Qualcomm
Qualcomm® 217 LTE IoT Modem

A low-power, IoT-optimized Cat 1bis modem that features a GSMA-certified, integrated SIM (iSIM)* that can be remotely programmed with wireless operator connectivity.

The Qualcomm 217 LTE IoT Modem is an ultra-low power LTE modem with integrated positioning support, abundant I/O support for peripherals, processing capabilities to make on-device decisions, and operating temperature support for industrial use cases.

It uses Qualcomm® Terrestrial Positioning Service (TPS) and the all new Qualcomm® QCG110 GNSS multi-band receiver, all in a cost-conscious and ultra-compact design.

Designed for OEMs, ODMs, MNOs, and developers, the Qualcomm 217 LTE IoT Modem provides extremely security-focused and integrated connectivity throughout the world by means of iSIM. The modem also provides ubiquitous and highly reliable positioning via terrestrial-based positioning methods that rely on Wi-Fi and cellular scans.

This Cat 1bis-based modem leverages existing LTE cellular infrastructure and networks to support easy deployment of your IoT devices across a variety of industrial applications, including wearables, IP cameras, point-of-sale systems, and autonomous robotics. The ultra-low current usage behavior of the chip in sleep states make it attractive for use cases such as smarty utility meters and asset tracking.

* Integrated SIM (iSIM) capabilities will be available later in 2024. Subject to change without notice.

Related Products

The Qualcomm® 216 LTE IoT Modem is a Cat 1bis IoT-optimized LTE modem with integrated positioning support for greater connectivity, location, and compute processing capabilities both on device and at the edge.

To learn more visit: qualcomm.com

Highlights

Security-focused global connectivity through an integrated SIM (iSIM)

Add global connectivity and superior security to your IoT device through an integrated SIM (iSIM).

- Support for GSMA SGP32 standard for Remote SIM provisioning of iSIM on the Qualcomm 217 LTE IoT Modem
- Qualcomm Technologies, Inc. is the first and only silicon supplier with a GSMA SAS-UP site that enables secure, two-step iSIM personalization
- Certification in progress for highest level of security: EAL5+ and PP0117

Positioning across challenging signal environments

Resolve location across multiple challenging environments through a combination of TPS and cloud-based GNSS support.

Cost-conscious design

Save space, time, and costs while developing a variety of applications for different markets.

Global connectivity

Compatible with all LTE networks around the world (using Cat 1bis technology), IoT devices powered by the Qualcomm 217 LTE IoT Modem run on the same networks as cell phones and benefit from roaming agreements, allowing them to get data connectivity through a single provider, just like consumer devices do. Wide RF spectrum support across FDD and TDD bands ranging from 600 MHz to 2700 MHz makes it ideal for devices that need global connectivity.

Power-optimized design

IoT devices powered by the Qualcomm 217 LTE IoT Modem that operate in power-saving states like PSM (as low as 2 uA) and eDRX (as low as 9 uA) can support increased battery life and reduce device costs.

OpenCPU

The enhanced processor of the Qualcomm 217 IoT Modem and increased memory (compared to the Qualcomm 216 LTE IoT Modem) allows for hosted applications and openCPU system designs.
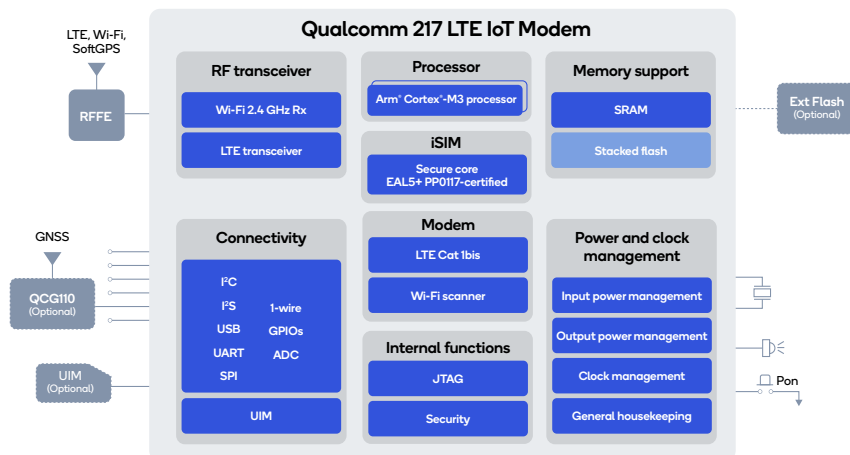
Qualcomm 217 LTE IoT Modem Target Applications

- Wearables
- Point-of-Sale Systems
- IP Cameras
- Utility Grid Monitoring
- Smart Metering
- Autonomous Robotics
- Asset Trackers
- Robot Lawn Mowers

