



SUNSEA AIOT A7672G, A7670G SIMCom LTE Cat 1 Module Owner's Manual

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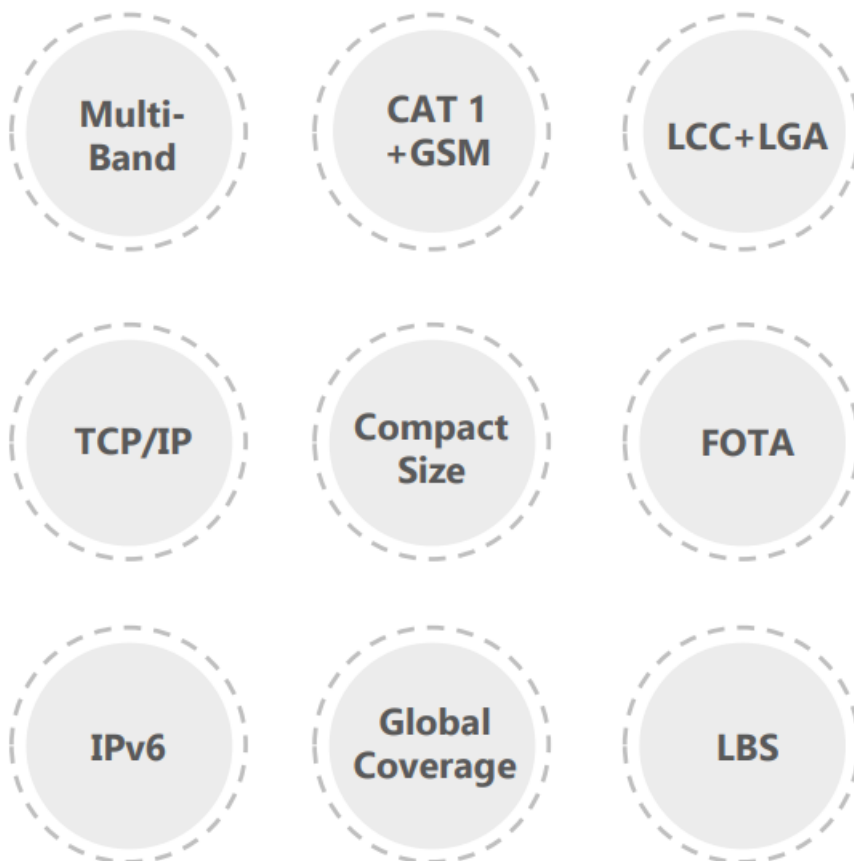
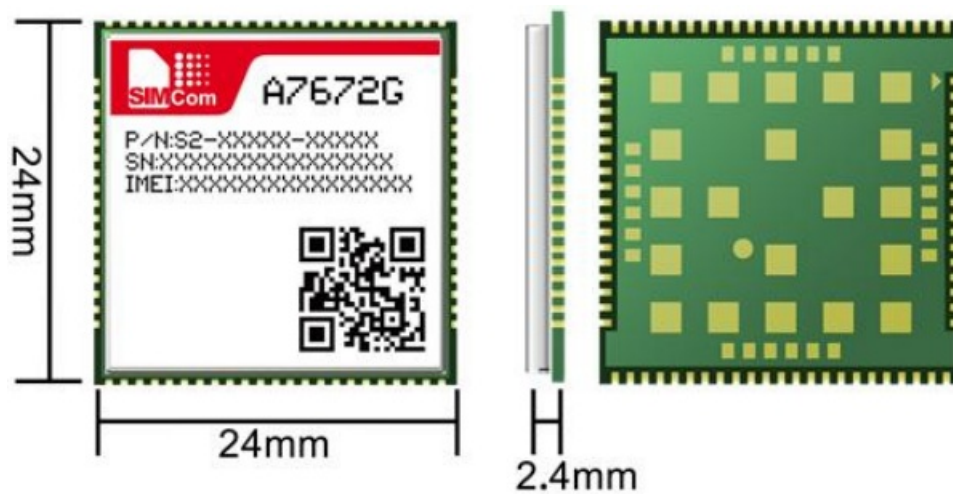
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A7672G/ A7670G

SIMCom LTE Cat 1 Module



Product Description

A7672G/ A7670G is the LTE Cat 1 module that supports wireless communication modes of LTEFDD/TDD/GSM/GPRS/EDGE. It supports maximum 10Mbps downlink rate and 5Mbps uplink rate.

A7672G/ A7670G adopts LCC+LGA form factor and is compatible with SIM7070G ,which enables smooth migration from 2G/NB/Cat M products to LTE Cat 1 products. Its band combination supports global coverage and this greatly facilitates more compatible product design for the global customer needs.

A7672G/ A7670G supports both multiple built-in network protocols and the drivers for main operation systems (USB driver for Windows, Linux and Android). The software functions, AT commands are compatible with the A7670X series modules. A7672G/ A7670G integrates abundant industrial standard interfaces with powerful expansibility, such as UART, USB, I2C and GPIO, which makes it perfectly suitable for main IOT applications such as telematics, POS, surveillance devices, industrial routers, and remote diagnostics etc.

