

WiFi Gen4 Certification Guideline

Using LabTool

GEN 4 BOARD SETUP

Very important note - The board must be flashed with the Manufacturing Software, otherwise the production intent software will disable the UART ports and will not communicate with the LabTools program.

Boards are to be ordered with MFG SW through Winstroon (supplier). Order extra, since it is a difficult process to expedite.

All that is needed will be:

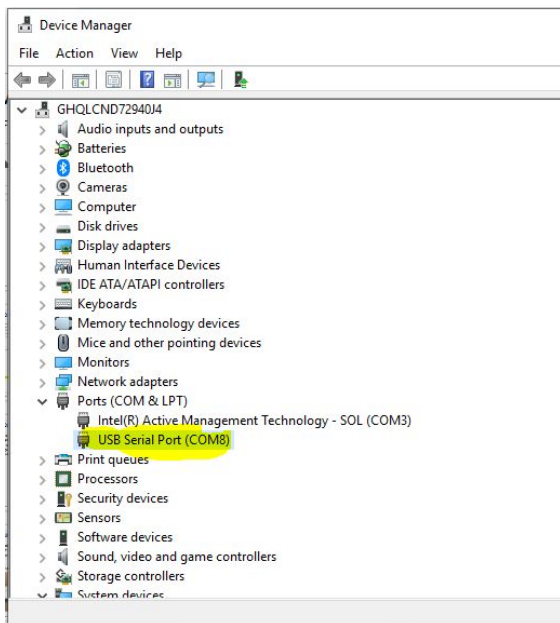
1. 12Vdc power supply
2. UART USB cable with minimum Tx, Rx, Gnd (FTDI preferred)
3. UART driver
4. WiFi module with MFG SW installed

GEN 4 BOARD SETUP

Included is one module with both on-board antenna connectors as well as a Fakra connector for an external antenna.

Plug in the module using a 12V wall adapter and then connect to UART with the cable included in the shipment.

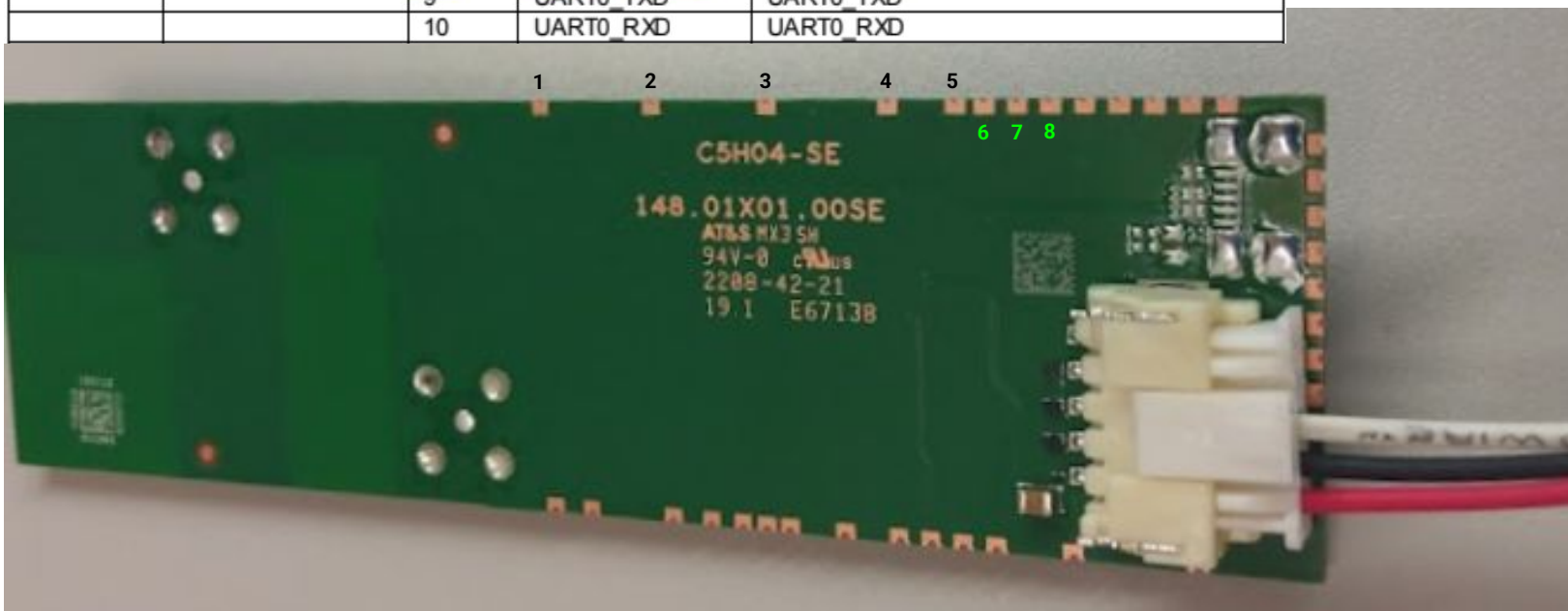
Once the device boots, verify that it shows up in device manager as shown below.



