



Quectel EC200U Series (Mini PCIe) LTE Standard Module

Introduction

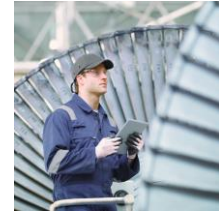
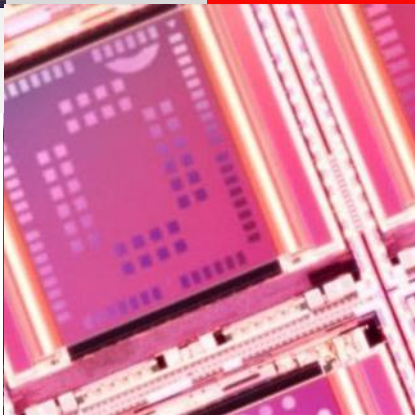
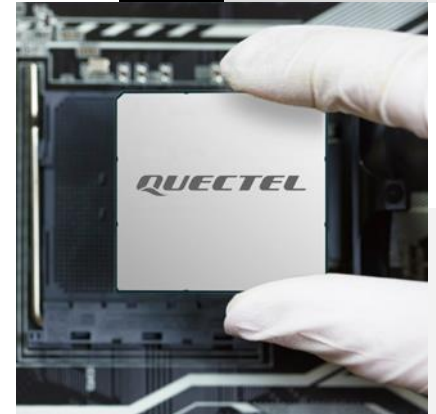
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Module Highlights

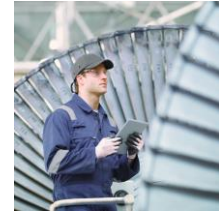
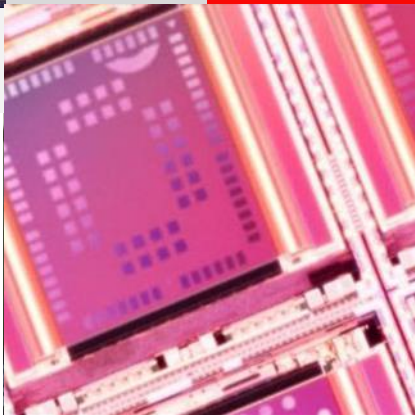
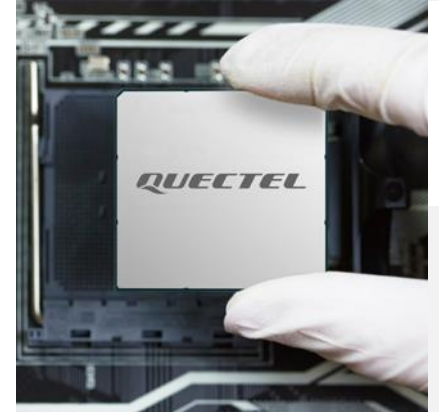
Specifications & Timelines

Technical Details

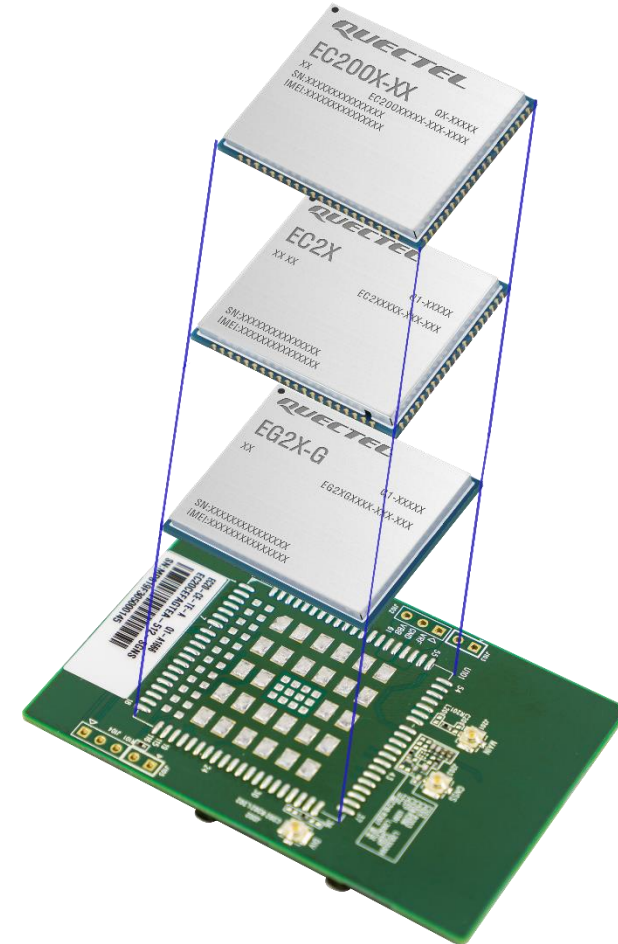
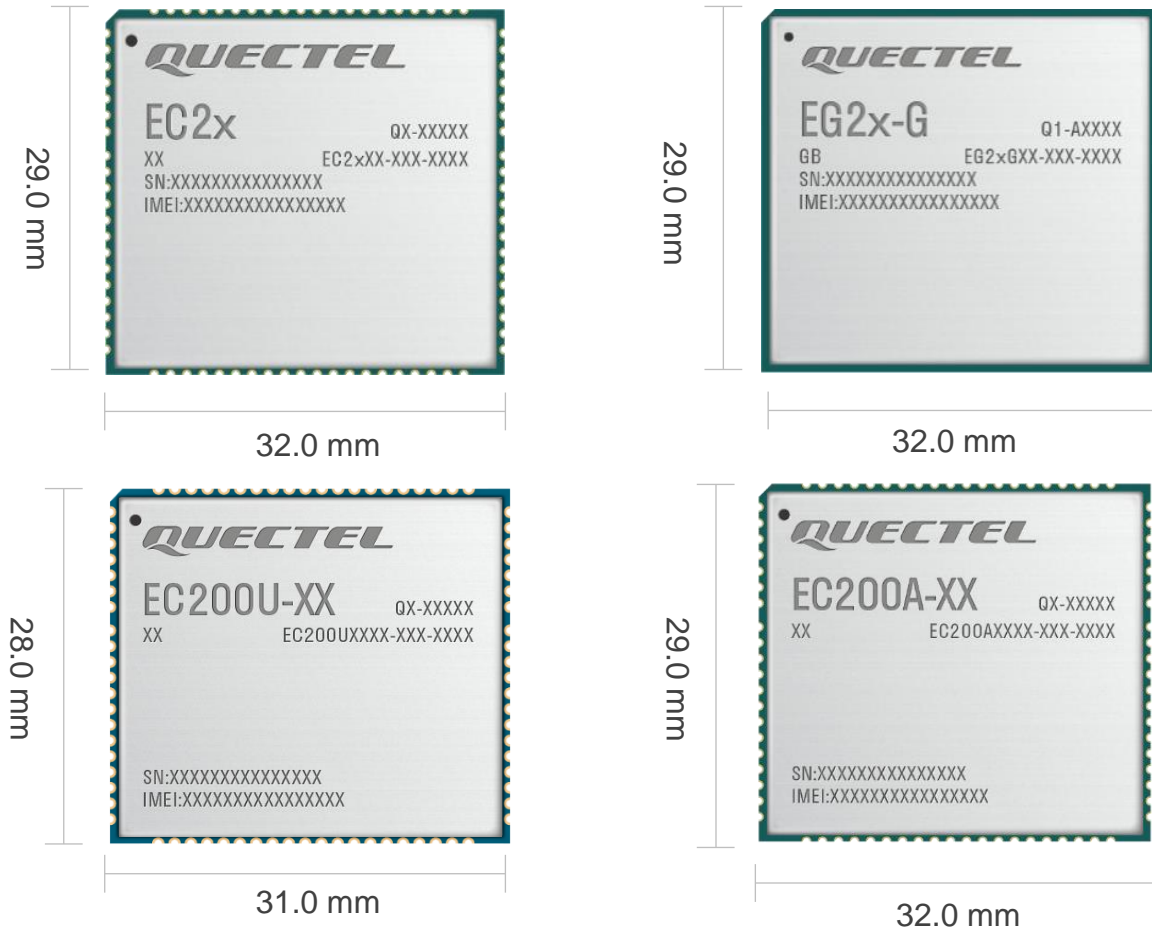
Typical Applications

