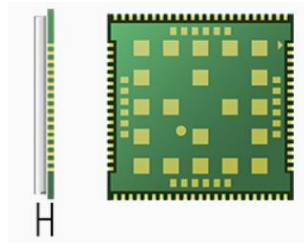




A7672G/A7672X Series

LTE Cat 1 Module

User Guide and Modular Integration Instructions



Product Description

A7672G (A7672G/A7672X series) is the LTE Cat 1 module that supports wireless communication modes of LTE-FDD/TDD/GSM/GPRS/EDGE.

It supports maximum 10Mbps downlink rate and 5Mbps uplink rate.

A7672G/A7672X series 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.

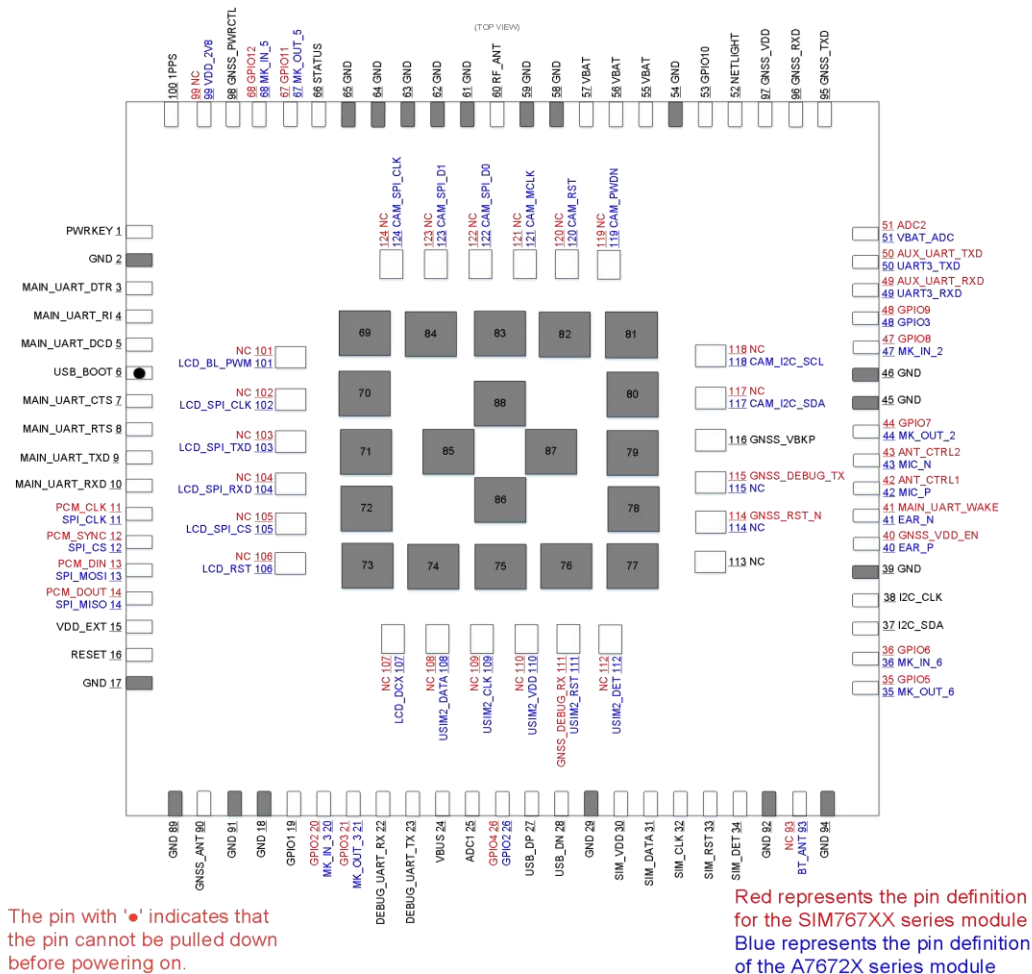
A7672G/A7672X supports both multiple built-in network protocols and the drivers for main operating systems (USB driver for Windows, Linux and Android). The software functions, AT commands are compatible with the A7670X series modules. A7672G/A7672X integrates abundant industrial standard interfaces with 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, remote diagnostics etc.

Function	A7672G/A7672X series
Power	Power supply range: 3.4V~4.2V
Peak current	2A
Sleep current	<2mA
Frequency band	○ 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
GNSS	Support GNSS function interface
Temperature range	Normal working temperature: -30°C ~ +80°C Extended operating temperature: -40°C ~ +85°C * Storage temperature: -45°C ~ +90°C
UART interface	Main serial port UART1: • For AT command transmission and data transmission • Baud rate supports from 300bps to 3686400bps, the default is 115200bps • Support RTS and CTS hardware flow control • Support serial port multiplexing function in accordance with GSM 07.10 protocol • Debug serial port UART_LOG: • Support debug usage UART3 serial port: • Ordinary serial port
(U)SIM interface	Support (U)SIM card: 1.8V/3.0V

USB interface	USB2.0, only supports slave mode, the maximum data transfer rate is 480Mbps
SD card interface	NA
WLAN/BT interface	Only supports Bluetooth data transmission
ADC interface	● Provide a ADC and a VBAT_ADC interfaces ● Voltage range: 0~1.8V Resolution: 9 bits
Network indication	i. NETLIGHT: Network indication
Diversity indication	ii. No
Antenna interface	Main antenna interface iii. GNSS antenna interface(optional) Bluetooth antenna interface(optional)
Software upgrade	Upgrade software via USB
Data Transfer	Uplink up to 5Mbps; Downlink up to 10 Mbps

Pin Assignment Overview

The following figure shows the pin assignment of A7672G/A7672X



Pin definition

Table 3: Pin type definition

PIN type	Description
PI	Power input
PO	Power output
AI	Analog input
AO	Analog output
I/O	Input or output
DI	Digital input
DO	Digital output
DOH	Digital output with high level
DOL	Digital output with low level
PU	Pull up
PD	Pull down

A7672G/A7672X			
Pin No.	Pin Name	I/O	Power domain
1	PWRKEY	DI	Power ON/OFF input, active low. VIH: 0.7*VBAT VIL: 0.3*VBAT
2	GND	-	GND
3	DTR	DI	1.8V
4	RI	DO	1.8V
5	DCD	DO	1.8V
6	USB_BOOT●	DI	1.8V
7	CTS	DO	1.8V
8	RTS	DI	1.8V
9	TXD	DO H	1.8V
10	RXD	DI	1.8V
11	SPI_CLK	IO, PD	1.8V
12	SPI_CS	IO, PD	1.8V
13	SPI_MOSI	DO ,PD	1.8V
14	SPI_MISO	DI, PD	1.8V
15	VDD_EXT	PO	1.8V

