User Manual

PRODUCT NAME :   Dual Band 2T2R MIMO Wi-Fi Module

MODEL NAME   :   TWFM-L006D

LG Innotek		
REG. DATE : 2013.12.13	**User Manual**	REV.NO : 1.0
REV. DATE : 2013.12.13	MODEL NAME : **TWFM-L006D**	PAGE : 1 / 11

Table of Contents

## 1. Features

TWFM-L006D is the module for IEEE 802.11a/b/g/n wireless LAN. TWFM-L006D is based on MTK RT5572 solution.

- IEEE 802.11 a/b/g/n Dual Band WLAN infrastructure
- Size : 40mm x46.5mm x 8.25mm
- 2.4GHz and 5GHz, internal PA and LNA
- Two stream spatial multiplexing up to 300Mbps
- Metal Press Antenna
- Use on-chip OTP (One-Time Programmable)
- USB 2.0
- Supports drivers for Linux, Windows
- Security : WPA,WPA2,AES(TKIP) ,IEEE 802.1X
- Application: DTV, DVR, HD DVD Player, Blue-ray Disk Player, STB

2. Module Photo
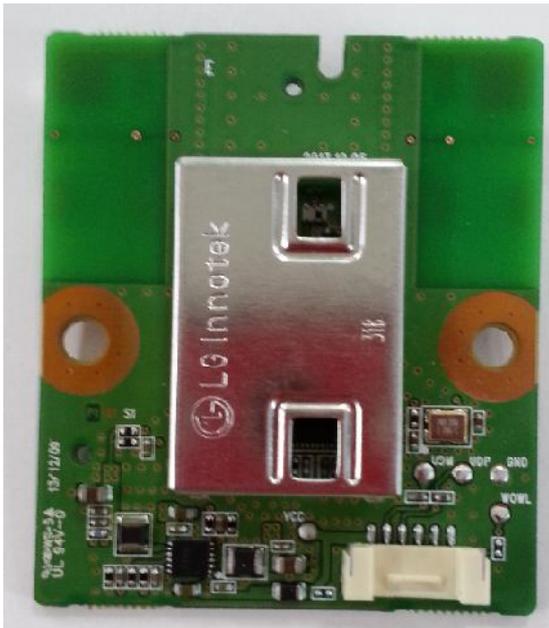
3. Block Diagram
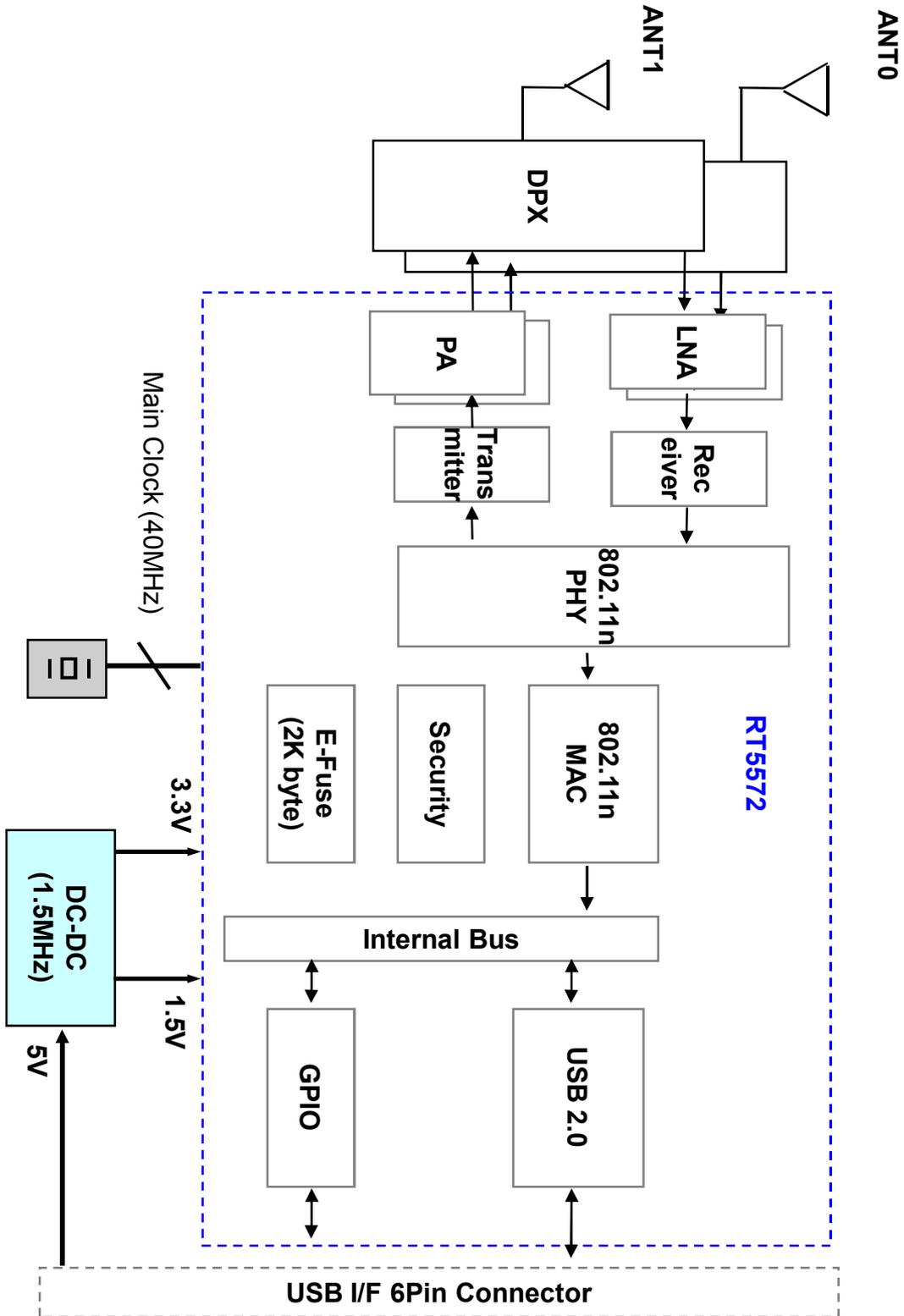
4. Storage Test Conditions

