USER MANUAL

Wireless Module

Model Name: WN4520L

	Liteon P/N	Sony P/N
Type A	**AAZ100426G0**	

Version 1.0

Author: *Kaysa Lee*

Change History

Revision	Date	Author	Change List
Version 1.0	2017/ 07 / 19	Kaysa Lee	Initial release

CONTENT

1 PRODUCT OVERVIEW

1.1 DESCRIPTION

WN4520L is a WLAN module which using Chipsets : Rockchip NanoD and Realtek RTL8821CSH

1.2 FEATURES

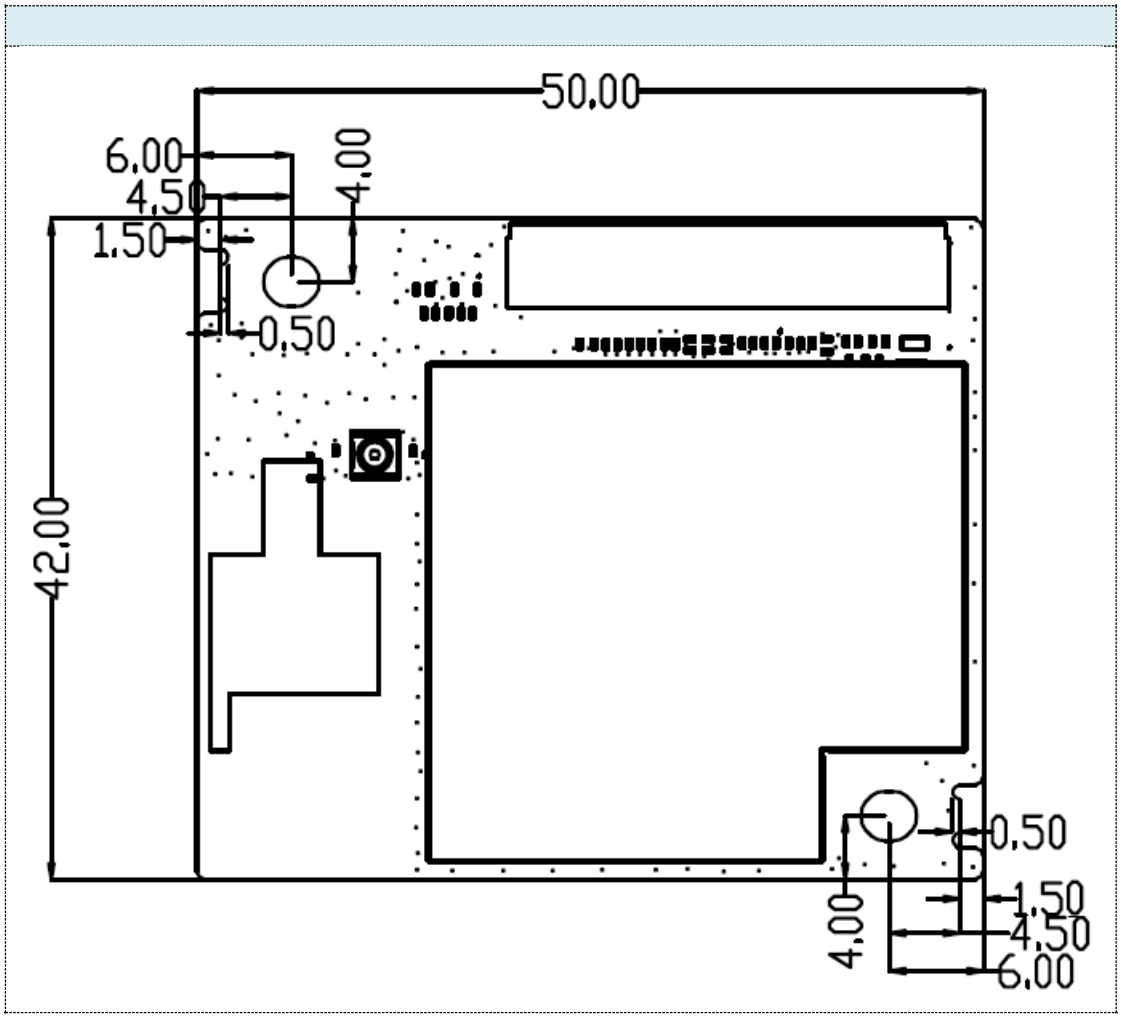
- Operate at 2.4GHz / 5GHz band
- 150Mbps PHY Rate Support
- 1T1R Mode
- 20MHz Bandwidth Support (2.4G) , 20/40MHz Bandwidth Support (5G)
- IEEE standards support: IEEE 802.11a/b/g and 802.11n
- 802.11i- WEP 64/128, AES, TKIP
- RoHS compliance
- Low Halogen compliance

