QUECTEL®
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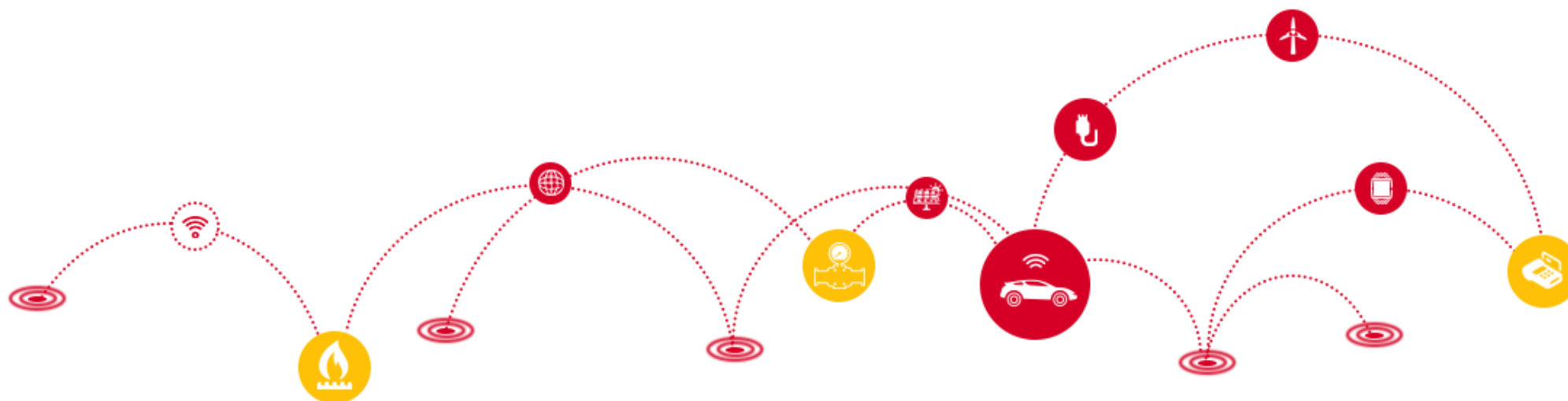
Quectel LTE Standard Module
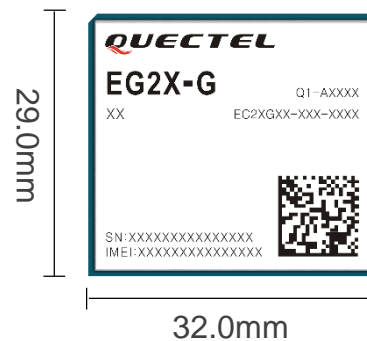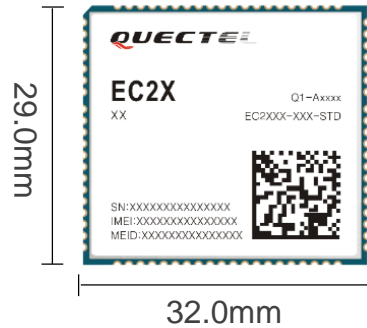## Product Overview

February, 2020

LTE Standard Roadmap

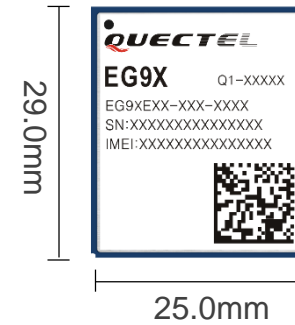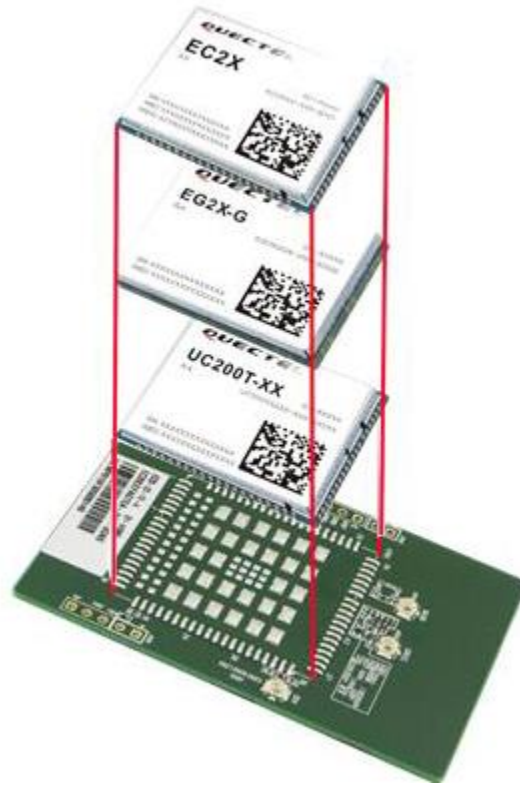Specifications

Technologies

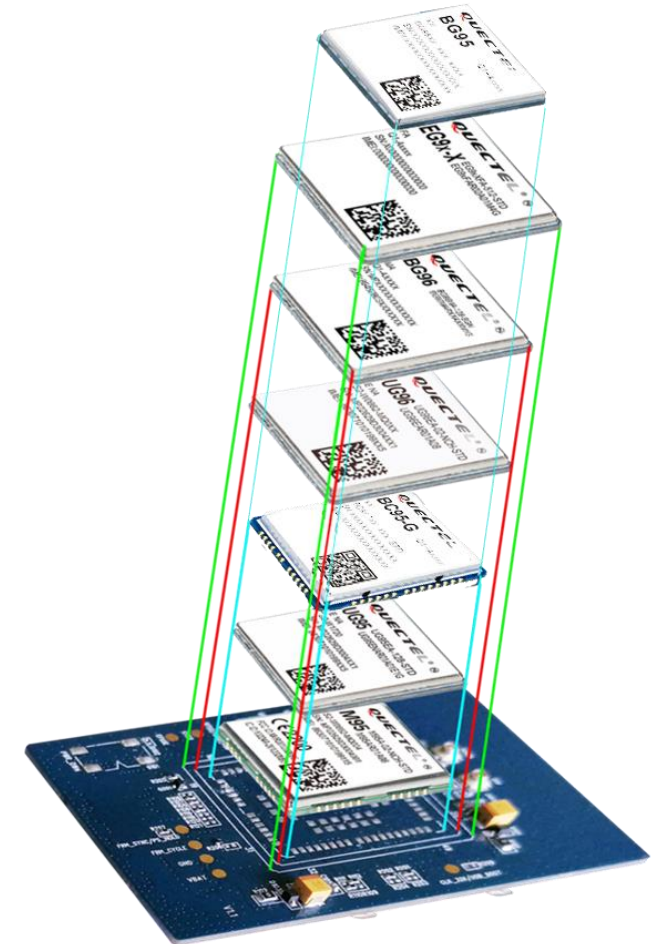Applications

Form Factor of MDM9x07 Platform

EC2x & EG2x-G are compatible with:

- UMTS/HSPA+ module **UC200T**

EG9x are compatible with:

- GSM/GPRS module **M95**
- UMTS/HSPA modules **UG95/UG96**
- LTE Cat NB2 module **BC95-G**
- LTE Cat M1/Cat NB1/EGPRS module **BG96/BG95**

LTE Standard Modules Roadmap

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Product Lifetime > 2025

Cat 4

EC25
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- -E/ -A/ -V/ -J/ -AU/ -AUT/ -AUTL

EC20 R2.1
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- China/ India

EM05
- M.2 Form Factor
- Multi-mode LTE
- -CE/ -E/ -CML

EG95-E
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EC25-EU/ -AF
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- EMEA (-EU)
- North America (-AF)

EG25-G
- Compatible with EC2x/ UC200T
- LGA Form Factor
- Multi-mode LTE
- Global Version

EG95-NA
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

X Series

EC25-MX
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- Mexico

EC25-AFX
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- North America

EG95-EX
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EC25-EUX
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- EMEA

EC25-AUX
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- Latin America/ Australia/ New Zealand

EG95-NAX
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

Cat 1

EC21
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- -E/ -A/ -V/ -J/ -AU/ -AUT/ -KL

EG91-E
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EC21-EU
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- EMEA

EG91-NS/ -NA
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

EG91-NAX/ -VX/ -EX
- Compatible with BG96/ BG95/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America (-NAX/ -VX) EMEA (-EX)

EG21-G `NEW`
- Compatible with EC2x/ UC200T
- LGA Form Factor
- Multi-mode LTE
- Global Version

EC21-AUX
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- Latin America/ Australia/ New Zealand

`Feb. 2020`

EC21-EUX `NEW`
- Compatible with EC2x/ EG2x-G/ UC200T
- Multi-mode LTE
- EMEA

MM/YYYY *Estimated Engineering Sample Dates*

2016	2017	2018	2019/2020

LTE Standard Roadmap
Specifications
Technologies
Applications
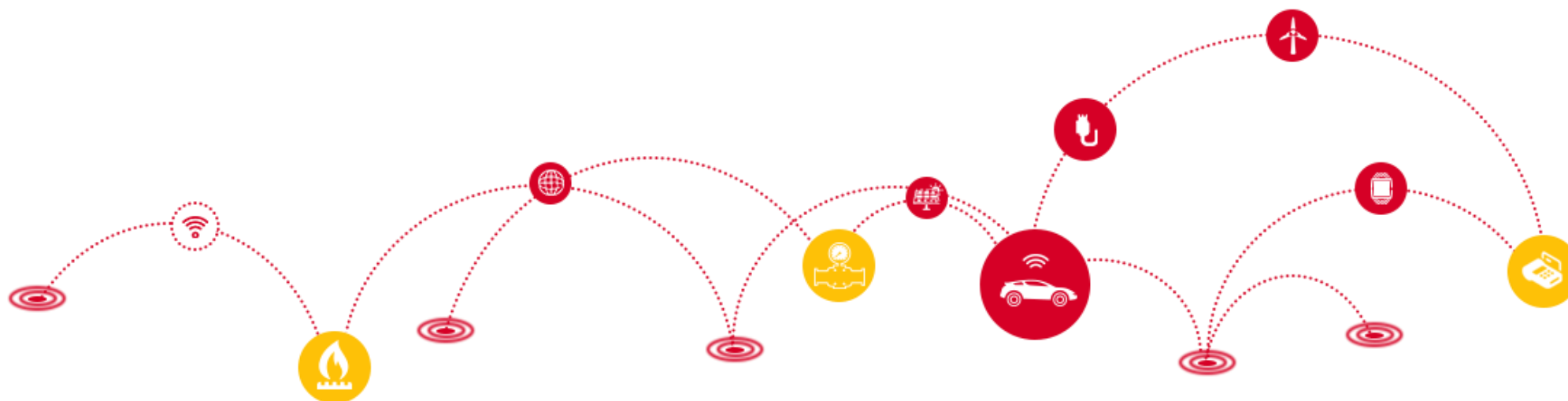
EC25/EC21/EC20 R2.1/EG2x-G Mechanical Dimensions

