Manual
For
11n Wireless LAN CARD
11N 無線網卡

Model Number : WMP-ND02

1.0 Scope

1.1 Document

This document is to specify the product requirements for **802.11n Draft 2.0 Mini PCI**. This mPCI is based on Ralink chipset that complied with complied with IEEE 802.11n Draft 2.0, and it is also backward complied with IEEE 802.11a standard from 5.15~5.850GHz(upon every contries to use different frequencies) wideband and IEEE 802.11b/g standard from 2.4-2.4835GHz. It can be used to provide up to 54Mbps for IEEE 802.11a and IEEE 802.11g , 11Mbps for IEEE 802.11b and 300Mbps for IEEE 802.11n to connect your wireless LAN.

1.2 Product Features

Ÿ   A WLAN intelligent NIC solution to a host SOC platform

Ÿ   High performance 266 MHz MIPS4Kec CPU inside

Ÿ   Compatible with IEEE 802.11g high rate standard to provide wireless 54Mbps data rate

Ÿ   Compatible with IEEE 802.11a standard to provide wireless 54Mbps data rate

Ÿ   Compatible with IEEE 802.11b high rate standard to provide wireless 11Mbps data rate

Ÿ   Compatible with IEEE 802.11n draft standard to provide wireless 300Mbps data rate

Ÿ   Operation at 2.4 ~ 2.4835GHz and 5.15 ~ 5.850GHz (upon every contries to use different frequencies) frequency band to meet worldwide regulations

Ÿ   Dynamic date rate scaling at 6, 9, 12, 18, 24, 36, 48, 54Mbps for IEEE 802.11a and IEEE 802.11g

Ÿ   Dynamic date rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b

Ÿ   Dynamic date rate of IEEE 802.11n scaling from MCS – 0 to MCS –15 as shown in Appendix I

Ÿ   Supports wireless data encryption with 64/128 bit WEP for security

Ÿ   Support WPA and WPA2 enhanced security

Ÿ   Drivers support   Linux 2.4.6

Ÿ   RoHS complaint

2.0 Requirements

The following sections identify the detailed requirements of the **802.11n Draft 2.0 mPCI.**

