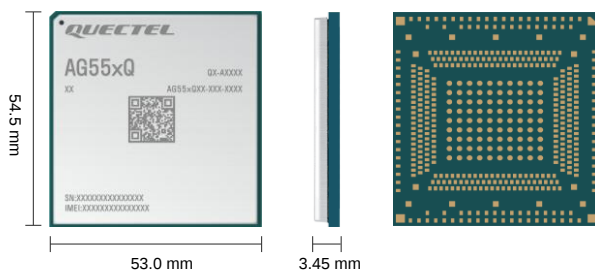


Quectel AG55xQ Family

IATF 16949 Compliant
Automotive Grade
5G NR + C-V2X/DSDA Module
Based on AEC-Q100 Qualified Chipset



AG55xQ is a series of Quectel's automotive-grade 5G NR Sub-6 GHz modules, supporting both 5G NR NSA and SA modes. Adopting 3GPP Rel-15 technology, the module supports maximum 2.4 Gbps downlink and 550 Mbps uplink data rates at 5G NSA mode, and maximum 1.6 Gbps downlink and 200 Mbps uplink data rates at LTE-A. Optional PC5-based C-V2X direct communication makes AG55xQ family a great solution for automotive applications since it makes the traffic smoother and more efficient by paving the way for automated driving and fully connected traffic. The module supports DSDA (optional) and provides abundant interfaces for developing customer applications. Its excellent performance in ESD and EMI protection ensures great robustness in harsh environments.

AG55xQ family consists of AG550Q (5G + DSSS + C-V2X), AG551Q (5G + DSSS), AG552Q (5G + DSDA) and AG553Q (5G + DSDA + C-V2X) series, each of which includes multiple modules (AG55xQ-CN, AG55xQ-EU, AG55xQ-NA and AG55xQ-JP) to meet varied market demands. It is backward compatible with existing GSM, UMTS and LTE networks, enabling connectivity in areas without 5G NR deployment and even remote areas without 3G or 4G coverage.

AG55xQ family supports multiple input multiple output (MIMO) technology. Using multiple antennas at the transmitting and receiving ends at the same time in the same frequency band greatly reduces errors and optimizes data speed. While supporting multi-constellation GNSS (GPS, GLONASS, BDS, Galileo and QZSS) based on Qualcomm® IZat™ location technology Gen 9 VT, the module also supports dual-frequency GNSS, PPE (RTK) and GNSS/QDR integrated navigation solutions. This greatly simplifies product design and enables quicker, more accurate and more dependable positioning.

With AG55xQ family, we provide automotive OEMs and tier-1 suppliers with secure and reliable connected car solutions, and vehicle manufacturers with smart and flexible solutions to build self-driving cars. More specifically, the module is commonly used in telematics boxes (T-Box), telematics control units (TCU), advanced driver-assistance systems (ADAS), C-V2X (V2V, V2I, V2P) systems, on-board units (OBU), roadside units (RSU), and other automotive/traffic systems.



Key Features

- ✓ Compliant with IATF 16949 qualified and automotive quality processes such as APQP and PPAP
- ✓ Based on AEC-Q100 qualified Qualcomm SA515M chipset
- ✓ Automotive 5G NR module with 4G (LTE Cat 19)/3G/2G fallback, supporting both 5G NR NSA and SA modes
- ✓ MIMO technology in line with data rate and link reliability demands
- ✓ Optional C-V2X PC5 Mode 4 direct communications
- ✓ Optional DSDA for flexible user-oriented applications
- ✓ A great variety of navigation solutions (single or dual-band GNSS, PPE (RTK), GNSS/QDR integrated navigation, etc.) ensure fast and accurate positioning in any environment
- ✓ Feature refinements: DFOTA, VoLTE, QuecOpen®, High Security, etc.
- ✓ Wide operating temperature range (-40 °C to +85 °C) and high eCall operating temperature (up to +95 °C) meet the demanding requirements for automotive devices
- ✓ Excellent EMI protection makes the module operate satisfactorily in harsh environments



5G NR Sub-6 GHz



LTE Cat 19



QDR + PPE (RTK)
(Optional)



3GPP Rel-15 C-V2X
Driving Safety



eCall



Dual-Band GNSS
(Optional)



USB 3.1
Interface



RGMII



DSDA
(Optional)