Customer Support

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EC200U Series Compatible Modules

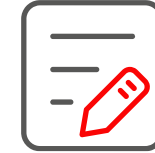
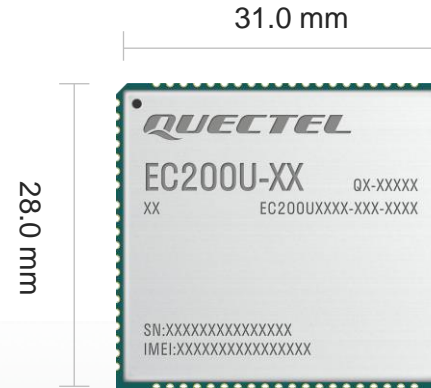


EC200U series module is compatible with Quectel LTE Standard EC2x series, EC200A series and EG2x-G modules

EC200U Series Highlights

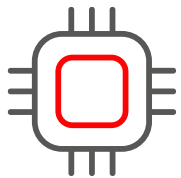


Compatible multiple variants with global market certification.

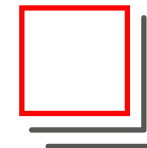


Cost-optimized Cat 1 module.

Classic Form Factor: 28.0 × 31.0 × 2.4 mm

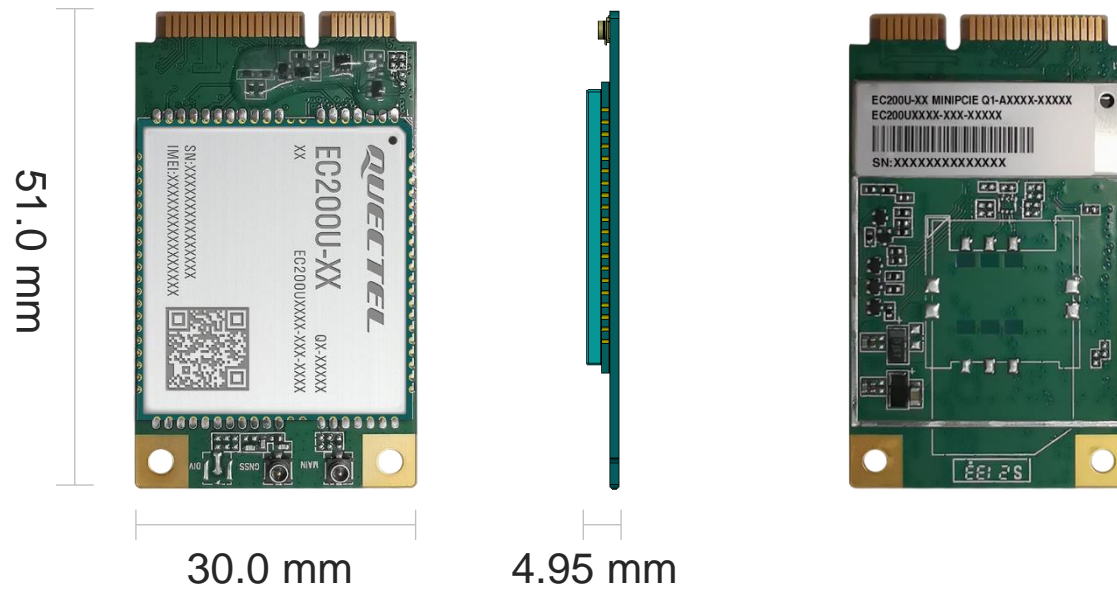


Chipset platform:
UIS8910



Compatible with EC2x series, EC200A series and EG2x-G modules.

EC200U-EU/-AU Mini PCIe



Length: 51.0 mm (± 0.15 mm)
Width: 30.0 mm (± 0.15 mm)
Height: 4.95 mm (± 0.2 mm)
Weight: Approx. 5.96 g

EC200U Series Highlights



Highlights	Description
Hardware Interfaces	USB 2.0/ PCM/ Analog Audio/ (U)SIM/ UART/ ADC/ I2C/ LCM ^① / SDIO/ SPI/ Matrix Keypad ^① / RESET_N/ PWRKEY/ Antenna Interface (main antenna, GNSS antenna ^② , Wi-Fi Scan/ Bluetooth antenna ^②)
USB Serial Driver	Windows 8/ 8.1/ 10/ 11, Linux 2.6–6.5, Android 4.x–13.x
GNSS Driver (Optional)	Android 4.x–13.x
RIL Driver	Android 4.x–13.x
USB RNDIS Driver	Windows 8/ 8.1/ 10/ 11, Linux 2.6–6.5
USB ECM Driver	Linux 2.6–6.5
Abundant Protocols	TCP/ UDP/ PPP/ NITZ/ PING/ FILE/ MQTT/ NTP/ HTTP/ HTTPS/ SSL/ FTP/ FTPS/ CMUX/ MMS ^②
Enhanced Features	DFOTA (Delta Firmware Upgrade Over-The-Air, Backup Recovery) (U)SIM card detection SDIO interfaces for SD card and WLAN ^①
SMS	Text and PDU mode Point-to-point MO and MT SMS cell broadcast SMS storage: ME & SM
QuecOpen[®]	No need for MCU in peripheral circuits
Audio	1 analog audio input + 1 analog audio output HR/ FR/ EFR/ AMR/ AMR-WB Echo cancellation and noise suppression

①: LCM, matrix keypad and SDIO (for WLAN) interfaces are only supported in QuecOpen[®] solution.

②: GNSS antenna, Wi-Fi Scan/ Bluetooth antenna and MMS protocol are optional.