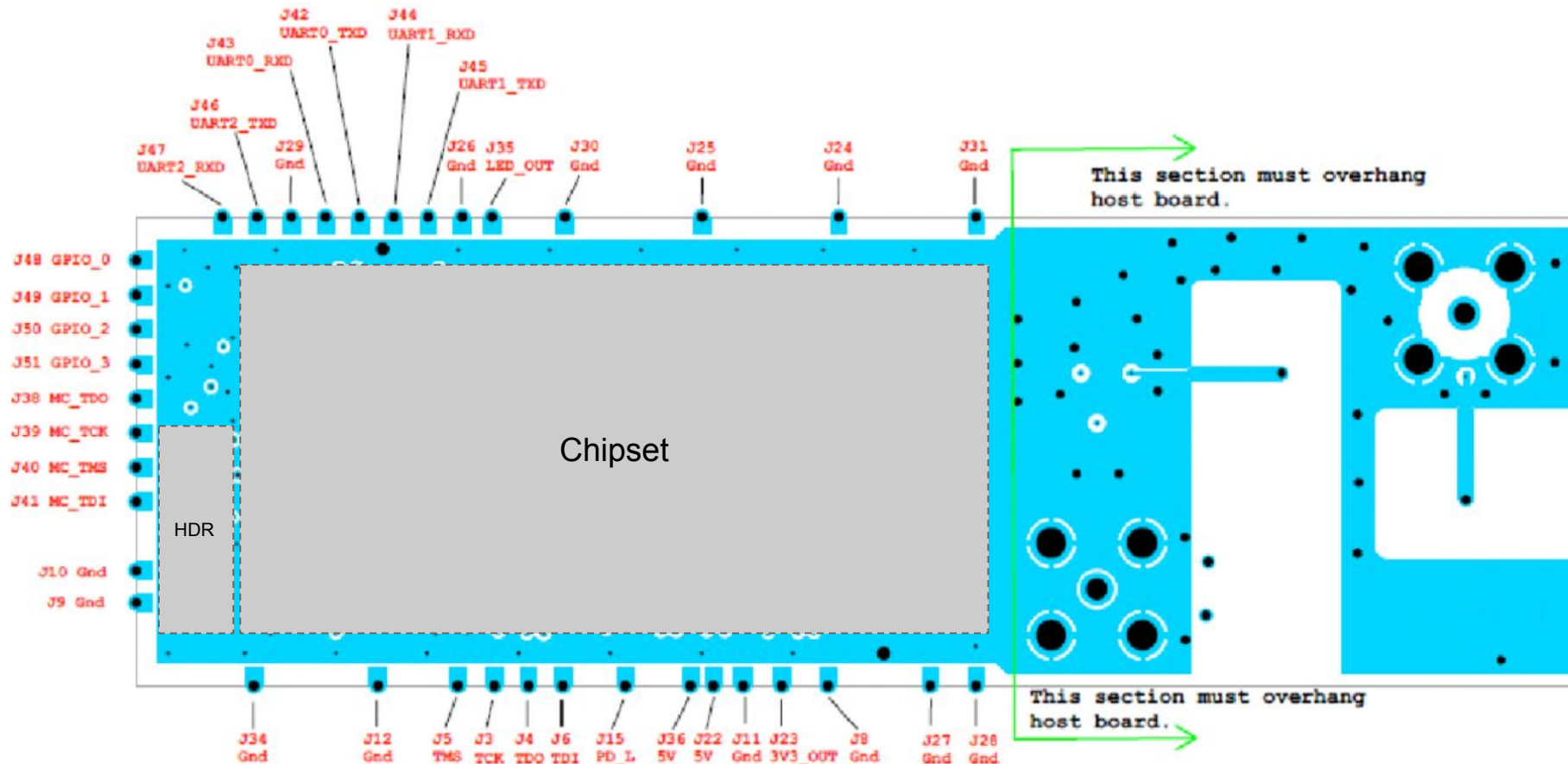
GEN 4 BOARD SETUP ([Amber Drive](#))

