

保密等级：机密

## SPECIFICATION

### 产品规格书

## SKI.WB663U.2

**IEEE 802.11a/b/g/n/ac 2T2R USB Wi-Fi Module**

**Integrated Bluetooth 2.1+EDR/4.2/5.1**

| Approved by Shikun |                 |                |
|--------------------|-----------------|----------------|
| Checked by 审核      | Rechecked by 复审 | Approved by 批准 |
| 李定松                | 郭征              | 张怡晴            |

Please send the original back to us after you have approved and signed.

客户承认签章后敬请寄回正本一份。

| Approved by customer |                  |                   |
|----------------------|------------------|-------------------|
| Comments 确认意见        | Approved by 批准签字 | Company's seal 盖章 |
|                      |                  |                   |
| Customer's Name:     |                  |                   |

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## 1. Introduction (简介)

SKI.WB663U.2 module is based on MEDIATEK MT7663BUN solution. MT7663B is a highly integrated single chip which features a low power 2x2 11a/b/g/n/ac dual-band Wi-Fi subsystem and a Bluetooth subsystem. The Wi-Fi subsystem contains the 802.11a/b/g/n/ac radio, baseband, and MAC that are designed to meet both the low power and high throughput application. The Bluetooth subsystem contains the Bluetooth radio which complies with Bluetooth v2.1+EDR, v4.2, and v5.1, baseband, link controller. This documentation describes the engineering requirements specification.

SKI.WB663U.2 模块基于 MEDIATEK MT7663BUN 解决方案。MT7663B 是一款高度集成的芯片，具有低功耗 2x2 11a/b/g/n/ac 双频 Wi-Fi 子系统和蓝牙子系统。Wi-Fi 子系统包含 802.11a/b/g/n/ac 射频、基带和 MAC，旨在满足低功耗和高吞吐量应用。蓝牙子系统包含蓝牙 2.1+EDR、v4.2 和 v5.1、基带和链路控制器。本文件描述了工程需求规范。

Note: This module is mainly used in the field of IT products.

备注：此模组主要用于信息类产品。

## 2. FEATURES (特性)

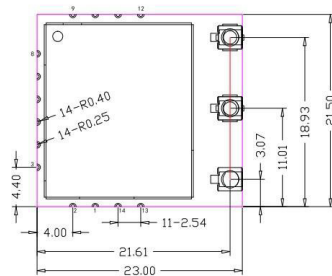
|                                 |                           |
|---------------------------------|---------------------------|
| <b>Reserving System</b><br>接收制式 | IEEE Std. 802.11a         |
|                                 | IEEE Std. 802.11b         |
|                                 | IEEE Std. 802.11g         |
|                                 | IEEE Std. 802.11n         |
|                                 | IEEE Std. 802.11ac        |
|                                 | Bluetooth 2.1+EDR/4.2/5.1 |
| <b>Chip Solution</b><br>芯片方案    | MT7663BUN                 |
| <b>Band</b><br>波段               | 2.4/5GHz                  |
| <b>Dimensions</b><br>尺寸         | 23.0mm*21.5mm*3.05mm      |

| 型号           | 安装方式 | 支持标准                                                       | 频段       | 天线接口 | 备注                   |
|--------------|------|------------------------------------------------------------|----------|------|----------------------|
| SKI.WB663U.2 | SMD  | IEEE<br>802.11a/b/g/n/ac<br>+ Bluetooth<br>2.1+EDR/4.2/5.1 | 2.4/5GHz | IPEX | 23.0mm*21.5mm*3.05mm |

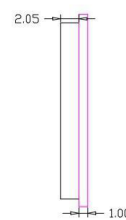
### 3. Block Diagram (结构框图)

