

# Qualcomm® Snapdragon Wear™ 3100 Platform

## Snapdragon Wear 3100 Platform Advancements

Snapdragon Wear 3100 is based on a new ultra-low power hierarchical system architecture. In this architecture, the high-performance quad core A7 processor, the highly efficient integrated DSP, and the new ultra-low power co-processor work in conjunction with each other with the aim of re-imagining smartwatch experiences – enhance existing ones, bring-in new ones – while helping to extend battery life.

- **Powerful core baseband (APQ8009w and MSM8909w)** Quad core A7 processors, Qualcomm® Adreno™ class graphics engine, 4G LTE multi-mode modem, Wi-Fi and Bluetooth, integrated location, and a highly efficient DSP.
- **New, Ultra-low power co-processor (QCC1110)** Incredibly small (~21 mm<sup>2</sup>), operates at near threshold voltages (0.6V), custom designed SRAM, 1MB memory, dedicated PMU, a deep learning engine, and runs efficient event-driven RTOS.
- **Dual Display Architecture** Supports core baseband and co-processor to write directly to the display via either high performance MIPI or low power SPI interfaces.
- **New Wearable PMIC (PMW3100)** Low rock bottom sleep current, reduced size while integrating: PMIC, battery charging, fuel gauge, and haptics driver functionality. Supports faster charging.
- **New GaAs Power Amplifiers** Consumes up to 20% percent lower peak power compared to their CMOS based predecessors.
- **New NFC Chips** Supports smaller antenna designs and higher reader interoperability.
- **Enhanced and Optimized Software Platform** Supports Wear OS by Google on the baseband and an Event-Driven RTOS on the low power co-processor.

To learn more visit:

[Qualcomm.com/wearables](http://Qualcomm.com/wearables)

## Supporting Next Generation Wearables User Experiences

### Rich interactive mode

Snapdragon Wear 3100 platform helps deliver high performance, superior connectivity, smart sensing, and compelling features for smartwatches running Wear OS by Google.



### New personalized experiences

**Enhanced Ambient Mode** - Combines the beauty of a Fashion Watch with the power of a Smartwatch: Supports smooth second hand, live complications, up to 16 colors, adaptive brightness, and touch.

**Dedicated Sports Experiences** - Combines the battery life of a Sports Watch with the richness of a Smartwatch: Go for an ultra-marathon, swim long distances, or bike for miles with GPS and active heart rate monitoring without worrying about running down your battery.

**Traditional Watch Mode** - Combines the utility of an Analog Watch with the flexibility of a Smartwatch: Utilizing only the co-processor in an RTOS environment - allows you to continue enjoying your watch for extended periods of time.



### Support for Extended Battery Life

Supports up to 67% reduction in lowest power mode, 49% reduction in GPS, 43% reduction in keyword detection, 35% reduction in per minute clock update, 34% reduction in MP3 playback, and 13% reduction in voice query over Wi-Fi or Bluetooth compared to Snapdragon Wear 2100.

Battery life day of use improvements ranging from 4 to 12 hours compared to Snapdragon Wear 2100, depending on display type, battery capacity, and device configurations. Personalized Sports Experiences are designed to go for up to 15 hours battery life (calculated based on a typical 450mAh sports watch battery), and Traditional Watch Mode supports week-long battery life.





# Snapdragon Wear 3100 Platform

Next Generation Smartwatch Platform Based on a New Ultra-Low Power Hierarchical System Architecture

## Features & Specifications

### Main Processor

- Quad-core Arm Cortex A7 up to 1.2 GHz optimized for wearables

### Co-Processor

- Ground up design to support enhanced ambient, dedicated sports, and traditional watch modes/experiences
- Works alone or in conjunction with the main processor
- Small footprint: ~21mm<sup>2</sup>
- Cortex M0 processor running near threshold voltages
- Integrates custom designed SRAM, dedicated PMU, a deep learning engine for custom workloads, and range of I/Os
- Runs highly efficient event-driven RTOS

### GPU

- Adreno 304 GPU: OpenGL ES 3.0, optimized power for wearables

### DSP

- Qualcomm® Hexagon™ QDSP6 v56
- Integrated modem DSP shared for modem, GNSS, sensor processing and audio
- Open Sensor Execution Environment

### Memory

- 10x10 ePoP memory
- Supports range of configurations between 4x4 and 8x8
- 400 MHz LPDDR3, eMMC 4.5

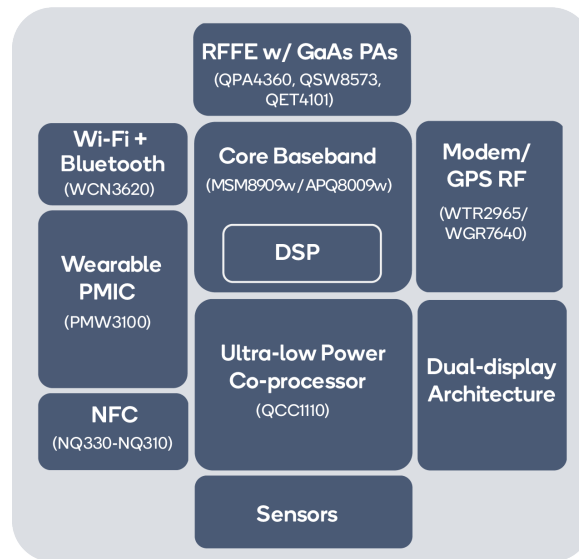
### Display

- Up to 640x480 at 60fps, optimized for wearables
- Supports MIPI from the core baseband and SPI from the QCC1110 co-processor

### Location

- Gen 8C Satellite: GPS, Glonass, Beidou, Galileo
- Terrestrial: Wi-Fi, Cellular
- PDR3.0 (GPS + Sensor fusion)

## Snapdragon Wear 3100 Block Diagram



### Modem

- Integrated X5 LTE Global Mode modem, supporting LTE FDD, LTE TDD, 1x Adv, EV-DO Rev. A, TD-SCDMA & GSM/EDGE
- Right-sized for wearables to operate in Cat 3 and Cat 1 configurations
- Supports accelerated operator certification
- Qualcomm® Snapdragon™ modem and GPS RF (WTR2965)
- RFFE with Gallium Arsenide PAs (QPA4360, QSW8573, QET4101)

### Connectivity

- WCN3620 - Low power Wi-Fi and Bluetooth, optimized for wearables
- 802.11b/g/n (2.4GHz)
- Qualcomm® location technology
- USB 3.0
- Bluetooth 4.1 + Bluetooth Low Energy
- Integrated NFC with support from NXP

### Power Management

- New wearable PMIC optimized for low power and high integration
- Integrates battery charging, fuel gauge, and haptics driver functionality
- 5.05mm x 5.64mm

### Audio & Voice

- Qualcomm® Voice Suite
- Qualcomm® Voice Noise Suppression and Echo Cancellation
- Qualcomm® Voice Activation
- Qualcomm Aqstic™ audio codec and speaker amplifier

### RF Front End

- Qualcomm® RF Front-End Solution Security Features
- Qualcomm® Processor Security features

### Operating System

- Supports Wear OS by Google
- Event-Driven RTOS

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