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Features

- Connect to any cellular network around the world through a GSMA-certified iSIM that can be provisioned on networks remotely
- GSMA-compliant common criteria security certification (EAL5+) based on PP0117 offers the same high standards of cyber protection offered by the latest generation of embedded SIMs (eSIMs) hardware:
  - Certification applies to hardware and OS and is universally accepted as having superior security, worldwide
  - Superior security level is higher than that found in common SIM cards with standard chips (SIMs)
- With iSIM technology embedded directly into the hardware, simplify development and decrease supply chain costs by using just one modem for your connectivity and positioning needs
- Qualcomm TPS available through Qualcomm Aware™ Platform for access to billions of geolocated beacons globally:
  - Wi-Fi-based positioning gives access to 8+ billion Wi-Fi connection points
  - Cellular connectivity gives access to 60+ million cell sites
- Two means of satellite-based positioning supported:
  - 1: Traditional GNSS-based positioning by means of an optional attach with the QCG110
  - 2: Cloud-based GPS positioning via Qualcomm Aware
- Positioning logic on the modem intelligently hands off between TPS, cloud-based GPS, and/or GNSS for efficient power consumption
- Pre-integration with optional dual-band GNSS receiver (QCG110) for fast, continuous position, and location across extreme, complex environments: The QCG110 is Qualcomm Technologies' first L1/L5 GNSS receiver designed exclusively for IoT applications, and operates at low power
- Features a design that powers a wide variety of IoT uses that need highly accurate, low-power positioning and integrated connectivity with only one SKU, which works in multiple geographies and can be provisioned remotely thanks to the Cat 1bis-integrated iSIM
- Provides three sleep states with varying degrees of power management and functionality access
- Modem features and optimizations that enable ~ 2 uA current consumption in deep sleep (PSM) state and < 9 uA in eDRX state
- Includes features required for certification with all major carriers (certifications ongoing)
- Supports junction temperature of 105 °C, which enables deploying devices built with the Qualcomm 217 LTE IoT Modem in extreme industrial conditions
- Utilize hardware reference designs and our SDK to save development time or build new applications
- Includes stacked memory with ample free space for developers and OEMs to develop their applications
- Supports OpenCPU functionality for hostless (no external MCU) mode device architecture, OpenCPU provides additional memory for customer applications

The Qualcomm 217 LTE IoT Modem is a Qualcomm® product developed by Qualcomm Technologies, Inc., and manufactured using the company's own supply chain. As a Qualcomm product, the development, production, and sale of the Qualcomm 217 LTE IoT Modem are all subject to Qualcomm's robust trade compliance program, which includes policies and procedures designed to promote adherence to all applicable trade-related controls, including, e.g., US and EU export controls and sanctions. Qualcomm screens and regularly re-screens all of our partners against all relevant restricted party lists, including all third-party vendors whose IP may be utilized in a Qualcomm® chipset platform.

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Block Diagram

Specifications

CPU	Dual-core Arm® Cortex®-M3 Processor, up to 306 MHz
Cellular Modem-RF	Chipset: Qualcomm 217 LTE IoT Modem Cellular Technology: Rel.14 LTE Peak Download Speed: 10 Mbps Peak Upload Speed: 5 Mbps
Power Management	Supply Voltage Range: 3.1 V to 4.5 V
Location	Qualcomm® Terrestrial Positioning Service (TPS)* Integrated Wi-Fi Rx 2.4 GHz Dual-Band GNSS via QCG110 attachment Multi-Band optional GNSS attach (QCG110)
SIM	iSIM EAL5+ PP0117-capable (certification in progress)
Memory	Memory included on die: 8 MB NOR flash with XIP support, 2.1 MB SRAM
Security	Hardware-based Crypto Engine, Secure Boot, Flash encryption, TRNG
Software Options	Operating System: Free RTOS SDKs: LTE IoT SDK
Network Protocols	IPv4, IPv6, TLS, HTTPS, TCP, UDP, MQTT, OMA Lightweight M2M, CoAP, SSL, DTLS, ping
Interfaces	32x GPIO, 4x UART, 2x I^2C, 2x I^2S, 2x SPI, 4-channel ADC, 1x QSPI, USB 2.0
RF	Low band (617–960 MHz): 5, 8, 12, 13, 14, 18, 19, 20, 26, 28, 71 Mid band (1710–2200 MHz): 1, 2, 3, 4, 25, 34, 39, 66 High band (2300–2690 MHz): 7, 38, 40, 41 Supports 23 dBm transmit power
Wi-Fi	2.4 GHz Wi-Fi sniffing functionality for location/positioning
Operating Temperature Range	Minimum Temperature: -40 °C, Maximum Temperature: 105 °C
Contributing Chipsets	Qualcomm® QCA4004 | QCC711 | QCG110 | SMB231
Firmware Over-The-Air (FOTA) Upgrade	Dedicated 512 KB flash reserved for FOTA/dFOTA. dFOTA framework/APIs support available.
Package	Dimensions: 6.90 x 6.50 x 1.11 mm

* Based on cellular & Wi-Fi scans

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