Key Benefits

- Compact size with abundant interfaces
- Suitable for LTE and GSM network with global coverage
- Abundant software functions: FOTA, LBS, SSL
- Form factor is compatible with the A7670X/A7672X/SIM7070G/ series

General Features

Frequency Bands	LTE-FDD B1/B2/B3/B4/B5/B7/B8/B12/B13/ B18/B19/B20/B25/B26/B28/B66/
	LTE-TDD B38/B39/B40/B41
	GSM/GPRS/EDGE 850/900/1800/1900 MHz
Supply Voltage	3.4V ~ 4.2V, Typ: 3.8V
Control Via AT Commands	
Operation temperature	-10°C ~ +55°C
Dimensions	24*24*2.4mm
Weight	TBD

Data Transfer

LTE Cat 1	Uplink up to 5 Mbps
	Downlink up to 10 Mbps
EDGE	Uplink/Downlink up to 236.8Kbps
GPRS	Uplink/Downlink up to 85.6Kbps

Other Features

USB Driver for Microsoft Windows 7/8/10
 USB Driver for Linux /Android
 RIL supporting for Android 5.0/6.0/7.0/8.0/9.0
 Firmware update via USB/FOTA
 TCP/IP/IPV4/IPV6/Multi-PDP/FTP/HTTP/DNS
 RNDIS/PPP/ECM
 MQTT/MQTTS
 TLS1.2
 LBS
 TTS

Interfaces

USB2.0

UART
(U)SIM card(1.8V/3V)
Analog audio
ADC
I2C
GPIO
Antenna: Primary

Certifications

3C#/SRRC#/NAL#
CE#/FCC#/RoHS#/REACH#

Note

*: optional
#: on going

General Features

FCC Warning:

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 this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note 1: 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.

Note :

1. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. The minimum separation generally be used is at least 20 cm.

KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.

Explanation: this module meets all the requirements of FCC part 2, 22(H), 24(E), 27(L), 27(F), 27(H),90(S)

2.3 Summarize the specific operational use conditions

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The EUT no have permanently attached antenna , The test antenna gain is LTE B2/B25/B38/B41: 9.01 dBi, LTE B4/B66: 5.0dBi, LTE B5: 10.41dBi, LTE B7: 11.01dBi ,LTE B12: 8.69dBi,LTE B13: 10.15dBi,LTE B26: 10.35dBi,LTE B40: 0dBi,GSM 850:1.41dBi,GSM 1900:4.01dBi. The use condition of the prototype is mobile. Use conditions mainly for advertising machines, TV BOX and HDTV colar..

2.4 Limited module procedures

If a modular transmitter is approved as a "limited module," then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval. This limited module procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed will be maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Explanation: this module is a limited module

2.5 Trace antenna designs

For a modular transmitter with trace antenna designs, see the guidance in Question 11 of KDB Publication 996369 D02 FAQ - Modules for Micro-Strip Antennas and traces. The integration information shall include for the TCB review the integration instructions for the following aspects: layout of trace design, parts list (BOM), antenna, connectors, and isolation requirements.

- a) Information that includes permitted variances (e.g., trace boundary limits, thickness, length, width, shape(s), dielectric constant, and impedance as applicable for each type of antenna);
- b) Each design shall be considered a different type (e.g., antenna length in multiple(s) of frequency, the wavelength, and antenna shape (traces in phase) can affect antenna gain and must be considered);
- c) The parameters shall be provided in a manner permitting host manufacturers to design the printed circuit (PC) board layout;
- d) Appropriate parts by manufacturer and specifications;
- e) Test procedures for design verification; and
- f) Production test procedures for ensuring compliance.

Explanation: No, this module without trace antenna designs.

2.6 RF exposure considerations

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable - xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Explanation: This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This module is designed to comply with the FCC statement, fcc id is:2AJYU-8BAE005

2.7 Antennas

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an “omnidirectional antenna” is not considered to be a specific “antenna type”).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product. The module manufacturers shall provide a list of acceptable unique connectors.

Explanation: This module use External antenna. The test antenna gain is LTE B2/B25/B38/B41: 9.01 dBi, LTE B4/B66: 5.0dBi, LTE B5: 10.41dBi, LTE B7: 11.01dBi ,LTE B12: 8.69dBi,LTE B13: 10.15dBi,LTE B26: 10.35dBi,LTE B40: 0dBi,GSM 850:1.41dBi,GSM 1900:4.01dBi.

2.8 Label and compliance information

Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating “Contains FCC ID” with their finished product. See Guidelines for Labeling and User Information for RF Devices - KDB Publication 784748.

Explanation: On the metal shielding shell, there is space for printing basic information such as the name and model of the product, and the id :2AJYU-8BAE005 is included.

2.9 Information on test modes and additional testing requirements

Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer’s determination that a module as installed in a host complies with FCC requirements.

Explanation: Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

2.10 Additional testing, Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.


Explanation: The module without unintentional-radiator digital circuitry, so the module do not require an evaluation by FCC part15 subpart B. The host should be evaluated by the FCC subpart B.

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Documents / Resources

	<p>SUNSEA AIOT A7672G, A7670G SIMCom LTE Cat 1 Module [pdf] Owner's Manual 8BAE005, 2AJYU-8BAE005, 2AJYU8BAE005, 8bae005, A7672G A7670G SIMCom LTE Cat 1 Module, A7672G, A7670G, SIMCom LTE Cat 1 Module, SIMCom, LTE Cat 1 Module, Cat 1 Module, Module, LTE Module</p>
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References

-  [SIMCom Wireless Solutions - Wireless Modules and Solutions Supplier](#)

Manuals+.