16	RESET	DI, PU	System reset control input, active low. VIH: 0.7*VBAT VIL: 0.3*VBAT
17	GND	-	GND
18	GND	-	GND
19	GPIO1	IO, PU	1.8V
20	MK_IN_3	DI	1.8V
21	MK_OUT_3	DO	1.8V
22	UART_LOG_RX	DI	1.8V
23	UART_LOG_TX	DO H	1.8V
24	VBUS	AI	Valid USB detection input. Active high, Vmax(valid)= 3.0V, Vmax(detection)=5.2V
25	ADC	AI	0V-1.8V
26	GPIO2	IO, PD	1.8V
27	USB_DP	IO	-
28	USB_DM	IO	-
29	GND	-	GND
30	USIM1_VDD	PO	1.8V/3.0V
31	USIM1_DATA	IO, PU	1.8V/3.0V
32	USIM1_CLK	IO, PU	1.8V/3.0V
33	USIM1_RST	IO,	1.8V/3.0V
34	USIM1_DET	IO, PU	1.8V
35	MK_OUT_6/I2C3_SDA	IO	1.8V
36	MK_IN_6/I2C3_SCL	IO	1.8V
37	I2C_SDA	IO	1.8V
38	I2C_CLK	DO	1.8V

39	GND	-	GND
40	EAR_P	AI O	1.8V
41	EAR_N	AI O	1.8V
42	MIC_P	AI O	1.8V
43	MIC_N	AI O	1.8V
44	MK_OUT_2	DO	1.8V
45			
46	GND	-	GND
47	GND	-	GND
48	MK_IN_2	DI	1.8V
49	GPIO3	IO, PD	1.8V
50	UART3_RXD	DI	1.8V
	UART3_TXD	DO H	1.8V
51	VBAT_ADC	AI	-
52	NETLIGHT	DO	1.8V
53	GPIO4	IO, PU	1.8V
54	GND	-	GND
55	VBAT	PI	3.4V~4.2V
56	VBAT	PI	3.4V~4.2V
57	VBAT	PI	3.4V~4.2V
58	GND	-	GND
59	GND	-	GND
60	RF_ANT	AI O	-
61	GND	-	GND
62	GND	-	GND
63	GND	-	GND
64	GND	-	GND
65	GND	-	GND
66	STATUS	DO	1.8V
67	MK_OUT_5	DO	1.8V
68	MK_IN_5	DI	1.8V

69	GND	-	GND
70	GND	-	GND
71	GND	-	GND
72	GND	-	GND
73	GND	-	GND
74	GND	-	GND
75	GND	-	GND
76	GND	-	GND
77	GND	-	GND
78	GND	-	GND
79	GND	-	GND
80	GND	-	GND
81	GND	-	GND
82	GND	-	GND
83	GND	-	GND
84	GND	-	GND
85	GND	-	GND
86	GND	-	GND
87	GND	-	GND
88	GND	-	GND
89	GND	-	GND
90	GNSS_ANT	AI O	-
91	GND	-	GND
92	GND	-	GND
93	BT_ANT	AI O	-
94	GND	-	GND
95	GNSS_TXD	DO	1.8V
96	GNSS_RXD	DI	1.8V
97	1V8_GNSS	PI	-
98	GNSS_PWRCTL	DI	1.8V
99	VDD_2V8	PO	-
100	1PPS	DO	1.8V
101	LCD_BL_PWM	DO	1.8V
102	LCD_SPI_CLK	DO	1.8V
103	LCD_SPI_TXD	DI, DO	1.8V
104	LCD_SPI_RXD	DI	1.8V
105	LCD_SPI_CS	DO	1.8V
106	LCD_RST	DO	1.8V

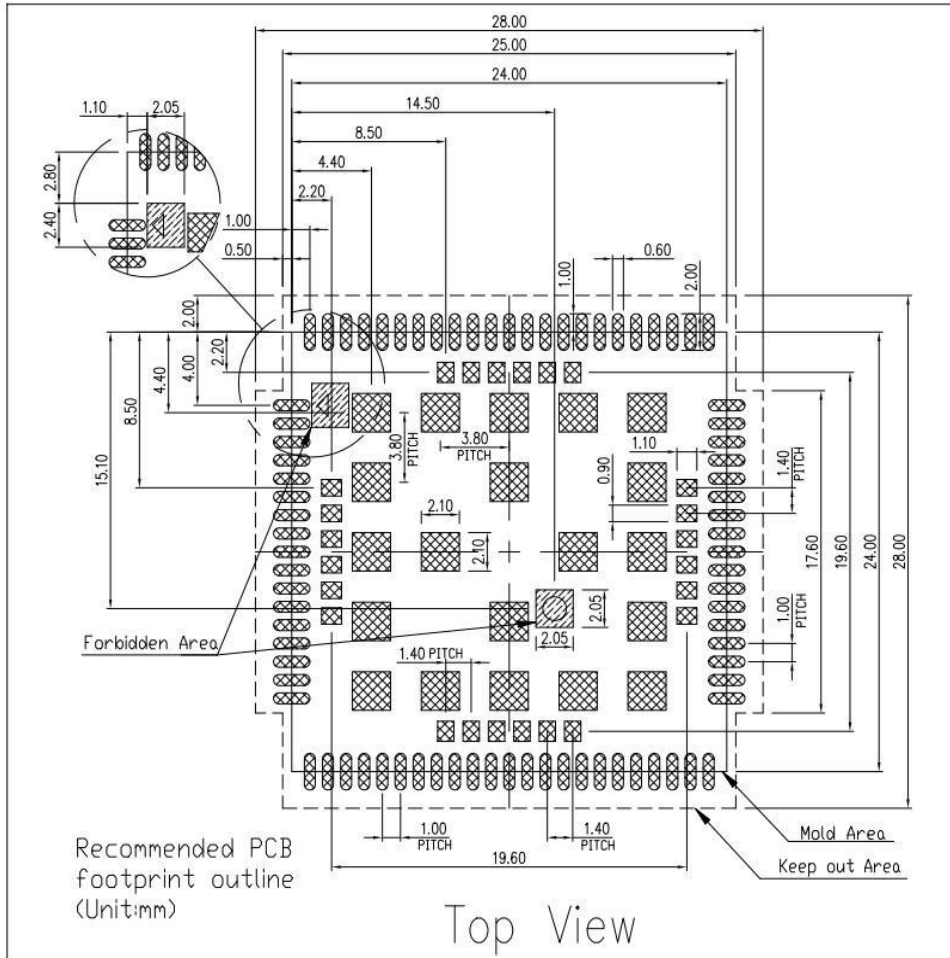
107	LCD_DCX	DO	1.8V
108	USIM2_DATA	I/O, PU	1.8/3.0V
109	USIM2_CLK	I/O, PU	1.8/3.0V
110	USIM2_VDD	PO	1.8/3.0V
111	USIM2_RST	I/O, PU	1.8/3.0V
112	USIM2_DET	IO, PU	1.8V
113	NC	-	-
114	NC	-	-
115	NC	-	-
116	GNSS_VBKP	PI	-
117	CAM_I2C_SDA	DI, DO	1.8V
118	CAM_I2C_SCL	DO	1.8V
119	CAM_PWDN	DO	1.8V
120	CAM_RST	DO	1.8V
121	CAM_MCLK	DO	1.8V
122	CAM_SPI_D0	DI	1.8V
123	CAM_SPI_D1	DI	1.8V
124	CAM_SPI_CLK	DO	1.8V