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Multi-mode LTE Module (MDM9x07)
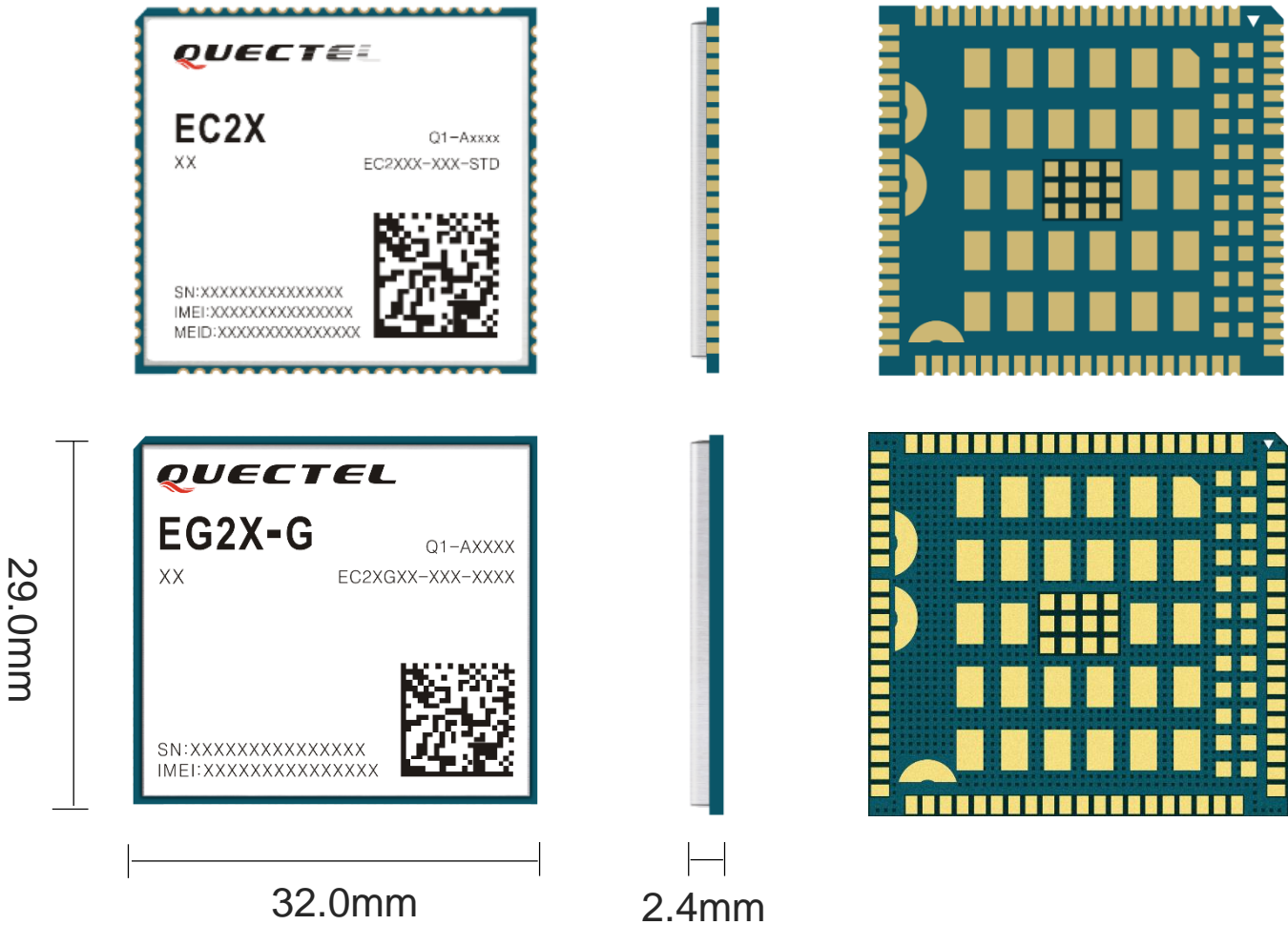
Length: 29.0mm ($\pm$0.15mm)
Width: 32.0mm ($\pm$0.15mm)
Height: 2.4mm ($\pm$0.2mm)
Weight: Approx. 4.9g (EC25/EC21/EG2x-G)
        Approx. 5.3g (EC20 R2.1)

29.0mm

32.0mm

2.4mm

EC25-E/-A/-V/-J/-AUT/-AUTL/-AU/ EC20 R2.1 Specifications

29.0mm × 32.0mm × 2.4mm
150M DL/ 50M UL

■ Multi-mode LTE Cat 4 Module

Variant		EC25-E	EC25-A	EC25-V	EC25-J	EC25-AUT	EC25-AUTL	EC25-AU	EC20-CE R2.1
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B12	B4/ B13	B1/ B3/ B8/ B18/ B19/ B26	B1/ B3/ B5/ B7/ B28	B3/ B7/ B28	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B8
	LTE-TDD	B38/ B40/ B41	\	\	B41	\	\	B40	B34/ B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B5/ B8	B2/ B4/ B5	\	B1/ B6/ B8/ B19	B1/ B5	\	B1/ B2/ B5/ B8	B1/ B8
	TD-SCDMA	\	\	\	\	\	\	\	B34/ B39
EVDO/CDMA		\	\	\	\	\	\	\	BC0
GSM/EDGE		B3/ B8	\	\	\	\	\	Quad-band	B3/ B8
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	\	Optional	Optional
Wi-Fi/BT Interface		Y	Y	Y	Y	Y	Y	Y	Y
Ethernet Interface		Y	Y	Y	Y	Y	Y	Y	Y
Region		EMEA/ Korea/ Thailand/ India	North America	Verizon	Japan	Australia	Australia	Latin America/ Australia/ New Zealand	China/ India
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ SKT/ Telefónica/ LGU+* **Regulatory:** GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers/ Telus **Regulatory:** FCC/ IC/ PTCRB **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** NTT DOCOMO/ SoftBank/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** RCM **Others:** WHQL	**Regulatory:** RCM **Others:** WHQL	**Carrier:** Telstra* **Regulatory:** GCF/ FCC/ Anatel/ NCC/ RCM **Others:** WHQL	**Regulatory:** SRRC/ NAL/ CCC **Others:** WHQL

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

# EC25-E/-A/-V/-J/-AU Mini PCIe/ EC20 R2.1 Mini PCIe Specifications

30.0mm × 51.0mm × 4.9mm
150M DL/ 50M UL

■ Multi-mode LTE Cat 4 Module

Variant		EC25-E Mini PCIe	EC25-A Mini PCIe	EC25-V Mini PCIe	EC25-J Mini PCIe	EC25-AU Mini PCIe	EC20-CE R2.1 Mini PCIe
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B12	B4/ B13	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B8
	LTE-TDD	B38/ B40/ B41	\	\	B41	B40	B34/ B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B5/ B8	B2/ B4/ B5	\	B1/ B6/ B8/ B19	B1/ B2/ B5/ B8	B1/ B8
	TD-SCDMA	\	\	\	\	\	B34/ B39
EVDO/CDMA		\	\	\	\	\	BC0
GSM/EDGE		B3/ B8	\	\	\	Quad-band	B3/ B8
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional
Region		EMEA/ Korea/ Thailand/ India	North America	Verizon	Japan	Latin America/ Australia/ New Zealand	China/ India
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ SKT/ Telefónica/ LGU+* **Regulatory:** GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers/ Telus **Regulatory:** FCC/ IC/ PTCRB **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** NTT DOCOMO/ SoftBank/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Carrier:** Telstra* **Regulatory:** GCF/ FCC/ Anatel/ NCC/ RCM **Others:** WHQL	**Regulatory:** SRRC/ NAL/ CCC **Others:** WHQL

"" means under development.*
① means Rx-diversity is not supported.

EC25-AF/-AFX/-EU/-EUX/-MX/-AUX/ EG25-G Specifications
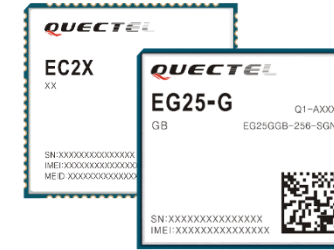
29.0mm × 32.0mm × 2.4mm
150M DL/ 50M UL

■ Multi-mode LTE Cat 4 Module

Variant		EC25-AF	EC25-AFX	EC25-EU	EC25-EUX	EC25-MX	EC25-AUX	EG25-G
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B5/ B7/ B28/ B66	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	B38/ B40/ B41	B38/ B40/ B41	\	B40	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B1/ B8	B1/ B8	B2/ B4/ B5	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\
GSM/EDGE		\	\	B3/ B8	B3/ B8	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	\	Optional	Optional
Wi-Fi/BT Interface		Y	\	Y	\	\	\	Y
Ethernet Interface		Y	Y	Y	Y	Y	Y	Y
Region		North America FirstNet	North America FirstNet	EMEA/ Thailand/ India	EMEA	Mexico	Latin America/ Australia/ New Zealand	Global
Certification		**Carrier:** Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Deutsche Telekom/ British Telecom **Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF/ CE/ RCM/ NCC **Others:** WHQL	**Regulatory:** FCC/ PTCRB/ IFETEL **Others:** WHQL	**Regulatory:** CE/ Anatel/ NCC/ RCM **Others:** WHQL	**Carrier:** Deutsche Telekom/ Verizon/ AT&T/ Sprint/ U.S. Cellular/ Telus/ T-Mobile*/ Rogers* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA/ ICASA/ FAC* **Others:** WHQL

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

EC25-AF/-AFX/-EU/-EUX/-MX/-AUX Mini PCIe/ EG25-G Mini PCIe Specifications

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51.0mm × 30.0mm × 4.9mm
150M DL/ 50M UL

■ Multi-mode LTE Cat 4 Module

Variant		EC25-AF Mini PCIe	EC25-AFX Mini PCIe	EC25-EU Mini PCIe	EC25-EUX Mini PCIe	EC25-MX Mini PCIe	EC25-AUX Mini PCIe	EG25-G Mini PCIe①
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B5/ B7/ B28/ B66	B1/ B2②/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	B38/ B40/ B41	B38/ B40/ B41	\	B40	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B1/ B8	B1/ B8	B2/ B4/ B5	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\
GSM/EDGE		\	\	B3/ B8	B3/ B8	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	\	Optional	Optional
Region		North America FirstNet	North America FirstNet	EMEA/ Thailand/ India	EMEA	Mexico	Latin America/ Australia/ New Zealand	Global
Certification		**Carrier:** Verizon/ AT&T/ T-Mobile/ Rogers/Telus **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Deutsche Telekom* **Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF/ CE/ RCM/ NCC **Others:** WHQL	**Regulatory:** FCC/ PTCRB/ IFETEL **Others:** WHQL	**Regulatory:** CE/ Anatel/ NCC/ RCM **Others:** WHQL	**Carrier:** Deutsche Telekom/ Verizon/ AT&T/ U.S. Cellular/ Telus/ T-Mobile*/ Sprint*/ Rogers* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ IMDA/ ICASA/ FAC*/ NBTC* **Others:** WHQL

① means there are two types of EG25-G Mini PCIe, with or without (U)SIM card connector.
② means Rx-diversity is not supported.
"*" means under development.

