

Qualcomm® 9205 LTE Modem

Integrates key technologies required for creating innovative IoT applications using low power, wide-area connectivity.

The Qualcomm 9205 LTE modem is our next-generation global multi-mode single chipset connectivity solution, purpose-built to support reliable, optimized cellular connectivity for IoT applications such as asset trackers, health monitors, security systems, smart city sensors and smart meters, as well as a range of wearable trackers. Key features of Qualcomm 9205 make it ideal for battery-powered IoT devices to help them operate for nearly 10 years or longer in the field and IoT applications requiring low-power, wide-area connectivity in a small form factor.

The Qualcomm 9205 LTE modem is a multi-band, multi-mode solution with extended RF frequency support from 450MHz to 2.1GHz to enable more than 23 global RF bands. Its high reliability, low latency, and voice support of Rel.14 LTE Cat-M1 (eMTC), along with extended coverage and delay tolerance of Rel.14 LTE NB-2 (NB-IoT), make it a robust, cutting-edge modem solution. And 2G/E-GPRS support is designed to allow for connectivity in areas where LTE IoT is not yet deployed.

Robust application and services are enabled by a variety of hardware and software components including: an Arm Cortex A7 processor, ThreadX and AliOS Things RTOS's, and a comprehensive set of native networking protocols. Additionally, Qualcomm 9205 comes equipped with an LTE IoT SDK with comprehensive set of APIs for additional application and service enablement.

Highlights

High level of integration

Qualcomm 9205 is 50% smaller than its predecessor. With integrated flash, RAM, and RF front-end, it is also more cost effective.



Ultra-low power for long battery life

Qualcomm 9205 features reduce power consumption by up to 70% in idle mode compared to its predecessor. This power consumption reduction, along with an ultra-low system level cutoff voltage and advanced battery management features, allows Qualcomm 9205 to support wide range of batteries with extended battery life.



Integrated GNSS receiver

Qualcomm 9205 uses the latest generation (gen9) Qualcomm® GNSS engine, with support for both a dedicated GNSS antenna and a cellular + GNSS shared antenna, for maximum design flexibility on the end-device.



Hardware-based security foundations

Qualcomm 9205 features a comprehensive security framework, including Qualcomm® Trusted Execution Environment. The solution is a FIPS certifiable cryptographic hardware platform and includes features for storage security and key provisioning, debug security, hardware crypto, and secure boot.



Qualcomm

9205 LTE

Qualcomm 9205 Applications

- Utility Metering
- Energy Management
- Object Tracking
- Voice (VoLTE)
- Smart Buildings
- Connected Health Care
- Environmental Monitoring
- Wearables

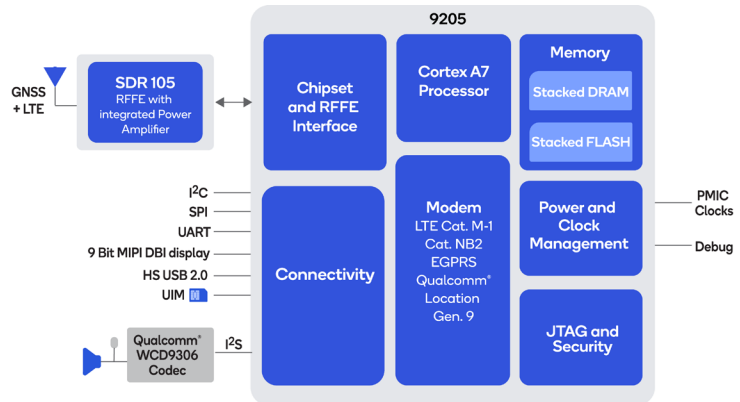
Features

- Advanced Rel.14 LTE capabilities: Cat-M1 with 2,984 max. UL TBS Rel.14, Cat-M1 VoLTE enhancements, Cat-NB2 with multi-carrier NPRACH and Paging, Cat-M1 coverage enhancements Mode A support, Cat-M1 with enhanced coverage restriction, Cat-M1 w/ HARQ-ACK bundling in HD-FDD mode, Cat-NB2 with larger TBS and 2 HARQ processes, Cat-M1 retuning to another narrowband region within 1 retuning symbol, Cat-NB2 Release Assistance Indication (RAI)
- Voice Services: LTE Cat-M1 VoLTE over IMS, GSM CS voice
- Security Features: Secure debug, Hardware-based Crypto Engine, Secure file system, Qualcomm Trusted Execution Environment, Secure Boot
- Battery thermal monitoring capability
- Integrated Cortex A7 processor supports ThreadX and AliOS Things RTOS
- One hardware design supporting eMTC/ Cat-M1, NB-IoT/Cat-NB2, E-GPRS
- One software image no matter what technology is used
- One RF: Extended frequency range support from 450MHz to 2.1GHz supporting >23 global bands
- Power optimized, turnkey industrial tracker reference design, with integrated indoor and outdoor position location capabilities, and integrated drivers for various sensors.
- Companion antenna tuner and reference antenna solution for cellular and GNSS bring the ease of addressing global connectivity with a single hardware solution.

Software

- **Operating Systems:** ThreadX OS
- **LTE IoT Software Development Kit:** Designed to support developers in running custom software on the integrated applications processor, as well as to provide them access to additional capabilities of the Qualcomm 9205 LTE modem, such as geolocation. The SDK offers pre-integrated support for many cloud platforms, including Microsoft Azure, Alibaba Cloud Link One, China Mobile OneNET, DTSTON DTCloud, Ericsson IoT Accelerator, Gizwits and Verizon ThingSpace, and it also allows developers to extend this integration further and develop support for other major IoT cloud providers.

Block Diagram



Supported RF Bands

LTE low bands	
B5, B8, B12, B13, B14, B18, B19, B20, B26, B27, B28, B31, B71, B72, B73, B85	
LTE mid bands	EGPRS bands
B1, B25, B2, B66, B3, B4	B3, B2, B8, B5

Specifications

Dimensions	14.7mm × 15.3mm
CPU	Arm Cortex A7 CPU, up to 800 MHz
Cellular Modem	Voice Services: LTE Cat-M1 VoLTE over IMS, GSM CS voice
LTE Speed	Peak Download Speed: 588 kbps (Rel.14 Cat-M1), 127kbps (Rel.14 Cat-NB2) Peak Upload Speed: 1119 kbps (Rel.14 Cat-M1), 158.5 kbps (Rel.14 Cat-NB2)
Cellular Technology	Cellular Technology: Rel.12 EGPRS MSC33 LTE Technology: Rel.14 LTE Cat-M1, Rel.14 LTE Cat-NB2
Network Protocols	IPv4/IPv6 stack with TCP and UDP, PPP, SSL, DTSL, FTP, ping, HTTP, MQTT, OMA Lightweight M2M, CoAP
Location	GPS, GLONASS, Beidou, Galileo, QZSS
Interfaces	HS-UART (4-wire), ADC, PWM, i2s, GPIO, SPI, USB 2.0
Electrical	Supply Voltage Range: 2.4V to 4.8V
Operating Temperatures	Maximum Temperature: 85°C Minimum Temperature: -40°C

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