

QUALCOMM®  
SNAPDRAGON™

660

MOBILE PLATFORM

## Snapdragon 660 mobile platform advancements:

- + Qualcomm Spectra™ 160 Camera ISP: Dual 14-bit ISPs support up to 25MP single or 16MP dual cameras for the ultimate photography and videography experience
- + Qualcomm® Adreno™ 512 GPU: Up to 30% better graphics and enhanced gaming performance<sup>1</sup> for lifelike visuals and more efficient rendering of advanced 3D graphics
- + Qualcomm® Hexagon™ 680 DSP includes Hexagon Vector eXtensions (HVX), designed to support Caffe2 and Tensorflow for machine learning and image processing
- + Snapdragon X12 LTE modem designed to support mobile industry leading connectivity with LTE download speeds up to 600 Mbps, integrated 2x2 802.11ac Wi-Fi with MU-MIMO, and RF front end technologies
- + Qualcomm® Kryo™ 260 CPU: Manufactured in 14nm, bringing Kryo to the 600-tier for the first time
- + Qualcomm® Quick Charge™ 4 technology: 20% faster, 30% more efficient than previous generation, charge from zero to 50% in 15 minutes<sup>2</sup>
- + Pin and software compatible with Snapdragon 630

To learn more visit: [snapdragon.com](http://snapdragon.com)

## User Experiences



### Outstanding image quality

The 14-bit Qualcomm Spectra 160 dual ISP taps into the performance enhancements Hexagon 680 DSP's HVX adds, bringing amazing features like smooth zoom, fast autofocus, and true-to-life colors.



### Enhanced graphics and 3D gaming

With up to 30% improved performance<sup>1</sup>, Adreno 512 GPU supports lifelike visuals and more efficient rendering of advanced 3D graphics. Developers gain access to the latest graphics APIs.



### Connect faster at home and away<sup>2</sup>

With LTE and Wi-Fi downlink speeds up to 2X faster<sup>2</sup>, the Snapdragon X12 modem can download files quickly. Improved Wi-Fi coverage is engineered to provide a stronger signal, even through hard to penetrate walls.



### On device machine learning

Qualcomm® Machine Learning Platform supports high performance, intelligent, on-device processes, utilizing heterogeneous compute capabilities to power immersive and engaging experiences.

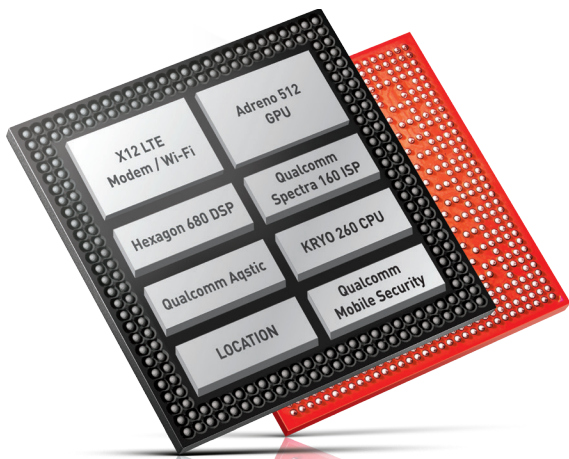


### Power when it's needed most

Do more throughout the day: stream music and videos, play games, talk, all while getting up to 15% more battery life<sup>1</sup>. When it's time to recharge, Quick Charge 4 gets it done super-fast.

<sup>1</sup>As Compared to Snapdragon 626

<sup>2</sup>Quick Charge is designed to increase the battery charge of a device by up to 50% in 15 minutes. Actual results may vary depending on device design.



The Snapdragon 660 mobile platform supports a leap in performance, engineered to allow enhanced user experiences and mobile industry-leading battery performance

## FEATURES & SPECIFICATIONS<sup>1</sup>

### GPU

- + Adreno 512 GPU
- + OpenGL ES 3.2, OpenCL 2.0 full, Vulkan, DX12

### DSP

- + Hexagon 680 DSP with:
  - Hexagon Vector eXtensions
  - Qualcomm All-Ways Aware™
  - Snapdragon Neural Processing Engine SDK
  - Caffe/Caffe2 and Tensorflow support

### Display

- + Quad HD 2560x1600
- + WQXGA
- + Up to 4K external display support
- + DisplayPort and USB Type-C support

### Audio

- + Qualcomm Aqstic™ audio codec and speaker amplifier
- + Qualcomm® aptX™ audio playback with support for aptX Classic and HD

### CPU

- + 8x Kryo 260 CPU
- + 1.95 GHz to 2.2 GHz
- + 14nm FinFET process technology

### Camera

- + Qualcomm Spectra 160 ISP
- + Dual 14-bit ISPs
- + Up to 25 MP single camera
- + Up to 16 MP dual camera
- + Qualcomm® Clear Sight™ camera features, Hybrid Autofocus, Optical Zoom, Zero Shutter Lag

### Video

- + Up to 4K UltraHD capture @ 30 fps
- + Up to 4K UltraHD playback @30fps
- + H.264 (AVC), H.265 (HEVC), VP9

### Memory

- + LPDDR4, dual channel
- + Up to 1866MHz, 8GB RAM
- + eMMC and UFS

### Charging

- + Quick Charge 4 technology

### Security

- + Qualcomm® Mobile Security
  - Hardware Token
  - Camera Security
  - App Protect
  - Qualcomm® Processor Security

### RF Front End

- + Qualcomm® TruSignal™ adaptive antenna tuning
- + High-power transmit (HPUE)
- + Envelope tracking technology

### Modem

- + Snapdragon X12 LTE modem
- + Downlink: LTE Cat 12 up to 600 Mbps, 3x20 MHz carrier aggregation, up to 256-QAM
- + Uplink: LTE Cat 13 up to 150 Mbps, Snapdragon Upload+ (2x20 MHz carrier aggregation, up to 64-QAM)
- + Qualcomm® All Mode with support for all seven cellular modes, and support for:
  - VoLTE with SRVCC to 3G and 2G, HD and Ultra HD Voice (EVS), CSFB to 3G and 2G
  - Voice over Wi-Fi (VoWiFi) with LTE call continuity

### Connectivity

- + Wi-Fi integrated 802.11ac 2x2 with MU-MIMO
- + 2.4 GHz, 5 GHz
- + Bluetooth 5

### Location

- + GPS, Glonass, BeiDou, Galileo, QZSS, and SBAS
- + Low Power Geofencing and Tracking, Sensor-assisted Navigation

<sup>1</sup> Certain optional features available subject to Carrier and OEM selection for an additional fee.

Qualcomm aptX is a product of Qualcomm Technologies International, Ltd., Qualcomm Aqstic, Qualcomm TruSignal, Qualcomm All-ways Aware, Qualcomm Mobile Security, Qualcomm Processor Security, Qualcomm Clear Sight, Qualcomm All Mode and Qualcomm Snapdragon Upload+ are products of Qualcomm Technologies, Inc.

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