2.1 Functional Block Diagram
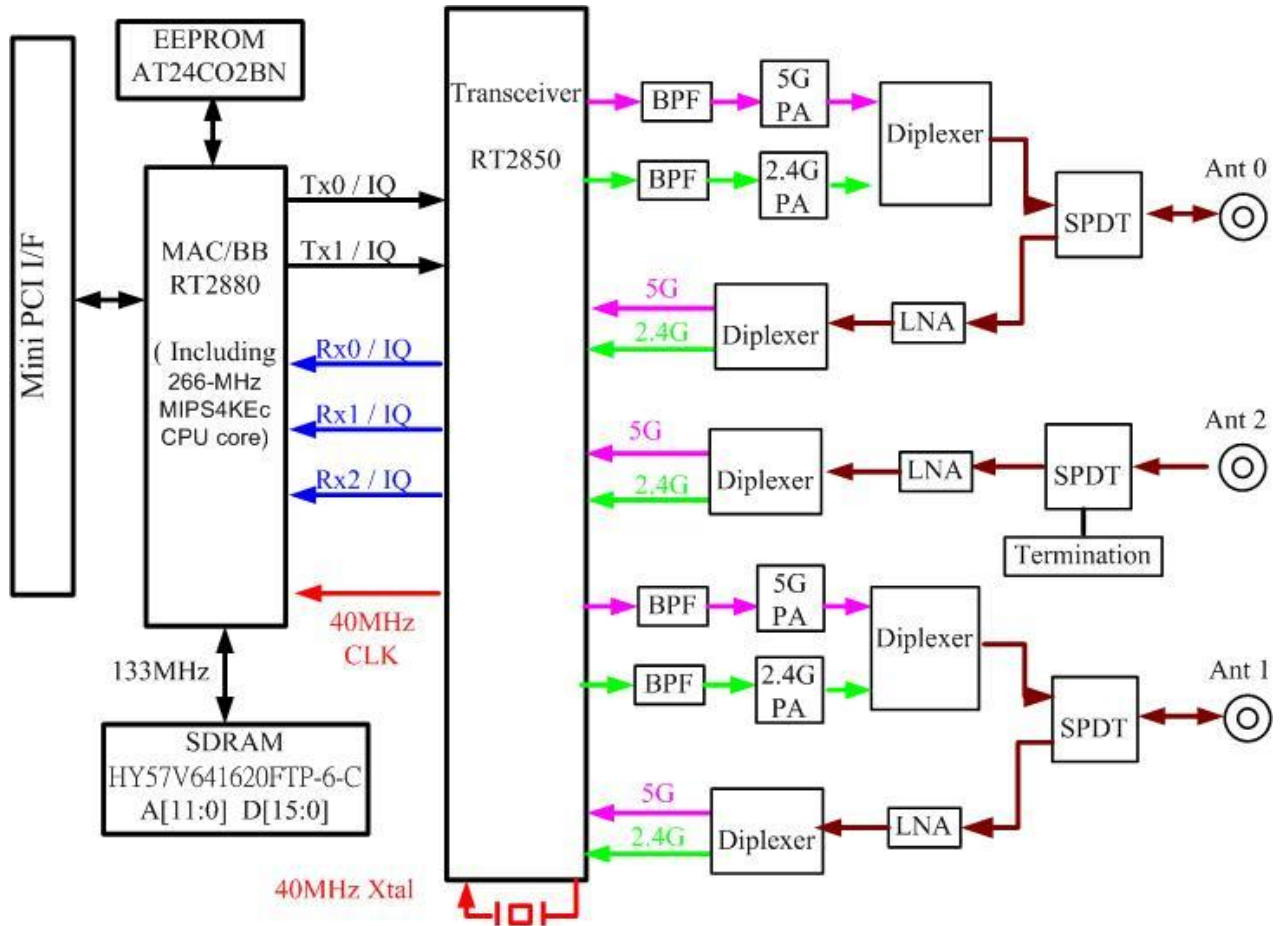
2.2 General Requirements

2.2.1 IEEE 802.11a Section

#	Feature	Detailed Description
2.2.1.1	Standard	Ÿ IEEE 802.11a
2.2.1.2	Radio and Modulation Type	Ÿ BPSK, QPSK, 16QAM, 64QAM with OFDM
2.2.1.3	Operating Frequency	Ÿ 5.15 ~ 5.25GHz. , 5.725~5.850 GHz for US and Canada Ÿ 5.25 ~ 5.35GHz. , 5.725~5.850 GHz for Taiwan Ÿ 5.15 ~ 5.35GHz and 5.47~5.725GHz for Japan Ÿ 5.15 ~ 5.35GHz and 5.47 ~ 5.725GHz for Europe Ÿ 5.725~5.850GHz for China
2.2.1.4	Channel Numbers	Ÿ 9 channels for US Ÿ 8 channels for Taiwan
2.2.1.5	Data Rate	Ÿ 6,9,12,18,24,36,48,54Mbps

#	Feature	Detailed Description
2.2.1.6	Media Access Protocol	Ÿ CSMA/CA with ACK
2.2.1.7	Transmitter Output Power at Antenna Connector	Ÿ Maximum to 23.15dBm
2.2.1.8	Receiver Sensitivity at Antenna Connector	Ÿ Typical Sensitivity at each RF chain. Frame (1000-byte PDUs) Error Rate <10% at room Temp. 25degree C and 3.3V Ÿ −88dBm at 6Mbps Ÿ −87dBm at 9Mbps Ÿ −86dBm at 12Mbps Ÿ −84dBm at 18Mbps Ÿ −82dBm at 24Mbps Ÿ −78dBm at 36Mbps Ÿ −72dBm at 48Mbps Ÿ −71dBm at 54Mbps

2.2.2 IEEE 802.11b Section

#	Feature	Detailed Description
2.2.2.1	Standard	Ÿ IEEE 802.11b
2.2.2.2	Radio and Modulation Schemes	Ÿ DQPSK, DBPSK, DSSS, and CCK
2.2.2.3	Operating Frequency	Ÿ 2400 ~ 2483.5MHz ISM band
2.2.2.4	Channel Numbers	Ÿ 11 channels for United States and Canada and Taiwan 13 channels for Europe Countries 14 channels for Japan
2.2.2.5	Data Rate	Ÿ 11, 5.5, 2, and 1Mbps
2.2.2.6	Media Access Protocol	Ÿ CSMA/CA with ACK
2.2.2.7	Transmitter Output Power	Ÿ Maximum to 21.28dBm
2.2.2.8	Receiver Sensitivity	Ÿ Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 8% at room Temp. 25degree C and 3.3V Ÿ −90dBm at 1Mbps Ÿ −90dBm at 2Mbps Ÿ −88dBm at 5.5Mbps Ÿ −85dBm for 11Mbps

2.2.3 IEEE 802.11g Section

#	Feature	Detailed Description
2.2.3.1	Standard	Ÿ IEEE 802.11g
2.2.3.2	Radio and Modulation Type	Ÿ BPSK, QPSK, 16QAM, 64QAM with OFDM
2.2.3.3	Operating Frequency	Ÿ 2400 ~ 2483.5MHz ISM band
2.2.3.4	Channel	Ÿ 11 channels for United States and Canada and Taiwan

#	Feature	Detailed Description
	Numbers	13 channels for Europe Countries 13 channels for Japan
2.2.3.5	Data Rate	Ÿ 6,9,12,18,24,36,48,54Mbps
2.2.3.6	Media Access Protocol	Ÿ CSMA/CA with ACK
2.2.3.7	Transmitter Output Power	Ÿ Maximum to 24.81dBm
2.2.3.8	Receiver Sensitivity	Ÿ Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 10% at room Temp. 25degree C and 3.3V Ÿ −90dBm at 6Mbps Ÿ −88dBm at 9Mbps Ÿ −85dBm at 12Mbps Ÿ −83dBm at 18Mbps Ÿ −80dBm at 24Mbps Ÿ −76dBm at 36Mbps Ÿ −73dBm at 48Mbps Ÿ −72dBm at 54Mbps

2.2.4 IEEE 802.11n Section

#	Feature	Detailed Description
2.2.4.1	Standard	Ÿ IEEE 802.11n
2.2.4.2	Radio and Modulation Type	Ÿ BPSK, QPSK, 16QAM, 64QAM with OFDM
2.2.4.3	Operating Frequency	Ÿ 2.4 ~ 2.4835GHz, 5.15 ~ 5.25GHz. , 5.725~5.850 GHz for US and Canada Ÿ 2.4 ~ 2.4835GHz, 5.25 ~ 5.35GHz. , 5.725~5.850 GHz for Taiwan Ÿ Ÿ 2.4 ~ 2.4835GHz, 5.15 ~ 5.35GHz and 5.47~5.725GHz for Japan Ÿ 2.4 ~ 2.4835GHz, 5.15 ~ 5.35GHz and 5.47 ~ 5.725GHz for Europe Ÿ 2.4 ~ 2.4835GHz, 5.725~5.850GHz for China
2.2.4.4	Channel Numbers	Ÿ United States: For 15.247(2.4GHz) 11 for draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) For 15.247(5GHz) 5 for draft 802.11n (20MHz) 2 for draft 802.11n (40MHz) Ÿ Taiwan: For 2.4GHz 11 for draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) For 5GHz 8 for draft 802.11n (20MHz) 3 for draft 802.11n (40MHz)
2.2.4.5	Data Rate	Ÿ From MCS − 0 to MCS −15 as shown in Appendix I
2.2.4.6	Media Access	Ÿ CSMA/CA with ACK

