

IoT

LTE



GNSS



3G

2G

Quectel EC25&EC21 LTE Module Presentation

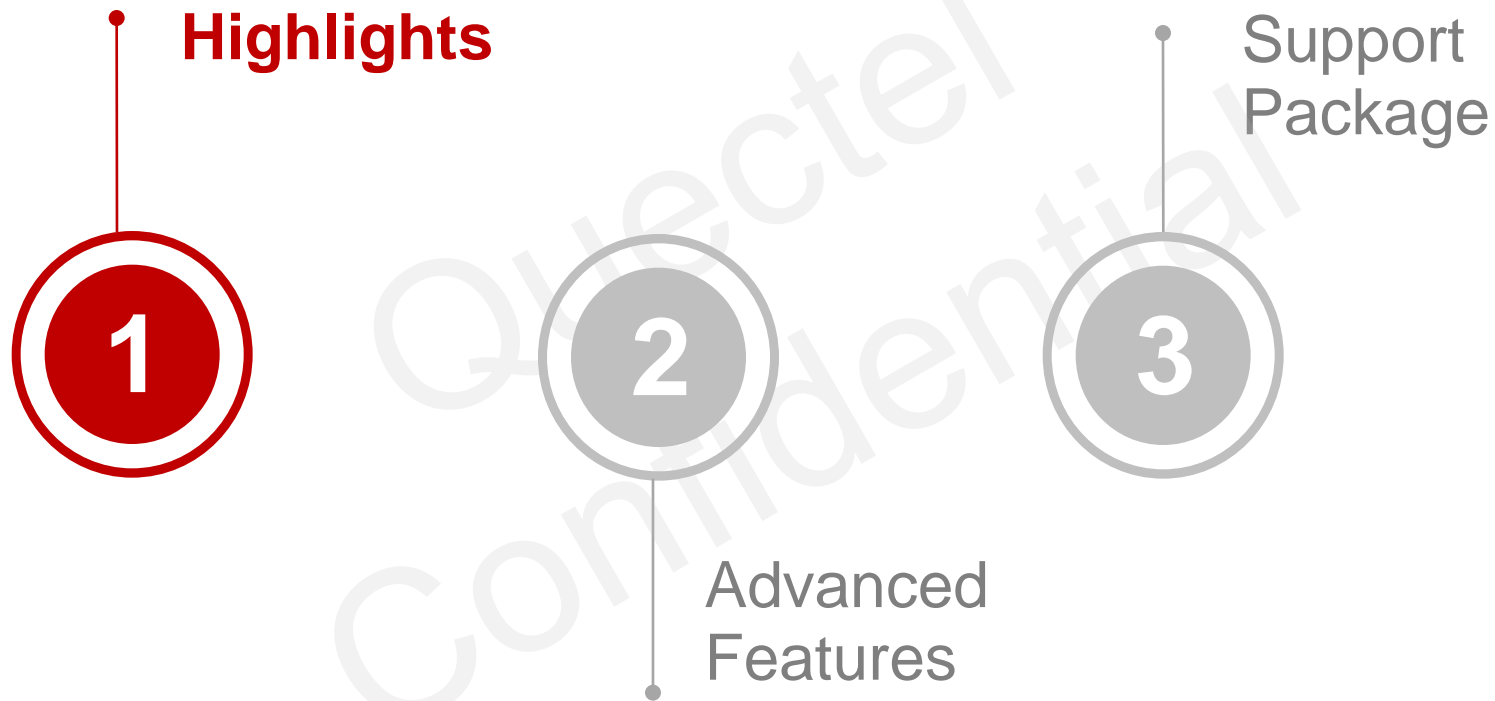
December, 2016

www.quectel.com



Build a Smarter World

Internet of Things





**Based on
Qualcomm
MDM9x07 Chipset**



Multi-Band Combination

EC25-V: B4/B13@FDD LTE

EC25-J: B1/B3/B8/B18/B19/B26@FDD LTE B41@TDD LTE B1/B6/B19@WCDMA

EC25-A: B2/B4/B12@FDD LTE B2/B4/B5@WCDMA

EC25-E: B1/B3/B5/B7/B8/B20@FDD LTE B38/B40/B41@TDD LTE B1/B5/B8@WCDMA B3/B8@GSM

EC25-AU: B1/B2/B3/B4/B5/B7/B8/B28@FDD LTE B40@TDD LTE B1/B2/B5/B8@WCDMA

B2/B3/B5/B8@GSM

LTE High Speed Packet Access

LTE FDD: DL up to 150Mbps/UL up to 50Mbps

LTE TDD: DL up to 130Mbps/UL up to 35Mbps

Robust Package

LCC package with heat sink design, compatible with Quectel UMTS/HSPA+ UC20 module

