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Qualcomm Announces Breakthrough Automotive Processor with Integrated LTE Modem and Machine Intelligence to Further its Leadership in the Connected Car

-- Qualcomm Snapdragon 820 Automotive Family Offers LTE-Advanced Connected Platform with Heterogeneous Compute, Machine Intelligence, Scalability from Premium to Standard Tiers, and Leading Graphics and Video Capabilities --

LAS VEGAS, Jan. 5, 2016 /PRNewswire/ -- Qualcomm Incorporated (NASDAQ: QCOM) today announced that its subsidiary, Qualcomm Technologies, Inc., has introduced its latest Qualcomm® Snapdragon™ automotive processors, the [Snapdragon 820 Automotive family](#), offering a scalable next-generation infotainment, graphics and multimedia platform with machine intelligence and a version with integrated LTE-Advanced connectivity. The Snapdragon 820A is Qualcomm Technologies' newest automotive grade system-on-chip (SoC). Qualcomm Technologies has taken a modular approach to designing the Snapdragon 820A, enabling a vehicle's infotainment system to be upgradable through both hardware and software updates, thereby enabling vehicles to be easily upgraded with the latest technology. A demonstration of the upgradeable module can be seen at the Qualcomm Automotive booth, North Hall #915 at CES 2016.

The Snapdragon 820A family is based on 14nm FinFET advanced process node running Qualcomm Technologies' custom 64-bit Qualcomm® Kryo™ CPU, Qualcomm® Adreno™ 530 GPU, Qualcomm® Hexagon™ 680 DSP with Hexagon Vector eXtension (HVX), Qualcomm® Zeroth™ machine intelligence platform, and the Snapdragon 820Am version with integrated X12 LTE modem capable of 600 Mbps downlink / 150 Mbps uplink. The 820A is engineered with custom-built, highly optimized cores designed for [heterogeneous computing](#)—the ability to combine its diverse processing engines within the system-on-chip (SoC), such as the CPU, GPU and DSP cores, to achieve previously unattainable performance and power savings.

The Zeroth™ initiative, a machine intelligence platform on Snapdragon 820A, is designed to enable automakers to develop state-of-the-art deep learning-based solutions using neural networks for advanced driver assistance systems (ADAS) and in-vehicle infotainment scenarios, and run them efficiently on embedded platforms in the vehicle. Zeroth accelerates execution of deep neural networks using the heterogeneous compute engines that are part of the Snapdragon 820A. A Zeroth-powered development kit for automotive solutions will be available for the Snapdragon 820A.

"With the Snapdragon 820 Automotive processing platform, we are delivering an unprecedented level of performance and technology integration designed to significantly enhance the consumer's safety and in-vehicle experience. Never before has the unparalleled combination of integrated LTE cloud connectivity, powerful heterogeneous computing, leading-edge multimedia performance and breakthrough machine learning capabilities been delivered in a single chip, fully integrated, automotive grade solution," said Patrick Little, senior vice president and general manager, automotive, Qualcomm Technologies, Inc. "The automotive industry has long been asking for a single scalable solution capable of delivering the rich user experience and level of performance, connectivity and upgradability that consumers are accustomed to on their personal mobile devices – including real-time cloud connectivity and navigation, immersive 4K graphics and video displays, the flexibility of hardware and software upgradability, and the deep learning and remote diagnostic capabilities needed to deliver the next level of safety performance in the vehicle. The Snapdragon 820 Automotive platform has been designed to deliver all of these capabilities and much more."

The version with integrated X12 LTE modem is designed to support continuous in-car and cellular connectivity, featuring the leading 4G LTE Advanced Pro that can support up to 600 Mbps download/150Mbps upload speeds, stream HD movies into the car, serve as a Wi-Fi hotspot supporting 802.11ac 2x2 MIMO, connect multiple mobile devices inside the car, and support 802.11p DSRC for V2X (Vehicle to Vehicle/Infrastructure/Pedestrian) communications. Local connectivity inside the car via Bluetooth® supports content sharing between mobile devices brought into the car and the car's infotainment

system. Qualcomm Technologies is also helping to lead the 3GPP in developing specifications for automotive V2X, for both LTE release 14 (LTE V2X) and 5G standards.