### 4. Package Outline and Mounting (外形及安装尺寸)

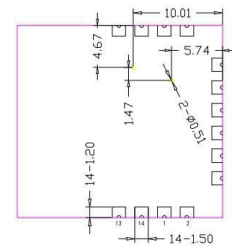
模组结构图及建议PCB 封装如下（焊盘圆弧直径与焊盘宽度一致）：



模组俯视图



模组侧视图

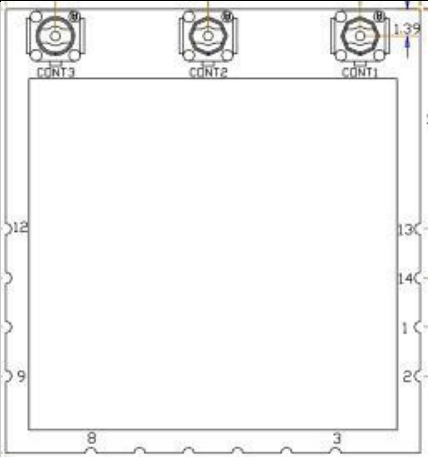


模组底视图

**NOTE:**

1. 板内顶层器件最高2.05mm;
2. 模组外形尺寸公差为 $\pm 0.15\text{mm}$ , 板厚以及未标注公差为 $\pm 0.1\text{mm}$ ;

## 5. Pin Definition（引脚定义）

|  |              |                     |
|------------------------------------------------------------------------------------|--------------|---------------------|
| TOP VIEW                                                                           |              |                     |
| PIN                                                                                | SYMBOL       | DESCRIPTION         |
| 1                                                                                  | 3.3V         | 3.3V 供电             |
| 2                                                                                  | 3.3V         | 3.3V 供电             |
| 3                                                                                  | DM           | USB_DM              |
| 4                                                                                  | DP           | USB_DP              |
| 6                                                                                  | RESET        | 内部有 10K 上拉电阻, 低电平有效 |
| 7                                                                                  | WL_HOST_WAKE | 内部有 10K 上拉电阻, 低电平有效 |
| 9                                                                                  | BT_HOSTWAKE  | 内部有 10K 上拉电阻, 低电平有效 |
| 5,8,10,11,12,13,14                                                                 | GND          | GND                 |

## 6. Product Pictures（实物图片）



正视图（top view）



## 背视图 (bottom view)

产品铭牌尺寸及内容如下 (标贴):



## 7. Key Materials (关键物料)

| 序号 | 关键件名称 | 型号                       | 规格/材料      | 备注 |
|----|-------|--------------------------|------------|----|
| 1  | 集成电路  | MT7663BUN                | FN-76      |    |
| 2  | PCB   | SKI.WB663U.2             | FR-4, 4LAY |    |
| 3  | 晶体振荡器 | CN4040M00012T211523<br>0 | 40MHz      |    |
| 4  | 双工器   | RFDIP160806ALM6T30       |            |    |

## 8. General Requirements (一般要求)

| No. | Feature                      | Description                  |
|-----|------------------------------|------------------------------|
| 8-1 | Operation Voltage 工作电压范围     | 3.3V+/-0.3                   |
| 8-2 | Current Consumption 最大电流     | 700mA                        |
| 8-3 | Ripple 纹波                    | ≤100mV                       |
| 8-4 | Operation Temperature 工作温度范围 | 0°C to +40°C                 |
| 8-5 | Antenna Type 天线类型            | External antenna             |
| 8-6 | USB                          | High Speed USB 2.0 Interface |
| 8-7 | Storage Temperature 存储温度     | -40°C to +125°C              |

## 9. Electrical Characteristics (电气特性)

除非另有说明, 电气规范试验是在下列条件下进行, 环境条件温度: 25°C ± 5°C; 电源电压: 模块输入电压 3.3V (±10%);

The Test for electrical specification was performed under the following condition unless otherwise specified.

Ambient condition Temperature :25°C ± 5°C;

Power supply voltages: 3.3V (±10%) input power at the Module.

