

Product Specification

WN8522D 10-CP

IEEE Dual Band 802.11n USB2.0 Module

v.02

Arcadyan P/N :

FICCP8522014J-P (Connect-DIP)

Compal P/N :

PK29820010I

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Revision History

<i>Edition #</i>		<i>Reason for revision</i>	<i>Issue date</i>	<i>Written by</i>
V 01	◆	Initial Document	August 29 th 2011	Troy Chen
V 02	◆	Revised version	December 16 th , 2011	Stephanie Tsai

Chapter 1 Introduction

1. Introduction

WN8522D is a dual band wireless 802.11n USB Adapter which enables wireless networking systems to attain data communication speeds up to 300 megabits-per-second (Mbps), while remaining backward compatible to the existing installed base of Wi-Fi systems worldwide. It supports operation to the IEEE 802.11a/b and IEEE 802.11g ,and draft IEEE 802.11n standards.

WN8522B will enable a next generation of high-data-rate platforms for operation in the 2.4 GHz band that deliver a five-fold speed increase. The cost and performance advantages will make it an ideal solution for high bandwidth enterprise applications, such as wireless video conferencing and large file transfers. It is compatible with 802.11g standard's mandatory modulation schemes—Complementary Code Keying (CCK), which is used in 802.11b, and Orthogonal Frequency Division Multiplexing (OFDM), used in 802.11g and draft 802.11n. Using CCK ensures backward-compatibility with the installed Wi-Fi 802.11b base, while OFDM provides the speed required for today's high-bandwidth applications.

1.1 Product Features

- ◆ High speed for wireless LAN connection, RX up at 300 Mbps data rate.
- ◆ Backward compatible to the existing IEEE 802.11a/b/g WLAN infrastructure.
- ◆ User-friendly utility to configure SSID, security setup and site survey.
- ◆ Wireless data encryption with 64, 128 encryption for security.
- ◆ Support USB v2.0

1.2 Applications

- ◆ Home networking for device sharing.
- ◆ Wireless multimedia.

Chapter 2 Hardware

2.1 General Overview

- ◆ USB 2.0 Interface and 802.11 n chipset-on-board design.
- ◆ Antenna: Antennas on board

