



Quectel Wi-Fi & Bluetooth Module

Product Overview

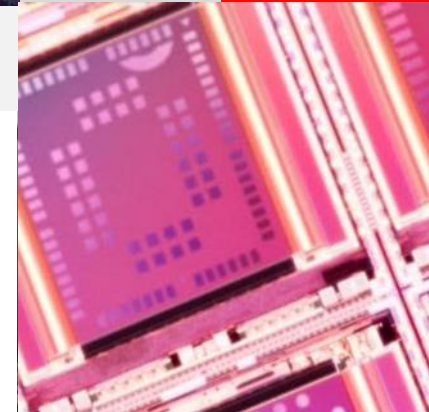
Build a Smarter World



Duty of Confidentiality

The Receiving Party shall keep confidential all documentation and information provided by Quectel, except when the specific permission has been granted by Quectel. The Receiving Party shall not access or use Quectel's documentation and information for any purpose except as expressly provided herein. Furthermore, the Receiving Party shall not disclose any of the Quectel's documentation and information to any third party without the prior written consent by Quectel. For any noncompliance to the above requirements, unauthorized use, or other illegal or malicious use of the documentation and information, Quectel will reserve the right to take legal action.

Build a Smarter World

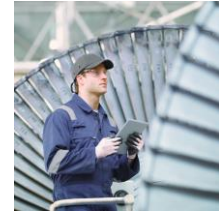
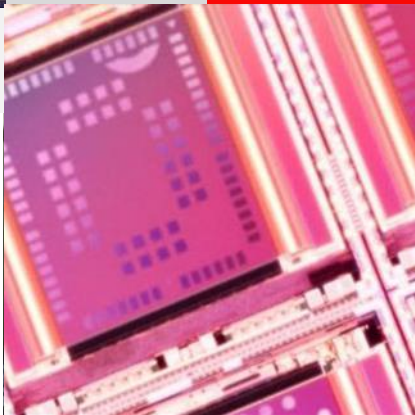
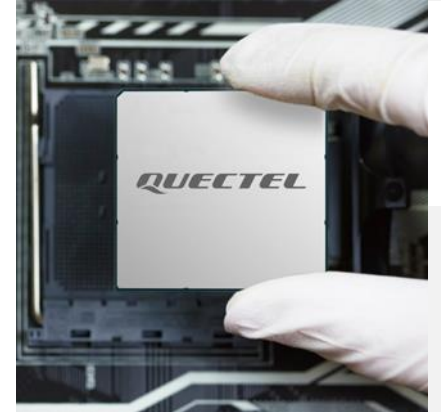




Roadmap

Product Introduction
Technical Architecture
Applications


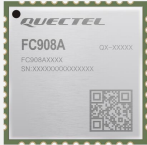









Build a Smarter World



Non-Automotive Wi-Fi&Bluetooth Modules Roadmap



Hosted Wi-Fi




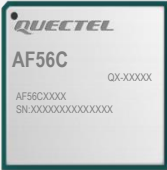



Wi-Fi 4	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6E
<div><div>FC30R</div></div> <div><div>FC908A</div><div>11/20</div></div>	<div><div>FC21</div></div> <div><div>FC20</div></div> <div><div>FC80A</div></div> <div><div>FC800L</div><div>11/10</div></div>	<div><div>FC62E</div></div> <div><div>FC64E</div></div> <div><div>FG50V</div></div>	<div><div>FC65E</div></div> <div><div>FC66E</div></div>

Stand-alone

 <div>FC41D</div>	 <div>HC06U</div>
--	--

Automotive Wi-Fi&Bluetooth Modules Roadmap



	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6E
High	<div>AF51Y</div>	<div>AF50T</div>	<div>AF68E *</div>
Medium		<div>AF56C AF56C *</div>	<div>AF58E AF58E *</div>
Entry	<div>AF20</div>	<div>AF22x AF22x *</div>	
Bluetooth	<div>AH20C</div>		

* means under planning.



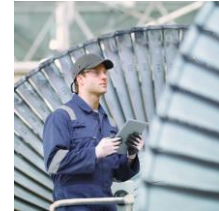
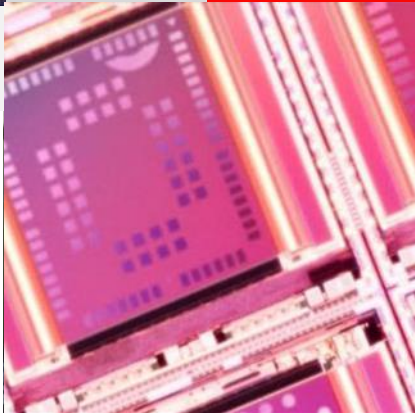
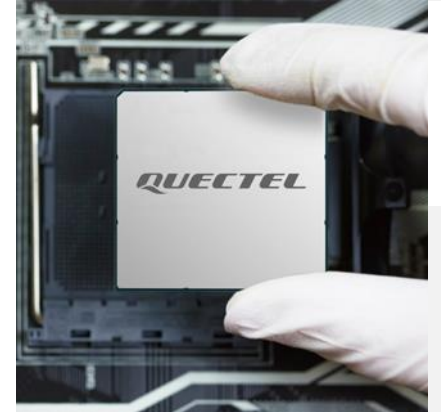
Roadmap

Product Introduction

Technical Architecture

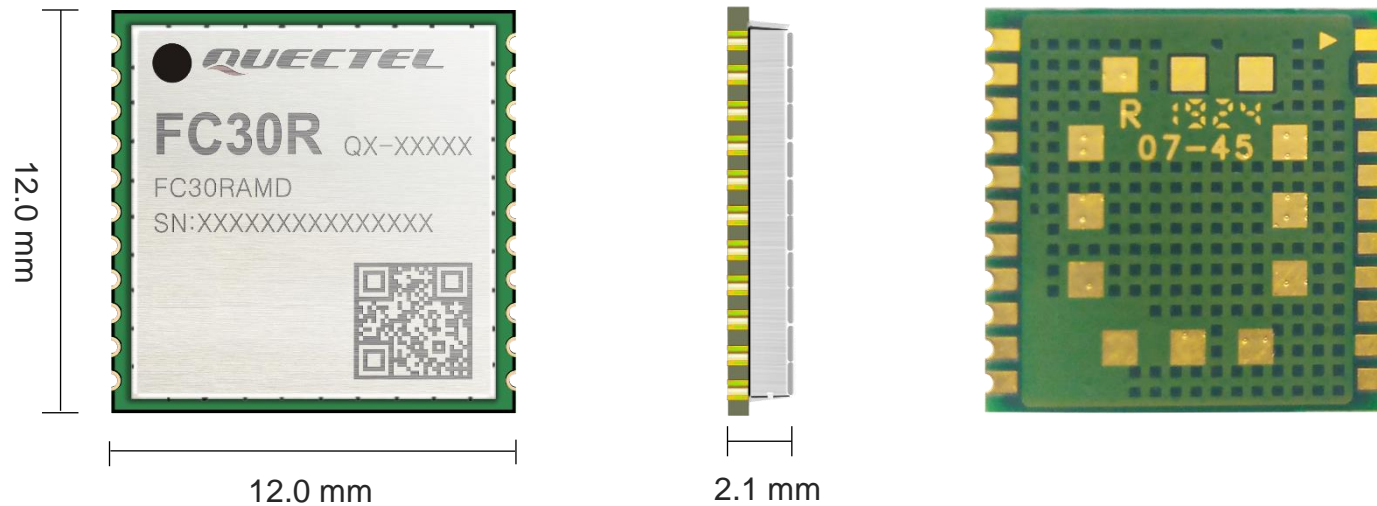
Applications

Build a Smarter World



FC30R Highlights (Wi-Fi 4)

Industrial Grade Wi-Fi Module (RTL8189EM)



Length: 12.0 mm (± 0.15 mm)
Width: 12.0 mm (± 0.15 mm)
Height: 2.1 mm (± 0.20 mm)
Weight: Approx. 0.57 g

- Work with Quectel LTE Standard modules
- Support 802.11 b/g/n, 2.4 GHz band and 1 × 1 antenna
- Cost-effective Wi-Fi only solution
- Operate in soft-AP or station mode
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC30R Specifications (Wi-Fi 4)

Module	FC30R
WLAN Protocol	802.11 b/g/n
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	DBPSK, DQPSK, BPSK, QPSK, CCK,16QAM, 64QAM
Dimension (mm)	12.0 × 12.0 × 2.1
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.0–3.6, Typ. 3.3
Interfaces	SDIO 3.0 × 1, Wi-Fi × 1
I/O Power Supply Voltage Range (V)	<ul style="list-style-type: none">● 1.75–1.89, Typ.1.8● 3.0–3.6, Typ. 3.3
Security	TKIP/ AES/ WPA-PSK/ WPA2-PSK
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: SRRC/ CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*/RCM*

“*” means under planning.

