

# USER MANUAL

## WLAN + BT Combo Module

Model Name: WCBN4506R

	Liteon P/N	Sony P/N
Type A	<b>AAZ100162G0</b>	<b>1-493-092-11</b>
Type B	<b>AAZ100171G0</b>	<b>1-493-092-21</b>

Version 1.1

*Author: Kaysa Lee*

### Change History

Revision	Date	Author	Change List
Version 1.0	2015 / 09 / 01	Kaysa Lee	Initial release
Version 1.1	2015 / 09 / 21	Kaysa Lee	Update Product Picture/MAC Label format(size)

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## 1 PRODUCT OVERVIEW

### 1.1 DESCRIPTION

WCBN4506R is a WLAN +BT Combo module which using MTK Chipset MT7662RU

### 1.2 FEATURES

- Operate at 2.4GHz / 5GHz band
- 300Mbps PHY Rate Support
- 2T2R Mode
- 20MHz Bandwidth Support (2.4G) , 40MHz Bandwidth Support (5G)
- USB 2.0 support for data rates up to 12Mbps full speed and 480Mbps high speed
- IEEE standards support: IEEE 802.11a/b/g and 802.11n
- 802.11i- WEP 64/128, AES, TKIP
- RoHS compliance
- Low Halogen compliance

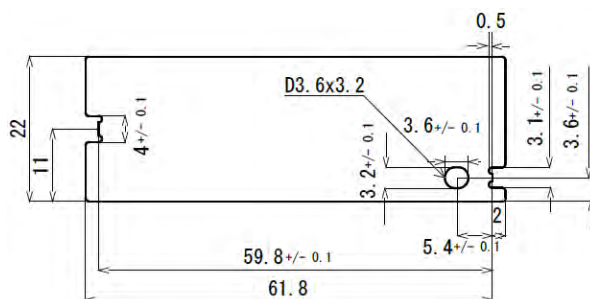
### 1.3 GENERAL SPECIFICATIONS

<b>Main Chipset</b>	MT7662RU
<b>Standard</b>	IEEE 802.11a/b/g/n , Bluetooth 4.2
<b>Bus Interface</b>	USB 2.0
<b>Form Factor</b>	63.8mm x 22mm x 5.4mm
<b>Weight</b>	7.4g (A) 6.5g (B)
<b>Data Rate</b>	WiFi: 802.11b: CCK, DQPSK, DBPSK 802.11a, 802.11g: 64QAM, 16QAM, QPSK, BPSK 802.11n: 64QAM, 16QAM, QPSK, BPSK Bluetooth: GFSK, $\pi/4$ -DQPSK and 8-DPSK
<b>Frequency Range</b>	2.400 ~ 2.4835 GHz 5.150 ~ 5.85GHz
<b>Receive Sensitivity</b>	WiFi: 11b @ 11Mbps: (Max.) : -85dBm , (Typical) : -89.5dBm ( <b>PER&lt;8%</b> ) 11g @ 54Mbps: (Max.) : -69dBm , (Typical) : -76dBm ( <b>PER&lt;10%</b> ) 11n @ MCS7 (2.4g HT20): (Max.) : -67dBm , (Typical) : -74.5dBm ( <b>PER&lt;10%</b> ) 11n @ MCS7 (5g HT20): (Max.) : -67dBm , (Typical) : -73.5dBm ( <b>PER&lt;10%</b> ) 11n @ MCS7 (5g HT40): (Max.) : -64dBm , (Typical) : -70dBm ( <b>PER&lt;10%</b> ) Bluetooth: 1DH5 BDR: (Max.): -86 dBm , (Typical): -95.5 dBm ( <b>BER &lt; 0.1%</b> ) 2DH5 EDR: (Max.): -86 dBm , (Typical): -92.5 dBm ( <b>BER &lt; 0.01%</b> ) 3DH5 EDR: (Max.): -80 dBm , (Typical): -86 dBm ( <b>BER &lt; 0.10%</b> ) BLE : (Max.): -90dBm , (Typical): -97dBm ( <b>PER&lt;30.8%</b> )

