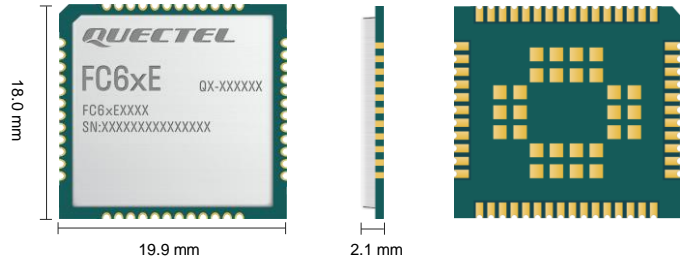


Quectel FC6xE

Wi-Fi & Bluetooth Module Compact LCC Package



FC6xE is a series of high-performance Wi-Fi 6/6E and Bluetooth 5.2 LCC package modules launched by Quectel. It can be used to establish WLAN and Bluetooth connections. FC6xE contains FC62E[®], FC64E, FC65E and FC66E. FC6xE supports $2 \times 2 + 2 \times 2$ MIMO, delivering a maximum data rate up to 3000 Mbps. With an ultra-compact size of 18.0 mm × 19.9 mm × 2.1 mm, FC6xE optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

Surface-mount technology (SMT) makes FC6xE an ideal solution for durable and rugged designs. The low profile and small size of LCC package ensure that it can be easily embedded into size-constrained applications and provide reliable connectivity with these applications. The advanced package and the laser-engraved label with better heat dissipation and indelible markings allow for large-scale automated manufacturing which has strict requirements on cost and efficiency.

Based on a reliable PCIe 3.0 interface, FC6xE achieves low-power and high-speed data transmission. Coupled with its compact size, lower power consumption, wide temperature range, higher transmit power and high reliability, the module can meet the requirements of industrial, consumer goods and automotive applications.



Key Features

- ✓ 2.4 GHz/ 5 GHz/ 6 GHz Wi-Fi bands and Bluetooth 5.2
- ✓ Dual Band Simultaneous (DBS)
- ✓ PCIe 3.0 interface that supports higher data transmission rate and enables lower power consumption
- ✓ Fast time-to-market: simple design minimizes design-in time and development efforts
- ✓ Wide operating temperature range: -30 °C to +75 °C



