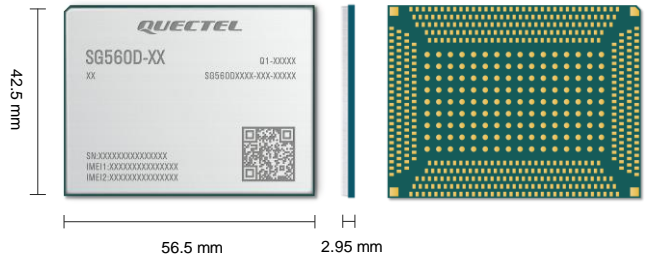


# Quectel SG560D Series

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



SG560D series is Quectel’s new generation of multi-mode 5G smart module with built-in Android 12/ 13/ 14 OS. Based on QCM6490 or QCS6490 high-performance 64-bit octa-core processors with built in Adreno™ 643 GPU, it is ideal for both industrial and consumer applications requiring high data rates and multimedia functions. SG560D series module is available in four variants: SG560D-CE, SG560D-EM, SG560D-WF and SG560D-NA.

SG560D series module supports 3GPP Rel-15 specification, as well as 5G NSA and SA modes with 4G/ 3G fallback. Additionally, the module supports Wi-Fi 6E & DBS, IEEE 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 2 × 2 MU-MIMO and Bluetooth 5.2.

SG560D series module supports 5G & LTE Multiple-Input Multiple-Output (MIMO) technology. The use of multiple antennas at the receiver end on the same frequency band at the same time significantly reduces bit error rate and improves communication quality. The module also integrates the multi-constellation GNSS receiver (GPS, GLONASS, BDS, NavIC, Galileo, QZSS and SBAS) for speedy and accurate positioning.

A rich set of interfaces (such as LCM, camera, touch panel, PCIe, 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, smart safety, industrial-grade PDA, etc.

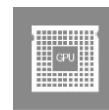


### Key Features

- ✓ Built-in Android 12/ 13/ 14 OS
- ✓ Worldwide 5G/ 4G/ 3G/ 2G coverage
- ✓ Wi-Fi 6E & DBS, 802.11ax, 2 × 2 MU-MIMO
- ✓ 5G & LTE MIMO technology, improving the data rate and link reliability in wireless communication
- ✓ Multi-constellation GNSS receiver for speedy and accurate positioning in different environments; L1 + L5 dual-band
- ✓ 4K H.265/ H.264 video encoding and decoding
- ✓ 14 TOPS computing power
- ✓ PCIe interface



5G Sub-6 GHz



Qualcomm® Adreno™ 643 GPU



Android



LTE Cat 18



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



Bluetooth 5.2



GPS/ GLONASS/ BDS/ NavIC/ Galileo/ QZSS/ SBAS



Powerful Multimedia Functions



LGA Package

# Quectel SG560D Series

5G Sub-6 GHz	SG560D-CE	SG560D-EM	SG560D-NA	SG560D-WF
<b>Region/ Operator</b>	China/ India	EMEA/ Korea/ South Africa/ Latin America/ Australia/ India/ New Zealand / Japan/ China	North America	Global
<b>CPU</b>	QCM6490, octa-core 5G SoC 1 × Gold Plus @ 2.7 GHz + 3 × Gold @ 2.4 GHz + 4 × Silver @ 1.9 GHz	QCM6490, octa-core 5G SoC 1 × Gold Plus @ 2.7 GHz + 3 × Gold @ 2.4 GHz + 4 × Silver @ 1.9 GHz	QCM6490, octa-core 5G SoC 1 × Gold Plus @ 2.7 GHz + 3 × Gold @ 2.4 GHz + 4 × Silver @ 1.9 GHz	QCS6490, octa-core 5G SoC 1 × Gold Plus @ 2.7 GHz + 3 × Gold @ 2.4 GHz + 4 × Silver @ 1.9 GHz
<b>Memory</b>	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) 6 GB + 128 GB (LPDDR4X uMCP, optional) 8 GB + 128 GB (LPDDR4X uMCP, optional)
<b>OS</b>	Android 13/ 14	Android 13/ 14	Android 13/ 14	Android 12/ 13/ 14
<b>Dimensions (mm)</b>	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95	42.5 × 56.5 × 2.95
<b>Package</b>	LGA	LGA	LGA	LGA
<b>Weight (g)</b>	Approx. 17.5	Approx. 17.5	Approx. 17.5	Approx. 17.5
<b>Temperature Range</b>				
<b>Operating Temperature</b>	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
<b>Frequency Bands</b>				
<b>5G SA/NSA</b>	n 1/ 3/ 5/ 8/ 28/ 41/ 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	-
<b>5G MIMO</b>	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): n38/ 40/ 41/ 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	-
<b>LTE</b>	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	-
<b>LTE MIMO</b>	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	-
<b>WCDMA</b>	B1/ 5/ 8	B1/ 2/ 4/ 5/ 6/ 8/ 19	-	-
<b>GSM/EDGE</b>	-	B2/ 3/ 5/ 8	-	-
<b>WLAN</b>	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6E, DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6E, DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6E, DBS, 2 × 2 MU-MIMO	2.4 & 5 & 6 GHz 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6E, DBS, 2 × 2 MU-MIMO
<b>Bluetooth</b>	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2
<b>GNSS<sup>①</sup></b>	GPS/ GLONASS/ BDS/ NavIC/ Galileo/ QZSS/ SBAS; L1 + L5	GPS/ GLONASS/ BDS/ NavIC/ Galileo/ QZSS/ SBAS; L1 + L5	GPS/ GLONASS/ BDS/ NavIC/ Galileo/ QZSS/ SBAS; L1 + L5	-
<b>Certifications</b>				
<b>Carrier</b>	-	-	America: Verizon*/ AT&T*/ T-Mobile*	-
<b>Regulatory</b>	China: CCC/ SRRC/ NAL	Global: GCF* Europe: CE* Australia/ New Zealand: RCM*	Global: GCF North America: PTCRB America: FCC Canada: IC	Europe: CE Australia/ New Zealand: RCM The UK: UKCA America: FCC Canada: IC
<b>Others</b>	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH
<b>Data Rate</b>				
<b>5G SA</b>	2.1 Gbps (DL)/ 450 Mbps (UL)	2.1 Gbps (DL)/ 900 Mbps (UL)	2.1 Gbps (DL)/ 900 Mbps (UL)	-
<b>5G NSA</b>	2.5 Gbps (DL)/ 550 Mbps (UL)	2.5 Gbps (DL)/ 550 Mbps (UL)	2.5 Gbps (DL)/ 550 Mbps (UL)	-
<b>LTE</b>	1.2 Gbps (DL)/ 200 Mbps (UL)	1.2 Gbps (DL)/ 200 Mbps (UL)	1.2 Gbps (DL)/ 200 Mbps (UL)	-
<b>DC-HSPA+</b>	42 Mbps (DL)/ 5.76 Mbps (UL)	42 Mbps (DL)/ 5.76 Mbps (UL)	-	-
<b>WCDMA</b>	384 kbps (DL)/ 384 kbps (UL)	384 kbps (DL)/ 384 kbps (UL)	-	-
<b>EDGE</b>	-	296 kbps (DL)/ 236.8 kbps (UL)	-	-
<b>GPRS</b>	-	107 kbps (DL)/ 85.6 kbps (UL)	-	-
<b>Enhanced Features</b>				
<b>Modem</b>	5G: Release 15 LTE: Release 15	5G: Release 15 LTE: Release 15	5G: Release 15 LTE: Release 15	-
<b>Rx-diversity</b>	●	●	●	-
<b>DL MIMO 4 × 4</b>	●	●	●	-
<b>(U)SIM Detection</b>	●	●	●	-
<b>Dual SIM Dual Standby</b>	●	●	●	-
<b>Firmware Upgrade via USB</b>	●	●	●	●
<b>Firmware Upgrade via OTA</b>	●	●	●	●

