naked eye and use artificial intelligence to authenticate whether the face matches the owner's.

The teardown showed the TrueDepth sensors were built from multiple suppliers. The infrared camera was supplied from Sony/Foxconn, the flood illuminator from Texas Instruments, and the dot projector from Finisar and Philips. ST Microelectronics, a Switzerland-based semiconductor chip maker, supplied specific parts for the camera and the flood illuminator to complete the sensors.

IHS Markit's senior director for microelectromechanical systems and sensors, Jeremie Bouchaud, believes the complexity and intricacy of the TrueDepth sensors likely led to the supply delays and problems Apple encountered before its launch, as reported by multiple outlets.

"For instance, the assemblage and test of the Texas Instruments and ST Microelectronics subsystem for the flood illuminator is far from trivial and requires a high number of test equipment pieces," said Bouchaud.

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