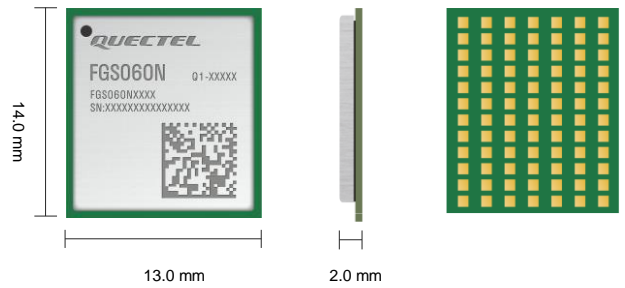


# Quectel FGS060N

## Wi-Fi 6 & Bluetooth 5.4 & IEEE 802.15.4 Module



FGS060N is a high-performance Wi-Fi 6, Bluetooth 5.4 and IEEE 802.15.4 module in LGA package launched by Quectel. Under the IEEE 802.11ax standard protocol, it supports MCS 0–MCS 11 rates in an 80 MHz bandwidth with 1024QAM supported. The module is designed with a reliable SDIO 3.0 interface to provide WLAN capability.

With an ultra-compact size of 14.0 mm × 13.0 mm × 2.0 mm, FGS060N optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

Surface-mount Technology (SMT) makes FGS060N an ideal solution for durable and rugged designs. The low profile and small size of LGA package ensure that the module can be easily embedded into size-constrained applications and provide reliable connectivity with these applications. The advanced package, integrated shielding cover 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 and wide operating temperature range, FGS060N is suitable for a variety of smart home and industrial applications.



### Key Features

- ✓ 2.4 GHz/ 5 GHz Wi-Fi bands, Bluetooth 5.4
- ✓ IEEE 802.15.4 (Thread, Zigbee)
- ✓ SDIO 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: -40 °C to +85 °C



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



Bluetooth 5.4



Zigbee



Thread



SDIO 3.0  
Interface



LGA Package



Ultra-compact  
Size



Operating Temperature  
Range: -40 °C to +85 °C

# Quectel FGS060N

Wi-Fi 6 & Bluetooth 5.4 & IEEE 802.15.4	FGS060N
WLAN Protocol	IEEE 802.11 a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/ 5 GHz
Wi-Fi Antenna	1 × 1
Wi-Fi Modulation Mode	DSSS/ OFDM/ DBPSK/ DQPSK/ CCK/ BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM/ 1024QAM/ OFDMA
Encryption Mode	WPA2/ WPA3
Wi-Fi Operating Mode	AP/ STA/ P2P
IEEE 802.15.4	Zigbee/ Thread
Bluetooth Protocol	Bluetooth 5.4
Dimensions	14.0 mm × 13.0 mm × 2.0 mm
Weight	Approx. 0.7 g
<b>Temperature Range</b>	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-45 °C to +95 °C
<b>Physical Rate (Max.)</b>	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	150 Mbps
802.11ac	433.3 Mbps
802.11ax	600.4 Mbps
<b>Interfaces</b>	
SPI	× 1 (for IEEE 802.15.4)
SDIO 3.0	× 1 (for Wi-Fi)
UART	× 1 (for Bluetooth)
PCM	× 1 (for Bluetooth)
Wi-Fi/Bluetooth Antenna	× 1
<b>Electrical Features</b>	
Power Supply Voltage	VBAT_3V3: 3.14–3.46 V, Typ. 3.3 V VBAT_1V8: 1.71–1.89 V, Typ. 1.8 V
I/O Power Supply Voltage	VDDIO: • 3.14–3.46 V, Typ. 3.3 V • 1.71–1.89 V, Typ. 1.8 V
VDDIO_RF Power Supply	VDDIO_RF: • 3.14–3.46 V, Typ. 3.3 V
SDIO_VDD Power Supply	SDIO_VDD: • 3.14–3.46 V, Typ. 3.3 V • 1.71–1.89 V, Typ. 1.8 V
Power Consumption	Max. current at Tx mode: • 276 mA @ 3.3 V • 246 mA @ 1.8 V
<b>Certifications</b>	
Regulatory	Europe: CE America: FCC Canada: IC Australia/New Zealand: RCM Japan: JATE/TELEC Taiwan, China: NCC*