FC30R Timeline

2020						2021							
Feb.	...	Sep.	Oct.	Nov.	Dec.	Jan.	...	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Stage

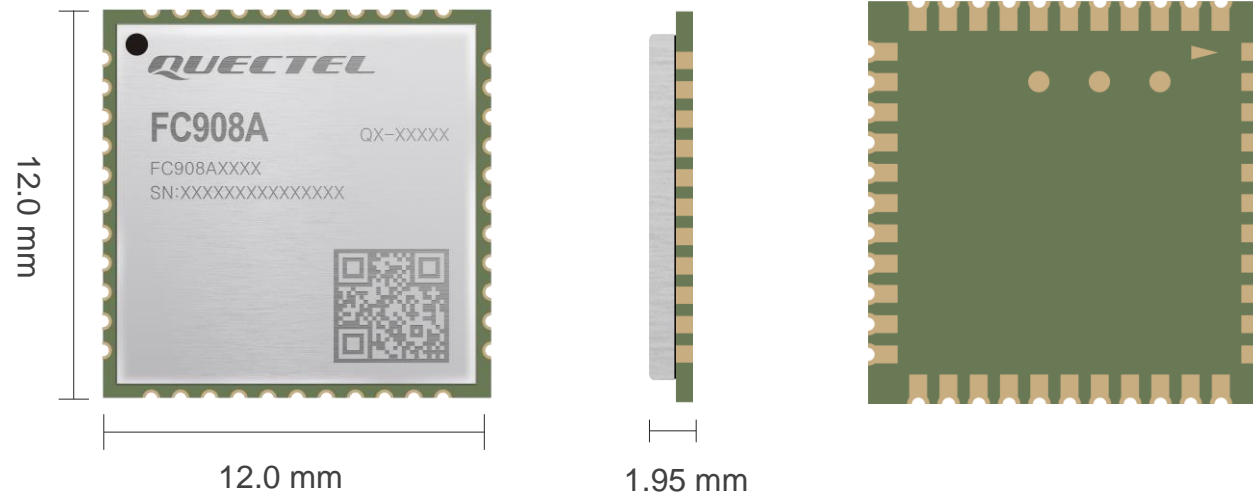
FC30R 

Regulatory Certification



FC908A Highlights (Wi-Fi 4)

Industrial Grade Wi-Fi&Bluetooth Module (CYW43438)



Length: 12.0 mm (± 0.15 mm)
Width: 12.0 mm (± 0.15 mm)
Height: 1.95 mm (± 0.20 mm)
Weight: TBD

- Support 802.11 b/g/n, 2.4 GHz band and 1 × 1 antenna
- Operate in soft-AP or station mode, support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC908A Specifications (Wi-Fi 4)

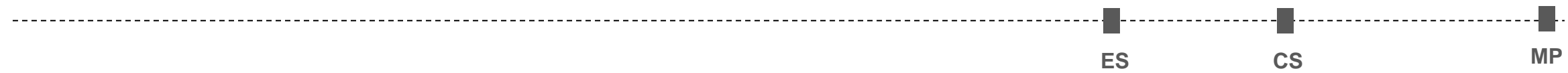
Module	FC908A
WLAN Protocol	802.11 b/g/n
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	DSSS, OFDM, DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM
Bluetooth Protocol	Bluetooth 5.1
Dimension (mm)	12.0 × 12.0 × 1.95
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.0–4.8, Typ. 3.6
Interfaces	SDIO 2.0 × 1, Wi-Fi × 1
I/O Power Supply Voltage Range (V)	1.71–3.63, Typ. 1.8/3.3
Security	WPA3
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*

“*” means under planning.

FC908A Timeline

2021											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Schedule



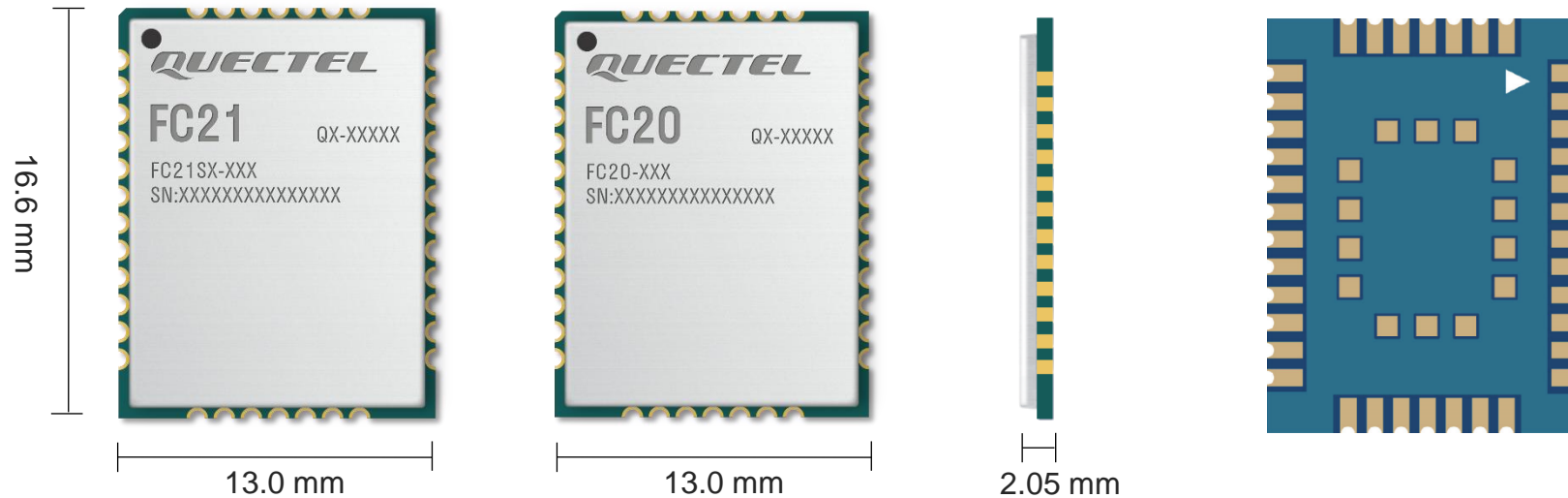
ES: Engineering samples ready. Basic functions are available for customers’ simple demo purpose.
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

Regulatory Certification

CE/ FCC/ SRRC TBD

FC20/FC21 Highlights (Wi-Fi 5)

Industrial Grade Wi-Fi&Bluetooth Module (QCA1023/QCA9377)



Length: 16.6 mm (± 0.15 mm)
 Width: 13.0 mm (± 0.15 mm)
 Height: 2.05 mm (± 0.20 mm)
 Weight: Approx. 0.81 g (FC20)
 Approx. 0.73 g (FC21)

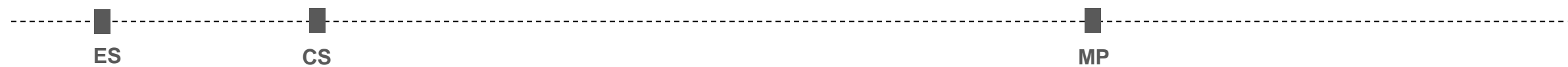
- Based on Qualcomm QCA1023/QCA9377 chipset solution for industrial Wi-Fi and Bluetooth applications
- 1 × 1 device supporting 802.11 a/b/g/n/ac and 2.4/5 GHz dual-band
- 5 GHz power amplifier available to improve Wi-Fi 5 GHz performance for FC20 series, not available for FC21
- Operate in soft-AP or station mode, support Bluetooth 5.0
- Operating temperature range: -40 °C to +85 °C
- Excellent co-existence with Quectel LTE Standard modules
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC21 Timeline



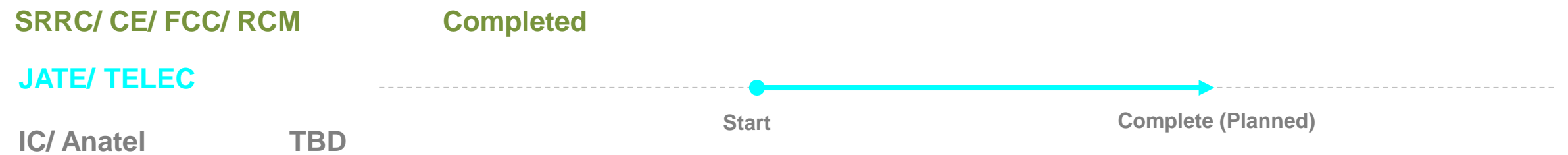
2020				2021							2022	
Jun.	...	Nov.	Dec.	Jan.	Feb.	Mar.	...	Oct.	Nov.	Dec.	Jan.	Feb.

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

Regulatory Certification

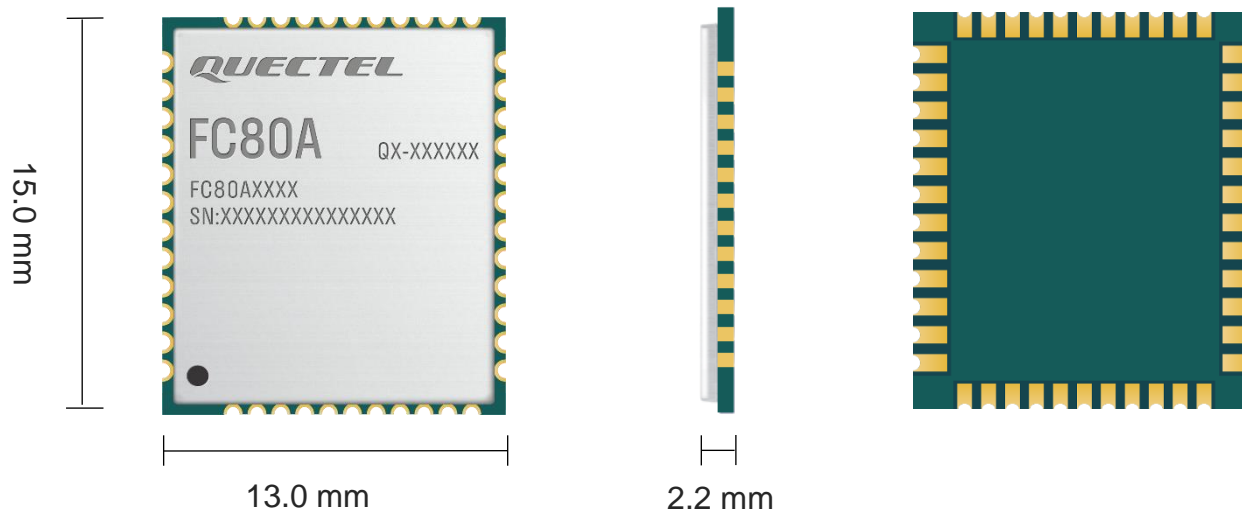


Others

Bluetooth Completed

FC80A Highlights (Wi-Fi 5)

Industrial Grade Wi-Fi&Bluetooth Module (CYW54591)



Length: 15.0 mm (± 0.15 mm)
Width: 13.0 mm (± 0.15 mm)
Height: 2.2 mm (± 0.20 mm)
Weight: 0.88 g

