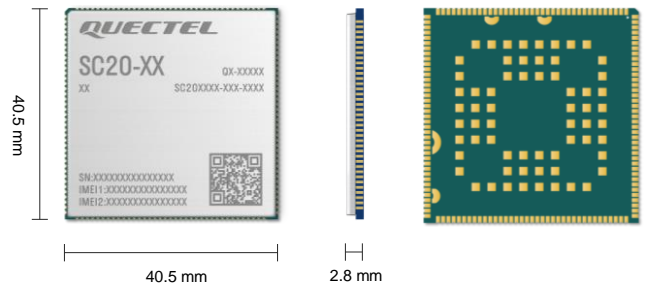


Quectel SC20 Series

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



SC20 is a series of multi-mode Smart LTE Cat 4 modules. It contains five variants with built-in Android OS: SC20-E, SC20-A, SC20-AU, SC20-J and Wi-Fi & Bluetooth only version SC20-W. Additionally, it contains seven variants with built-in Yocto Linux OS: SC20-EL/-EX, SC20-AL/-AX, SC20-AUL, SC20-JL, Wi-Fi & Bluetooth only version SC20-WL.

SC20 series delivers maximum data rates of up to 150 Mbps downlink and 50 Mbps uplink based on LTE network, and supports wireless communication via IEEE 802.11a/b/g/n and BT 4.2 LE. It is an ideal solution for both industrial and consumer applications requiring high data rates and high-speed Internet access. The module is backward-compatible with existing EDGE and GSM/GPRS networks, ensuring connection even in remote areas devoid of 3G or 4G coverage.

SC20 series module supports 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, BDS and GLONASS) receiver for positioning.

A rich set of interfaces (such as LCM, Camera, Touch Panel, MIC, SPK, UART, USB, I2C) extend the applicability of the module to a wide range of M2M applications, such as MID, PND, POS, router, data card, in-vehicle solutions, digital signage, smart safety and industrial PDA.



Key Features

- ✓ Integration of Android OS or Yocto Linux OS, Wi-Fi, Bluetooth and GNSS
- ✓ Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- ✓ MIMO technology which meets demands for data rate and link reliability in modem wireless communication systems
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ LCC + LGA package which ensures reliable connectivity with applications



Smart LTE Cat 4
Max. 150 Mbps (DL)
Max. 50 Mbps (UL)



Android OS



Yocto Linux OS



IEEE 802.11
a/ b/ g/ n



BT 4.2
(BR/ EDR + BLE)



GPS/ BDS/ GLONASS



Powerful Multimedia
Functions



USB 2.0 High Speed
Interface



LCC + LGA
Package

Quectel SC20 Series

LTE Cat 4	SC20-EX	SC20-AX
Region/Operator	EMEA/ Korea/ Thailand/ India/ Vietnam	North America
OS	Yocto Linux	Yocto Linux
MCP (LPDDR2 + NAND Flash)	SC20-EX: 512 MB + 512 MB	SC20-AX: 512 MB + 512 MB
Dimensions (mm)	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8
Weight (g)	Approx. 9.8	Approx. 9.8
Package	LCC + LGA	LCC + LGA
Temperature Range		
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C
Frequency Bands		
LTE-FDD	B1/ 3/ 5/ 7/ 8/ 20	B2/ 4/ 5/ 7/ 12/ 13/ 25/ 26
LTE-TDD	B38/ 40/ 41	-
WCDMA	B1/ 5/ 8	-
GSM/EDGE	Quad-band	-
Bluetooth	BT 2.1+EDR/3.0/4.1 LE/4.2 BLE	BT 2.1+EDR/3.0/4.1 LE/4.2 BLE
Wi-Fi	2.4/5 GHz, 802.11a/b/g/n	2.4/5 GHz, 802.11a/b/g/n
Bandwidth	1.4/3/5/10/15/20 MHz	1.4/3/5/10/15/20 MHz
GNSS	GPS/BDS/GLONASS	GPS/BDS/GLONASS
Certifications		
Carrier	-	America: Verizon/ AT&T
Regulatory	Global: GCF Europe: CE The UK: UKCA Australia/New Zealand: RCM	Global: GCF North America: PTCRB America: FCC Canada: IC
Others	RoHS/REACH	RoHS/REACH
Data Rate		
LTE-FDD Data Rate (Mbps)	150 (DL)/50 (UL)	150 (DL)/50 (UL)
LTE-TDD Data Rate (Mbps)	130 (DL)/30 (UL)	-
DC-HSPA+ Data Rate (Mbps)	42 (DL)/5.76 (UL)	-
WCDMA Data Rate (kbps)	384 (DL)/384 (UL)	-
EDGE Data Rate (kbps)	296 (DL)/236.8 (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	●	●