## Wi-Fi 6 & Bluetooth 5.4 & IEEE 802.15.4 FGS060N

### Wi-Fi Performance

		Receiver Sensitivity	Transmit Power
2.4 GHz	802.11b/1 Mbps	-96 dBm ±2.5 dB	16 dBm ±2.5 dB
	802.11b/11 Mbps	-87 dBm ±2.5 dB	16 dBm ±2.5 dB
	802.11g/6 Mbps	-90 dBm ±2.5 dB	16 dBm ±2.5 dB
	802.11g/54 Mbps	-74 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT20 MCS 0	-90 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT20 MCS 7	-71 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT40 MCS 0	-87 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT40 MCS 7	-69 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ax/HE20 MCS 0	-90 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ax/HE20 MCS 11	-61 dBm ±2.5 dB	8 dBm ±2.5 dB
	802.11ax/HE40 MCS 0	-87 dBm ±2.5 dB	14 dBm ±2.5 dB
802.11ax/HE40 MCS 11	-59 dBm ±2.5 dB	8 dBm ±2.5 dB	
5 GHz	802.11a/6 Mbps	-90 dBm ±2.5 dB	15 dBm ±2.5 dB
	802.11a/54 Mbps	-74 dBm ±2.5 dB	15 dBm ±2.5 dB
	802.11n/HT20 MCS 0	-90 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT20 MCS 7	-71 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT40 MCS 0	-87 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11n/HT40 MCS 7	-69 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ac/VHT20 MCS 0	-90 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ac/VHT20 MCS 8	-68 dBm ±2.5 dB	13 dBm ±2.5 dB
	802.11ac/VHT40 MCS 0	-87 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ac/VHT40 MCS 9	-64 dBm ±2.5 dB	12 dBm ±2.5 dB
	802.11ac/VHT80 MCS 0	-83 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ac/VHT80 MCS 9	-60 dBm ±2.5 dB	11 dBm ±2.5 dB
	802.11ax/HE20 MCS 0	-91 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ax/HE20 MCS 11	-62 dBm ±2.5 dB	7 dBm ±2.5 dB
	802.11ax/HE40 MCS 0	-88 dBm ±2.5 dB	14 dBm ±2.5 dB
	802.11ax/HE40 MCS 11	-59 dBm ±2.5 dB	7 dBm ±2.5 dB
	802.11ax/HE80 MCS 0	-84 dBm ±2.5 dB	14 dBm ±2.5 dB
802.11ax/HE80 MCS 11	-57 dBm ±2.5 dB	7 dBm ±2.5 dB	

### Bluetooth Performance

	Receiver Sensitivity	Transmit Power
BR (GFSK)	-92 dBm ±2.5 dB	3 dBm ±2.5 dB
EDR ( $\pi/4$ -DQPSK)	-93 dBm ±2.5 dB	0 dBm ±2.5 dB
EDR (8-DPSK)	-88 dBm ±2.5 dB	0 dBm ±2.5 dB
BLE (1 Mbps)	-96 dBm ±2.5 dB	3 dBm ±2.5 dB
BLE (2 Mbps)	-94 dBm ±2.5 dB	3 dBm ±2.5 dB
BLE (S = 2)	-98 dBm ±2.5 dB	3 dBm ±2.5 dB
BLE (S = 8)	-103 dBm ±2.5 dB	3 dBm ±2.5 dB

### 802.15.4 Performance

	Receiver Sensitivity	Transmit Power <sup>①</sup>
IEEE 802.15.4	2405 MHz	4.5 dBm ±2.5 dB
	2440 MHz	4.5 dBm ±2.5 dB
	2480 MHz <sup>②</sup>	0 dBm ±2.5 dB

Model	Ordering Code	Antenna	DBS	Coexistence with Cellular Module	Development Board (Only for Debugging)
FGS060N	FGS060NABMD	One antenna	-	-	FGS060NABM2

#### NOTE:

- ①: When the module is powered on, the default transmit power of IEEE 802.15.4 is 0 dBm. In actual use, you must configure the power using the **ot** command. For example, execute the command **ot-ctl txpower 18** to configure the maximum power to 18 dBm. For more information, contact Quectel Technical Support.
- ②: Due to the limitations of software, the transmitting power of the high channel (2480 MHz) is lower than that of the low and middle channels.