- Support 802.11 a/b/g/n/ac and 2.4 GHz/5 GHz dual-band
- Support 2 × 2 MIMO or 1 × 1+ 1 × 1 in RSDB (Real Simultaneous Dual Band) mode
- Operate in soft-AP and station mode, support Bluetooth 5.0
- Operating temperature range: -30 °C to +75 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC80A Specifications (Wi-Fi 5)

Module	FC80A
WLAN Protocol	802.11 a/b/g/n/ac
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Dimension (mm)	15.0 × 13.0 × 2.2
Working Mode	AP/ STA
Interfaces	SDIO 3.0 × 1, UART × 1, PCM × 1, Wi-Fi Antenna × 2, Bluetooth Antenna × 1 (Optional)
Power Supply Voltage Range (V)	VBAT: 3.2–4.5, Typ. 3.3
I/O Power Supply Voltage Range (V)	VDDIO: 1.7–3.6, Typ. 1.8/3.3
Security	WPA3
Max. Physical Data Rate (Mbps)	866.6 Mbps + 300 Mbps, 2 × 2 MIMO, or 1 × 1+ 1 × 1 in RSDB (Real Simultaneous Dual Band) mode
Operating Temperature Range (°C)	-30 to +75
Region	Global
Certification	Regulatory: CE*/ FCC*

“” means under planning.*

FC80A Timeline

2021								2022			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

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

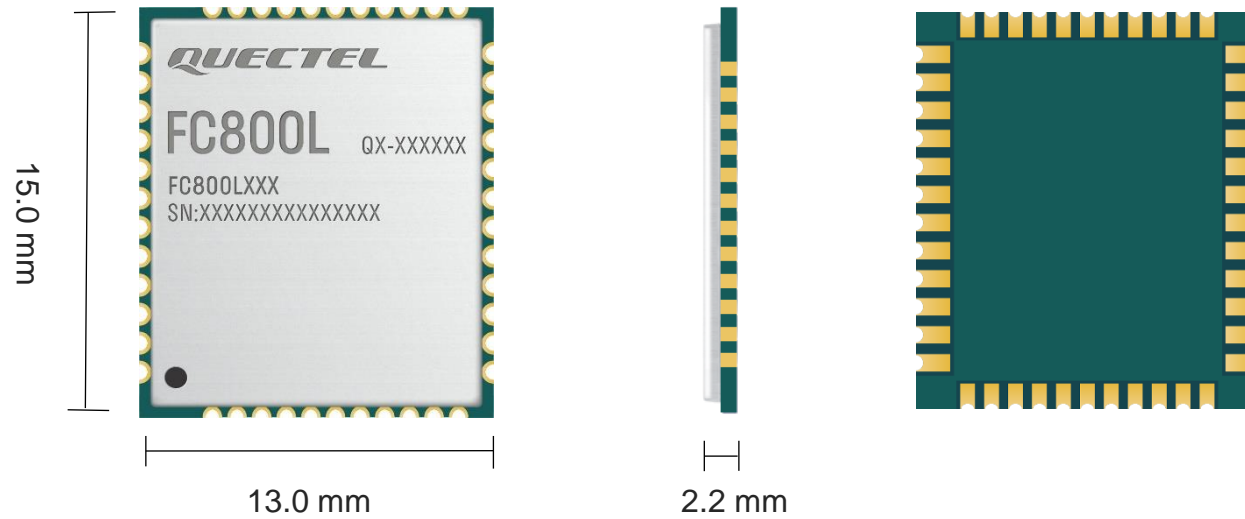
Regulatory Certification

CE/ FCC

TBD

FC800L Highlights (Wi-Fi 5)

Industrial Grade Wi-Fi&Bluetooth Module (Amlogic W155S1)



Length: 15.0 mm (± 0.15 mm)
Width: 13.0 mm (± 0.15 mm)
Height: 2.2 mm (± 0.20 mm)
Weight: TBD

- Support 802.11 a/b/g/n/ac and 2.4 GHz/ 5 GHz dual-band
- Operate in soft-AP and station mode, support Bluetooth 5.0
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC800L Specifications (Wi-Fi 5)

Module	FC800L
WLAN Protocol	802.11 a/b/g/n/ac
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	DSSS, CCK, BPSK, QPSK, DBPSK, DQPSK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Dimension (mm)	15.0 × 13.0 × 2.2
Working Mode	AP/ STA
Interfaces	SDIO 3.0 × 1, UART × 1, PCM × 1, Wi-Fi × 1, Bluetooth Antenna × 1
Power Supply Voltage Range (V)	VBAT: 2.97–3.63, Typ. 3.3
I/O Power Supply Voltage Range (V)	VDDIO: 1.62–1.98, Typ. 1.8
Security	WPA3
Max. Physical Data Rate (Mbps)	433.3
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*

“*” means under planning.

FC800L Timeline

2021								2022			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Project Schedule



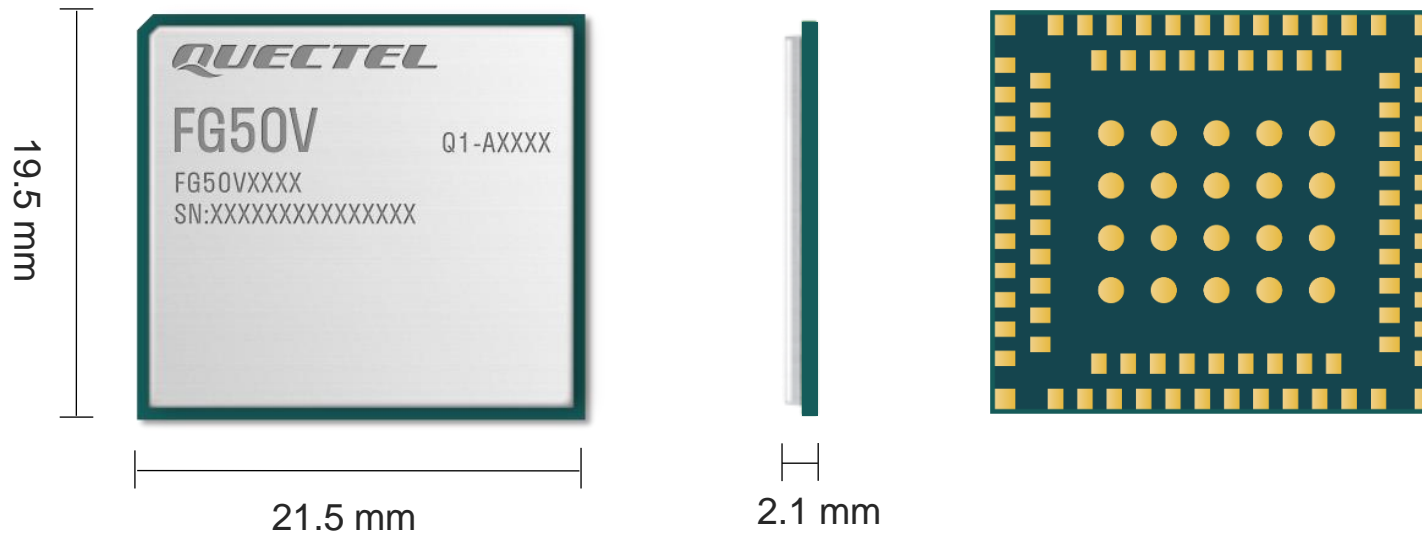
ES: Engineering samples ready. Basic functions are available for customers’ simple demo purpose.
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

Regulatory Certification

CE/ FCC/ SRRC TBD

FG50V Highlights (Wi-Fi 6)

Industrial Grade Wi-Fi&Bluetooth Module (QCA6391)



Length: 19.5 mm (± 0.20 mm)
Width: 21.5 mm (± 0.20 mm)
Height: 2.1 mm (± 0.20 mm)
Weight: 2.3 g

- Must work with Quectel 5G RG50xQ series modules and enjoy good co-existence mechanism
- 2 × 2 + 2 × 2 device supporting 802.11 a/b/g/n/ac/ax and 2.4/ 5 GHz dual-band, with max. data rate up to 1774.5 Mbps
- Operate in soft-AP and station mode, support Bluetooth 5.2
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FG50V Specifications (Wi-Fi 6)

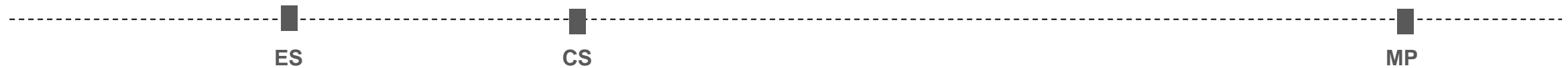
Module	FG50V
WLAN Protocol	802.11 a/b/g/n/ac/ax
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM, 1024QAM
Bluetooth Protocol	Bluetooth 5.2
Dimension (mm)	19.5 × 21.5 × 2.1
Working Mode	AP/ STA
VBAT	VDD_RF, VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Max. Physical Data Rate (Mbps)	1774.5, 2 × 2 + 2 × 2 MIMO, DBS (Dual Band Simultaneous)
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE/ FCC/ KC*

“*” means under ongoing.

FG50V Timeline

2021											
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. For certification status, please refer to the "certification schedule".