"Like Qualcomm Technologies, AT&T is committed to the connected car and takes a similar approach to technology development with the AT&T Drive platform, offering a global, modular solution to automakers to enable best-in-class user experiences for their drivers," said Chris Penrose, senior vice president, Internet of Things, AT&T Mobility. "We design our solutions to provide better connectivity, flexibility and upgradability on our network, and Qualcomm Technologies' development of the Snapdragon 820A Smart LTE Module is a prime example of this same approach to technology."

Furthermore, the Snapdragon 820A's sensor integration provides cognitive awareness and vehicle self-diagnostics, supports ADAS features for improved vehicle safety systems, and provides location and navigation through GNSS and dead reckoning technologies. By integrating advanced camera and sensor processing, the 820A supports critical always-on warnings and emergency services, extends standard cameras to Intelligent Cameras, and supports parking assist periphery vision features using surround view cameras. These features are supported by the on-chip Hexagon 680 DSP with HVX, which supports multiple automotive camera sensors connected simultaneously.

The Snapdragon 820A family of automotive-grade processors is designed for the automotive ecosystem and offers many notable features:

- Scalable and modular platform offering pin, package and software-compatibility, with optional integrated LTE capability that is hardware and software upgradeable as wireless network technology evolves.
- Supports vertical tiering options by offering the Snapdragon 820A family across premium to standard performance configurations.
- Comprehensive software support for QNX, Linux and Android, as well as substantial platform-level integration of high value sub-systems to respond to the acceleration in refresh cycles while managing cost.
- The connectivity, multimedia and graphics capabilities allow many real-time cloud based features, including streaming multimedia, enterprise collaboration, real-time maps and location services, remote diagnostics and one-touch telematics, with substantial potential for performance, connectivity and multimedia innovation for auto OEMs.
- The upgradability option allows a wireless operator to offer an 820A Smart LTE Module concept for the version with an integrated modem that allows cellular connectivity to be updated through both hardware and software when new features become available on the cellular network.

Qualcomm Technologies is also collaborating with Aisin AW to develop the modular infotainment solution utilizing the Snapdragon 820A. "We expect the 820's powerful features will deliver superior processing power, graphics performance and low power consumption demanded by next generation infotainment systems," said Mr. Kyomi Morimoto, Managing Officer, Aisin AW.

QNX Software Systems Limited, a subsidiary of Blackberry Limited, is a leading provider of software platforms for in-car electronics, and its OS technology will be compatible with the Snapdragon 820A. "Together, Qualcomm Technologies processors and QNX OS technology offer a proven combination for automotive infotainment and telematics applications," said John Wall, Senior Vice President and Head of QNX Software Systems. "The new Snapdragon 820A embodies the same qualities of scalability, flexibility, and performance that characterize the QNX® Neutrino® OS, and we look forward to working closely with Qualcomm Technologies on delivering support for this new and highly capable SoC."

Won-Yong Hwang, Vice President & Head of In-Vehicle Infotainment Engineering Division of LG Electronics states, "LG has worked with Qualcomm Technologies for years on bringing 3G and LTE connectivity to vehicles in multiple telematics programs, and welcomes the integration of the latest LTE modem technology with advanced multimedia, CPU and GPU features of the Snapdragon 820A to provide a scalable platform for the next generation of high performance connected infotainment systems."

"At Mitsubishi Electric, we are excited about how the Snapdragon 820A can contribute to the premium user experience; the advanced capabilities of the new CPU, GPU, Hexagon DSP and integrated modem create a significant improvement for the end customer: enabling an enhanced phone experience in the vehicle," said Gareth Williams, Director of Advanced Development, Mitsubishi Electric.

"Visteon is committed to bringing cutting-edge advanced graphics in our instrument clusters and infotainment systems.

Having Qualcomm Technologies as a contributor supports that goal," said Jim Farell, director, Visteon Technology Office.

As part of the automotive ecosystem, Neusoft Corporation, industry experts in ADAS Vision solutions, also collaborates with Qualcomm Technologies to provide cognitive vision solutions on Snapdragon 820A, leveraging the compute performance of the HVX vision engine alongside infotainment systems.

Automotive samples of the 820A family are expected to be available in Q1 2016. A number of concept vehicles and demonstrations based on the Snapdragon 820A, from Qualcomm Technologies and other automotive industry leaders, will be shown in the Qualcomm Automotive booth, North Hall #915 at CES 2016.

About Qualcomm Incorporated

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