

# Product Specifications

## WM-8192EU(Realtek RTL8192EU-CG) 11n 2T2R USB Module

**Version: 1.1**

Manufacturer	CC&C Technologies, Inc.
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## Revision History

Version	Date	Change Description
1.0	05/28, 2014	Initial release
1.1	07/24, 2014	Update power-down control function

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## Overview

WM-8192EU is a WLAN 11n USB Module, which fully supports the features and functional compliance of IEEE 802.11e and i standards. It supports up to 300Mbps high -speed wireless network connections.

It is designed to provide excellent performance with minimum power consumption and enhance the advantages of robust system and cost-effective. It is targeted at competitive superior performance, better power management applications.

## Features

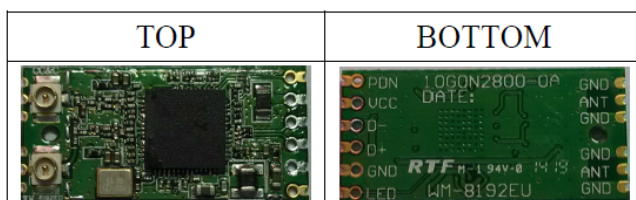
- 2x2 MIMO technology improves effective throughput and range over existing 802.11 b/g/n products
- Operates in 2.4 frequency bands

Freq.	Bands	Frequency
2.4 GHz		2.412-2.472 GHz, 2.484 GHz

- Data rates of up to 150 Mbps for 20 MHz channels and 300 Mbps for 40 MHz channels
- 802.11e-compatible bursting
- Support for the IEEE 802.11e, and i standards
- BPSK, QPSK, 16 QAM, 64 QAM, DBPSK, DQPSK, and CCK modulation schemes
- WEP, TKIP, and AES hardware encryption Schemes
- Support soft AP for Windows XP, Vista, 7 and Windows 8.

## Factory options

- Support LED function
- With or without shielding cover



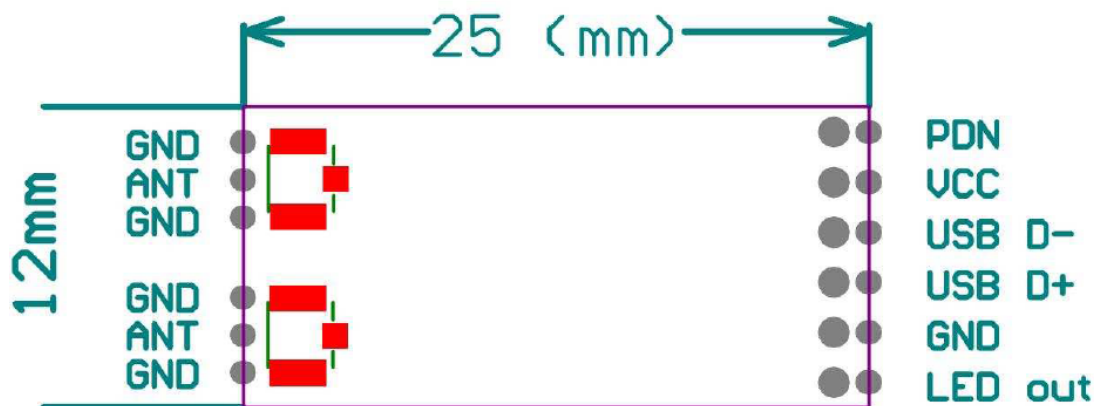
## General Specification

<b>Model Name</b>	<b>WM-8192EU</b>
Product Name	11n 2T2R USB Module
Standard	802.11b/g/n
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120,180,240,270 and maximum of 300Mbps
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM/ DBPSK/ DQPSK/ CCK
Frequency Band	2.4GHz ISM Band
Spread Spectrum	IEEE 802.11b: CCK (Complementary Code Keying) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
RF Output Power (tolerance $\pm$ 2dBm)	17dBm – 802.11b@CCK 11Mbps 15dBm – 802.11g@OFDM 54Mbps 13dBm – 802.11n@MCS7_HT20 13dBm – 802.11n@MCS7_HT40
Operation Mode	Ad hoc, Infrastructure, Soft AP
Receiver Sensitivity	-76dBm – 802.11b@11Mbps -63dBm – 802.11g@54Mbps -64dBm – 802.11n@MCS7_BW20 -61dBm – 802.11n@MCS7_BW40
OS Support	Windows XP /Vista /7 /8, Linux
Security	64 bit/128 bit WEP, TKIP, AES, WPA, WPA2
Interface	USB 2.0
RF output	IPEX connectors
Operating Temperature	0 - 50° C ambient temperature
Storage Temperature	-10 ~ 70° C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Size	25 x 12 x 2mm (L x W x H)