Regulatory Certification

CE/ FCC

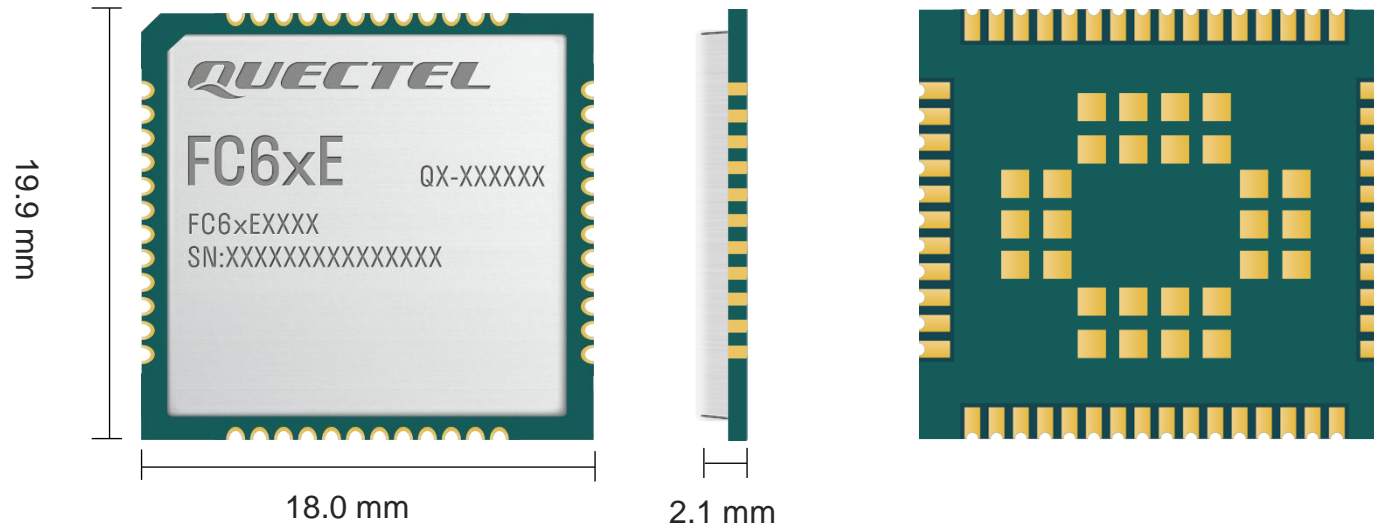
Completed

KC



FC62E/FC64E Highlights (Wi-Fi 6)

Industrial Grade Wi-Fi&Bluetooth Module (QCA2062/QCA2064)

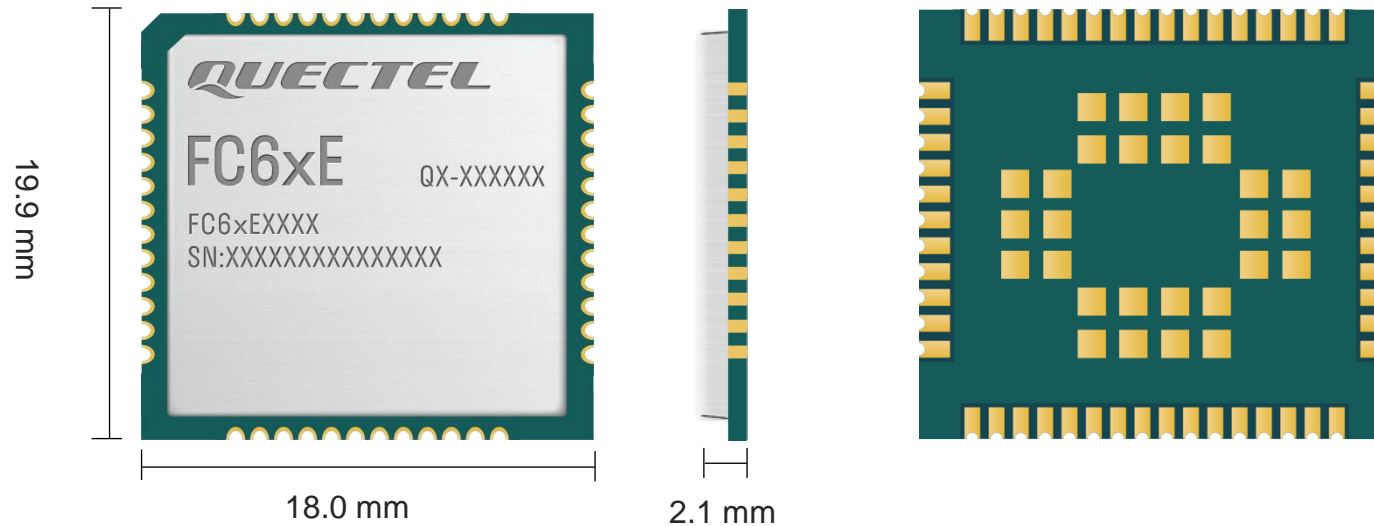


Length: 19.9 mm (± 0.15 mm)
 Width: 18.0 mm (± 0.15 mm)
 Height: 2.1 mm (± 0.20 mm)
 Weigh: 1.6 g

- Support 802.11 a/b/g/n/ac/ax and 2.4/ 5 GHz dual-band, with max. data rate up to 1774.5 Mbps
- Support DBS (Dual Band Simultaneous): FC64E supports DBS, FC62E does not support DBS
- FC64E supports $2 \times 2 + 2 \times 2$ MIMO, FC62E supports 2×2 MIMO
- Operate in soft-AP or station mode and support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC65E/FC66E Highlights (Wi-Fi 6E)

Industrial Grade Wi-Fi&Bluetooth Module (QCA2065/QCA2066)



Length: 19.9 mm (± 0.15 mm)
Width: 18.0 mm (± 0.15 mm)
Height: 2.1 mm (± 0.20 mm)
Weigh: 1.63 g

- Support 802.11 a/b/g/n/ac/ax and 2.4/ 5/ 6 GHz triple-band, with max. data rate up to 2400 Mbps
- Support DBS (Dual Band Simultaneous): FC66E supports DBS, FC65E does not support DBS
- FC65E supports 2 × 2 MIMO, FC66E supports 2 × 2 + 2 × 2 MIMO
- Operate in soft-AP or station mode and support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC6xE Specifications (Wi-Fi 6 & Wi-Fi 6E)

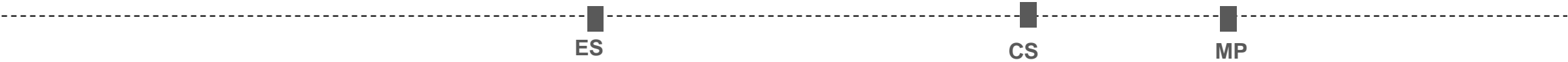


Module	FC62E/ FC64E	FC65E/ FC66E
WLAN Protocol	802.11 a/b/g/n/ac/ax	802.11 a/b/g/n/ac/ax
Wi-Fi Bands (GHz)	2.4/ 5	2.4/ 5/ 6
Wi-Fi Modulation	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM
Bluetooth Protocol	Bluetooth 5.1	Bluetooth 5.1
Dimension (mm)	18.0 × 19.9 × 2.1	18.0 × 19.9 × 2.1
Working Mode	AP/ STA	AP/ STA
Power Supply Voltage (V)	0.95, 1.35, 1.95, 1.8, 2.2, 3.3 (Optional)	0.95, 1.35, 1.95, 1.8, 2.2, 3.3 (Optional)
Interfaces	Wi-Fi: PCIe 3.0 × 1 Bluetooth: UART × 1, PCM × 1 Antenna: Wi-Fi × 2, Bluetooth × 1 (shared with Wi-Fi, independent antenna is optional)	Wi-Fi: PCIe 3.0 × 1 Bluetooth: UART × 1, PCM × 1 Antenna: Wi-Fi × 2, Bluetooth × 1 (shared with Wi-Fi, independent antenna is optional)
DBS (Dual Band Simultaneous)	FC62E does not support DBS, FC64E supports DBS	FC65E does not support DBS, FC66E supports DBS
I/O Power Supply Voltage (V)	1.8	1.8
Security	WPA3	WPA3
Operating Temperature Range (°C)	-30 to +85	-30 to +85
Region	Global	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*/ JATE*/ TELEC*	Regulatory: CE*/ FCC*/ SRRC*/ JATE*/ TELEC*

FC66E/FC65E/FC64E/FC62E Timeline

2021												2022		
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.

Project Schedule



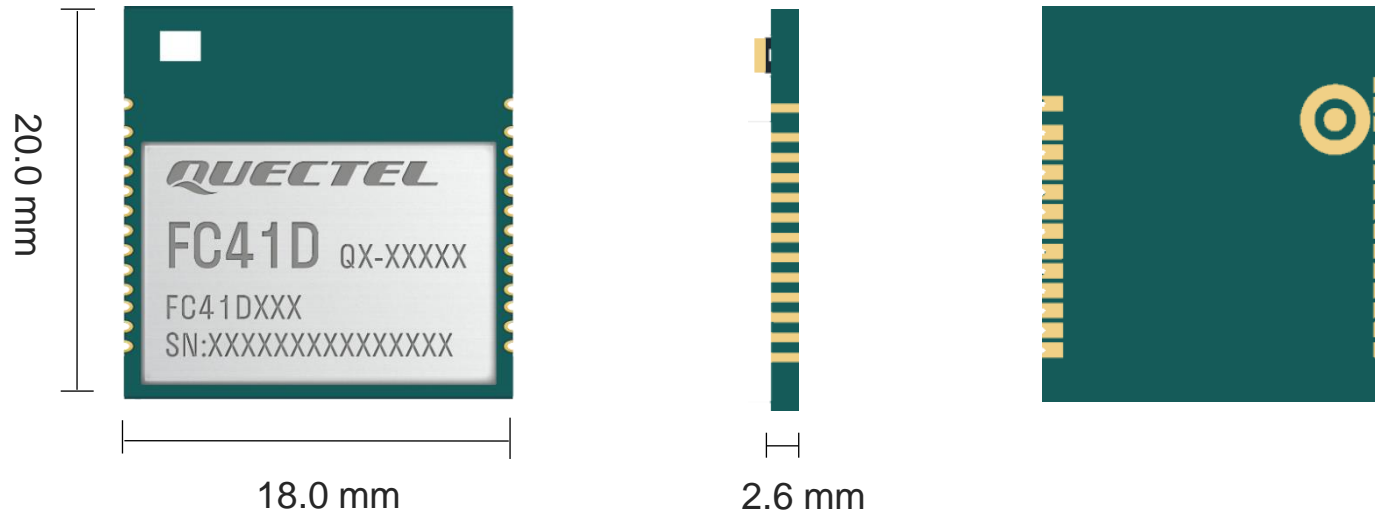
ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

Regulatory Certification

CE/ FCC/ SRRRC/ JATE/ TELEC TBD

FC41D Highlights

Stand-alone Wi-Fi&Bluetooth Module (BK7231M)



Length: 20.0 mm (± 0.20 mm)
Width: 18.0 mm (± 0.20 mm)
Height: 2.6 mm (± 0.20 mm)
Weight: 1.05 g

- Support 802.11 b/g/n Wi-Fi
- Operate in soft-AP or station mode and support Bluetooth 5.2
- Support UART serial communication
- Compatible with pin antenna, IPEX antenna and PCB antenna
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

FC41D Specifications

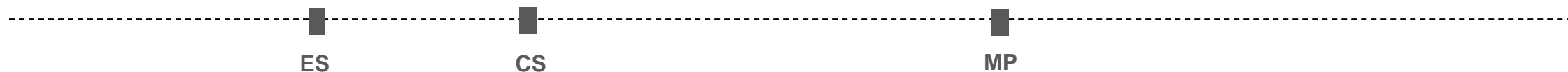
Module	FC41D
WLAN Protocol	802.11 b/g/n, 1 x 1
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply Voltage (V)	3.3
Interfaces	UART, SPI, PWM, ADC, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC* Others: Bluetooth*

“*” means under ongoing.

