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Qualcomm Explains 4GLTE for Cars

By [Automotive IT News](#)

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Qualcomm is the major supplier for both 3G and 4G LTE chipsets for the automotive industry. Automotive IT News talked with Paul Hedtke, Senior Director of Business Development for Qualcomm Auto Team to learn more about LTE for automobiles.

Qualcomm designs and makes cellular modems according to the specifications of car makers. Tier One suppliers in turn make the "box" to connect the modem to the data bus and other ECUs within the vehicle.

The LTE chipset has to meet higher standards than cell phones. For instance, a consumer device only has to withstand -30°C to 70°C (-22°F -155°F) while automotive chipsets have to be able to handle -40°C to 85°C (-40°F -185°F) because vehicles are left outside and may be in the heat of the desert or in the cold of a blizzard.

The development cycle for telematics head units is typically two to three years due to the testing of not only the hardware but how the software works and connects to the ECUs and data bus of the entire vehicle, says Hedtke. Car makers use special antennas on the outside of the vehicle that are stronger than cell phone antennas and designed for vehicle use.

3G connections for vehicles are fine when only a small amount of data is transferred, however, graphics such as 3D mapping, large amounts of data or software and video require a faster connection to work smoothly.

"4G LTE is necessary in the case of the Audi A3 with Google maps with street view and Google Earth which uses a lot data that has to be updated, frequently," said Hedtke.

He noted that in the past, when you bought a car, the navigation system came with maps that over time became incorrect due to road construction or street changes. However, with streaming data, the maps and traffic data are more accurate.

4G/LTE technology in the Audi A3, supports data rates of up to 100 Megabits per second (Mbps) downstream. Navigation with Google Earth and Google Street View shows a 360 degree panoramic view to give the driver a street view of the destination before arrival.

"4G LTE is critical to the future of vehicles and as an enhancement for services such as mapping and video streaming for passengers," said Hedtke.

He was able to explain why AT&T was the first carrier in the United States to offer 4G LTE vehicle data connections over the other top tier wireless carrier, Verizon Wireless. AT&T, when it built its various networks, allows for the hand off (fall back) from 4G LTE data to 3G data in areas where there is no LTE coverage because it uses the 3GPP global standard.

Verizon Wireless' slower CDMA network is based on the 3GPP2 standard while its new 4G LTE network uses the 3GPP standard. When Verizon built its new network, it decided its chipsets would not allow the hand off between the two data networks.

As the auto industry is working towards autonomous driving, the larger pipe of data with LTE will allow for more safety, security and assistive driving features that require faster connections. Some examples of possible uses for 3G and 4G LTE data in the future are Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) features such as danger alerts, lane change warning and lane detection.

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Hedtke could not state which auto makers will be offering 4G LTE in the future; however, he hinted that Qualcomm's current automotive clients with 3G chipsets are planning on 4G LTE in future models. Qualcomm currently provides the cellular modem chips for most OEMs.

So far, only Audi and General Motors have announced 4G LTE in their vehicles, "Next year, you are going to hear a lot more announcements," concluded Hedtke.

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