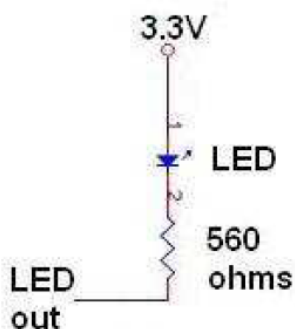
### DC power input:

Module	Minimum	Typical	Maximum	Unit
DC 3.3V module	3.135	3.3	3.465	V

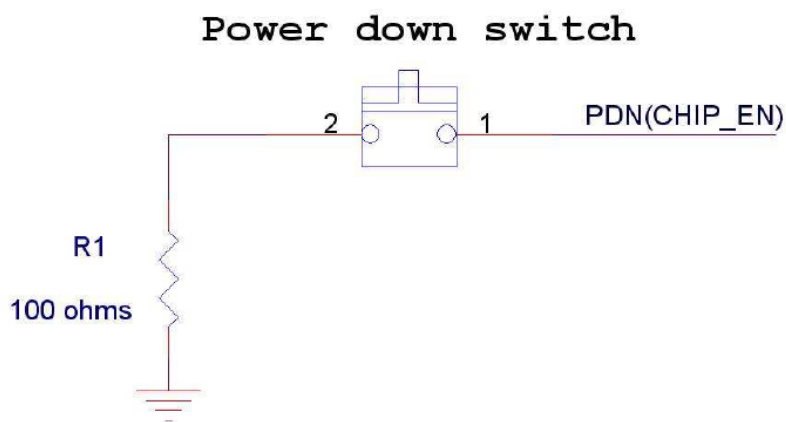
Pin outs:



**The function of pin LED out is optional to LED (LED1\_pin 20), a factory option.**  
 The external circuit for WiFi activity LED display (LED function is a factory option)

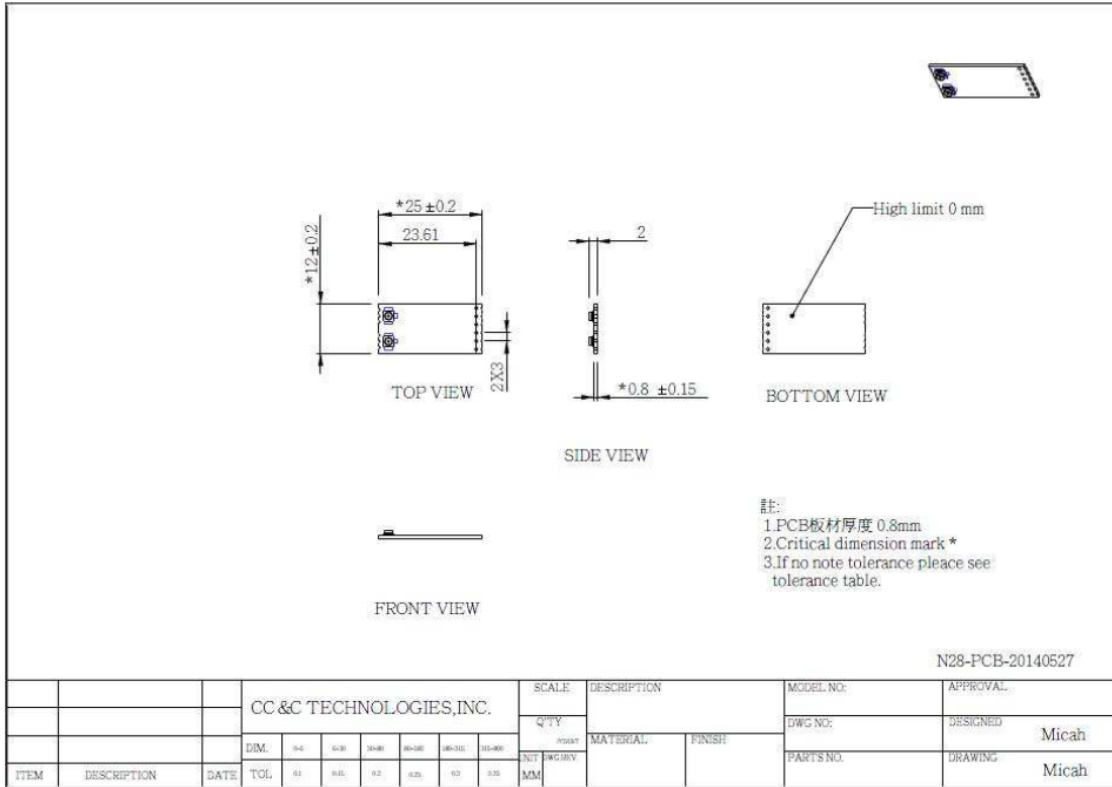


**The function of pin PDN is optional to power-down (CHIP\_EN\_pin 41), a factory option.**  
 The external circuit for power-down function input (factory option), uses a push or toggle switch.