NOTE:
●: Supported.

Quectel SC20 Series

LTE Cat 4	SC20-E/-EL	SC20-A/-AL	SC20-AU/-AUL	SC20-J/-JL	SC20-W/-WL
Region/Operator	EMEA/Korea/Thailand/India	North America	Australia/Taiwan/Brazil	Japan	Global
OS	SC20-E: Android SC20-EL: Yocto Linux	SC20-A: Android SC20-AL: Yocto Linux	SC20-AU: Android SC20-AUL: Yocto Linux	SC20-J: Android SC20-JL: Yocto Linux	SC20-W: Android SC20-WL: Yocto Linux
eMCP (LPDDR3 + eMMC)	SC20-E: 1 GB + 8 GB 2 GB + 16 GB SC20-EL: 1 GB + 8 GB	SC20-A: 1 GB + 8 GB 2 GB + 16 GB SC20-AL: 1 GB + 8 GB	SC20-AU: 1 GB + 8 GB 2 GB + 16 GB SC20-AUL: 1 GB + 8 GB	SC20-J: 1 GB + 8 GB 2 GB + 16 GB SC20-JL: 1 GB + 8 GB	SC20-W: 1 GB + 8 GB 2 GB + 16 GB SC20-WL: 1 GB + 8 GB
Dimensions (mm)	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8
Weight (g)	Approx. 9.8	Approx. 9.8	Approx. 9.8	Approx. 9.8	Approx. 9.8
Package	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA
Temperature Range					
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Frequency Bands					
LTE-FDD	B1/ 3/ 5/ 7/ 8/ 20	B2/ 4/ 5/ 7/ 12/ 13/ 25/ 26	B1/ 3/ 5/ 7/ 8/ 28	B1/ 3/ 8/ 18/ 19/ 26	-
LTE-TDD	B38/ 40/ 41 ^①	-	B40	B41	-
WCDMA	B1/ 5/ 8	B1/ 2/ 4/ 5/ 8	B1/ 2/ 5/ 8	B1/ 6/ 8/ 19	-
GSM/EDGE	Quad-band	850/ 1900 MHz	Quad-band	-	-
Bluetooth	BT 2.1+EDR/ 3.0/ 4.1/ 4.2 BLE	BT 2.1+EDR/ 3.0/ 4.1/ 4.2 BLE	BT 2.1+EDR/ 3.0/ 4.1/ 4.2 BLE	BT 2.1+EDR/ 3.0/ 4.1/ 4.2 BLE	BT 2.1+EDR/ 3.0/ 4.1/ 4.2 BLE
Wi-Fi	2.4/ 5 GHz, 802.11a/ b/ g/ n	2.4/ 5 GHz, 802.11a/ b/ g/ n	2.4/ 5 GHz, 802.11a/ b/ g/ n	2.4/ 5 GHz, 802.11a/ b/ g/ n	2.4/ 5 GHz, 802.11a/ b/ g/ n
Bandwidth	1.4/ 3/ 5/ 10/ 15/ 20 MHz	1.4/ 3/ 5/ 10/ 15/ 20 MHz	1.4/ 3/ 5/ 10/ 15/ 20 MHz	1.4/ 3/ 5/ 10/ 15/ 20 MHz	-
GNSS	GPS/ BDS/ GLONASS	GPS/ BDS/ GLONASS	GPS/ BDS/ GLONASS	GPS/ BDS/ GLONASS	-
Certifications^②					
Carrier	-	America: Verizon/ AT&T/ T-Mobile ^③ Canada: Rogers/ Telus ^③	Australia: Telstra	Japan: NTT DOCOMO/ KDDI/ SoftBank	-
Regulatory	Global: GCF Europe: CE South Korea: KC Thailand: NBTC	Global: GCF North America: PTCRB America: FCC Canada: IC	Global: GCF Europe: CE Brazil: Anatel Taiwan/ China: NCC Australia/ New Zealand: RCM	Japan: JATE/ TELEC	Europe: CE America: FCC Canada: IC Brazil: Anatel Japan: JATE/ TELEC Australia/ New Zealand: RCM
Others	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH
Data Rate					
LTE-FDD Data Rate (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	-
LTE-TDD Data Rate (Mbps)	130 (DL)/ 30 (UL)	-	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	-
DC-HSPA+ Data Rate (Mbps)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	-
WCDMA Data Rate (kbps)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	-
EDGE Data Rate (kbps)	296 (DL)/ 236.8 (UL)	296 (DL)/ 236.8 (UL)	296 (DL)/ 236.8 (UL)	-	-
GPRS Data Rate (kbps)	107 (DL)/ 85.6 (UL)	107 (DL)/ 85.6 (UL)	107 (DL)/ 85.6 (UL)	-	-
Enhanced Features					
3GPP E-UTRA	Release 10	Release 10	Release 10	Release 10	-
Rx-diversity	●	●	●	●	-
DL MIMO 2 × 2	●	●	●	●	-
(U)SIM Card Detection	●	●	●	●	-
Firmware Upgrade via USB	●	●	●	●	●

