Qualcomm is packaging up 5G phones with antenna modules announcement

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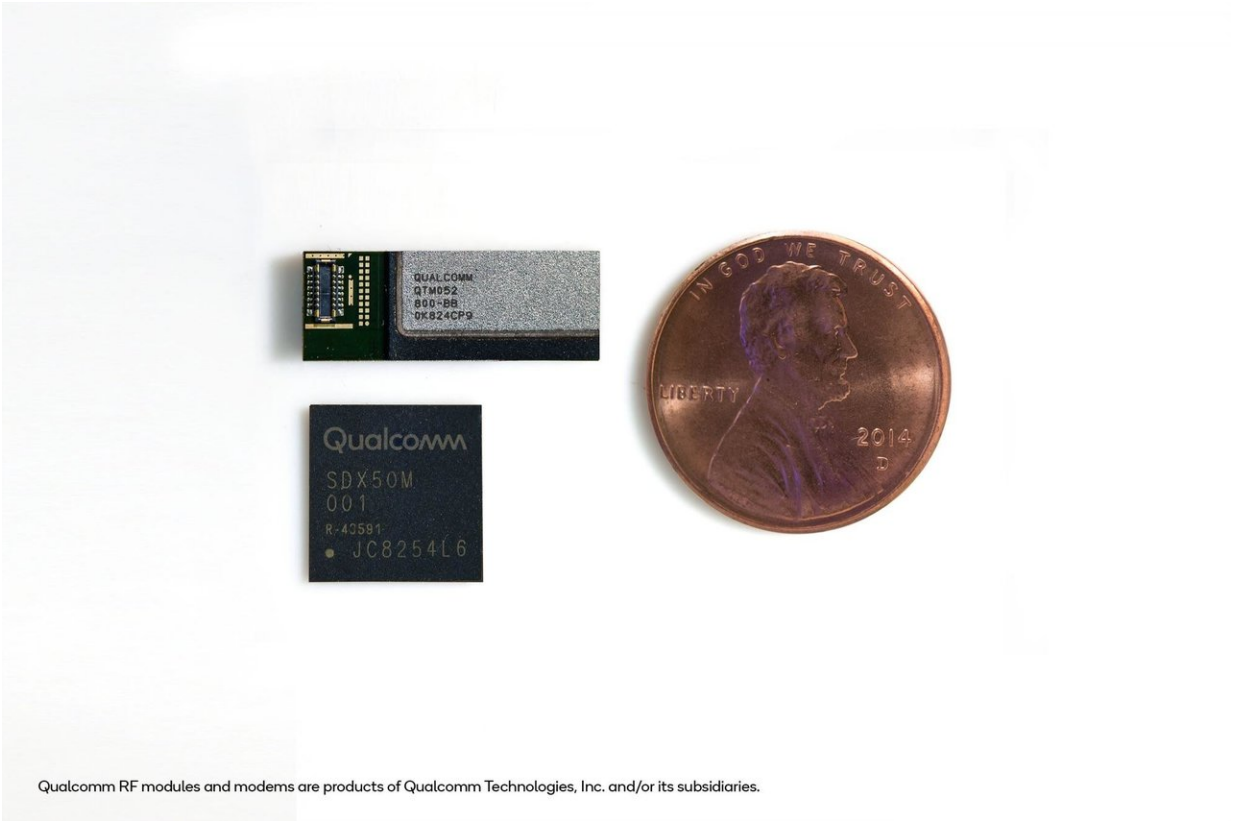

Credit: Qualcomm Technologies

Qualcomm Technologies on Monday unveiled "the world's first fully-integrated 5G NR millimeter wave (mmWave) and sub-6 GHz RF modules for smartphones and other mobile devices." Translation: The

5G party is for real and will get started sooner than later. Superfast smartphones are making real moves with the news on Monday that Qualcomm developed antenna technologies to power the 5G phones.

Qualcomm Technologies is a subsidiary of Qualcomm Incorporated; they are now at a stage where they are talking about key components of the 5G hardware ecosystem that Qualcomm has been building.

The San Diego Union Tribune said "Qualcomm has rolled out 5G antenna modules for smartphones that tap millimeter wave spectrum to deliver fiber optic like fast speeds to mobile devices."

AnandTech said the company is announcing the final version of their mmWave antenna module, the QTM052.

Why is this a big deal? *The San Diego Union-Tribune* said some industry experts had even been asking if it was technically feasible to miniaturize antenna technologies so smartphones could tap millimeter wave frequencies. Enter Qualcomm with antenna modules "about the size of a fingernail."

"The QTM052 antennas could make ultra-fast gigabit 5G a reality," said *The Verge* on Monday. Chaim Gartenberg said they will enable "the high-speed swath of networking spectrum to work with mobile phones."

The new QTM052 antenna carries two advantages, in size (small enough that device manufacturers will be able to embed it into the bezel of a phone) and technology. The array is roughly the size of a penny, he said. It involves antennas that can point toward the nearest 5G tower. "It can even bounce signals off of surrounding surfaces."

Meanwhile, talking signals, discussions focused on mmWave. Ryan Smith in *AnandTech* said, "mmWave is a critical component of the 5G

specification, as it's going to be these high (and relatively unused) frequencies that are going to give 5G enough spectrum to hit its multi-gigabit target speeds."

The mmWave portion of the spectrum offers dramatically faster speeds, but, said *The Verge*, (1) it transmits at a much shorter range and is (2) more easily blocked by walls and users' hands held over their devices.

Here is how the Qualcomm company release stated it:

"To date, mmWave signals have not been used for mobile wireless communications due to the many technical and design challenges they pose, which impact nearly every aspect of device engineering, including materials, form-factor, industrial design, thermals, and regulatory requirements for radiated power. As such, many in the mobile industry considered mmWave highly impractical for mobile devices and networks, and thus unlikely to materialize."

How their solution will make a difference: "The QTM052 mmWave antenna modules work in tandem with the Snapdragon X50 5G modem, as a comprehensive system, to help overcome the formidable challenges associated with mmWave."

The company release went on to say, "They support advanced beam forming, beam steering, and beam tracking technologies, drastically improving the range and reliability of mmWave signals. They feature an integrated 5G NR radio transceiver, power management IC, RF front-end components and phased antenna array. They support up to 800 MHz of bandwidth in the 26.5-29.5 GHz (n257), as well as the entire 27.5-28.35 GHz (n261) and 37-40 GHz (n260) mmWave bands."

Moving forward: The QTM052 mmWave antenna module family and QPM56xx sub-6 GHz RF module family are sampling to customers.

Mike Freeman in *The San Diego Union-Tribune* said while several antenna modules are being tested by smartphone makers today, they could show up in mobile devices next year.

MacRumors expanded on how this may play out: "Mobile hotspots are likely to be the first accessories to include Qualcomm's technology, but the company says that we can expect Android smartphones with this 5G millimeter wave antenna during the first half of 2019. 5G devices require 5G networks, which carriers are working on."