



Qualcomm® QCS6490/ QCM6490 Processors

These processors are designed for Enterprise and IoT applications including support for 5G and Wi-Fi 6E for ubiquitous coverage, powerful AI, and expanded interfaces for industrial use cases.

The 6 nm QCS6490/QCM6490 are powerful processors that deliver premium-tier features with true global 5G and support for Wi-Fi 6E, with advanced camera, AI, and compute for powerful performance at low power, purpose-built for industrial and commercial IoT applications such as ruggedized handhelds and tablets, kiosks, industrial scanners, point of sale systems, and human-machine interface systems.

As companies in the industrial and commercial space are increasingly dependent on wireless connectivity to efficiently operate and connect countless IoT devices, the QCM6490 provides the advantages of 5G for full mobility, high data rates and coverage, while connecting the unconnected to unlock data and insights to help increase efficiency and drive adoption of emerging technologies like computer vision and machine learning. An enterprise grade Wi-Fi 6E also provides extended coverage and scale.

The QCS6490/QCM6490 supports the latest re-engineered Qualcomm® Hexagon™ NPU processor that features a fused AI-accelerator architecture to bring astonishing performance at low power.

Improvements to our Qualcomm® Kryo™ CPU and Qualcomm® Adreno™ GPU provide powerful computing performance.

Combined with a high-performing triple-ISP and support for up to five concurrent cameras and video encode/decode at up to 4K30/4K60 respectively, these processors deliver powerful edge AI for high performance at low power.

Support for freeway lane-level vehicle navigation (with meter-level positioning) and urban pedestrian navigation with sidewalk accuracy.

Materials are subject to change without notice.
87-28733-1 Rev. C

Highlights

Ubiquitous coverage with 5G

International coverage with 5G mmWave/Sub-6 GHz that offers widespread coverage and high-speed mobility with standalone and non-standalone modes, TDD and FDD, spectrum sharing, LTE, and legacy modes (3G, 2G). This is designed to enable OEMs to bring blazing-fast connected devices to global networks in nearly any form factor.



Powerful enterprise grade Wi-Fi 6 and Wi-Fi 6E connectivity

Enterprise-grade Wi-Fi 6 and Wi-Fi 6E (6 GHz) featuring Qualcomm® 4K Quadrature Amplitude Modulation (QAM), 160 MHz bandwidth, bi-directional Multi-User MIMO, and advanced Dual Band Simultaneous functionality. Transforms connectivity experiences with multi-gigabit speeds (up to 3.6 Gbps), extended capacity, and dramatic latency reduction.



Powerful AI/ML transforming experiences

The Qualcomm® AI Engine features a fused AI-accelerator architecture and brings the total performance up to 12 TOPS. On-device machine learning enables Edge computing use cases growing at an exponential scale.



Expanded interfaces and peripherals

Many features supported to enable industrial and commercial IoT devices like: USB 3.1 Type-C with DisplayPort, USB 2.0, 2x PCIe and discrete memory beyond LP4X/LP5 MCP.



Expected Product Longevity: July 2036

The QCS6490 processor is a part of the Product Longevity Program for Qualcomm IoT Portfolio. These products are developed and engineered with product longevity and durability in mind, helping to bring stability to our customer product designs. Product longevity dates are subject to change without notice.

QCS6490/QCM6490 Target Applications

- Transportation & Logistics
- Smart Warehousing
- Retail
- Manufacturing
- Healthcare
- Ecommerce

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QCS6490

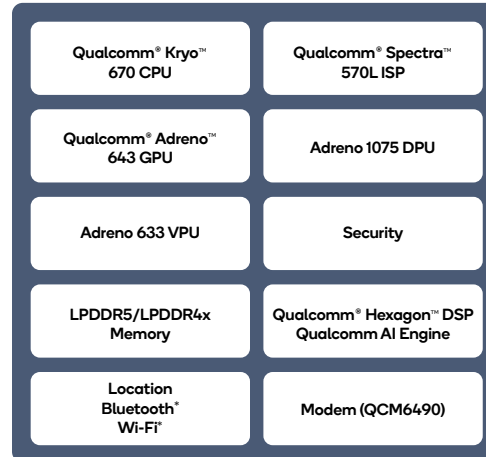
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QCM6490