NOTE:

- ①: B41 of SC20-E/-EL does not support full band and therefore is not certified by CE.
- ②: The certification status listed here are only for Android-version SC20 series modules.
- ③: T-Mobile/ Telus for data-only version has been done and that for voice version is TBD.
- : Supported.

Quectel SC20 Series

General Features

Interfaces

LCM	4-lane MIPI_DSI, up to 1.5 Gbps/ lane, HD (720P) @ 60 fps
Camera	Uses MIPI_CSI, up to 1.5 Gbps/ lane, supports two cameras: <ul style="list-style-type: none">• 2-lane MIPI_CSI for rear camera, up to 8 MP• 1-lane MIPI_CSI for front camera, up to 2 MP
Touch Panel	Capacitive touch panel
UART	× 2, UART1 supports hardware flow control, up to 4 Mbps
USB 2.0	<ul style="list-style-type: none">• Supports high speed mode, up to 480 Mbps• Supports USB 2.0 OTG, USB OTG + charge and USB to Ethernet functions
(U)SIM	× 2, supports 1.8/ 3 V (U)SIM cards, (U)SIM card detection function and DSDS
Audio	Analog channels: <ul style="list-style-type: none">• Two inputs: MIC1, MIC2• Three outputs: speaker, earpiece, headphone
Video	<ul style="list-style-type: none">• Encoding: 720P (H.264) @ 30 fps; WVGA (MPEG-4/ VP8) @ 30 fps• Decoding: 1080P (H.264/ MPEG-4/ VP8/ H.265/ DivX4/ 5/ 6) @ 30 fps; WVGA (H.263) @ 30 fps
GPIO	× 25
SD Card	× 1, SD 3.0, 4-bit SDIO
I2C	× 3
General-purpose ADC	× 1
SPI	× 1, multiplexed from GPIO
PWM	× 1
Motor Drive	× 1
Keypad	PWRKEY, KEY_VOL_UP, KEY_VOL_DOWN
Antenna	× 4, main antenna, Rx-diversity antenna, GNSS antenna and Wi-Fi/ Bluetooth antenna interface respectively

Electrical Features

Supply Voltage Range	3.5–4.2 V, Typ. 3.8 V
Power Consumption	20 μA @ power off Typ. 3 mA @ sleep