2.2 Hardware Architecture

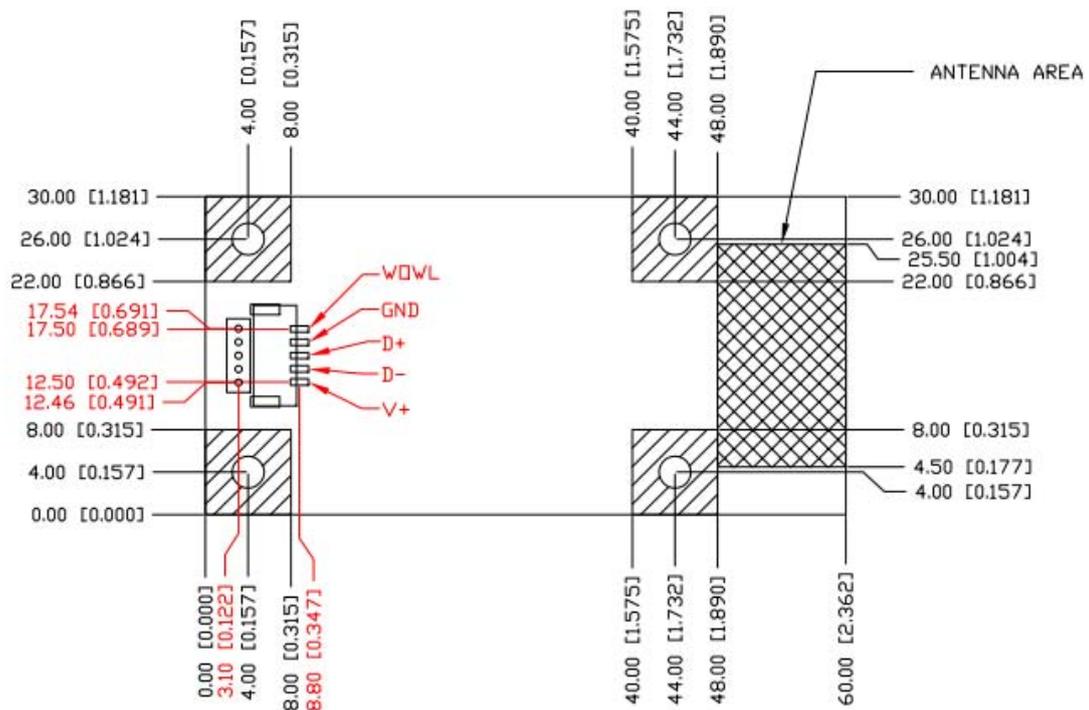
Broadcom 43236 single chip USB2.0

2.3 Main Chipset Information

- ◆ **BCM43236** is a dual band IEEE 802.11n-compliant MAC/PHY/Radio complete system on a chip with 2.4Ghz and 5GHz internal PA

2.4 PCB dimension

PCB dimension : 60x30 mm



Weight (Connect-DIP) : 6.6035g +/- 1g

2.5 Pin Assignment,

排線順序，由右到左：V+

D-

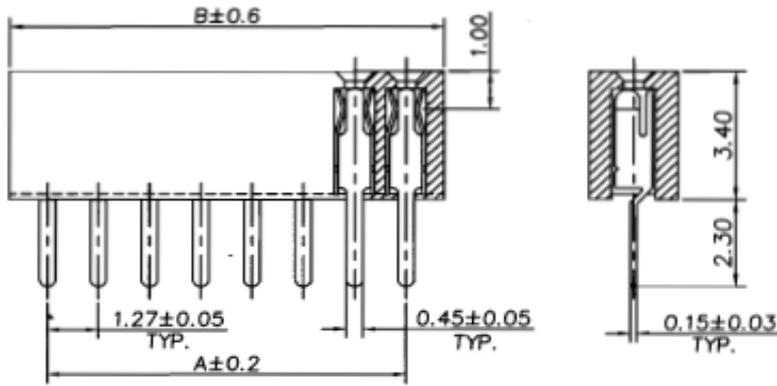
D+

GND

WOWL

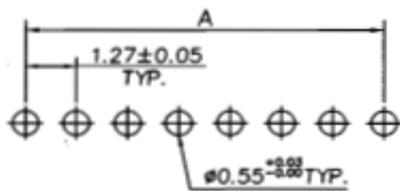


2.6 Connector Type,



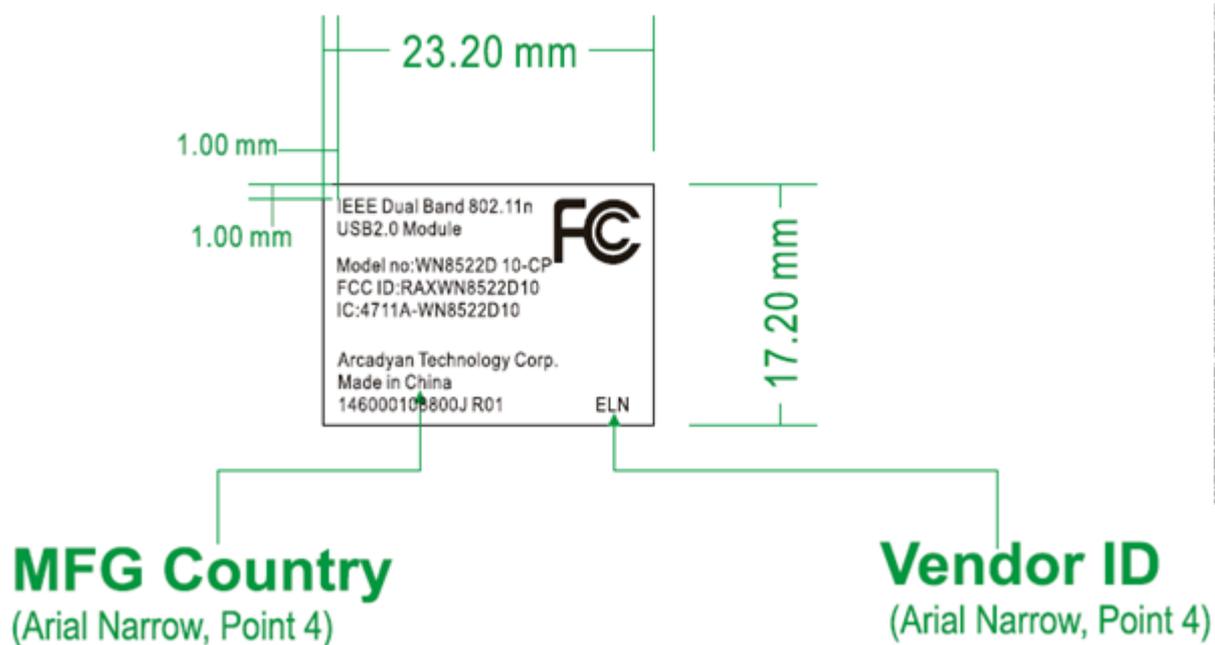
$$A = 1.27 * (\text{No. of Contact} - 1)$$