IEEE 802.11
a/b/g/n/ac/ax



Bluetooth 5.2



Ultra-compact Size



PCIe 3.0
Interface



DBS



Operating
Temperature Range:
-30 °C to +75 °C



LCC Package

Quectel FC6xE

Wi-Fi & Bluetooth	FC62E ^①	FC64E	FC65E	FC66E
WLAN Protocol	IEEE 802.11a/b/g/n/ac/ax	IEEE 802.11a/b/g/n/ac/ax	IEEE 802.11a/b/g/n/ac/ax	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/ 5 GHz	2.4 GHz/ 5 GHz	2.4 GHz/ 5 GHz/ 6 GHz	2.4 GHz/ 5 GHz/ 6 GHz
Wi-Fi Antenna	2 × 2 MIMO	2 × 2 + 2 × 2 MIMO	2 × 2 MIMO	2 × 2 + 2 × 2 MIMO
Wi-Fi Modulation Mode	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM
2.4 GHz Channel Bandwidth	20/ 40 MHz	20/ 40 MHz	20/ 40 MHz	20/ 40 MHz
5 GHz Channel Bandwidth	20/ 40/ 80 MHz	20/ 40/ 80 MHz	20/ 40/ 80/ 160 MHz	20/ 40/ 80/ 160 MHz
6 GHz Channel Bandwidth	-	-	20/ 40/ 80/ 160 MHz	20/ 40/ 80/ 160 MHz
DBS	-	Supported	-	Supported
Encryption Mode	WPA3	WPA3	WPA3	WPA3
Wi-Fi Operating Mode	AP/ STA	AP/ STA	AP/ STA	AP/ STA
Bluetooth Standard	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2
BLE Feature	LE Audio, 2M PHY, BLE Long Range	LE Audio, 2M PHY, BLE Long Range	LE Audio, 2M PHY, BLE Long Range	LE Audio, 2M PHY, BLE Long Range
Dimensions	18.0 mm × 19.9 mm × 2.1 mm	18.0 mm × 19.9 mm × 2.1 mm	18.0 mm × 19.9 mm × 2.1 mm	18.0 mm × 19.9 mm × 2.1 mm
Weight	Approx. 1.6 g	Approx. 1.6 g	Approx. 1.6 g	Approx. 1.6 g
Temperature Range				
Operating Temperature	-30 °C to +75 °C	-30 °C to +75 °C	-30 °C to +75 °C	-30 °C to +75 °C
Storage Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Physical Rate (Max.)				
802.11a	54 Mbps	54 Mbps	54 Mbps	54 Mbps
802.11b	11 Mbps	11 Mbps	11 Mbps	11 Mbps
802.11g	54 Mbps	54 Mbps	54 Mbps	54 Mbps
802.11n	300 Mbps	600 Mbps	300 Mbps	600 Mbps
802.11ac	866 Mbps	866 Mbps	1732 Mbps	1732 Mbps
802.11ax	1200 Mbps	1774.5 Mbps	2400 Mbps	3000 Mbps
Interfaces				
PCIe	× 1 (for Wi-Fi)	× 1 (for Wi-Fi)	× 1 (for Wi-Fi)	× 1 (for Wi-Fi)
PCM	× 1 (for Bluetooth)	× 1 (for Bluetooth)	× 1 (for Bluetooth)	× 1 (for Bluetooth)
UART	× 1 (for Bluetooth)	× 1 (for Bluetooth)	× 1 (for Bluetooth)	× 1 (for Bluetooth)
Special Pins	WLAN_EN, BT_EN	WLAN_EN, BT_EN	WLAN_EN, BT_EN	WLAN_EN, BT_EN
Wi-Fi Antenna Interface	× 1	× 1	× 1	× 1
Wi-Fi/Bluetooth Antenna Interface	× 1	× 1	× 1	× 1
Electrical Characteristics				
Power Supply Voltage	VDD_CORE_VL: 0.95 V VDD_CORE_VM: 1.35 V VDD_CORE_VH: 1.95 V VDD_RF: 2.2 V	VDD_CORE_VL: 0.95 V VDD_CORE_VM: 1.35 V VDD_CORE_VH: 1.95 V VDD_RF: 2.2 V	VDD_CORE_VL: 1.0 V VDD_CORE_VM: 1.8 V VDD_CORE_VH: 2.0 V VDD_RF: 2.0 V	VDD_CORE_VL: 1.0 V VDD_CORE_VM: 1.8 V VDD_CORE_VH: 2.0 V VDD_RF: 2.0 V
I/O Power Supply Voltage	1.8 V	1.8 V	1.8 V	1.8 V
Certifications				
Regulatory	Europe: CE ^① America: FCC ^① Canada: IC ^① China: SRRC ^① South Korea: KC ^① Japan: JATE ^① / TELEC ^① Australia/New Zealand: RCM ^①	Europe: CE America: FCC Canada: IC China: SRRC South Korea: KC Japan: JATE/ TELEC Australia/New Zealand: RCM	Europe: CE America: FCC Canada: IC China: SRRC South Korea: KC Japan: JATE*/ TELEC*	Europe: CE America: FCC Canada: IC China: SRRC South Korea: KC Japan: JATE/ TELEC Australia/New Zealand: RCM

NOTE:

- ①: under planning.
- *: ongoing.

