

QUALCOMM®
SNAPDRAGON™

820

MOBILE PROCESSOR

Enabling a more
immersive, intuitive and
connected experience.

The Snapdragon 820 mobile processor offers many advantages:

- **New X12 LTE:** Industry leading connectivity with LTE download speeds of up to 600 Mbps and multi-gigabit 802.11ad Wi-Fi
- **New Qualcomm® Kryo CPU:** Delivering maximum performance and low power consumption Kryo is QTI's first custom 64-bit quad-core CPU, manufactured in advanced 14nm FinFET LPP process
- **New Qualcomm® Adreno 530:** Up to 40% better graphics and compute performance with the Adreno 530 GPU
- **Qualcomm Spectra™ 14-bit dual image signal processors (ISPs)** deliver high resolution DSLR-quality images using heterogeneous compute for advanced processing and additional power savings
- **New Hexagon 680 DSP** includes Hexagon Vector eXtensions and Sensor Core with Low Power Island for always-on sensor processing
- **New Qualcomm® Adreno Visual Display Processing** delivers graphics, visual and display enhancements that improve overall visual fidelity while reducing power consumption
- **New Touch-To-Track:** Recognize and track multiple objects on screen using advanced computer vision

To learn more visit:

snapdragon.com or mydragonboard.org

FEATURING THE LATEST IN MOBILE TECHNOLOGY.



Capture sharper,
higher-quality images,
in challenging lighting
situations

Qualcomm's Spectra 14-bit dual image signal processors tap into the enhanced performance and feature enhancements that Hexagon 680 DSP's HVX performance adds with amazing features like Low Light Photo and Video and Touch-to-Track where ISP and DSP work intelligently together to enhance imaging as well as track movements and improve zoom.



Immersive, life-like
virtual reality

Experience realistic, visual and audio immersion and smooth VR action enabled by Snapdragon 820's Heterogeneous compute platform, designed for high performance and optimized for long battery life.



Next-generation
computer vision

Drive more safely with object detection and enhanced navigation and enhance your smartphone camera capability with features that can track faces and objects for a more intelligent mobile experience.



Deeply immersive
3D gaming

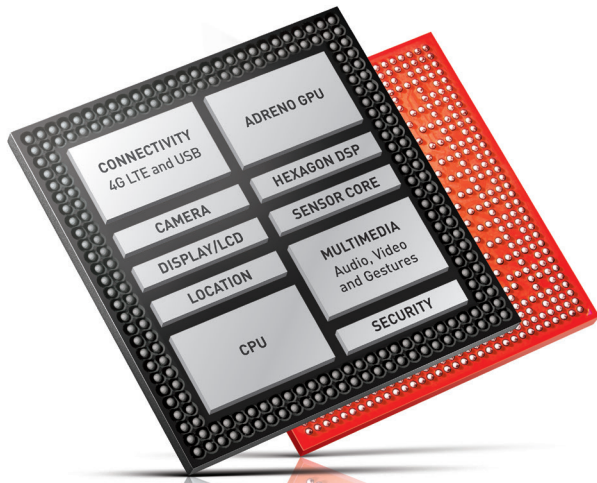
The combination of Snapdragon 820's Adreno 530 GPU and Kryo CPU creates enough compute performance to enable console quality games and exciting, next generation virtual reality applications.



All day battery life and
easier, faster charging

Snapdragon 820 lowers power consumption by 30% over previous generation plus charge a typical phone from zero to 80 percent in about 35 minutes, with Qualcomm® Quick Charge™ 3.0 technology.

Qualcomm®
snapdragon 



Qualcomm® Snapdragon™
820 processors. Enabling
a more connected,
immersive and intelligent
all day experience.

FEATURES & SPECIFICATIONS³

CPU

- Custom 64-bit Kryo quad-core CPU in 14nm FinFET, with SoC Virtualization

GPU

- Adreno 530 GPU: OpenGL ES 3.1+ AEP¹, OpenCL2.0 Full¹, Vulkan¹, Renderscript, 64-bit virtual addressing DirectX 11.2, plus hardware tessellation, geometry shaders, programmable blending and decreased power consumption²

DSP

- Qualcomm® Hexagon™ 680 DSP with Hexagon Vector eXtensions and Low Power Island for sensor processing

Display

- 4k60 FPS decode 10-bit
4k60 FPS over HDMI 2.0
4k60 Miracast 2.0 streaming
HEVC 10-bit and VP9 decode
Direct Stream Video for Wireless Display
- 3:1 Frame Buffer Compression ratio

Memory & Storage

- LPDDR4
- UFS 2.0—Gear 3 storage
- Universal Bandwidth Compression

Modem

- Integrated X12 LTE, with Global Mode supporting LTE FDD and TDD, WCDMA (DB-DC-HSDPA, DC-HSUPA), TD-SCDMA, CDMA 1x/EVDO, and GSM/Edge
- Cat 12 download: up to 600 Mbps via 3x carrier aggregation and 256-QAM, up to 4x4 MIMO on one carrier
- Cat 13 upload: up to 150 Mbps via 2x carrier aggregation and 64-QAM
- Support for LTE in unlicensed spectrum (LTE-U) when paired with WTR3950
- Support for enhanced HD Voice and Video calling over Wi-Fi, with real-time Wi-Fi quality monitoring

RF

- 4th gen power efficient LTE multimode transceiver (WTR3925) with Qualcomm Technologies, Inc.'s integrated and system optimized Qualcomm RF360™ front end solution for world mode bands and lower power

Camera

- Qualcomm Spectra™ 14-bit dual ISPs can support up to 25MP 30fps and up to 1.2GPix/sec throughput

Security

- Qualcomm® SecureMSM™ foundation
- Qualcomm® Snapdragon™ Smart Protect
- Qualcomm® Snapdragon Sense™ ID fingerprint technology
- Qualcomm® Snapdragon StudioAccess™ content protection

Multimedia

- 10-bit 4K decode
- 1080p240 FPS decode
- 4K HEVC video at 60FPS with 10-bit color
- Simultaneous 1080p30+1080p30 inbound/outbound
- WCD9335 audio codec
- Hi-Fi 24bit/192kHz FLAC playback

Connectivity

- QCA9500 802.11ad 60GHz WiFi
1st WTR3950 LTE-U support
Next Gen QFE3100 Envelope Tracking



¹As of Nov 1, 2015, Snapdragon 820 has been conformance certified by Khronos for OpenCL™ 2.0, and is expected to be certified for OpenGL® ES 3.1. Conformance criteria for Vulkan™ Specifications have not yet been established. Snapdragon 820 is intended to support this standard.

²As compared to its predecessor, the Adreno 430 GPU in the Snapdragon 810 processor.

³Certain optional features available subject to Carrier and OEM selection for an additional fee.

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