1.3 GENERAL SPECIFICATIONS

Main Chipset	RTL8821CSH
Standard	IEEE 802.11a/b/g/n
Bus Interface	USB 2.0
Form Factor	42mm x 50mm x 3.5mm
Weight	8g
Data Rate	WiFi: 802.11b: CCK, DQPSK, DBPSK 802.11a, 802.11g: 64QAM, 16QAM, QPSK, BPSK 802.11n: 64QAM, 16QAM, QPSK, BPSK
Frequency Range	2.400 ~ 2.4835 GHz 5.150 ~ 5.85GHz
Transmit Output Power	WiFi: 11b: 12 +/- 1.5dBm (11Mbps) 11g: 12 +/- 1.5dBm (54Mbps) 11n: 12 +/- 1.5dBm (MCS7 HT20) 11a: 11 +/- 1.5dBm (54Mbps) , *5.8GHz = 7+/- 1.5dBm 11an: 11 +/- 1.5dBm (MCS7 HT20/40) , *5.8GHz = 7+/- 1.5dBm
Receive Sensitivity	WiFi: 11b @ 11Mbps: (Max.) : -85dBm , (Typical) : -89dBm **(PER<8%)** 11g @ 54Mbps: (Max.) : -69dBm , (Typical) : -75.5dBm **(PER<10%)** 11n @ MCS7 (2.4g HT20): (Max.) : -67dBm , (Typical) : -73dBm **(PER<10%)** 11n @ MCS7 (5g HT20): (Max.) : -67dBm , (Typical) : -71dBm **(PER<10%)** 11n @ MCS7 (5g HT40): (Max.) : -64dBm , (Typical) : -68.5dBm **(PER<10%)**
Temperature & Humidity	Normal Test Condition: 25 +/- 2deg.C , 65 +/- 2% RH Operating: -10 to 70 deg.C Storage: -40 to 85 deg.C
Operating Voltage	4V ±10% I/O supply voltage