NOTE:

The PIN Marked '●' is used to enter forced download mode, and it cannot be pulled down before the module powered up, otherwise it will affect the normal start-up of the module.

Recommended PCB footprint outline

The recommended PCB footprint outline for A7672G/A7672X series is shown as below.



Recommended PCB footprint outline (Unit: mm)

Power requirements

The following table shows the supply voltage range of A7672G/A7672X.

Modules	Power Pin	Symbol description	Min	Typical	Max	Unit
A7672G/A7672X series	VBAT	Power supply range	3.4	3.8	4.2	V

Module recommended supply voltage comparison

When the A7672G/A7672X is at the maximum power in GSM TX mode, the peak current can reach 2A (peak current), which results in a large voltage drop on VBAT. In order to ensure that the voltage drop is less than 300mV, the power supply capacity of external power supply must be no less than 2A. The sudden current and voltage drop model at the battery end are shown in the figure below:

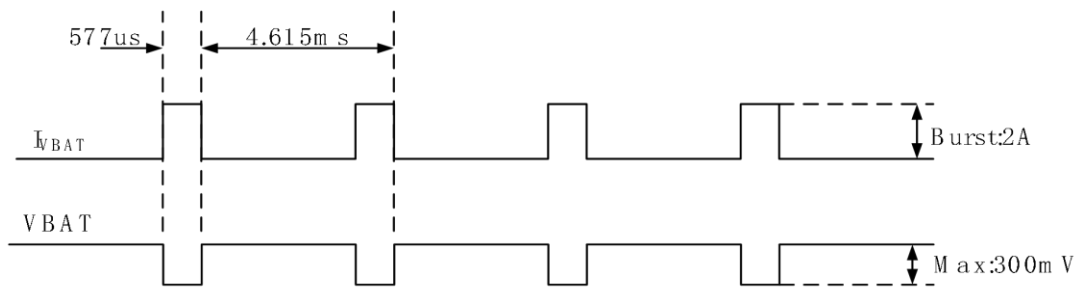


Figure 5: A7672G/A7672X Burst transmission power requirements

In the customer's design, special attention must be paid to the design of the power supply section to ensure that even when the current consumption of the module reaches the peak current, the drop of VBAT does not fall below 3.4V. If the voltage drops below 3.4V, the RF performance of the module will be affected.

NOTE: When the power supply of A7672X can provide a peak current of 2A, the total capacitance of the external power supply capacitor is recommended not to be less than 300uF; if it cannot provide a peak current of 2A, it is recommended that the total capacitance of the external capacitor is not less than 600uF to ensure that the voltage

It is recommended to place four ceramic capacitors of 10pF/33nF/0.1uF/1uF close to VBAT to improve RF performance and system stability. At the same time, it is recommended that the width of the VBAT trace between the power supply on the PCB and the module is at least 3mm. The reference design recommendations are as follows: If the VBAT input contains high frequency interference, it is recommended to add magnetic beads for filtering. The recommended models of magnetic beads are BLM21PG300SN1D and MPZ2012S221A

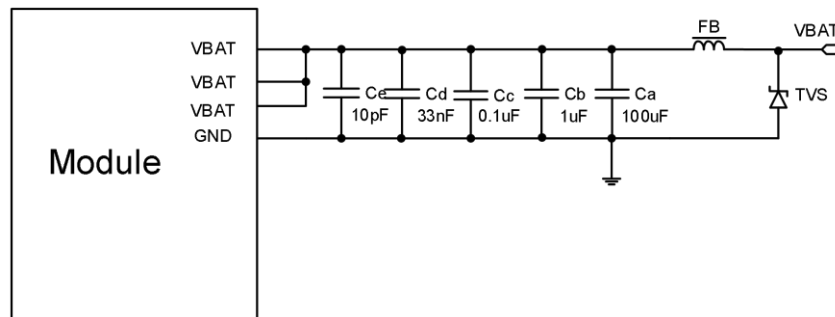


Figure 6: VBAT input reference circuit

Manufacturer	Part Number	VRWM	VCmax	PPPmax	CJmax	Package
WILL	ESD56301D05-2/TR	5V	9.5V	1500W	700pF	DFN1610-2L
WILL	ESD56301D04-2/TR	4.85V	11V	2000W	480pF	DFN1610-2L
WAYON	WS2057KP	5V	12V	2040W	700pF	DFN1610-2L
WAYON	WS4.5DPHXM	4.85V	11V	2255W	700pF	DFN1610-2L

Table 6: TVS for VBAT part number list

The following methods can be used to power off the module:

- Power off by pulling the PWRKEY pin down to a low level.
- Power off Module by AT command 'AT+CPOF'.
- Over-voltage or under-voltage automatic power off, use "AT+CPMVT" to set the voltage range.
- Over-temperature or under-temperature automatic power off.

It is strongly recommended that the customer use PWRKEY or 'AT+CPOF' to shut down, and then power off VBAT (especially when the module does not need to work). In addition, the customer cannot shut down VBAT by disconnecting it, which may cause damage to flash.