N/A	Castellated Pins	1	GND	Common Return
		2	GND	Common Return
		3	GND	Common Return
		4	GND	Common Return
		5	XMT LED	Open drain with 196 limit resistor
		6	GND	Common Return
		7	UART 1 TX	UART1 TXD
		8	UART 1 RX	UART1 RXD
		9	UART0 TXD	UART0 TXD
		10	UART0 RXD	UART0 RXD

[GENIV Tool Drive](#)



GEN 4 BOARD SETUP (Amber Drive)



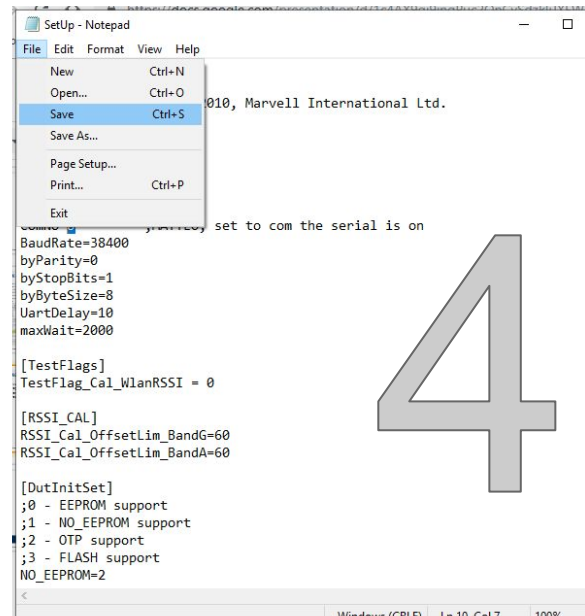
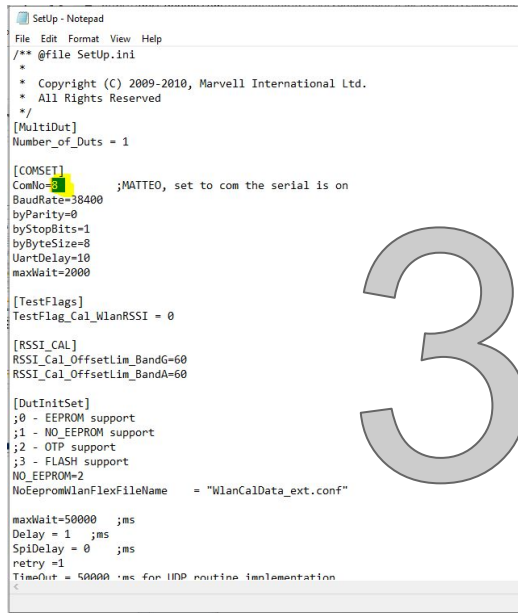
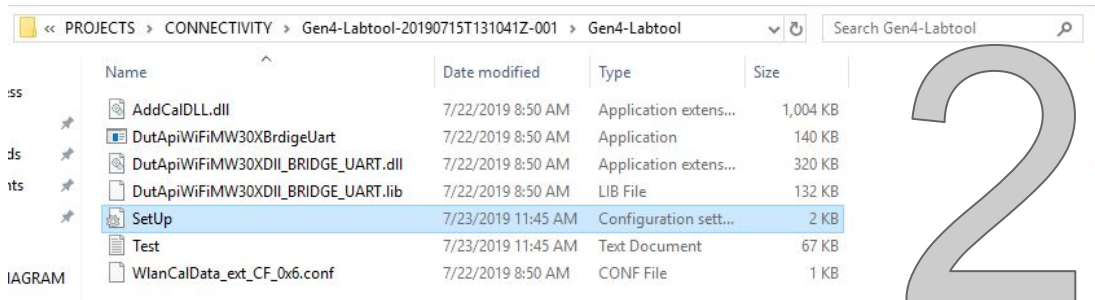
GEN 4 SW Instructions, [start at slide 15](#)
[Programming Procedure](#)

Notes

- JLink Flasher Required

GEN4 LAB TOOL

1. Verify COM via Device Manager.
2. Open **Gen4-Labtool\SetUp**
3. Change COM to match COM in device Manager
4. Go to **File>Save**



