



Technical Specification Document

C20QM

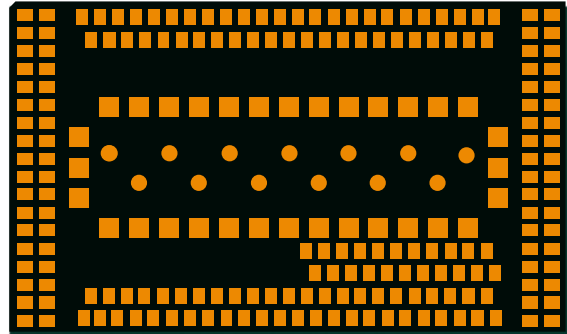
LTE Cat 4 / 2G Module



Cavli C-Series C20QM Module



LTE Cat 4/ 2G Module



C20QM is the series of LTE Cat 4 modules with 2G fall back supporting 3GPP release 10 designed for IoT and M2M applications. It delivers a maximum data rate of 150 Mbit/s DL & 50 Mbit/s UL. It has a compact LGA form factor which is pin compatible with C10GS LTE Cat 1/4 module which allows flexible migration. C20QM supports integrated GNSS with Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou/Compass, Galileo and QZSS), for precise and dependable positioning. C20QM supports VoLTE and SMS over IMS/SG/CS and supports wide set Internet protocols and industry-standard interfaces.

They come in 2 variants - C20QM-EA for the Europe and Asia market and C20QM-NA for the North America market. With optional integrated eSIM powered by Cavli Hubble platform, it provides global connectivity that helps to further reduce the time to market. C20QM is ideal for IoT applications such as asset tracking, e-mobility, data loggers, fleet management and environmental monitoring.

Key features



LTE Cat 4



eSIM



Cavli Hubble Platform



Integrated GNSS



USB 2.0 Interface



2G



Small Form Factor Design



VoLTE Support



SMS over IMS/SG/CS

| | C20QM-EA | C20QM-NA |
|--------------------------------|--|--|
| Basic Information | | |
| Region | EMEA, APAC | North America |
| CPU | ARM Cortex-A7 @ 1.3 GHz | ARM Cortex-A7 @ 1.3 GHz |
| Memory | 256 MB RAM 256/ 512 MB Flash | 256 MB RAM 256/512 MB Flash |
| OS | Linux 4.14 | Linux 4.14 |
| Package | LGA | LGA |
| Pin Count | 233 | 233 |
| Dimensions | 37 x 21.8 x 2.8 mm | 37 x 21.8 x 2.8 mm |
| Weight | TBD | TBD |
| Operating Temperature | -30 °C to +75 °C | -30 °C to +75 °C |
| Extended Operating Temperature | -40 °C to +85 °C | -40 °C to +85 °C |
| Radio Frequency Bands | | |
| RAT | Cat 4 GSM | Cat 4 GSM |
| Transmission Rates | Cat 4: DL 150 Mbps & UL 50 Mbps GSM (2G): DL 236.8 Kbps & UL 236.8 Kbps | Cat 4: DL 150 Mbps & UL 50 Mbps GSM (2G): DL 236.8 Kbps & UL 236.8 Kbps |
| LTE Band List GSM Band List | B1/ B3/ B5/ B8/ B20/ B40 900/ 1800MHz | B2/ B4/ B5/ B12/ B13/ B25/ B26/ B66 900/ 1800MHz |
| 3GPP Release | 10 | 10 |
| GNSS Capability | | |
| GNSS (GNA Variant) | GPS/ GLONASS/ BeiDou/ Galileo QZSS Capable | GPS/ GLONASS/ BeiDou/ Galileo QZSS Capable |
| Network Protocols | | |
| Internet Protocols | TCP(S), HTTP(S), MQTT(S), FTP(S), UDP, WS(S), PPP, SNMP | TCP(S), HTTP(S), MQTT(S), FTP(S), UDP, WS(S), PPP, SNMP |
| Interfaces | | |
| UART | x3 | x3 |
| USB 2.0 (HS) | x1 | x1 |
| SDIO 3.0 | x1 | x1 |
| USIM (DSSS) (1.8V / 3.0V) | x1 | x1 |
| JTAG | x1 | x1 |
| Network Status Indicator | x1 | x1 |
| Power ON Status Indicator | x1 | x1 |
| SGMII | x1 | x1 |
| I2C ² | x1 | x1 |

¹Optional

²Needs SDK

³In Progress

| | C20QM-EA | C20QM-NA |
|-------------------|----------|----------|
| SPI ² | x1 | x1 |
| ADC | x2 | x2 |
| LCD | x1 | x1 |
| GPIO ² | x9 | x9 |
| PCM ² | x1 | x1 |
| Main ANT | x1 | x1 |
| GNSS ANT | x1 | x1 |
| Diversity ANT | x1 | x1 |

Electrical Characteristics

| | | |
|-------------------|---|---|
| Operating Voltage | Range: 3.6 V to 4.5 V Typical: 3.8 V | Range: 3.6 V to 4.5 V Typical: 3.8 V |
| TxD Peak | TBD | TBD |
| TxD Idle | TBD | TBD |
| GNSS (Fix) | TBD | TBD |

Enhanced Features

| | | |
|-----------|-----|-----|
| VoLTE | Yes | Yes |
| SMS - IMS | Yes | Yes |
| SMS - SG | Yes | Yes |
| SMS - CS | Yes | Yes |

Driver Support

| | | |
|------------|-----|-----|
| USB Driver | TBD | TBD |
|------------|-----|-----|

Certifications

| | | |
|------------|--|---|
| Regulatory | Global: GCF ³ Europe: CE ³ UK: UKCA ³ Taiwan: NCC ³ South Korea: KC ³ | Global: GCF ³ North America: PTCRB ³ America: FCC ³ Canada: IC ³ |
| Carrier | TBD | Verizon ³ /AT&T ³ /TMobile ³ |
| Others | RoHS / REACH | RoHS / REACH |

Other Features

| | | |
|---|----------|----------|
| Integrated GNSS | Optional | Optional |
| Integrated eSIM + Cavli Hubble Global Connectivity and Device Management Platform | Optional | Optional |
| miniPCIe Form Factor | Optional | Optional |

¹ Optional

² Needs SDK

³ In Progress



Product Variants

| Variant Name | Region | Flash Size | Integrated eSIM |
|----------------|---------------|------------|-----------------|
| C20QM-EA-22GNN | EMEA, APAC | 256 MB | ✗ |
| C20QM-EA-22GNH | EMEA, APAC | 256 MB | ✓ |
| C20QM-NA-22GNN | North America | 256 MB | ✗ |
| C20QM-NA-22GNH | North America | 256 MB | ✓ |
| C20QM-EA-24GNN | EMEA, APAC | 512 MB | ✗ |
| C20QM-EA-24GNH | EMEA, APAC | 512 MB | ✓ |
| C20QM-NA-24GNN | North America | 512 MB | ✗ |
| C20QM-NA-24GNH | North America | 512 MB | ✓ |

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