Abundant Interfaces and Functionalities

USB/UART/USIM/PCM/ADC/RESET/Ethernet

NETLIGHT/eCall*

Extended Temperature Range

-40° C ~ +85° C

* Under development



**Based on
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Multi-Band Combination

EC21-E: B1/B3/B5/B7/B8/B20@FDD LTE B1/B5/B8@WCDMA B3/B8@GSM

EC21-A: B2/B4/B12@FDD LTE B2/B4/B5@WCDMA

EC21-V: B4/B13@FDD LTE

EC21-AUT: B1/B3/B5/B7/B28@FDD LTE B1/B5@WCDMA

EC21-AUTL: B3/B7/B28@FDD LTE

EC21-J: B1/B3/B8/B18/B19/B26@FDD LTE

EC21-KL: B1/B3/B5/B7/B8@FDD LTE

EC21-AU: B1/B2/B3/B4/B5/B7/B8/B28@FDD LTE B40@TDD LTE

B1/B2/B5/B8@WCDMA B2/B3/B5/B8@GSM

EC21-CT: B1/B3/B5@FDD LTE B41@TDD LTE

LTE Speed Packet Access

LTE FDD: DL up to 10Mbps/UL up to 5Mbps

LTE TDD: DL up to 8.96Mbps/UL up to 3.1Mbps

Robust Package

LCC package with heat sink design, compatible with Quectel UMTS/HSPA+ UC20 module

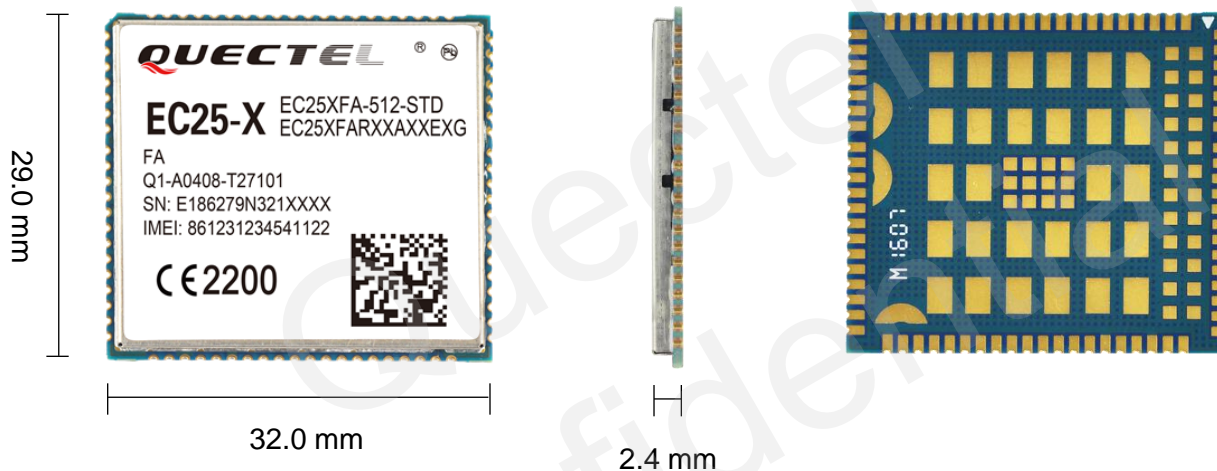
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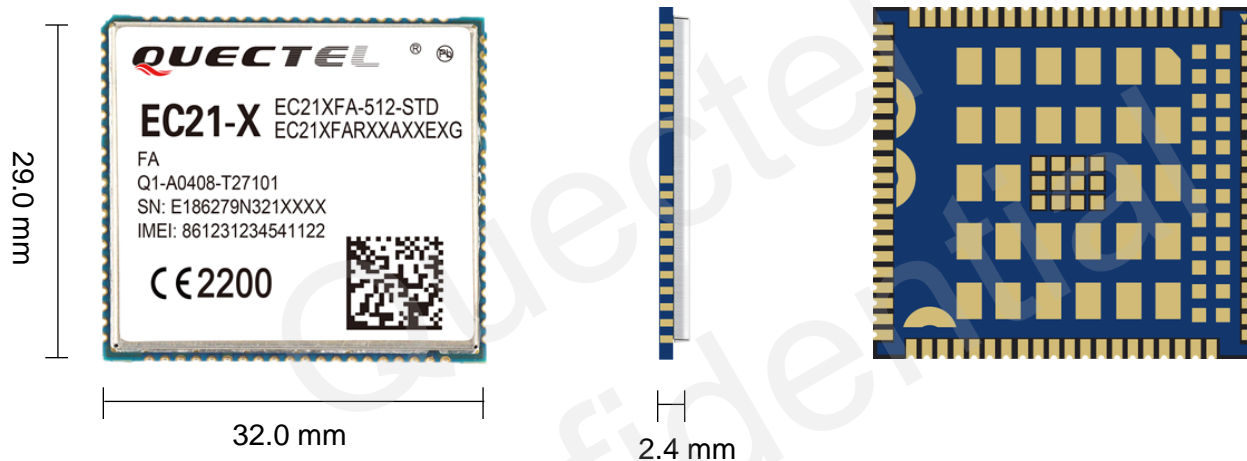


Length: 32.0mm (± 0.15 mm)

Width: 29.0mm (± 0.15 mm)

Height: 2.4mm (± 0.2 mm)