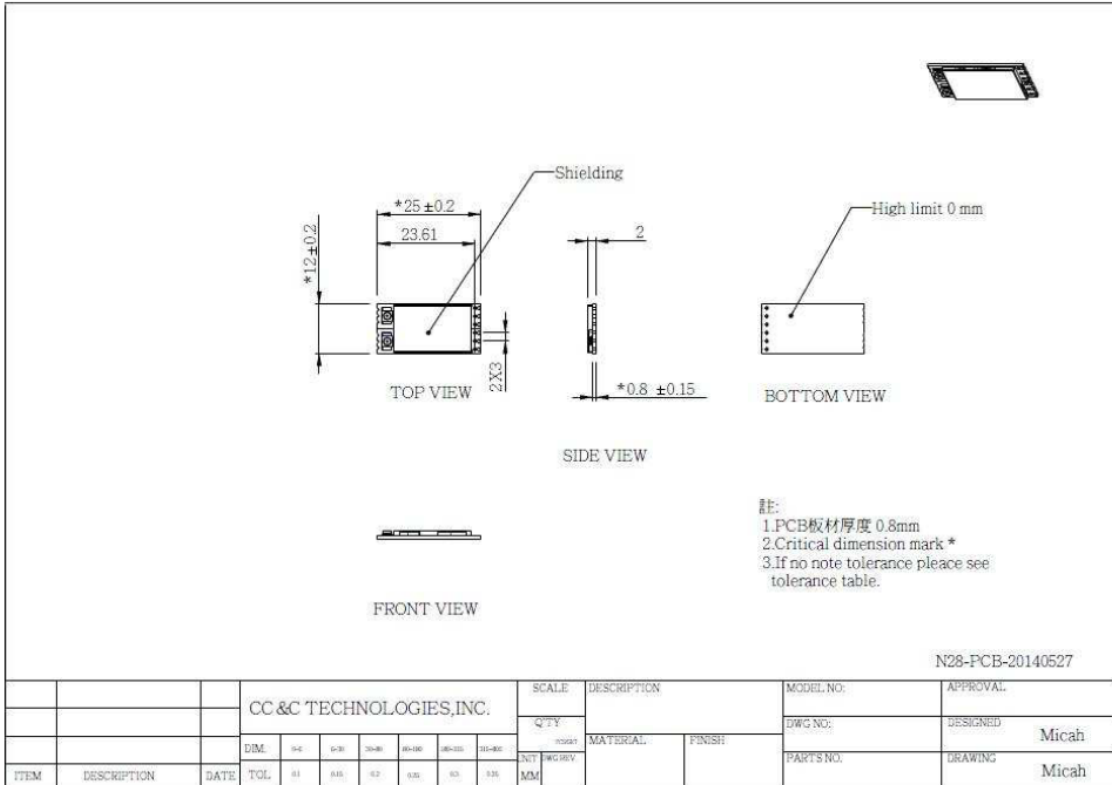


## Dimension

### Without Shielding Cover



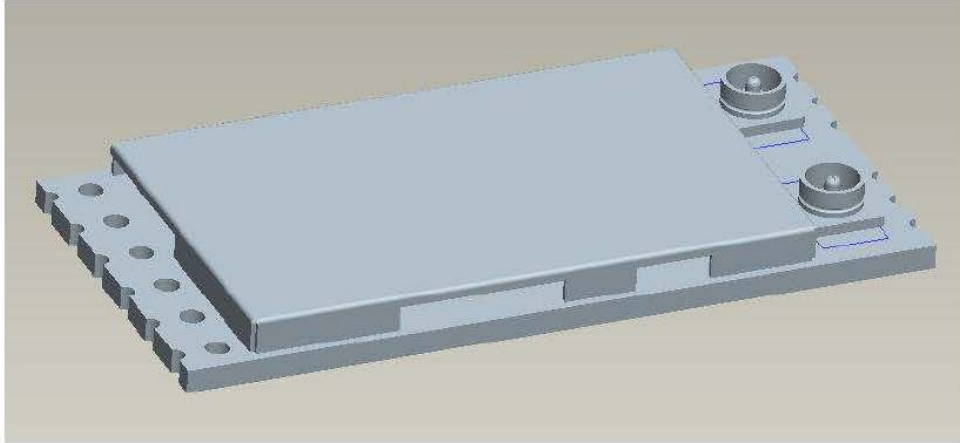
**With Shielding Cover**



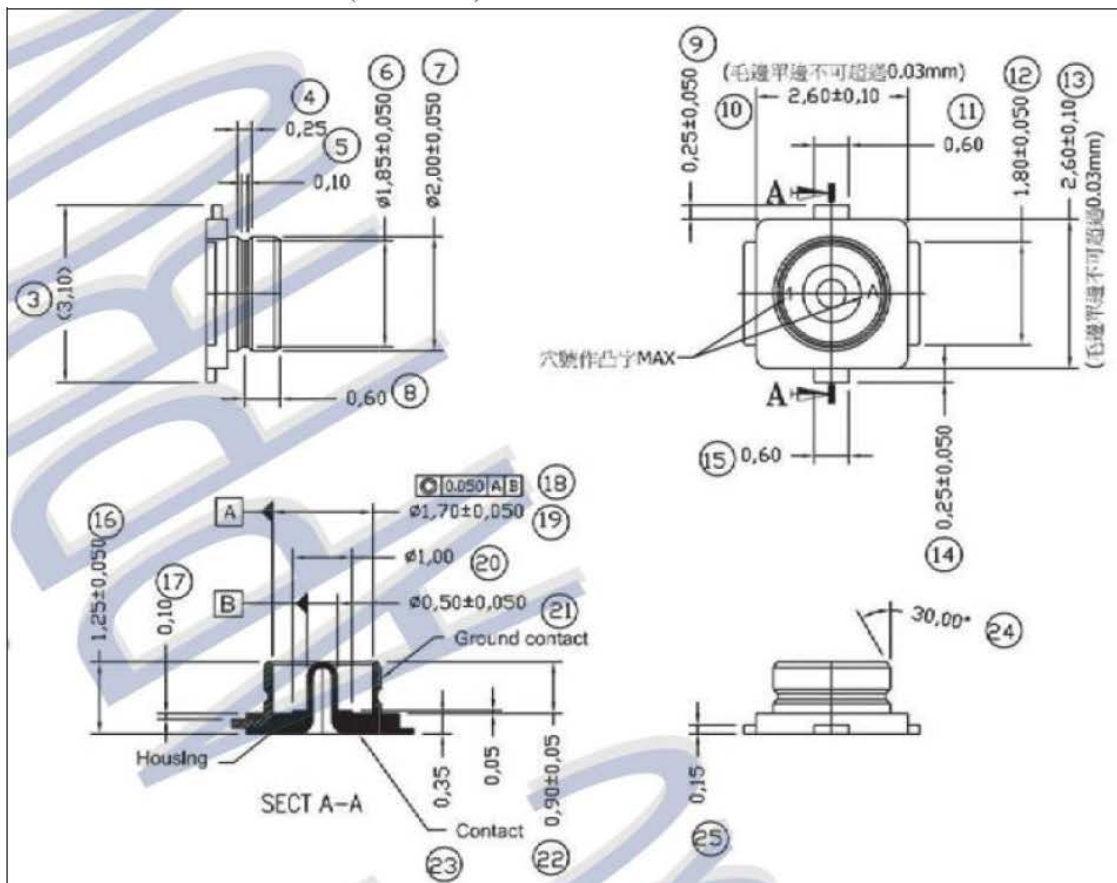


# Placement Notice

## RF connector



RF connector dimensions (unit: mm)



## PCB Layout footprint

1. The recommended layout pads for WM-8192EU module are shown below. (module top view)



All dimensions are in millimeters.  
Tolerance:  $\pm 0.05\text{mm}$

## FCC Regulatory Information for the Module

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

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

### FCC 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 minimum distance 20cm between the radiator & your body.

### Information to be supplied to the OEM or Host Integrator

The OEM/Host Integrator shall be responsible for ensuring that the end-user has no manual instructions to remove or install module and the FCC compliance requirement of the end product, which integrates this module.

#### 1. Applicable rules:

This module is certified pursuant to two Part 15 rules sections (15.247).

#### 2. Specific operational use conditions and antenna list:

- a) This module is restricted to installation in products for use only in mobile and fixed applications.
- b) The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.
- c) The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.
- d) OEM integrator has be limited the operation channels in channel 1-11 for 2.4GHz band.
- e) This module has been approved to operate with the antenna types listed below, with the maximum permissible gain indicated.