Symbol	A7672G/A7672X					
	Min	Typ	Max	Unit	Min	Typ
T _{on}	-	30	-	ms	-	50
V _{IH}	0.7* VBAT	-	VBAT	V	-	2.1
V _{IL}	0	0	0.3* VBAT	V	0	0

Table 6: Power on timing and electronic characteristic

Reset Circuit

The A7672G/A7672X series can be reset by pulling down the reset pin to a low level. The recommended circuit is as follows:

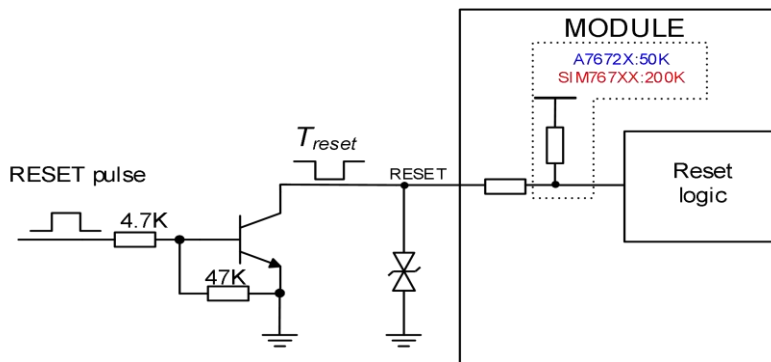


Figure 9: Reference reset circuit

Symbol	A7672G/A7672X			
	Min	Type	Max	Unit
T _{on}	2	2.5	-	s
V _{IH}	0.7* VBAT	-	VBAT	V
V _{IL}	0	0	0.3* VBAT	V

Table 7: RESET pin electronic characteristic

USB Interface

A7672G/A7672X series module provides a USB2.0 interface, supporting high-speed 480Mbps and full-speed mode 12Mbps, and does not support USB charging function and USB HOST mode. USB is the main debugging port and software upgrade interface. It is recommended that customers reserve USB test points during design. If the main control chip is connected, OR resistors should be reserved for switching external test points during design, as shown in the figure below.

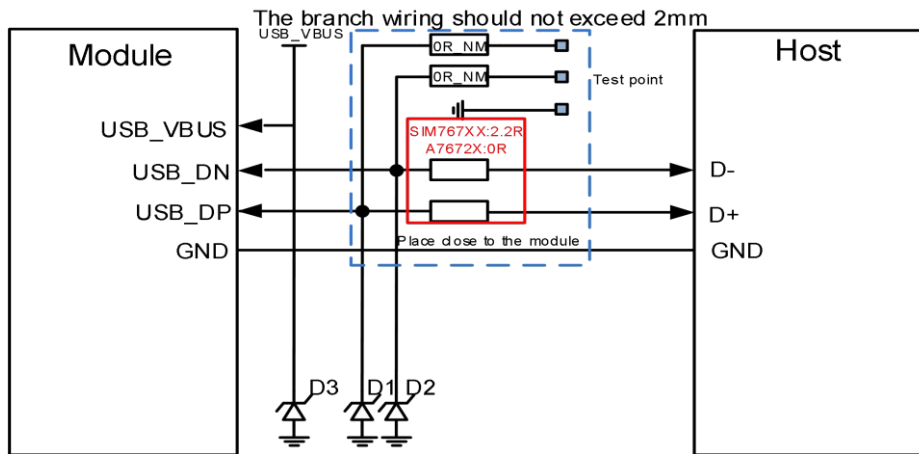


Figure 10: USB reference circuit

Customers should pay attention to the selection of D3 devices. It is recommended to choose anti-static and anti-surge two-in-one devices, and one TVS tube can be placed, recommended model AZ9707-01F. D+/D- trace impedance is controlled according to 90Ω and covered with ground; D1/D2 select TVS tube with capacitance value <1pF, and they should be placed near the USB connector or test point, recommended models ESD73131CZ and ESD9L5.0ST5G.

Manufacturer	Part Number	VRWM	VCmax	CJmax	Package
WILL	ESD73131CZ-2/TR	5V	6.5V	0.45pF	DWN0603-2L
ON	ESD9L5.0ST5G	5V	9.8V	0.9pF	SOD-923
AMAZING	AZ9707-01F	7V	12.5V	950pF	DFN1610

Table 8: TVS for USB part number list

USB_BOOT Interface

A7672G/A7672X series support the USB forced download function. Before the A7672G/A7672X is powered on, customer can pull the USB_BOOT pin to GND, then apply VBAT power to the module, and press PWRKEY to enter the download mode. The reference circuit is as follows:

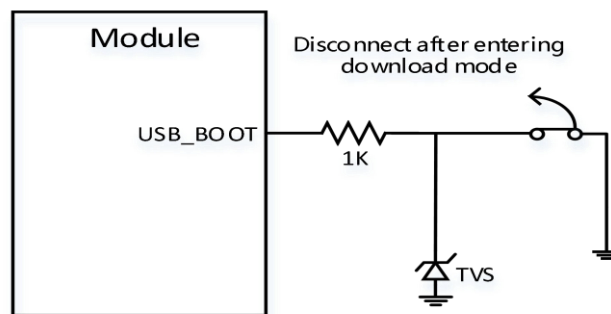


Figure 11: Forced download reference circuit

Network Indication

The NETLIGHT pins can be used to drive a network status indicator LED. The following circuit is the reference design.

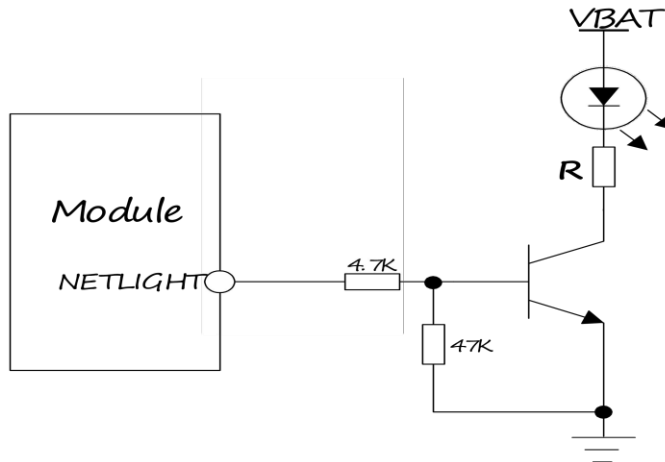


Figure 12: NETLIGHT/STATUS reference circuit

Module	NETLIGHT pin status	Module status
A7672G/A7672X	Always On	Searching Network
	200ms ON, 200ms OFF	Data Transmit
	800ms ON, 800ms OFF	Registered network
	OFF	Power off / Sleep

Table 9: NETLIGHT pin status

USIM Interface

A7672G/A7672X series supports 1.8V/3.0V (U)SIM card by default and support hot-swappable function. The USIM peripheral circuit should be close to the USIM card socket. The following figure shows the 6-pin SIM card holder reference circuit.