Current Consumption	TBD

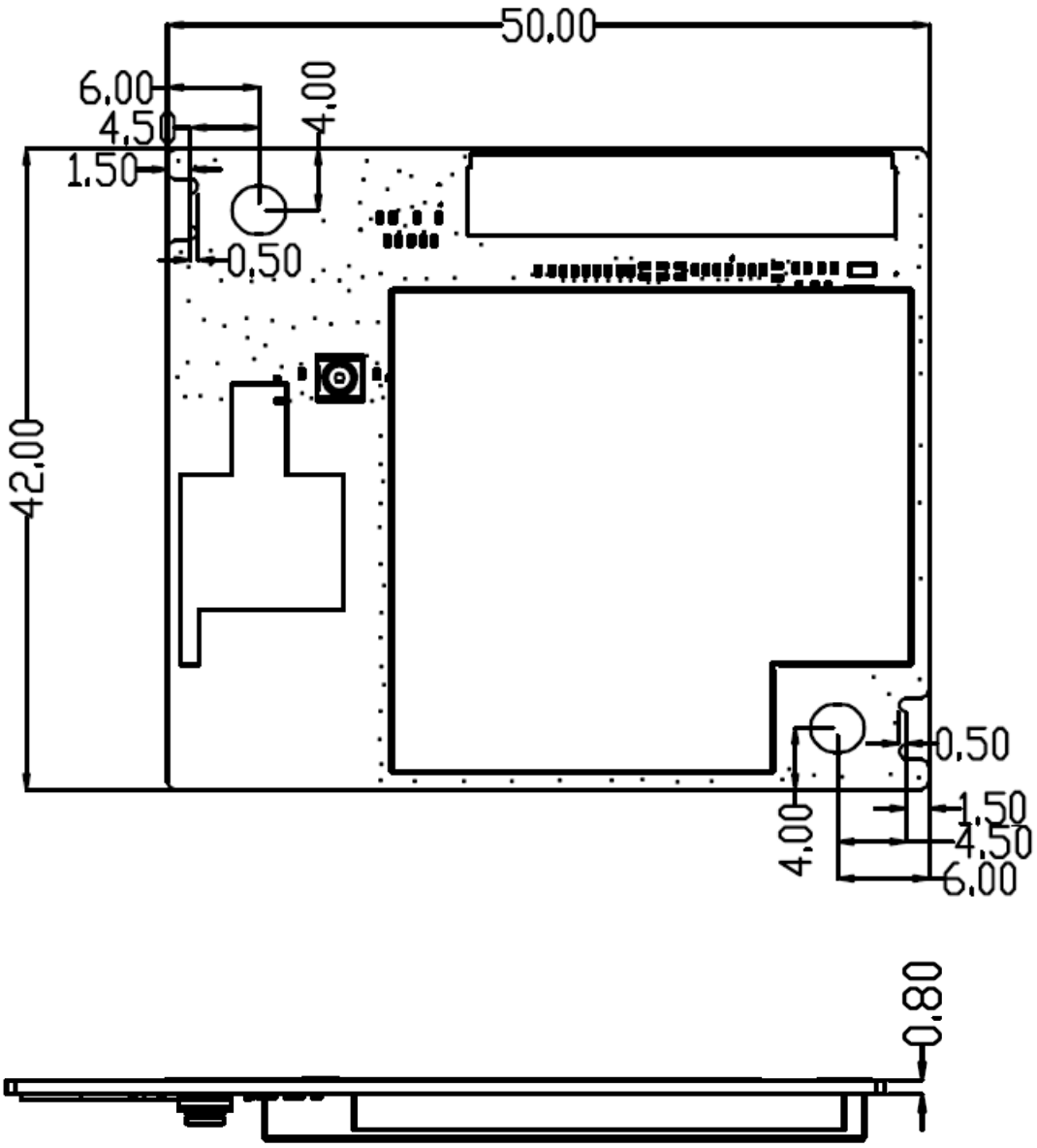
1.4 PARTS LAYOUT



unit : mm

All dimension tolerances are +/- 0.2 mm,
unless otherwise specified.

