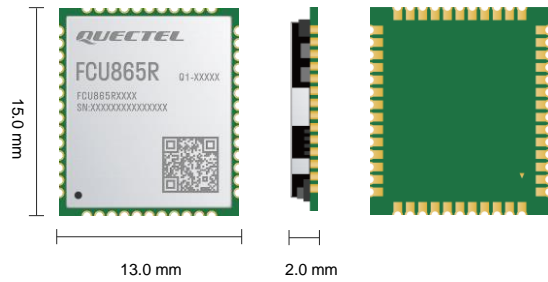


Quectel FCU865R

Wi-Fi 6 & Bluetooth 5.3 Module Ultra-compact LCC Package



The FCU865R is a high-performance Wi-Fi 6 and Bluetooth 5.3 LCC package module launched by Quectel, which can be used for Wi-Fi and Bluetooth connections. The module supports the IEEE 802.11a/b/g/n/ac/ax protocol and provides a maximum data rate of up to 600 Mbps. It also supports 1T1R mode, LE Audio, Auracast and covers the 2.4 GHz and 5 GHz Wi-Fi bands.

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 it can be easily embedded into size-constrained applications and provide reliable connectivity with these applications.

Designed with a reliable USB 2.0 interface to provide WLAN capability, the module achieves low-power and high-speed data transmission. Coupled with its compact size, and high reliability, FCU865R can meet the application needs in a variety of fields.

Key Features

- ✓ 2.4 GHz and 5 GHz Wi-Fi bands and Bluetooth 5.3
- ✓ USB 2.0 interface with higher data transmission rate and low power consumption
- ✓ Faster time-to-market: simple design minimizes design-in time and development efforts
- ✓ Operating temperature range: -20 °C to +70 °C
- ✓ Supports LE Audio and Auracast



USB 2.0 Interface



Bluetooth 5.3



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



Ultra-compact Size



LCC Package



Temperature Range: -20 °C to +70 °C

Wi-Fi 6 & Bluetooth 5.3	FCU865R
WLAN Protocol	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/5 GHz
Wi-Fi Antenna	1 × 1
Wi-Fi Modulation Mode	DBPSK/DQPSK/CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM
2.4 GHz Channel Bandwidth	20 MHz/40 MHz
5 GHz Channel Bandwidth	20 MHz/40 MHz/80 MHz
Encryption Mode	WPA3
Wi-Fi Operating Mode	AP/STA
Bluetooth Protocol	Bluetooth 5.3
Dimensions	15.0 mm × 13.0 mm × 2.0 mm
Weight	Approx. 0.82 g
Temperature Range	
Operating Temperature	-20 °C to +70 °C
Physical Rate (Max.)	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	150 Mbps
802.11ac	433 Mbps
802.11ax	600 Mbps
Interfaces	
USB 2.0	× 1 (For Wi-Fi/Bluetooth)
Wi-Fi/Bluetooth Antenna	× 1
Electrical Features	
Power Supply Voltage	VBAT: 3.0–3.6 V, Typ. 3.3 V
Power Consumption	Max. current at 802.11n HT40 non-signaling Tx mode: 576.5 mA
Certifications	
Regulatory (Planning)	<p>Europe: CE America: FCC China: SRRC Canada: IC Australia/New Zealand: RCM Japan: JATE/TELEC South Korea: KC</p>

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Wi-Fi 6 & Bluetooth 5.3

FCU865R

Wi-Fi Performance

		Receiver Sensitivity (Typ.)	Transmit Power (Typ.)
2.4 GHz	802.11b/1 Mbps	-98.5 dBm	19 dBm
	802.11b/11 Mbps	-90.5 dBm	19 dBm
	802.11g/6 Mbps	-94.5 dBm	19 dBm
	802.11g/54 Mbps	-77.5 dBm	18 dBm
	802.11n/HT20 MCS 0	-94.5 dBm	19 dBm
	802.11n/HT20 MCS 7	-76 dBm	17 dBm
	802.11n/HT40 MCS 0	-91.5 dBm	19 dBm
	802.11n/HT40 MCS 7	-72.5 dBm	17 dBm
	802.11ax/HE20 MCS 0	-95 dBm	19 dBm
	802.11ax/HE20 MCS 11	-67 dBm	13 dBm
	802.11ax/HE40 MCS 0	-92 dBm	19 dBm
	802.11ax/HE40 MCS 11	-63 dBm	13 dBm
5 GHz	802.11a/6 Mbps	-94 dBm	20 dBm
	802.11a/54 Mbps	-77 dBm	18 dBm
	802.11n/HT20 MCS 0	-94 dBm	20 dBm
	802.11n/HT20 MCS 7	-75 dBm	17 dBm
	802.11n/HT40 MCS 0	-90.5 dBm	20 dBm
	802.11n/HT40 MCS 7	-72 dBm	17 dBm
	802.11ac/VHT20 MCS 0	-94 dBm	20 dBm
	802.11ac/VHT20 MCS 8	-71 dBm	16 dBm
	802.11ac/VHT40 MCS 0	-91 dBm	20 dBm
	802.11ac/VHT40 MCS 9	-66.5 dBm	15 dBm
	802.11ac/VHT80 MCS 0	-87.5 dBm	18 dBm
	802.11ac/VHT80 MCS 9	-63.5 dBm	15 dBm
	802.11ax/HE20 MCS 0	-94 dBm	20 dBm
	802.11ax/HE20 MCS 11	-66 dBm	13 dBm
	802.11ax/HE40 MCS 0	-91.5 dBm	20 dBm
	802.11ax/HE40 MCS 11	-61.5 dBm	13 dBm
802.11ax/HE80 MCS 0	-88 dBm	18 dBm	
802.11ax/HE80 MCS 11	-60.5 dBm	13 dBm	

Bluetooth Performance

	Receiver Sensitivity (Typ.)	Transmit Power (Typ.)
BR	-96 dBm	7 dBm
EDR ($\pi/4$ -DQPSK)	-95 dBm	7 dBm
EDR (8-DPSK)	-89.5 dBm	7 dBm
BLE (1 Mbps)	-99 dBm	7 dBm
BLE (2 Mbps)	-96.5 dBm	7 dBm
BLE (S = 2)	-103 dBm	7 dBm
BLE (S = 8)	-107 dBm	7 dBm

Model	Ordering Code	Antenna	DBS	Coexistence with Cellular Module	Development Board (Only for Debugging)
FCU865R	FCU865RAAMD	One antenna	-	-	FCU865RAATA