$$B = 1.27 * (\text{No. of Contact}) + 0.60$$



RECOMMENDED P.C.B LAYOUT

2.7 Label Drawing



2.8 BOM List

Part no	Descrip
165000073400J	RNA R0A SCHEMATIC FILE WN8522D 10-CP (D)
CICCP8522014J	??CONFIG WN8522D 10-CP (D)
123700011600J	R01 PARTITION COVER WN8522B-LF-FX LT
175000377000J	V0.10 FINAL TEST PROGRAM WN8522D 10-CP (D)
NICCP8522014J	??PCBA WN8522D 10-CP (S) Con-DIP MAIN
175000377100J	V0.10 PRE TEST PROGRAM WN8522D 10-CP (D)
249300000100J	R04 MAC_ID #NEW:743170# #OLD:7C4FB5;00264D# ARC
SICCP8522014J	??SMD ASM WN8522D 10-CP (S) Con-DIP MAIN
102100045100A	BEAD 100MHz 25% 600ohm 300mA 0402 MURATA
102100038100E	BEAD 100MHz 25% 600ohm 300mA 0402 LT/LF TAIYO
1021A1000019J	BEAD 100MHz 25% 220ohm 3A 0805 HF MAXECHO
102100019100E	BEAD 100MHz +-25% 220ohm 3A 0805 LT/LF TDK
1023A1000050J	CHOKE SMD 100KHz 2.2uH 20% 1.2A 2.8x3mm HF TOKO
1023A1000065J	CHOKE POWER IND 1MHz 2.2uH 30% 1.3A 2.5X2mm HF TOKO
1023A1000064J	?!CHOKE POWER IND 1MHz 2.2uH 20% 0.1ohm 1.5A 2520 HF HITACHI
102300070100J	CHOKESMD 100KHz 2.2uH 20% 215mohm 1.28A 2.8X2.6mm HF GOTREND
102400038100J	FILTER SMD 240~1000MHz 1.5ohm RFCMF1220100M3T LT/LF WALSIN
110300251100J	?!RF IC BCM43236KMLG 2.4/5GHz a/b/g/n QFN88 LT/LF BROADCOM
110300298100J	?!RF IC SE2577L Dual Band 802.11n LNA FEM QFN20 ROHS SIGE
116000062100J	X'TAL 20MHz 7ppm 18pF 35ohm 100uW 3.2X2.5mm SMD LT/LF TXC
116000061100J	X'TAL 20MHz +/-7ppm 18pF 3.2X2.5mm SMD LT/LF eCERA
116800144100J	REG PWM STEP-DOWN EUP3020JIR1 1A TDFN-12 LT/LF EUTECH
116800324100J	REG AUR9707AGD PWM DC/DC CONV ADJ 1A WDFN-12L HF AURA
116800168100E	CONV RT8020PQW ADJ 1A BUCK WDFN-12L LT/LF RICHTEK
1195A0000023J	?!CONN RF SMD6 MM8130-2600RB8 MURATA
141852220021J	?!R0A PCB WN8522D 10-CP (D) (4L) LT/LF
20000000JN60A	RES SMD 0ohm 5% 1/16W 0402 HF
20000000JT90E	RES SMD 0ohm 5% 1/20W 0201 T0.25 HF