## 10. Mechanical, Environmental and Reliability Tests

(机械、环境和可靠性测试)

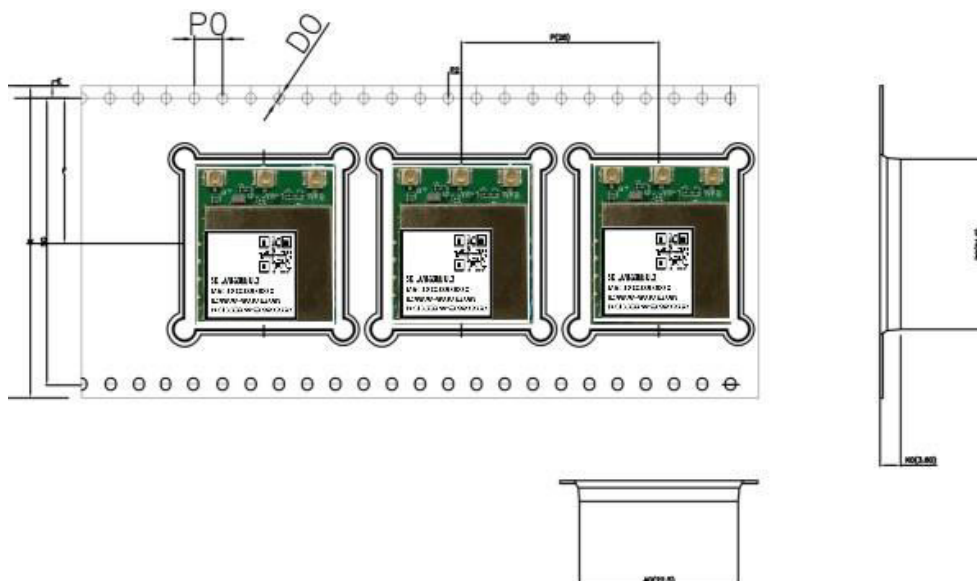
| Test Items | Test Conditions | Qty | Criteria Condition |
|------------|-----------------|-----|--------------------|
|------------|-----------------|-----|--------------------|

|             |                                        |                                                                                                                                                                                                        |       |                                                                                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10-1</b> | <b>Drop test</b>                       | The packed samples within 100Kg can be tested<br>Drop height:<br>Face Side: 800/600/450mm<br>Edge line: 600/450/350mm<br>Drop time: 1 each Face and edge.                                              | 1xBox | After drop test, the outer box and inner box will not be broken by appearance visual inspection.                                                                                                                                                                                                                         |
| <b>10-2</b> | <b>Vibration test</b>                  | X-Y-Z direction, first<br>Frequency changing from 10Hz to 30Hz to 10Hz, amplitude 0.75mm, 5 times vibrations, then frequency Changing from 30Hz to 55 Hz to 30 Hz, amplitude 0.15mm, 5 time vibration. | 3     | After test, the Appearance, Power EVM and Frequency error shall be satisfied with the specification.                                                                                                                                                                                                                     |
| <b>10-3</b> | <b>Impact test</b>                     | Impact acceleration:<br>50m/sec <sup>2</sup> ;<br>Impact duration: 16ms;<br>Impact times: 1000.                                                                                                        | 3     | After test, the Appearance, Power EVM and Frequency error shall be satisfied with the specification.                                                                                                                                                                                                                     |
| <b>10-4</b> | <b>Soldering ability test</b>          | Soldering temperature: 235±5℃<br>Soldering duration: 2±0.5S                                                                                                                                            | 3     | 1. After soldering, the soldered area must be covered by a smooth bright solder layer, some deficiencies such as a small amount of the pinhole, not wetting are allowed, but the deficiencies can not be in the same place;<br>2. At least 90% of soldered area shall be covered continuously by the soldering material. |
| <b>10-5</b> | <b>Humidity test</b>                   | Leave samples in 40±3℃, 93% RH @ 96 hours                                                                                                                                                              | 3     | Leave samples in standard test condition for 2 hours then test, the Appearance, Power, EVM and Frequency error functional parameter shall be satisfied with the test specification.                                                                                                                                      |
| <b>10-6</b> | <b>High temperature load life test</b> | Thermostat cabinet temperature: 55±5℃<br>Applied voltage: 110% rated voltage<br>Working duration: 200 hour                                                                                             | 60    | After test, leave samples in standard condition for 1 hour and test, Power, EVM and Frequency error shall be satisfied with the test specification.                                                                                                                                                                      |

