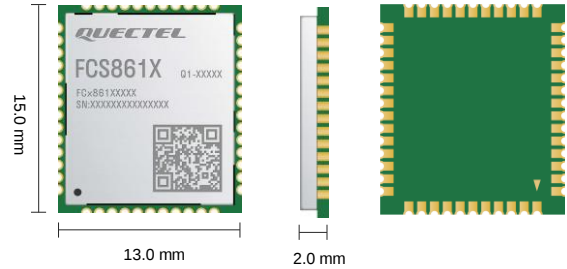


Quectel FCS861X

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



FCS861X is a high-performance Wi-Fi 6 and Bluetooth 5.4 module in an LCC package, featuring 2T2R. It can be used for WLAN and Bluetooth connectivity, delivering a maximum data rate up to 1201 Mbps. And the module also supports Bluetooth LE Audio.

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 FCS861X an ideal solution for durable and rugged designs. The low profile and small size of LCC package ensure that FCS861X 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 that has strict requirements on cost and efficiency. Coupled with its compact size, low power consumption and high reliability, FCS861X can meet various needs of commercial applications.



Key Features

- ✓ 2.4 GHz/5 GHz Wi-Fi bands and Bluetooth 5.4
- ✓ SDIO 3.0 or USB 2.0 interface (optional)
- ✓ Faster time-to-market: simple design minimizes design-in time and development efforts
- ✓ Wide operating temperature range: -20 °C to +80 °C
- ✓ Bluetooth LE Audio



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



Bluetooth 5.4



Ultra-compact Size



LCC Package



USB 2.0 Interface
(optional)



SDIO 3.0
Interface (optional)



Operating Temperature
Range: -20 °C to +80 °C

Wi-Fi 6 & Bluetooth 5.4	FCS861X
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	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, WAPI
Wi-Fi 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
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	
SDIO 3.0 ①	× 1 (for Wi-Fi)
USB 2.0 ①	× 1 (for Wi-Fi/Bluetooth)
PCM	× 1 (for Bluetooth)
UART ①	× 1 (for Bluetooth)
Wi-Fi/Bluetooth Antenna	× 1 (ANT_WIFI0/BT ②)
Wi-Fi Antenna	× 1 (ANT_WIFI1)
Bluetooth Antenna	× 1 (ANT_BT ②) (optional)
Electrical Features	
Power Supply Voltage	VBAT: 3.0–3.6 V, typ. 3.3 V
I/O Supply Voltage	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: 231.72 mA @ VBAT 0.11 mA @ VDD_IO
Certifications	
Regulatory	Europe: CE America: FCC Canada: IC China: SRRC Australia/New Zealand: RCM

NOTE:

1. ①: The module supports Wi-Fi applications via SDIO or USB interfaces, and Bluetooth applications via UART or USB interfaces. Please select the corresponding module model based on actual requirements. For more details, please contact Quectel Technical Support.

2. ②: ANT_WIFI0/BT serves as Wi-Fi and Bluetooth shared antenna and ANT_BT is kept unconnected in two-antenna solution. Exclusive Bluetooth antenna is supported in three-antenna solution with ANT_WIFI0/BT only served as Wi-Fi antenna.

Wi-Fi 6 & Bluetooth 5.4		FCS861X	
Wi-Fi Performance			
		Transmit Power (Typ.)	Receiver Sensitivity (Typ.)
2.4 GHz	802.11b/1 Mbps	18 dBm	-100 dBm
	802.11b/11 Mbps	18 dBm	-92 dBm
	802.11g/6 Mbps	18 dBm	-96 dBm
	802.11g/54 Mbps	15 dBm	-80 dBm
	802.11n/HT20 MCS 0	18 dBm	-94 dBm
	802.11n/HT20 MCS 7	15 dBm	-76 dBm
	802.11n/HT40 MCS 0	18 dBm	-91 dBm
	802.11n/HT40 MCS 7	15 dBm	-73 dBm
	802.11ax/HE20 MCS 0	18 dBm	-95 dBm
	802.11ax/HE20 MCS 11	13 dBm	-67 dBm
	802.11ax/HE40 MCS 0	18 dBm	-92 dBm
	802.11ax/HE40 MCS 11	13 dBm	-64 dBm
5 GHz	802.11a/6 Mbps	18 dBm	-93 dBm
	802.11a/54 Mbps	15 dBm	-76 dBm
	802.11n/HT20 MCS 0	18 dBm	-92 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	-93 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	-65 dBm
	802.11ac/VHT80 MCS 0	18 dBm	-86 dBm
	802.11ac/VHT80 MCS 9	14 dBm	-62 dBm
	802.11ax/HE20 MCS 0	18 dBm	-93 dBm
	802.11ax/HE20 MCS 11	12 dBm	-63 dBm
	802.11ax/HE40 MCS 0	18 dBm	-90 dBm
	802.11ax/HE40 MCS 11	12 dBm	-61 dBm
	802.11ax/HE80 MCS 0	18 dBm	-85 dBm
	802.11ax/HE80 MCS 11	12 dBm	-57 dBm
Bluetooth Performance			
Two-antenna solution		Transmit Power (Typ.)	Receiver Sensitivity (Typ.)
BR (GFSK)		5 dBm	-96 dBm
EDR (π/4-DQPSK)		5 dBm	-93 dBm
EDR (8-DPSK)		5 dBm	-90 dBm
BLE (1 Mbps)		5 dBm	-98 dBm
BLE (2 Mbps)		5 dBm	-96 dBm
BLE (S = 2)		5 dBm	-102 dBm
BLE (S = 8)		5 dBm	-106 dBm
Three-antenna solution		Transmit Power (Typ.)	Receiver Sensitivity (Typ.)
BR (GFSK)		5 dBm	-95 dBm
EDR (π/4-DQPSK)		5 dBm	-94 dBm
EDR (8-DPSK)		5 dBm	-89 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	-104 dBm

Model	Ordering Code	Antenna	Wi-Fi Application Interface	Bluetooth Application Interface	Development Board (Only for Debugging)
FCS861X	FCS861XBAAMD	Three antennas	SDIO interface	UART, PCM interfaces	FCS861XBAAM2
FCS861X	FCS861XABMD	Two antennas	SDIO interface	UART, PCM interfaces	FCS861XABM2
FCS861X	FCS861XBABMD	Three antennas	SDIO interface	UART, PCM interfaces	FCS861XBABM2
FCS861X	FCU861XAAMD	Two antennas	USB interface	USB, PCM interfaces	FCU861XAAM2
FCS861X	FCU861XBAAMD	Three antennas	USB interface	USB, PCM interfaces	FCU861XBAAM2