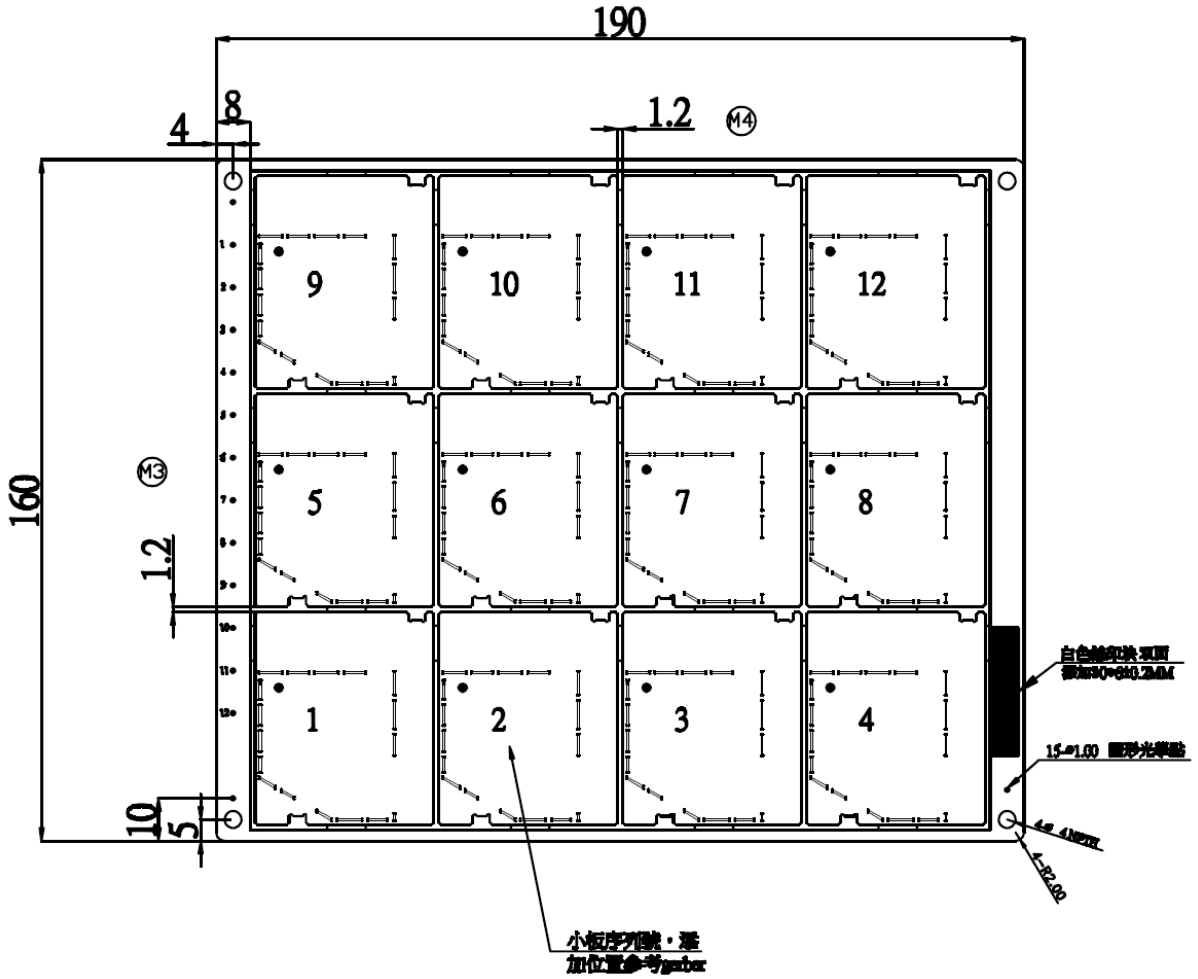
1.5 BOARD OUTLINE



unit : mm

All dimension tolerances without specification are +/- 0.2 mm,
except routing area +/- 0.25mm.

