

User Manual

1. Features

T1000 is a highly integrated module with low power dual band (2.4GHz and 5GHz) Wireless LAN (WLAN) and Bluetooth Low Energy communication.

BLE:	
Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps, 2Mbps
Antenna Type:	PIFA Antenna
Antenna Gain:	2.08 dBi
Power Supply:	DC 3.3V
Test Voltage:	DC 3.3V
BT:	
Operation Frequency:	2402-2480MHz
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Product Type:	Fix Location
Antenna Type:	PIFA Antenna
Power Supply:	2.08 dBi
Test Voltage:	DC 3.3V
2.4G:	
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Modulation Type:	IEEE for 802.11b:DSSS(CCK,DQPSK,DBPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	2.08 dBi
Power Supply:	DC 3.3V
Test Voltage:	DC 3.3V
5G:	
Operating Frequency	U-NII-1 & U-NII-2A: 5180-5320MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	3.84 dBi
Power Supply:	DC 3.3V
Test voltage:	DC 3.3V

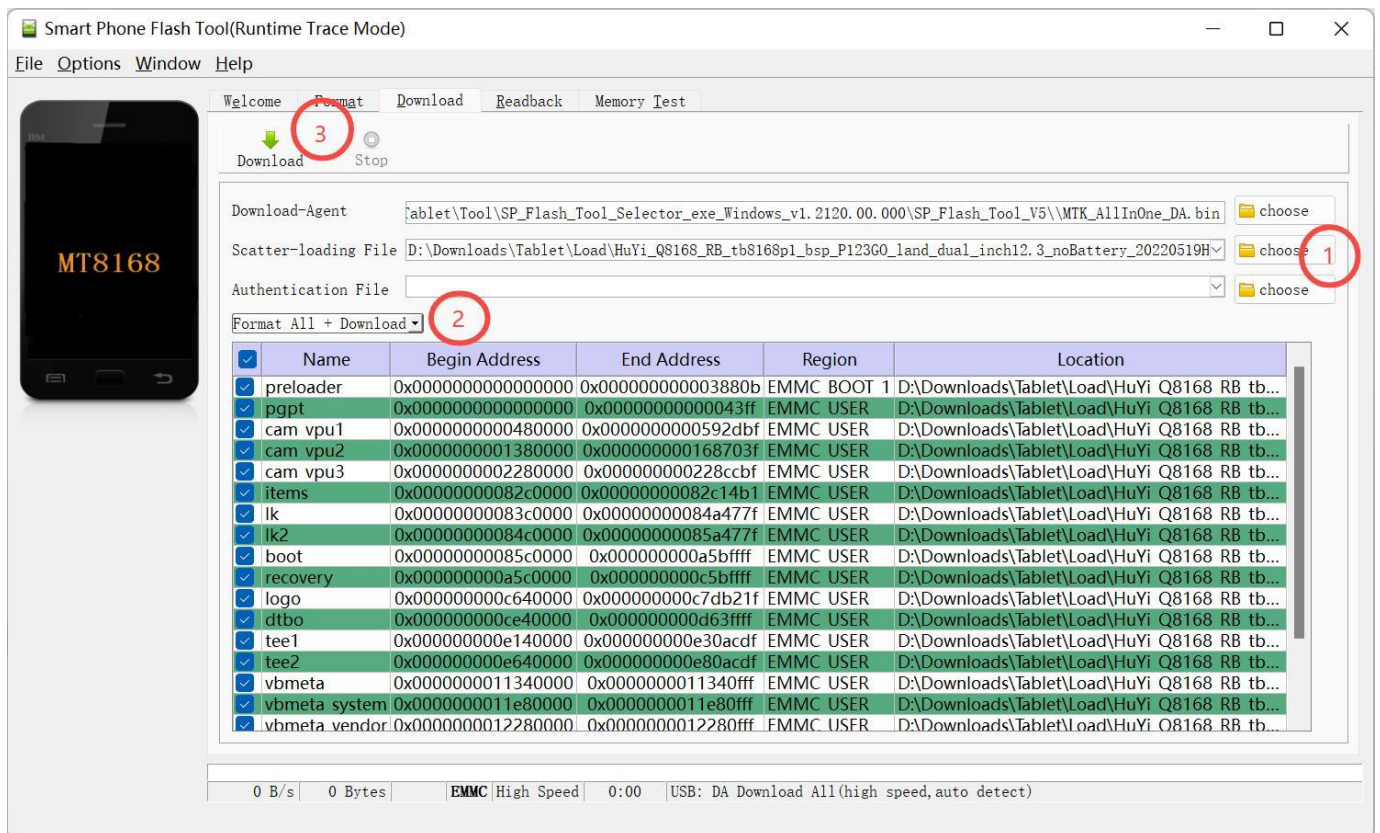
2. Temperature Limit Ratings

Parameter	Minimum	Maximum	Unit
Storage Temperature	-40	+85	°C
Ambient Operating Temperature	-20	+85	°C

