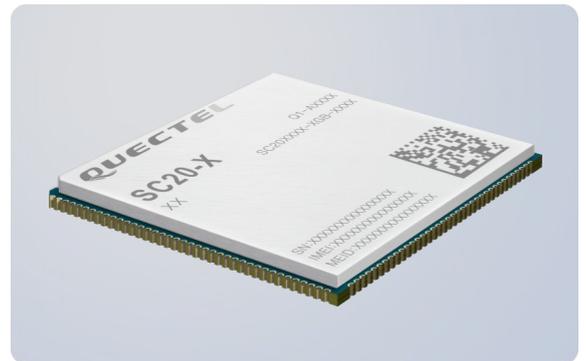


# Quectel SC20

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



SC20 is Quectel’s new generation of multi-mode Smart LTE Cat 4 module with built-in Android OS. It contains seven variants: SC20-CE, SC20-E, SC20-A, SC20-AU, SC20-J, SC20-EU\* and Wi-Fi & BT only version SC20-W.

SC20 delivers maximally 150Mbps downlink and 50Mbps uplink data rates based on LTE network, and additionally supports wireless communication via IEEE 802.11 a/b/g/n (IEEE 802.11 b/g/n for SC20-CE/-W R1.0) and BT4.1 LE (BT4.2 on Android 7). It is ideal for both industrial and consumer applications requiring high data rate and high-speed internet access. SC20 is backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can be connected even in remote areas devoid of 3G or LTE coverage.

SC20 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 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 CPE, wireless POS, smart metering, router, data card, automotive, smart phone, digital signage, alarm panel, security and industry PDA.

### Key Benefits

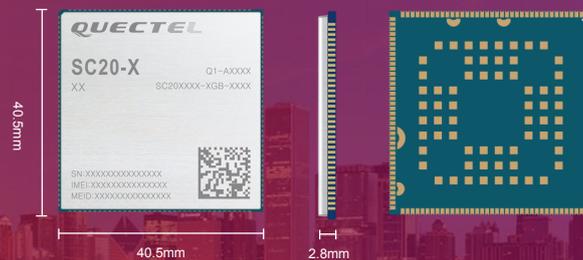
- ✓ Integrates Android OS, Wi-Fi, Bluetooth and GNSS into one module
- ✓ Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems
- ✓ Multi-constellation GNSS receiver available for applications requiring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

 <b>4G</b> LTE	 <b>3G</b> HSPA+	 Android OS
Smart LTE Cat 4 Max 150Mbps (DL) Max 50Mbps (UL)	Max 42Mbps (DL) Max 5.76Mbps (UL)	
 IEEE 802.11 a/b/g/n	 BT4.2 (BR/EDR+BLE)	 Multi-constellation GNSS
 Powerful Multimedia Function	 USB 2.0 High Speed Interface	 LCC+LGA Package

Rev.: V1.6 | Status: Released

# Quectel SC20

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



### Variant for China/India

#### SC20-CE:

LTE FDD: B1/B3/B5/B8  
LTE TDD: B38/B39/B40/B41  
TD-SCDMA: B34/B39  
EVDO/CDMA: BCO  
WCDMA: B1/B8  
GSM: 900/1800MHz

### Variant for EMEA/Korea/Thailand

#### SC20-E:

LTE FDD: B1/B3/B5/B7/B8/B28  
LTE TDD: B38/B40/B41  
WCDMA: B1/B5/B8  
GSM: 850/900/1800/1900MHz

### Variant for North America

#### SC20-A:

LTE FDD: B2/B4/B5/B7/B12/B13/B25/B26  
WCDMA: B1/B2/B4/B5/B8  
GSM: 850/1900MHz

### Variant for Australia/Taiwan/Brazil

#### SC20-AU:

LTE FDD: B1/B3/B5/B7/B8/B28  
LTE TDD: B40  
WCDMA: B1/B2/B5/B8  
GSM: 850/900/1800/1900MHz

### Variant for Japan

#### SC20-J:

LTE FDD: B1/B3/B8/B18/B19/B26  
LTE TDD: B41  
WCDMA: B1/B6/B8/B19

### Variant for EMEA/Korea/Thailand/India

#### SC20-EU\*:

LTE FDD: B1/B2<sup>①</sup>/B3/B5<sup>①</sup>/B7/B8/B20/B28A  
LTE TDD: B38/B41  
WCDMA: B1/B2/B5/B8  
GSM: 850/900/1800/1900MHz

### Variant for the Global

#### SC20-W:

Only Support Wi-Fi & BT

### Data

#### LTE:

LTE FDD: Max 150Mbps (DL)/Max 50Mbps (UL)  
LTE TDD: Max 130Mbps (DL)/Max 30Mbps (UL)

#### UMTS:

DC-HSDPA: Max 42Mbps (DL)  
HSUPA: Max 5.76Mbps (UL)  
WCDMA: Max 384Kbps (DL/UL)

#### TD-SCDMA:

Max 4.2Mbps (DL)/Max 2.2Mbps (UL)

#### CDMA2000:

EVDO: Max 3.1Mbps (DL)/Max 1.8Mbps (UL)  
1X Advanced: Max 307.2Kbps (DL/UL)

#### GSM:

GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)  
EDGE: Max 296Kbps (DL)/Max 236.8Kbps (UL)