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20010000FN60J	RES SMD 100 ohm +-1% 1/16W 0402 T0.35 HF
20010020A056J	RES SMD 10Kohm 1% 1/20W 0201 T0.23 HF WALSIN
20010020A021J	RES SMD 10Kohm 1% 1/20W 0201HF CYNTEC
20010020A019J	RES SMD 10Kohm 1% 1/20W 0201 HF YAGEO
20010030JT70J	RES SMD 100K OHM 5% 1/20W 0201 T0.25 HF
20015020A008J	RES SMD 15Kohm 1% 1/20W 0201 T0.23 HF YAGEO
20022100A007J	RES SMD 221ohm 1% 1/20W 0201 T0.3 HF WALSIN
20026730FN60E	RES SMD 267K ohm +-1% 1/16W 0402 T0.35 HF
20040210FN61E	RES SMD 4.02Kohm 1% 1/16W 0402 T0.35 HF
20059020FN60E	RES SMD 59Kohm 1% 1/16W 0402 LT/LF
20060420FN60J	RES SMD 60.4Kohm 1% 1/16W 0402 LT/LF
2040900A0000J	C SMD CER 9pF +-0.5pF 25V NPO 0201 T0.3mm HF MURATA
2041013JH100J	C SMD CER 100pF 5% 50V NPO 0402 LT/LF
2041013JH100E	C SMD CER 100pF 5% 50V NPO 0402 T0.5mm LT/LF
2041013JH104E	C SMD CER 100pF 5% 50V NPO 0402 LT/LF MURATA
204101AA0001J	C SMD CER 100pF 5% 25V NPO 0201 T0.3 HF MURATA
2041029KE100E	C SMD CER 1000pF 10% 25V X7R 0201 T0.3mm LT/LF
204102AA0003J	C SMD CER 1000pF 10% 25V X7R 0201 T0.3mm HF DARFON
204102AA0001J	C SMD CER 1000pF 10% 25V X7R 0201 T0.3mm HF MURATA
2041039KA101E	C SMD CER 10nF 10% 10V X5R 0201 T0.3mm LT/LF TAIYO
2041030A0012J	C SMD CER 0.01uF 10% 10V X7R 0201 T0.3 HF MURATA
2041043A0021J	C SMD CER 0.1uF +-10% 16V X7R 0402 T0.5mm LT/LF DARFON (LW)
2041043A0022J	C SMD CER 0.1uF +-10% 16V X5R 0402 T0.5mm LT/LF TAIYO (LW)
2041043KC100E	C SMD CER 0.1uF +-10% 16V X7R 0402 T0.5mm LT/LF
2041049KJ001E	C SMD CER 0.1uF 10% 6.3V X5R 0201 T0.3mm LT/LF TAIYO
2041049KJ000E	C SMD CER 0.1uF 10% 6.3V X5R 0201 LT/LF
204104AKJ000J	C SMD CER 0.1uF 10% 6.3V X5R 6.3V 0201 T0.3mm LT/LF MURATA
2041053A0014J	C SMD CER 1uF 10% 6.3V X5R 0402 T0.5mm HF
2041053KJ001J	C SMD CER 1uF +-10% 6.3V X5R 0402 T0.5mm LT/LF TAIYO
2041053KJ010J	C SMD CER 1uF 10% 6.3V X5R 0402 T0.5 HF
2041060A0022J	C SMD CER 10uF 10% 16V X5R 0805 T1.25mm HF MURATA
2041060A0025J	C SMD CER 10uF 10% 16V X5R 0805 T1.25mm HF DARFON
2043303JH100J	C SMD CER 33pF 5% 50V NPO 0402 HF
2043303JH100E	C SMD CER 33pF +-5% 50V NPO 0402 T0.5mm LT/LF MURATA