Module Highlights

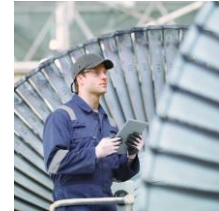
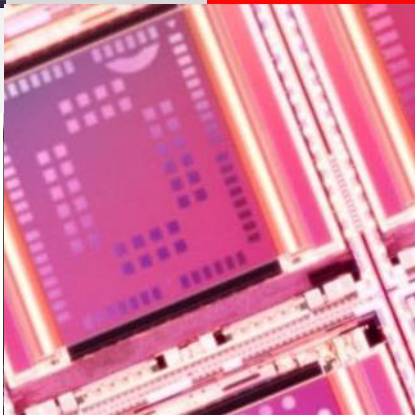
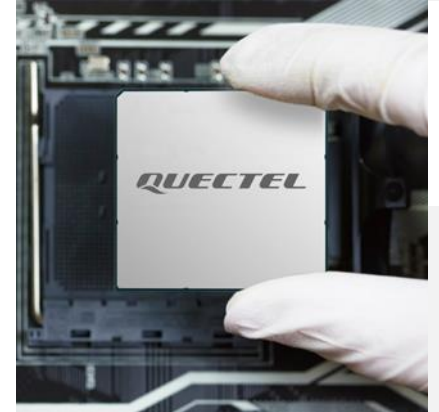
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Customer Support

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EC200U Series Specifications

28.0 mm × 31.0 mm × 2.4 mm
10 Mbps DL/ 5 Mbps UL



Variant		EC200U-CN	EC200U-EU	EC200U-AU
Region		China/ India	EMEA/ Australia/ New Zealand	Latin America
Chipset		UIS8910	UIS8910	UIS8910
LTE	LTE-FDD Band	B1/ 3/ 5/ 8	B1/ 3/ 5/ 7/ 8/ 20/ 28	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 28/ 66
	LTE-TDD Band	B34/ 38/ 39/ 40/ 41	B38/ 40/ 41	B38/ 40/ 41
UMTS	WCDMA Band	-	-	-
	TD-SCDMA Band	-	-	-
GSM		Optional, 900/ 1800 MHz	Quad-band	Quad-band
GNSS		Optional	Optional	Optional
Wi-Fi Scan		Optional	Optional	Optional
Bluetooth		Optional	Optional	Optional
Mini PCIe Form Factor		Supported	Supported	Supported
DFOTA		Supported	Supported	Supported
Open Solution		QuecOpen®/ QuecPython®	QuecOpen®/ QuecPython®	QuecOpen®/ QuecPython®
QuecLocator®		Supported	Supported	Supported
Analog Audio		Supported	Supported	Supported
VoLTE		Supported	Supported	Supported
Power Supply		3.3–4.3 V, typ. 3.8 V	3.3–4.3 V, typ. 3.8 V	3.3–4.3 V, typ. 3.8 V
Certification	Carrier	China Telecom/ China Mobile/ China Unicom	KT*	-
	Regulatory	SRRC/ NAL/ CCC	CE/ RCM /KC	FCC/ Anatel
	Others	WHQL	WHQL	WHQL
Project Stage		MP	MP	MP

EC200U-EU/-AU Mini PCIe Specifications

30.0 mm × 51.0 mm × 4.9 mm
10 Mbps DL/ 5 Mbps UL



Variant		EC200U-EU Mini PCIe	EC200U-AU Mini PCIe
Region		EMEA/ Australia/ New Zealand	Latin America
LTE	LTE-FDD Band	B1/ 3/ 5/ 7/ 8/ 20/ 28	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 28/ 66
	LTE-TDD Band	B38/ 40/ 41	B38/ 40/ 41
GSM		Quad-band	Quad-band
QuecLocator®		Supported	Supported
VoLTE		Supported	Supported
GNSS		Optional	Optional
Audio		PCM	PCM
Power Supply		3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Certification		Regulatory: CE/ RCM	Regulatory: FCC/ Anatel
Project Stage		MP	CS

EC200U-EU Timeline



2022						2023								
Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.

Project Stage

EC200U-EU MP

Certification



EC200U-AU Mini PCIe Timeline



2023											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Schedule



ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.
MP: Hardware and software ready for mass production.

Certification

Regulatory FCC/ Anatel ----- Completed



Module Highlights

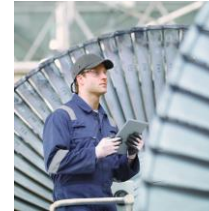
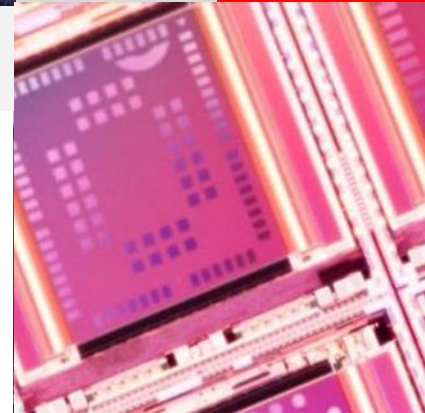
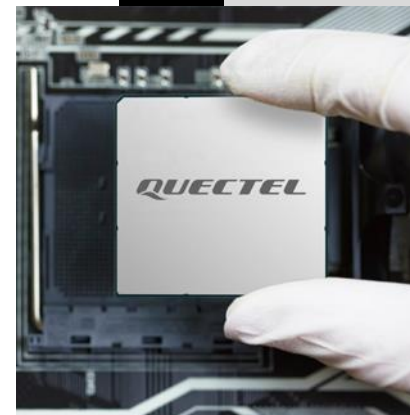
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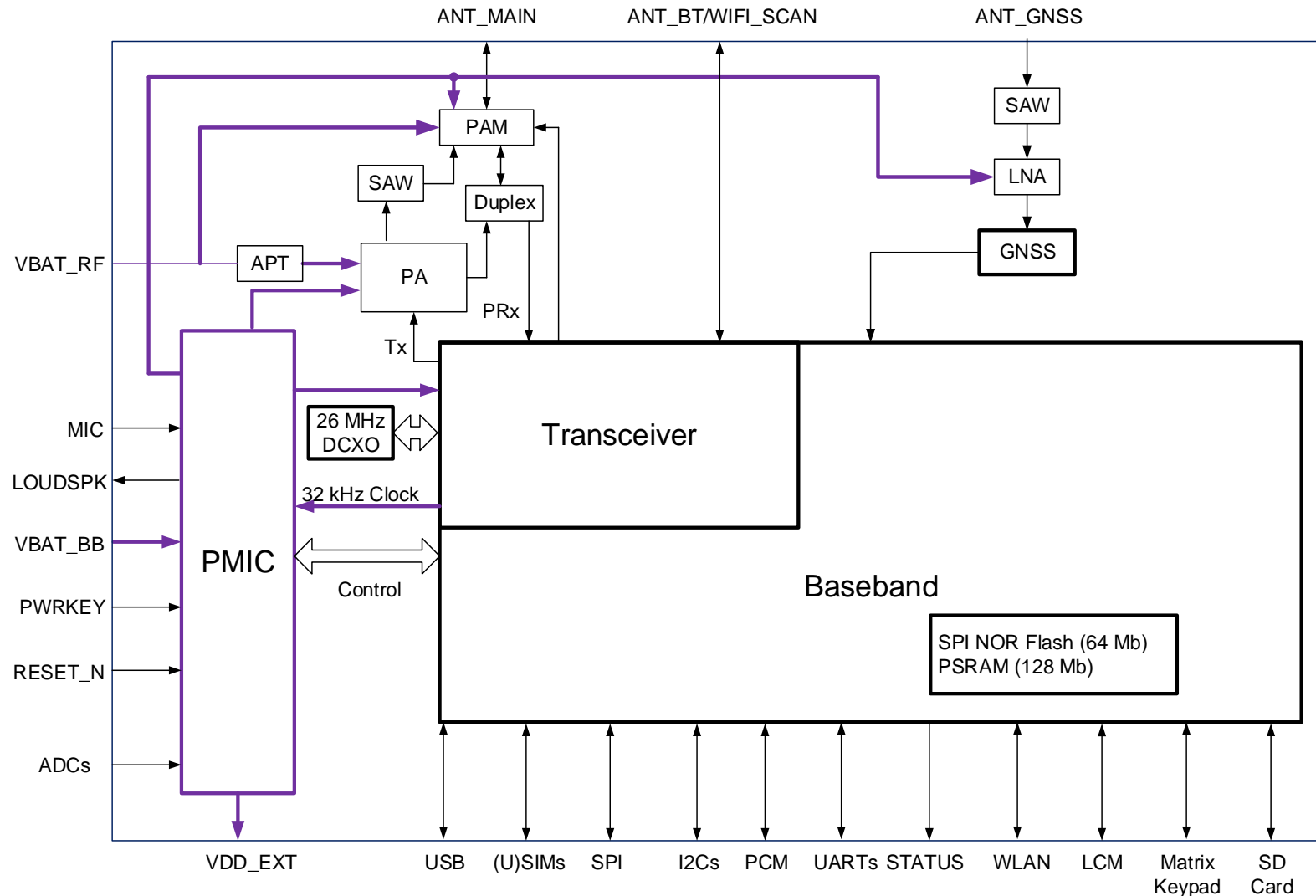
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Customer Support