OPEN COMMAND WINDOW

1. Plug in the USB into your computer.
2. Power the WiFi board with 12V.
3. Confirm that the green LED is blinking on the WiFi board.
4. Click on **Gen4-Labtool\DutApiWiFiMW30XBrdgeUart**



```
Name:      Dut labtool
Version:   2.1.0.13
Date:      Jul 16 2015 (15:19:03)
```

Note:

```
Name:      DutApiClass
Interface: Ethernet
Version:   2.1.0.13
Date:      Jul 16 2015 (15:18:27)
```

Note:

```
\\.COM3
DutIf_InitConnection: 0
```

W87xx (802.11a/g/b/n) TEST MENU

Enter option:

4

GET / PUBLISH RF CHANNEL

A Command Window will open.

1. Type 11
2. Press Enter
3. RF Channel shall be published.
 - RF Channel: **X**

If you see RF Channel: 0, this is an ERROR

Please verify your COM under device manager, and update the **SetUp** file accordingly.

```
Name:      Dut labtool
Version:    2.1.0.13
Date:       Jul 16 2015 (15:19:03)
```

Note:

```
Name:      DutApiClass
Interface:  EtherNet
Version:    2.1.0.13
Date:       Jul 16 2015 (15:18:27)
```

Note:

```
\\.\COM8
```

```
DutIf_InitConnection: 0
```

```
-----
W87xx (802.11a/g/b/n) TEST MENU
-----
```

```
Enter option: 11
```

```
DutIf_GetRfChannel: 0x00000000
```

```
RF Channel: 6 (2437.0 MHz)
```

```
Enter option:
```

3 - Verify Channel on Board

```
Name:      Dut labtool
Version:    2.1.0.13
Date:       Jul 16 2015 (15:19:03)
```

Note:

```
Name:      DutApiClass
Interface:  EtherNet
Version:    2.1.0.13
Date:       Jul 16 2015 (15:18:27)
```

Note:

```
\\.\COM3
```

```
DutIf_InitConnection: 0
```

```
-----
W87xx (802.11a/g/b/n) TEST MENU
-----
```

```
Enter option: 11
```

```
DutIf_GetRfChannel: 0xFFFFFFFF9
```

```
RF Channel: 0 (0.0 MHz)
```

```
Enter option: 11
```

```
DutIf_GetRfChannel: 0xFFFFFFFF9
```

```
RF Channel: 0 (0.0 MHz)
```

```
Enter option:
```

ERROR

SET RF CHANNEL

1. To set RF channel to 11
 - Type **12 13** and press Enter
2. To set RF channel to 7
 - Type **12 7** and press Enter
3. To set RF channel to 1
 - Type **12 1** and press Enter

TO VERIFY RF Channel,

Type **11**, and press Enter.

```

Name:      Dut labtool
Version:   2.1.0.13
Date:      Jul 16 2015 (15:19:03)

Note:

Name:      DutApiClass
Interface: Ethernet
Version:   2.1.0.13
Date:      Jul 16 2015 (15:18:27)

Note:

\\.\COM8
DutIf_InitConnection: 0

-----
W87xx (802.11a/g/b/n) TEST MENU
-----

Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option: 12 7
DutIf_SetRfChannel: 0x00000000
RF Channel: 7 (2442.0 MHz)
Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 7 (2442.0 MHz)
Enter option: 12 1
DutIf_SetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option:
  
```

Setting Cont Tx and b/g/n Band [LabTool Commands](#)

All the channels are capable of b/g/n modulation. In this example, channel 1 and channel 11 will be configured to run as b, g or n in continuous transmission mode.

Command 17 will be used to set these modes. Each time the channel changes, command 17 will need to be sent.

```
-----
W87xx (802.11a/g/b/n) TEST MENU
-----
Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 6 (2437.0 MHz)
Enter option: 12 1
DutIf_SetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option: 17 1 4
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 1
DutIf_SetTxContMode: 0x00000000
```

Cmd 11, confirm current channel

Cmd 12 1, change chan 6 to chan 1

Cmd 17 1 4, Set continuous Tx at 11Mbps, therefore 'b' band

- 802.11b, highest speed is 11Mbps
- 802.11g, highest speed is 54Mbps
- 802.11n, highest speed is MCS7