Weight: Approx. 4.9g

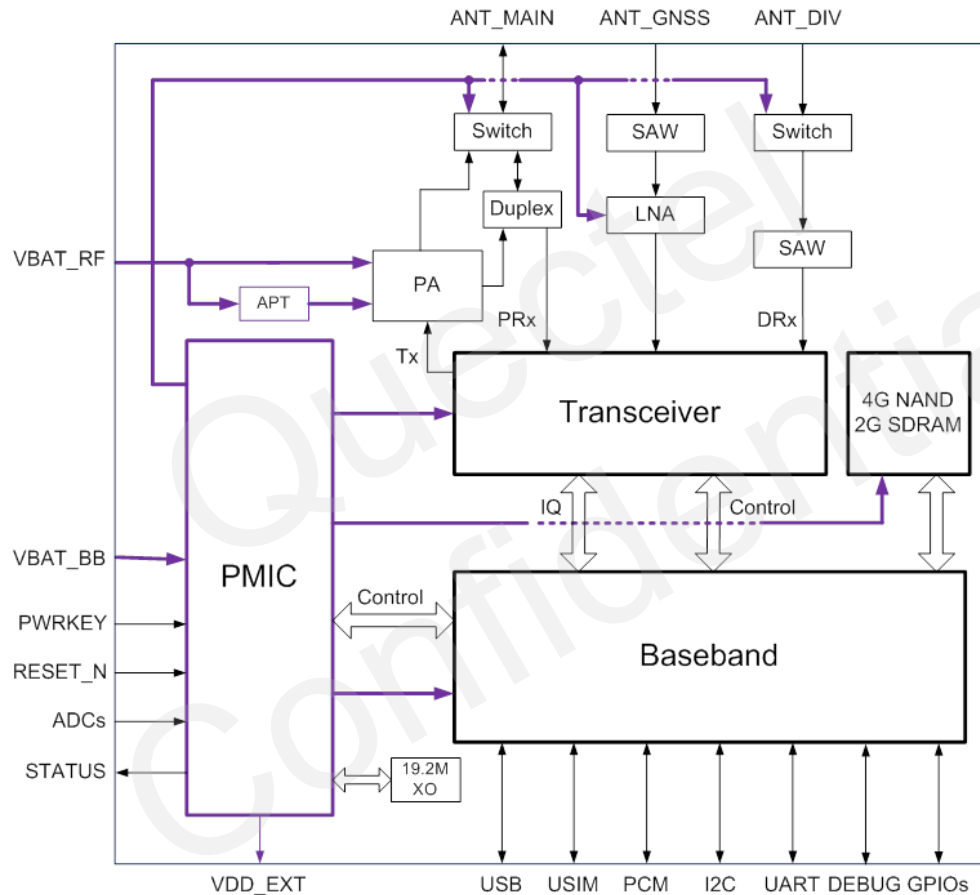


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USB Serial Drivers

- Windows XP/Vista/7/8/8.1/10
- Linux 2.6 or later
- Android 4.0/4.2/4.4/5.0/5.1/6.0

Quality Guarantee

- Reliable network protocol
- Steady flash protection mechanism
- Superior audio algorithms
- High sensitivity

Abundant Protocols

- TCP/UDP/PPP/FTP/HTTP/NTP
- PING/QMI
- HTTPS*/SMTP*/MMS*/FTPS*
- SMTPS*/SSL*

NIDS&RIL Drivers

- RIL: Android 4.0/4.2/4.4/5.0/5.1/6.0
- NIDS: Windows XP, Windows Vista/7/8/8.1/10

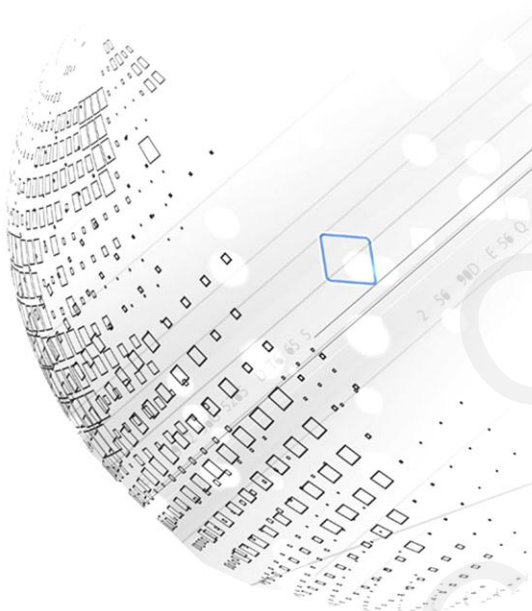
Flexible Applications

- eCall*
- SIM card detection*
- DTMF*

Special Features

- Over Temp.&Voltage Protection
- QuecOpenTM*

* Under development



Standard V.25ter AT commands



3GPP TS 27.007 (GSM 07.07)



3GPP TS 27.005 (GSM 07.05 SMS)



TCP/IP stack AT commands



STK (SIM Application Toolkit)



Quectel enhanced AT commands



Telematics & Transport

- Automotive OEM
- Vehicle Tracking
- Container Tracking
- Ship Tracking
- Fleet Management
- OBD
- DVR
- Insurance Box



Energy

- Electricity Meter
- Gas Meter
- Water Meter
- Heat Meter
- Smart Grid
- Wind Turbines
- Solar Panel
- Charging Pile