#	Feature	Detailed Description
	Protocol	
2.2.4.7	Transmitter Output Power	Ÿ　Maximum to 27.4dBm
2.2.4.8	Receiver Sensitivity	Ÿ　Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 10% at room Temp. 25degree C and 3.3V HT20 Ÿ　−87dBm at MCS0 Ÿ　−85dBm at MCS1 Ÿ　−82dBm at MCS2 Ÿ　−78dBm at MCS3 Ÿ　−76dBm at MCS4 Ÿ　−72dBm at MCS5 Ÿ　−70dBm at MCS6 Ÿ　−69dBm at MCS7 HT40 Ÿ　−84dBm at MCS0 Ÿ　−81dBm at MCS1 Ÿ　−79dBm at MCS2 Ÿ　−75dBm at MCS3 Ÿ　−73dBm at MCS4 Ÿ　−68dBm at MCS5 Ÿ　−66dBm at MCS6 Ÿ　−65dBm at MCS7

2.3 General Section

#	Feature	Detailed Description
2.3.1.1	Antenna Connector	Ÿ　Three UFL antenna connectors
2.3.1.2	Operating Voltage	Ÿ　3.3VDC +/- 5%
2.31.3	Current Consumption	Ÿ　1000mA at continuous transmit mode (2 Tx chains on) Ÿ　650mA at continuous receive mode (3 Rx chains on)
2.3.1.4	Form Factor and Interface	Ÿ　Mini-PCI form factor
2.3.1.5	LEDs	Ÿ　External LED function supported

2.4 Software Requirements

The Configuration Software supports Linux2.4.6. This configuration software includes the following functions:

Ÿ　**Information**
Information allows you to monitor network status.

Ÿ　**Configuration**
Configuration allows you to configure parameters for wireless networking.

Ÿ　**Security**
Supports enhanced security WEP, 802.1x, WPA and WPA2.

2.4.1 Information

#	Feature	Detailed Description
2.4.1.1	General Information	Ÿ　General Information shows the name of Wireless Adapter, Adapter MAC Address, Regulatory Domain, Firmware Version, and

#	Feature	Detailed Description
		Utility Version.
2.4.1.2	Current Link Information	Ÿ Current Link Information shows the Current Setting ESSID, Channel Number, Associated BSSID, Network Type, Security Status, Link Status, Transmit Speed, Signal Strength, and Link Quality.
2.4.1.3	Site survey	Ÿ To search the neighboring access points and display the information of all access points.

2.4.2 Configuration

#	Feature	Detailed Description
2.4.2.1	ESS ID	Ÿ Input an SSID number if the roaming feature is enabled Ÿ Supports for ASCII printable characters.
2.4.2.2	Network Type	Ÿ Ad-hoc Mode and 802.11 Ad-hoc Mode for network configurations that do not have any access points Ÿ Infrastructure Mode for network configurations with access points
2.4.2.3	Power Save	Ÿ Extend the battery life of clients by allowing the client to sleep for short periods of time while the Access Point buffers the messages.
2.4.2.4	RTS Threshold	Ÿ Set the number of bytes used for fragmentation boundary for messages
2.4.2.5	Fragment Threshold	Ÿ Set the number of bytes used for RTS/CTS boundary
2.4.2.6	Transmission Speed	Ÿ This indicates the communication rates. Select appropriate transmission speed to match your wireless LAN settings
2.4.2.7	Roaming	Ÿ Support Automatic or Manual Rescan to associate with access point.

2.4.3 Security

#	Feature	Detailed Description
2.4.3.1	Encryption	Ÿ RC4 encryption algorithm Ÿ Support 64-bit and 128-bit WEP encryption Ÿ Support open system (OSA) and shared key authentication (SKA)
2.4.3.2	WEP Management	Ÿ Four WEP keys can be selected Ÿ STA with WEP off will never associate any AP with WEP enabled Ÿ WEP Key Format: Option for Hex format
2.4.3.3	802.1x	Ÿ Support EAP-TLS, EAP-TTLS, and EAP-PEAP
2.4.3.4	WPA/WPA2	Ÿ Support WPA/WPA2-PSK and WPA/WPA2-EAP Ÿ Support Cipher Mode AES and TKIP

2.5 Mechanical Requirements

#	Feature	Detailed Description
2.5.1	Length	Ÿ 57.64mm(max)
2.5.2	Width	Ÿ 59.60mm(+-0.25)
2.5.3	Height	Ÿ 6mm(+-0.2.5)

2.6 Compatibility Requirements

This device passes the following compatibility requirements.