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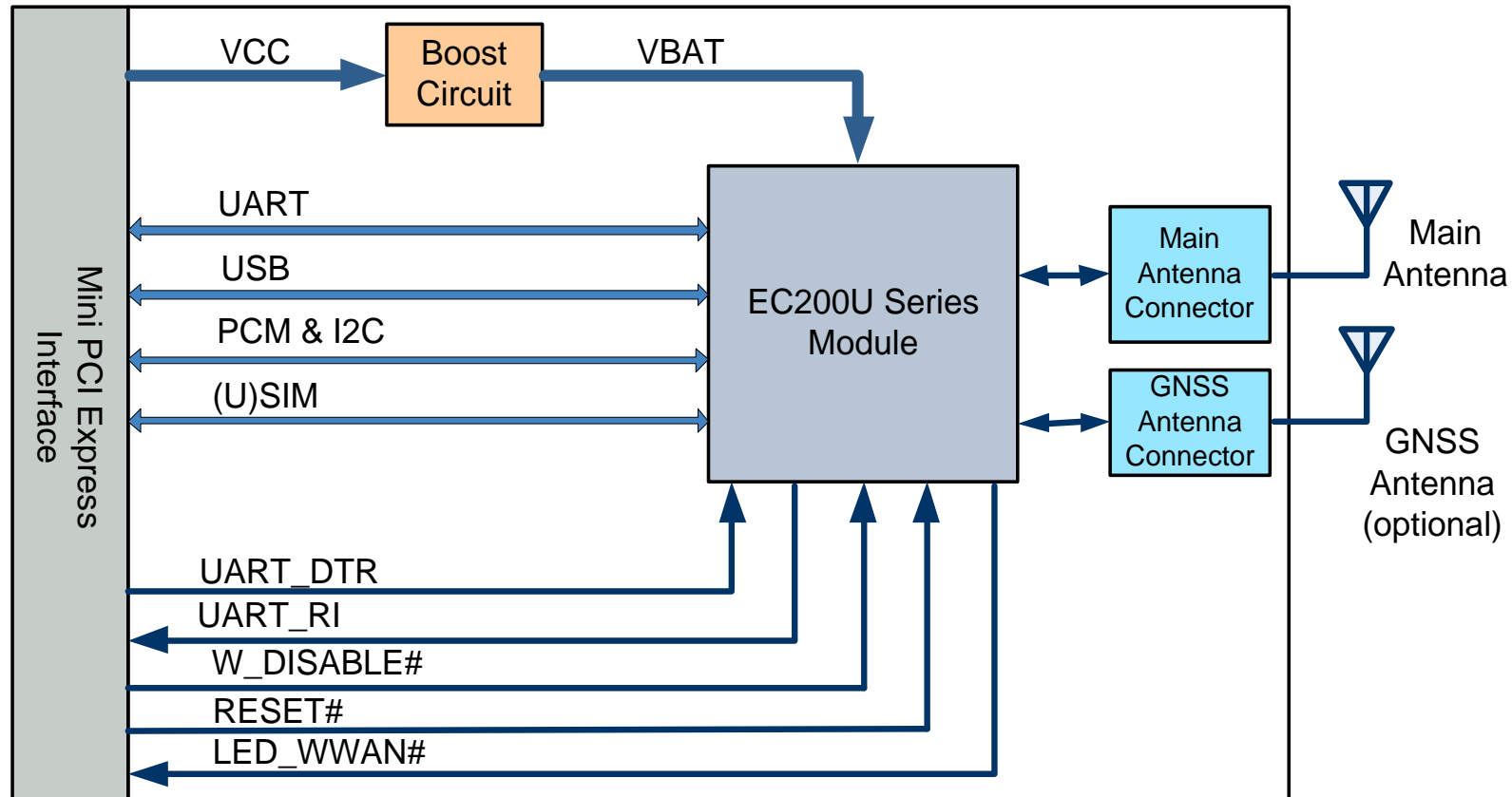
EC200U Series Hardware Architecture



LCM, matrix keypad and SDIO (for WLAN) interfaces are only supported in QuecOpen® solution.

GNSS antenna, Wi-Fi Scan/ Bluetooth antenna are optional.

EC200U Series Mini PCIe Hardware Architecture



USB Serial Driver

- Windows 8/ 8.1/ 10/ 11
- Linux 2.6–6.5
- Android 4.x–13.x

GNSS (Optional) & RIL & USB RNDIS & USB ECM Drivers

- GNSS Driver: Android 4.x–13.x
- RIL Driver: Android 4.x–13.x
- USB RNDIS Driver:
Windows 8/ 8.1/ 10/ 11, Linux 2.6–6.5
- USB ECM Driver: Linux 2.6–6.5

Quality Guarantee

- Reliable network protocols
- Steady flash protection mechanism
- Superior audio algorithms
- Backup recovery mechanism

Special Features

- QuecOpen®
- QuecPython®
- QuecLocator®

Flexible Applications

- (U)SIM card detection
- DTMF
- VoLTE
- GNSS (Optional)

