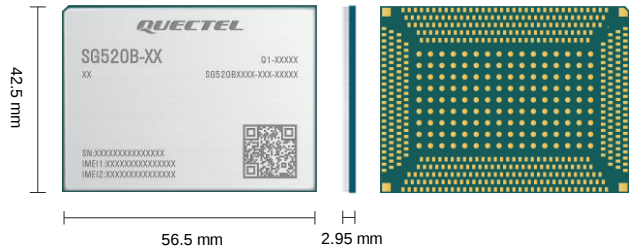


Quectel SG520B Series

5G Sub-6 GHz Smart Module with Wi-Fi 6E & Bluetooth



SG520B series is Quectel’s new generation of multi-mode 5G smart module with built-in Android 13/ 14*/ 15^①/ 16^①/ 17^①/ 18^① OS. Based on QCM4490 64-bit octa-core processors, it is ideal for both industrial and customer applications requiring high data rates and multimedia functions. SG520B series is available in four variants: SG520B-CN, SG520B-EM, SG520B-NA^① and SG520B-WF^①.

SG520B series module meets 3GPP Release 16 specification, and supports both 5G NSA and SA modes with 4G/ 3G fallback. The module also supports Wi-Fi 6E & DBS, IEEE 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 2 × 2 MU-MIMO and Bluetooth 5.2.

SG520B series module supports 5G & LTE Multiple-Input Multiple-Output (MIMO) technology. The use of multiple antennas at the receiver end at the same time and on the same frequency band greatly minimizes errors and optimizes the data speed. The module also combines high-speed wireless connectivity with embedded multi-constellation and high-sensitivity GNSS (GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS) receiver for positioning.

A rich set of interfaces (such as LCM, camera, touch panel, UART, USB, I2C and I2S) extend the applicability of the module to a wide range of M2M applications, including smart gateway, CPE, MiFi, MID, PND, POS, router, multimedia terminal, smart phone, digital signage, industrial PDA, etc.



Key Features

- ✓ Built-in Android 13/ 14*/ 15^①/ 16^①/ 17^①/ 18^① OS
- ✓ Worldwide 5G/ 4G/ 3G/ 2G coverage
- ✓ Supports Wi-Fi 6E & DBS, IEEE 802.11ax, 2 × 2 MU-MIMO
- ✓ Supports 5G & LTE MIMO technology, which meets demands for data rate and link reliability in wireless communication system
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment, supporting L1 band
- ✓ Supports 1080P H.265/ H.264 video encoding and decoding