EC21/EG21-G Specifications

■ Multi-mode LTE Cat 1 Module

29.0mm × 32.0mm × 2.4mm
10M DL/ 5M UL

Variant		EC21-E	EC21-EU	EC21-EUX	EC21-A	EC21-V	EC21-AUT	EC21-AU	EC21-KL	EC21-J	EC21-AUX	EG21-G 2019, New
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	\	\	\	\	B40	\	\	B40	B38/ B39/ B40/ B41
UMTS		B1/ B5/ B8	B1/B8	B1/B8	B2/ B4/ B5	\	B1/ B5	B1/ B2/ B5/ B8	\	\	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
GSM/EDGE		B3/ B8	B3/B8	B3/B8	\	\	\	Quad-band	\	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional	Optional	\	\	Optional	Optional
Wi-Fi/BT Interface		Y	Y	\	Y	Y	Y	Y	Y	Y	\	\
Ethernet Interface		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region		EMEA/ Thailand/ India	EMEA/ Thailand/ India	EMEA/ Thailand/ India	North America	Verizon	Australia	Latin America/ Australia/ New Zealand	Korea	Japan	Latin America/ Australia/ New Zealand	Global
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica* **Regulatory:** GCF/ CE/ RCM/ FAC **Others:** WHQL	**Carrier:** Deutsche Telekom **Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM* **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus **Regulatory:** FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** Telstra **Regulatory:** GCF/RCM **Others:** WHQL	**Carrier:** Telstra **Regulatory:** FCC/ IC/ Anatel/ NCC/ JATE/ TELEC/ RCM **Others:** WHQL	**Carrier:** KT/ SKT **Regulatory:** KC **Others:** WHQL	**Carrier:** NTT DOCOMO/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** CE/ FCC/ Anatel/ NCC/ RCM **Others:** WHQL	**Carrier:** Deutsche Telekom/ Sprint/ Verizon*/ AT&T*/ T-Mobile* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA **Others:** WHQL

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

EC21 Mini PCIe/ EG21-G Mini PCIe Specifications

30.0mm × 51.0mm × 4.9mm
10M DL/ 5M UL

■ Multi-mode LTE Cat 1 Module

Variant		EC21-E Mini PCIe	EC21-EU Mini PCIe	EC21-EUX Mini PCIe	EC21-A Mini PCIe	EC21-V Mini PCIe	EC21-AUT Mini PCIe	EC21-AU Mini PCIe	EC21-KL Mini PCIe	EC21-J Mini PCIe	EC21-AUX Mini PCIe	EG21-G Mini PCIe 2019, New
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B2[1]/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2[1]/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	\	\	\	\	B40	\	\	B40	B38/ B39/ B40/ B41
UMTS		B1/ B5/ B8	B1/ B8	B1/ B8	B2/ B4/ B5	\	B1/ B5	B1/ B2/ B5/ B8	\	\	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
GSM/EDGE		B3/ B8	B3/B8	B3/B8	\	\	\	Quad-band	\	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional	Optional	\	\	Optional	Optional
Region		EMEA/ Korea/ Thailand/ India	EMEA/ Thailand/ India	EMEA/ Thailand/ India	North America	Verizon	Australia	Latin America/ Australia/ New Zealand	Korea	Japan	Latin America/ Australia/ New Zealand	Global
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica* **Regulatory:** GCF/ CE/ RCM/ FAC **Others:** WHQL	**Carrier:** Deutsche Telekom* **Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM* **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers/ Telus **Regulatory:** FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** Telstra **Regulatory:** GCF/ RCM **Others:** WHQL	**Carrier:** Telstra **Regulatory:** FCC/ IC/ Anatel/ NCC/ JATE/ TELEC/ RCM **Others:** WHQL	**Carrier:** KT/ SKT **Regulatory:** KC **Others:** WHQL	**Carrier:** NTT DOCOMO/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** CE/ FCC/ Anatel/ NCC/ RCM **Others:** WHQL	**Carrier:** Deutsche Telekom/ Verizon*/ AT&T*/ T-Mobile*/ Sprint* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ NCC/ JATE/ TELEC/ RCM/ ICASA **Others:** WHQL

"" means under development.*
① means Rx-diversity is not supported.

EC25-AF Timeline

2019									2020		
Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.

Project Stage

EC25-AF MP

Carrier Certification Schedule

Verizon/ T-Mobile/ AT&T/ U.S. Cellular/ Rogers/ Telus　　Completed

**AT&T
(For FirstNet)**

Start　　　　　　　　　Complete (Planned)

Regulatory Certifications

GCF/ FCC/ IC/ PTCRB　　Completed

Others

WHQL　　Completed

EC25-AFX Timeline

2019							2020				
Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
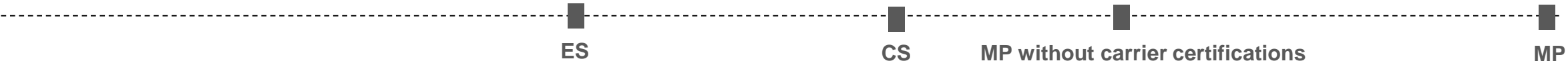
Project Schedule

ES   **CS**   **MP without carrier certifications**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Verizon
Start   **Complete (Planned)**

AT&T (With FirstNet)

T-Mobile/
U.S. Cellular
TBD   TBD

Regulatory Certifications

GCF/ FCC/ PTCRB/ IC   **Completed**

Others

WHQL   **Completed**

EC25-EUX Timeline

2019								2020			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
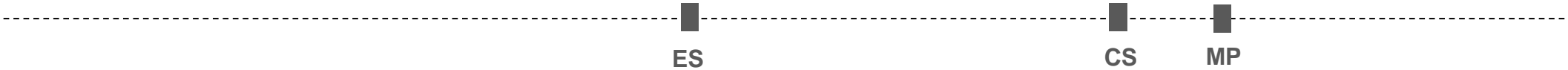
Project Schedule

ES   CS   MP

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. For certification status, please refer to the "certification schedule".

Regulatory Certification

GCF/ CE/ NCC/ RCM

Others
WHQL

EC21-EUX Timeline

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2020									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

Project Schedule

ES   CS   MP

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. For certification status, please refer to the "certification schedule".

Regulatory Certification Schedule

GCF

Start (Planned)   **Complete (Planned)**

CE/ RCM

Others

WHQL

EC25-MX Timeline

2019								2020			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Project Schedule
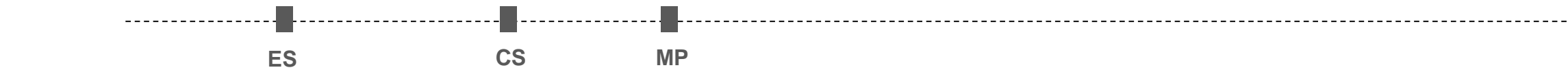
```
                                              ES                            CS    MP
```

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. For certification status, please refer to the "certification schedule".
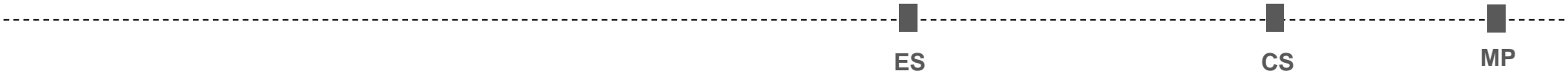
Regulatory Certifications

FCC/ PTCRB[1]/ IFETEL

Others

WHQL

[1] The PTCRB is not full certificate, and is only for authentication and ciphering cases.

EC25-AUX Timeline

	2019							2020
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.

Project Schedule

ES   CS   MP

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. For certification status, please refer to the "certification schedule".

Regulatory Certifications

CE/ Anatel/ NCC/ RCM

Others

WHQL

EC21-AUX Timeline

2019								2020
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.

Project Schedule

```
                                        ES          CS        MP
```

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. For certification status, please refer to the "certification schedule".

Regulatory Certifications
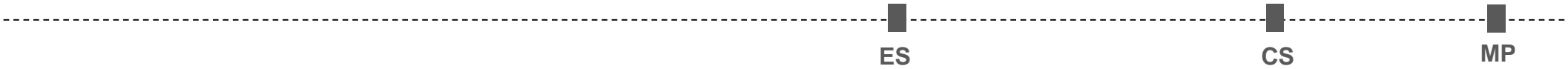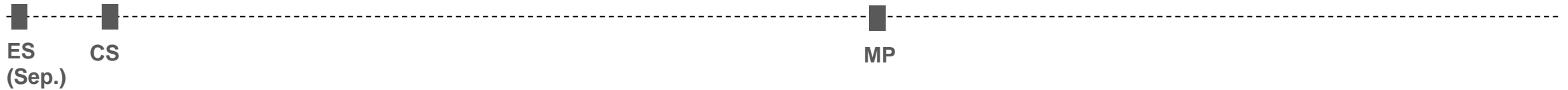
CE/ FCC/ Anatel/ NCC/ RCM

Others

WHQL

EG25-G Timeline

2018	2019											
Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Schedule

ES (Sep.)   **CS**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Deutsche Telekom/ Verizon/ AT&T/ U.S. Cellular/ Sprint/ Telus   Completed

T-Mobile/ Rogers   TBD — — — — TBD

Regulatory Certification Schedule

GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA/ ICASA   Completed
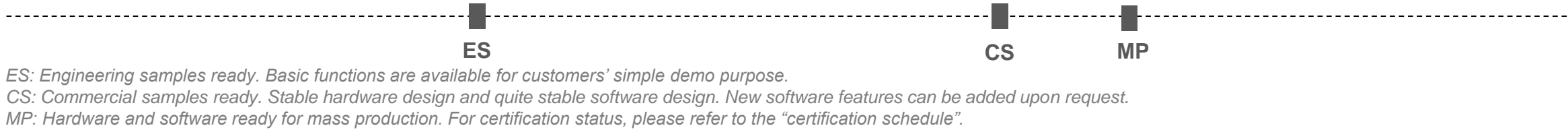
FAC   TBD — — — — TBD

Others

WHQL   Completed

EG21-G Timeline

2019					2020						
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.

