

# SNAPDRAGON® W5+ AND SNAPDRAGON® W5 GEN 1 WEARABLE PLATFORMS

Snapdragon



## Snapdragon W5+ and Snapdragon W5 Advancements

The Snapdragon W5+ and Snapdragon W5 platforms are purpose-built for next-generation wearables. Comprised of a new 4nm System-on-Chip (SoC) and new a 22nm ultra-low power co-processor, Snapdragon W5+ enhances our hybrid architecture with display, sensors, audio, and notifications offload use cases. Snapdragon W5 includes the SoC and forgoes the co-processor for segment-specific wearables.

### Powerful SoC (Qualcomm® SW5100 and Qualcomm® SW5100P)

4nm quad-core @ 1.7 GHz, Qualcomm® Adreno™ 702 GPU, 1x16 LPDDR4 2133 MHz memory, dual ISPs with support for 16-megapixel cameras, 4G LTE multi-mode modem, Wi-Fi, Bluetooth®, integrated location, and dual Qualcomm® Hexagon™ DSPs.

### Always-on, ultra-low power co-processor (Qualcomm® QCC5100)

22nm @ 250 MHz. U55 ML core, HiFi5 DSP, 2.5D GPU, integrated Bluetooth® 5.3, 802.11n RF, 8+ MB memory, and requisite IO capabilities.

### Multiple configurations available

Snapdragon W5+ Gen 1 wearable platform features SW5100 (4G) or SW5100P (Bluetooth) plus the QCC5100 AON Co-processor and supports Wear OS by Google, Android Open Source (ASOP), and RTOS. Also available without the QCC5100 AON co-processor as Snapdragon W5 wearable platform with support for Wear OS by Google and AOSP.



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W5 wearable platform  
Gen 1

## Highlights

### Ultra-low power for extended battery life

The Snapdragon W5+ Gen 1 is designed for ultra-low power at every level. The platform features an enhanced hybrid architecture with a new 4nm SoC and 22nm highly integrated AON Co-Processor. It incorporates new Bluetooth 5.3 architecture, low-power islands for Wi-Fi, GNSS, and Audio, and low-power states such as Deep Sleep and Hibernate. These innovations result in 30-60% lower power on typical use cases\*, which drives >50% longer battery life. The Snapdragon W5 Gen 1 platform brings all the low-power capabilities of the SoC while foregoing the benefits of the co-processor.



### Breakthrough performance for premium user experiences

The Snapdragon W5+ platform incorporates significant performance enhancements in both the quad-core SoC and the next-gen co-processor. Together with dual GPUs, a new ML core, upgraded memory, camera, and audio/video subsystems, users will experience truly immersive interactive experiences, ultra-low power ambient experiences, and always-sensing health-and-wellness experiences.



### High integration for sleek, innovative designs

High integration and packaging innovation across the SoC and Co-Processor drives significant reductions\* in SoC (30% smaller), chipset (35% smaller) and core PCB (40% smaller) areas. This enables smaller/thinner designs while also making it possible to do a single SKU covering global operators.



### Easier to scale and differentiate for customers

Designed to meet customer requirements across consumer and enterprise segments. A range of ecosystem partners are supporting the platforms across sensors, audio, camera, payments, UX, and software stacks with their optimized technologies. This provides OEMs with a reduction in development time and the ability to focus on differentiation.



\* Compared to previous generations

# SPECIFICATIONS & FEATURES

## Snapdragon W5+ and Snapdragon W5 Wearable Platforms

Purpose-built for next-generation wearables to deliver dramatic improvements in power, performance, and size.



### System-on-Chip

- 4nm
- Quad-core 1.7 GHz optimized for wearables
- Features low-power islands for Wi-Fi, GNSS, Audio
- Incorporates low-power states such as Deep Sleep and Hibernate
- Runs Wear OS by Google and AOSP

### Always On Co-Processor

- 22nm
- 250 MHz
- 2.5D GPU
- U55 Machine Learning core
- Integrated Bluetooth 5.3
- HiFi5 DSP
- 8+ MB Memory
- Runs FreeRTOS

### GPU

- Adreno 702 GPU @ 1 GHz

### DSP

- Dual Hexagon QDSP V66K

### Memory

- 1x16 LPDDR4 2133 MHz

### Display

- 640x640 @ 60 Hz
- Supports MIPI-DSI for the SoC and QSPI with DDR for the QCC5100 co-processor