#	Feature	Detailed Description
2.6.1	Wi-Fi	Ÿ Meet Wi-Fi certification for IEEE 802.11a/b/g/n product
2.6.2	WHQL	Ÿ Meet applicable WHQL certification requirements
2.6.3	Physical Layer and Functionality	Ÿ Meet ALPHA Engineering Test Plan and Test Report

2.7 Requirements of Reliability, Maintainability and Quality

#	Feature	Detailed Description
2.7.1	MTBF	Ÿ Mean Time Between Failure > 30,000 hours
2.7.2	Maintainability	Ÿ There is no scheduled preventive maintenance required
2.7.3	Quality	Ÿ The product quality is followed-up by ALPHA factory quality control system

2.8 Environmental Requirements

#	Feature	Detailed Description
2.8.1	Operating Temperature Conditions	Ÿ The product is capable of continuous reliable operation when operating in ambient temperature of 0 ℃ to +45℃.
2.8.2	Non-Operating Temperature Conditions	Ÿ Neither subassemblies is damaged nor the operational performance is degraded when restored to the operating temperature after exposing to storage temperature in the range of –20 ℃ to +75 ℃.
2.8.3	Operating Humidity conditions	Ÿ The product is capable of continuous reliable operation when subjected to relative humidity in the range of 10% and 90% non-condensing.
2.8.4	Non-Operating Humidity Conditions	Ÿ The product is not damaged nor the performance is degraded after exposure to relative humidity ranging from 5% to 95% non-condensing

Appendix I:

Rate Dependent Parameters for High Throughput . Modulation and Coding Schemes (MCS)

Table 1 - Modulation and Coding Schemes

Bits 0-6 in HT-SIG1 (MCS index)	Number of spatial streams	Modulation	Coding rate	N_{ES} 20	N_{ES} 40	N_{SD} 20	N_{SD} 40	N_{CBPS} 20MHz	N_{CBPS} 40MHz	GI = 800ns Rate in 20MHz	GI = 800ns Rate in 40MHz	GI = 400ns Rate in 20MHz	GI = 400ns Rate in 40MHz
0	1	BPSK	½	1	1	52	108	52	108	6.5	13.5	7 2/9	15
1	1	QPSK	½	1	1	52	108	104	216	13	27	14 4/9	30
2	1	QPSK	¾	1	1	52	108	104	216	19.5	40.5	21 2/3	45
3	1	16-QAM	½	1	1	52	108	208	432	26	54	28 8/9	60
4	1	16-QAM	¾	1	1	52	108	208	432	39	81	43 1/3	90
5	1	64-QAM	⅔	1	1	52	108	312	648	52	108	57 7/9	120
6	1	64-QAM	¾	1	1	52	108	312	648	58.5	121.5	65	135
7	1	64-QAM	5/6	1	1	52	108	312	648	65	135	72 2/9	150
8	2	BPSK	½	1	1	52	108	104	216	13	27	14 4/9	30
9	2	QPSK	½	1	1	52	108	208	432	26	54	28 8/9	60
10	2	QPSK	¾	1	1	52	108	208	432	39	81	43 1/3	90
11	2	16-QAM	½	1	1	52	108	416	864	52	108	57 7/9	120
12	2	16-QAM	¾	1	1	52	108	416	864	78	162	86 2/3	180
13	2	64-QAM	⅔	1	1	52	108	624	1296	104	216	115 5/9	240
14	2	64-QAM	¾	1	1	52	108	624	1296	117	243	130	270
15	2	64-QAM	5/6	1	1	52	108	624	1296	130	270	144 4/9	300

The parameters in the table are:

- ■ Rate: Rate in Mbps
- ■ NES: Number of FEC encoders used
- ■ NSD: Number of Data Subcarriers
- ■ NCBPS: Number of Code Bits Per Symbol (total of all spatial streams)
- ■ NSS: Number of   Spatial Streams

Test Equipment/測試設備列表

English

NO.	EQUIPMENT	Q'TY
1	IQ-View	1
2	Shielded Box (530 * 280 *160 mm) made of Copper	1
3	Splitter (1 * 3)	1
4	RF CABLE	4
5	PC (with monitor)	1
7	USB 2.0 / PCI / MINI PCI / CARD BUS Interface	1
8	Test connect (HIROSE / IPEX)	3
9	Fixed Attenuator (20dB)	1
10	Power supply	1

中文

項次.	設備名稱	數量
1	IQ-View	1
2	隔離箱 (530 * 280 *160 mm) made of Copper	1
3	分配器(1 * 3)	1
4	RF 線	4
5	PC (with monitor)	1
6	PCI GPIB 控制卡 或 USB GPIB 控制卡	1
7	USB 2.0 / PCI / MINI PCI / CARD BUS Interface	1
8	測試接頭(HIROSE / IPEX)	3
9	固定式衰減器(20dB)	1
10	電源供應器	1

Test Environment Diagram/測試環境圖示

power supply 3.3V

Splitter (1 對 3)

DUT (Board)