Project Schedule

ES   **CS**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Deutsche Telekom/ Sprint   Completed

Verizon

AT&T   **Start**   **Complete (planned)**

T-Mobile

Regulatory Certifications

GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA   Completed

NBTC/ FAC   **TBD**   **TBD**

Others

WHQL   Completed

EG95/EG91 Mechanical Dimensions

Multi-mode LTE Module (MDM9x07)
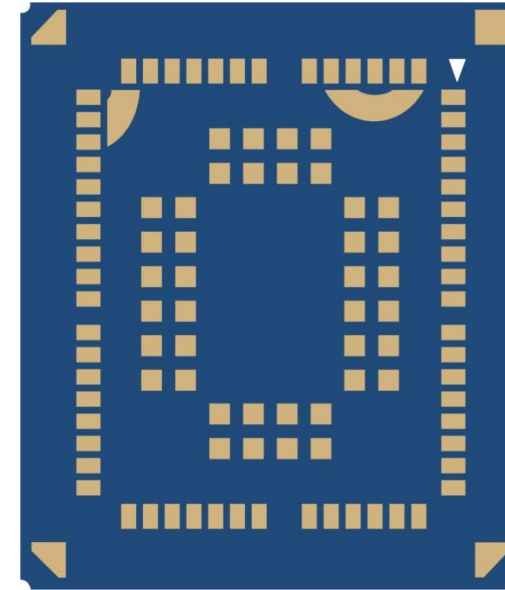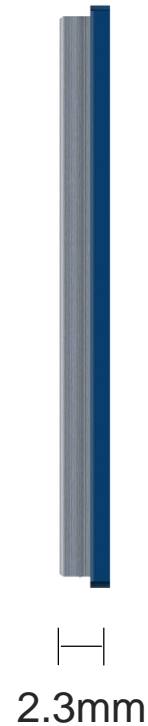
29.0mm

25.0mm

2.3mm

Length: 29.0mm ($\pm$0.15mm)
Width: 25.0mm ($\pm$0.15mm)
Height: 2.3mm ($\pm$0.2mm)
Weight: Approx. 3.8g

EG95/EG91 Specifications

■ Multi-mode LTE Cat 4/Cat 1 Modules

29.0mm × 25.0mm × 2.3mm
150M DL/ 50M UL (EG95)
10M DL/ 5M UL (EG91)

Variant		EG95-E	EG91-E	EG95-EX 2019, New	EG91-EX 2019, New	EG95-NA	EG91-NA	EG95-NAX 2019, New	EG91-NAX 2019, New	EG91-NS 2019, New	EG91-VX 2019, New
Category		Cat 4	Cat 1	Cat 4	Cat 1	Cat 4	Cat 1	Cat 4	Cat 1	Cat 1	Cat 1
LTE	LTE-FDD	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28	B1/ B3/ B7/ B8/ B20/ B28	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13/ B25/ B26	B2/ B4/ B5/ B12/ B13/ B25/ B26	B2/ B4/ B5/ B12/ B13/ B25/ B26	B4/ B13
	LTE-TDD	\	\	\	\	\	\	\	\	\	\
UMTS	WCDMA	B1/ B8	B1/ B8	B1/ B8	B1/ B8	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	\
	TD-SCDMA	\	\	\	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\	\	\	\
GSM/EDGE		B3/ B8	B3/ B8	B3/B8	B3/B8	\	\	\	\	\	\
GNSS		\	\	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Wi-Fi/BT Interface		\	\	\	\	\	\	\	\	\	\
Ethernet Interface		\	\	\	\	\	\	\	\	\	\
Region		EMEA	EMEA	EMEA	EMEA	North America	North America	North America	North America	North America	North America
Certification		Regulatory: GCF/ CE/ RCM/ FAC Others: WHQL	Carrier: Deutsche Telekom Regulatory: GCF/ CE/ RCM/ Anatel/ FAC Others: WHQL	Regulatory: GCF/ CE/ RCM Others: WHQL	Regulatory: GCF/ CE/ RCM Others: WHQL	Carrier: Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: Verizon*/ AT&T*/ T-Mobile*/ Sprint*/ U.S. Cellular* Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: Verizon*/ AT&T*/ T-Mobile*/ Sprint*/ U.S. Cellular* Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: Verizon/ AT&T/ Sprint/ T-Mobile* Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: Verizon* Regulatory: GCF/ FCC Others: WHQL

EG91-E/EG95-E Timeline

2019								2020		
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.

Project Stage

EG91-E/EG95-E MP

Carrier Certification

Deutsche Telekom (EG91-E)

Regulatory Certifications

GCF/ CE/ RCM/ Anatel/ FAC

GCF CE Anatel

Others

WHQL

EG91-NA/EG95-NA Timeline

2019											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Stage

EG91-NA/EG95-NA `MP`

Carrier Certifications

Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus
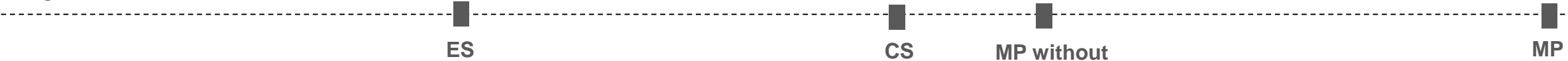
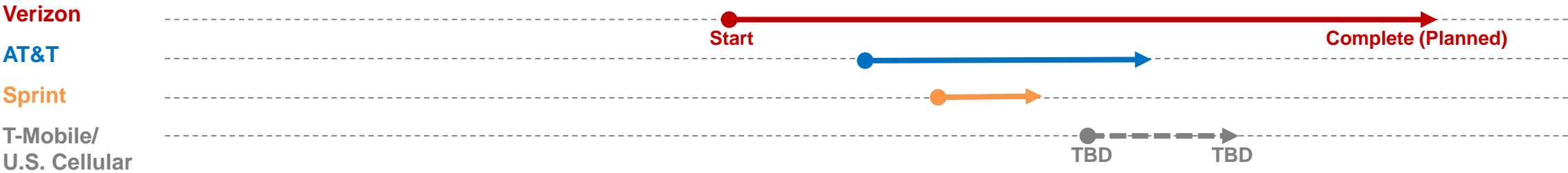## Regulatory Certifications

GCF/ FCC/ PTCRB/ IC

Others

WHQL

EG91-NAX Timeline

2019						2020					
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.

Project Schedule

ES   **CS**   **MP without carrier certifications**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Verizon   **Start**   **Complete (Planned)**

AT&T

Sprint

T-Mobile/ U.S. Cellular   **TBD**   **TBD**

Regulatory Certifications

GCF/ FCC/ PTCRB/ IC   **Completed**

Others

WHQL   **Completed**

EG95-NAX Timeline

2019						2020					
Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
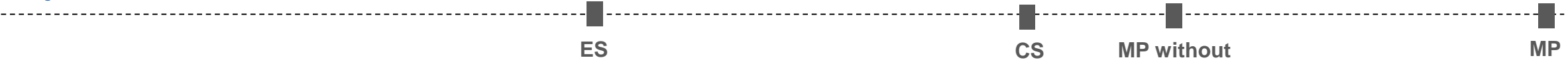
Project Schedule

ES   **CS**   **MP without carrier certifications**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Verizon   Start   Complete (Planned)

AT&T

Sprint

T-Mobile/ U.S. Cellular   TBD   TBD

Regulatory Certifications

GCF/ FCC/ PTCRB/ IC   **Completed**

Others

WHQL   **Completed**

EG95-EX Timeline

2019								2020			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Project Schedule

```
-----------------------------[ES]----------[CS]----------[MP]-----------------
                              ES            CS            MP
```

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. For certification status, please refer to the "certification schedule".

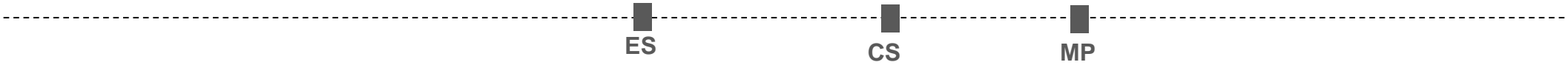## Regulatory Certifications

GCF/ CE/ RCM

Others

WHQL

EG91-EX Timeline

2019								2020			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Project Schedule

ES   CS   MP

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. For certification status, please refer to the "certification schedule".

Regulatory Certifications

GCF/ CE/ RCM

GCF   CE

Others

WHQL

EG91-NS Timeline

	2019											2020
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.

Project Schedule

ES   **CS**   **MP without carrier certifications**   **MP**

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Verizon/ AT&T/ Sprint   **Completed**

T-Mobile

TBD   **TBD**

Regulatory Certifications

GCF/ FCC/ PTCRB/ IC   **Completed**

Others

WHQL   **Completed**

EG91-VX Timeline

2019					2020			
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
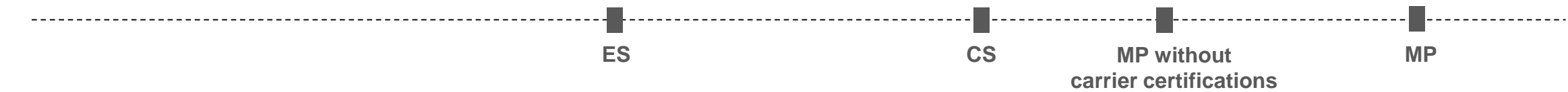
Project Schedule

ES   CS   MP without carrier certifications   MP

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. For certification status, please refer to the "certification schedule".