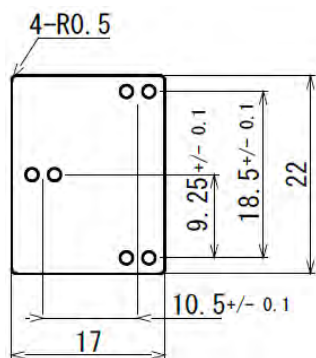
<b>Temperature &amp; Humidity</b>	Normal Test Condition: 25 +/- 2deg.C , 65 +/- 2% RH Operating: -10 to 45 deg.C (2x2 mode), -10 to 60 deg.C (1x2 mode) Storage: -40 to 85 deg.C
<b>Operating Voltage</b>	3.3V ±10% I/O supply voltage
<b>Current Consumption</b>	Typical: 500mA (2x2 mode) Max: 650mA (2x2 mode) Min: 450mA (2x2 mode)
<b>Antenna Type</b>	Type A: Antenna PWB (WiFi) + IPEX MHF RF connector x 1 (BT) Type B: IPEX MHF RF connector x 3 (WIFI + BT)

### 1.4 BOARD OUTLINE

#### WIFI Board:



#### Antenna Board:



unit : mm

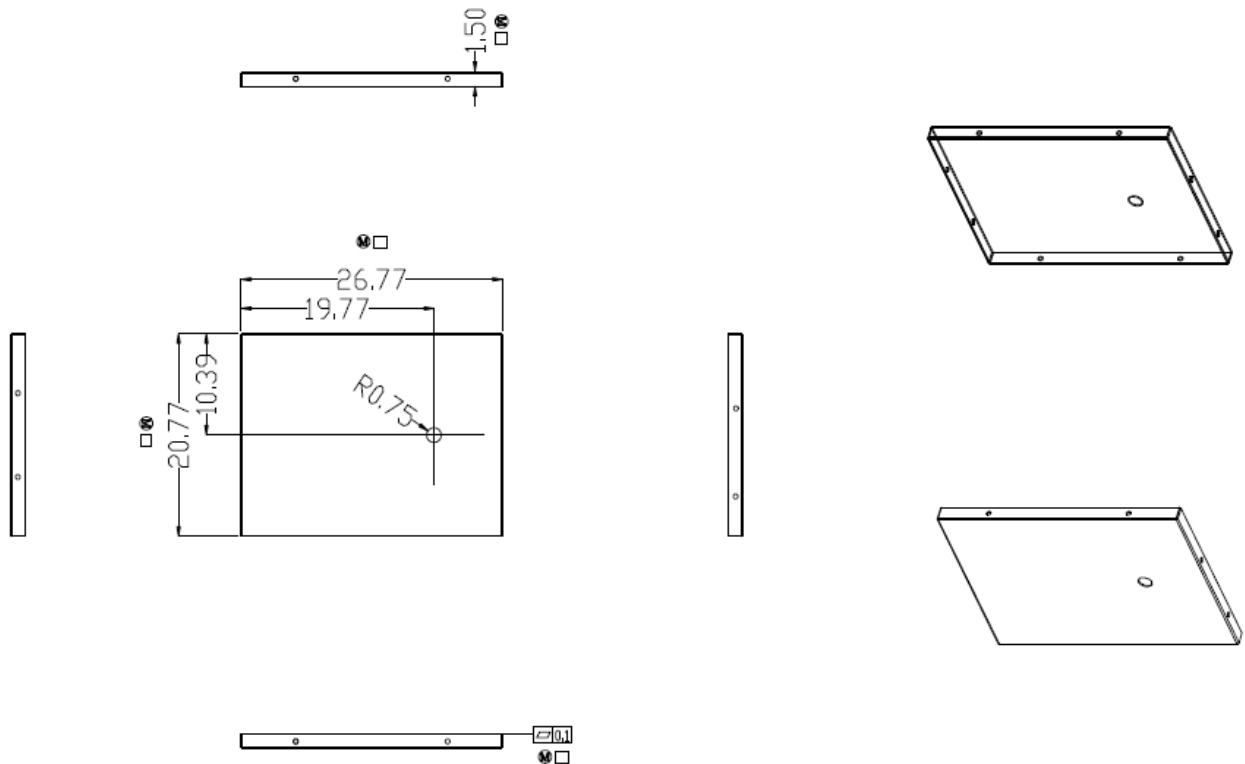
All dimension tolerances without specification are +/- 0.2 mm, except routing area +/- 0.25mm.

