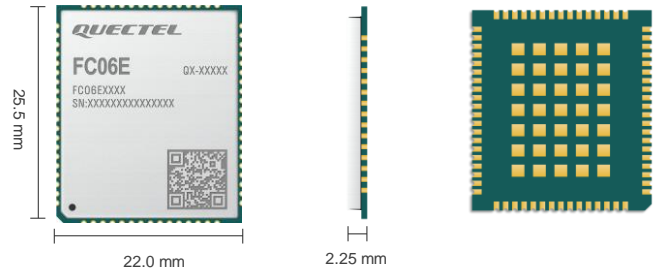


# Quectel FC06E

## Wi-Fi 6 & Bluetooth 5.2 Module Ultra-compact LCC Package



FC06E is a high-performance Wi-Fi 6 and Bluetooth 5.2 LCC package module launched by Quectel. It can be used to establish WLAN and Bluetooth connections. Supporting  $2 \times 2 + 2 \times 2$  MIMO, it delivers a maximum data rate up to 1774.5 Mbps. With an ultra-compact size of 25.5 mm  $\times$  22.0 mm  $\times$  2.25 mm, FC06E optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

Surface-mount technology (SMT) makes FC06E 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, FC06E 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 and consumer goods applications.



## Key Features

- ✓ 2.4 GHz and 5 GHz Wi-Fi bands and Bluetooth 5.2
- ✓ DBS
- ✓ PCIe 3.0 interface that supports higher data transmission rate and enables lower power consumption
- ✓ Faster 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

Wi-Fi 6 & Bluetooth 5.2	FC06E
WLAN Protocol	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/ 5 GHz
Wi-Fi Antenna	2 × 2 + 2 × 2
Wi-Fi Modulation Mode	DBPSK/DQPSK/CCK/BPSK/QPSK/QAM
2.4 GHz Channel Bandwidth	20 MHz/ 40 MHz
5 GHz Channel Bandwidth	20 MHz/ 40 MHz/ 80 MHz
DBS	Supported
Encryption Mode	WPA3
Wi-Fi Operating Mode	AP/ STA
Bluetooth Protocol	Bluetooth 5.2
Bluetooth LE Audio	Supported
Dimensions	25.5 mm × 22.0 mm × 2.25 mm
Weight (g)	Approx. 2.58 g
<b>Temperature Range</b>	
Operating Temperature Range	-30 °C to +75 °C
<b>Data Rate (Max.)</b>	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	600 Mbps
802.11ac	866 Mbps
802.11ax	1774.5 Mbps
<b>Interfaces</b>	
PCIe	× 1
PCM	× 1
UART	× 1
Wi-Fi Antenna Interfaces	× 2 (ANT_WIFI0, ANT_WIFI1)
Bluetooth Antenna Interface	× 1 (ANT_BT)
<b>Electrical Features</b>	
Power Supply Voltage	VDD_CORE_VL: 0.95 V VDD_CORE_VM: 1.35 V VDD_CORE_VH: 1.95 V VDD_RF: 1.95 V VDD_FEM: 5 V/ 3.3 V
I/O Power Supply Voltage	1.8 V
Power Consumption	Max. current at non-signaling mode (DBS): 488.97 mA @ 0.95 V 311.17 mA @ 1.35 V 7.57 mA @ 1.8 V 152.93 mA @ 1.95 V 1316 mA @ 5 V
<b>Certifications</b>	
Regulatory	<b>Europe:</b> CE <b>America:</b> FCC <b>The UK:</b> UKCA <b>Canada:</b> IC <b>China:</b> SRRC <b>South Korea:</b> KC <b>Australia/New Zealand:</b> RCM

## Wi-Fi 6 & Bluetooth 5.2

## FC06E

### Wi-Fi Performance

		Receiver Sensitivity (Typ.)	Transmit Power (Typ.)	
			@ VDD_FEM (5 V)	@ VDD_FEM (3.3 V)
2.4 GHz	802.11b/ 1 Mbps	-95 dBm	20 dBm	19 dBm
	802.11b/ 11 Mbps	-89 dBm	20 dBm	19 dBm
	802.11g/ 6 Mbps	-93 dBm	20 dBm	17 dBm
	802.11g/ 54 Mbps	-75 dBm	19 dBm	15 dBm
	802.11n/ HT20 MCS 0	-91 dBm	20 dBm	17 dBm
	802.11n/ HT20 MCS 7	-72 dBm	18.5 dBm	15 dBm
	802.11n/ HT40 MCS 0	-89 dBm	20 dBm	17 dBm
	802.11n/ HT40 MCS 7	-70 dBm	18.5 dBm	15 dBm
	802.11ax/ HE20 MCS 0	-91 dBm	20 dBm	17 dBm
	802.11ax/ HE20 MCS 11	-63 dBm	17.5 dBm	14 dBm
	802.11ax/ HE40 MCS 0	-90 dBm	20 dBm	17 dBm
	802.11ax/ HE40 MCS 11	-61 dBm	17.5 dBm	14 dBm
5 GHz	802.11a/ 6 Mbps	-92 dBm	20 dBm	18 dBm
	802.11a/ 54 Mbps	-74 dBm	19 dBm	16.5 dBm
	802.11n/ HT20 MCS 0	-91 dBm	20 dBm	18 dBm
	802.11n/ HT20 MCS 7	-72 dBm	18.5 dBm	16 dBm
	802.11n/ HT40 MCS 0	-88 dBm	20 dBm	18 dBm
	802.11n/ HT40 MCS 7	-70 dBm	18.5 dBm	16 dBm
	802.11ac/ VHT20 MCS 0	-90 dBm	20 dBm	18 dBm
	802.11ac/ VHT20 MCS 8	-70 dBm	17.5 dBm	15.5 dBm
	802.11ac/ VHT40 MCS 0	-89 dBm	20 dBm	18 dBm
	802.11ac/ VHT40 MCS 9	-65 dBm	17.5 dBm	15.5 dBm
	802.11ac/ VHT80 MCS 0	-86 dBm	20 dBm	17.5 dBm
	802.11ac/ VHT80 MCS 9	-61 dBm	17 dBm	15 dBm
	802.11ax/ HE20 MCS 0	-91 dBm	20 dBm	18 dBm
	802.11ax/ HE20 MCS 11	-63 dBm	17 dBm	15 dBm
	802.11ax/ HE40 MCS 0	-90 dBm	20 dBm	18 dBm
	802.11ax/ HE40 MCS 11	-60 dBm	17 dBm	15 dBm
	802.11ax/ HE80 MCS 0	-84 dBm	20 dBm	17.5 dBm
	802.11ax/ HE80 MCS 11	-58 dBm	16.5 dBm	14 dBm

### Bluetooth Performance

	Receiver Sensitivity (Typ.)	Transmit Power (Typ.)
GFSK	-91 dBm	8 dBm
EDR ( $\pi/4$ -DQPSK)	-91 dBm	6.5 dBm
EDR (8-DPSK)	-88 dBm	6.5 dBm
BLE (1 Mbps)	-98 dBm	8 dBm
BLE (2 Mbps)	-95 dBm	8 dBm

Model	Ordering Code	Antenna	DBS	Coexistence with Cellular Module	Development Board (Only for Debugging)
FC06E	FC06EAEMD	Three antennas	Supported	Not Supported	FC06EAEM2
FC06E	FC06EACMD	Three antennas	Supported	Supported	FC06EACTA