Qualcomm

Qualcomm® E51 4G Modem-RF

A new NB-IoT modem purpose-built for IoT with highly integrated, low-power, compact, and cost-efficient designs for size-constrained devices. This modem is ideal for a variety of industrial devices such as smart meters, IP cameras, wearable and healthcare devices, POS terminals, and similar applications that need low-power compute, connectivity, and design flexibility.

The Qualcomm E51 4G Modem-RF is a new modem purpose-built for industrial IoT applications. With a highly integrated design that supports a rich array of peripherals, ODMs, OEMs, and developers can easily build, deploy, and scale devices that use NB-IoT networks that support applications across smart metering, IP cameras, POS terminals, and other devices that require low-power compute, connectivity, and design flexibility in a compact, cost-effective, and power-optimized design.

Related Products

Qualcomm Technologies offers low-power Cat 1bis modems optimized for IoT devices that required a compact, cost-conscious design:

216 LTE IoT Modem

E41 4G Modem-RF

Highlights

Power-Optimized Connectivity

Enable battery-powered devices in remote and distributed settings with reliable, low-latency, and power-optimized connectivity.

Compact and Cost-Effective Design

With a smaller footprint and built-in PMU and RFIC, OEMs can use this modem to build form-factor-constrained devices and help optimize BOM costs.

Rich Peripheral Support

Support for a rich array of peripherals for a wide array of IoT applications and functionality.

87-87711-1 Rev. C

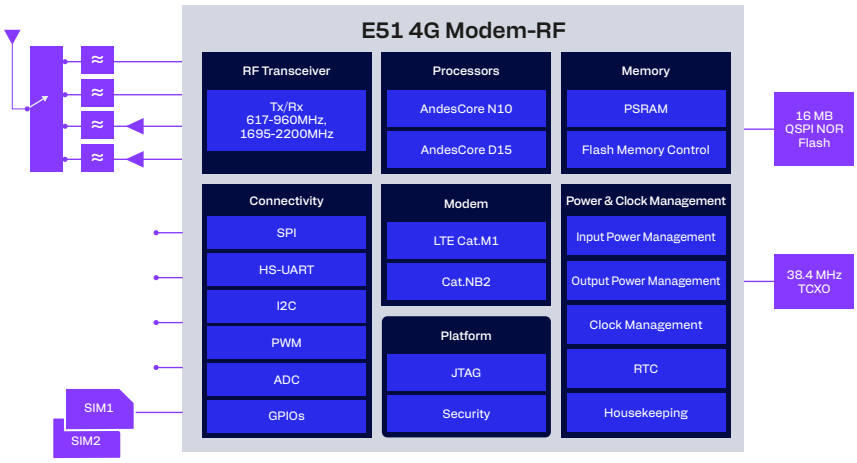
Target Applications

- Smart Meters
- Smart City Devices
- Intelligent Parking Solutions
- Healthcare Devices
- Wearable Devices
- IP Cameras
- Point-of-Sale Terminals

Features

- Connects devices on 3GPP Rel.14 LTE Cat. M1 and Cat.NB2 networks
- Support for Rel.14 with increased TBS size and a greater number of HARQ processes for a higher data rate
- Inter-frequency measurements for improved mobile performance
- Extended DRX and PSM features for prolonged sleep use cases
- RF transceiver with programmable RF filtering in a single SKU design, allowing worldwide operation
- Single-antenna system architecture with coverage-enhancement techniques
- Dual-UICC interfaces compliant with ETSI TS 102 221 specification
- Multi-interface support for external SIM cards or a soldered SIM card
- Single-battery design for low-voltage primary batteries without need for a voltage booster
- Functional with single-rail power supply from 2.2 V to 5.5 V, and 3GPP RF-compliant from 2.5 V to 5.5 V
- Integrated, programmable RTC
- Support for different low-power modes with five wake signals and an ultra-low deep sleep mode

Block Diagram



Specifications

Category	Specifications
CPU	**CPU Clock Speed:** Up to 204 MHz **CPU Cores:** Dual-Core
Cellular Modem-RF	**Peak Download Speed:** 300 Kbps (Rel.14) **Peak Upload Speed:** 1.1 Mbps (Rel.14) **Cellular Technology:** Rel.14 LTE
Network Protocols	IPv4/IPv6 stack with TCP and UDP, TLS, HTTPS, MQTT, OMA Lightweight M2M, CoAP, SSL, DTLS, ping
RF	**LTE low bands:** B5, B8, B12, B13, B14, B17, B18, B19, B20, B26, B28, B71, B85 **LTE mid bands:** B1, B2, B3, B4, B25, B66
Power Management	**Supply Voltage Range:** 3.1 V to 4.5 V
Battery	Battery voltage monitoring capability
Interfaces	2x I2C, 2x I2S, Up to 32 GPIOs, 4-channel ADC, 3x UARTs, 2x SPI
Operating Temperature Range	**Maximum Temperature:** 95 °C **Minimum Temperature:** -30 °C
Software Options	**Operating System:** FreeRTOS
Location	GTP
SIM	2x SIM or eSIM

To learn more visit: qualcomm.com

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