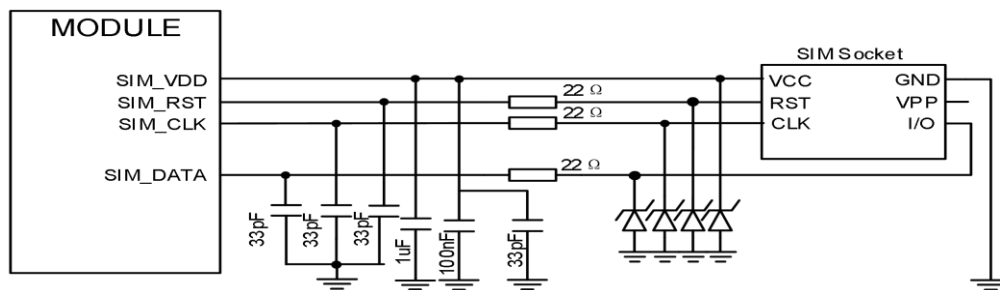


Figure 13: SIM interface reference circuit

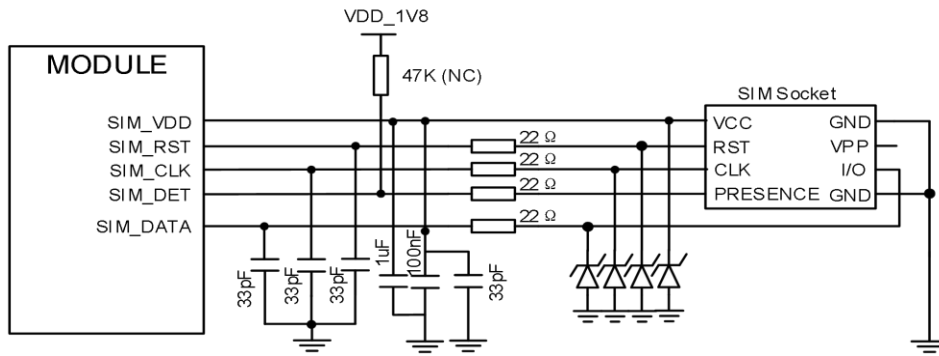


Figure 14: SIM interface reference circuit (8PIN)

Manufacturer	Part Number	VRWM	VCmax	PPpmax	CJmax	Package
WAYON	WE05DUCF	5V	8.5V	56W	0.7pF	DFN1006-2L
WILL	ESD9X5VU-2/TR	5V	8V	72W	0.9pF	DFN1006-2L

Table 10: TVS for USIM part number list

SIM_DATA has been pulled up with a 4.7KΩ resistor to SIM_VDD in module.

NOTE:

- A 100nF capacitor on SIM_VDD is used to reduce interference.
- Using "AT+UIMHOTSWAPON=0 or 1"AT command to set module SIM card hot swap function enable. This function is disabled by default.
- Using "AT+UIMHOTSWAPLEVEL=0 or 1"AT command to set the SIM card detection level to adapt the signal logic.

UART Interface

A7672G/A7672X series provides three serial ports, one main full-function communication serial port UART, one ordinary two-wire serial port, one print LOG serial port.

Below are the reference circuits.

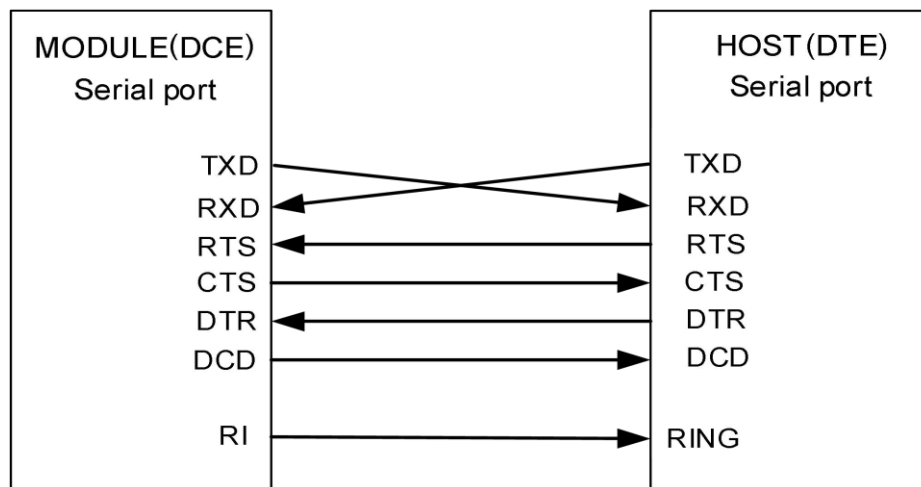


Figure 15: UART Full modem

The following figure shows the use of a transistor for circuit conversion. The circuit in the dotted line can refer to the circuit of the solid line TXD and RXD, and you need to pay attention to the direction of the signal. The recommended transistor model here is MMBT3904.

