

# calliope<sup>2</sup>

## GC02S1 Modules

LTE Cat 1bis

### Optimized LTE Cat 1bis connectivity for IoT applications

The Calliope™ 2 GC02S1 modules are based on Sequans' second-generation Calliope Cat 1 platform, leveraging Sequans' many years of 4G experience and millions of units deployed around the world. The modules support the optimized Cat 1bis standard, deliver ultra-low power consumption and can be deployed in any country, enabling them to operate and roam on any LTE network worldwide, even where LTE-M and NB-IoT are not available. Calliope 2 GC02S1 delivers remarkably high levels of security and reliability.



#### Highlights

- 3GPP LTE Cat 1bis Release 14 (upgradable to Release 15) including support for PSM and eDRX
- Cost-effective support for Cat 1 data rate (10Mbps DL/5Mbps UL)
- Industry lowest deep sleep mode at 1µA and best-in-class eDRX and PSM
- Small LGA module form factor
- Power supply supports 3.2-5.5V
- Up to 2 external SIM/eSIM interfaces, and 1 integrated SIM/eSIM\*
- Embedded IP stack (TCP w/ TLS1.3, UDP w/ DTLS1.2, CoAP/MQTT, HTTP/FTP), and LwM2M client
- Differential firmware upgrade
- Open SDK for customer application
- VoLTE\*

\*For future support

Module Variants	Regions	LTE Bands Supported
GC02S1-NA	North America	2, 4, 5, 12, 13, 14, 17, 25, 66
GC02S1-EU	Europe	1, 3, 8, 20, 28

#### Calliope 2 LTE Platform

At the heart of the Calliope 2 GC02S1 modules is the Calliope 2 chip platform, the second generation of Sequans' Calliope LTE Cat 1 platform, which has now been cost-optimized to operate with a single receive antenna: Cat 1bis. Calliope 2 improves on the cost and power consumption levels of first-generation Calliope and includes new, powerful features such as its EAL5+ secure enclave that is usable as an iSIM\*. Calliope 2 GC02S1 modules utilize a single rail power supply starting at 3.2 V. Sequans designs and owns all of its technology, from chip to software to module, thus ensuring an exceptionally low total cost of ownership and faster time to market.

#### Applications

The Calliope 2 GC02S1 modules provide ideal connectivity for Cat 1bis M2M and IoT devices, including asset trackers and telematics, security and alarm systems, payment systems, smart meters, smart city lighting and parking, healthcare devices, industrial monitors, and a wide range of smart home and consumer electronics devices.

#### Key Features

##### Ultra-low power consumption

Calliope 2 GC02S1 modules deliver ultra-low power consumption by adapting sleep and active state power consumption according to use case, thereby enabling long life for battery-powered Cat 1bis IoT devices.

##### Integrated SIM/eSIM\*

The secure enclave in Calliope 2 can support secure key storage, crypto applications, and integrated eSIM\*, which it can operate without additional components, thereby reducing complexity and total cost of ownership for customers. Sequans makes no compromise on security and certifies its chipsets and processes to the Common Criteria EAL5+ security level---the same high standard required for traditional SIM cards.

##### Next-level customer security

The Calliope 2 GC02S1 software suite provides customers with all tools necessary to securely boot and upgrade the firmware, ensuring authenticated firmware transfer, integrity verification, and protection against unauthorized modifications.

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## Product Characteristics

### LTE Modem

- ❖ 21 x 19.5 x 1.8 mm LGA module
- ❖ Three pin-to-pin fully compatible regional hardware variants
- ❖ 3GPP Cat 1bis Release 14 (upgradeable to Release 15)
- ❖ Maximum transmit power up to +23 dBm
- ❖ Single power supply: 3.2-5.5V

### Throughput

- ❖ LTE Cat 1bis: up to 10 Mbps DL, 5 Mbps UL

### Interfaces

- ❖ UART x 4 (max 3.6 MBauds)
- ❖ USB 2.0
- ❖ USIM x 2 (ISO7816)
- ❖ PCM for digital audio
- ❖ JTAG
- ❖ I2C
- ❖ SPI
- ❖ ADC
- ❖ GPIO including multiple module wake inputs and high precision LTE-synchronized GPIOs
- ❖ 50 Ohm cellular antenna interface

### Software

- ❖ Field proven LTE software stack
- ❖ Rich set of AT commands compatible with other Sequans platforms
- ❖ HTTPS, MQTTS, CoAP to connect to all cloud platforms
- ❖ Virtual LAN over USB ECM
- ❖ (D)FOTA

### Environmental

- ❖ Operating temperature: -40° C to +85° C
- ❖ Storage: JEDEC MSL 3



More information here