Ant

IP: 192.168.100.254

Shielded Enclosure

PC

192.168.100.x

RF cable

RJ 45

power line
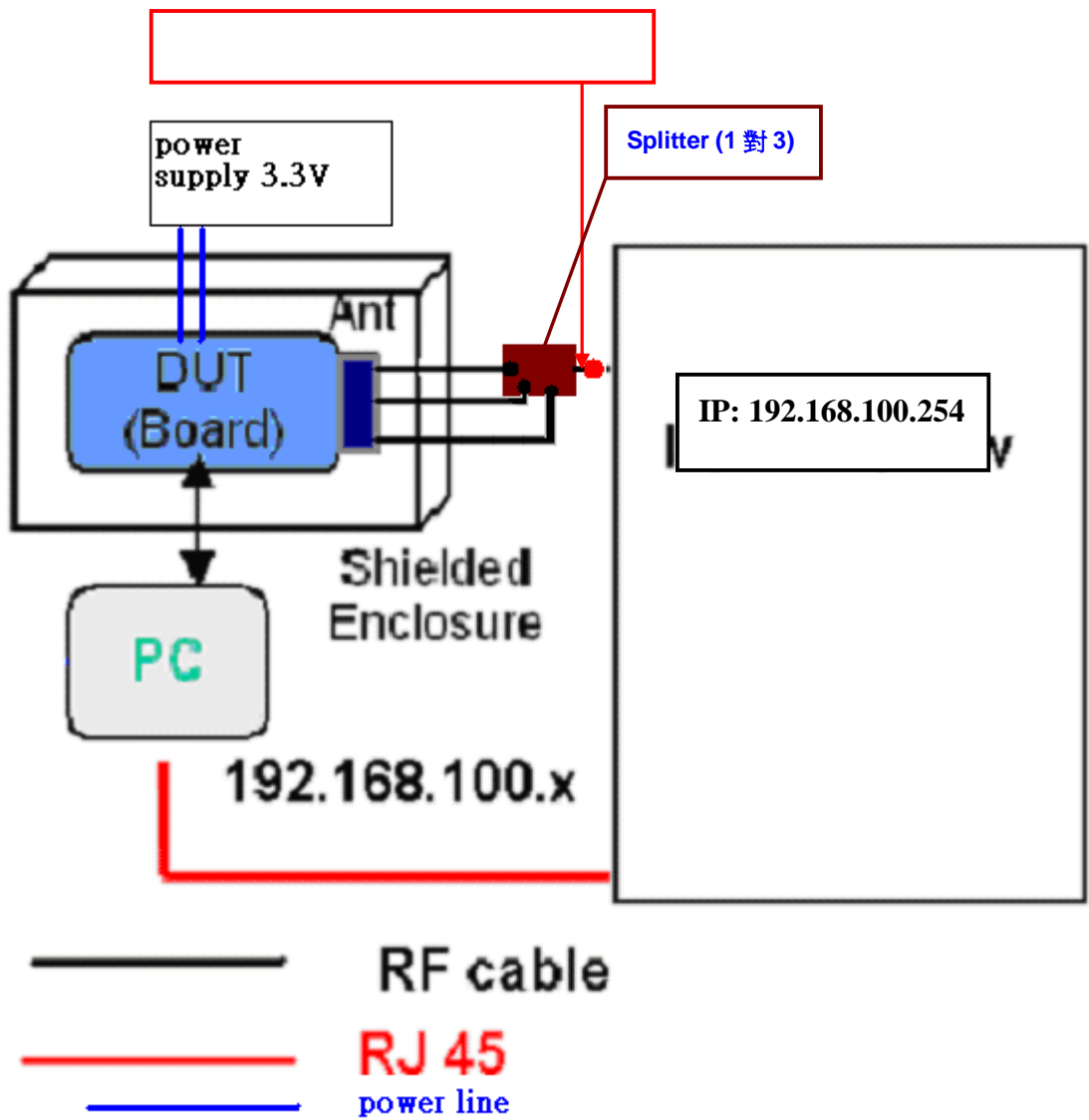
（**Note：For IQ-View / IQ-Flex**）

Normal Test Operating Procedure/一般作業用測試操作程序

1. Testing Steps: 6 steps in total
1. 測試步驟: 共 6 個步驟
註 1:測試前請先安裝待測物之 driver.
註 2:測試前請先依照附錄(Test Programming Setup & Test Program Install step / 測試程式設定和測試環境架設說明)設定
[Step 1] Run "ATEToolRT28xx" at DUT (see Figure 1) to open test window (see Figure 2).
[步驟 1] 執行 DUT 端上的"ATEToolRT28xx"(如圖 1)開啓如圖 2 測試畫面。

(Figure 1)

(Figure 2)

ALPHA
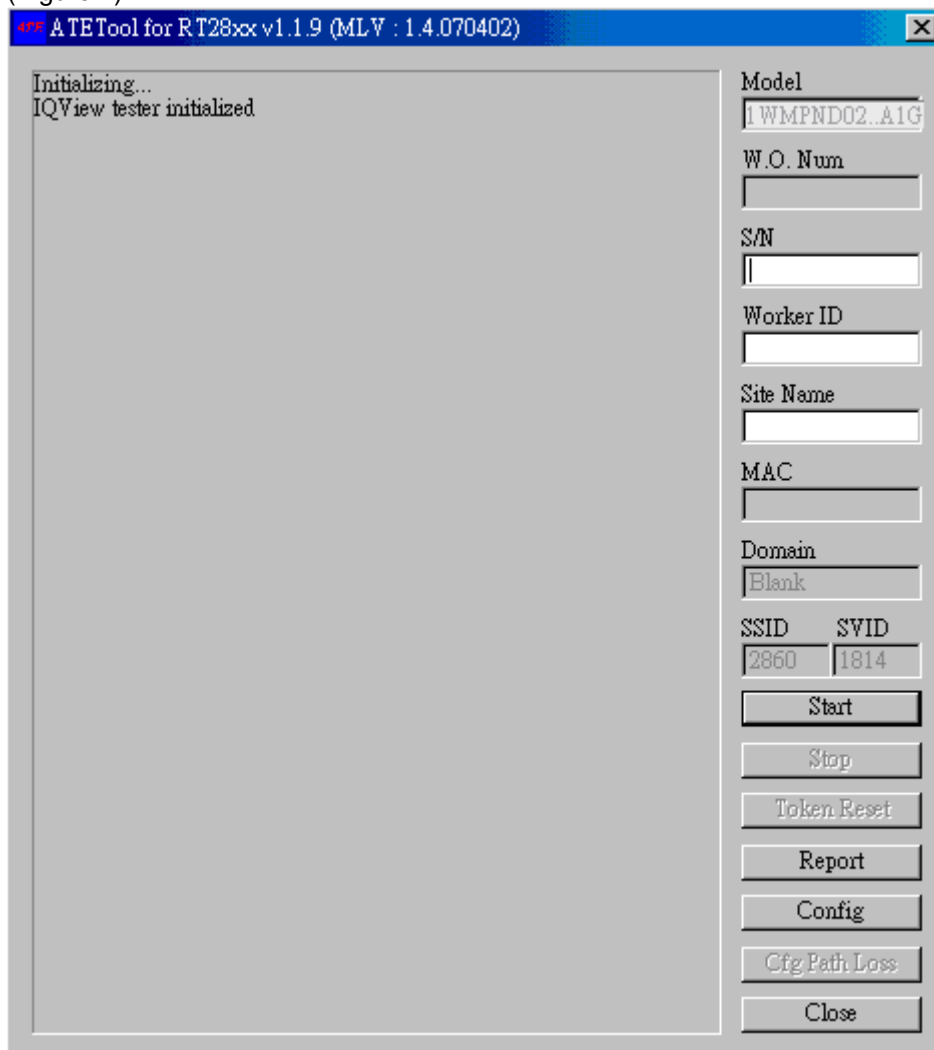
[Step 2] Select test model, Then Kevin W.O Number and Serial number and Worker ID and Site Name.
(see Figure 3)