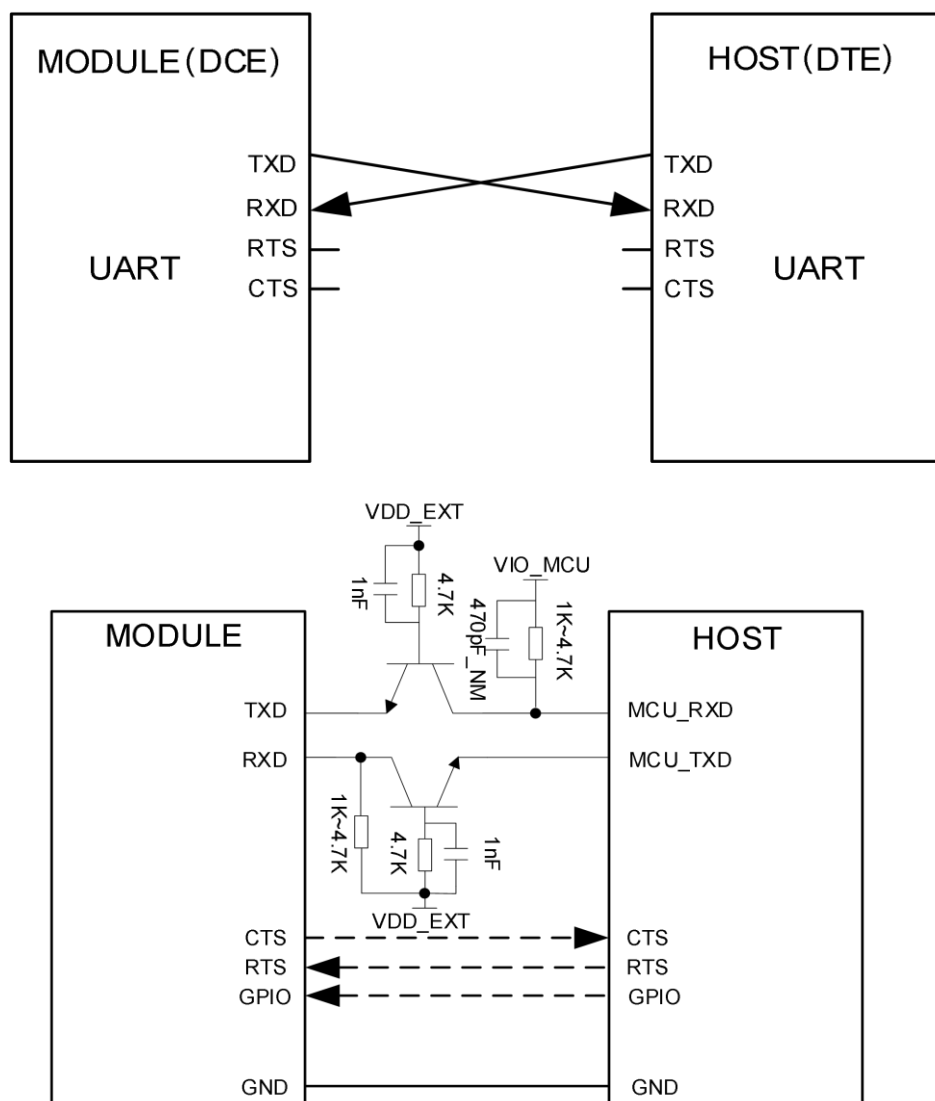


Figure 17: Triode level conversion circuit

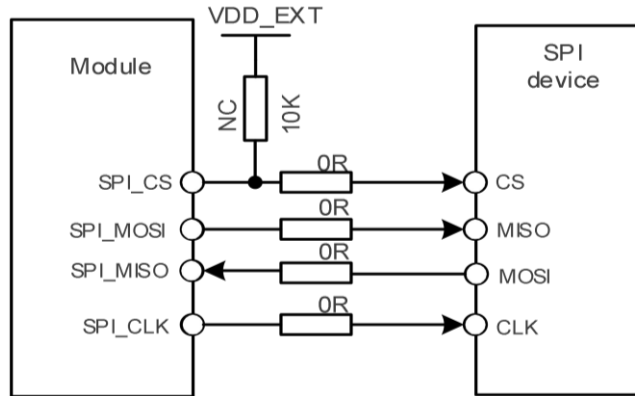
NOTE:

- Main UART of A7672X supports the following baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600, 1842000 and 3686400. The default baud rate is 115200bps.
- The maximum baud rate supported by A7672X ordinary serial port is 921600.
- The parasitic capacitance of the transistor will affect the edge of the high-speed digital signal. It is not recommended to use this circuit when the signal speed is higher than 115200bps.

SPI*

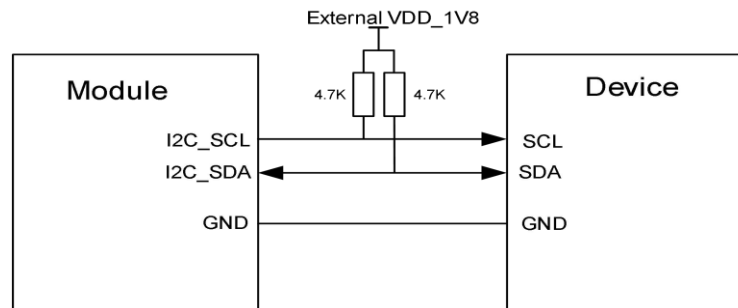
The A7672G/A7672X provides a set of 4 wire (MISO, MOSI, CS and CLK) SPI interface with maximum clock rate of 52 MHz. It supports master mode and provides full-duplex format, synchronous and serial communication with peripheral devices.

The reference circuit for SPI is shown in the following figure:



I2C

A7672G/A7672X series provide one set of I2C interface, and it supports standard speed clock frequency 100Kbps, supports high speed clock frequency 400Kbps, its operation voltage is 1.8V.

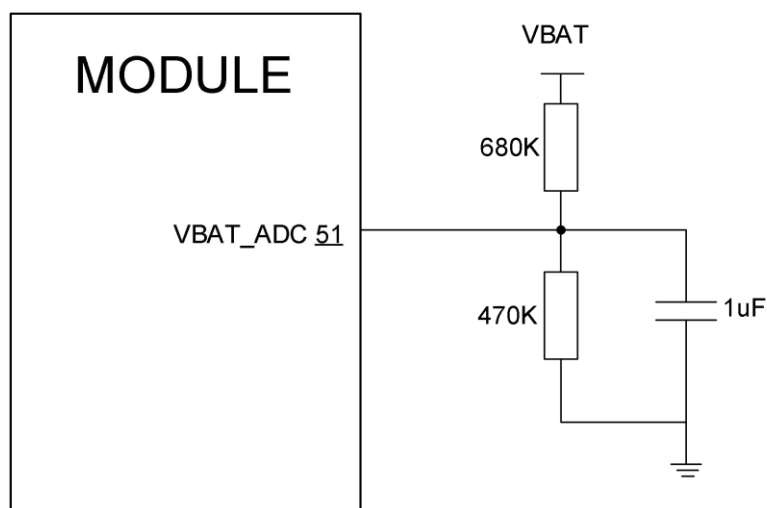


ADC Interface

SIM767XX series provides 2 ADC interfaces. A7672G/A7672X provides 1 ADC interface and 1 VBAT_ADC. The electrical characteristics are compared as follows:

Function	A7672G/A7672X series
ADC Interface	Resolution: 9Bits Voltage range: 0~1.8V