Carrier Certification Schedule

Verizon

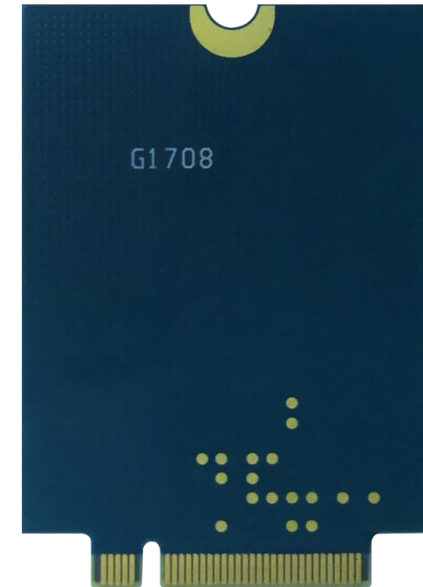Start   →   **Complete (Planned)**

Regulatory Certification

GCF/ FCC   **Completed**

Others

WHQL   **Completed**

EM05 Mechanical Dimensions

Multi-mode LTE Module (MDM9x07)

42.0mm

30.0mm

2.3mm

G1708

EM05-XX
XX

QUECTEL

Q1-XXXXX
EM05XXXX-XXX-XXXX

SN:XXXXXXXXXXXXXXX
IMEI:XXXXXXXXXXXXXX

Length: 42.0mm ($\pm$0.15mm)
Width: 30.0mm ($\pm$0.15mm)
Height: 2.3mm ($\pm$0.2mm)
Weight: Approx. 6.0g

EM05 Specifications

42mm × 30mm × 2.3mm
**150M DL/ 50M UL**

■ Multi-mode LTE Cat 4 Module

Variant		EM05-CE	EM05-E	EM05-CML
LTE	LTE-FDD	B1/ B3/ B5/ B8	B1/ B3/ B7/ B8/ B20/ B28	\
	LTE-TDD	B38/ B39/ B40/ B41	B38/ B41	B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B8	B1/ B8	\
	TD-SCDMA	\	\	\
EVDO/CDMA		BC0	\	\
GNSS		Optional	Optional	Optional
Wi-Fi/BT Interface		\	\	\
Ethernet Interface		\	\	\
Region		China/ Thailand/ India	Europe/ Australia/ New Zealand	China (CMCC)
Certification		Regulatory: SRRC/ NAL/ CCC	Regulatory: CE/ RCM	Regulatory: SRRC/ NAL/ CCC

LTE Standard Roadmap
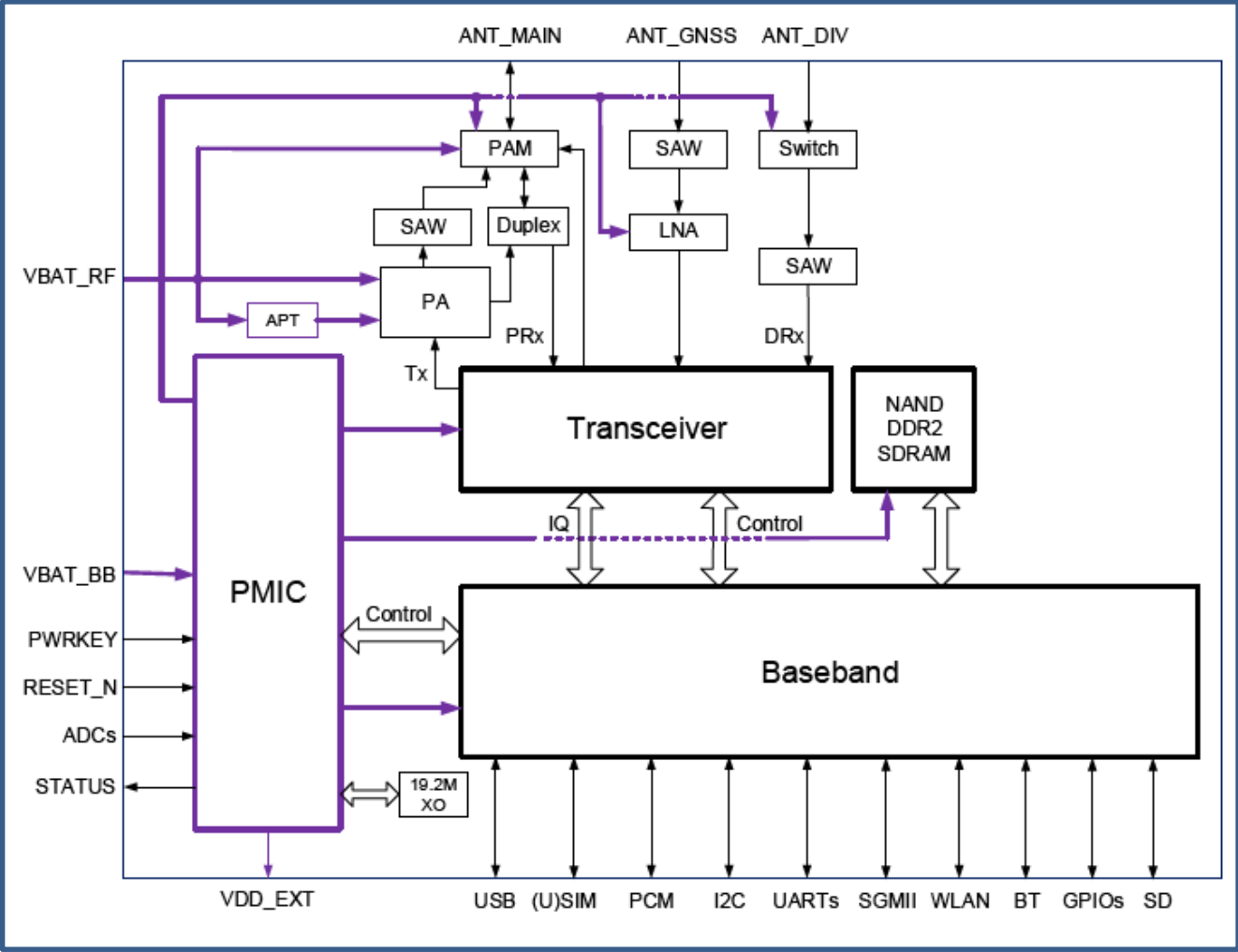# Specifications
Technologies
Applications
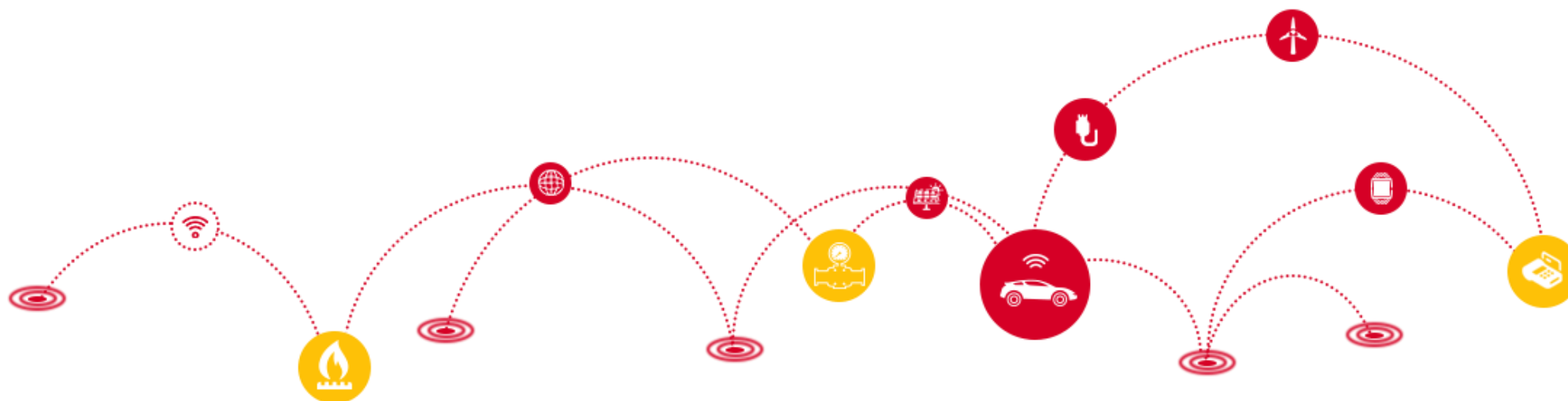
Hardware Architecture

The block diagram is for reference only and varies among different modules.

Software Advantages

USB Serial Driver

- Windows 7/8/8.1/10
- Linux 2.6~5.4
- Android 4.x/5.x/6.x/7.x/8.x/9.x

GNSS & RIL & NDIS & MBIM & GobiNet & QMI_WWAN Drivers

- GNSS Driver:
  Android 4.x/5.x/6.x/7.x/8.x/9.x
- RIL Driver:
  Android 4.x/5.x/6.x/7.x/8.x/9.x
- NDIS Driver:
  Windows 7/8/8.1/10
- MBIM Driver:
  Windows 8/8.1/10, Linux 3.18~5.4
- GobiNet Driver:
  Linux 2.6~5.4
- QMI_WWAN Driver:
  Linux 3.4~5.4

Quality Guarantee

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

Flexible Applications

- (U)SIM card detection
- DTMF

Special Features

- QuecOpen® ①
- QuecLocator®
- LwM2M
- eMBMs
- Secure boot*

Enhanced AT Commands

- 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)

"" means under development.*

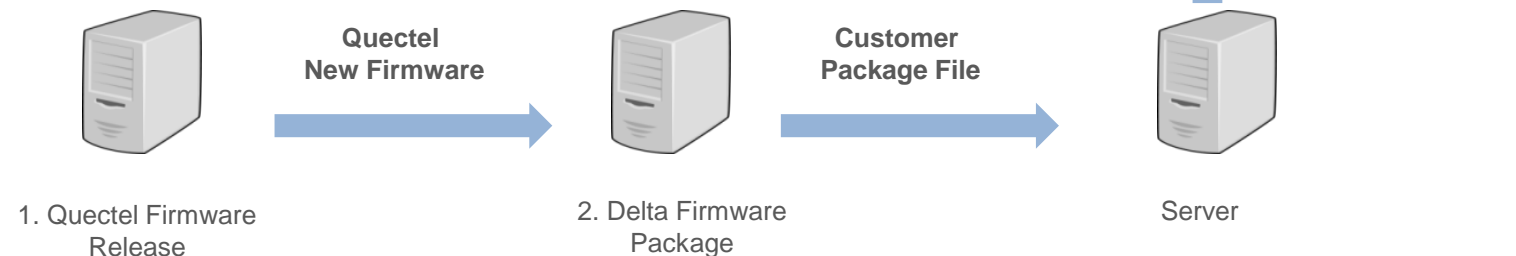*① means QuecOpen® function is optional.*

DFOTA

DFOTA refers to Delta Firmware Upgrade Over-The-Air, which enables customers to upgrade firmware wirelessly.