3. Application/ Tools

A. Image tool

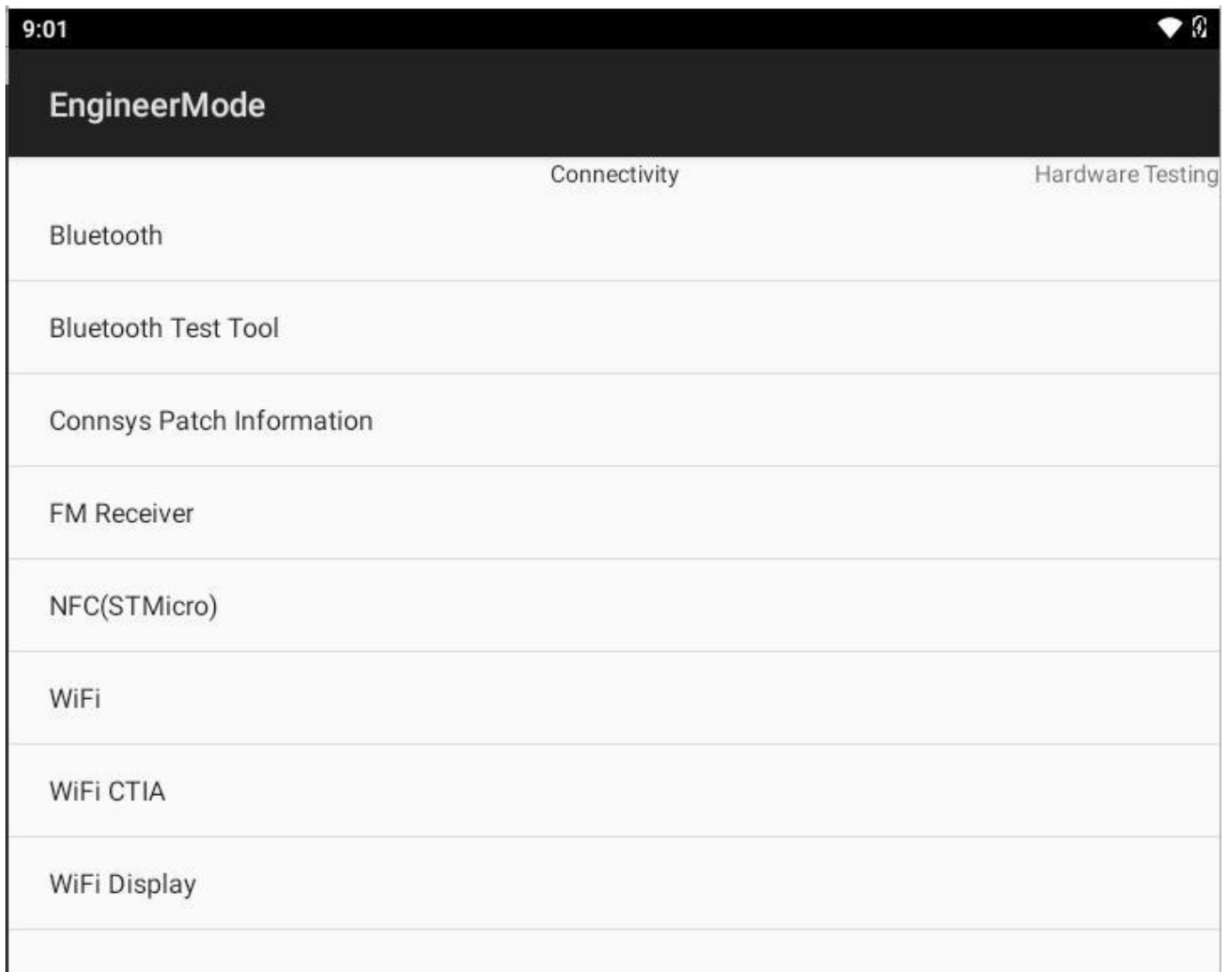
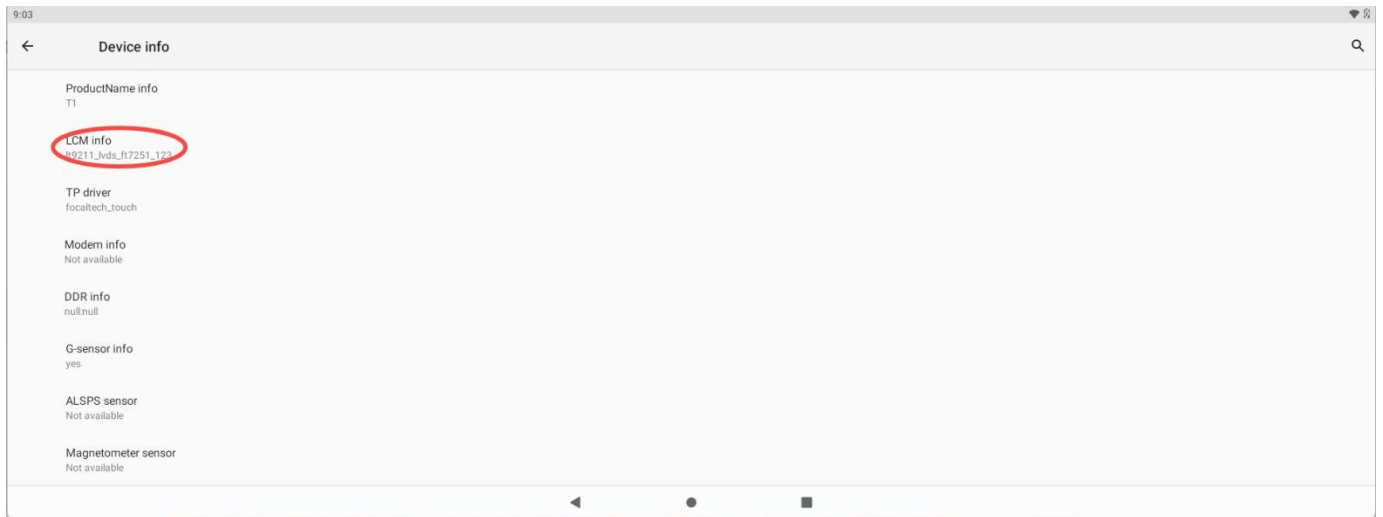
- Download the latest image
- Download MTK SP_Flash_Tool to install o PC, and put the module fixture and connect USB(Type C) to PC to power on the PUT
- Launch “SP_Flash_Tool_Selector_exe_Windows_v1.2120.00.000”
 - Select scatter file
 - Select “Format ALL + Download”
 - Press “Download” to start image programming
 - It will show green check in the progress while programming done
- Reboot device