Quectel FC6xE

Wi-Fi & Bluetooth		FC64E		FC65E/FC66E	
Wi-Fi Performance					
		Receiver Sensitivity	Transmit Power	Receiver Sensitivity	Transmit Power
2.4 GHz	802.11b/11 Mbps	-87 dBm ±2 dB	17 dBm ±2 dB	-89 dBm ±2 dB	17 dBm ±2 dB
	802.11g/54 Mbps	-74 dBm ±2 dB	14.5 dBm ±2 dB	-75 dBm ±2 dB	14.5 dBm ±2 dB
	802.11n/HT20 MCS 7	-72 dBm ±2 dB	13.5 dBm ±2 dB	-75 dBm ±2 dB	13.5 dBm ±2 dB
	802.11n/HT40 MCS 7	-67 dBm ±2 dB	13 dBm ±2 dB	-72 dBm ±2 dB	13 dBm ±2 dB
	802.11ax/HE20 MCS 11	-62 dBm ±2 dB	11 dBm ±2 dB	-63 dBm ±2 dB	11 dBm ±2 dB
	802.11ax/HE40 MCS 11	-59 dBm ±2 dB	10 dBm ±2 dB	-61 dBm ±2 dB	10 dBm ±2 dB
5 GHz	802.11a/54 Mbps	-72 dBm ±2 dB	13 dBm ±2 dB	-73 dBm ±2 dB	13 dBm ±2 dB
	802.11n/HT20 MCS 7	-70 dBm ±2 dB	12 dBm ±2 dB	-73 dBm ±2 dB	12 dBm ±2 dB
	802.11n/HT40 MCS 7	-68 dBm ±2 dB	11.5 dBm ±2 dB	-71 dBm ±2 dB	11.5 dBm ±2 dB
	802.11ac/VHT20 MCS 8	-66 dBm ±2 dB	11.5 dBm ±2 dB	-68 dBm ±2 dB	11.5 dBm ±2 dB
	802.11ac/VHT40 MCS 9	-63 dBm ±2 dB	10.5 dBm ±2 dB	-65 dBm ±2 dB	10.5 dBm ±2 dB
	802.11ac/VHT80 MCS 9	-57 dBm ±2 dB	10 dBm ±2 dB	-62 dBm ±2 dB	10 dBm ±2 dB
	802.11ax/HE20 MCS 11	-60 dBm ±2 dB	9.5 dBm ±2 dB	-62 dBm ±2 dB	9.5 dBm ±2 dB
	802.11ax/HE40 MCS 11	-58 dBm ±2 dB	9.5 dBm ±2 dB	-60 dBm ±2 dB	9.5 dBm ±2 dB
	802.11ax/HE80 MCS 11	-55 dBm ±2 dB	8.5 dBm ±2 dB	-57 dBm ±2 dB	8.5 dBm ±2 dB
	802.11ax/HE160 MCS 11	-	-	-53 dBm ±2 dB	8 dBm ±2 dB
6 GHz	802.11a/54 Mbps	-	-	-72 dBm ±2 dB	12 dBm ±2 dB
	802.11ax/HE20 MCS 11	-	-	-60 dBm ±2 dB	8.5 dBm ±2 dB
	802.11ax/HE40 MCS 11	-	-	-58 dBm ±2 dB	8.5 dBm ±2 dB
	802.11ax/HE80 MCS 11	-	-	-56 dBm ±2 dB	7.5 dBm ±2 dB
	802.11ax/HE160 MCS 11	-	-	-52 dBm ±2 dB	7 dBm ±2 dB
Bluetooth Performance					
		Receiver Sensitivity	Transmit Power	Receiver Sensitivity	Transmit Power
GFSK		-92 dBm ±2 dB	7 dBm ±2 dB	-92 dBm ±2 dB	7 dBm ±2 dB
EDR (π/4-DQPSK)		-90 dBm ±2 dB	4 dBm ±2 dB	-90 dBm ±2 dB	4 dBm ±2 dB
EDR (8-DQPSK)		-85 dBm ±2 dB	4 dBm ±2 dB	-85 dBm ±2 dB	4 dBm ±2 dB
BLE (1 Mbps)		-95 dBm ±2 dB	7 dBm ±2 dB	-95 dBm ±2 dB	7 dBm ±2 dB
BLE (2 Mbps)		-93 dBm ±2 dB	7 dBm ±2 dB	-93 dBm ±2 dB	7 dBm ±2 dB

Model	Ordering Code	Antenna	DBS	Coexistence with Cellular Module	Development Board (Only for Debugging)
FC66E	FC66EAAMD	Two antennas	Supported	-	FC66EAAM2
FC66E	FC66EABMD*	Two antennas	Supported	Supported	FC66EABM2*
FC65E	FC65EAAMD	Two antennas	-	-	FC65EAAM2
FC64E	FC64EAAMD	Two antennas	Supported	-	FC64EAAM2
FC64E	FC64EABMD	Two antennas	Supported	Supported	FC64EABM2

NOTE:

1. The development board is in M.2 form factor, which can be used to connect to the host that supports standard M.2 interface and can also work with Quectel EVB kit (RK3568-WF-EVB kit) for early debugging.
2. Contact local sales or FAE for ordering.
3. *: under development.