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2044751KC100A	C SMD CER 4.7uF 10% 16V X5R 1206 LT/LF TAIYO
2044751KC110A	C SMD CER 4.7uF 10% 16V X7R 1206 HF
2044754MJ000E	C SMD CER 4.7uF 10% 6.3V X5R 0603 T0.8 LT/LF MURATA
2044754A0013J	C SMD CER 4.7uF 10% 6.3V X5R 0603 T0.8 HF TAIYO
246106-002	ACCLABEL 18.2X7.1mm(SING) LT
TICCP8522014J	??NON SMD ASM WN8522D 10-CP (S) Con-DIP MAIN
1182A0000103J	?!PIN HEADER 1X5P 1.27mm LT/LF LCU
123700020600J	R01 PARTITION COVER WN8522D-AK LT
PICCP8522014J	??SHIP KIT WN8522D 10-CP (S) Con-DIP
146000108800J	?!R0A PRODUCT LABEL WN8522D 10-CP (S) Con-DIP
146066-102	(自印)CARTON LABEL 100MMX100MM LT
146139-003	R01 ACCLABEL DISKETTE 70X50MM LT
146500063300J	\$R01 CARTON LABEL 100*100MM GREEN LT
147000055300J	??R01 CARTON WN8522D 10-CP
147020136800J	??R01 BOX WN8522D 10-CP
147040009200J	R01 ANGLE BOARD 50X50X5X800mm LT
147040092900J	??R01 PARTITION WN8522D 10-CP
147050002500J	R01 BAG ANTI STATIC WN4601B-LF-CP LT
147150000400J	R01 PALLET 1230X1100X120mm (三夾板) LT
246106-002	ACCLABEL 18.2X7.1mm(SING) LT
246200000600A	MONTHLY LABEL ON CARTON LT