[步驟 2] 選取測試 Model 並鍵入工單號碼及 Serial Number 和測試人員及測試站別(如圖 3)

(Figure 3)

選取測試 Model

鍵入工單號碼及 Serial Numb
和測試人員及測試站別

ALPHA
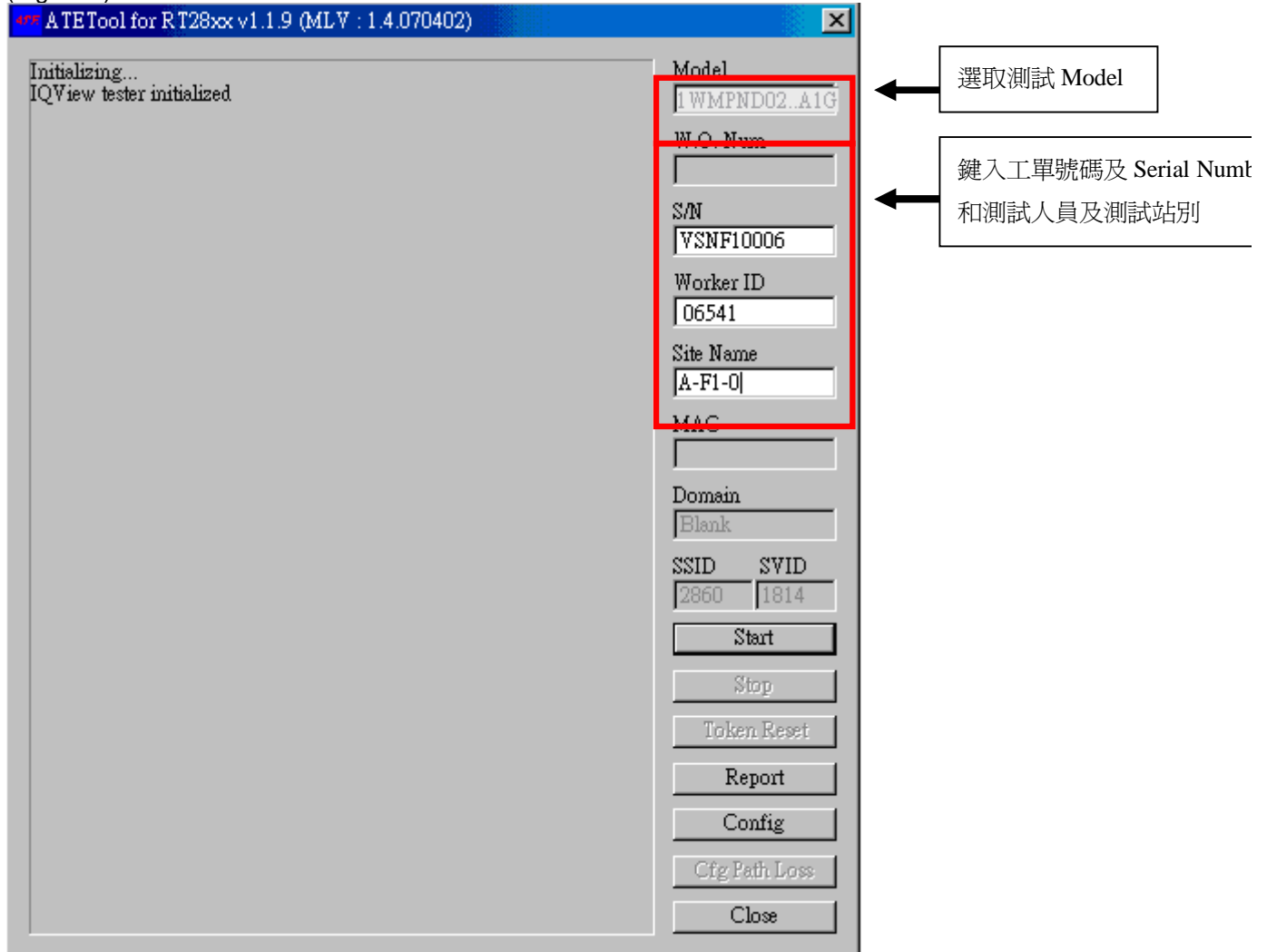
[Step 3] (a) Plug DUT into USB 2.0 / PCI / MINI PCI / CARD BUS Interface
(b) Plug RF Cable on DUT antenna point. **(MAIN)**