Payment

- Wireless POS
- Cash Register
- ATM
- Vending Machine
- Top-up Machine



Security

- Alarm
- Camera
- Video Surveillance



Smart City

- Street Lighting
- Traffic Light
- Elevator
- Digital Signage
- Advertisement Display
- LED Lighting
- Garbage Bin Monitoring
- Parking



Gateway

- DTU
- Consumer Router
- Industrial Router
- VOIP
- Server



Industry

- Industrial PDA
- Rugged Tablet PC
- Pipeline Management
- UAV
- Robot
- Flow Meter
- Refrigerator
- Industrial Control
- Industrial Monitoring



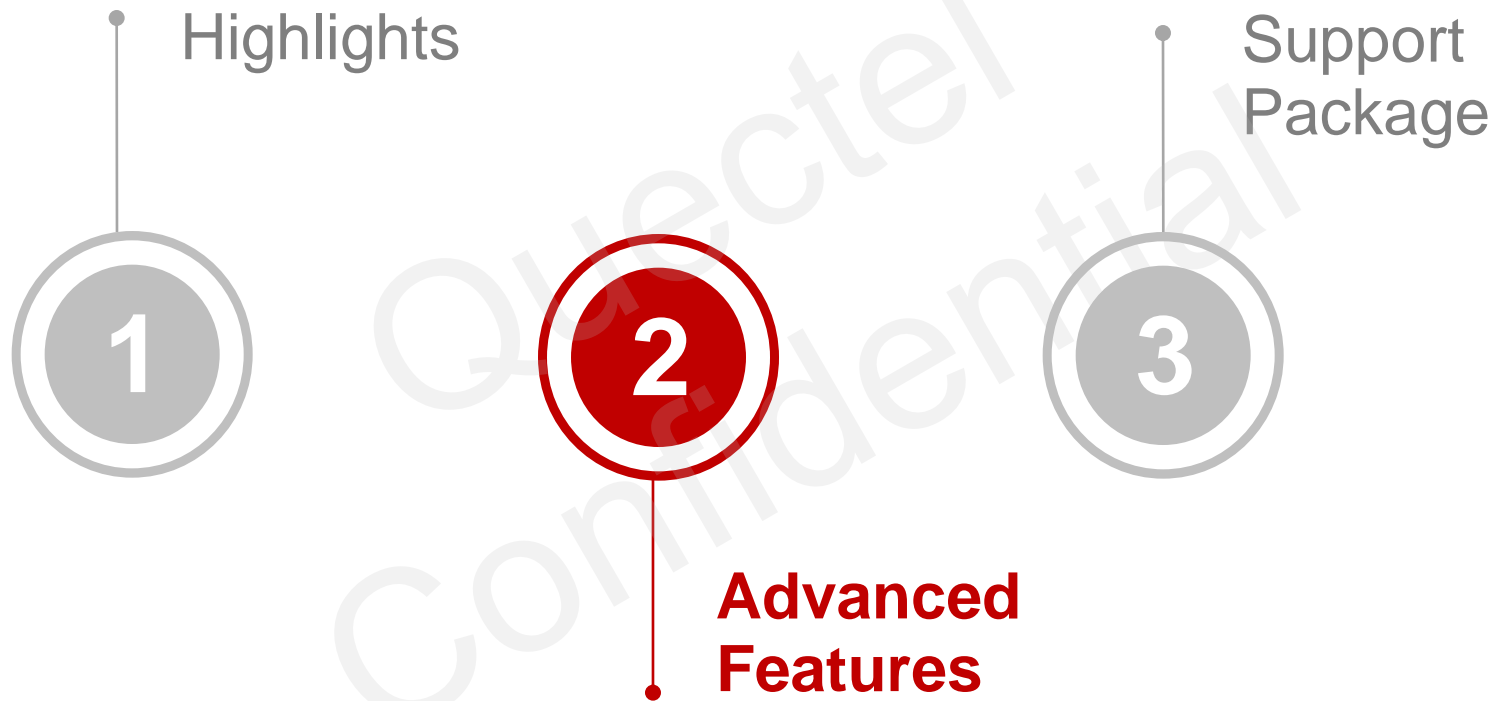
Life & Healthcare

- Personal Tracker
- Pet Tracker
- Wearables
- Elderly Monitoring
- Remote Medical Equipment
- Glucometer
- Blood Pressure Monitor
- Gaming Machine



Agriculture & Environment

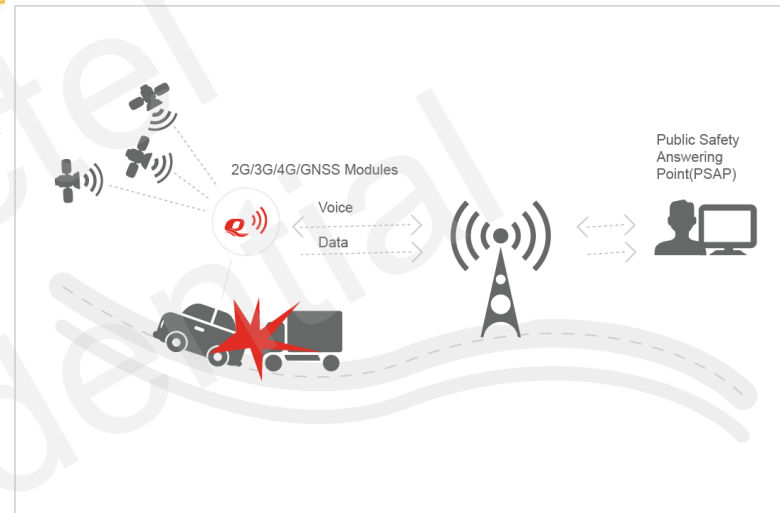
- Trail Camera
- Farm Machinery
- Irrigation
- Meteorological Station
- Wildlife Tracking
- Environment Monitoring