FC41D Timeline

2021									2022		
Mar.	Apr.	May	Jun.	Jul.	...	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.

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

Regulatory Certification

CE/ FCC/ SRRC



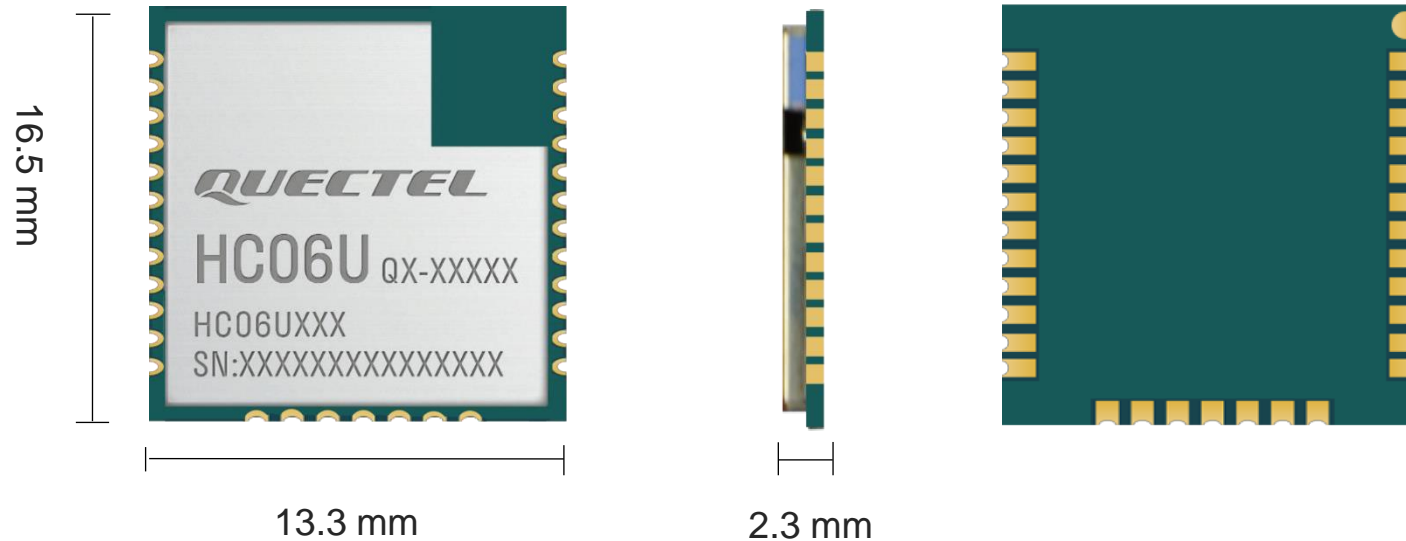
Others

Bluetooth



HC06U Highlights

BLE Module (BR1001)



Length: 16.5 mm (± 0.20 mm)
Width: 13.3 mm (± 0.20 mm)
Height: 2.3 mm (± 0.20 mm)
Weight: 0.85 g

- Support Bluetooth 5.0
- High cost performance, BLE module, integrated master and slave mode
- Operating temperature range: -40 °C to +85 °C
- Built-in ceramic antenna, Built-out pin antenna
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

HC06U Specifications

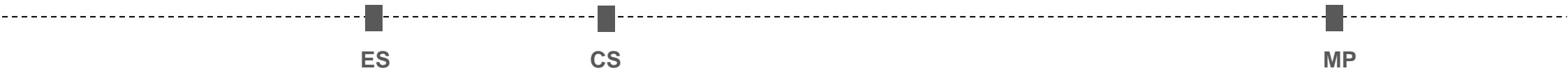
Module	HC06U
Bluetooth Protocol	Bluetooth 5.0
Power Supply Voltage (V)	3.3
Interfaces	UART, SPI, GPIOs
Security	SMP
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: FCC/ IC/ CE*

“*” means under planning/ongoing.

HC06U Timeline

2021										2022	
Jan.	Feb.	Mar.	Apr.	May	...	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.

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. For certification status, please refer to the “certification schedule”.

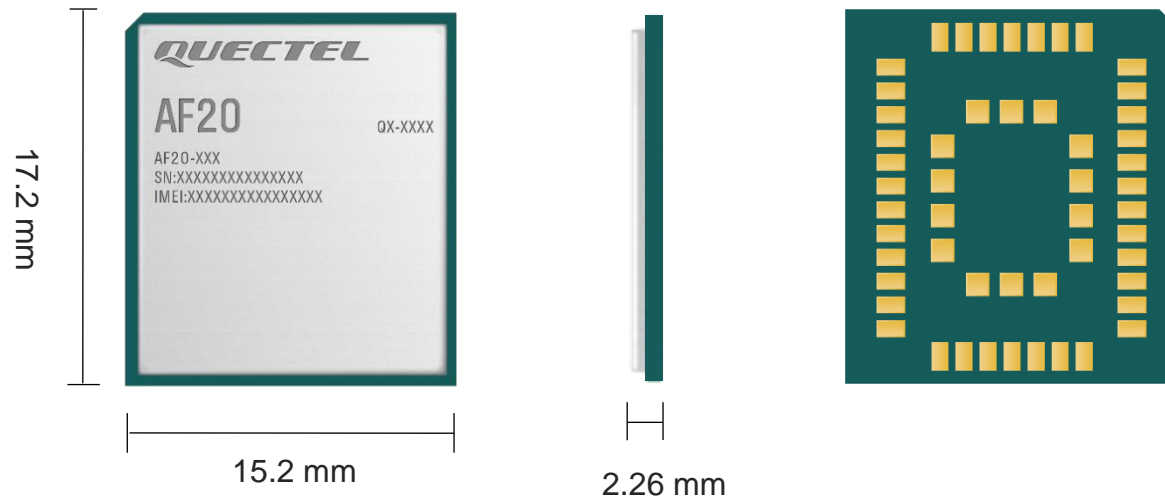
Regulatory Certification

FCC/ IC Completed



AF20 Highlights (Wi-Fi 5 1×1)

Automotive Grade Wi-Fi&Bluetooth Module (QCA6564A)



Length: 17.2 mm (± 0.15 mm)
 Width: 15.2 mm (± 0.15 mm)
 Height: 2.26 mm (± 0.20 mm)
 Weight: 1.26 g

- Qualcomm QCA6564A chipset solution dedicated for automotive applications
- Work with Quectel AG35 series module and enjoy good co-existence mechanism with the automotive grade LTE module
- 1 × 1 device supporting 802.11 a/b/g/n/ac and 2.4/ 5 GHz dual-band
- Operate in soft-AP or station mode and support Bluetooth 5.0
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF20 Specifications (Wi-Fi 5 1 × 1)

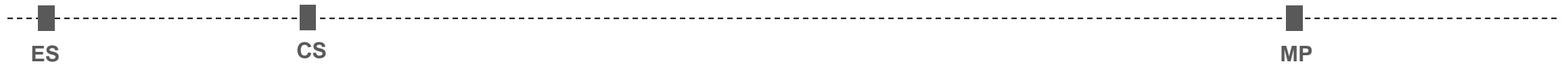
Module	AF20
Chip	QCA6564A
WLAN Protocol	802.11 a/b/g/n/ac, 1 × 1
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.14–3.46, Typ. 3.3
Interfaces	SDIO 3.0 × 1, BT_UART × 1, Wi-Fi/Bluetooth Antenna × 1
I/O Power Supply Voltage Range (V)	1.71–1.89, Typ.1.8
Security	WEP/ TKIP/ AES/ WPA-PSK/ WPA2-PSK
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*/ RCM*

“*” means under planning.

AF20 Timeline

2020				2021							
Jan.	...	Nov.	Dec.	Jan.	...	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.

