

SNAPDRAGON® 8 GEN 2 MOBILE PLATFORM

The Snapdragon 8 Gen 2 Mobile Platform defines a new premium standard for connected computing. Intelligently engineered with groundbreaking AI across the board, this AI marvel enables truly extraordinary experiences.



Groundbreaking AI

Our fastest, most advanced Qualcomm® AI Engine ever puts a world of possibilities at your fingertips. Communicate with friends or colleagues across the globe with multi-language translation and transcription, or capture premium content with AI Cinematic video. And now, the Qualcomm® Sensing Hub features dual-AI processors for the first time, powering exciting new experiences like direct-to-app voice assistance for convenient control of your favorite apps.

- Up to 4.35x faster AI performance¹
- First Snapdragon® Mobile Platform with INT4 precision support for 60% better performance/watt
- First Snapdragon Mobile Platform with Micro Tile Inferencing

Ingenious capture

Break photography barriers with the Qualcomm Spectra™ 18-bit triple Cognitive ISP—our first ever AI-powered camera processor. This new architecture powers real-time Semantic Segmentation, to recognize and optimize each aspect within a frame—like faces, hair, clothes, backgrounds, and more.

- First Snapdragon Mobile Platform with AI-powered Always-Sensing Camera
- Up to 200 MP photo capture
- 8K HDR video capture in 10-bit HDR

Next-level audio experiences

Be transported by Snapdragon Sound™ Technology, now featuring spatial audio with head-tracking² for complete surround-sound immersion. Now you're always at the center of sound—no matter how you move you'll always be captivated by the audio that's all around you.

- Hear every detail of your music with lossless music streaming
- Ultra-low latency Bluetooth® streaming <48ms for lag-free gaming

Champion-level gameplay

Accelerate your wins with the full arsenal of Snapdragon Elite Gaming™ Features. Best-in-class lighting, shadow, and illumination effects add astonishing authenticity to scenes, brought to you by the industry standard for real-time Hardware-Accelerated Ray Tracing. And, support for Unreal Engine 5 and Metahuman framework produces photorealistic human characters for unbeatable immersion. When combined with accelerated performance from our Qualcomm® Adreno™ GPU and Qualcomm® Kryo™ CPU, worlds of gaming will unfold and astound in real-time.

- First mobile platform to support Vulkan 1.3 APIs
- Adreno GPU delivers up to 25% faster performance, with up to 45% better power efficiency
- Kryo CPU improves performance up to 35%, while new micro-architecture allows up to 40% more power efficiency

Unparalleled connectivity

Featuring the Snapdragon X70 5G Modem RF System, Snapdragon 8 Gen 2 is the world's first and only mobile platform with a dedicated 5G AI processor. Plus, gaming, streaming, and communication from home soar via Wi-Fi 7 (the industry's lowest latency offering), all brought to you by the Qualcomm® FastConnect™ 7800 Mobile Connectivity System.

- 5G Dual-SIM Dual-Active (DSDA) enables the simultaneous use of two 5G+5G or 5G+4G SIM cards for ultimate user flexibility
- Blazing Wi-Fi speeds of up to 5.8 Gbps—more than double Wi-Fi 6
- World's first commercial Wi-Fi 7 SoC, with advanced High Band Simultaneous Multi-Link

Vault-like security

Snapdragon Secure offers the latest in isolation, cryptography, key management, attestation, and more—all intricately designed to protect your data and privacy.

- Enhanced Face Unlock security system including liveness detection

¹ On certain models (MobileBERT)

² When used with certain compatible Snapdragon Sound products.