Quectel AG55xQ Family

AG55xQ Family	AG550Q Series	AG551Q Series	AG552Q Series	AG553Q Series
General Overview	5G + DSSS + C-V2X - Single-Frequency GNSS (optional) - Dual-Frequency GNSS (optional) - QDR 3.0 (optional) - PPE (RTK) (optional) - Ethernet -CN/-EU/-NA/-JP^①	5G + DSSS - Single-Frequency GNSS (optional) - Dual-Frequency GNSS (optional) - QDR 3.0 (optional) - PPE (RTK) (optional) - Ethernet -CN/-EU/-NA/-JP^①	5G + DSDA - Single-Frequency GNSS (optional) - Dual-Frequency GNSS (optional) - QDR 3.0 (optional) - PPE (RTK) (optional) - Ethernet -CN/-EU^①/-NA^①/-JP^①	5G + DSDA + C-V2X - Single-Frequency GNSS (optional) - Dual-Frequency GNSS (optional) - QDR 3.0 (optional) - PPE (RTK) (optional) - Ethernet -CN^①/-EU/-NA^①/-JP^①

5G NR	AG55xQ-CN	AG55xQ-EU	AG55xQ-NA	AG55xQ-JP ^①
Region	China	EMEA/Korea/Australia/India/Southeast Asia/Latin America	North America/Mexico	Japan
Dimensions	54.5 mm × 53.0 mm × 3.45 mm	54.5 mm × 53.0 mm × 3.45 mm	54.5 mm × 53.0 mm × 3.45 mm	54.5 mm × 53.0 mm × 3.45 mm
Temperature Range				
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
eCall Operating Temperature	-	-40 °C to +95 °C	-	-
Frequency Bands				
5G NSA	n41/78/79	n1/3/8/20/28/41/78	n2/5/25/66/71/41/48/77/78	n1/3/77/78/79
5G SA	n1/3/8 ^② /28/41/78/79	n1/3/8/20/28/41/78	n2/5/25/66/71/41/48/77/78	n1/3/77/78/79
LTE-FDD	B1/3/5/7/8	B1/2/3/4/5/7/8/20/28/32 ^③	B2/4/5/7/12/13/14/17/25/26/28/29 ^③ /30 ^③ /66/71	B1/3/5/7/8/9/11/19/21/28
LTE-TDD	B34/38/39/40/41	B38/40/41/42	B41/48	B41
WCDMA	B1/8	B1/3/5/6/8	-	B1/3/5/8/9/19
GSM	900/1800 MHz	900/1800/850/1900 MHz	1900 MHz	-
C-V2X	B47 (For AG550Q/AG553Q Series)	B47 (For AG550Q/AG553Q Series)	B47 (For AG550Q/AG553Q Series)	B47 (For AG550Q/AG553Q Series)
Certifications				
Regulatory	AG550Q/AG551Q-CN: China: SRRC/NAL/CCC AG552Q-CN: China: CCC	AG550Q/AG551Q-EU: Europe: CE Australia/New Zealand: RCM	AG550Q-NA: Global: GCF North America: PTCRB America: FCC Canada: IC AG550Q-NA: America: Verizon*	TBD
Carrier	TBD	TBD	TBD	TBD
Others	TBD	TBD	TBD	TBD
Data Transmission (Peak Rate)				
5G NSA	2.4 Gbps (DL)/550 Mbps (UL)	2.4 Gbps (DL)/550 Mbps (UL)	2.4 Gbps (DL)/550 Mbps (UL)	2.4 Gbps (DL)/550 Mbps (UL)
5G SA	2.0 Gbps (DL)/450 Mbps (UL)	2.0 Gbps (DL)/450 Mbps (UL)	2.0 Gbps (DL)/450 Mbps (UL)	2.0 Gbps (DL)/450 Mbps (UL)
LTE-FDD	1.6 Gbps (DL)/200 Mbps (UL)	1.6 Gbps (DL)/200 Mbps (UL)	1.6 Gbps (DL)/200Mbps (UL)	1.6 Gbps (DL)/200 Mbps (UL)
LTE TDD	1.4 Gbps (DL)/120 Mbps (UL)	1.4 Gbps (DL)/120 Mbps (UL)	1.4 Gbps (DL)/120 Mbps (UL)	1.4 Gbps (DL)/120 Mbps (UL)
DC-HSDPA/HSUPA	42 Mbps/5.76 Mbps	42 Mbps/5.76 Mbps	-	42 Mbps/5.76 Mbps
WCDMA	384 kbps (DL)/384 kbps (UL)	384 kbps (DL)/384 kbps (UL)	-	384 kbps (DL)/384 kbps (UL)
EDGE	296 kbps (DL)/236.8 kbps (UL)	296 kbps (DL)/236.8 kbps (UL)	296 kbps (DL)/236.8 kbps (UL)	-
GPRS	107 kbps (DL)/85.6 kbps (UL)	107 kbps (DL)/85.6 kbps (UL)	107 kbps (DL)/85.6 kbps (UL)	-
C-V2X	30 Mbps (Tx)/30 Mbps (Rx)	30 Mbps (Tx)/30 Mbps (Rx)	30 Mbps (Tx)/30 Mbps (Rx)	30 Mbps (Tx)/30 Mbps (Rx)
Interfaces				
USB 2.0/3.1	× 1	× 1	× 1	× 1
UART	× 3 (UART1/Debug UART/Bluetooth UART)	× 3 (UART1/Debug UART/Bluetooth UART)	× 3 (UART1/Debug UART/Bluetooth UART)	× 3 (UART1/Debug UART/Bluetooth UART)
(U)SIM	× 2	× 2	× 2	× 2
PCIe 3.0	× 1	× 1	× 1	× 1
I2C	× 1	× 1	× 1	× 1
I2S	× 1	× 1	× 1	× 1
Digital Audio (PCM)	× 1	× 1	× 1	× 1
SDIO	× 1 (for eMMC)	× 1 (for eMMC)	× 1 (for eMMC)	× 1 (for eMMC)
ADC	× 2 (15-bit)	× 2 (15-bit)	× 2 (15-bit)	× 2 (15-bit)
RGMII	× 1	× 1	× 1	× 1
SPI	× 2	× 2	× 2	× 2
RESET_N	× 1 (Reset the module)	× 1 (Reset the module)	× 1 (Reset the module)	× 1 (Reset the module)
GPIO	× 15 (For QuecOpen® version only)	× 15 (For QuecOpen® version only)	× 15 (For QuecOpen® version only)	× 15 (For QuecOpen® version only)

