

Qualcomm Dragonwing™ Q-7790 Processor



Designed to deliver immersive, intelligent, and multimedia-focused edge experiences—powered by on-device AI, cutting-edge display technology, and easy system integration.

The Dragonwing Q-7790 empowers device makers to build next-generation edge devices across consumer and enterprise industries.

This processor delivers low-power, high-performance compute, supports security-focused content handling, and comes with on-device AI for intelligent and immersive experiences at the edge.

With integrated support for multi-display output, high-resolution cameras, low-latency audio, and high-speed wireless connectivity, the platform reduces development complexity and shortens time to market.

Android and Linux compatibility allow for faster prototyping, simplified updates, and long-term device support.

Highlights

AI AT THE EDGE

Achieve real-time AI inferencing with 24 TOPS of compute power, enabling smart features without cloud latency or added infrastructure.



IMMERSIVE VISUAL EXPERIENCE

Deliver ultra-smooth WQHD+ 144Hz playback, rich graphics, or dual 4K60 output for advanced visual interaction.



CAMERA AND AUDIO INTELLIGENCE

Support high-quality imaging with triple ISP, 48 MP capture, 8x DMIC input, directional audio, and low-power, always-on audio processing.



BUILT-IN CONNECTIVITY

Simplify integration with Wi-Fi 6E/7, Bluetooth® 5.4/6.0 wireless technology, USB-C with DisplayPort, and high-speed I/O for advanced wireless and wired communication.



STREAMLINED DEVELOPMENT

Accelerate time to market with Android and Linux support, OTA updates, and developer kits designed for fast prototyping and scaling.



Block Diagram

Octa-Core CPU	Adreno 722 GPU
24 TOPS AI Engine	Triple TFE
LPDDR5/LPDDR5X Memory	Audio DSP (LPASS)
Security	4K120 Decode / 4K60 Encode
Wi-Fi 7/6E	Bluetooth 5.4 and 6.0





Target Applications

- Body Cameras
- Action Cameras
- Dash Cameras
- Video Collaboration Devices
- AI Media Stations: AI TVs, Set-Top Boxes

Features

- **Octa-core CPU with performance and efficiency cores:** Responsive multitasking and smooth UX across complex applications
- **24 TOPS AI engine with NSP3, HMX, and HVX:** Real-time inference, voice processing, and edge intelligence without cloud dependency
- **Adreno 722 GPU:** Immersive graphics, fluid animations, and lifelike rendering for premium visual devices
- **Support for 4K120 video decode and 4K60 encode:** Ultra-high-resolution media playback and capture with low latency
- **Dual 4K60 output via HDMI 2.1 and USB-C DisplayPort:** Simultaneous multi-display applications and enhanced user interfaces
- **LPDDR5 and LPDDR5X memory up to 4200 MHz:** High-speed data access for AI models, multimedia, and real-time processing
- **Triple 21 MP ISP and support for up to 48 MP cameras:** High-fidelity imaging, HDR support, and advanced computer vision
- **8x DMIC audio DSP with low-power, always-on mode:** Voice wake, noise cancellation, and low-latency audio processing
- **UFS 4.0, eMMC, and SD 3.0 storage support:** Fast boot, quick media access, and reliable offline data storage
- **USB 3.1 Gen2 Type-C with DisplayPort support:** High-bandwidth peripheral and display connectivity in compact designs
- **2x PCIe Gen3 lanes and I3C interface:** Flexible expansion for Ethernet, sensors, or specialized accelerators
- **2x2 Wi-Fi 6E/7 and Bluetooth 5.4/6.0:** Advanced, high-speed wireless connectivity supports real-time streaming and sync
- **Secure boot and encrypted storage:** Superior security features for user data, firmware, and content rights management
- **OTA-ready Android 15 and Linux OS support:** Easy updates, rapid development cycles, and broad ecosystem compatibility
- **Compact 14.0 x 14.0 x 0.89 mm package:** Space-constrained designs in portable and embedded devices

Specifications

Dragonwing Q-7790	
SKUs	CQ7790S, CQ7790M
CPU	Maximum clock speed enabled by an octa-core processor: <ul style="list-style-type: none"> • 1x Prime @ 2.8 GHz • 4x Gold @ 2.4 GHz • 3x Silver @ 1.8 GHz
AI Performance	24 TOPS INT8, NSP3, 8K HMX, 4x HVX
GPU	Qualcomm® Adreno™ GPU @ 1.15 GHz
Memory	2x16-bit LPDDR5 @ 3200 MHz 2x16-bit LPDDR5X @ 4200 MHz
Addressable Memory	16 GB
Audio DSP (LPASS)	LPI w. eNPU5, AON
Display Support	2x DSI @ WQFD+ 144HS USB-C DP @ 4K60 4K60 HDMI Tx 2.1 HDCP 2.2
Video Decode	4K120 Formats: H.264/H.265/AV1
Video Encode	4K60 Formats: H.264/H.265
Camera	14bpp, Triple TFE (21 + 21 + 21 MP) Single IFE Lite 2x 4K30 2-exp sHDR
PCIe	2x PCIe Gen3 1-lane and 2-lane
USB	1x USB 3.1 Gen2 Type-C with DP eUSB 2.0
Other I/O	I3C, MI2S, GPIO, UART, Soundwire
Storage	UFS 4.0, eMMC 5.1, SD 3.0
Wi-Fi/Bluetooth/WAN	2x2 Wi-Fi 7 / Wi-Fi 6E Bluetooth 5.4/6.0
OS	Android, Linux
Package	14.0 x 14.0 x 0.89 mm
Temp. Range (Tj)	Maximum temperature: Tj = 95°C

Specifications are subject to change.

Ordering Information

Part Numbers

CQ7790S-0-AB

CQ7790M-0-AB

To learn more visit: [qualcomm.com](https://www.qualcomm.com)