### Connectivity

- Bluetooth 5.3
- 802.11/n (2.4GHz / 5GHz)
- Integrated PA and LNA
- Co-ex for Bluetooth, Bluetooth LE, Wi-Fi and LTE
- USB 2.0
- NFC supported via third party

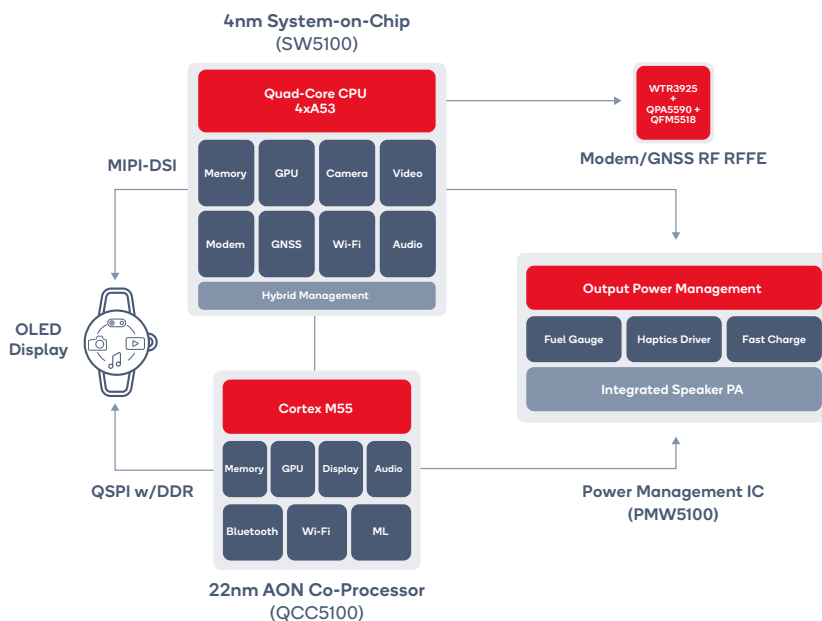
### Modem

- Wearable-optimized modem w/ Best-in-Class LTE Standby and VoLTE
- Rel 13 with Cat1 bis support
- E911 with z-axis support
- Cat 1/4, no CA
- Approved by >100 global network operators
- Snapdragon modem and GPS RF (Qualcomm® WTR3925, Qualcomm® WTR295)

To learn more visit:

[qualcomm.com/wearables](https://qualcomm.com/wearables)

## Snapdragon W5+ Gen 1 Block Diagram



### Power Management

- New wearable PMIC optimized for low power and high integration (Qualcomm® PMW5100)

### Location

- Gen 8C Satellite: GPS, Glonass, Beidou, Galileo
- Terrestrial: Wi-Fi, Cellular
- GNSS L1 (Qualcomm® WTR2965) or L1 + L5 (WTR3925)
- PDR4.5

### Camera

- Next Gen Qualcomm Spectra ISP
- Dual ISP 16MP+16MP

### Camera (cont.)

- EIS 3.0, MFNR, Pseudo ZSL
- 2x CSI 4-lane DPHY/CPHY

### RF Front End

- Qualcomm® RF Front End (RFFE) Solution
- Qualcomm® QPA5590 and Qualcomm® QFM5518

### Operating System

- Wear OS by Google and Android Open Source supported on the SoC
- FreeRTOS support on the AON Co-Processor

## Ordering Information

Snapdragon W5	Part Numbers
Snapdragon W5 w/ 4G connectivity (molded embedded package)	SW5100-0-AA
Snapdragon W5 w/ 4G connectivity (molded laser package)	SW5100-1-AA
Snapdragon W5 (molded embedded package)	SW5100P-0-AA
Snapdragon W5 (molded laser package)	SW5100P-1-AA
Snapdragon W5+	Part Numbers
Snapdragon W5 w/ 4G connectivity (molded embedded package)	SW5100-0-AA + QCC5100-0
Snapdragon W5 w/ 4G connectivity (molded laser package)	SW5100-1-AA + QCC5100-0
Snapdragon W5 (molded embedded package)	SW5100P-0-AA + QCC5100-0
Snapdragon W5 (molded laser package)	SW5100P-1-AA + QCC5100-0



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