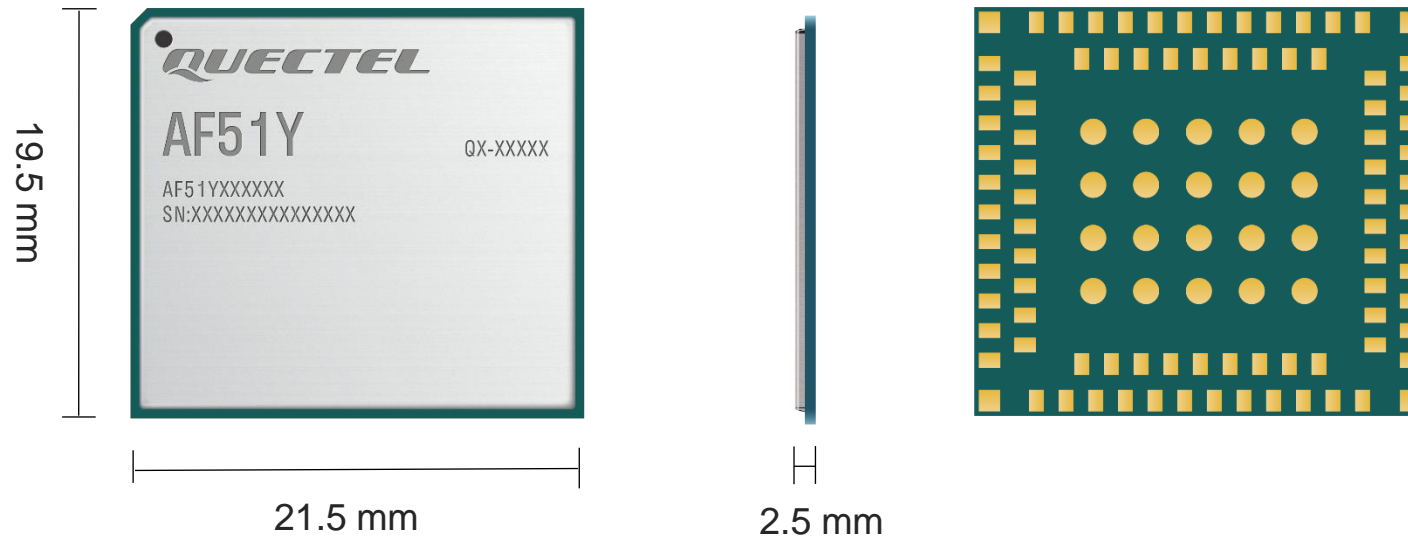
MP: Hardware and software ready for mass production. For certification status, please refer to the "certification schedule".

Regulatory Certification



AF51Y Highlights (Wi-Fi 5 2×2+1×1)

Automotive Grade Wi-Fi&Bluetooth Module (QCA6595)



Length: 19.5 mm (± 0.20 mm)
 Width: 21.5 mm (± 0.20 mm)
 Height: 2.5 mm (± 0.20 mm)
 Weight: 2.32 g

- Qualcomm QCA6595 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules
- Support 802.11 a/b/g/n/ac Wi-Fi and Dual-Band Simultaneous (DBS) with dual-MAC
- Operate in soft-AP and station mode and support Bluetooth 5.2
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF51Y Specifications (Wi-Fi 5 2×2+1×1)

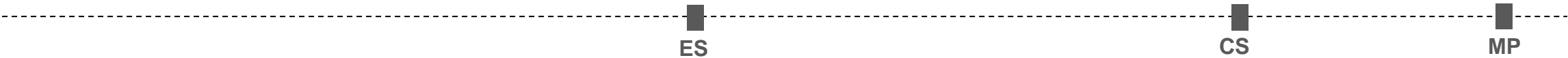
Module	AF51Y
Chip	QCA6595
WLAN Protocol	802.11 a/b/g/n/ac, 2 × 2 + 1 × 1, dual MAC
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply	VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*

“*” means under planning.

AF51Y Timeline

2021											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Project Schedule



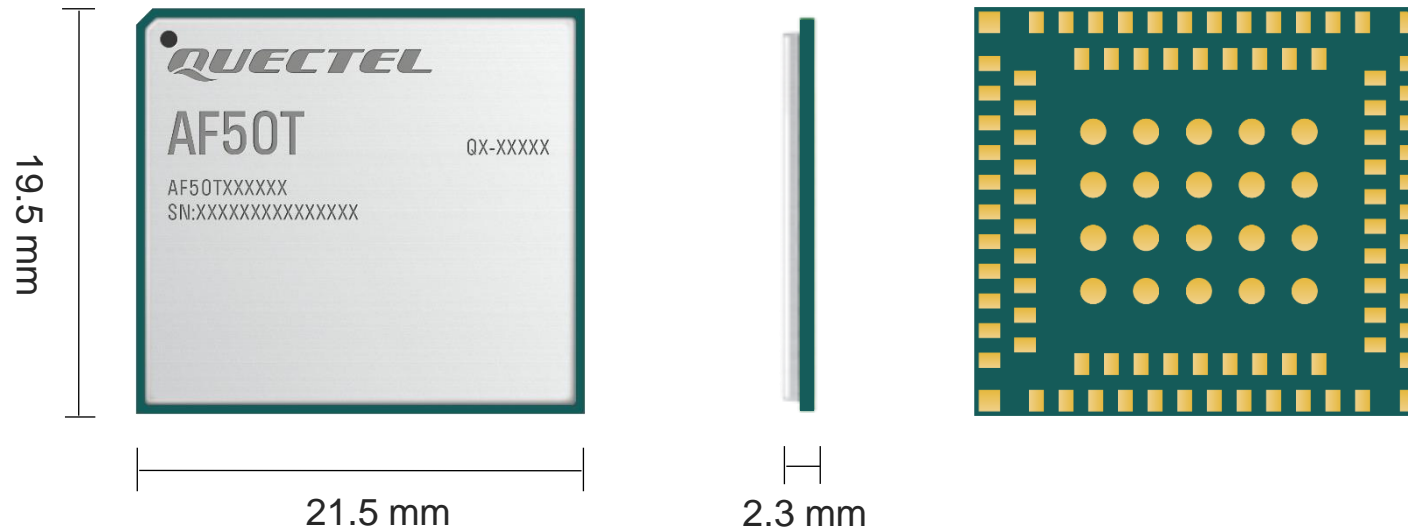
ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

Regulatory Certification

CE/ FCC/ IC/ Anatel/ JATE/ TELEC TBD

AF50T Highlights (Wi-Fi 6 2×2+2×2)

Automotive Grade Wi-Fi&Bluetooth Module (QCA6696)



Length: 19.5 mm (± 0.20 mm)
 Width: 21.5 mm (± 0.20 mm)
 Height: 2.3 mm (± 0.20 mm)
 Weight: Approx. 2.1 g

- Qualcomm QCA6696 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules
- Support 802.11 a/b/g/n/ac/ax Wi-Fi and Dual-Band Simultaneous (DBS) with dual-MAC
- Operate in soft-AP and station mode and support Bluetooth 5.2
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF50T Specifications (Wi-Fi 6 2×2+2×2)

Module	AF50T
Chip	QCA6696
WLAN Protocol	802.11 a/b/g/n/ac/ax, 2 × 2 + 2 × 2, dual MAC
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM, MU-MIMO-OFDMA
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply	VDD_RF, VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE/ FCC/ RCM/ IC*/ Anatel*/ SRRC*/ JATE*/ TELEC*

“*” means under planning.

AF50T Timeline

2021												2022			
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Project Stage

AF50T 

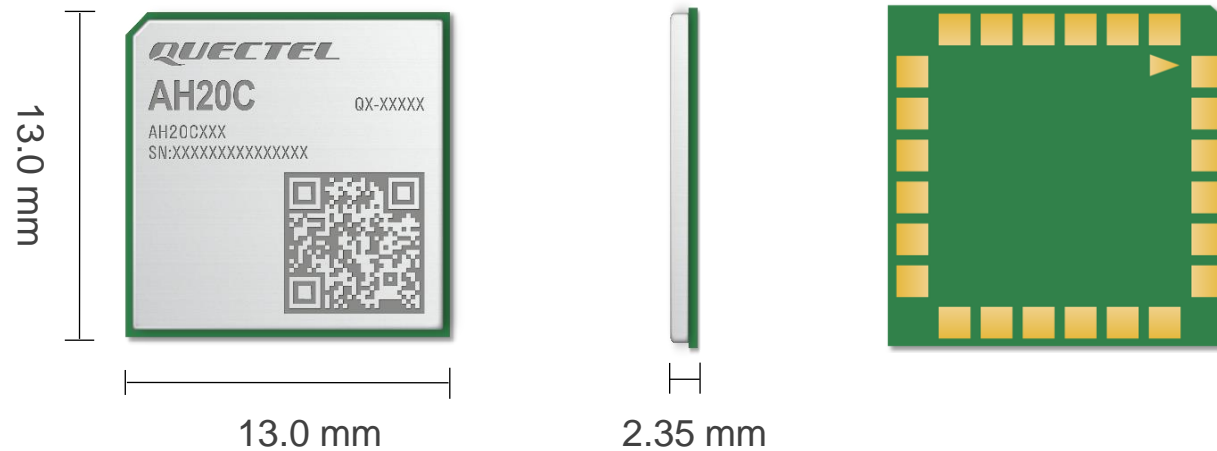
Regulatory Certification

CE/ FCC/ RCM Completed

IC/ Anatel/ SRRC/ JATE/ TELEC TBD

AH20C Highlights (Stand-alone Bluetooth)

Automotive Grade Stand-alone Bluetooth Module (CYW89072)



Length: 13.0 mm (± 0.20 mm)
Width: 13.0 mm (± 0.20 mm)
Height: 2.35 mm (± 0.20 mm)
Weight: TBD

- CYW89072 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules or third-party platform
- Support Bluetooth 5.0, support BLE and classic Bluetooth
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AH20C Specifications

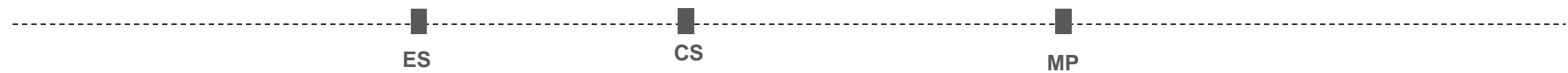
Module	AH20C
Chip	CYW89072
Bluetooth Bands (GHz)	2.4
Bluetooth Modulation	GFSK, $\pi/4$ -DQPSK, 8-DPSK, Gaussian
Bluetooth Protocol	Bluetooth 5.0 (BLE + Classic Bluetooth)
Bluetooth Profile	HFP, HSP, PBAP, A2DP, AVRCP, MAP, HID, GATT, iAP2, SPP, etc.
Power Supply	VDD_BT_3V3, VDD_IO_1V8
Interfaces	UART, PCM, I2C, BT_HOST_WAKE, BT_DEV_WAKE
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*

“*” means under planning.

