



865

The Qualcomm® Snapdragon™ 865 5G mobile platform scales 5G and leading 5<sup>th</sup> gen AI to power the next generation of premium devices. Capture professional-quality photos at Gigapixel speeds, compete amongst the best with desktop-level gaming plus a full suite of Qualcomm® Snapdragon Elite Gaming™ features—and play all day with resilient battery life.



### Staggering multi-gigabit speeds

The Snapdragon 865 is the most advanced 5G platform—ever. Designed to deliver unmatched connectivity and performance with peak speeds of up to 7.5 Gbps. Download, upload, stream and connect like never before. This platform is truly global so you can enjoy superior coverage and feel the power of 5G, all while maintaining unbelievable battery life.

- Supports all key regions and frequency bands including mmWave, sub-6, TDD, FDD and Dynamic Spectrum Sharing (DSS)
- Supports both standalone and non-standalone modes
- Supports global roaming and global multi-SIM



### Innovative and intelligent on-device AI

Our leading 5<sup>th</sup> generation Qualcomm® AI Engine fuels intuitive mobile experiences in photography, gaming and voice interactions. The all-new Qualcomm® Sensing Hub enables your device to be contextually aware of its surroundings at all times – using extremely low power. And, real-time AI Translation instantly translates your speech into a foreign language, all while retaining the sound of your authentic voice.

- Our 5<sup>th</sup> generation Qualcomm AI Engine is 2x more powerful than its predecessor
- Pushing 15 TOPS AI performance while using lower power
- All-new Qualcomm® Hexagon™ Tensor Accelerator
- Qualcomm® 3D Sonic and Qualcomm® 3D Sonic Max



### Gigapixel speed. Professional camera quality.

This is ground-breaking photography experiences unlike any other. Capture a billion shades of color at Gigapixel speeds with 4K HDR video—and snap photos simultaneously at a breathtaking 64 MP. Get ready for bigger, sharper 8K video as well as the ability to take massive 200 MP photos.

- 2 Gigapixels per second speeds
- No-limit HD slow-mo video capture @ 960 FPS
- First ever Dolby Vision for video capture on mobile



### Desktop-level features

Desktop-quality graphics and advanced customization is now available on mobile, not just on your PC. This platform pushes beyond mobile limits by harnessing the power of desktop-level features. Fully loaded with a full suite of next generation Snapdragon Elite Gaming features, you'll discover boundary-breaking enhancements for ultra smooth gaming experiences with the highest graphics quality and desktop-quality gaming.

- Qualcomm® Adreno™ 650 GPU delivers a 25% performance boost from its predecessor
- Brand-new Snapdragon Elite Gaming features including: Desktop Forward Rendering, Game Color Plus and first-ever updatable GPU drivers on mobile



### Resilient power and efficiency

The Snapdragon 865 achieves peak performance in every capacity. This platform powers dynamic, process-intensive experiences with incredible efficiency and supports all-day battery life. Plus, Qualcomm® Quick Charge™ AI technology is designed to monitor battery health and safety while extending battery life.

- Qualcomm® Kryo™ 585 CPU provides 25% faster performance
- Quick Charge AI is designed to extend battery life cycles up to 200 days

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

All comparisons made are in reference to previous generation, Snapdragon 855 mobile platform. Results will vary depending on OEM implementation and other factors. Battery life varies significantly based on device, settings, usage, and other factors.

Qualcomm Snapdragon, Qualcomm Kryo, Qualcomm Snapdragon Elite Gaming, Qualcomm 3D Sonic Sensor, Qualcomm 3D Sonic Max, Qualcomm Sensing Hub, Qualcomm Hexagon, Qualcomm Adreno, Qualcomm Quick Charge and Qualcomm AI Engine are products of Qualcomm Technologies Inc. and/or its subsidiaries.

# Qualcomm® Snapdragon™ 865 5G Mobile Platform

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## SPECIFICATIONS & FEATURES

### Artificial Intelligence

- Adreno 650 GPU
- Kryo 585 CPU
- Hexagon 698 Processor
  - Hexagon Tensor Accelerator
  - Hexagon Vector eXTensions
  - Hexagon Scalar Accelerator
- Qualcomm Sensing Hub
  - Ultra low power hub for audio, voice and sensors
  - Supports AI algorithms at low power
  - Support for fusing contextual data streams including sensors, audio and voice
  - Supports multiple voice assistants
  - Multi-mic far-field detection and echo cancellation

### 5G Modem-RF System

- Snapdragon X55 5G Modem-RF System
- 5G mmWave and sub-6 GHz, standalone (SA) and non-standalone (NSA) modes, FDD, TDD
- Dynamic Spectrum Sharing
- mmWave: 800 MHz bandwidth, 8 carriers, 2x2 MIMO
- Sub-6 GHz: 200 MHz bandwidth, 4x4 MIMO
- Qualcomm® 5G PowerSave
- Qualcomm® Smart Transmit™ technology
- Qualcomm® Wideband Envelope Tracking
- Qualcomm® Signal Boost adaptive antenna tuning
- Global 5G multi-SIM
- Downlink: Up to 7.5 Gbps
- Uplink: Up to 3 Gbps
- Multimode support: 5G NR, LTE including CBRS, WCDMA, HSPA, TD-SCDMA, CDMA 1x, EV-DO, GSM/EDGE