|              |                                     |                                                                                                                 |   |                                                                                                                                                                                        |
|--------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                     | (Supply Voltage Cycle 23h power on, 1h power off)                                                               |   |                                                                                                                                                                                        |
| <b>10-7</b>  | <b>High temperature load test</b>   | Temperature: 55±5℃<br>Samples work for 16 hours                                                                 | 3 | After test, the Appearance, Power, EVM and Frequency error shall be Satisfied with the test specification.                                                                             |
| <b>10-8</b>  | <b>Low temperature storage test</b> | Leave the samples in -25±3℃@24 hours                                                                            | 3 | Leave samples in standard test condition for 2 hours then test, the Appearance, Power, EVM and Frequency error shall be satisfied with the test specification.                         |
| <b>10-9</b>  | <b>Low temperature load test</b>    | Leave samples in -15±3℃@ 2 hours, samples' function shall be normal, the let samples work for 1 hour            | 3 | After test, leave the samples in standard condition and tested the Appearance, Power, EVM and Frequency error shall be satisfied with the test specification.                          |
| <b>10-10</b> | <b>Temperature circle test</b>      | One cycle duration<br>-10±3℃@3H 40±3℃ @3H<br>Total cycle: 10x                                                   | 3 | After test, leave the samples in standard condition and tested Power EVM and Frequency error shall be qualified and all the characters shall be satisfied with the test specification. |
| <b>10-11</b> | <b>Continuous TP test</b>           | Twice cycle duration<br>-10±3℃@4H<br>+60±3℃@4H,<br>+25@2H@2H                                                    | 3 | During test, There will not been appeared signal disconnection or interruption between DUT and AP.                                                                                     |
| <b>10-12</b> | <b>ESD</b>                          | Discharge voltage: 1kV<br>C: 150pF<br>Discharge resistance: 330Ω<br>Positive 10 times<br>1 time for each second | 3 | The products can recoverable smoothly after ESD test.                                                                                                                                  |

## 11. Package (包装)

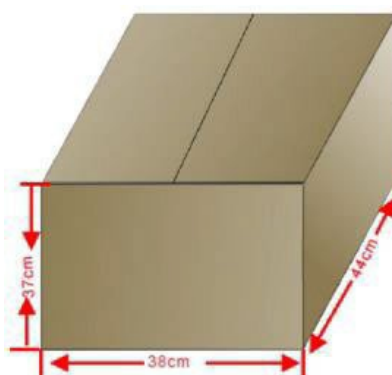
(1) 编带尺寸及方向:



(2) 包装数量:

每卷装 550pcs, 每箱数量=8\*550=4400 PCS

(3) 包装示意图:



(4) 标签样式:

暂无

## 12. Software Requirements (软件要求)

The driver supports the following operating systems: Microsoft Windows XP, Vista and Win7.  
驱动程序支持以下操作系统：微软 Windows XP, Vista 和 win7。