**1.5 PCB INFORMATION**

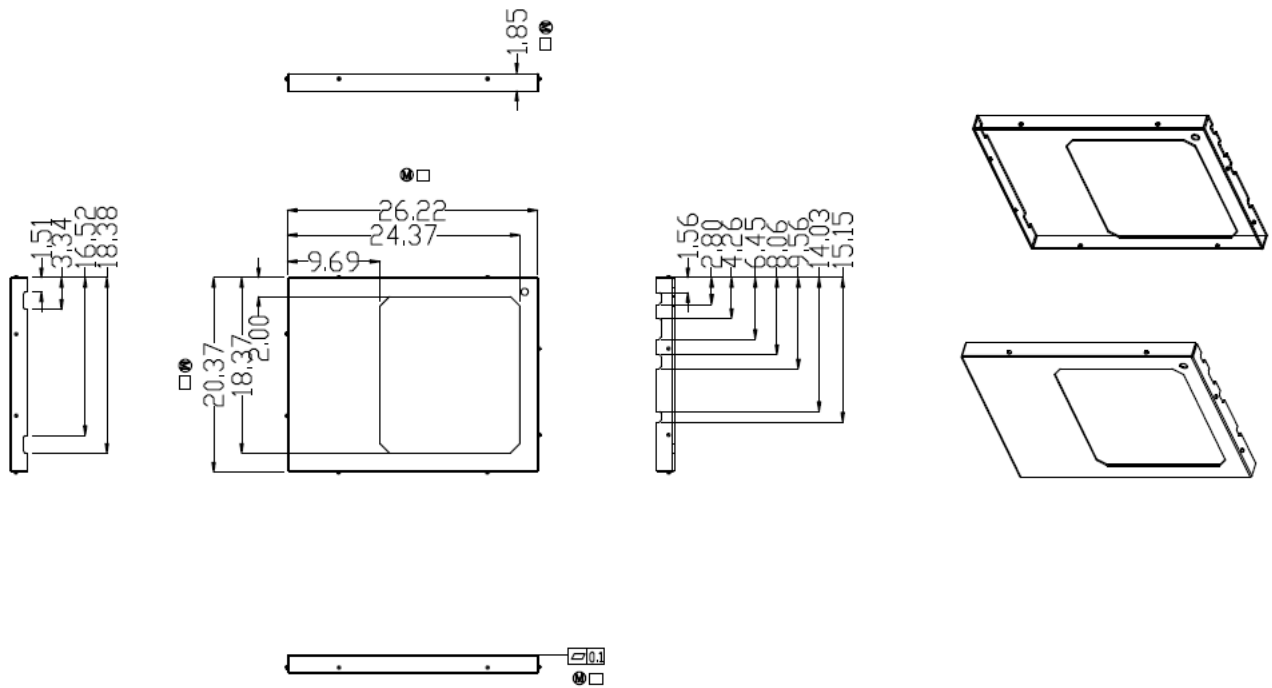
No.	Item	Vendor #1		Vendor #2
1	PWB Supplier	APCB		PIOTEK
2	ID Mark	323K380024YD (module)	323K381022YD (antenna)	323K380024AD (module) 323K381022AD (antenna)
3	PWB Supplier UL File No.	E85792	E85792	E220370
4	PWB Material Supplier	GRACE	Nanya	Nanya
5	PWB Material	GA-HF-15	NPG-150N	NPG-150N
6	PWB Material Supplier UL File No.	E186152	E98983	E98983
7	Flame Class	94V-0	94V-0	94V-0
8	Rated Temperature (Max Operation Temp.)	TG-150	TG-150	TG-150