B. Engineering mode

- Enter Settings -> About tablet -> Device info
- Press “LCM info” 8 times

- It will enter Engineer Mode



Regulatory Notices

1. Federal Communications Commission (FCC) Compliance Statement

FCC Part 15.19 Statements:

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.

FCC Part 15.21 statement

WARNING: Any changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

FCC Part 15.105 statement

NOTE: 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.

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Our module is limited to OEM installation in mobile or fixed applications only. And the OEM integrator will be responsible for ensuring that the end-user has no manual instructions to remove or install the module. All other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations need the separate approval. We will provide antenna installation requirements if applicable.

2. Industry Canada (IC) Compliance Statement

CAN ICES-3 (B)/NMB-3(B)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out

in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

ISED Canada: This device contains license-exempt transmitter (s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : 1. L'appareil ne doit pas produire de brouillage; 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

End Product Labeling

The module is labeled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:

Contains FCC ID: 2A6RN-T1000

Contains IC: 28517-T1000

2.2

This module has been assessed against the following FCC rule parts: CFR 47 FCC Part 15 C (15.247, DTS and DSS) and CFR 47 FCC Part 15 E (NII). It is applicable to the modular transmitter

2.3

This radio transmitter 2A6RN-T1000 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

The concrete contents to check are the following three points.

- 1) Must use a PIFA antenna with gain not exceeding those shown in the table below.
- 2) Should be installed so that the end user cannot modify the antenna
- 3) Feed line should be designed in 50ohm

Fine-tuning of return loss etc. can be performed using a matching network.