Chapter 3 Software

3.1 Operating System Supported

- ◆ Windows 2000, XP, Vista
- ◆ Linux Driver

3.2 Wireless Mode Supported

- ◆ AP (Infrastructure) Client mode

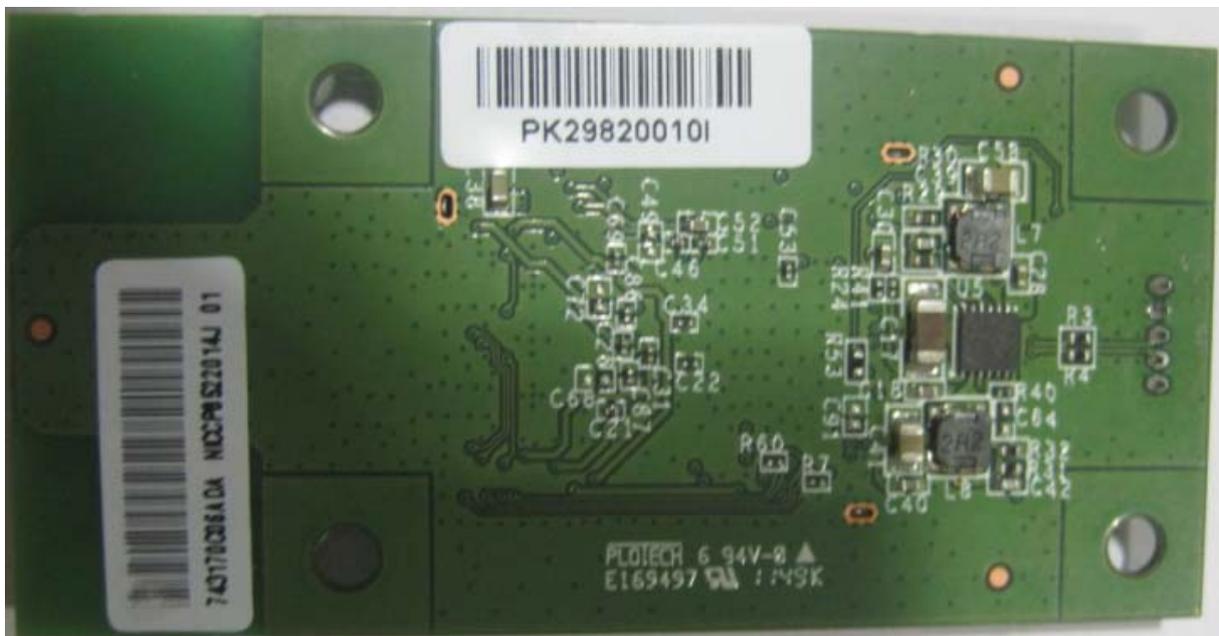
3.3 Security

- ◆ AP (Infrastructure) mode supports
 - ◆ Static WEP that support both 64 and 128 bit keys.
 - ◆ WPA(TKIP) with PSK
- ◆ Ad-hoc mode supports
 - ◆ None (plaintext)
 - ◆ Static WEP that supports both 64 and 128 bit keys

Chapter 4 Appearance

4.1 Module Pix

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Chapter 5 Specifications

5.1

◆ Frequency Band:

Draft 802.11n Radio: 2.4 GHz

802.11g Radio: 2.4 GHz

802.11b Radio: 2.4 GHz

USA – FCC

2412~2462MHz (Ch1~Ch11)

Canada – IC

2412~2462MHz (Ch1~Ch11)

802.11a Radio : 5 GHz

5.150~5.250GHz

5.725~5.850GHz

◆ Operating Channels:

IEEE 802.11b/g/n compliant:

11 channels (US, Canada)

◆ Transmit Power and Sensitivity:

TX Output Power:

2,4 GHz

- 11b: 15 +/- 2 dbm
- 11g: 13 +/- 2 dbm
- 11n HT20, 2.4GHz: 13 +/- 2 dbm
- 11n HT40, 2.4GHz: 12 +/- 2 dbm

5 GHz

- 11a 12 +/- 2 dBm
- 11n 20 MHz 12 +/- 2 dBm
- 11n 40 MHz 12 +/- 2 dBm

Rx Sensitivity:(Typical)

- 802.11a:
 - Typical -70dBm@54Mbps, +/-2dBm
- 802.11n 5GHz HT20: (TBC)
 - MCS=7 -68dBm@54Mbps, +/-2dBm
- 802.11n 5GHz HT40: (TBC)
 - MCS=7 -65dBm@54Mbps, +/-2dBm
- 802.11b:

- Typical -86dBm@11Mbps, +/-2dBm
- 802.11g:
 - Typical -72dBm @ 54Mbps, +/-2dBm
- Draft 802.11n 2.4GHz HT20:
 - MCS=7 -68dbm, +/-2dBm
- Draft 802.11n 2.4GHz HT40:
 - MCS=7 -65dbm, +/-2dBm
- ◆ Modulation
 - DBPSK @1Mbps
 - DQPSK@2Mbp
 - CCK@5.5/11Mbps
 - BPSK@6/9 Mbps
 - QPSK@12/18Mbps
 - 16-QAM@24Mbps
 - 64-QAM@48/54Mpb and above
- ◆ Current consumption(5V DC):
 - TX: 2500 MW at 11dBm HT40 CH38 2x2
 - RX: 1765 MW at 11dBm HT40 CH38 2x2
 - Radio OFF mode: < 100mA
- ◆ Operating Temperature: 0 ~ 60 °C ambient
- ◆ Storage Temperature: -20 ~ 60 °C ambient
- ◆ Humidity: under 85% and must be non-condensing
- ◆ Regulation and certification compliance available:
 - ◆FCC
 - ◆IC
 - ◆CONFETEL

References

- ◆ BRCM Reference Design Functional Specification
- ◆ IEEE 802.11b Standard Specification
- ◆ IEEE 802.11g Standard Specification
- ◆ IEEE 802.11n draft Standard Specification

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Federal Communication Commission 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 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.

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

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

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

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.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " **Contains TX FCC ID:RAXWN8522D10**". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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 Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada license-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'Industrie 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.

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

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

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

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.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the IC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. IC statement is required to be available in the users manual: This Class B digital apparatus complies with Canadian ICES-003. 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX IC : 4711A-WN8522D10".