Features

- Arm® Cortex®-V8 processor
 - Kryo Gold plus: high-performance core up to 2.7 GHz
 - Kryo Gold: three high-performance cores @ 2.4 GHz
 - Kryo Silver: four low-power cores @ 1.9 GHz
- Designed with the 6 nm process for superior performance and power efficiency
- 6th gen Qualcomm® AI Engine: Compute Hexagon DSP with dual Hexagon Vector eXtensions (HVX), Hexagon Co-processor (Hexagon CP) 2.0 and Hexagon Tensor Accelerator
- Adreno 643 GPU @ 812 MHz
- Dual-channel non-PoP high-speed memory, LPDDR5/LPDDR4x SDRAM
 - LPDDR5 SDRAM designed for 3200 MHz clock (2 x 16-bit)
 - LPDDR4X SDRAM designed for 2133 MHz clock (2 x 16-bit)
- Qualcomm® Universal Bandwidth Compression (UBWC) with camera, display, GPU, video, and compute DSP
- Display support: FHD+, 10-bit DisplayPort, eight hardware layers, improved HDR10+, and wide color Gamut, Qualcomm® Low-Power Picture Enhancement display feature, and Qualcomm® True Palette Display feature
- One 4-lane DSI DSC 1.2, D-PHY 1.2, or C-PHY 1.0; VESA DSC 1.2
- Triple 14-bit image signal processing (ISP) + two lite ISP 22 + 22 + 22 MP, 64 MP/30 fps
- Five 4-lane CSIs (4/4/4/4/4) D-PHY 1.2 or C-PHY 1.2
- Adreno 633 VPU for high-quality, ultra HD video encode and decode
- Support for USB 3.1 Type-C with DisplayPort and USB 2.0
- Long-term support for Android OS upgrades, Linux, Ubuntu, Windows 11 IoT Enterprise, security updates, and enterprise-grade hardware

Block Diagram



* Supported with a companion module

Specifications

AI	6th gen Qualcomm AI Engine
Modem	2G/3G/4G/5G – mmWave and sub-6 GHz bands (Rel. 15) 3.7 Gbps DL, 2.5 Gbps UL, 400 MHz mmW, 100 MHz sub-6 (QCM6490 only)
Connectivity	WLAN: Wi-Fi 6 (802.11ax) and Wi-Fi 6E (6 GHz), Bluetooth® 5.2 and FM supported. Uplink/Downlink MU-MIMO, 4K QAM, 160 MHz channels (5 & 6 GHz)
CPU	8x Kryo 670 CPU from 1.9 up to 2.7 GHz
GPU	Adreno GPU 643 with support for Open GL ES 3.2, Open CL 2.0, Vulkan 1.x, DX FL 12
DSP	Compute Hexagon DSP with dual HVX and 4K HMX
Memory & Storage	Dual-channel, non-PoP LPDDR5/LPDDR4X SDRAM, UFS 2.x/3.1, two-lane HS gear 4, SD v3.0, eMMC 5.1, PCIe two-lane NVMe
Display Support	Adreno 1075 DPU
Camera Support	Qualcomm Spectra™ ISP 570L 64 MP / 36 + 22 MP / 3x22 MP at 30 fps ZSL 192 MP non-ZSL
Video	Up to 4K60 decode for H.264/H.265/VP9, Up to 4K30 encode for H.264/H.265; Support for HDR10 and HDR10+ playback
Location	GPS, GLONASS, NavIC, BeiDou, Galileo, QZSS, and SBAS
Operating System	Android, Linux, Ubuntu, Windows 11 IoT Enterprise

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