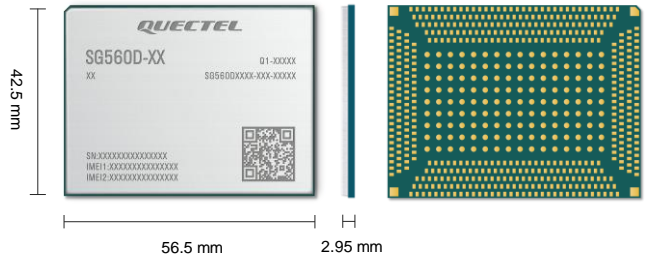


# Quectel SG560D Series

## 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 or Android 13 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 is available in four variants: SG560D-CE, SG560D-EM, SG560D-WF and SG560D-NA.

SG560D series supports 3GPP Rel-15 specification, and supports both 5G NSA and SA modes with 4G/ 3G fallback. In addition, 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 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, NavIC, Galileo, QZSS and SBAS) receiver for 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, industrial PDA, etc.

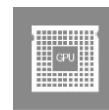


### Key Features

- ✓ Built-in Android 12 or Android 13 OS
- ✓ Worldwide 5G/ 4G/ 3G/ 2G coverage
- ✓ Supports Wi-Fi 6E & DBS, 802.11ax, 2 × 2 MU-MIMO
- ✓ Supports 5G & LTE MIMO technology, which meets demands for the 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 + L5 dual-band
- ✓ Supports 4K H.265/ H.264 video encoding and decoding
- ✓ 14 TOPS computing power
- ✓ Supports 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 LPDDR4X + 64 GB UFS (Default) 8 GB LPDDR4X + 128 GB UFS (Optional)	4 GB LPDDR4X + 64 GB UFS (Default) 8 GB LPDDR4X + 128 GB UFS (Optional)	4 GB LPDDR4X + 64 GB UFS (Default) 8 GB LPDDR4X + 128 GB UFS (Optional)	4 GB LPDDR4X + 64 GB UFS (Default) 6 GB LPDDR4X + 128 GB UFS (Optional) 8 GB LPDDR4X + 128 GB UFS (Optional)
<b>OS</b>	Android 13	Android 13	Android 13	Android 12/ 13
<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, 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
<b>Bluetooth</b>	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2	Bluetooth 5.2
<b>GNSS<sup>②</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>	TBD	TBD	America: Verizon <sup>①</sup> / AT&T <sup>①</sup> / T-Mobile <sup>①</sup>	TBD
<b>Regulatory</b>	China: CCC/ SRRC <sup>①</sup> / NAL	Global: GCF <sup>①</sup> Europe: CE <sup>①</sup> Australia/ New Zealand: RCM <sup>①</sup>	Global: GCF <sup>①</sup> North America: PTCRB <sup>①</sup> America: FCC <sup>①</sup> Canada: IC <sup>①</sup>	Europe: CE Australia/ New Zealand: RCM The UK: UKCA America: FCC Canada: IC
<b>Others</b>	RoHS <sup>①</sup> / REACH <sup>①</sup>	RoHS <sup>①</sup> / REACH <sup>①</sup>	RoHS <sup>①</sup> / REACH <sup>①</sup>	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)	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:  
1. ●: Supported  
2. ①: TBD (To Be Determined)  
3. ②: Optional

# Quectel SG560D Series

5G Sub-6 GHz	General Features
<b>Interfaces</b>	
<b>LCM</b>	Based on 4-lane MIPI DSI, supports up to 2.5 Gbps/ lane, (1200 × 2520) @ 144 fps Supports DisplayPort 1.4, up to 4K (3840 × 2160) @ 60 fps Supports Wi-Fi Miracast 4K @ 60 fps
<b>Camera</b>	4 × 4-lane MIPI CSI, up to 2.5 Gbps/ lane 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
<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
<b>USB</b>	USB0, supports USB 3.1 Type-C interface, compatible with USB 2.0, DisplayPort 1.4 and concurrent USB & DP USB1, supports USB 2.0, but host mode only
<b>PCIe</b>	× 1, 2-lane PCIe Gen 3, supports NVMe
<b>PWM</b>	× 2
<b>Motor Driver</b>	× 1
<b>Flashlight Driver</b>	× 1
<b>(U)SIM</b>	× 2, supports 1.8/ 2.95 V (U)SIM cards and DSDS
<b>UART</b>	× 11, supports up to 4 Mbps with hardware flow control, and debug UART is only for debugging (2 of them are default UART, while the other 9 of them are UART multiplexed from other interfaces)
<b>SD Card</b>	× 1, SD 3.0, supports 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 default I2C, while the other 8 of them are I2C multiplexed from other interfaces)
<b>I2S</b>	× 5 (2 of them are default I2S, while the other 3 of them are I2S multiplexed from other interfaces)
<b>SPI</b>	× 10 (1 of them is default SPI, while the other 9 of them are 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