In DFOTA, a delta firmware package, which only contains the differences between the source and the target firmware versions, occupies small memory. Thus the firmware can be upgraded quickly over LTE/WCDMA/GSM/GPRS networks, eliminating the need for users to bring the device to a service facility.

Firmware Upgrade Process via DFOTA

- Get Delta Firmware Package
- Put Delta Package on Server
- Execute **AT+QFOTADL** Command
- Download and Upgrade Firmware Automatically
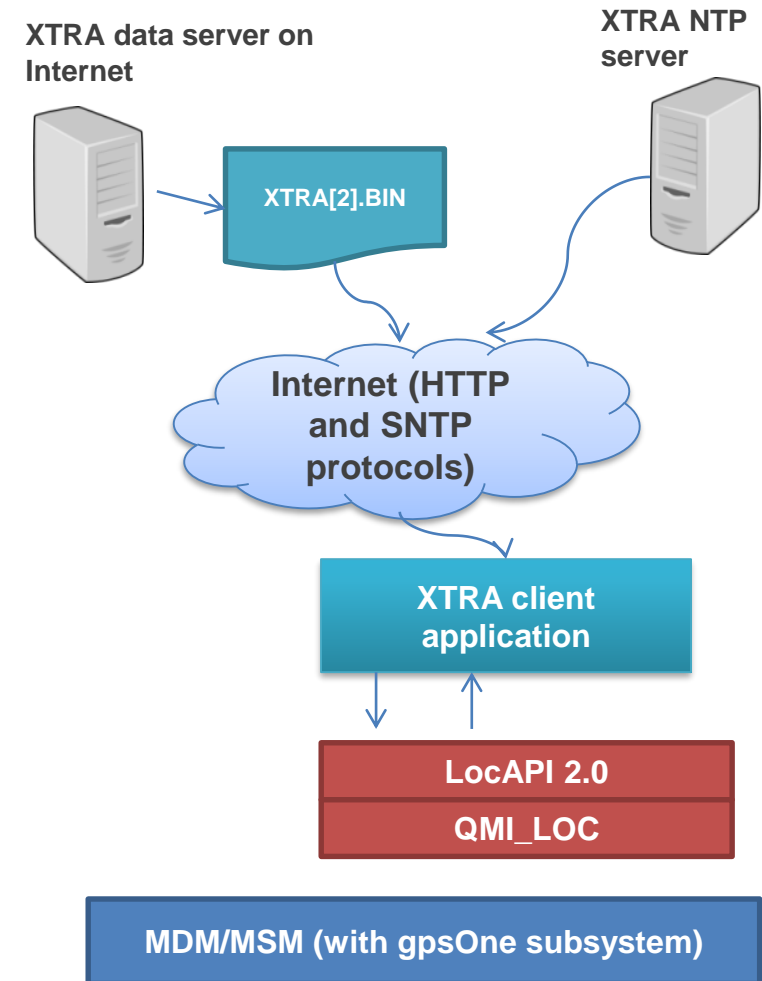
Terminal Device

Quectel LTE Module — Ext. MCU

4. Upgrade

Ext. Memory

3. Download

LTE/WCDMA/GSM/GPRS (FTP, HTTP(S), TCP, UDP)

Quectel New Firmware

Customer Package File

1. Quectel Firmware Release

2. Delta Firmware Package

Server

Qualcomm gpsOne Gen8

QUECTEL®
Build a Smarter World

gpsOneXTRA Assistance Technology

Qualcomm's new gpsOneXTRA Assistance technology provides enhanced operation by enabling users to download a small assistance data file through a brief Internet access session.

This technology delivers more accurate positioning with greater sensitivity than otherwise possible with standalone GPS receivers, especially in challenging areas such as indoors and in dense urban canyons.
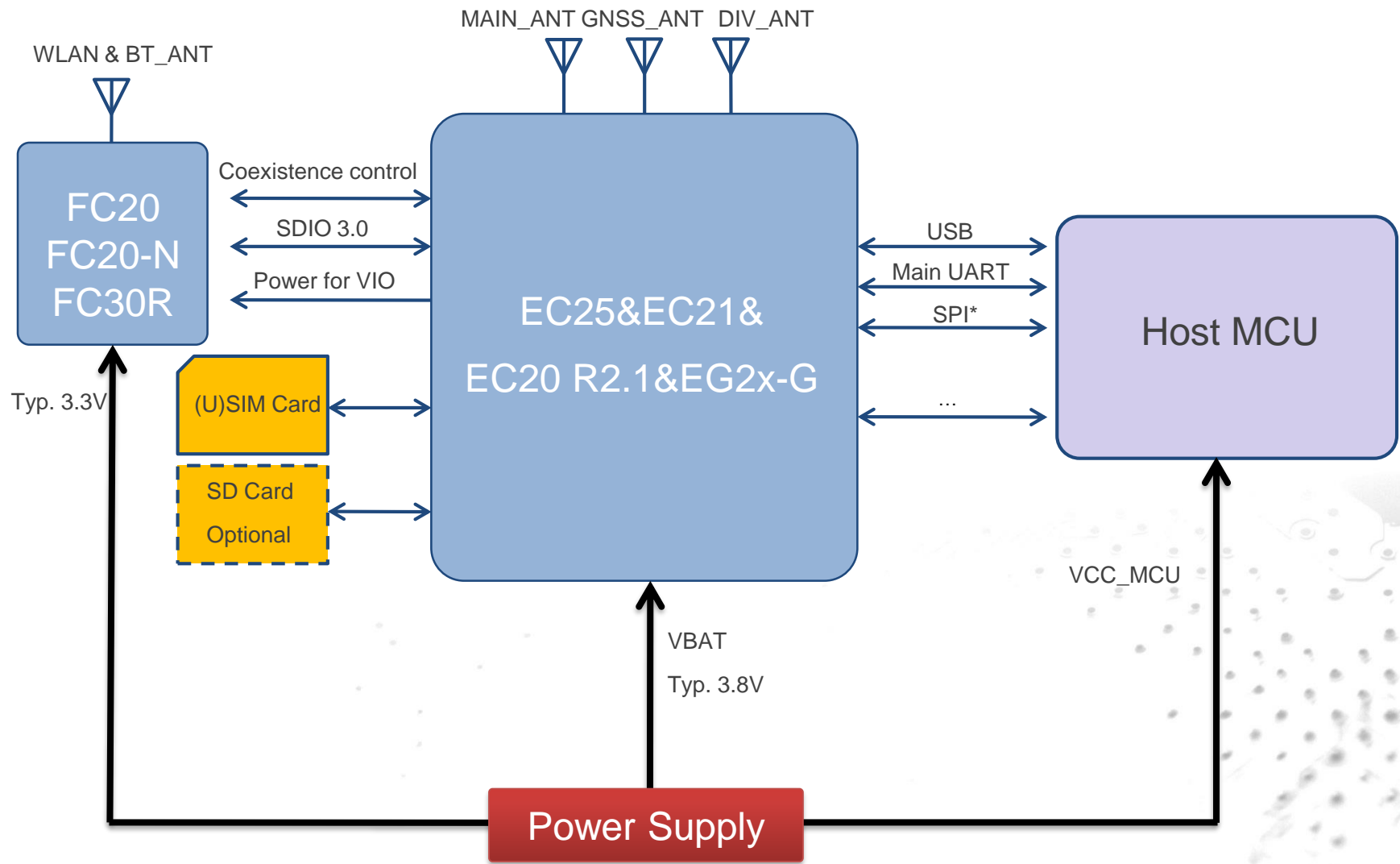
XTRA data server on Internet

XTRA NTP server

XTRA[2].BIN

Internet (HTTP and SNTP protocols)

XTRA client application

LocAPI 2.0

QMI_LOC

MDM/MSM (with gpsOne subsystem)

GNSS Performance of EC2x/EG9x/EG2x-G/EM05

QUECTEL®
Build a Smarter World

Module			EC25	EC21	EC20 R2.1	EG91	EG95	EG25-G	EG21-G	EM05
GNSS			GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS
Sensitivity (GNSS)	Cold start		-146dBm	-146dBm	-146dBm	-146dBm	-146dBm	-146dBm	-146dBm	-146dBm
	Reacquisition		-158dBm	-158dBm	-158dBm	-157dBm	-157dBm	-156dBm	-157dBm	-157dBm
	Tracking		-157dBm	-157dBm	-157dBm	-157dBm	-157dBm	-157dBm	-157dBm	-157dBm
TTFF (GNSS)	Cold start @open sky	Autonomous	35s	35s	35s	35s	35s	35s	35s	35s
		XTRA enabled	18s	18s	18s	12s	12s	15s	12s	20s
	Warm start @open sky	Autonomous	26s	26s	26s	26s	26s	28s	28s	28s
		XTRA enabled	2.2s	2.2s	2.2s	3.7s	3.8s	3s	2.2s	3.6s
	Hot start @open sky	Autonomous	2s	2s	2s	2s	2s	2s	2s	2s
		XTRA enabled	1.5s	1.5s	1.5s	3.4s	3.2s	1.6s	1.6s	1.8s
SVs	Total number of SVs available		55	55	55	55	55	55	55	55
Accuracy (GNSS)	CEP-50		<2.5m	<2.5m	<2.5m	<2.5m	<2.5m	<2.5m	<2.5m	<2.5m