5G Sub-6 GHz



Qualcomm®
Adreno™ Snapdragon
GPU



Android OS



LTE Cat 15



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



Bluetooth 5.2



GPS/ GLONASS/
BDS/ Galileo/
NavIC/ QZSS



Powerful Multimedia
functions



LGA Package

Quectel SG520B Series

5G Sub-6 GHz	SG520B-CN	SG520B-EM	SG520B-NA ^①	SG520B-WF ^①
Region/ Operator	China/ India	EMEA/ Korea/ South Africa/ Latin America/ Australia/ India/ Japan New Zealand	North America	Global
CPU	QCM4490, octa-core 2 × A78 @ 2.4 GHz 6 × A55 @ 2 GHz	QCM4490, octa-core 2 × A78 @ 2.4 GHz 6 × A55 @ 2 GHz	QCM4490, octa-core 2 × A78 @ 2.4 GHz 6 × A55 @ 2 GHz	QCM4490, octa-core 2 × A78 @ 2.4 GHz 6 × A55 @ 2 GHz
Memory	4 GB + 64 GB (LPDDR4X uMCP, default) 8 GB + 128 GB (LPDDR4X uMCP, optional)	4 GB + 64 GB (LPDDR4X uMCP, default) 8 GB + 128 GB (LPDDR4X uMCP, optional)	4 GB + 64 GB (LPDDR4X uMCP, default) 8 GB + 128 GB (LPDDR4X uMCP, optional)	4 GB + 64 GB (LPDDR4X uMCP, default) 8 GB + 128 GB (LPDDR4X uMCP, optional)
OS	Android 13/ 14*/ 15 ^① / 16 ^① / 17 ^① / 18 ^①	Android 14*/ 15 ^① / 16 ^① / 17 ^① / 18 ^①	Android 14*/ 15 ^① / 16 ^① / 17 ^① / 18 ^①	Android 14*/ 15 ^① / 16 ^① / 17 ^① / 18 ^①
Dimensions (mm)	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95
Package	LGA	LGA	LGA	LGA
Weight (g)	TBD	TBD	TBD	TBD
Temperature Range				
Operating Temperature	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C
Frequency Bands				
5G SA/ NSA	n1/ 3/ 5/ 8/ 28/ n41/ 78/ 79	n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 77/ 78/ 79	n2/ 5/ 7/ 12/ 13/ 14/ 25/ 26/ 29/ 30/ 38/ 41/ 48/ 66/ 70/ 71/ 77/ 78	-
5G MIMO	4 × 4 MIMO (DL): n1/ 41/ 78/ 79	4 × 4 MIMO (DL): n1/ 3/ 7/ 38/ 40/ 41/ 77/ 78/ 79 2 × 2 MIMO (UL): n41/ 77/ 78/ 79	4 × 4 MIMO (DL): n2/ 7/ 25/ 30/ 38/ 41/ 48/ 66/ 70/ 77/ 78 2 × 2 MIMO (UL): n38/ 41/ 48/ 77/ 78	-
LTE	B1/ 3/ 5/ 8/ 34/ 38/ 39/ 40/ 41	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 17/ 18/ 19/ 20/ 26/ 28/ 32/ 34/ 38/ 39/ 40/ 41/ 42	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 29/ 30/ 38/ 41/ 42/ 43/ 46/ 48/ 66/ 71	-
LTE MIMO	4 × 4 MIMO (DL): B1/ 41	4 × 4 MIMO (DL): B1/ 3/ 7/ 38/ 40/ 41/ 42	4 × 4 MIMO (DL): B2/ 4/ 7/ 25/ 30/ 38/ 41/ 42/ 43/ 48/ 66	-
WCDMA	B1/ 5/ 8	B1/ 2/ 4/ 5/ 6/ 8/ 19	-	-
GSM/ EDGE	-	B2/ 3/ 5/ 8	-	-
WLAN	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax Supports DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax Supports DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Supports DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Supports DBS, 2 × 2 MU-MIMO
Bluetooth	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2
GNSS	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS; L1	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS; L1	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS; L1	-
Certifications				
Carrier	TBD	TBD	TBD	TBD
Regulatory	China: CCC/ SRRC/ NAL	Global: GCF ^① Europe: CE* Australia/ New Zealand: RCM ^①	TBD	TBD
Others	TBD	TBD	TBD	TBD
Data Rate				
5G SA	Max. 2.1 Gbps (DL)/ 450 Mbps (UL)	Max. 2.1 Gbps (DL)/ 900 Mbps (UL)	Max. 2.1 Gbps (DL)/ 900 Mbps (UL)	-
5G NSA	Max. 2.5 Gbps (DL)/ 550 Mbps (UL)	Max. 2.5 Gbps (DL)/ 550 Mbps (UL)	Max. 2.5 Gbps (DL)/ 550 Mbps (UL)	-
LTE	Max. 0.8 Gbps (DL)/ 200 Mbps (UL)	Max. 0.8 Gbps (DL)/ 200 Mbps (UL)	Max. 0.8 Gbps (DL)/ 200 Mbps (UL)	-
DC-HSPA+	Max. 42 Mbps (DL)/ 5.7 Mbps (UL)	Max. 42 Mbps (DL)/ 5.7 Mbps (UL)	Max. 42 Mbps (DL)/ 5.7 Mbps (UL)	-
WCDMA	Max. 384 kbps (DL)/ 384 kbps (UL)	Max. 384 kbps (DL)/ 384 kbps (UL)	-	-
EDGE	-	Max. 296 kbps (DL)/ 236.8 kbps (UL)	-	-
GPRS	-	Max. 107 kbps (DL)/ 85.6 kbps (UL)	-	-
Enhanced Features				
Modem	5G: Release 16 LTE: Release 16	5G: Release 16 LTE: Release 16	5G: Release 16 LTE: Release 16	-
Rx-diversity	●	●	●	-
DL MIMO 4 × 4	●	●	●	-
(U)SIM Detection	●	●	●	-
Dual SIM Dual Standby	●	●	●	-
Firmware Upgrade via USB	●	●	●	●
Firmware Upgrade via OTA	●	●	●	●

Note:

1. *: Under development/ in progress/ planning
2. ①: TBD (To Be Determined)



Quectel SG520B Series

5G Sub-6 GHz		General Features	
Interfaces			
LCM		FHD+ @ 60/ 90/ 120 Hz	
Camera		3x MIPI CSI, 2x ISP: 25 MP @ 30 pfs, 16 + 16 MP @ 30 fps, 25 MP @ 30 fps ZSL, 64 MP NZSL	
Touch Panel		Capacitive, I2C controls	
Audio		Needs external audio codec	
Video		Encode: 1080p (H.264/ H.265) @ 60 fps Decode: 1080p (H.264/ H.265/ VP9) @ 60 fps	
USB		× 1, USB 3.1 Gen 1, compatible with USB 2.0	
PWM		× 2	
Motor Driver		× 1	
Flashlight Driver		× 1	
(U)SIM		× 2 (1.8/ 2.95 V)	
UART		× 2	
SD Card		× 1, SDIO 3.0, supports 4-bit SDIO	
ADC		× 6, general-purpose ADC interfaces	
I2C		× 8	
I2S		× 2	
SPI		× 1	
PWRKEY		1.8 V, pulled up internally	
GPIO		× 56	
Antenna		× 8 (cellular antenna × 5, Wi-Fi/ Bluetooth antenna × 1, Wi-Fi MIMO antenna × 1, GNSS antenna × 1)	
Electrical Features			
Supply Voltage Range		3.55~4.4 V, typ. 4.0 V	
Power Consumption		300 μA @ power off; typical 6mA @ sleep mode	