Ant.	Port	Brand	Model Name	Antenna Type	Gain (dBi)
A	1	-	ALO140-052030	PIFA	3
	2				3
B	1	-	ALC140-051021-A	Print	3

Ant.	Port	Brand	Model Name	Antenna Type	Gain (dBi)
	2				3
C	1	-	ALC140-052030-A	PIFA	3
	2				3
D	1	-	ALC160-051020-000000	Print	3.33
	2		ALC160-051021-000000		3.76
E	1	-	GY196HT625-001	Print	1.73
	2		GY196HT625-002		1.84
F	1	-	ALO160-052030-A	PIFA	3.54
	2		ALO160-052030-A		3.41
G	1	Master Wave	660023500G	Dipole	2.38
	2				2.38
H	1	WNC	81XCBB15.G01	PIFA	1.28
	2				1.28
I	1	WNC	81XCBB15.G02	PIFA	1.18
	2				1.18
J	1	Sevio	NTW01	Dipole	2.2
	2				2.2

Note: Other types of antennas and/or higher gain antennas shall only be authorized by Permissive Change procedures

### 3. RF exposure considerations

The end product must clearly indicate the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guideline.

**Mobile:** (§2.1091) (b) — A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

Per §2.1091(d)(4) In some cases (for example, modular or desktop transmitters), the potential conditions of use of a device may not allow easy classification of that device as either Mobile or Portable. In these cases, applicants are responsible for determining minimum distances for compliance for the intended use and installation of the device based on evaluation of either specific absorption rate (SAR), field strength, or power density, whichever is most appropriate.

**Note: If the final host/end product is intended for use as a portable device, the host manufacturer is responsible for separate approvals for the SAR requirements from FCC Part 2.1093.**

### 4. Information on test modes and additional testing requirements

1. This module is restricted to integration into hosts for indoor use only.
2. This module has been approved under stand-alone configuration.
3. OEM integrator has be limited the operation channels in channel 1-11 for 2.4GHz band.
4. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.
5. The information on how to configure test modes for host product evaluation for different

operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host can be found at KDB Publication 996369 D04.

### **5. Additional testing, Part 15 Subpart B disclaimer**

Appropriate measurements (e.g. 15B compliance) and if applicable additional equipment authorizations (e.g. SDoC) of the host product to be addressed by the integrator/manufacturer.

This module is only FCC authorized for the specific rule parts 15.247 listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host product as being Part 15 Subpart B compliant.

### **Manual Information to Be Supplied to the End User by the OEM or Host Integrator**

#### **Class B Device Interference Statement**

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

The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

**FCC 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 minimum distance 20cm between the radiator & your body.

**Label Compliance Information to be mandatory to affix to the End Product**

The host product shall be labeled in an external, visible permanent area with the following:

"Contains TX FCC ID: PANWM8192EU " or "Contains Transmitter Module FCC ID: PANWM8192EU"

The end product shall bear the following 15.19 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.

**Note:** If the labelling area is considered too small and therefore it is impractical (smaller than the palm of the hand) to display the compliance statement, then the statement may be placed in the user manual or product packaging.

## Industry 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.

This radio transmitter [IC: 6225A-WM8192EU] 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.

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	Sevio	NTW01	Dipole	2.2

Le présent émetteur radio [IC: 6225A-WM8192EU] 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.

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	Sevio	NTW01	Dipole	2.2

### IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 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.

*Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de **20cm** de distance entre la source de rayonnement et votre corps*

OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

**IMPORTANT NOTE:** In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the IC authorization is no longer considered valid and the IC No. 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 IC authorization.

### End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains transmitter module IC: 6225A-WM8192EU”.

*Contient le module d'émission IC: 6225A-WM8192EU*

*The Host Model Number (HMN) must be indicated at any location on the exterior of the end product or product packaging or product literature which shall be available with the end product or online.*

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée de telle sorte qu'une distance de 20cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

**IMPORTANT NOTE** for OEM integrator:

This module is intended for OEM integrator.

The OEM integrator is still responsible for

1. ensuring that the end-user has no manual instructions to remove or install module
2. the ISED compliance requirement of the end product, which integrates this module.
3. Appropriate measurements and if applicable additional equipment authorizations of the host device to be addressed by the integrator/manufacturer.
4. The separate approval is required for all other operating configurations, including portable configurations and different antenna configurations



The transmitter module may not be co-located with any other transmitter or antenna.  
Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

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

The Country Code Selection feature is disabled for products marketed in the US/Canada

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

Pour les produits disponibles aux États-Unis / Canada du marché, seul le canal 1 à 11 peuvent être exploités.  
Sélection d'autres canaux n'est pas possible.