Enhanced AT Commands

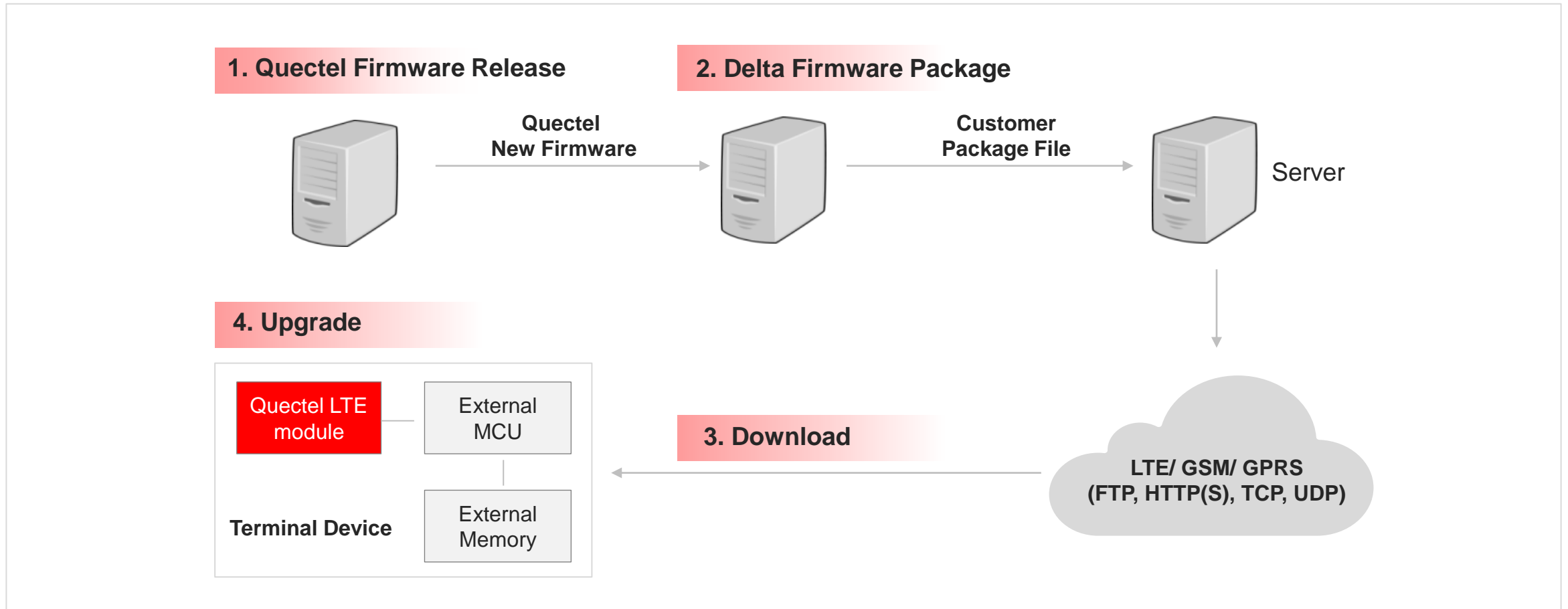
- 3GPP TS 27.007 (GSM 07.07)
- 3GPP TS 27.005 (GSM 07.05 SMS)
- Quectel Enhanced AT Commands

DFOTA



DFOTA (Delta Firmware Upgrade Over-The-Air)

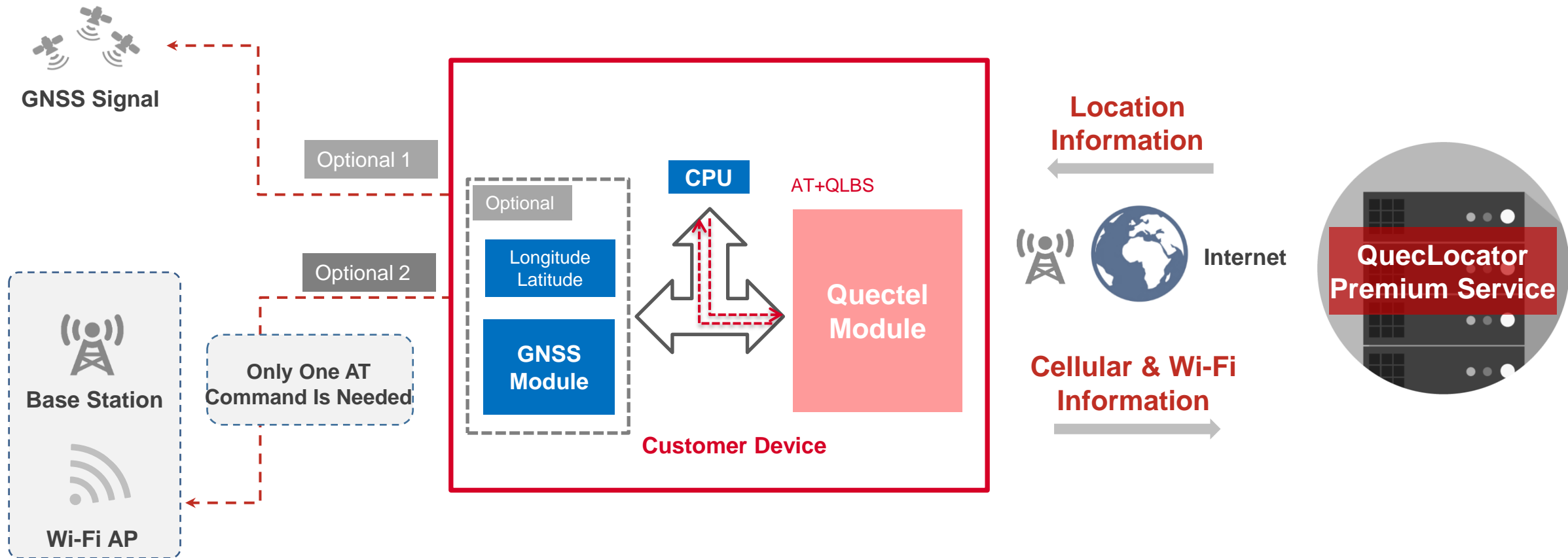
Quick firmware upgrade through cellular networks owing to differential upgrade, delta firmware package, and fast download speed.



QuecLocator[®] Working Process

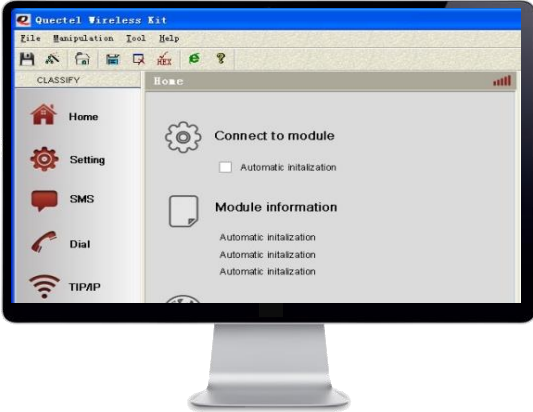


QuecLocator[®] is an easy and reliable positioning service providing secure and accurate positioning **Anytime, Anywhere.**



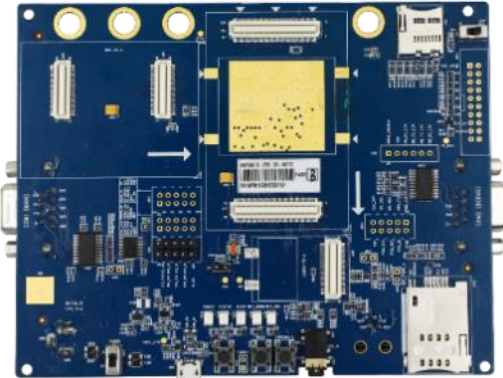
There is no need for extra GNSS modules when using QuecLocator[®].

Support Package



Quectel provides a graphical user interface (GUI) tool QNavigator, which can help customers quickly test the functions of Quectel modules.

