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 performance[1]
- 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-tracking[2] 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

SPECIFICATIONS & FEATURES

Snapdragon 8 Gen 2

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: 5 GHz, 6 GHz
- Channel Bandwidth: 20/40/80/160 MHz
- 8-stream sounding (for 8x8 MU-MIMO)
- MIMO Configuration: 2x2 (2-stream)
- MU-MIMO (Uplink & Downlink)
- 4K QAM
- OFDMA (Uplink & Downlink)
- Dual-band simultaneous (2x2 + 2x2)
- 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 Tracking[1]

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 3.2 GHz[2]
  - 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

GPS, Glonass, BeiDou, Galileo, QZSS, NavIC capable

Dual Frequency GNSS (L1/L5)

Sensor-Assisted Positioning
- 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 16 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

Storage: USF 4.0

Snapdragon