[步驟 3] (a) 將待測物插入 USB 2.0 / PCI / MINI PCI / CARD BUS Interface 介面。
(b) 將待測物接上測試線於天線端。**(MAIN)**

[Step 4] Click "START" to begin test. (See Figure 4)
[步驟 4] 按下"STRAT"開始測試(如圖 4)。

(Figure 4)

15
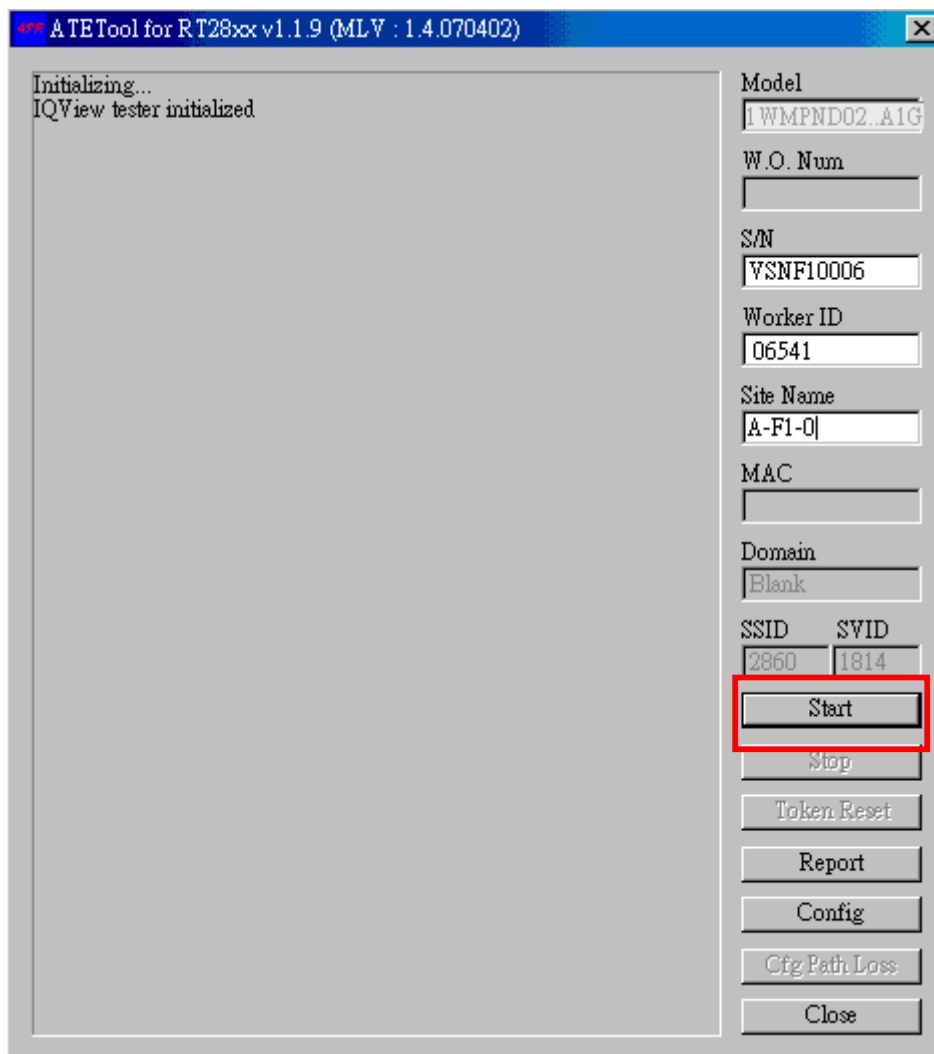
[Step 5] When test finish, it will show "PASS"(see Figure 5).
[步驟 5] 當測試完成,會出現"PASS"的視窗(圖 5)。

(Figure 5)
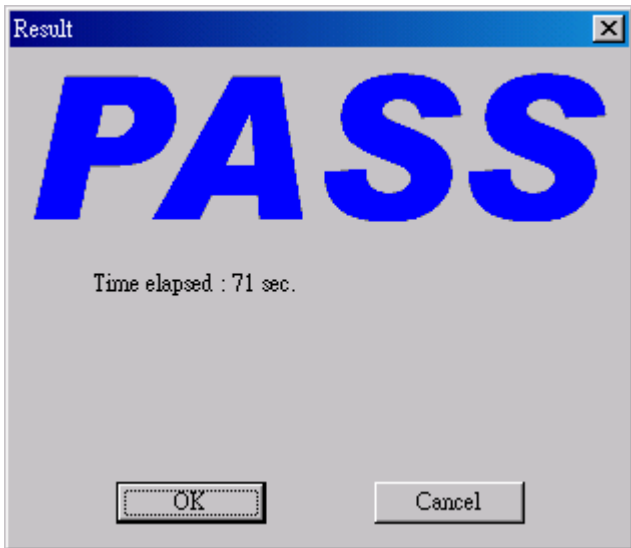
[Step 6] When show "PASS", click "OK" and change the next one to continue
[步驟 6] 出現 PASS 畫面,按 OK 鍵並換下一片繼續[步驟 2]到[步驟 5]。

