



# NB-IoT Module support LTE Cat M1 / NB1 cellular band with GPS

## location function

### Overview

SARA-R410M-QL series is one of IoT connectivity module which support LTE-Cat M1 / NB1 & EGPRS with GPS location service , the multi-mode module solution , easily access to all NB-IoT/LTE-M band implying coverage across Europe , North America , Africa and Asia . With board to board connector and directly AT-command access to smooth the long-range IoT application and unlimited GPS data transmission purpose.

The high quality GPS modules support GPS, GLONASS, QZSS & SBAS multi satellite system, You can just turn on/off GPS through AT-command to allow tracking for movement detection, and easily to send your GPS location back to server or mobile phone through NB-IoT cell. This module comes with a small antenna that connects to the I-PEX MHF1 connector for flexible design purpose .

### Applications

- Gateway / IPC / Door Lock / Remote Monitoring
- Tracker / Telematics / Fleet management

### Features

- LTE-Cat M1/NB1 & EGPRS function support
- GPS/QZSS L1 C/A, GLONASS L1 FDMA,SBAS (WAAS, EGNOS, MSAS) support
- Board to board connector and communication via UART(5pin) or USB(4 pin)

RoHS Compliant



- Built-in two I-PEX MHF1 RF connector for both NB-IOT & GPS antenna connection, to reduce antenna tuning efforts.
- External active antenna **short circuit protection**
- Over-The-Air firmware updates support
- Embedded TCP & UDP stack and support
- FTP & HTTP & MQTT message protocol support
- NB-IoT & GPS enable through AT-command via I2C
- Voice option (via PCM)
- Rich certificates for reference .
  - PTCRB
  - GCF
  - CE
  - FCC US
  - ISED Canada
  - RCM Australia
  - NCC
  - Giteki Japan
  - KC Korean

The above certification should follow the different type number of cellular module product .

### Technical Specifications

#### Receiver Performance Data\*

Core Engine	u-blox SARA-R410 series
LTE Frequency bands	LTE Cat M1/NB1 and EGPRS multi-mode support (LTE Bands: 1, 2, 3, 4, 5, 8, 12, 13,18, 19, 20, 25,



series

	26, 28 by different type name of ublox SARA-R410 module)
LTE Cat NB1 power consumption	Min power 60 mA 0 dBm 65 mA 12 dBm 80 mA 18 dBm 100 mA Max power 140 mA
LTE Cat M1 Connected Mode power consumption	Min power 100 mA 0 dBm 105 mA 12 dBm 125 mA 18 dBm 150 mA Max power 190 mA
LTE Cat M1 Power consumption	Power Save Mode: 8 $\mu$ A Active Idle Mode: 2 mA (also set the power control pin to Turn on/off module for power saving purpose)
Protocols	Dual stack IPv4 and IPv6 Embedded TCP/IP, UDP/IP, FTP, HTTP Embedded MQTT Embedded HTTPS, FTPS, TLS
Firmware upgrade	Via USB uFOTA client/server solution (Firmware upgrade Over the Air)
GPS support	AT-command access to GPS for fastest TTFB
GPS Protocol Support	NMEA 0183 v2.3 (compatible to 3.0) GGA, GLL, GSA, GSV, RMC, VTG, TXT

\* **Note. SPEC should be changed through IC vendor's notice**

**Electrical Data**

Main Power VDD	3.8V ~ 6V
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Peak through current	1500mA (Turn on peak current)
Power Consumption	Power Save Mode: 8 $\mu$ A Active Idle Mode: 2 mA
I/O Power(V)	2.3~3.3V

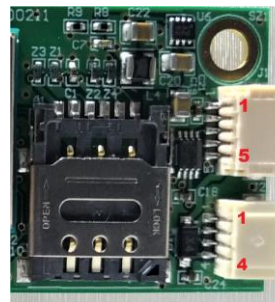
**Environmental Data**

Operating temperature	-40 ~ 85°C w/o battery
Storage temperature	-40 ~ 85°C w/o battery

**Mechanical Data :**

65 x 23 x 4.7 (mm)

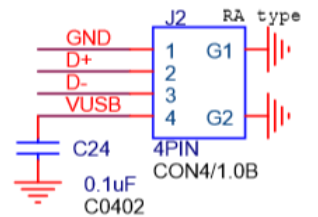
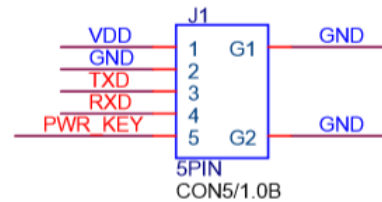
**Pin Definition :**



UART

USB

VDD = 3.8V~6.0V  
VIO = 3.3V (TXD/RXD)



**NB-IoT ANT**

**GPS ANT**



**Ordering Information**

**SARA-R410M-Qxx,**

xx=L	NB-IoT function only
xx=LG	NB-IoT with GPS function

\*This document is subject to change without notice.