Table 11: ADC interface parameters



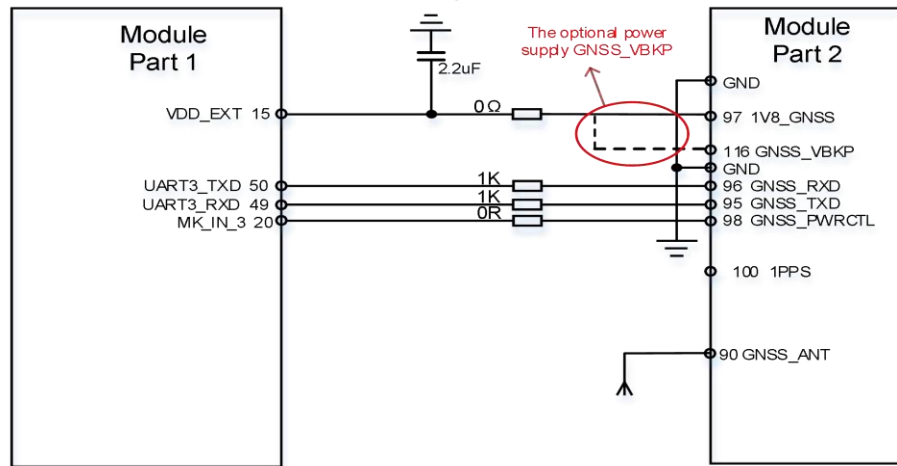
GNSS Interface

A7672G/A7672X supports GNSS function interface. GNSS provides 2 power supply input interfaces, 1 GNSS power enable control switch, 1 UART interface and 1 pulse synchronous clock signal interface, which are described in detail as follows.

PIN name	NO.	I/O	Description	Note
GNSS_VBKP	116	PI	GNSS backup power input	Power supply range 1.4V~3.6V, IVBKP=1mA (Typical, GNSS_VBKP=1.8V).
1V8_GNSS	97	PI	GNSS Vcore and VDDIO input	The supply voltage shall be 1.8V~1.9V, and routing width should more than 0.5mm.
GNSS_PWRCTL	98	DI	GNSS Vcore and VDDIO power enable control	Active high. Solution 1: Connect to GPIO, recommend use MK_IN_3 (PIN20). Solution 2: Connect to MCU GPIO.
GNSS_RXD	96	DI	GNSS UART RX	1.8V power domain. Solution 1: Use 1K resistor to connect UART3_TXD (PIN50) of the module in series. Solution 2: Connect to MCU UART_TX.
GPS_TXD	95	DO	GNSS UART TX	1.8V power domain. Solution 1: Use 1K resistor to connect UART3_RXD (PIN49) of the module in series. Solution 2: Connect to MCU UART_RX.
1PPS	100	DO	GNSS pulse synchronous clock signal	If unused, keep it open.

Table 12: A7672 GNSS interface

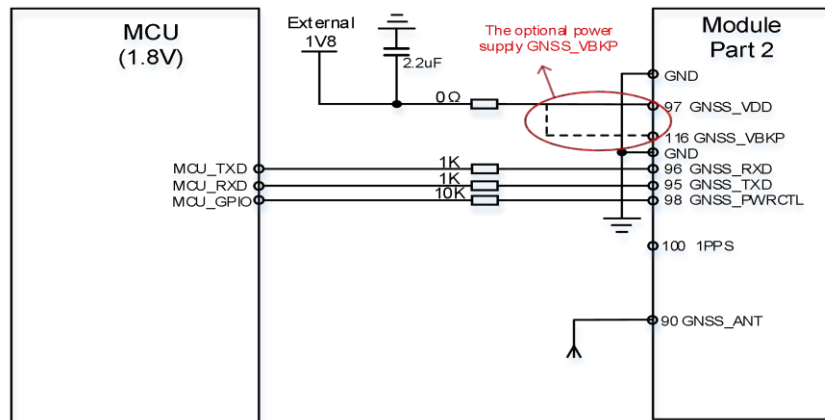
GNSS recommended reference design solution 1: A7672G/A7672X module itself provides power, power enable and UART transmission to GNSS, the recommended reference design as follows:



A7672G/A7672X GNSS reference design (Non-standalone GNSS solution)

GNSS recommended reference design solution 2:

The external MCU provides power, power enable and UART transmission to GNSS, this solution is used for scenarios where GNSS can work standalone without the module powering up. The recommended reference design as follows:

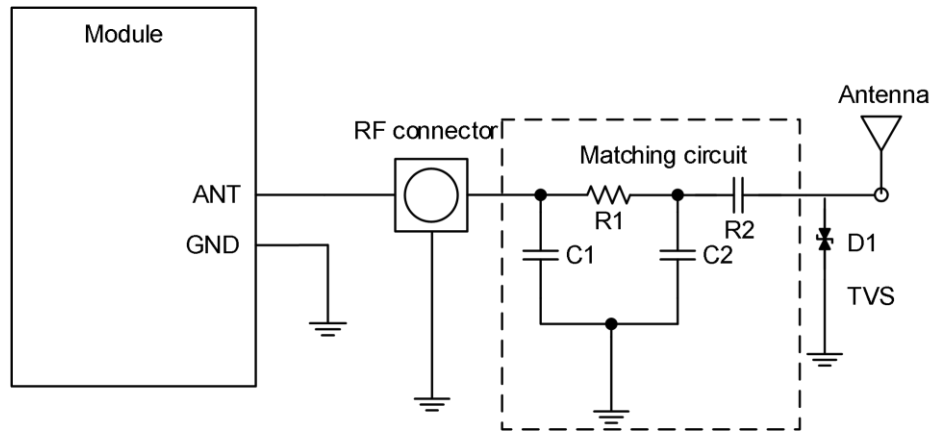


A7672G/A7672X GNSS reference design (Standalone GNSS solution)

RF Interface

In order to ensure the best performance of the output radio frequency, it is recommended to reserve a π -type matching circuit, and the capacitor is not attached by default.