Test Program setup / 測試程式設定

[步驟 1] 按下程式中"Config"選項 (如圖 1)，並輸入密碼 "**admin(測試用)**"。
(如圖 2)
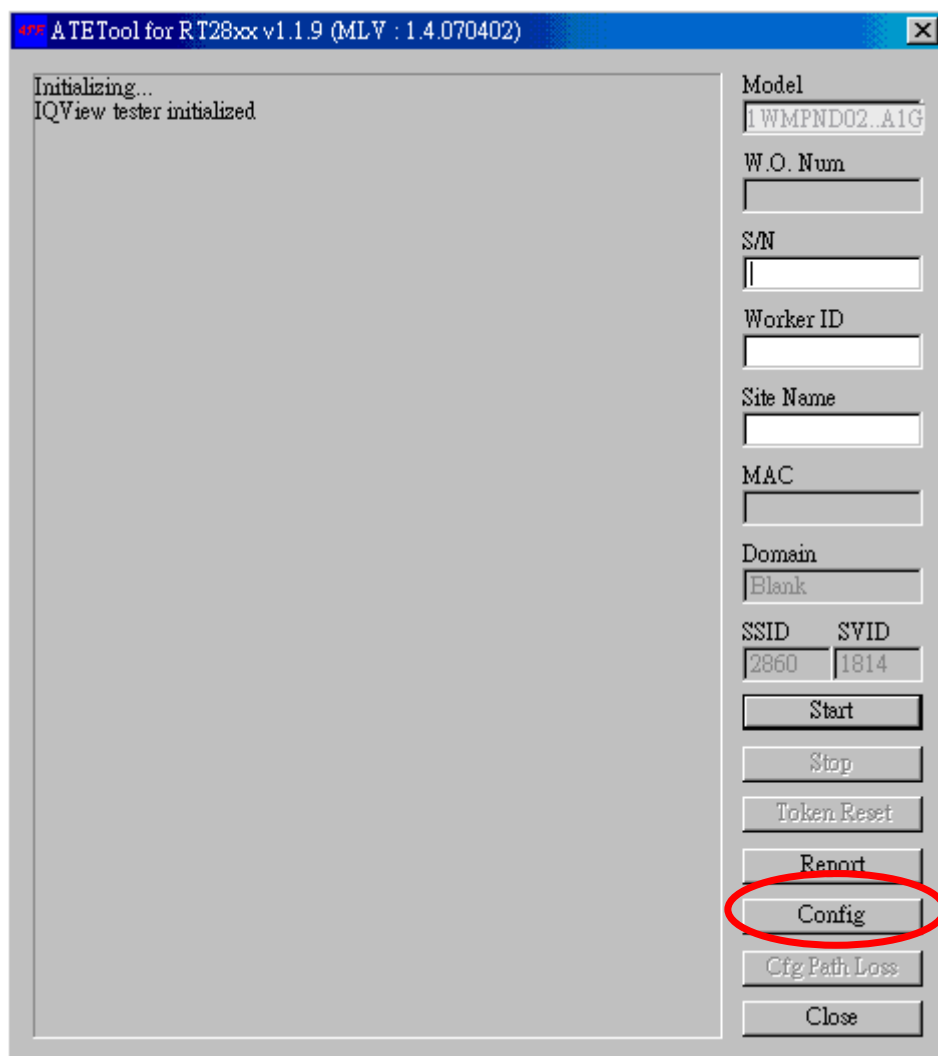
(Figure 1)

(Figure 2)
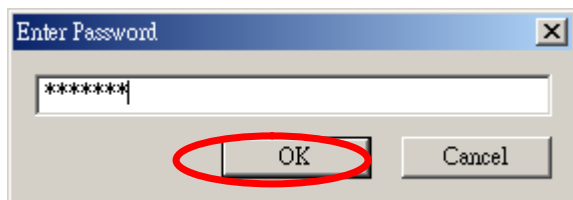
[步驟 2] 仿照以下圖形及數據去設定程式，完成後按下"ok"

註 1: 請 Import 檔案(1WMPND02..A1G.ini)進來,一樣可完成參數設定

註 2: Tx Power Calibration(11g)(Path Loss 請依當時 Cable loss 填入)

註 3: **Local IP 與 Server IP** 請依照產線電腦 **IP** 及產線 **SFCS Server** 設定

Test Program Install step / 測試環境架設說明

1.將測試設備接線完畢

2.準備乾淨的 **windowsXP** 環境

3.將測試程式複製至資料夾中

4.安裝測試程式資料夾內的 **ANIO Protocol Driver** 資料夾裡所附的 **ANIO.exe**

5.安裝待測物網卡的驅動程式

6.Calibration 測試環境,測試時加入一衰減器 **20dB** 測試.

7.開始進行測試

ALPHA

<div align="center">

Federal Communication Commission Interference Statement

</div>

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.

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.

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 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

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

1)   The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2)   The transmitter module may not be co-located with any other transmitter or antenna,

3)   For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are 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 (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not 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 FCC 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 FCC ID: RRK-WMPND02A1".

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.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada Rules. 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

This device has been designed to operate with an antenna having a maximum gain of 3.21dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

Caution:

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

Because high power radars are allocated as primary users (meaning they have priority) in 5250-5350 MHz and 5650-5850 MHz, these radars could cause interference and/or damage to license exempt LAN devices.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC 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.

以下警語適用台灣地區：

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。

在 5.25-5.35 秭赫(GHz)頻帶內操作之無線資訊傳輸設備，限於室內使用。

本模組於取得認證後將依規定於模組本體標示審合格籤，並要求平台上標示「本產品內含射頻模組：ID 編號」