EC25&EC21 eCall* Function

A car will have an electronic safety system automatically calling emergency services in case of a serious accident. Even if the driver is unconscious, the system will inform rescue workers of the crash site's exact whereabouts, and the rescues will be on its way within minutes. The system is named as "eCall".



- *Quectel supports eCall in 2G/3G/4G/GNSS modules and has been working on eCall since late 2011.*
- *Quectel has enough development experience on eCall to support and assist customers with eCall application development.*
- *“*”This function is still under development.*

- Concurrent GPS\GLONASS\BeiDou\Galileo operation
- Usable constellation increased to 55 satellite vehicles (SVs)
- Sensor Assisted Positioning (SAP)
- Precise Indoor Positioning (PIP)
- Global Terrestrial Positioning (GTP)
- Low power enhancement
- Geofencing capability



Parameter	Gen7	Gen8	Gen8C
GNSS system	GPS only	GPS+GLONASS+BDS	GPS+GLONASS+BDS+Galileo
Tracking sensitivity	-160dBm	-161dBm	-162dBm
TTFF (hot/warm/cold start)	1s/29s/35s	1s/29s/32s	1s/29s/32s
Total number of SVs available	~30	~55	~55

Quectel EC25 and EC21 modules adopt Qualcomm's **IZat Gen8C**, its location services not only show where you are, but also show who and what are around you, whether you're indoors or out.



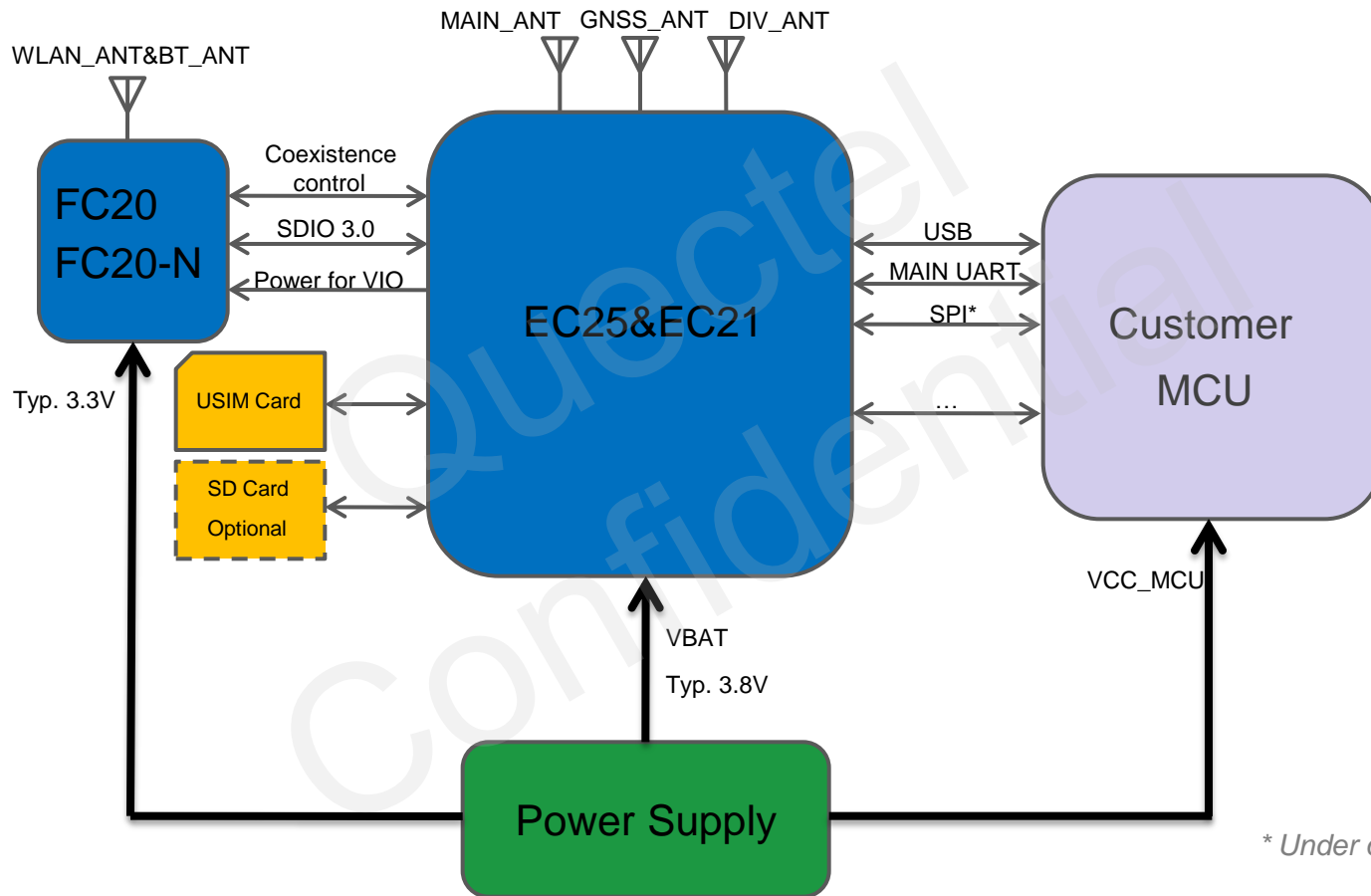
Augmented Positioning: Ubiquitous Wi-Fi and cellular networks ensure accurate positioning.