## 13. Reflow Profile (回流焊温度曲线)

Classification Reflow Profiles

| Profile Feature                                                                                  | Sn-Pb Eutectic Assembly                                                                                                                             | Pb-Free Assembly                                                                                                                                    |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Preheat/Soak                                                                                     |                                                                                                                                                     |                                                                                                                                                     |
| Temperature Min ( $T_{smin}$ )                                                                   | 100 °C                                                                                                                                              | 150 °C                                                                                                                                              |
| Temperature Max ( $T_{smax}$ )                                                                   | 150 °C                                                                                                                                              | 200 °C                                                                                                                                              |
| Time ( $t_p$ ) from ( $T_{smin}$ to $T_{smax}$ )                                                 | 60-120 seconds                                                                                                                                      | 60-120 seconds                                                                                                                                      |
| Ramp-up rate ( $T_L$ to $T_p$ )                                                                  | 3 °C/second max.                                                                                                                                    | 3 °C/second max.                                                                                                                                    |
| Liquidous temperature ( $T_L$ )                                                                  | 183 °C                                                                                                                                              | 217 °C                                                                                                                                              |
| Time ( $t_L$ ) maintained above $T_L$                                                            | 60-150 seconds                                                                                                                                      | 60-150 seconds                                                                                                                                      |
| Peak package body temperature ( $T_p$ )                                                          | For users $T_p$ must not exceed the Classification temp in Table 1.<br>For suppliers $T_p$ must equal or exceed the Classification temp in Table 1. | For users $T_p$ must not exceed the Classification temp in Table 2.<br>For suppliers $T_p$ must equal or exceed the Classification temp in Table 2. |
| Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_c$ ), see Figure 1. | 20* seconds                                                                                                                                         | 30* seconds                                                                                                                                         |
| Ramp-down rate ( $T_p$ to $T_L$ )                                                                | 6 °C/second max.                                                                                                                                    | 6 °C/second max.                                                                                                                                    |
| Time 25 °C to peak temperature                                                                   | 6 minutes max.                                                                                                                                      | 8 minutes max.                                                                                                                                      |

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

Table 1 SnPb Eutectic Process - Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>≥350 |
|-------------------|--------------------------------|--------------------------------|
| <2.5 mm           | 235 °C                         | 220 °C                         |
| ≥2.5 mm           | 220 °C                         | 220 °C                         |

Table 2 Pb-Free Process - Classification Temperatures ( $T_c$ )

| PackQge Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>350 - 2000 | Volume mm <sup>3</sup><br>>2000 |
|-------------------|--------------------------------|--------------------------------------|---------------------------------|
| <1.6 mm           | 260 °C                         | 260 °C                               | 260 °C                          |
| 1.6 mm - 2.5 mm   | 260 °C                         | 250 °C                               | 245 °C                          |
| >2.5 mm           | 250 °C                         | 245 °C                               | 245 °C                          |