1.6 PANEL DRAWING



NOTE: EXCEPT OHTER SPECIFIED

1.THICKNESS OF PCB:0.8±0.08mm

2.TOLERANCE: +/-0.1mm; OUTLINE TOLERANCE: +/-0.1mm

3.NPTH HOLE: +/-0.05mm; PTH HOLE +/-0.075mm

4.MARKED Ⓜ IS THE CRITICAL DIMENSION

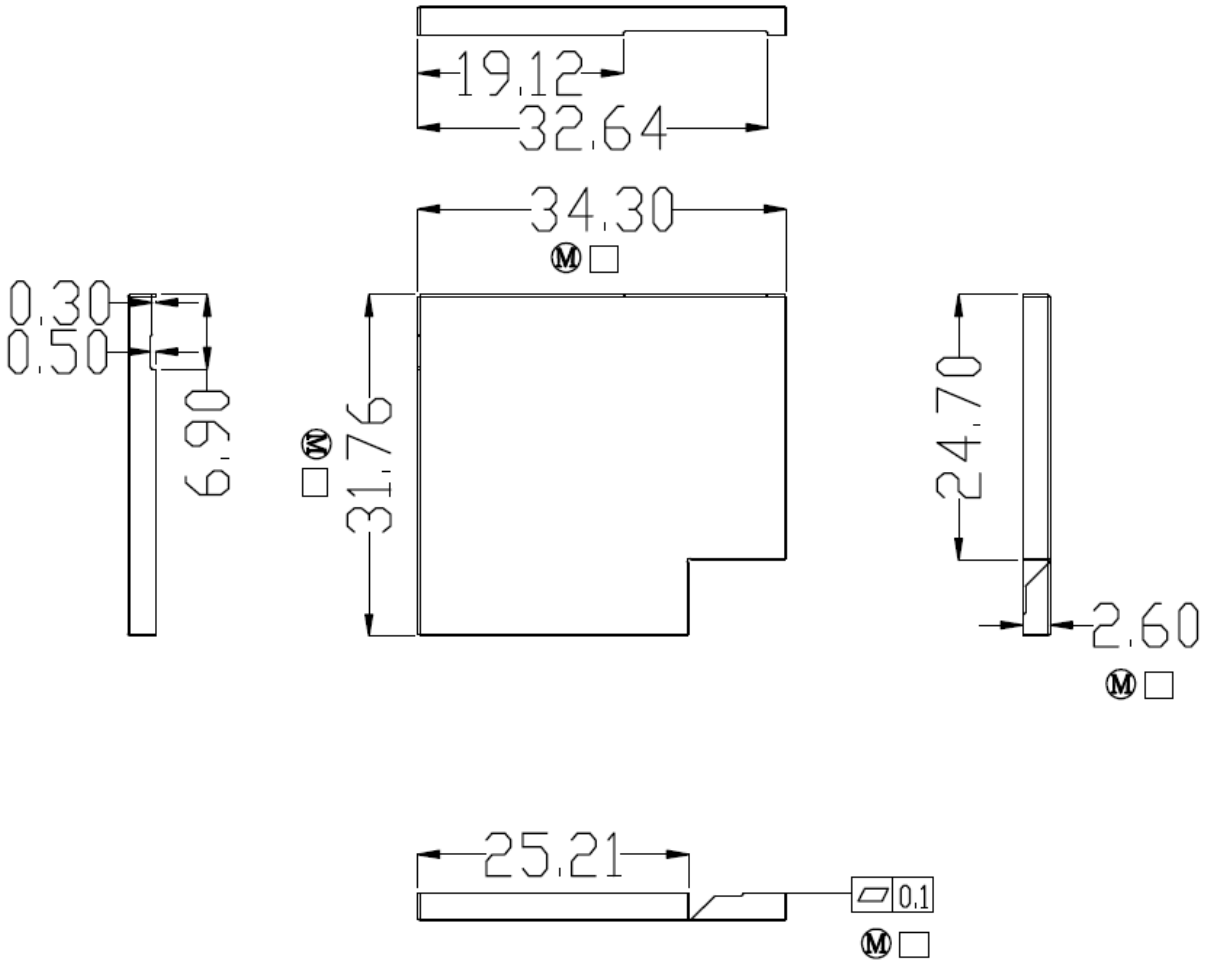
5.白漆要求:白色絲印應平整,無沙眼，不可有斷痕,
不可有电测针眼, 厚度:1mil $^{+0.15mil}_{-0}$ 。

DEG / DIM	A	B	C	D	ANGLE	
0-5	±0.02	±0.05	±0.10		0°-30°	±0.1°
5-10	±0.05	±0.10	±0.15		31°-60°	±0.3°
10-50	±0.10	±0.15	±0.20		61°-90°	±0.5°
50-100	±0.15	±0.20	±0.25			
100	±0.15%	±0.20%	±0.25%			

1.7 PCB INFORMATION

No.	Item	Vendor #1	Vendor #2
1	PWB Supplier	APCB	PIOTEK
2	ID Mark		
3	PWB Supplier UL File No.		
4	PWB Material Supplier		
5	PWB Material		
6	PWB Material Supplier UL File No.		
7	Flame Class		
8	Rated Temperature (Max Operation Temp.)		