### Wi-Fi & Bluetooth

- Qualcomm® FastConnect™ 6800 Subsystem
  - Wi-Fi Standards: Wi-Fi 6 (802.11ax), 802.11ac Wave 2, 802.11a/b/g/n
  - Wi-Fi Spectral Bands: 2.4 GHz, 5 GHz
  - Peak speed: 1.774 Gbps
  - Channel Utilization: 20/40/80 MHz
  - 8-stream sounding (for 8x8 MU-MIMO)
  - MIMO Configuration: 2x2 (2-stream)
  - MU-MIMO (Uplink & Downlink)
  - 1024 QAM (2.4 & 5 GHz)
  - OFDMA (2.4 and 5 GHz)
  - Dual-band simultaneous (DBS)
  - Wi-Fi Security: WPA3-Enterprise, WPA3-Enhanced Open, WPA3 Easy Connect, WPA3-Personal
- Integrated Bluetooth
  - Bluetooth Version: Bluetooth 5.1

- Bluetooth features: 1-to-many Bluetooth broadcast, up to 18dB link margin improvement
- Bluetooth audio: Qualcomm® aptX™ Voice audio for super wide band voice calls, Qualcomm® aptX™ Adaptive audio for robust, low latency, high quality audio, Qualcomm TrueWireless™ Technology
- Qualcomm® 60 GHz Wi-Fi
  - Wi-Fi Standards: 802.11ad, 802.11ay
  - Wi-Fi Spectral Band: 60 GHz
  - Peak speed: 10 Gbps
  - Ambient Wi-Fi sensing

### Camera

- Qualcomm® Spectra™ 480 Image Signal Processor
- Dual 14-bit ISPs
- Up to 2 Gigapixels per Second
- Hardware accelerator for computer vision (CV-ISP)
- Up to 200 Megapixel Photo Capture
- Up to 25 MP dual camera @ 30 FPS with Zero Shutter Lag
- Up to 64 MP single camera @ 30 FPS with Zero Shutter Lag
- Rec. 2020 color gamut video capture
- Up to 10-bit color depth video capture
- 4K Video Capture + 64 MP Photo
- 8K Video Capture @ 30 FPS
- Slow-mo video capture at 720p @ 960 FPS
- HEIF: HEIC photo capture, HEVC video capture
- Video Capture Formats: HDR10+, HDR10, HLG, Dolby Vision
- 4K Video Capture @ 120 FPS
- 4K HDR Video Capture with Portrait Mode (Bokeh)
- Multi-frame Noise Reduction (MFNR)
- Real-time object classification, segmentation and replacement

### Audio

- Hexagon Voice Assistant Accelerator for hardware accelerated voice signal processing
- Qualcomm Aqstic™ audio codec (Up to WCD9385)
  - Total Harmonic Distortion + Noise (THD+N), Playback: -108dB
  - Native DSD support, PCM up to 384 kHz/32-bit
  - Customizable "Golden Ears" filter
- Qualcomm Aqstic smart speaker amplifier (up to WSA8815)

### 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 and HDR10+

### CPU

- Kryo 585, Octa-core CPU
- Up to 2.84 GHz
- 64-bit Architecture

### Visual Subsystem

- Adreno 650 GPU
- Vulkan® 1.1 API support
- HDR gaming (10-bit color depth, Rec. 2020 color gamut)
- Physically Based Rendering
- API Support: OpenGL® ES 3.2, OpenCL™ 2.0 FP, Vulkan 1.1
- Hardware-accelerated H.265 and VP9 decoder
- HDR Playback Codec support for HDR10+, HDR10, HLG and Dolby Vision

### Security

- Secure Processing Unit: Mobile Payment, Dual SIM/Dual Standby
- Qualcomm 3D Sonic Sensor and Qualcomm 3D Sonic Max
- Biometric Authentication: Fingerprint, Iris, Voice, Face
- On-Device: Qualcomm® Mobile Security, Key Provisioning Security, Qualcomm® Processor Security, Qualcomm® Content Protection, Qualcomm® Trusted Execution Environment, Camera Security, Crypto Engine, Malware Protection, Secure Boot, Secure Token

### Charging

- Quick Charge 4+ technology
- Quick Charge AI

### Location

- GPS, Glonass, BeiDou, Galileo, QZSS, and SBAS
- Dual Frequency Support
- Low Power Geofencing and Tracking, Sensor-assisted Navigation
- Near Field Communications (NFC): Supported

### Memory

- Support for LP-DDR5 memory up to 2750 MHz
- Support for LPDDR4x memory up to 2133 MHz
- Memory Density: up to 16 GB

### General Specifications

- Full Suite Snapdragon Elite Gaming features
- 7 nm Process Technology
- USB Version 3.1; USB Type-C Support
- Part Number: SM8250

Certain optional features available subject to Carrier and OEM selection for an additional fee.

Qualcomm Smart Transmit, Qualcomm FastConnect, Qualcomm 5G PowerSave, Qualcomm TrueWireless, Qualcomm 60 GHz Wi-Fi, Qualcomm Spectra, Qualcomm Aqstic, Qualcomm Processor Security, Qualcomm Trusted Execution Environment, Qualcomm Wideband Envelope Tracker, Qualcomm Adaptive Antennae Tuning, Qualcomm Signal Boost, Qualcomm Mobile Security, Qualcomm aptX, and Qualcomm Content Protection are products of Qualcomm Technologies Inc. and/or its subsidiaries. ©2019 Qualcomm Technologies, Inc. and/or its affiliated companies.

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