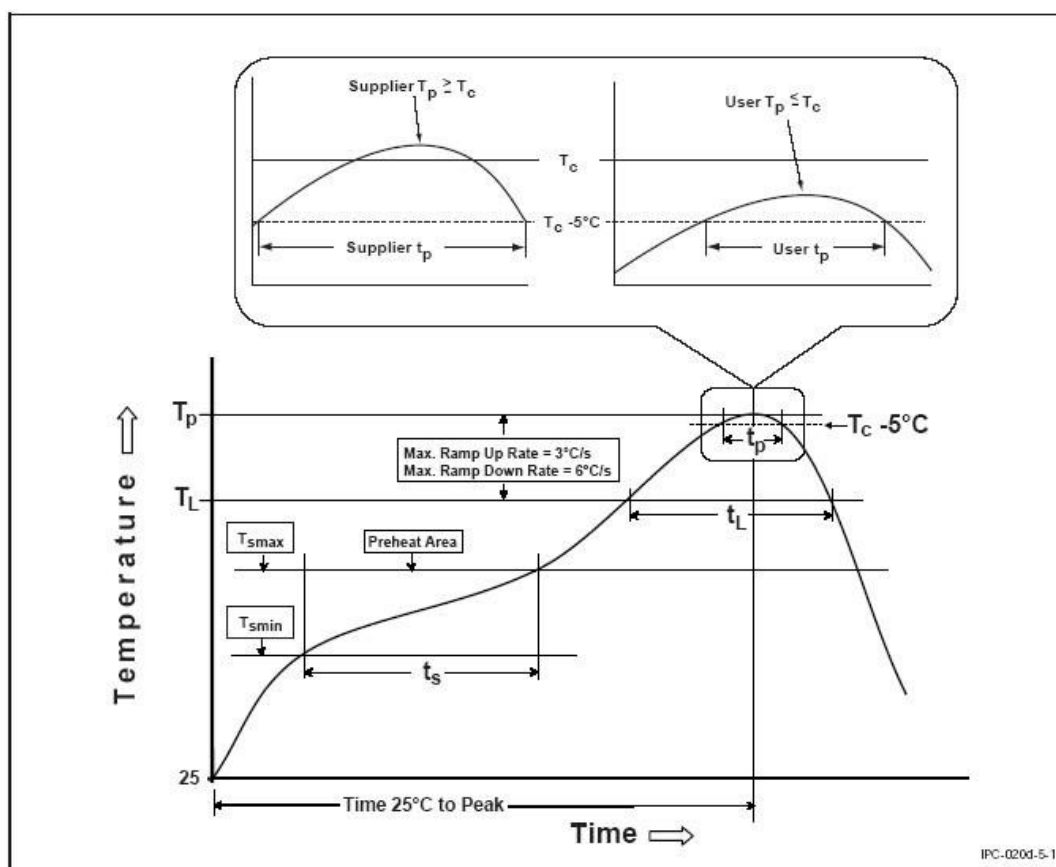


Figure1 Classification Profile (Not to scale)

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## FCC Statement

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.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

### FCC RF Radiation Exposure Statement:

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 and any part of your body.

The device must be professionally installed

The intended use is generally not for the general public. It is generally for industry/commercial use.

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

Installation must be controlled. Installation requires special training

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

This radio transmitter 2AR82-SKIWB663U21 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 the antenna with gains 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.

| Items             | Antenna         | Antenna type   | Max. Antenna Gain                                                                                                                                                                         |
|-------------------|-----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original          | 1               | FPC Antenna    | BT&BLE(2402-2480MHz): 1.5 dBi<br>2.4GHz WiFi(2412-2462MHz): 1.5 dBi<br>5GHz WiFi(5150-5850MHz): 1.45 dBi                                                                                  |
| First time C2 PC  | 2               | Dipole Antenna | BT & BLE(2402-2480MHz): 2.44 dBi<br>2.4GHz WiFi(2412-2462MHz): 2.44 dBi<br>5 GHz WiFi(5150-5850MHz): 5.2 dBi                                                                              |
| First time C2 PC  | 3               | Dipole Antenna | BT&BLE(2402-2480MHz):3.17 dBi<br>2.4GHz WiFi(2412-2462MHz): 3.17 dBi<br>5GHz WiFi(5150-5850MHz): 4.33 dBi                                                                                 |
| First time C2 PC  | 4               | Dipole Antenna | BT & BLE(2402-2480 MHz):2.97 dBi<br>2.4GHz WiFi(2412-2462MHz): 2.97 dBi<br>5 GHz WiFi(5150-5850MHz): 3.14 dBi                                                                             |
| Second time C2 PC | 5               | FPC Antenna    | BT & BLE (2402-2480MHz): 2.47 dBi<br>2.4GHz WiFi (2412-2462MHz):<br>Antenna1 : 4.41 dBi<br>Antenna2 : 4.23 dBi<br>5 GHz WiFi (5150-5850 MHz):<br>Antenna 1:5.19 dBi<br>Antenna 2:5.10 dBi |
| Third time C2PC   | 6(61005-00712)  | PIFA Antenna   | BT&BLE(2402-2480MHz): 2.60 dBi                                                                                                                                                            |
| Third time C2PC   | 7(61005-00713)  | PIFA Antenna   | BT&BLE(2402-2480MHz): 3.84 dBi                                                                                                                                                            |
| Third time C2PC   | 8(61005-00718)  | PIFA Antenna   | BT&BLE(2402-2480MHz): 3.86 dBi                                                                                                                                                            |
| Third time C2PC   | 9(61005-00714)  | PIFA Antenna   | 2.4GHz WiFi(2412-2462Mz): 3.01 dBi<br>5GHz WiFi(5150-5850MHz): 1.31 dBi                                                                                                                   |
| Third time C2PC   | 10(61005-00719) | PIFA Antenna   | 2.4GHz WiFi(2412-2462Mz): 4.17 dBi<br>5GHz WiFi(5150-5850MHz): 3.43 dBi                                                                                                                   |
| Third time C2PC   | 11(61005-00489) | PIFA Antenna   | 2.4GHz WiFi(2412-2462Mz): 2.19 dBi<br>5GHz WiFi(5150-5850MHz): 2.95 dBi                                                                                                                   |
| Third time C2PC   | 12(61005-00491) | PIFA Antenna   | 2.4GHz WiFi(2412-2462Mz): 3.01 dBi<br>5GHz WiFi(5150-5850MHz): 1.31 dBi                                                                                                                   |

Note: 1. GANT = GANT (without Cable) - Cable Loss;

2. For the first time C2PC, there are three different types of antennas in use.  
For the Radiated Bandedge and Spurious Emission, all the antennas have been tested, only the worst data for A100-0062 antenna was recorded in the report.