1.8 SHIELDING



NOTE:

1.THICKNESS OF MATERIAL :Material: C7521 T=0.15MM

2.MARKED □ IS CONTROL DIMENSIONS AND CTF ITEMS

3.Marked Ⓜ IS THE CRITICAL DIMENSION

4.tolerance level:B

DEG / DIM	A	B	C	D	ANGLE	
0-5	±0.02	±0.05	±0.10		0°-30°	±0.1°
5-10	±0.05	±0.10	±0.15		31°-60°	±0.3°
10-50	±0.10	±0.10	±0.20		61°-90°	±0.5°
50-100	±0.15	±0.20	±0.25			
100-	±0.15%	±0.20%	±0.25%			

FCC 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.

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

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.

The OEM or integrator is obligated to adhere to these requirements and restrictions as a condition for using the module's certification. The OEM or integrator is responsible to perform the required additional host regulatory testing and/or obtaining the required host approvals for compliance.

This module is intended for OEM integrators under the following conditions:

1. Ensure that the end-user has no manual instructions to remove or install module.
2. This module is certified pursuant to FCC Part 15 rules section 15.247, 15.407, RSS-247.
3. This module has been approved to operate with the antenna types listed below, with the maximum permissible gain indicated.

Brand	Antenna Model	Antenna Type	Gain (dBi)				
			2.4GHz	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
LITEON	WN4520L	Printed	2.5	2.1	3.2	3.4	3.5
LITEON	WN4520L(8MB-B)	Printed	-	1.86	1.51	1.82	2.44
Sony	WN4520L-D	Dipole	-	0.67	0.67	0.73	1.41
Sony	WN4520L-G	Dipole	-	1.13	1.13	0.63	0.76

4. Label and compliance information

Label of the end product:

The host product must be labeled in a visible area with the following " Contains FCC ID: PPQ-WN4520L ".

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.

5. Information on test modes and additional testing requirements

This module has been approved under stand-alone configuration.

OEM integrator has be limited the operation channels in channel 1-11 for 2.4GHz band.

The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

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.

6. Additional testing, Part 15 Subpart B disclaimer

Appropriate measurements (e.g. Part 15 Subpart B 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, 15.407 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.

7. The user manual of the end product should include (information for OEMs):

The module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Information To Be Supplied to the End User by the OEM or Integrator:

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 be installed to provide a separation distance of at least 20 cm from all persons.

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.

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

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

IC WARING 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 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.

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.

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.

ISED 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.

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

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.

Modular OEM Integrator Notice

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: 4491A-WN4520L”.

Contient le module d'émission IC: 4491A-WN4520L

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.

Japan Statement:

5GHz product for indoor use only.

この製品は屋内においてのみ使用可能です

CE Statement:

Compliance with 2014/53/EU Radio Equipment Directive (RED)

In accordance with Article 10.8(a) and 10.8(b) of the RED, the following table provides information on the frequency bands used and the maximum RF transmit power of the product for sale in the EU:

Frequency range (MHz)	Max. Transmit Power (dBm/mW)
2400-2483.5	dBm
5150-5250	dBm
5250-5350	dBm
5470-5725	dBm

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

The device is restricted to indoor use only.

	AT	BE	BG	HR	CY	CZ	DK
	EE	FI	FR	DE	EL	HU	IE
	IT	LV	LT	LU	MT	NL	PL
	PT	RO	SK	SI	ES	SE	UK

NCC 警語:

【低功率射頻器材技術規範】

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。

低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

應避免影響附近雷達系統之操作。