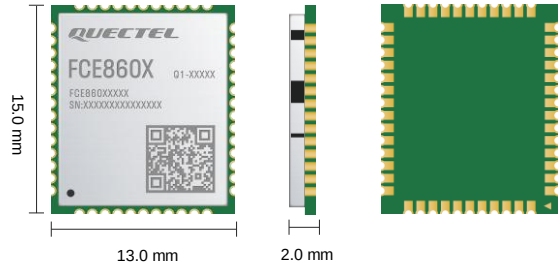


Quectel FCE860X

Wi-Fi 6 & Bluetooth 5.4 Module Ultra-compact LCC Package



FCE860X is a high-performance Wi-Fi 6 and Bluetooth 5.4 module featuring 2T2R in LCC package. It can be used for WLAN and Bluetooth connections, delivering a maximum data rate up to 1201 Mbps.

With an ultra-compact size of 15.0 mm × 13.0 mm × 2.0 mm, the module optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

Surface-mount technology (SMT) makes the module an ideal solution for durable and rugged designs. The low profile and small size of LCC package ensure that the module can be easily embedded into size-constrained applications and provide reliable connectivity with these applications.

Based on the reliable PCIe 2.0 interface, the module enables high-speed, low-power WLAN wireless transmission. With its compact form factor, low power consumption, wide temperature range, and high reliability, FCE860X is ideally suited for consumer applications.



Key Features

- ✓ 2.4 GHz and 5 GHz Wi-Fi bands and Bluetooth 5.4
- ✓ PCIe 2.0 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
- ✓ Wider operating temperature range:
-20 °C to +80 °C or -40 °C to +85 °C



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



Bluetooth 5.4



PCIe 2.0 Interface



Ultra-compact Size



Operating Temperature
Range: -20 °C to +80 °C or
-40 °C to +85 °C



LCC Package

Wi-Fi 6 & Bluetooth 5.4	FCE860X
WLAN Protocol	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/5 GHz
Wi-Fi Antenna	2 × 2
Wi-Fi Modulation Mode	DSSS/DBPSK/DQPSK/CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM/OFDMA
2.4 GHz Channel Bandwidth	20 MHz/40 MHz
5 GHz Channel Bandwidth	20 MHz/40 MHz/80 MHz
Encryption Mode	WEP, WPA, WPA2, WPA3-SAE, WAPI
Operating Mode	AP/STA
Bluetooth Protocol	Bluetooth 5.4
Dimensions	15.0 mm × 13.0 mm × 2.0 mm
Weight	Approx. 0.73 g
Temperature Range	
Operating Temperature	-20 °C to +80 °C or -40 °C to +85 °C (optional)
Physical Rate (Max.)	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	300 Mbps
802.11ac	866.7 Mbps
802.11ax	1201 Mbps
Interfaces	
PCIe 2.0	× 1 (for Wi-Fi)
PCM	× 1 (for Bluetooth)
UART	× 1 (for Bluetooth)
Enable Pins	WLAN_EN, BT_EN
Wi-Fi/Bluetooth Antenna	× 1 (ANT_WIFI0/BT ^①)
Wi-Fi Antenna	× 1 (ANT_WIFI1)
Bluetooth Antenna	× 1 (ANT_BT ^①) (optional)
Electrical Features	
Power Supply Voltage	VBAT: 3.0–3.6 V, typ. 3.3 V VDD_IO: 3.135–3.465 V, typ. 3.3 V; 1.71–1.89 V, typ. 1.8 V
Power Consumption	Max. current at Tx mode: 305 mA @ VBAT 0.6 mA @ VDD_IO
Certifications	
Regulatory	China: SRRC Europe: CE* America: FCC* Canada: IC* Australia/New Zealand: RCM*

NOTE:

1. ①: In two-antenna solution, ANT_WIFI0/BT is a shared interface for Wi-Fi and Bluetooth, leaving ANT_BT unconnected. In three-antenna solution, a dedicated Bluetooth antenna interface (ANT_BT) is supported, with ANT_WIFI0/BT only served as Wi-Fi antenna.

2. * : In progress.

Quectel FCE860X

Wi-Fi 6 & Bluetooth 5.4		FCE860X	
Wi-Fi Performance			
		Transmit Power (Typ.)	Receiver Sensitivity(Typ.)
2.4 GHz	802.11b/1 Mbps	18 dBm	-98 dBm
	802.11b/11 Mbps	18 dBm	-92 dBm
	802.11g/6 Mbps	18 dBm	-93 dBm
	802.11g/54 Mbps	15 dBm	-76 dBm
	802.11n/HT20 MCS 0	18 dBm	-92 dBm
	802.11n/HT20 MCS 7	15 dBm	-74 dBm
	802.11n/HT40 MCS 0	18 dBm	-89 dBm
	802.11n/HT40 MCS 7	15 dBm	-70.5 dBm
	802.11ax/HE20 MCS 0	18 dBm	-93 dBm
	802.11ax/HE20 MCS 11	13 dBm	-64 dBm
	802.11ax/HE40 MCS 0	18 dBm	-90 dBm
	802.11ax/HE40 MCS 11	13 dBm	-61 dBm
5 GHz	802.11a/6 Mbps	18 dBm	-92 dBm
	802.11a/54 Mbps	15 dBm	-76 dBm
	802.11n/HT20 MCS 0	18 dBm	-91 dBm
	802.11n/HT20 MCS 7	15 dBm	-73 dBm
	802.11n/HT40 MCS 0	18 dBm	-88 dBm
	802.11n/HT40 MCS 7	15 dBm	-70 dBm
	802.11ac/VHT20 MCS 0	18 dBm	-92 dBm
	802.11ac/VHT20 MCS 8	14 dBm	-70 dBm
	802.11ac/VHT40 MCS 0	18 dBm	-89 dBm
	802.11ac/VHT40 MCS 9	14 dBm	-64.5 dBm
	802.11ac/VHT80 MCS 0	18 dBm	-85 dBm
	802.11ac/VHT80 MCS 9	14 dBm	-61 dBm
	802.11ax/HE20 MCS 0	18 dBm	-92 dBm
	802.11ax/HE20 MCS 11	12 dBm	-62 dBm
	802.11ax/HE40 MCS 0	18 dBm	-89 dBm
	802.11ax/HE40 MCS 11	12 dBm	-60 dBm
	802.11ax/HE80 MCS 0	18 dBm	-86 dBm
	802.11ax/HE80 MCS 11	12 dBm	-57 dBm
Bluetooth Performance			
		Transmit Power (Typ.)	Receiver Sensitivity (Typ.)
BR (GFSK)		5 dBm	-88 dBm
EDR ($\pi/4$ -DQPSK)		5 dBm	-88 dBm
EDR (8-DPSK)		5 dBm	-82 dBm
BLE (1 Mbps)		5 dBm	-97 dBm
BLE (2 Mbps)		5 dBm	-95 dBm
BLE (S = 2)		5 dBm	-101 dBm
BLE (S = 8)		5 dBm	-105 dBm

Model	Ordering Code	Antenna	Wi-Fi Interface	Bluetooth Interface	Operating Temperature	Development Board (Only for Debugging)
FCE860X	FCE860XACMD	Two antennas	PCIe 2.0	UART	-20 °C to +80 °C	FCE860XACM2
FCE860X	FCE860XBACMD	Three antennas	PCIe 2.0	UART	-20 °C to +80 °C	FCE860XBACM2
FCE860X	FCE860XADMD	Two antennas	PCIe 2.0	UART	-40 °C to +85 °C	FCE860XADM2