Note:

- : Supported
- \*: Under development/ in progress/ planning
- ①: Optional

# Quectel SG560D Series

5G Sub-6 GHz	General Features
<b>Interfaces</b>	
<b>LCM</b>	Based on 4-lane MIPI DSI, up to 2.5 Gbps/ lane data rate, up to (1200 × 2520) @ 144 fps resolution DisplayPort 1.4, up to 4K (3840 × 2160) @ 60 fps Wi-Fi Miracast 4K @ 60 fps
<b>Camera</b>	4 × 4-lane MIPI CSI, up to 2.5 Gbps/ lane data rate 3 × ISP, up to 3 × 27 MP @ 24 fps or 3 × 22 MP @ 30 fps; 36 MP + 27 MP @ 24 fps or 36 MP + 22 MP @ 30 fps; 36 MP @ 30 fps pixels
<b>Touch Panel</b>	Capacitive touch panel, controlled by I2C
<b>Audio</b>	Needs external audio codec
<b>Video</b>	Encoding: 4K (H.264/ H.265) @ 30 fps Decoding: 4K (H.264/ H.265/ VP9) @ 60 fps × 2
<b>USB</b>	USB0: USB 3.1 Type-C, compatible with USB 2.0, DisplayPort 1.4 and concurrent USB & DP USB1: USB 2.0, host mode only
<b>PCIe</b>	× 1, 2-lane PCIe Gen 3, NVMe
<b>PWM</b>	× 2
<b>Motor Driver</b>	× 1
<b>Flashlight Driver</b>	× 1
<b>(U)SIM</b>	× 2, 1.8/ 2.95 V (U)SIM cards, (U)SIM card hot-swap, DSDS (Dual Sim Dual Standby)
<b>UART</b>	× 11, Up to 4 Mbps data rate with hardware flow control, and debug UART is only for debugging (2 of them are the default UART, while the other 9 of them are the UART multiplexed from other interfaces)
<b>SD Card</b>	× 1, SD 3.0, 4-bit SDIO
<b>ADC</b>	× 6, general-purpose ADC interfaces
<b>I2C</b>	× 16, used for camera, touch panel, sensor and other peripherals (8 of them are the default I2C, while the other 8 of them are I2C multiplexed from other interfaces)
<b>I2S</b>	× 5 (2 of them are the default I2S, while the other 3 of them are the I2S multiplexed from other interfaces)
<b>SPI</b>	× 10 (1 of them is the default SPI, while the other 9 of them are the SPI multiplexed from other interfaces)
<b>PWRKEY</b>	1.8 V, pulled up internally
<b>GPIO</b>	× 35
<b>Antenna</b>	SG560D-CE/ -EM/ -NA: × 8 (cellular antenna × 5, Wi-Fi/ Bluetooth antenna × 1, Wi-Fi MIMO antenna × 1, GNSS antenna × 1) SG560D-WF: × 2 (Wi-Fi/ Bluetooth antenna × 1, Wi-Fi MIMO antenna × 1)
<b>Electrical Features</b>	
<b>Supply Voltage Range</b>	3.55–4.4 V, typ. 4.0 V
<b>Power Consumption</b>	240 μA @ power off; typ. 5.5 mA @ sleep mode