GNSS Chipsets: Using GPS, GLONASS and BeiDou satellites, IZat location technologies pinpoint your position anywhere in the world, even in challenging urban environments.

Key Features:

- Low power consumption
- Precise indoor positioning
- Global terrestrial positioning
- Trigger a notification when location context changes

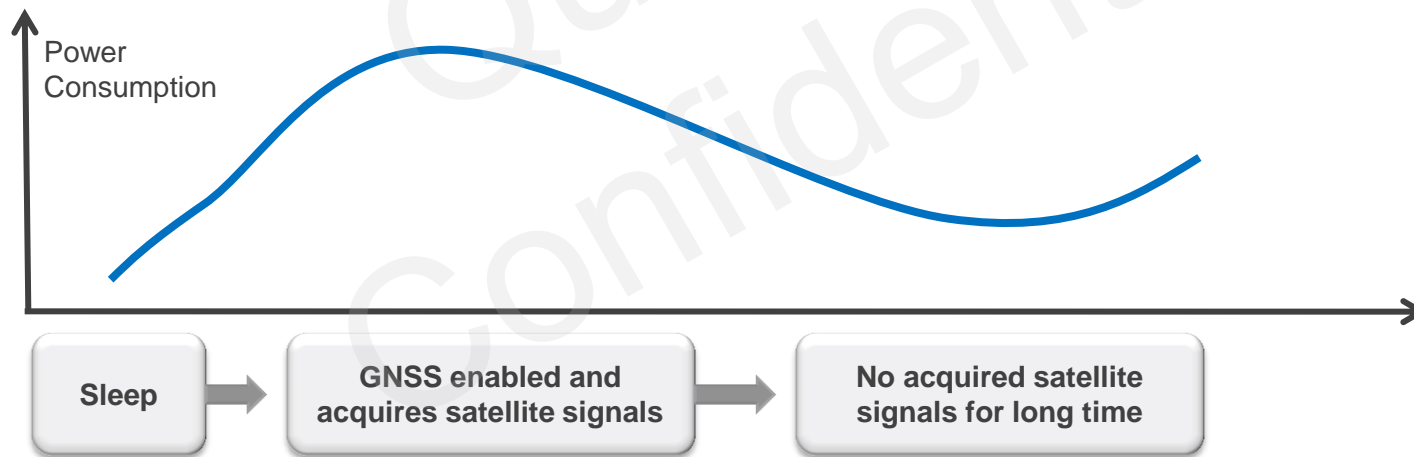
Cloud-Based Assistance: IZat location technologies use a network of cloud-based assistance servers that provide industry-leading location performance for any mobile device, on any network and in any environment.