NOTE: GNSS function is supported only on selected EC2x/EG9x/EG2x-G/EM05 models.
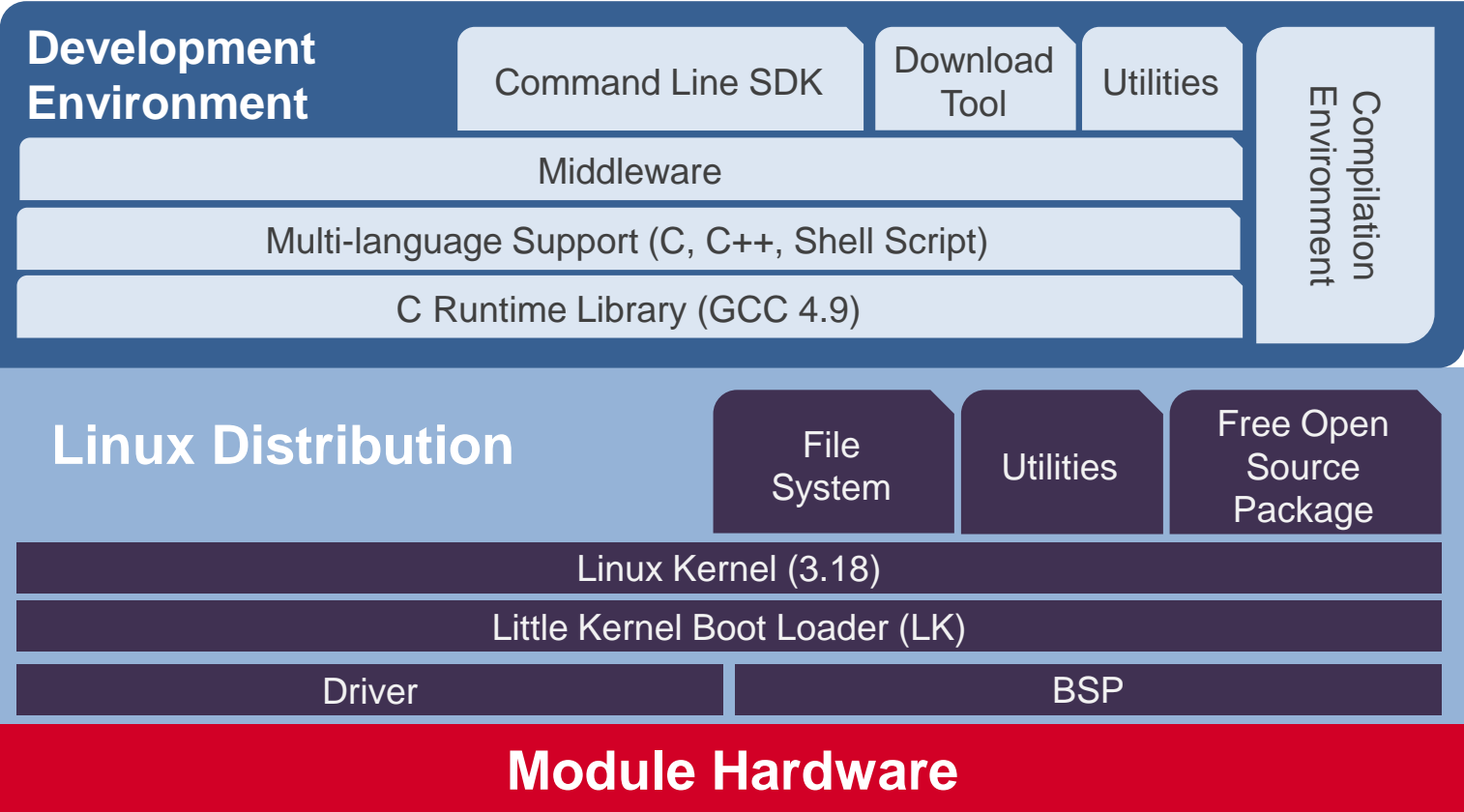
LTE + Wi-Fi Solution

WLAN & BT_ANT

MAIN_ANT GNSS_ANT DIV_ANT

FC20
FC20-N
FC30R

Coexistence control

SDIO 3.0

Power for VIO

Typ. 3.3V

(U)SIM Card

SD Card

Optional

EC25&EC21&
EC20 R2.1&EG2x-G

USB

Main UART

SPI*

...

Host MCU

VCC_MCU

VBAT

Typ. 3.8V

Power Supply

"" means under development.*

Wi-Fi Module Features

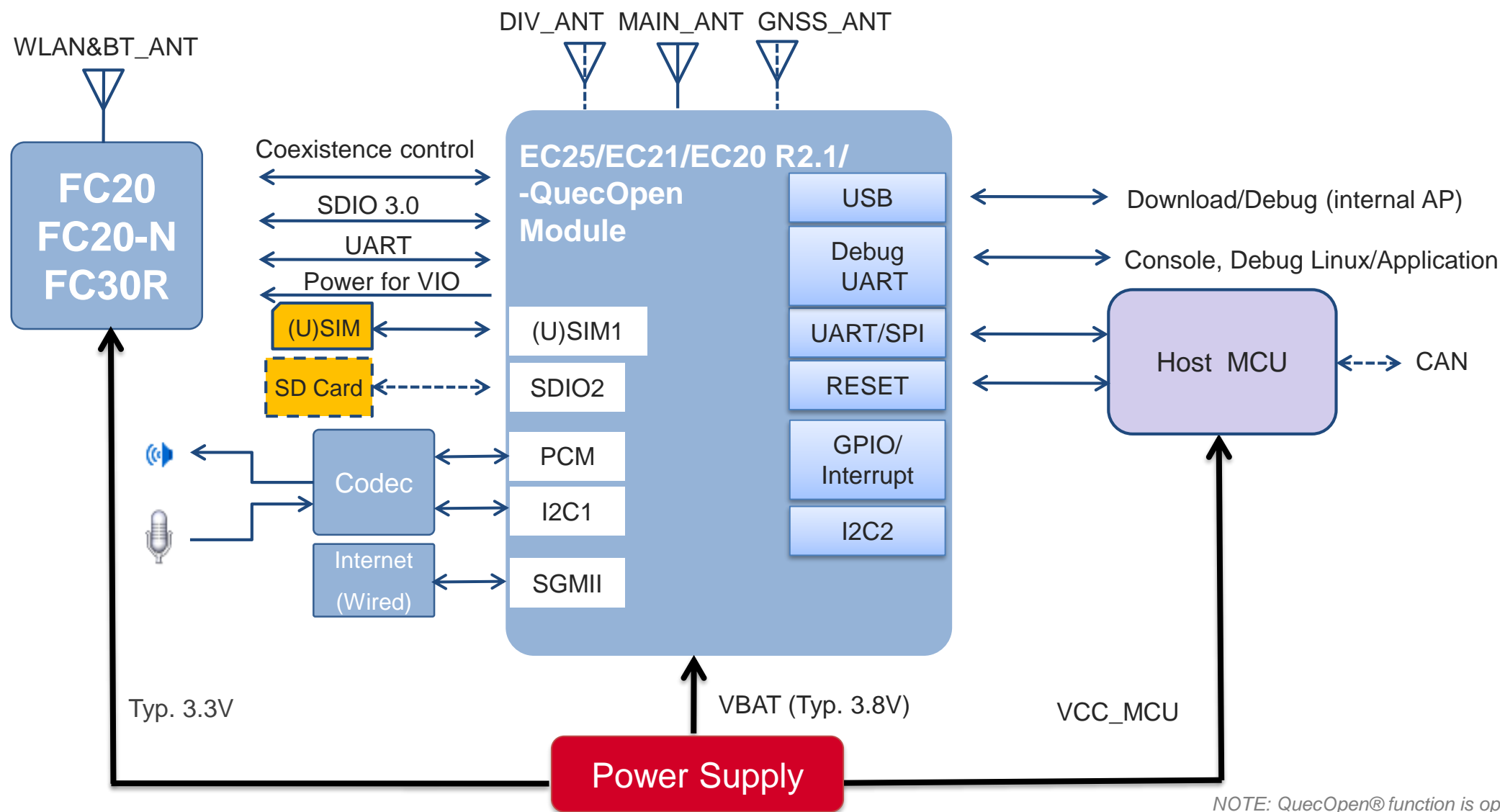| Feature	FC20	FC20-N	FC30R
Dimensions	16.6mm × 13.0mm × 2.1mm	16.6mm × 13.0mm × 2.1mm	12.0mm × 12.0mm × 2.1mm
Package	LCC	LCC	LCC
Function	Wi-Fi 2.4GHz/5GHz + BT 4.2*	Wi-Fi 2.4GHz	Wi-Fi 2.4GHz
Wi-Fi Mode	AP only STA only AP+STA AP+AP	AP only STA only AP+STA AP+AP	AP only STA only
Supply Voltage	3.3V+1.8V	3.3V+1.8V	3.3V+1.8V
Interface	SDIO 3.0	SDIO 3.0	SDIO 3.0
WLAN Technology	802.11a/b/g/n/ac	802.11b/g/n	802.11b/g/n
Antenna	Wi-Fi & BT antenna	Wi-Fi antenna	Wi-Fi
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	11Mbps @802.11b; 54Mbps @802.11g 150Mbps @802.11n
AP (Access Point)	Maximally 16/ Typically 10	Maximally 16/ Typically 10	Maximally 16/ Typically 10
Operation Temperature Range	-35°C ~ +75°C	-35°C ~ +75°C	-20°C ~ +75°C
Extended Temperature Range	-40°C ~ +85°C	-40°C ~ +85°C	-30°C ~ +85°C

"" means under development.*

QuecOpen®

Development Environment

Command Line SDK	Download Tool	Utilities	Compilation Environment

Middleware

Multi-language Support (C, C++, Shell Script)

C Runtime Library (GCC 4.9)

Linux Distribution

File System	Utilities	Free Open Source Package

Linux Kernel (3.18)

Little Kernel Boot Loader (LK)

Driver	BSP

Module Hardware

Figure: Framework of QuecOpen®

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.

NOTE: QuecOpen® function is optional.

QuecOpen® - Typical Router Solution

WLAN&BT_ANT

DIV_ANT MAIN_ANT GNSS_ANT

FC20
FC20-N
FC30R

Coexistence control

SDIO 3.0

UART

Power for VIO

(U)SIM

SD Card

Codec

Internet (Wired)

EC25/EC21/EC20 R2.1/ -QuecOpen Module

(U)SIM1

SDIO2

PCM

I2C1

SGMII

USB

Debug UART

UART/SPI

RESET

GPIO/ Interrupt

I2C2

Download/Debug (internal AP)

Console, Debug Linux/Application

Host MCU

CAN

Typ. 3.3V

VBAT (Typ. 3.8V)

VCC_MCU

Power Supply

NOTE: QuecOpen® function is optional.