AH20C Timeline

2021					2022					
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.

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. For certification status, please refer to the “certification schedule”.

Regulatory Certification

CE/ FCC/ IC TBD



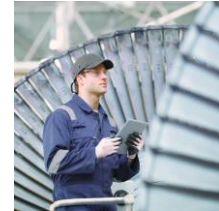
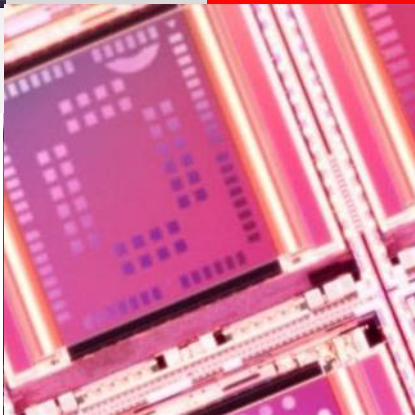
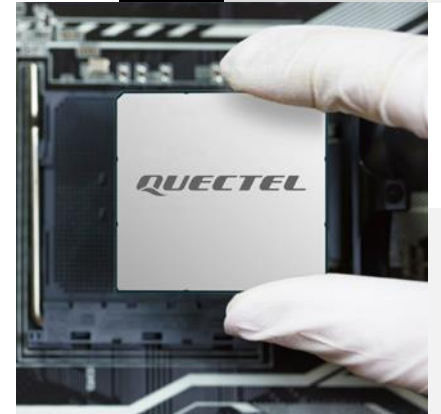
Roadmap

