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IOS APPLE

# 2019 iPhones to feature new antenna structure that improves indoor navigation

 by [Joshua Swingle](#) / May 05, 2016, 4:29 AM



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(L-R) Apple iPhone XS Max, iPhone XS, and iPhone XR

With just over four months to go until Apple's next-gen iPhones are officially introduced, renowned analyst Ming Chi Kuo is back today with his latest [research note](#) which focuses on the antenna technology Apple will use.

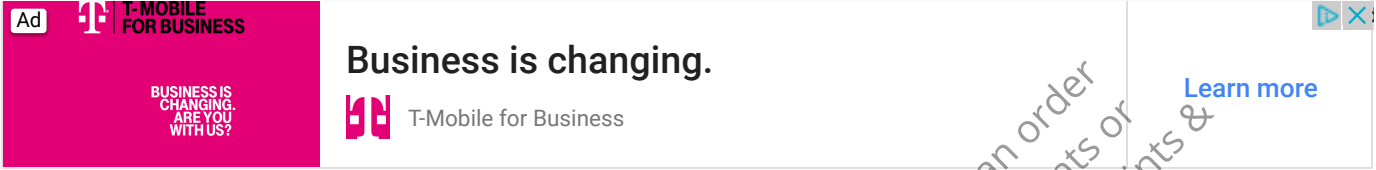
## Improved indoor navigation, fewer production issues

Inside the iPhone XS, iPhone XS Max, and iPhone XR there are currently two upper antennae and two lower ones, all of which are manufactured from Liquid Crystal Polymer (LCP). According to Kuo, though, the 2019 iPhone series will introduce some major changes to this structure. Specifically, it's predicted Apple will use a single LCP and modified polyamide (MPI) unit for the upper antenna and three MPI units for the lower ones.

The reason for this sudden switch to MPI technology reportedly has something to do with production. In his research note, Kuo explains that the current-gen iPhones are being held

back by LCP manufacturing issues which cause problems for high-frequency cellular transmission and ultimately affect yield.

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Apple is ditching the iPhone XS & iPhone XR LCP technology almost entirely

The focus on the modified-PI structure this year should result in similar 4G LTE performance and fewer production problems. Theoretically, the technology is also cheaper to produce, although Kuo believes the overall antenna production costs will rise between 10% and 20% due to new ultra-wideband upgrades that will improve indoor navigation performance.

Speaking of which, recent Apple patents suggested the company was working on a feature that'd allow individual store and mall apps to integrate indoor mapping and location tracking.

Another benefit that'll come from the switch is a more diverse set of suppliers – Apple will apparently go from having just two suppliers to a total of five. **Murata**, who is already one of Apple's suppliers, will continue to supply LCP for the upper antenna, while Flexium, Avary, and ZDT will split orders for the MPI part. Regarding the bottom MPI units, orders look set to be split between Avary, ZDT, and DSBJ. Current LCP supplier Career has been cut from Apple's order list, according to Kuo, and will not receive new orders for the iPhone, iPad, or **Apple Watch** this year.

## Apple could switch its antenna technology back in 2020

The focus on MPI this year is a pretty major move for Apple, but according to Ming-Chi Kuo, it's only temporary. In fact, come next year the Cupertino giant will reportedly switch back to LCP once materials have been improved and production issues resolved. This technology will then be used inside the next-gen **iPad Pro** models that are due to arrive in Q1 2020 and Apple's first 5G iPhones later on in the year.

While on the topic of 5G iPhones, it's worth pointing out that the modem situation for these has changed quite drastically over the past month. Following Apple's legal battle with Qualcomm which resulted in the latter refusing to supply the former with **modems for its 2018 iPhone Series**, the expectation was that the Silicon Valley-based company would continue to use Intel modems as it introduced support for the next-generation networks next year.

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