Setting Cont Tx and b/g/n Band

[LabTool Commands](#)

Channel 1 in 'g' band

```
-----
W87xx (802.11a/g/b/n) TEST MENU
-----
Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 6 (2437.0 MHz)
Enter option: 12 1
DutIf_SetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option: 17 1 4
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 1
DutIf_SetTxContMode: 0x00000000
Enter option: 17 1 13
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 2
DutIf_SetTxContMode: 0x00000000
```

- Cmd 17 1 13, Set continuous Tx at 54Mbps, therefore 'g' band

- 802.11b, highest speed is 11Mbps
- 802.11g, highest speed is 54Mbps
- 802.11n, highest speed is MCS7

Setting Cont Tx and b/g/n Band

[LabTool Commands](#)

Channel 1 in 'n' band

W87xx (802.11a/g/b/n) TEST MENU

```
Enter option: 11
DutIf_GetRfChannel: 0x00000000
RF Channel: 6 (2437.0 MHz)
Enter option: 12 1
DutIf_SetRfChannel: 0x00000000
RF Channel: 1 (2412.0 MHz)
Enter option: 17 1 4
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 1
DutIf_SetTxContMode: 0x00000000
Enter option: 17 1 13
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 2
DutIf_SetTxContMode: 0x00000000
Enter option: 17 1 22
DutIf_SetTxDataRate: 0x00000000
TRPC ID: 5
DutIf_SetTxContMode: 0x00000000
```

- Cmd 17 1 22, Set continuous Tx at MCS7, therefore 'n' band

- 802.11b, highest speed is 11Mbps
- 802.11g, highest speed is 54Mbps
- 802.11n, highest speed is MCS7

Setting Cont Tx and b/g/n Band

[LabTool Commands](#)

Repeat earlier steps for channel 11



Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

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.

This device complies with Innovation, Science, and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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, et*
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

This equipment complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

L'appareil est conforme aux limites d'exposition aux rayonnements spécifiées par la FCC/ISED pour les environnements non contrôlés. La distance entre le radiateur et le corps doit être d'au moins 20 cm lors de l'installation et du fonctionnement de l'appareil.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 Subparts A and C has been investigated. It is applicable to the modular.

2.3 Specific operational use conditions

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.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm from your body.

2.7 Antennas

This radio transmitter FCC ID: A5UWICHAM01 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.

ANT No.	Antenna Type	Antenna Gain	Impedance	Frequency Range
1	Internal Vertical Slot Antenna	1.2dBi	50Ω	2.4~2.5GHz
2	Internal Horizontal Monopole	0.5dBi	50Ω	2.4~2.5GHz
3	PCB	1.3dBi	50Ω	2.4~2.5GHz

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID: A5UWICHAM01"

2.9 Information on test modes and additional testing requirements

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

2.10 Additional testing, Part 15 Subpart B disclaimer

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

This device is intended only for OEM integrators under the following condition: The transmitter module may not be co-located with any other transmitter or antenna. As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne. Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

Important Note:

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

Any company of the host device which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to RSS-247 and RSS-Gen requirement, only if the test result comply with RSS-247 and RSS-Gen requirement, then the host can be sold legally.

Note Importante:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l' ISSED ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada. toute entreprise de l'hôte qui installent ce dispositif modulaire avec limite approbation devrait effectuer l'essai des modules et des rayonnements non essentiels des émissions rayonnées selon RSS-247 et le cnr - gen, seulement si le résultat d'essai conforme RSS-247 et le cnr - gen, puis l'hôte peut être vendu légalement.

End Product Labeling



The final end product must be labeled in a visible area with the following:

Contains IC: 10248A-WICHAM01.

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: Contient des IC: 10248A-WICHAM01.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

This radio transmitter [IC: 10248A-WICHAM01] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below:

Cet émetteur radio [IC: 10248A-WICHAM01] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous:

ANT No.	Antenna Type	Antenna Gain	Impedance	Frequency Range
1	Internal Vertical Slot Antenna	1.2dBi	50Ω	2.4~2.5GHz
2	Internal Horizontal Monopole	0.5dBi	50Ω	2.4~2.5GHz
3	PCB	1.3dBi	50Ω	2.4~2.5GHz

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.

Les types d'antennes non inclus dans cette liste qui ont un gain supérieur au gain maximum indiqué pour tout type répertorié sont strictement interdits pour l'utilisation avec cet appareil.

Model: WICHAM01