Product Introduction

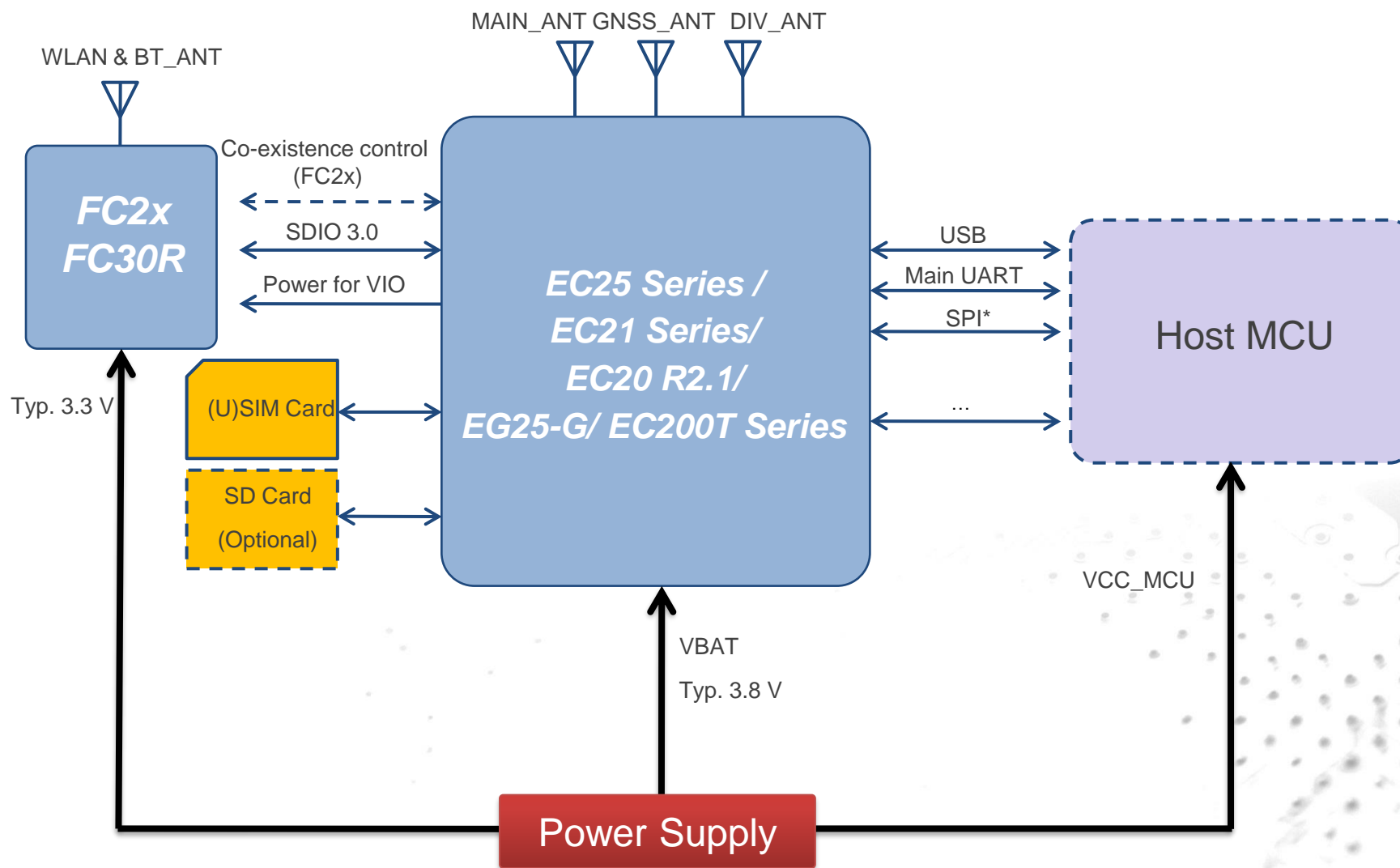
Technical Architecture

Applications

Build a Smarter World

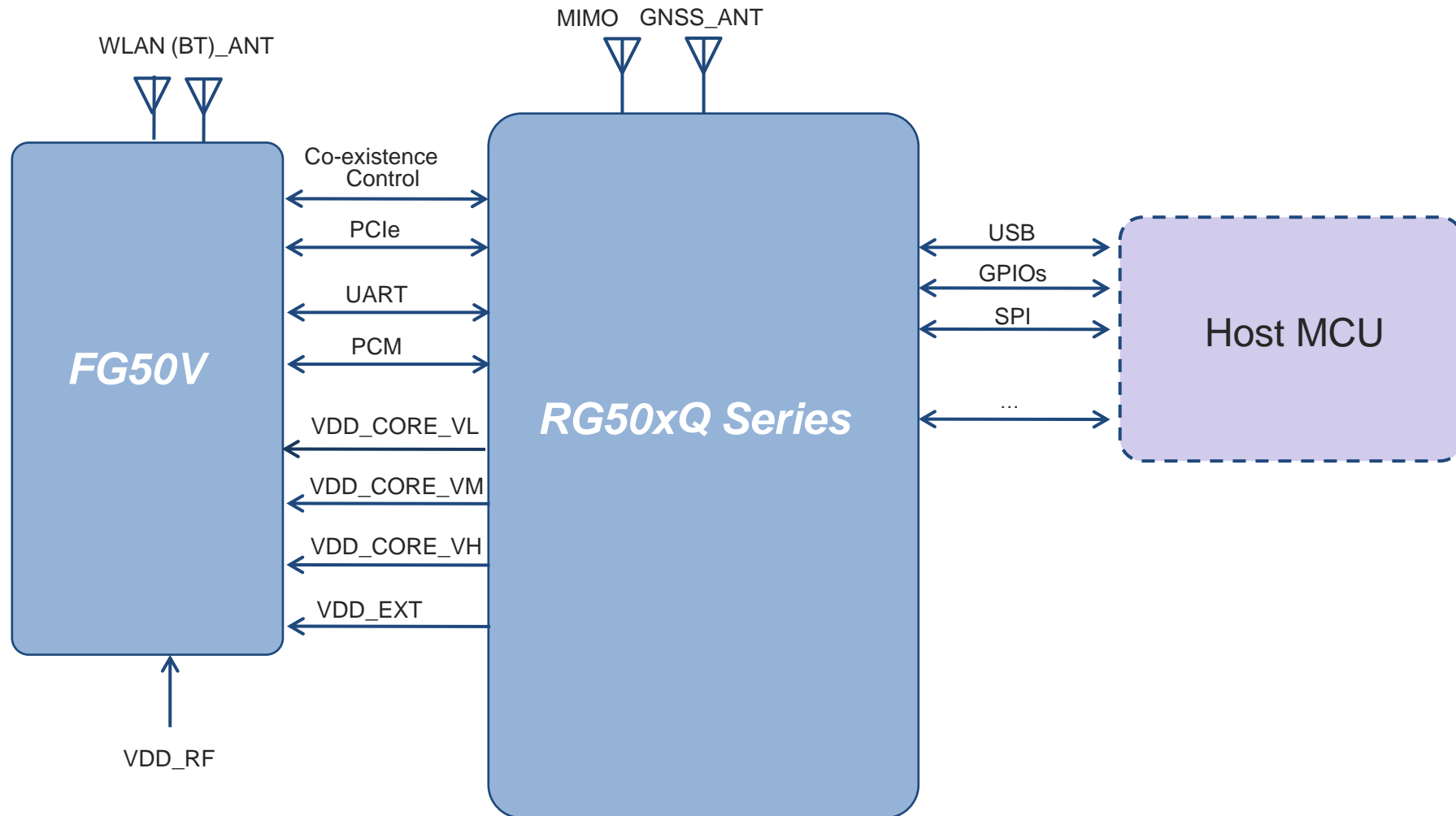


LTE + FC2x/FC30R Solution

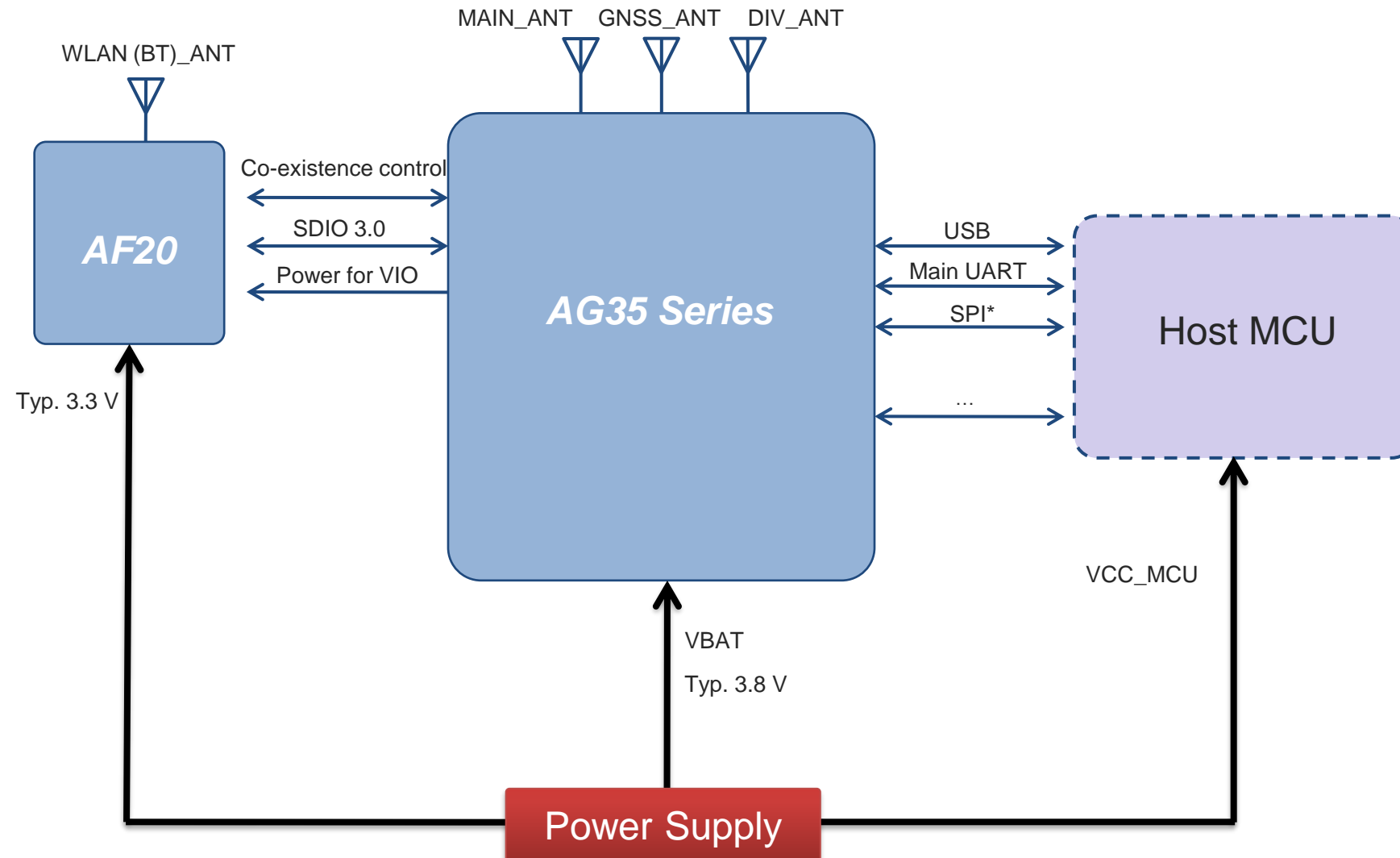


“*” means under development.

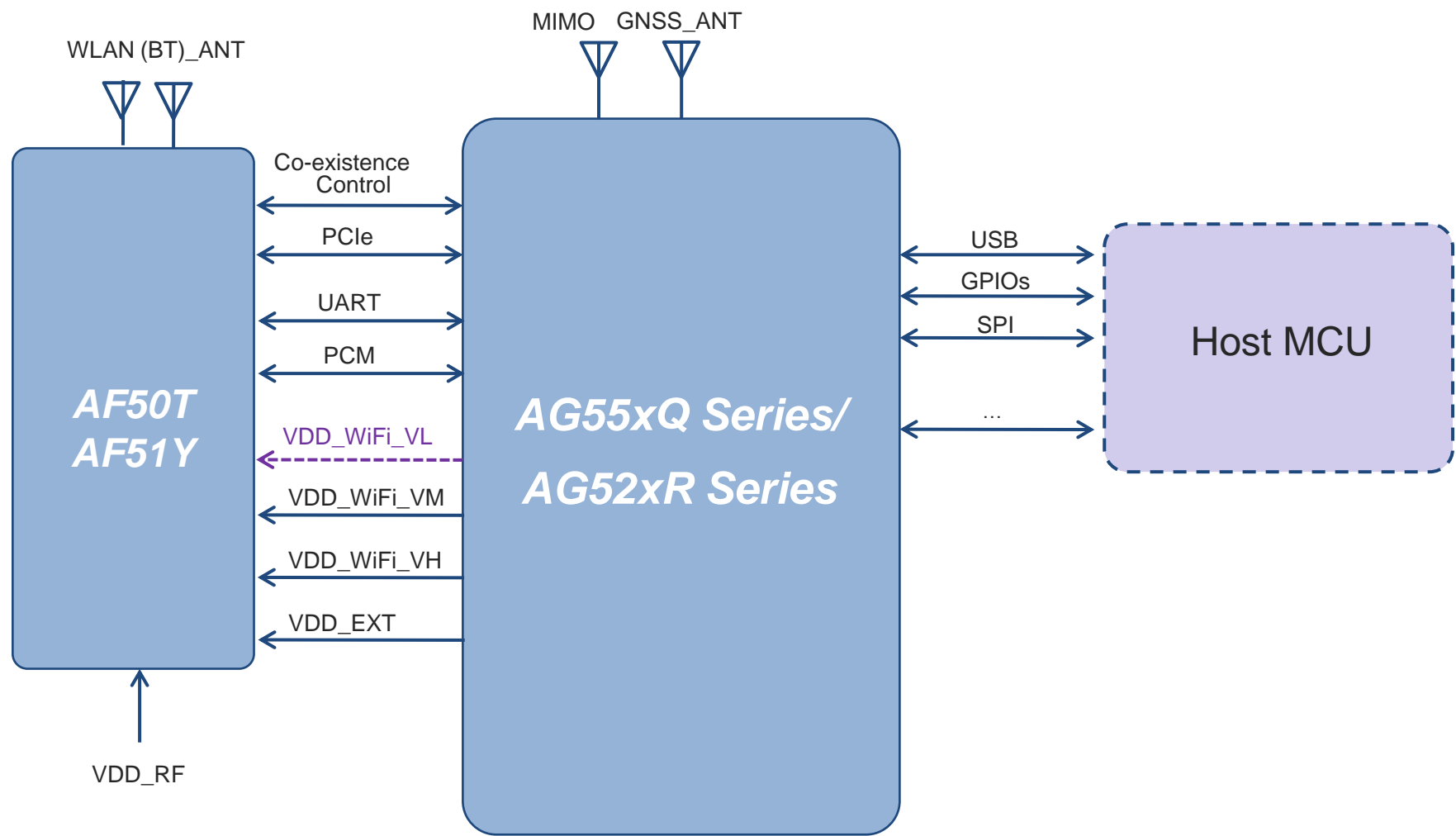
RG500Q Series + FG50V Solution



AG35 Series + AF20 Solution



AG55xQ Series/AG52xR Series + AF50T/AF51Y Solution



In AG52xR Series + AF50T/AF51Y solution, VDD_WiFi_VL is inputted by an external DC-DC converter.

Wi-Fi&Bluetooth Module Advantages



Best Co-existence

- The best co-existence of Wi-Fi and LTE/5G
- The best co-existence of Wi-Fi and Bluetooth

Quality

- Stable and robust network connectivity
- Wide working temperature
- Low power consumption

One-stop Solution

- Used with Quectel cellular modules
- One-stop LTE/5G + Wi-Fi/Bluetooth solution
- Provide the best performance

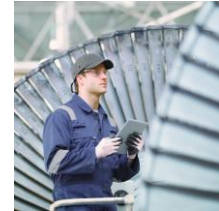
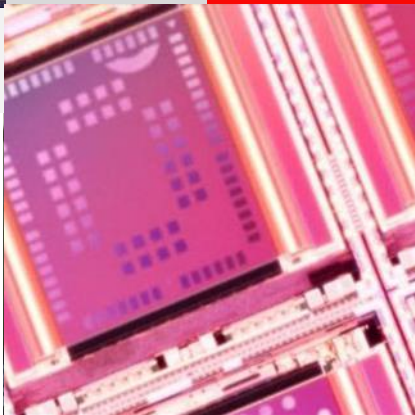
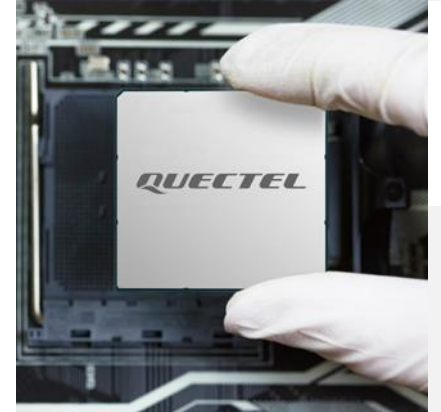
Easy Design

- Compact module package
- Convenient for test
- Convenient for automatic mass production
- Reduce manufacturing cost



Roadmap
Product Introduction
Technical Architecture
Applications

Build a Smarter World



Applications

Network

- DTU
- Routers
- Industrial gateway
- Wi-Fi hot spot



Automotive

- T-box
- Infotainment
- Tracking
- OBD
- DVR



Home

- Home automation
- Smart TV
- OTT box
- Smart speaker
- Smart home appliances



Others

- Wireless POS
- IP camera
- ATM





The number one cellular module vendor in the world and a leading GNSS module supplier

- Unbeatable choice from the broadest module portfolio in the world
- The highest quality products for the best possible prices
- Superb support with the largest R&D team in the industry
- Continuous innovation – first to market with 5G, LPWA, CV2X, snapdragon
- A passionate, dedicated team of “Quectelers” ensure our customers always come first

Thank You

Build a Smarter World

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 5108 6236 • Email: info@quectel.com
Technical Support: support@quectel.com