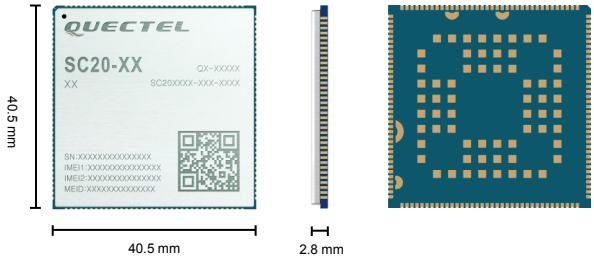
Quectel SC20 Series

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



SC20 series is Quectel's new generation of multi-mode Smart LTE Cat 4 module. It contains five variants with built-in Android OS: SC20-E, SC20-A, SC20-AU, SC20-J and Wi-Fi & BT only version SC20-W. Additionally, it contains five variants with built-in Yocto Linux OS: SC20-EL, SC20-AL, SC20-AUL, SC20-JL and Wi-Fi & BT only version SC20-WL.

SC20 series module 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, GLONASS, Galileo and BeiDou) 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, smartphone, digital signage, security 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/GLONASS/
Galileo/BeiDou

Powerful Multimedia Functions

USB 2.0 High Speed Interface

LCC + LGA Package

Version: 1.9 | Status: Released

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
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/B3/B5/B7/B8/B20	B2/B4/B5/B7/B12/B13/B25/B26	B1/B3/B5/B7/B8/B28	B1/B3/B8/B18/B19/B26	/
LTE-TDD	B38/B40/B41①	/	B40	B41	/
WCDMA	B1/B5/B8	B1/B2/B4/B5/B8	B1/B2/B5/B8	B1/B6/B8/B19	/
GSM/EDGE	850/900/1800/1900 MHz	850/1900 MHz	850/900/1800/1900 MHz	/	/
BT	BT 2.1+EDR/3.0/4.1 LE/4.2 BLE	BT 2.1+EDR/3.0/4.1 LE/4.2 BLE	BT 2.1+EDR/3.0/4.1 LE/4.2 BLE	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	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/BeiDou/GLONASS or GPS/BeiDou/Galileo	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo	/
Certifications②					
Carrier	/	**America:** Verizon/AT&T/T-Mobile③/Sprint④ **Canada:** Rogers/Telus③	**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 Transmission					
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	●	●	●	●	●

Notes:

1. ① B41 of SC20-E/-EL does not support full band and therefore is not certified by CE.
2. ② The certification status listed here are only for Android-version SC20 series modules.
3. ③ T-Mobile/Telus for data-only version has been done and that for voice version is TBD.
4. ④ means TBD.
5. * means ongoing.
6. ● means supported.

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General features

Supply Voltage Range	3.5–4.2 V, Typ. 3.8 V
Power Consumption	20 μA @ power off Typ. 3 mA @ sleep
Weight	Approx. 9.8 g
Package	LCC + LGA
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: • 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	• 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: • Two inputs: MIC1, MIC2 • Three outputs: speaker, earpiece, headphone
Video	• 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/BT antenna interface respectively

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