SPECIFICATIONS & FEATURES



Artificial Intelligence

Qualcomm® Adreno™ GPU

Qualcomm® Kryo™ CPU

Qualcomm® Hexagon™ Processor

- Fused AI Accelerator Architecture
- Hexagon Tensor Accelerator
- Hexagon Vector eXtensions
- Hexagon Scalar Accelerator
- Hexagon Direct Link
- Support for mix precision (INT8+INT16)
- Support for all precisions (INT4, INT8, INT16, FP16)
- Micro Tile Inferencing

Qualcomm® Sensing Hub

- Dual AI Processors for audio and sensors
- Always-Sensing camera

5G Modem-RF System

Snapdragon® X70 5G Modem-RF System

- 5G mmWave and sub-6 GHz, standalone (SA) and non-standalone (NSA) modes, standalone mmWave and mmWave-sub6 dual connectivity, FDD, TDD
- mmWave: 8 carriers, 2x2 MIMO
- Sub-6 GHz: 4x4 MIMO
- Qualcomm® 5G AI Suite
- Qualcomm® AI-Enhanced Signal Boost
- Qualcomm® 5G PowerSave Gen 3
- Qualcomm® Smart Transmit™ 3.0 technology
- Qualcomm® Wideband Envelope Tracking
- Qualcomm® 5G Ultra-Low Latency Suite
- Global 5G multi-SIM, including 5G-5G/4G Dual-SIM Dual-Active (DSDA)

Downlink: Up to 10 Gbps

Uplink: Up to 3.5 Gbps

Multimode support: 5G NR, NR-DC, EN-DC, LTE, CBRS, WCDMA, HSPA, TD-SCDMA, CDMA 1x, EV-DO, GSM/EDGE

Wi-Fi & Bluetooth®

Qualcomm® FastConnect™ 7800 System

- Wi-Fi Generation: Wi-Fi 7
- Peak speed: 5.8 Gbps
- 802.11be, 802.11ax, 802.11ac, 802.11a/b/g/n
- Wi-Fi Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz
- Channel Bandwidth: 320/240/160/80/40/20 MHz
- 8-stream sounding (for 8x8 MU-MIMO)
- MIMO Configuration: 2x2 (2-stream)
- MU-MIMO (Uplink & Downlink)
- 4K QAM
- OFDMA (Uplink & Downlink)
- High Band Simultaneous (HBS) Multi-Link
- Wi-Fi Security: WPA3-Enterprise, WPA3-Enhanced Open, WPA3 Easy Connect, WPA3-Personal

Integrated Bluetooth

- Bluetooth audio: Snapdragon Sound™ Technology with support for Qualcomm® aptX™ Voice, aptX Lossless, aptX Adaptive, and LE Audio
- Bluetooth features: Bluetooth 5.3, LE Audio, Dual Bluetooth antennas

Camera

Qualcomm Spectra™ Image Signal Processor

- Cognitive ISP, Triple 18-bit ISPs
- Up to 36 MP triple camera @ 30 FPS with Zero Shutter Lag
- Up to 64+36 MP dual camera @ 30 FPS with Zero Shutter Lag
- Up to 108 MP single camera @ 30 FPS with Zero Shutter Lag
- Up to 200 Megapixel Photo Capture

AI-based face detection, auto-focus, and auto-exposure

Rec. 2020 color gamut photo and video capture

Up to 10-bit color depth photo and video capture

8K HDR Video Capture + 64 MP Photo Capture

10-bit HEIF: HEIC photo capture, HEVC video capture

Video Capture HDR Formats: HDR10+, HDR10, HLG, Dolby Vision

8K HDR Video Capture @ 30 FPS

4K Video Capture @ 120 FPS

Slow-mo video capture at 720p @ 960 FPS

8K Video Playback @ 60 FPS

Engine for Visual Analytics 3.0

Real-time Semantic Segmentation photo and video processing

Bokeh Engine 2 for Video Capture

Pro Sight Video Capture

Computational HDR Video Capture: Up to 4 exposures (with QDOL image sensors)

Video super resolution

Multi-frame Noise Reduction (MFNR)

Locally Motion Compensated Temporal Filtering

Multi-Frame and triple exposure staggered/digital overlap HDR dual-sensor support

Audio

Qualcomm Aqstic™ audio codec

Qualcomm Aqstic smart speaker amplifier

Total Harmonic Distortion + Noise (THD+N), Playback: -108dB

Qualcomm Audio and Voice Communication Suite

Spatial Audio with Head Tracking¹

Display

On-Device Display Support:

- 4K @ 60 Hz
- QHD+ @ 144 Hz

Maximum External Display Support:

- Up to 4K @ 60 Hz
- 10-bit color depth, Rec. 2020 color gamut
- HDR10, HDR10+, HDR vivid, and Dolby Vision

Demura and subpixel rendering for OLED Uniformity

OLED Aging Compensation

CPU

Kryo CPU

- 64-bit Architecture
- 1 Prime core, up to 3.36 GHz²
 - Arm Cortex-X3 technology
- 4 Performance cores, up to 2.8 GHz
- 3 Efficiency cores, up to 2.0 GHz

Visual Subsystem

Adreno GPU

- Real-time Hardware Accelerated Ray Tracing
- Snapdragon Game Post Processing Accelerator
- HDR gaming (10-bit color depth, Rec. 2020 color gamut)
- Snapdragon Shadow Denoiser
- API Support: OpenGL® ES 3.2, OpenCL™ 2.0 FP, Vulkan® 1.3
- Hardware-accelerated H.265 and VP9 decoder
- HDR Playback Codec support for HDR10+, HDR10, HLG, and Dolby Vision

Security

Platform Security Foundations, Trusted Execution

Environment & Services, Secure Processing Unit (SPU)

Trust Management Engine

Qualcomm® wireless edge services (WES) and premium security features

Qualcomm® 3D Sonic Sensor and Qualcomm 3D Sonic Max (fingerprint sensor)

Qualcomm® Type-1 Hypervisor

Location

Concurrent GPS, Glonass, BeiDou, Galileo, QZSS, NavIC

Triple frequency GNSS (L1/L2C/L5)

Sensor-Assisted Positioning 6.0

- With global map aiding
- Urban pedestrian navigation with sidewalk accuracy
- Global freeway lane-level vehicle navigation

Charging

Qualcomm® Quick Charge™ 5 Technology

Memory

Support for LP-DDR5x memory up to 4200 MHz

Memory Density: up to 24 GB

General Specifications

Full suite of Snapdragon Elite Gaming™ Features

4 nm Process Technology

USB Version 3.1; USB Type-C Support

Part Number: SM8550-AB, SM8550-AC²

Storage: UFS 4.0

¹ When used with certain compatible Snapdragon Sound products.

² Snapdragon 8 Gen 2 Mobile Platform also available in 3.19 GHz CPU version (SM8550-AB). Maximum CPU speed will vary based on platform version. Consult OEM specifications for device CPU speed.

Certain optional features available subject to Carrier and OEM selection for an additional fee. Qualcomm 5G AI Suite, Qualcomm Audio & Voice Communication Suite, Snapdragon Sound, Snapdragon Elite Gaming, Qualcomm Type-1 Hypervisor, Snapdragon, Qualcomm Adreno, Qualcomm Kryo, Qualcomm Hexagon, Qualcomm Sensing Hub, Qualcomm FastConnect, Qualcomm 5G PowerSave, Qualcomm Smart Transmit, Qualcomm Wideband Envelope Tracking, Qualcomm AI-Enhanced Signal Boost, Qualcomm 5G Ultra-Low Latency Suite, Qualcomm Spectra, Qualcomm aptX, Qualcomm Aqstic, and Qualcomm Quick Charge are products of Qualcomm Technologies, Inc. and/or its subsidiaries. Qualcomm wireless edge services are offered by Qualcomm Technologies, Inc. and/or its subsidiaries. Snapdragon Sound, Snapdragon Elite Gaming, Snapdragon, Hexagon, Adreno, FastConnect, Kryo, Smart Transmit, Qualcomm Spectra, Qualcomm Aqstic, and Quick Charge are trademarks or registered trademarks of Qualcomm Incorporated. aptX is a trademark or registered trademark of Qualcomm Technologies International, Ltd. ©2022 Qualcomm Technologies, Inc. and/or its affiliated companies. All Rights Reserved.