**1.6 SHIELDING**

COVER:



**Frame:**



**NOTE:**

1. THICKNESS OF MATERIAL :洋白銅 T=0.15MM
2. MARKED □ IS CONTROL DIMENSIONS AND CTF ITEMS
3. MARKED Ⓚ IS THE CRITICAL DIMENSION

**1.7 PIN CONFIGURATION**

Pin	UART version 10Pin		
	Name	Type	Description
1	GND	-	Ground
2	DM	I/O	USB Data -
3	DP	I/O	USB Data +
4	RST_L	I	Ground
5	SYNC	O	SYNC Signal GPIO11(MT7662RU Pin44)
6	VCC	PWR	3.3V
7	VCC	PWR	3.3V
8	GND	-	Ground

## 1.8 WARNINGS

### **FCC Statement:**

#### 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 with any other transmitters except in accordance with FCC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without C2P.

This device is restricted for indoor use.

**IMPORTANT NOTE:**

**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 20 cm between the radiator & your body.

**IMPORTANT NOTE:**

This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.

Additional testing and certification may be necessary when multiple modules are used.

20 cm 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 20 cm 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: PPQ-WCBN4506R ". 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.



**IC Statement:**

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.

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.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with IC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without reassessment permissive change.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.

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 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 specified for point-to-point and non-point-to-point operation as appropriate.

le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 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.

Dynamic Frequency Selection (DFS) for devices operating in the bands 5250- 5350 MHz, 5470-5600 MHz and 5650-5725 MHz.

Sélection dynamique de fréquences (DFS) pour les dispositifs fonctionnant dans les bandes 5250-5350 MHz, 5470-5600 MHz et 5650-5725 MHz.

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 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.

Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

For indoor use only.

Pour une utilisation en intérieur uniquement.

**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 20 cm 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 20 cm de distance entre la source de rayonnement et votre corps.

This radio transmitter (IC: 4491A-WCBN4506R) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 4491A-WCBN4506R) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Table for Filed Antenna

Set	Ant.	Brand Holder	Model Name	Antenna Type	Connector	Remark
1	1	SONY corporation	WCBN4506R	PIFA Antenna	N/A	Only for EUT 2 WiFi use
	2	SONY corporation	WCBN4506R	PIFA Antenna	N/A	Only for EUT 2 WiFi use
2	3	SONY corporation	WCBN4506R	Dipole Antenna	I-PEX	For EUT 1 WiFi and BT use For EUT 2 BT use
	4	SONY corporation	WCBN4506R	Dipole Antenna	I-PEX	For EUT 1 WiFi and BT use For EUT 2 BT use
3	5	Waka manufacturing Co.,Ltd.	01S1072-00	Dipole Antenna	I-PEX	Only for EUT 1 WiFi use
	6	Waka manufacturing Co.,Ltd.	01S1072-00	Dipole Antenna	I-PEX	Only for EUT 1 WiFi use

Set	Ant.	Gain (dBi)						Cable Length [mm]
		BT-2.4GHz	WiFi-2.4GHz	WiFi-5GHz Band 1	WiFi-5GHz Band 2	WiFi-5GHz Band 3	WiFi-5GHz Band 4	
1	1	-	0.71	1.81	1.81	2.14	1.8	N/A
	2	-	0.13	0.72	1.78	2.12	1.67	N/A
2 Note1	3	1.61	1.61	2.13	2.13	2.31	2.68	100-910mm Note2
	4	1.61	1.61	2.13	2.13	2.31	2.68	100-910mm Note2
3 Note1	5	-	2.06	2.41	2.87	1.89	2.7	90mm
	6	-	2.06	2.41	2.87	1.89	2.7	90mm

Note: 1. Gain with cable loss





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.

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 20 cm 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. 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 : 4491A-WCBN4506R ".

**Japan Statement:**

5GHz product for indoor use only.

**CE Statement:**

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.

**NCC 警語:**

經型式認證合格之低功率射頻電機，非經許可，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。

低功率射頻電機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。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機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。