Support Package - Technical Materials & EVB Kit

Technical Materials Package

- Hardware & software documents
- Debug tools, download tools, test tools, EVB kit & USB drivers
- Approvals & test reports
- QNavigator

Development Tool (UMTS&LTE EVB Kit)

- Connectors
  a) *Power supply connectors*
  b) *USB connector*
  c) *UART connectors*
  d) *(U)SIM card connector*
  e) *SD card connector*
  f) *Digital and audio connectors*

- Auxiliaries
  a) *Network status LED*
  b) *Power key*
  c) *Reset key*
  d) *Test points*
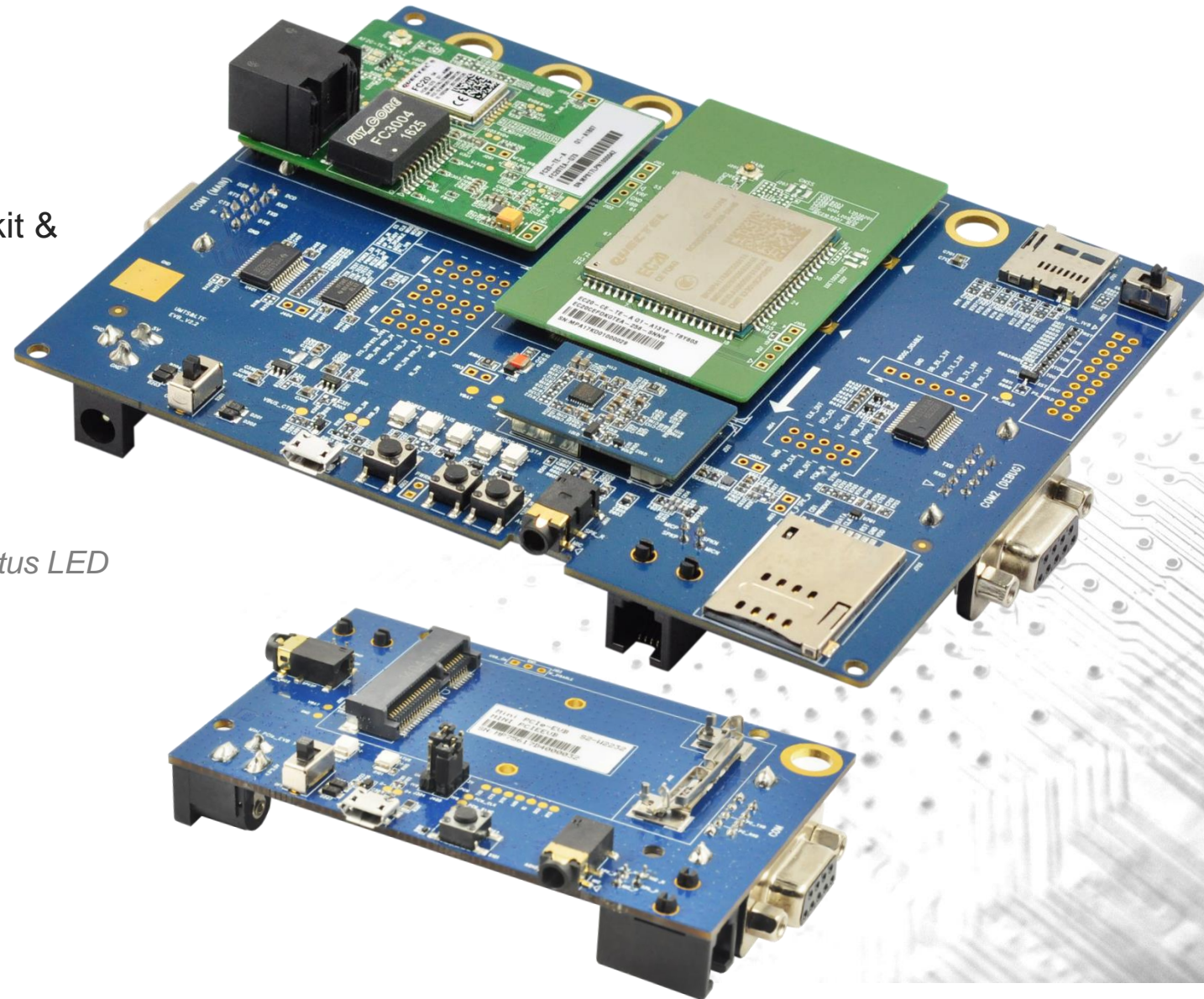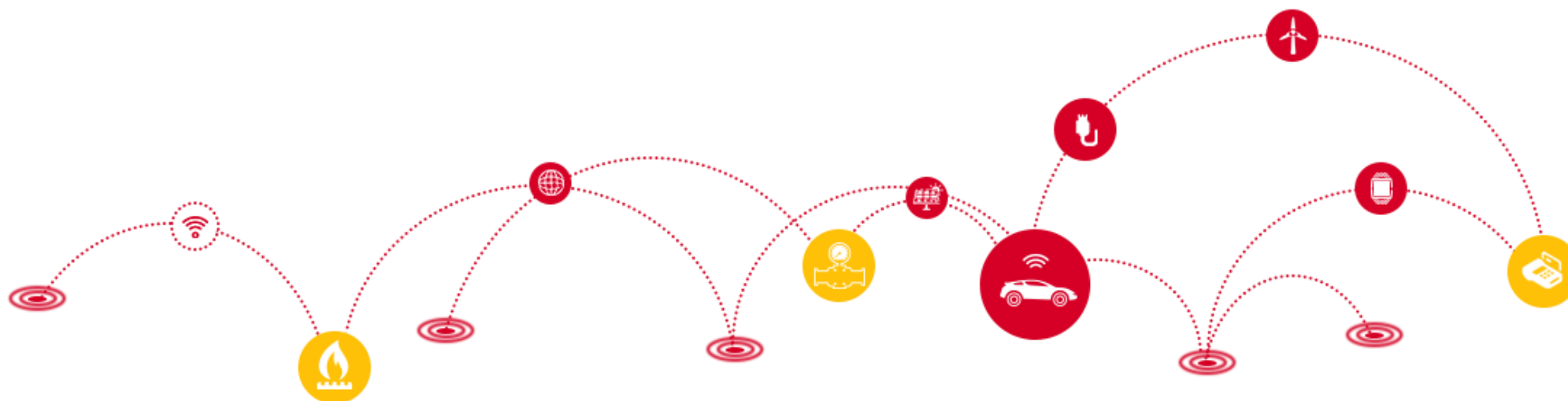
Support Package - QNavigator
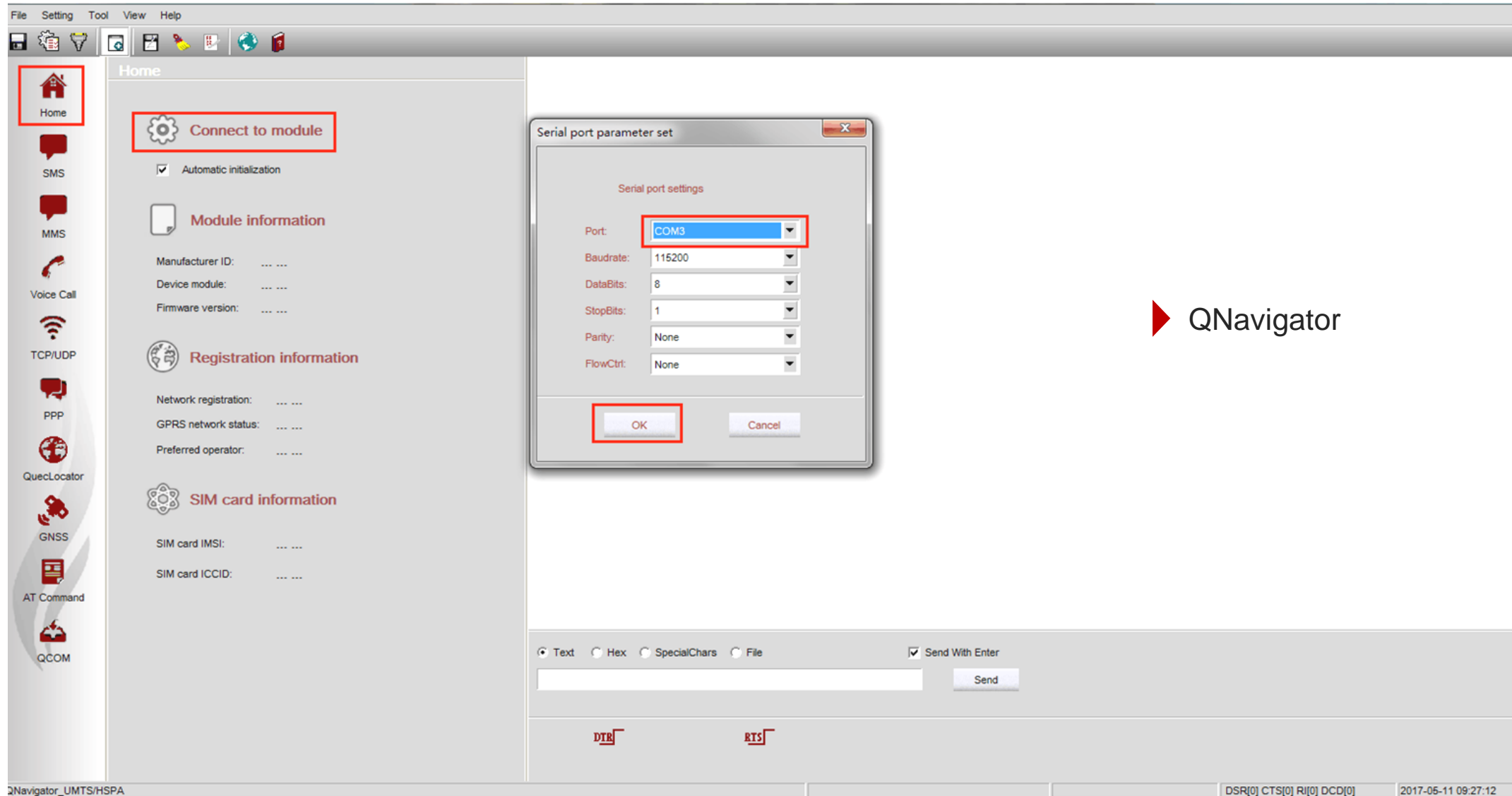
QNavigator

LTE Standard Roadmap
Specifications
Technologies
Applications

Target Applications

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
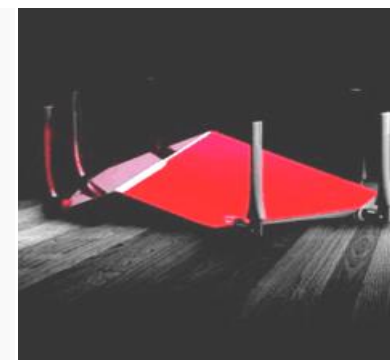- Vending Machine
- Top-up Machine

Security

- Alarm
- Camera
- Video Surveillance
- Intrusion Detection
- Smoke Detector
- Asset Protection

Smart City

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

Gateway

- DTU
- Consumer Router
- Industrial Router
- VoIP
- Server
- Wi-Fi Hotspot

Industry

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

Life & Healthcare

- Personal Tracker
- Household Appliances
- Pet Tracker
- Wearables
- Elderly Monitoring
- Remote Medical Equipment
- Glucometer
- Blood Pressure Monitor
- Gambling Machine

Agriculture & Environment

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

Thank you!

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