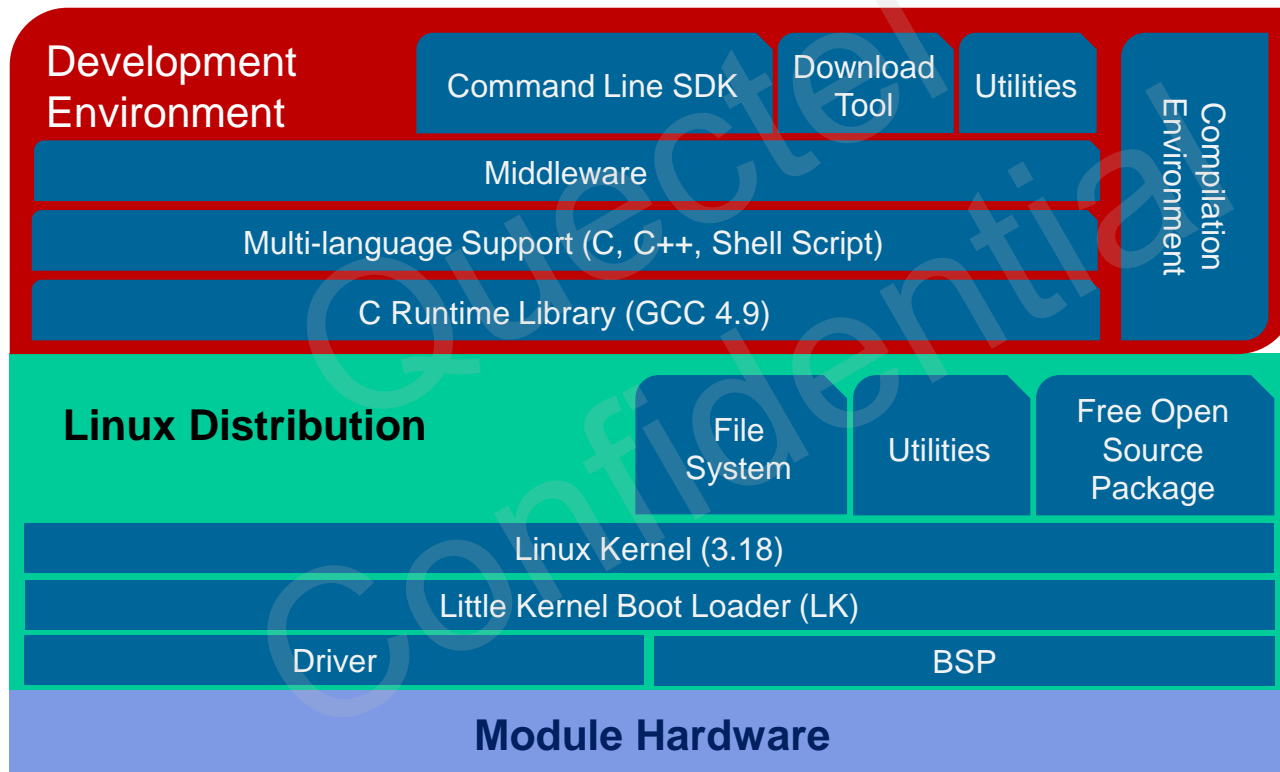
Feature	FC20	FC20-N
Dimensions	16.6 x 13.0 x 2.1mm	16.6 x 13.0 x 2.1mm
Package	LCC+LGA	LCC+LGA
Function	Wi-Fi 2.4G/5G&BT4.1*	Wi-Fi 2.4G
Pin No.	52	52
Supply Voltage	3.3V+1.8V	3.3V+1.8V
Interface	SDIO+UART&PCM	SDIO
WLAN technology	802.11 a/b/g/n/ac	802.11 b/g/n
Antenna	Wi-Fi&BT antenna	Wi-Fi antenna
Data Rate	54Mbps @802.11a; 11Mbps @802.11b; 54Mbps @802.11g; 150Mbps @802.11n; 433Mbps @802.11ac	11Mbps @802.11b; 54Mbps @802.11g; 150Mbps @802.11n;
AP (access point)	16	16
Other Interface Pin	Reset/COEX	Reset/COEX
Operation Temperature	-40 ~ +85° C	-40 ~ +85° C

EC25&EC21 provide power saving solutions by DPO (Dynamic Power Optimization), thus extending battery life, maximizing talk and standby time. DPO is a power-saving solution which attempts to turn off GNSS RF parts, reduces current consumption up to 50% without impact on TTFF.

The DPO feature attempts to reduce power consumption by turning the RF (and associated hardware) on just long enough to acquire the satellite signals. It can be activated only when there is no need to decode navigation data because the GNSS receiver has the GNSS time knowledge and ephemeris (or XTRA-based almanac corrections) needed to compute the location.