NOTE:
1. ①: Under planning.
2. ②: In AG55xQ-CN, n8 is supported on AG552Q-CN.
3. ③: LTE-FDD B29/30/32 supports Rx only.
4. * : In progress.



Quectel AG55xQ Family

5G NR	AG55xQ-CN	AG55xQ-EU	AG55xQ-NA	AG55xQ-JP ^①
Antenna Interfaces				
Main	× 1 (2G/3G/4G Tx & PRx; 5G NR n1/3/8 ^② /28 Tx & PRx SA; 5G NR n41/78/79 PRx MIMO)	× 1 (2G/3G/4G LMHB Tx & PRx; 5G NR n1/3/8/20/28 Tx & PRx SA/NSA; 4G B42 DRx; 5G NR n78 DRx; 5G NR n41 PRx MIMO)	× 1 (2G/4G Tx & PRx; 5G NR n2/5/25/66/71 Tx & PRx SA/NSA; 4G B48 DRx; 5G NR n48/77/78 DRx; 5G NR n41 PRx MIMO)	× 1 (2G/3G/4G TRx; 5G n78/79 RX)
Diversity	× 1 (3G/4G LMHB DRx; 5G NR n1/3/8 ^② /28 DRx; 5G NR n41 DRx MIMO; 5G NR n78/79 Tx & PRx SA/NSA)	× 1 (4G B20 Tx & PRx @ NSA; 5G NR n20/28 Tx & PRx @ NSA; 4G B42 Tx & PRx; 5G NR n78 Tx & PRx SA/NSA; 3G/4G/5G LMHB DRx; 5G NR n41 DRx MIMO)	× 1 (4G B48 Tx & PRx; 5G NR n48/77/78 Tx & PRx SA/NSA; 4G/5G LMHB DRx; 5G NR n41 DRx MIMO)	× 1 (5G n77/78/79 TRx; 3G/4G DRx)
MIMO3	× 1 (4G MHB PRx MIMO; 5G NR n1/3 PRx MIMO; 5G NR n78/79 DRx; 5G NR n41 Tx & PRx SA/NSA)	× 1 (4G B1/3 Tx & PRx @ NSA; 5G NR n41 Tx & PRx SA/NSA; 5G NR n1/3 Tx & PRx @ NSA; 4G MHB PRx MIMO; 4G B42 PRx MIMO; 5G NR n1/3/78 PRx MIMO)	× 1 (4G B2/7/66 Tx & PRx @ NSA; 5G NR n41 Tx & PRx SA/NSA; 5G NR n2/25/66 Tx & PRx @ NSA; 4G MHB PRx MIMO; 4G B48 PRx MIMO; 5G NR n2/25/66/48/77/78 PRx MIMO)	× 1 (5G n1/3 TRx; 4G/5G MIMO; 4G B11/21 TRX)
MIMO4	× 1 (4G MHB DRx MIMO; 5G NR n41 DRx; 5G NR n1/3/78/79 DRx MIMO)	× 1 (4G MHB DRx MIMO; 4G B42 DRx MIMO; 5G NR n41 DRx; 5G NR n1/3/78 DRx MIMO)	× 1 (4G MHB DRx MIMO; 4G B48 DRx MIMO; 5G NR n41 DRx; 5G NR n2/25/66/48/77/78 DRx MIMO)	× 1 (4G/5G MIMO)
SDSA - Main	× 1 (SDSA 2G/4G Tx & PRx)	× 1 (SDSA 2G/4G Tx & PRx)	× 1 (SDSA 2G/4G Tx & PRx)	× 1 (SDSA 2G/4G Tx & PRx)
SDSA - Diversity	× 1 (SDSA 4G DRx)	× 1 (SDSA 4G DRx)	× 1 (SDSA 4G DRx)	× 1 (SDSA 4G DRx)
C-V2X	× 2 (C-V2X TRx0/TRx1)	× 2 (C-V2X TRx0/TRx1)	× 2 (C-V2X TRx0/TRx1)	× 2 (C-V2X TRx0/TRx1)
GNSS	× 1	× 1	× 1	× 1
Voice				
Speech Codec Modes	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB
Echo Arithmetic	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression
VoLTE	Digital Audio and VoLTE (Voice over LTE)	Digital Audio and VoLTE (Voice over LTE)	Digital Audio and VoLTE (Voice over LTE)	Digital Audio and VoLTE (Voice over LTE)
SMS				
Point-to-point MO and MT	●	●	●	●
SMS Cell Broadcast	●	●	●	●
Text and PDU Mode	●	●	●	●
Enhanced Features				
eCall	-	●	-	-
DFOTA	●	●	●	●
QuecOpen® (Open Linux)	●	●	●	●
