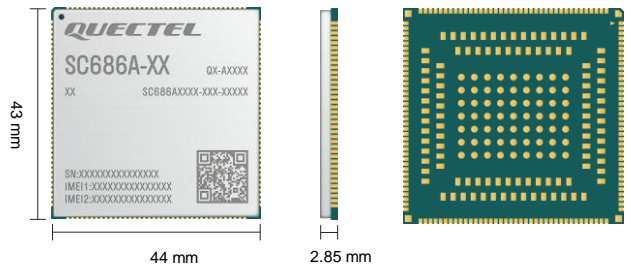


Quectel SC686A Series

Multi-mode Smart LTE Module with Wi-Fi & Bluetooth



SC686A is a series of multi-mode Smart LTE Cat 6 module with built-in Linux OS. Based on Qualcomm octa-core and 64-bit ARM v8.0 compliant application processor with built-in Adreno™ 610 GPU, the module is designed to support high performance, various multimedia features and Quick Charge 3.0 technology. It is ideal for both industrial and consumer applications with high data rate and multimedia functions.

SC686A series module supports multiple-input multiple-output (MIMO) technology. The use of multiple antennas at the receiver end on the same frequency band greatly minimizes errors and optimizes the data speed. This module also combines high-speed wireless connectivity with embedded dual-band 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, MIC, SPK, UART, USB, I2C, SPI) extend the applicability of the module to a wide range of M2M applications, including smart POS, smart cash registers, smart home gateways, smart robots, smart wearables, smart safety, PDA & tablets, vending machines, delivery lockers, audio and video recorders, as well as video streaming and entertainment systems.



Key Features

- ✓ LTE Cat 6 modem supporting 2 × 20 MHz carrier aggregation, with maximum downlink speed of up to 300 Mbps
- ✓ Worldwide LTE, UMTS/ HSPA+ and GSM/ GPRS/ EDGE coverage
- ✓ 4-lane MIPI DSI for 2520 × 1080 @ 60 fps display
- ✓ Up to 4 cameras and 2 concurrently working cameras
- ✓ Dual-band multi-constellation GNSS receiver for applications requiring fast and accurate fixes in any environment
- ✓ Recording and playback of 1080P videos @ 60 fps



64-bit ARM v8.0 Processor (Octa-core)



Qualcomm® Adreno™ 610 GPU



Linux OS



Smart LTE Cat 6
Max. 300 Mbps (DL)
Max. 50 Mbps (UL)



IEEE 802.11 a/ b/ g/ n/ ac



Bluetooth 5.1 (BR/ EDR + BLE)



GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS (L1)



Powerful Multimedia Functions



LCC + LGA Packages

Quectel SC686A Series

LTE Cat 6	SC686A-EM	SC686A-NA	SC686A-WF
Region/ Operator	EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa	North America	Global
OS	Linux	Linux	Linux
CPU	Kryo 260 Gold: quad high-performance cores 2.0 GHz + Kryo 260 Silver: quad low-power cores 1.8 GHz	Kryo 260 Gold: quad high-performance cores 2.0 GHz + Kryo 260 Silver: quad low-power cores 1.8 GHz	Kryo 260 Gold: quad high-performance cores 2.0 GHz + Kryo 260 Silver: quad low-power cores 1.8 GHz
Memory	2 GB + 16 GB (LPDDR4X eMCP, Default) 3 GB + 32 GB (LPDDR4X eMCP, Optional)	2 GB + 16 GB (LPDDR4X eMCP, Default) 3 GB + 32 GB (LPDDR4X eMCP, Optional)	2 GB + 16 GB (LPDDR4X eMCP, Default) 3 GB + 32 GB (LPDDR4X eMCP, Optional)
Dimensions (mm)	43.0 × 44.0 × 2.85	43.0 × 44.0 × 2.85	43.0 × 44.0 × 2.85
Package	LCC + LGA	LCC + LGA	LCC + LGA
Weight (g)	Approx. 11.8	Approx. 11.8	Approx. 11.8
Temperature Range			
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Frequency Bands			
LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 66/ 71	-
LTE-TDD	B38/ 40/ 41	B41	-
WCDMA	B1/ 2/ 4/ 5/ 8	-	-
GSM	850/ 900/ 1800/ 1900 MHz	-	-
Bluetooth	Bluetooth 5.1	Bluetooth 5.1	Bluetooth 5.1
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac
Bandwidth	1.4/ 3/ 5/ 10/ 15/ 20 MHz	1.4/ 3/ 5/ 10/ 15/ 20 MHz	-
GNSS	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS, L1	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS, L1	-
Certifications			
Carrier	-	America: Verizon*/ AT&T/ T-Mobile	-
Regulatory	Global: GCF Europe: CE The UK: UKCA South Korea: KC Australia/New Zealand: RCM	Global: GCF North America: PTCRB America: FCC Canada: IC	Europe: CE America: FCC The UK: UKCA Canada: IC South Korea: KC Japan: JATE/TELEC Australia/New Zealand: RCM
Others	RoHS*/ REACH*	RoHS*/ REACH*	RoHS*/ REACH*
Data Transmission			
LTE-FDD Data Rate (Mbps)	300 (DL)/ 50 (UL)	300 (DL)/ 50 (UL)	-
LTE-TDD Data Rate (Mbps)	265 (DL)/ 30 (UL)	265 (DL)/ 30 (UL)	-
WCDMA Data Rate (kbps)	384 (DL)/ 384 (UL)	-	-
GPRS Data Rate (kbps)	107 (DL)/ 85.6 (UL)	-	-
Enhanced Features			
3GPP E-UTRA	Release 10	Release 10	-
Rx-diversity	●	●	-
DL MIMO 2 × 2	●	●	-
(U)SIM Card Detection	●	●	-
Firmware Upgrade via USB	●	●	●
Firmware Upgrade via OTA	●	●	●

Note:

*: Under development/ in progress/ planning

Quectel SC686A Series

LTE Cat 6	General Features
Interfaces	
LCM	4-lane MIPI DSI FHD+ (2520 × 1080) @ 60 fps
Camera	Three 4-lane MIPI CSI, up to 2.5 Gbps/ lane Supports up to 4 cameras, up to 25 MP with triple ISPs
Touch Panel	Capacitive touch panel, I2C controls
UART	× 4 (Supports 4 Mbps with hardware flow control, 2 of them are default UART, the other 2 of them are multiplexing UART)
USB	USB 3.1 Gen1 (5 Gbps), USB 2.0 compliant, supports USB OTG
Audio	3 analog inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC) 3 analog outputs: speaker, earpiece, headphone
GPIO	× 21
SD Card	× 1 (SD 3.0, 4-bit SDIO)
I2C	× 7 (4 of them are dedicated I2C, 1 of them is general-purpose I2C, the rest 2 of them are multiplexing I2C)
ADC	× 2
SPI	× 3 (Can be multiplexed into UART and I2S respectively, and the multiplexed I2S supports both Tx and Rx)
PWRKEY	Pulled up internally to 1.8 V
Motor Drive	× 1
(U)SIM	× 2 (1.8/ 2.95 V)
Flashlight	× 2
LED	× 1
Antenna	× 4, Main/ Rx-diversity/ GNSS/ Wi-Fi & Bluetooth antenna interface respectively (SC686A-WF: × 1, Wi-Fi & Bluetooth antenna interface)
Electrical Features	
Supply Voltage Range	3.55–4.4 V, typ. 3.8 V
Power Consumption	4.1 mA