Passive Antenna for LTE/GNSS



Passive antenna reference

In above figure, the component R1/R2/C1/C2 is reserved for antenna matching, the value of components can only be got after the antenna tuning, usually provided by the antenna factory. Among them, R1 paste 0 Ω , R2 paste 100pF, C1 and C2 do not paste by default. The component D1 is a Bidirectional ESD Protection device, which is suggested to add to protection circuit, the recommended Part Numbers of the TVS for RF main antenna and GNSS antenna are listed in the following table:

Manufacturer	Part Number	VRWM	VCmax	CJmax	Package
Murata	LXES03AAA1-154	4V	28V	0.05pF	0603
INPAQ	CES10201V05B0	5V	30V	0.1pF	0201
BillSEMI	BLE5VOCR05UB	5V	40V	0.05pF	DFN1006-2L

Table 14: TVS for RF main antenna part number list

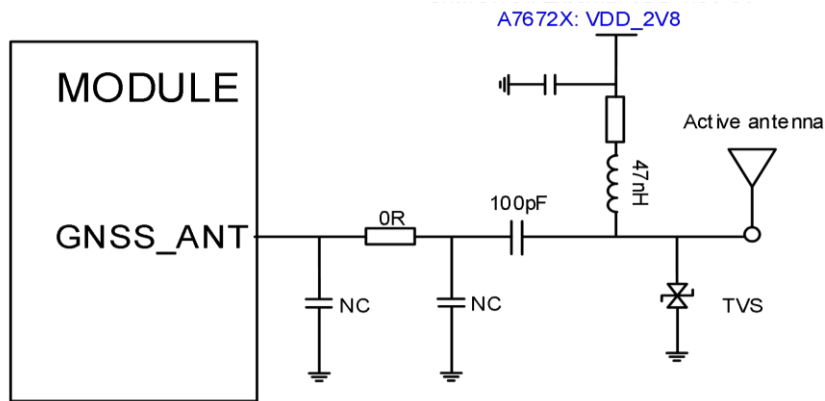
Manufacturer	Part Number	VRWM	VCmax	CJmax	Package
WAYON	WE05DGCF-B	5V	23V	0.3pF	DFN1006-2L

Table 15: TVS for GNSS antenna part number list

Active Antenna for GNSS

If an active antenna is used, there should be an external power supply, while the VDD_2V8 of A7672G/A7672X can provide power supply for the active antenna.

Default power supply value of A7672G/A7672X is controlled by AT+CVAUXV, default is 3V, which should meet the antenna requirement. For example, "AT+CVAUXV=2800" sets power supply 2.8V.





Device Certification

The A7672G/A7672X module from DCI is certified for FCC and IC.

This module may only operate using an antenna of a type and maximum (or lesser) gain approved by DCI. Antenna types not included in the, having a gain greater than the max gain indicated for that type are strictly prohibited for use with this module. In the event that these conditions cannot be met, then the FCC/IC authorization is no longer considered valid and the FCC ID/IC ID cannot be used in the final product. In these circumstances, the host manufacturer will be responsible for reevaluating the end product (including the module) and obtaining separate FCC/IC authorization.

This module uses an external antenna. The test antenna gain is LTE B2/B25/B38/B41: 9.01 dBi, LTE B4/B66: 5.0dBi, LTE BS: 10.41dBi, LTE B7: 11.0ldBi , LTE B12: 8.69dBi, LTE B13: 10.lsdBi, LTE B26:10.35dBi, LTE B40: 0dBi,GSM 850:1.41dBi, GSM 1900:4.0ldBi.

FCC Certification and Statement

The A7672G/A7672X module is certified for the FCC as a single-modular transmitter and meets all the requirements of FCC part 2, 22(H), 24(E), 27(L), 27(F), 27(H),90(S). The module is an FCC-certified radio module that carries a modular grant. Compliance of this device in all final host configurations is the responsibility of the Grantee. This device is to be used only for mobile and fixed applications. Users are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the authority of the user to operate the equipment. Separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

This information must be included in the host manufacturer's instruction manual. 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.

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

- ***This device may not cause harmful interference.***
- ***This device must accept any interference received, including interference that may cause undesired operation of the device.***

CAUTION

FCC RF Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth in §2.1091 for fixed and mobile applications in an uncontrolled environment. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. End users must follow the specific operating instructions to satisfy RF exposure limits.

Innovation, Science, and Economic Development Canada (ISED)

The A7672G/A7672X module is certified for IC as a single-modular transmitter. The A7672G/A7672X module meets IC modular approval and labeling requirements. The IC follows the same testing and rules as the FCC regarding certified modules in authorized equipment. This device complies with Industry Canada licence-exempt RSS standards.

Operation is subject to the following two conditions:

- ***This device may not cause interference.***
- ***This device must accept any interference, including interference that may cause undesired operation of the device.***

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- ***L'appareil ne doit pas produire de brouillage.***
- ***L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.***

CAUTION

IC RF Radiation Exposure Statement:

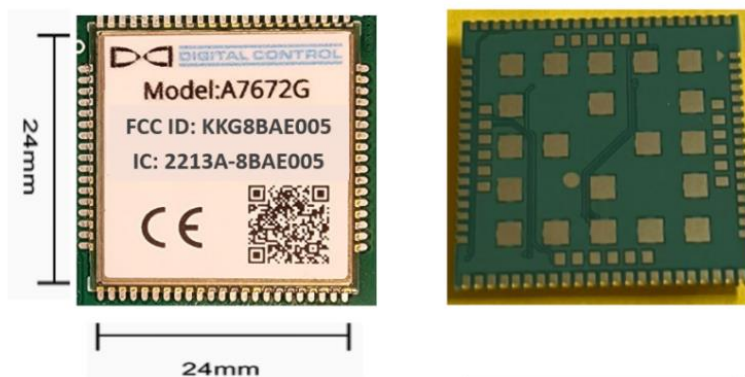
To comply with IC RF exposure requirements for mobile devices, this device and its antenna must not be colocated or operating in conjunction with any other antenna or transmitter. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons

Pour se conformer aux exigences d'IC en matière d'exposition aux radiofréquences pour les appareils mobiles, cet appareil et son antenne ne doivent pas être placés à proximité d'une autre antenne ou d'un autre émetteur, ni fonctionner conjointement avec ceux-ci. L'antenne utilisée pour cet émetteur doit être installée de manière à respecter une distance de séparation d'au moins 20 cm par rapport à toute personne.

Module Markings and Host Labeling Requirements

FCC ID: KKG8BAE005, Model A7672G

IC: 2213A-8BAE005, HVIN: A7672G,





End Product Labeling

This module is designed to comply with the FCC single modular FCC grant, FCC ID: KKG8BAE005. The host system using this module must display a visible label indicating the following text:

Contains FCC ID: KKG8BAE005

These modules are designed to comply with the IC single modular IC grant, IC ID: 2213A- 8BAE005. The host system using this module must display a visible label indicating the following text:

Contains IC: 2213A- 8BAE005

Manual Information to the End User

The integrator must be aware of not providing information to the end user regarding how to install or remove this RF module in the user's manual of the end product that integrates this module. The end user's manual must include all required regulatory information and warnings as shown in this manual.