SEQUANS COMMUNICATIONS CA410 Cellular Module

SEQUANS COMMUNICATIONS CA410 Cellular Module Instructions

Contents

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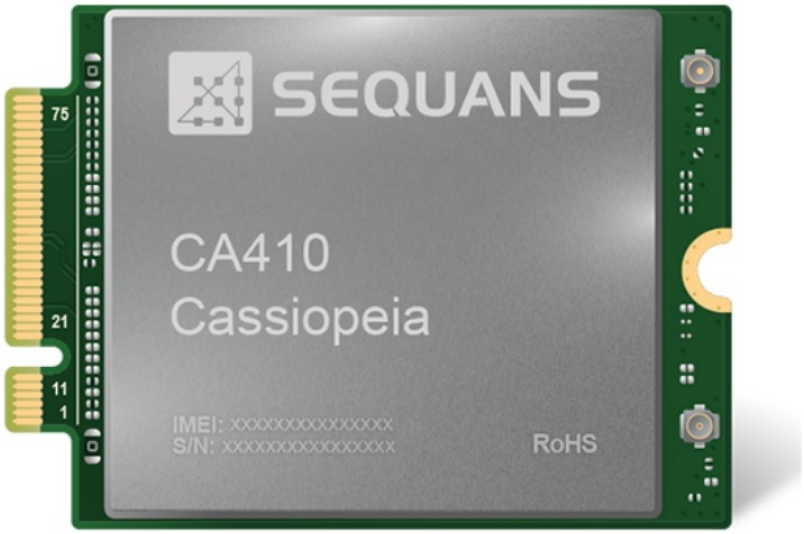

Product Information

Specifications

The product model CA410 complies with regulatory approval standards for Band B8 and CBRS band (B48) under FCC jurisdiction.

Product Usage Instructions

FCC Regulatory Approval

This device complies with Part 15 of the FCC Rules. To ensure proper operation, make sure the device does not cause harmful interference and is able to accept any interference received. Follow these steps:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for instructions about how to install or de-install the module.

ISED Regulatory Approval

For ISED regulatory approval, ensure that the transmitter module is not co-located with any other transmitter. Users are encouraged to correct interference by following these measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a different circuit.
- Consult a professional for installation or de-installation guidance.

Acronyms

- **DL:** Downlink
- **ECCN:** Export Control Classification Number
- **ECM:** Electronic Countermeasure
- **ESD:** Electrostatic Discharge

- **FFF:** Form Fit Function
- **FFH:** Frequency Hopping
- **GND:** Ground
- **GPIO:** General Purpose Input/Output
- **HBM:** Human Body Model
- **I/O:** Input/Output
- **IMEI:** International Mobile Equipment Identity
- **IMS:** IP Multimedia Subsystem
- **IP:** Internet Protocol
- **ISIM:** IMS Subscriber Identity Module
- **LTE:** Long-Term Evolution
- **PHY:** Physical Layer
- **RB:** Resource Block
- **RED:** Radio Equipment Directive
- **RF:** Radio Frequency
- **RoHS:** Restriction of Hazardous Substances
- **Rx:** Receiver
- **S/N:** Serial Number
- **SIM:** Subscriber Identity Module
- **SMS:** Short Message Service
- **SPI:** Serial Peripheral Interface
- **TCXO:** Temperature Compensated Crystal Oscillator
- **Tx:** Transmitter
- **UE:** User Equipment
- **UICC:** Universal Integrated Circuit Card
- **UL:** Uplink
- **USB:** Universal Serial Bus

Band B8 and CBRS band (B48) approval is only relevant under FCC jurisdiction.

FCC Regulatory Approval
FCC-ID: 2AAGMCA410A (single modular approval)
This above-identified LTE radio module is not intended to be provided to end-users but is for installation by OEM integrators only.

Installation/Integration

OEM integrators must follow Sequans' installation instructions to provide for and benefit from FCC compliant module integrations and must abide especially by the following provisions:

The maximum antenna gain values (accounting for cable attenuation) to comply with the FCC maximum ERP/EIRP limits and with RF Exposure rules:

- LTE band 2 (1850-1910 MHz): 9.26 dBi
- LTE band 4 (1710-1755 MHz): 6.66 dBi
- LTE band 5 (824-849 MHz): 10.89 dBi

- LTE band 8 (897.5-900.5 MHz): 10.86 dBi
- LTE band 12 (699-716 MHz): 13.58 dBi
- LTE band 13 (777-787 MHz): 10.33 dBi
- LTE band 14 (788-798): 10.32 dBi
- LTE band 26 (814-849): 10.84 dBi
- LTE band 48 (3550-3700): 1.24 dBi
- LTE band 66 (AWS-3): 6.66 dBi

Sequins's module integration guidelines must be closely followed.