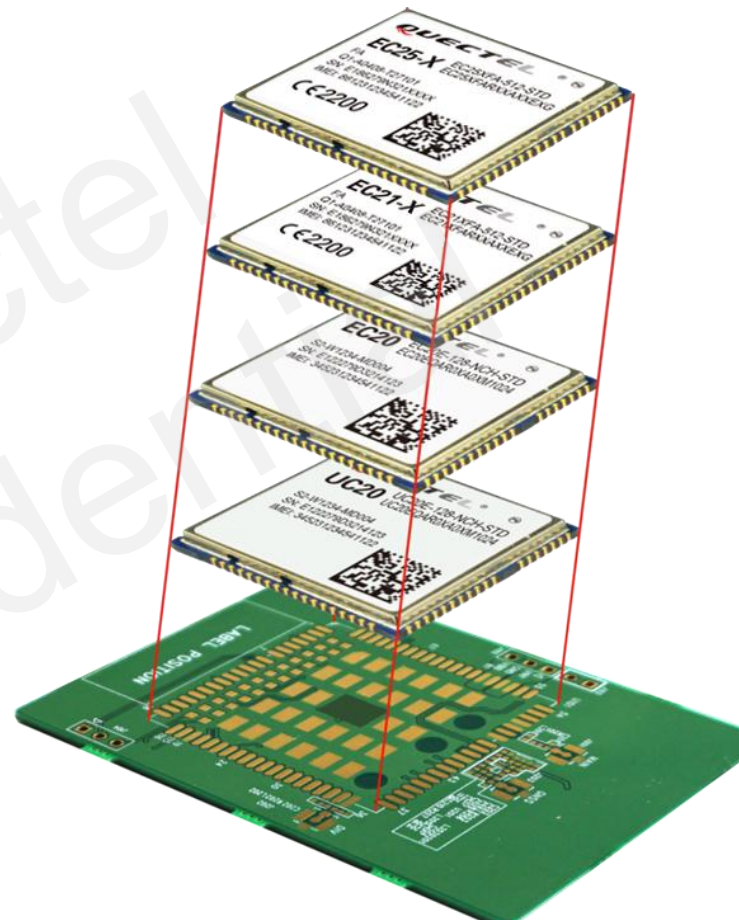


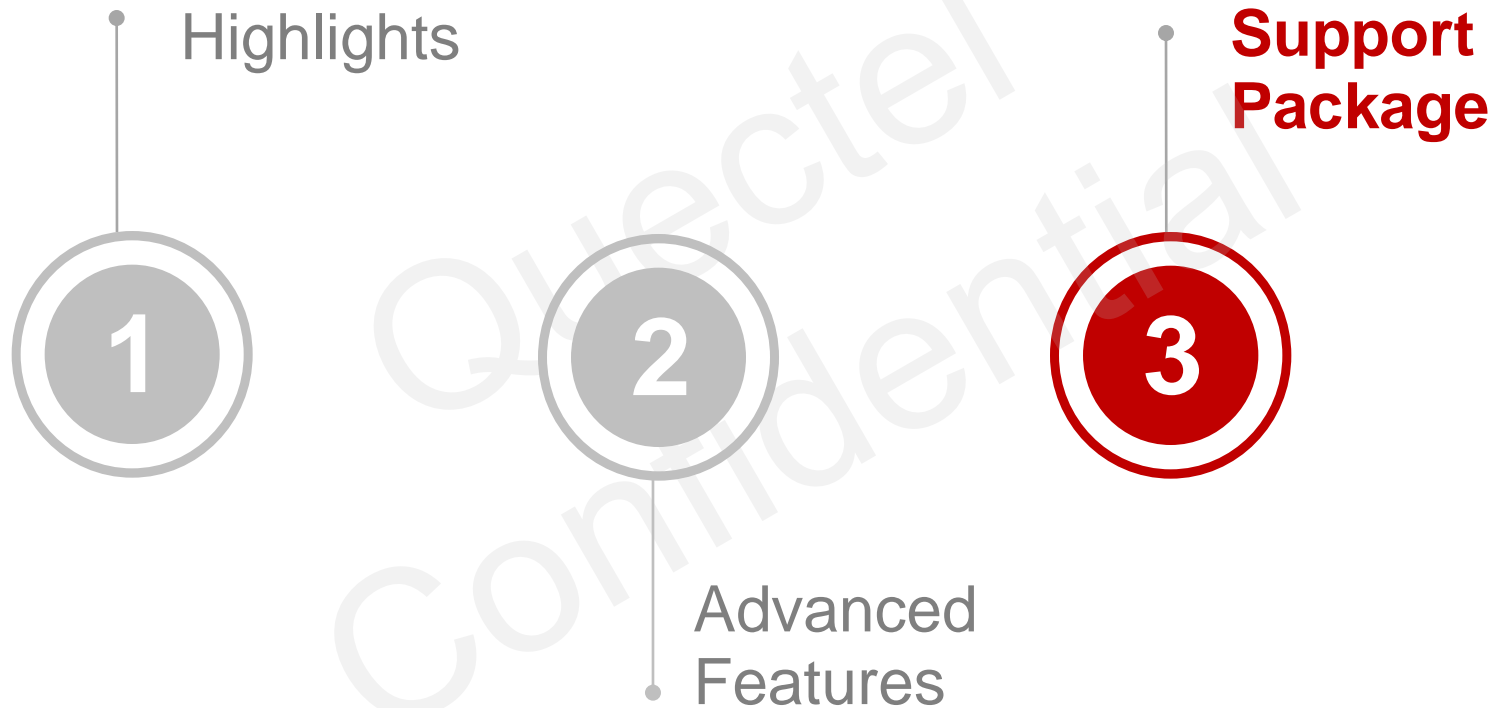
QuecOpen™ is an open source embedded development platform based on Linux system, which is intended to simplify the design and development process for IoT applications.



* Under development

EC2x is compatible with Quectel's UMTS/HSPA+ UC20 module. Compatibility design accommodates both UC20 and EC2x modules on the same PCB footprint.



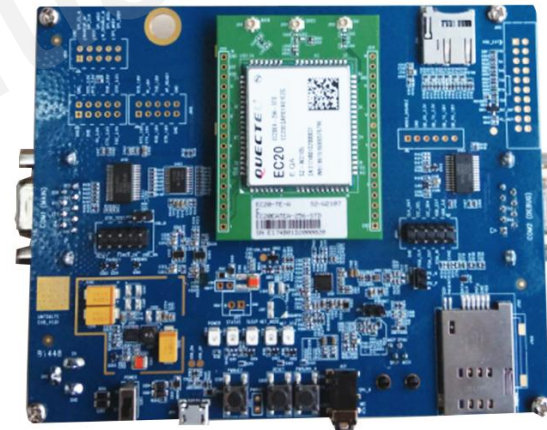


Technical Materials Package

- Hardware & software specification
- Application note package
- Debug tool, download tool, test tool, EVB package, USB drivers
- Approvals & test report package

Development Tool

- Interfaces
 - a) RS-232 interfaces
 - b) USB interface
 - c) Power supply
 - d) Antenna interface
 - e) Handset interface
 - f) Earphone interface
 - g) Test interface
- Features
 - a) Digital or analog audio interface
 - b) Network status LED
 - c) Power key
 - d) Reset key



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Thank you!

December, 2016

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