3. For the third time C2PC, there are seven different types of antennas in use. The antenna used in the test had the highest gain of material number 61005-00718 and 61005-00719

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## Canada Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-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 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

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.

for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5 250-5 350 MHz et 5 470-5 725 MHz doit se conformer à la limite de p.i.r.e.;

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; and le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5 725-5 825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

This device is designed for use in flat panel displays operating at least 20cm from persons and Indoor use only. This radio transmitter [IC ID: 24728-SKIWB663U201] 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 indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio 24728-SKIWB663U201 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.

Please notice that if the ISSED 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: 24728-SKIWB663U201" 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: 24728-SKIWB663U21 » ou d'une formulation similaire exprimant le même sens, comme suit

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.

This radio transmitter 24728-SKIWB663U21 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 24728-SKIWB663U21 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 the antenna with gains 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 ) Les antennes dont le gain ne dépasse pas celui indiqué dans le tableau ci - dessous doivent être utilisées.
- 2 ) doivent être installés de façon que l'utilisateur final ne peut pas modifier l'antenne
- 3 ) La ligne d'alimentation doit être conçue en 50ohm

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

| Items            | Antenna | Antenna type   | Max. Antenna Gain                                                                                                                                                                   |
|------------------|---------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original         | 1       | FPC Antenna    | BT&BLE(2402-2480MHz): 1.5 dBi<br>2.4GHz WiFi(2412-2462MHz): 1.5 dBi<br>5GHz WiFi(5150-5850MHz): 1.45 dBi                                                                            |
| First time C2PC  | 2       | Dipole Antenna | BT&BLE(2402-2480MHz): 2.44 dBi<br>2.4GHz WiFi(2412-2462MHz): 2.44 dBi<br>5GHz WiFi(5150-5850MHz): 5.2 dBi                                                                           |
| First time C2PC  | 3       | Dipole Antenna | BT&BLE(2402-2480MHz):3.17 dBi<br>2.4GHz WiFi(2412-2462MHz): 3.17 dBi<br>5GHz WiFi(5150-5850MHz): 4.33 dBi                                                                           |
| First time C2PC  | 4       | Dipole Antenna | BT&BLE(2402-2480MHz):2.97 dBi<br>2.4GHz WiFi(2412-2462MHz): 2.97 dBi<br>5GHz WiFi(5150-5850MHz): 3.14 dBi                                                                           |
| Second time C2PC | 5       | FPC Antenna    | BT & BLE (2402-2480MHz): 2.47 dBi<br>2.4GHz WiFi (2412-2462MHz):<br>Antenna1:4.41 dBi<br>Antenna2:4.23 dBi<br>5GHz WiFi (5150-5850MHz):<br>Antenna 1:5.19 dBi<br>Antenna 2:5.10 dBi |

Note: 1. GANT = GANT (without Cable) - Cable Loss;

For the first time C2PC, there are three different types of antennas in use. For the Radiated Bandedge and Spurious Emission, all the antennas have been tested, only the worst data for A100-0062 antenna was recorded in the report.

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## 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/ICanada 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.

Must have on the host device a label showing Contains FCC ID: 2AR82-SKIWB663U21 , IC: 24728-SKIWB663U21 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 the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in 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, 15B class B requirement, only if the test result comply with FCC part

15C: 15.247 and 15.209 & 15.207, 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: 2AR82-SKIWB663U21 and Contains IC: 24728-SKIWB663U21

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:2AR82SKIWB663U21, IC: 24728-SKIWB663U21