Monarch NB01Q Module
Optimized, single-mode LTE category NB1/NB2 IoT connectivity solution for use on the worldwide NB-IoT network

The Monarch NB01Q module is the first, all-in-one, single-mode LTE category NB1/NB2 module with worldwide deployment and roaming capability. The Monarch NB01Q module comprises Sequans’ Monarch LTE Platform and all other elements necessary for a complete LTE modem system. These include an LTE-optimized transceiver, a complete Single-SKU™ RF front-end to support LTE bands worldwide, and key interfaces, all in a single compact LGA package. The Monarch NB01Q module also includes Sequans’ carrier-proven LTE protocol stack and a comprehensive software package for over-the-air device management and packet routing. The Monarch NB01Q module is compatible with any host running Linux or Windows, and a wide range of embedded and real-time operating systems.

Monarch LTE Platform
At the heart of the Monarch NB01Q module is the Monarch LTE Platform (SQN3330), an ultra-compact, cost and power-efficient LTE chip for IoT and M2M device design. Monarch provides all necessary IoT features along with extremely low power consumption at a low cost for industry leading price/performance. Monarch’s software suite is based on more than a decade of proven field experience. It is running in major 4G deployments around the world and is one of the most mature solutions in the global 4G ecosystem. It includes the entire LTE Release 13 software stack along with all drivers required for a complete 4G system. It includes a turnkey package compatible with Linux, Windows and a wide range of embedded and real-time OSes, and contains Sequans’ standard compliant LWM2M clients. A field diagnostic tool is available for faster time-to-market.

Applications
The Monarch NB01Q module is ideal for adding LTE connectivity to M2M and IoT devices. It is an ultra-compact, high performance solution, delivering a perfect blend of LTE features and ultra-low power consumption for the design of NB-IoT connected devices including sensors, meters, buttons, and trackers of all kinds.

Monarch NB01Q Module Evaluation Kit
The Monarch NB01Q module evaluation kit enables plug-and-play development with all major operating systems. The evaluation kit also includes schematic layout and BOM design files for use in PCB designs.

Highlights
- Based on Sequans Monarch LTE Platform
- 3GPP LTE Release 13 Cat NB1, half-duplex FDD, 27.2 Kbps downlink and 62.5 Kbps uplink, Cat NB2, half-duplex FDD, 120 Kbps downlink and 160 Kbps uplink
- Upgradable to 3GPP Release 14 LTE Advanced Pro
- Operates with a single LTE antenna on LTE low and mid bands
- Multi-tone and single-tone
- In-band, stand alone and guard-band operation
- Small 20 x 21 x 1.5 mm LGA module
- Supports 200 kHz narrowband channel size for machine type communications
- Embedded LWM2M client
- Supports location based services
- Compatible with Linux, Windows, and a wide range of embedded and real-time OSes
- High-speed UART as primary data interface
- Fully tested and calibrated
- Pin-to-pin compatible footprint with Sequans Cat 4 VZ22Q, Cat 1 VZ120Q and Cat M VZM20Q modules
- Embedded power management, pSRAM
- Optional GNSS

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Monarch NB01Q module block diagram

Product characteristics

**LTE Modem**
- 20x21x1.5mm, LGA module
- Operates on HD-FDD low and mid LTE bands (1, 2, 3, 4, 5, 8, 9, 10, 12, 13, 14, 17, 18, 19, 20, 25, 26, 27, 28, 65, 66)
- Multi-tone and single-tone
- In-band, stand alone and guard-band operations
- SMS over SG
- LWM2M client
- 3GPP Release 13 upgradable to 14, GCF and PTCRB compliant
- Compliant with FCC modular requirements
- Max transmit power up to +23 dBm
- RoHS Compliant

**Throughput**
- LTE Category NB1: 27.2 Kbps DL / 62.5 Kbps UL
- LTE Category NB2: 120 Kbps DL / 160 Kbps UL

**Data Interfaces**
- High speed UART
- I2C
- USIM

**Environmental**
- Operating temperature: -30° C to +85° C
- Storage: -40° C to +85° C