EVB Kit



LCC & LGA Module EVB



Mini PCIe Module EVB



Module Highlights

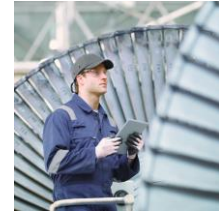
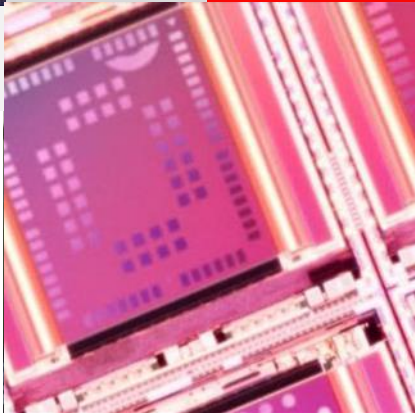
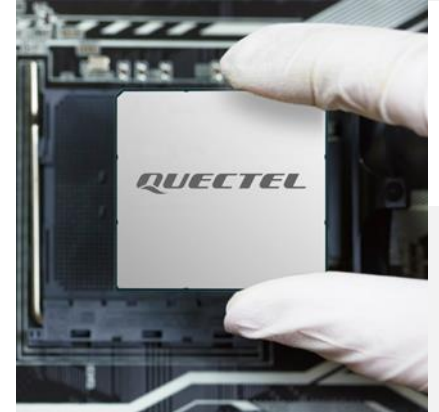
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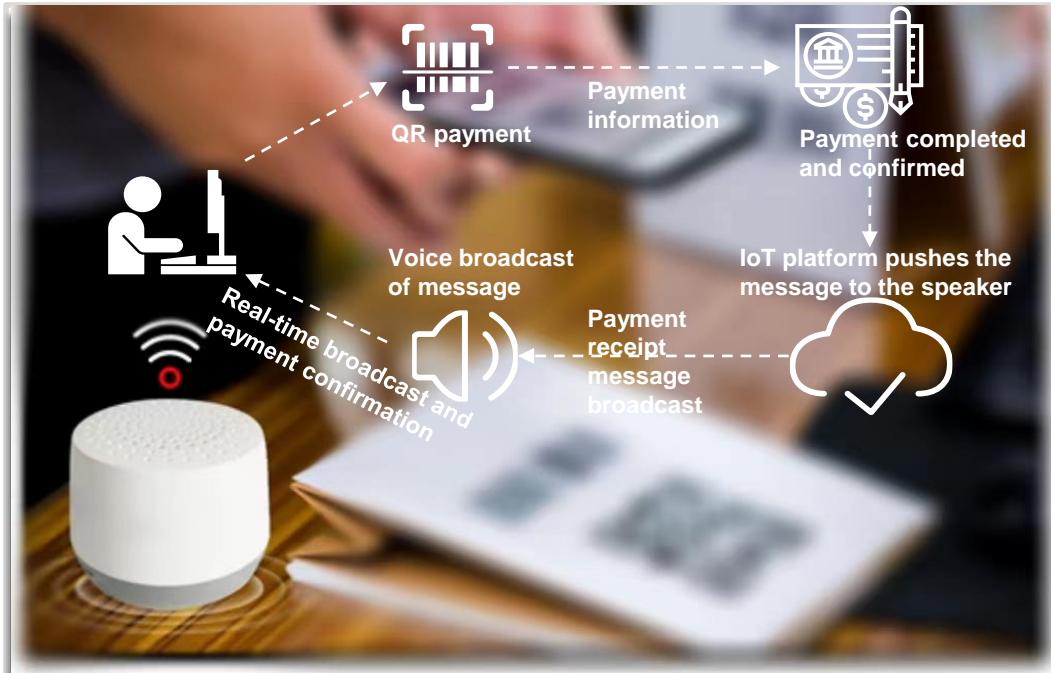
Customer Support

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Cloud Speaker

A solution to the problem that QR payment receipt cannot be confirmed in time if the payment App is not running or the broadcast sound is inaudible.



- Chipsets inside modules are imbedded with an audio codec.
- A cropped version is adopted to save more RAM or ROM space.
- Virtual machine architecture and modular programming.



Long-lasting Battery Life

- 24-hour continuous broadcasting
- Low battery voice alert



Multiple IoT platforms

- Quectel IoT platform
- Alibaba cloud
- Tencent cloud



Human-like sound

- TTS, MP3, AMR are supported
- The sound is closer to a real person's voice



Applications

- Payment receipt broadcasting
- Voice broadcasting in station and airport
- Local radio in rural area

Photovoltaic (PV)

Challenges

- Wire Ethernet features higher wiring costs and inflexibility.
- Wi-Fi features a short transmission distance, poor stability and potential network security risk.
- 2G devices cannot connect to network as 2G is phasing out.

Solution



Solution Highlights



4G Cat 1 technology avoids the risks followed by carriers shutting down 2G/ 3G network.



Through the module, the device data are collected and uploaded to the network server, so as to query, manage and maintain data anytime and anywhere.



4G Cat 1 series modules covering multiple chipsets and sizes satisfy the diverse demands of customers to market their terminal products in different areas around the world.



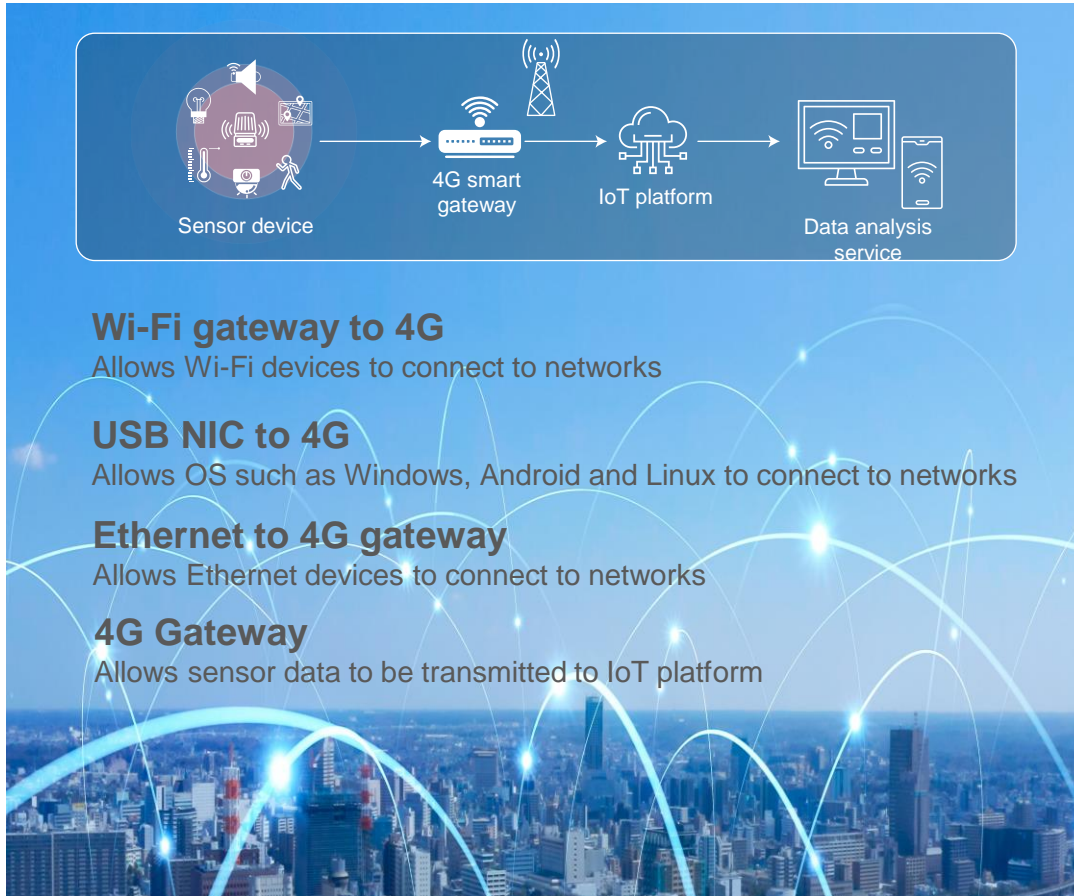
The current 4G network can ensure the stable and long-term network coverage of PV power generation devices.