The antenna shall not be accessible for modification or change by the end user

2.4

The module complies with FCC Part 15.247 / Part 15.407 and apply for Single module approval.

2.5

Trace antenna designs: Not applicable.

The device must be professionally installed

The connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter which is not normally required. the user has no access to the connector.

Installation must be controlled. Installation requires special training

2.6

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.7

Antenna type and antenna gain:

2.4G WIFI&5G WIFI Antennas:

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2412-2462	PIFA antenna	2.08

Antenna No.	Frequency Band	Antenna Type	Max Antenna Gain (dBi)
0	5150-5850	PIFA antenna	3.84

BT Antenna:

Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2402-2480	PIFA antenna	2.08

2.8

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as “Contains FCC ID: 2A6RN-T1000”; any similar wording that expresses the same meaning may be used.

Please notice that if the ISED certification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains IC: 28517-T1000” any similar wording that expresses the same meaning may be used.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots « Contient un module d'émission », du mot « IC: 28517-T1000 » ou d'une formulation similaire exprimant le même sens, comme suit

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems
for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate;

Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée, selon le cas;

This radio transmitter 28517-T1000 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain

Le présent émetteur radio 28517-T1000 a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

The concrete contents to check are the following three points.

- 1) Must use a PFA antenna with gain not exceeding those shown in the table below.
- 2) Should be installed so that the end user cannot modify the antenna
- 3) Feed line should be designed in 50ohm

Fine tuning of return loss etc. can be performed using a matching network.

Le contenu concret à vérifier sont les trois points suivants.

- 1) doit utiliser une antenne PIFA avec un gain ne dépassant pas ceux indiqués dans le tableau ci-dessous.
- 2) devrait être installé de sorte que l'utilisateur ne puisse pas modifier l'antenne
- 3) la ligne d'alimentation devrait être conçue dans 50ohm

Le réglage fin de la perte de retour, etc. peut être effectué en utilisant un réseau correspondant.

Antenna type and antenna gain:
2.4G WIFI&5G WIFI Antennas:

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2412-2462	PIFA antenna	2.08

Antenna No.	Frequency Band	Antenna Type	Max Antenna Gain (dBi)
0	5150-5850	PIFA antenna	3.84

BT Antenna:

Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2402-2480	PIFA antenna	2.08

Notice to OEM integrator

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as show in this manual(FCC/Canada statement).

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B, ICES 003.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.

The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

This module is stand-alone modular. If the end product will involve Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer has to consult with module manufacturer for the installation method in the end system.

Any company of the host device which install this modular should perform the test of radiated & conducted emission and spurious emission etc. according to FCC Part 15C: 15.247 and 15.209 & 15.207, 15.407, 15B class B requirement, only if the test result comply with FCC part 15C: 15.247 and 15.209 & 15.207, 15.407, 15B class B requirement. Then the host can be sold legally.

This modular transmitter is only FCC authorized for the specific rule parts (47CFR Part 15.247 and 15.407) 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.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.

Must have on the host device a label showing Contains FCC ID: 2A6RN-T1000 or IC: 28517-T1000

Installer should put it in the manual:

The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems

l'hôte doit utiliser l'instrument uniquement dans des dispositifs qui répondent à la fcc / (catégorie d'exposition rf mobile, ce qui signifie le dispositif est installé et utilisé à une distance d'au moins 20 cm de personnes.

le manuel de l'utilisateur final doit inclure la partie 15 / (fac rss gen déclarations de conformité relatives à l'émetteur que de montrer dans ce manuel.

le fabricant est responsable de la conformité de l'hôte, le système d'accueil avec le module installé avec toutes les autres exigences applicables du système comme la partie 15 b, ices - 003.

accueillir le fabricant est fortement recommandé de confirmer la conformité avec les exigences de la fcc / (émetteur lorsque le module est installé dans l'hôte.

le dispositif d'accueil doivent avoir une étiquette indiquant contient FCC ID: 2A6RN-T1000, IC: 28517-T1000

Les personnes chargées de l'installation devraient figurer dans le manuel:

Les dispositifs fonctionnant dans la bande de 5 150 à 5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Doit avoir sur l'appareil hôte une étiquette indiquant Contient l'ID FCC : 2A6RN-T1000 ou IC : 28517-T1000