PCIe for WLAN Function	●	●	●	●
UART/PCM for Bluetooth Function	●	●	●	●
(U)SIM Detection	●	●	●	●
Temperature Management	●	●	●	●
eSIM (eUICC)	Optional	Optional	Optional	Optional
Single-Frequency GNSS (GPS/GLONASS/BDS/Galileo/QZSS)	Optional	Optional	Optional	Optional
Dual-Band GNSS (Default L1 + L5/Optional L1 + L2*)	Optional	Optional	Optional	Optional
PPE (RTK)	Optional	Optional	Optional	Optional
QDR 3.0 (External IMU Required)	Optional	Optional	Optional	Optional
High Security	TrustZone TPM* (External HSM required) Secure Boot SELinux	TrustZone TPM* (External HSM required) Secure Boot SELinux	TrustZone TPM* (External HSM required) Secure Boot SELinux	TrustZone TPM* (External HSM required) Secure Boot SELinux
ESD/EMI Protection	Realized Through Internal Specific Circuits and Components	Realized Through Internal Specific Circuits and Components	Realized Through Internal Specific Circuits and Components	Realized Through Internal Specific Circuits and Components
Gigabit Ethernet ^③	●	●	●	●
C-V2X TDD B47	AG550Q/AG553Q	AG550Q/AG553Q	AG550Q/AG553Q	AG550Q/AG553Q
SDSA (SIM2 for 2G/4G only)	AG552Q/AG553Q	AG552Q/AG553Q	AG552Q/AG553Q	AG552Q/AG553Q
1 GB NAND + 1 GB DDRAM	Optional	Optional	Optional	Optional
Drivers				
USB ECM Driver	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5
USB RNDIS Driver	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5
USB GobiNet Driver	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5
USB QMI_WWAN Driver	Linux 3.4–6.5	Linux 3.4–6.5	Linux 3.4–6.5	Linux 3.4–6.5
USB Serial Driver	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5	Windows 7/8/8.1/10/11 Linux 2.6–6.5
Electrical Features				
Supply Voltage Range	VBAT_BB/VBAT_RF: 3.3–4.3 V, typ. 3.8 V VBAT_C-V2X: 4.75–5.25 V, typ. 5.0 V	VBAT_BB/VBAT_RF: 3.3–4.3 V, typ. 3.8 V VBAT_C-V2X: 4.75–5.25 V, typ. 5.0 V	VBAT_BB/VBAT_RF: 3.3–4.3 V, typ. 3.8 V VBAT_C-V2X: 4.75–5.25 V, typ. 5.0 V	VBAT_BB/VBAT_RF: 3.3–4.3 V, typ. 3.8 V VBAT_C-V2X: 4.75–5.25 V, typ. 5.0 V
Power Consumption	0.02 mA @ Power off 1.40 mA @ Sleep (typ.) 25.0 mA @ Idle	0.03 mA @ Power off 1.40 mA @ Sleep (typ.) 25.0 mA @ Idle	0.03 mA @ Power off 1.40 mA @ Sleep (typ.) 25.0 mA @ Idle	TBD @ Power off TBD @ Sleep (typ.) TBD @ Idle

NOTE:
1. ①: Under planning.
2. ②: In AG55xQ-CN, n8 is supported on AG552Q-CN.
3. ③: The module's RGMII interface supports the Gigabit Ethernet protocol, while actual throughput is subject to testing.

4. *: Under development.
5. ●: Supported.