LTE Cat 1 series modules are integrated with Bluetooth function, which makes it easier to maintain the electricity meter and terminal devices.

4G Smart Gateway

Smart gateway allows non-cellular devices to connect to 4G networks.



Wi-Fi gateway to 4G

Allows Wi-Fi devices to connect to networks

USB NIC to 4G

Allows OS such as Windows, Android and Linux to connect to networks

Ethernet to 4G gateway

Allows Ethernet devices to connect to networks

4G Gateway

Allows sensor data to be transmitted to IoT platform

Solution Highlights



Module variants meeting users' requirements for chipset, size, region and band



Rich hardware interfaces such as USB, Wi-Fi and Ethernet



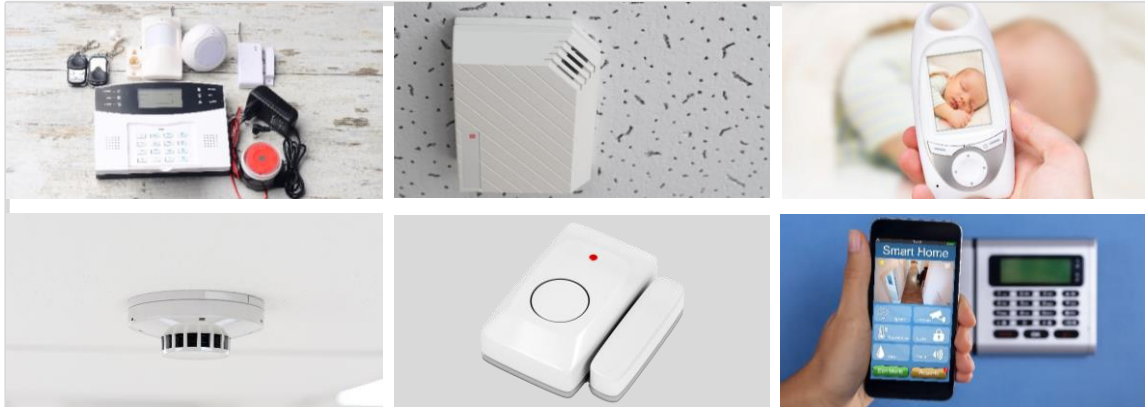
Various Open solutions :

- Linux
- QuecPython®
- FreeRTOS



- Sufficient example codes
- Socket programming supported in upper-layer application
- No need to focus on underlying interfaces
- Web configuration gateway

Various sensor data, collected to IoT gateway and transmitted to IoT platform via cellular network, are analyzed and managed intelligently.



Connect to mobile network with cellular module and provide safe and reliable data connection and transfer.

Home smart safety

Home safety devices which connects to network via a cellular module, together with video recorder, door and window sensors and smog detectors, can realize remote recording and alarm functions. When abnormality is detected, users will be noticed instantly via message, call, or App, which improves home safety.

Commercial smart safety

With video recorder, invasion detectors and fire detectors connected, commercial sites can be safely monitored and guarded to protect commercial assets.

Solution Highlights



- Module variants meeting users' requirements for chipset, size, region and band
- LTE Cat 1 modules supporting PSM

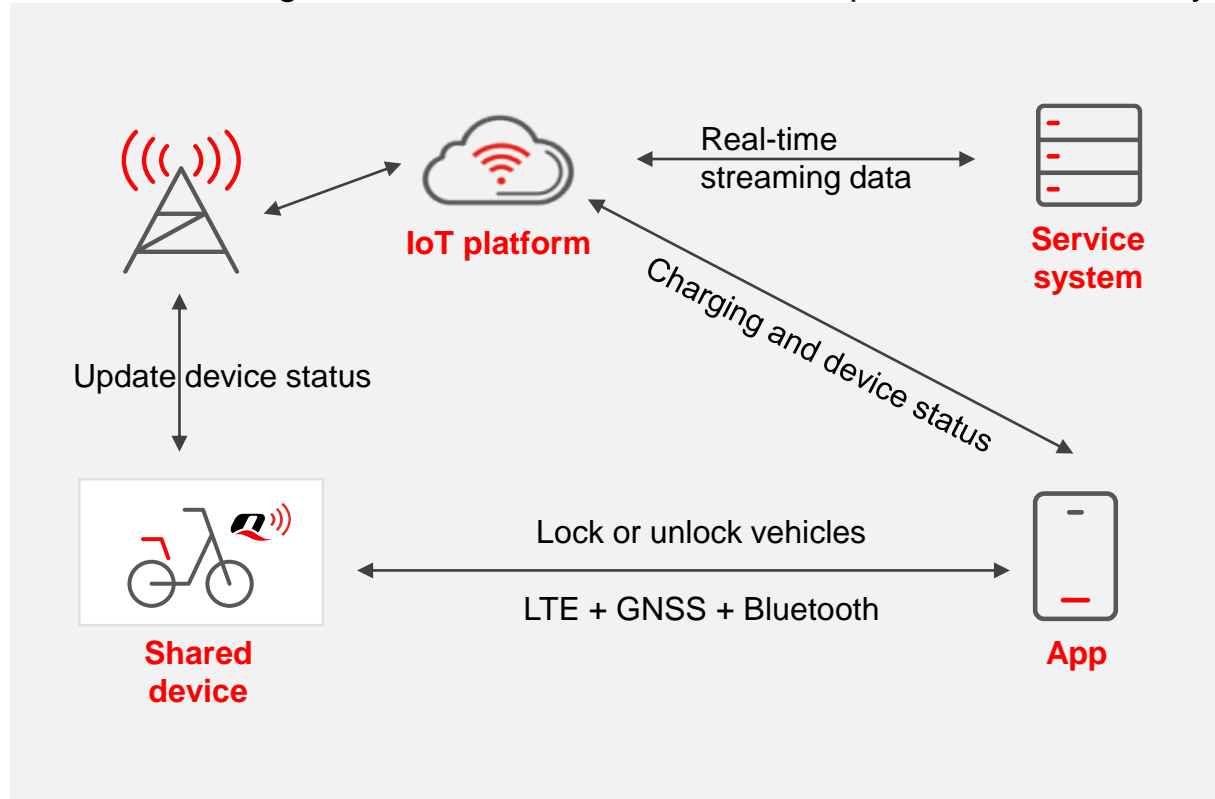


Support for safety functions related to system and software

Sharing

Challenges

- Traditional public bicycles feature: fixed parking sites, high construction cost and low usage rate.
- Electrical, intelligent and shared travel methods improve travel efficiency.



Solution Highlights



- Suitable for shared bicycle, motorbike, scooter and other travel devices.
- GNSS function is applied for recording vehicle usage, and Bluetooth for locking or unlocking vehicles.
- An overall solution is provided.



A low-cost device operating mode that allows human-computer interaction in network transmission.