Compliance of host integrations of the module is limited to host adaptation designs which are identical to Sequans' reference design. Host integrations with adaption designs deviating from Sequans' reference design require either class 2 permissive change to this modular approval or a separate host approval with different FCC-ID; Host integrations with co-located (simultaneously operating) radio transmitters must be evaluated in accordance with FCC multi-transmitter rules and may require either class 2 permissive change to this modular approval or a separate host approval with different FCC-ID, dependent on the result of the evaluation; Inquiry at FCC or a TCB is urgently recommended. Integrations of the module into host products which are intended for portable use, i.e. less than 20cm distance between its radiating structures (antenna) and the body of nearby persons, or which otherwise put additional technical requirements like Hearing Aid compatibility require either class 2 permissive change to this modular approval or a separate host approval with different FCC-ID; Compliance with Unwanted Emission Limits for Digital Device If the OEM host integration fully complies with the above-described reference design and can completely inherit and rest on compliance of the existing modular approval the OEM remains still responsible to show compliance of the overall end-product with the FCC limits for unwanted conducted and radiated emissions from the digital device (unintentional radio) portion of such end-product (commonly addressed as part 15B compliance or similar).

End-product Labelling

- The module's FCC-ID must either be visible from the exterior of the host product (e.g. per window) or per electronic display or shall be displayed on an additional exterior label per the following or similar string: contains FCC-ID: 2AAGMCA410A
- **Digital Device** – Unwanted Emissions **Notice**: If the end-product falls under part 15 of the FCC rules (it shall display the following user notice on its exterior acc. to part 15.19 (the notice may be printed in the manual in case the host is too small):

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Further labelling requirements may apply depending on the FCC rule parts relevant to the host product.

- **End-product User Instructions** / **Notices in the Manual:** At a minimum, end-product users must be provided with the following notices at a prominent location of the product literature furnished with the product:
    - Product Modifications: Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
    - RF Exposure Compliance: This equipment complies with FCC radiofrequency radiation exposure rules and limits set forth for an uncontrolled environment, when installed and operated with minimum distance

of 20 cm between its radiating structures (antenna) and the body of nearby persons and when not operated simultaneously with other nearby radio-transmitters.
    - Maximum Antenna Gain: The user instructions of end-products equipped with standard external antenna connectors for the modular radio transmitter providing the option to connect other antennae than those which may or may not be bundled with the end-product must list the maximum allowed antenna gain values as derived from those given above, accounting for the cable attenuations of the actual installation.
    - **Digital Device** – Unwanted Emissions
      Notice: If the end-product is or contains a digital device (unintentional radio portions) and is not exempted by its use case (like vehicular use) the following part 15.105 (b) user notice shall be provided at a prominent location of the product literature:
    - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
    - Reorient or relocate the receiving antenna;
    - Increase the separation between the equipment and receiver;
    - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
    - Consult the dealer or an experienced radio/TV technician for help
- **Further User Notices:** May be required dependent on the FCC rule parts relevant to the host product.
- **Non-allowed User Instructions:** The end-product user guidance may NOT include instructions about how to install or de-install the module.

ISED Regulatory Approval

ISED registration number/identification ISED: 12732A-CA410A. This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

As long as the two conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or colocation with another transmitter), then the Canada authorisation is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorisation.

End Product Labelling
This transmitter module is authorised only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains
IC:12732A-CA410A”.

Manual Information To the End User
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

Acronyms

Acronym	Definition
DL	Downlink
ECCN	Export Control Classification Number
ECM	Ethernet Control Model, USB interface
ESD	Electrostatic discharge
FFF	Firmware From Flash
FFH	Firmware From Host
GND	Ground
GPIO	General Purpose Input Output
HBM	Human Body Model (ESD)
I/O	Input/Output
IMEI	International Mobile Equipment Identity
IMS	Instant Messaging Service
IP	Internet Protocol
ISIM	Integrated SIM
LTE	Long Term Evolution, or 4G. Standard is developed by the 3GPP www.3gpp.org.
PHY	Physical Layer
RB	Resource Block
RED	Radio Equipment Directive
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
Rx	Reception
S/N	or SN: Serial Number
SIM	Subscriber Identification Module
SMS	Short Message Service
SPI	Serial Peripheral Interface
TCXO	Temperature Compensated Crystal Oscillator
Tx	Transmission
UE	User Equipment
UICC	Universal Integrated Circuit Card
UL	Uplink
USB	Universal Serial Bus

FAQ

Q: What should I do if I encounter interference issues with the device?
A: If you experience interference, try reorienting or relocating the receiving antenna, increase the separation between equipment and receiver, connect to a different circuit, or seek professional guidance.

Documents / Resources

 5 Regulatory Approval 5.1 FCC Regulatory Approval	SEQUANS COMMUNICATIONS CA410 Cellular Module [pdf] Instructions CA410 Cellular Module, CA410, Cellular Module, Module

References

- 3GPP – The Mobile Broadband Standard
- User Manual

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