### Audio & Video

#### Speech Codec Modes:

HR/FR/EFR/AMR/AMR-WB

#### Echo Arithmetic:

Echo Cancellation/Noise Reduction

#### VoLTE:

VoLTE (Voice over LTE) Supported

#### Audio:

MP3, AAC+, eAAC, AMR-NB, -WB, G.711, WMA 9/10 Pro

#### Video:

Encode: 30fps 720P (H.264), 30fps WVGA (MPEG-4/VP8)  
Decode: 30fps 1080P (H.264/MPEG-4/VP8/ H.265 DivX4/5/6), 30fps WVGA (H.263)

### Interfaces

#### LCM:

4-lane MIPI\_DSI, up to 1.5Gbps/lane  
HD (720P) @60fps

#### Camera:

Use MIPI\_CSI, up to 1.5Gbps/lane  
Support Two Cameras:  
2-lane MIPI\_CSI for Rear Camera, up to 8MP  
1-lane MIPI\_CSI for Front Camera, up to 2MP

#### Touch Panel:

Capacitive Touch Panel

**Audio:** 2 analog audio inputs and 3 analog audio outputs

**USB 2.0:** High Speed up to 480Mbps, Support OTG

**(U)SIM Interface:** × 2, 1.8V/2.95V

**I2C:** × 3

**GPIO:** × 25

**UART:** × 2 (high speed UARTs)

**SD Card:** × 1 (3.0, 4-bit SDIO)

**Keypad:** PWRKEY, VOL UP, VOL DOWN

**ADC:** × 3 (BAT\_SNS, BAT\_THERM, ADC)

**Antenna:** 4 Solder Pads for Main/Diversity/GNSS/Wi-Fi&BT Antenna, Respectively

### Electrical Characteristics

**Supply Voltage:** 3.5V~4.2V, 3.8V Typ.

**Consumption:** 20uA @Power off  
3mA @Sleep, Typ.

#### Output Power:

Class 3 (23dBm±2dB) for LTE FDD Bands  
Class 3 (23dBm±2dB) for LTE TDD Bands  
Class 3 (24dBm+1/-3dB) for WCDMA Bands  
Class 2 (24dBm+1/-3dB) for TD-SCDMA Bands  
Class 3 (24dBm+3/-1dB) for EVDO/CDMA BCO  
Class 4 (33dBm±2dB) for GSM850 and EGSM900  
Class 1 (30dBm±2dB) for DCS1800 and PCS1900  
Class E2 (27dBm±3dB) for GSM850 and EGSM900  
8-PSK  
Class E2 (26dBm±3dB) for DCS1800 and PCS1900  
8-PSK

### Sensitivity:

LTE FDD B1: -102dBm	LTE TDD B39: -101dBm
LTE FDD B2: -101dBm	LTE TDD B40: -100dBm
LTE FDD B3: -101dBm	LTE TDD B41: -100dBm
LTE FDD B4: -101dBm	WCDMA B1: -110dBm
LTE FDD B5: -101dBm	WCDMA B2: -110dBm
LTE FDD B7: -100dBm	WCDMA B4: -110dBm
LTE FDD B8: -101dBm	WCDMA B5: -110dBm
LTE FDD B12: -100dBm	WCDMA B6: -110dBm
LTE FDD B13: -100dBm	WCDMA B8: -110dBm
LTE FDD B18: -100dBm	WCDMA B19: -110dBm
LTE FDD B19: -100dBm	TD-SCDMA: -108dBm
LTE FDD B20: -99dBm	EVDO/CDMA: -109dBm
LTE FDD B25: -99dBm	GSM 850: -109dBm
LTE FDD B26: -99dBm	GSM 900: -109dBm
LTE FDD B28: -99dBm	GSM 1800: -109dBm
LTE TDD B38: -100dBm	GSM 1900: -109dBm

### Enhanced Features

#### WLAN:

2.4G/5G, 802.11 a/b/g/n (SC20-E/-A/-AU/-J, SC20-CE/-W R1.1)  
2.4G, 802.11 b/g/n (SC20-CE/-W R1.0)

#### Bluetooth:

BT2.1+EDR/3.0/4.1LE (BT4.2 on Android 7)

#### GNSS:

GPS/GLONASS/BeiDou

Support 3GPP E-UTRA Release 10

**Bandwidth:** 1.4/3/5/10/15/20MHz

Support Rx-diversity, DL MIMO 2 × 2

(U)SIM Card Detection

Firmware Upgrade via USB

### General Features

**OS:** Android 5.1/6.0/7.1

#### Memory:

8GB eMMC+1GB LPDDR3

16GB eMMC+2GB LPDDR3

**Temperature Range:** -40°C ~ +75°C

**Dimensions:** 40.5mm × 40.5mm × 2.8mm

**Package:** LCC + LGA

**Weight:** Approx. 9.8g

### Approvals

RoHS/REACH

CE/GCF (Europe)

FCC/PTCRB/AT&T/Verizon\* (North America)

RCM\*/Telstra\* (Australia)

IC (Canada)

JATE/TELEC (Japan)

CCC/SRRC/NAL (China)

①: LTE B2 and B5 of SC20-EU Do Not Support Rx-diversity

\* Under Development