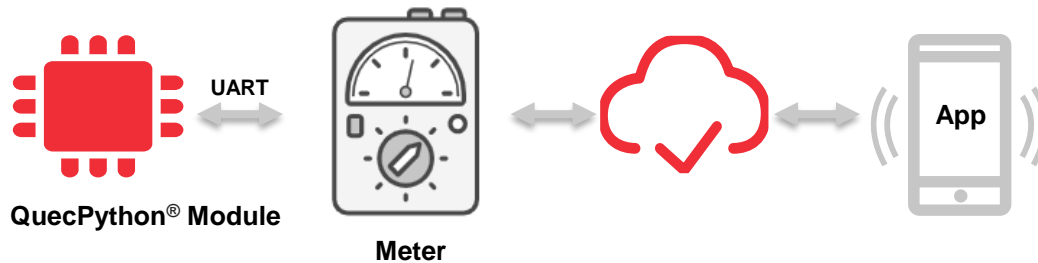
Shared bicycles have become an effective means to alleviate urban traffic congestion and the “last mile” problem.

Challenges

- Traditional mechanical meter features a low measurement accuracy.
- Manual data calculation leads to high management cost.



Solutions



Solution Highlights



- Developed on QuecPython® language
- Rich third-party libraries
- Free from compilation



A set of codes can be widely used in the products based on various chipsets without modification.

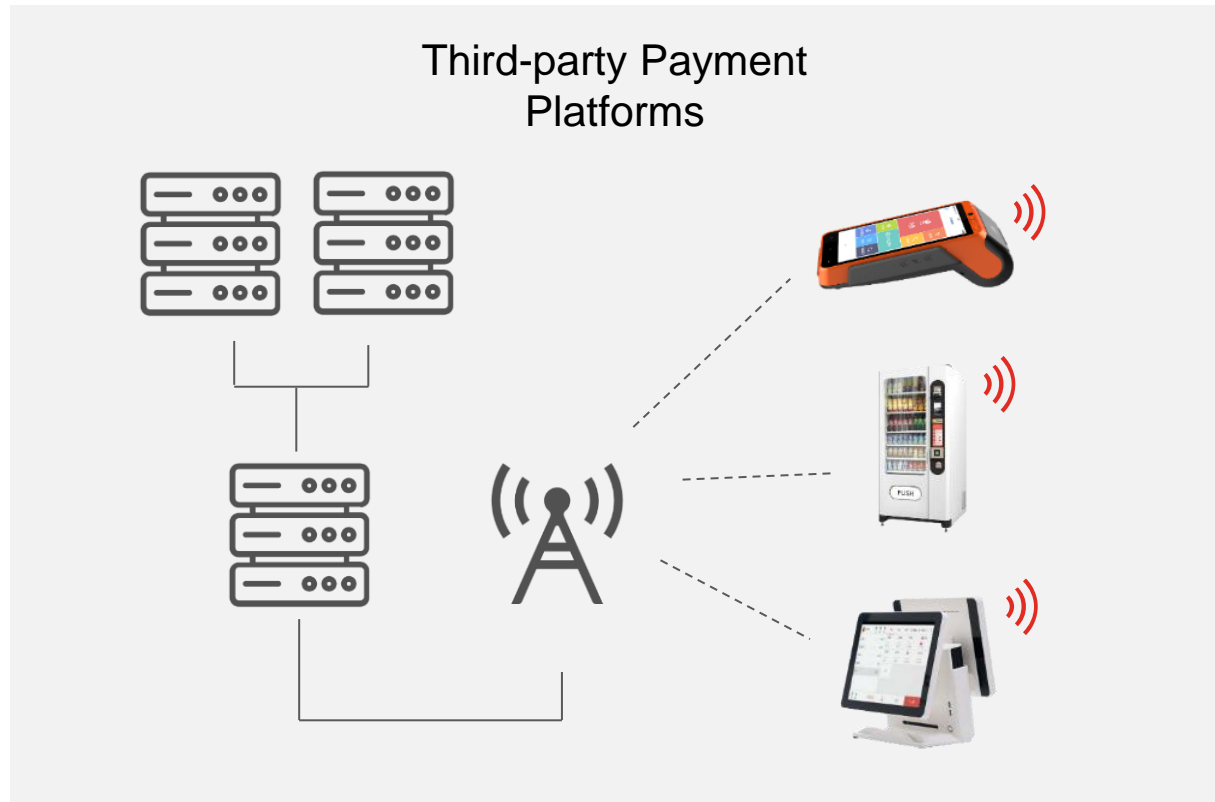


A brand-new meter reading mode

Multiple application scenarios to solve the problems in production and life:

- Smart power consumption
- Distributed energy resources
- Multifunctional community services

- 2G/ 3G phaseout
- Over 100 million 2G/ 3G POS terminals still in use
- Wide use leads to a shorter average replacement time (2–3 years)



Solution Highlights



LTE standard solution can meet the demand of direct replacement of 2G/ 3G products.



LTE modules in Open solutions enhance their competitiveness by supporting code scanning, screen display and application.



Wireless payment has been an essential application of LTE Cat 1 technology which provides wider coverage, higher data rates, and greater cost advantages.



Module Highlights

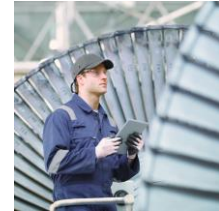
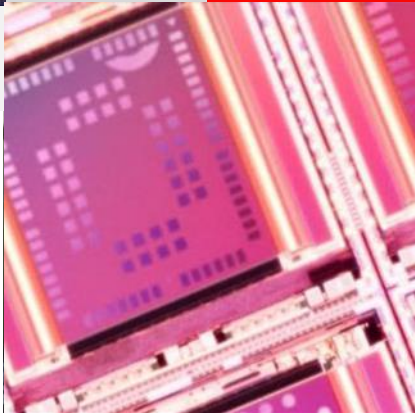
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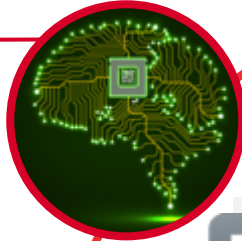
Customer Support

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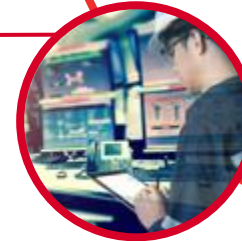
1. System Evaluation

- Analyzing customer requirements
- Recommending the right module for the customer
- Evaluating antenna placement
- Designing antennas



5. Mass Production

- Providing assembly and testing guidelines
- Providing after-sales services



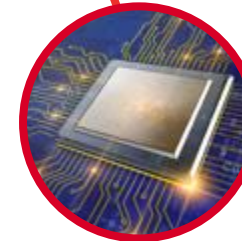
2. Design In

- Recommending referenced hardware designs
- Checking schematics and layouts
- Providing software design support



3. Prototype

- Providing design validation testing
- Recommending suppliers



4. Testing Service

- RF testing
- Power consumption testing
- Audio testing
- Reliability & environmental testing
- ESD testing
- Certification testing
- Antenna debugging





We are a global IoT solutions provider, backed by outstanding support and services, to deliver a smarter world.

- Unbeatable choice from the broadest module portfolio in the world
- High quality range of off-the-shelf and customized antennas
- Superb support with the largest R&D team in the industry
- Continuous innovation in 5G, LPWA, Automotive, and Smart module technology
- A passionate, dedicated team of “Quectelers” ensures our customers always come first

Thank You

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