Parameter	Min	Max	Unit
Storage Temperature	-20	+80	℃
Storage Humidity (@ 40℃)	-	90	%

Caution : The specifications above the Table define levels at which permanent damage to the device can occur. Function operation is not guaranteed under these conditions. Operating at absolute maximum conditions for extend periods can adversely affect the long-term reliability of the device.

• Other conditions
  1) Do not use or store modules in the corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are contained.
    Also, avoid exposure to moisture.
  2) Store the modules where the temperature and relative humidity do not exceed 5 to 40℃ and 20 to 60%.
  3) Assemble the modules within 6 months.
    Check the soldering ability in case of 6 months over.

5. Operating Test Conditions

Parameter	Min	Typ	Max	Unit
Operating Temperature	0	-	+60	℃
Operating Humidity (40℃)	-	-	85	%
Supply Voltage	4.5	5.0	5.5	Vdc

6. Software Programming

1) Windows Utility
Execute the released windows utility installer.

(1) Run RaUI.exe

< Fig1.1 RaUI icon>

(2) RaUI can co-exist with WZC. When coexisting with WZC, RaUI only provides monitoring functions, such as surveying the link status, network status, static counters, advanced features status, WMM status and WPS status.

< Fig1.2 Select WZC and RaUI>

 (3) When starting RaUI, the system will connect to the AP with best signal strength without setting a profile or matching a profile setting. It will issue a scan command to a wireless NIC. After two seconds, the AP list will be updated with the results of a BSS list scan.
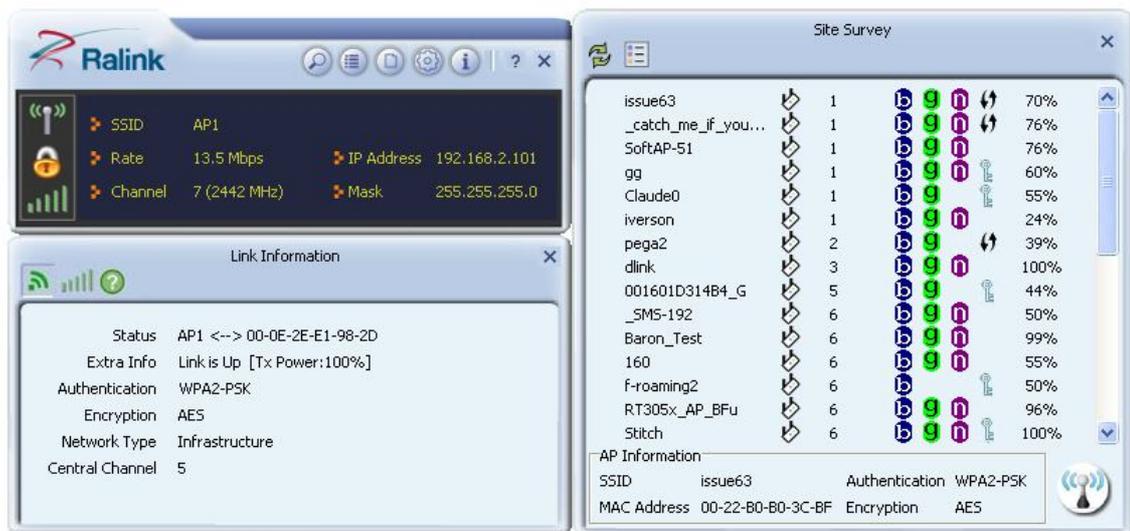
< Fig1.3 RaUI section introduction>

(4) Button section.
- Site survey, Link information, Profile, Advanced, Information, About page.
- Help page.

< Fig1.4 Button section>

(5) When starting RaUI, a small Ralink icon appears in the notifications area of the taskbar, as shown in <Fig1.5>.

 : Indicates the connected and signal strength is good.

 : Indicates the connected and signal strength is normal.

 : Indicates that it is not yet connected.

 : Indicates that a wireless NIC can not be detected.

 : Indicates that the connection and signal strength is weak.

< Fig1.5 Ralink icon in system tray>

* Please refer to the help page in detail usage manual.

2) Linux Device Driver
Before compiling the driver, you should change make file or makefile.inc to meet your target platform.

* Please refer to the release note in detail.

7. Pin Description

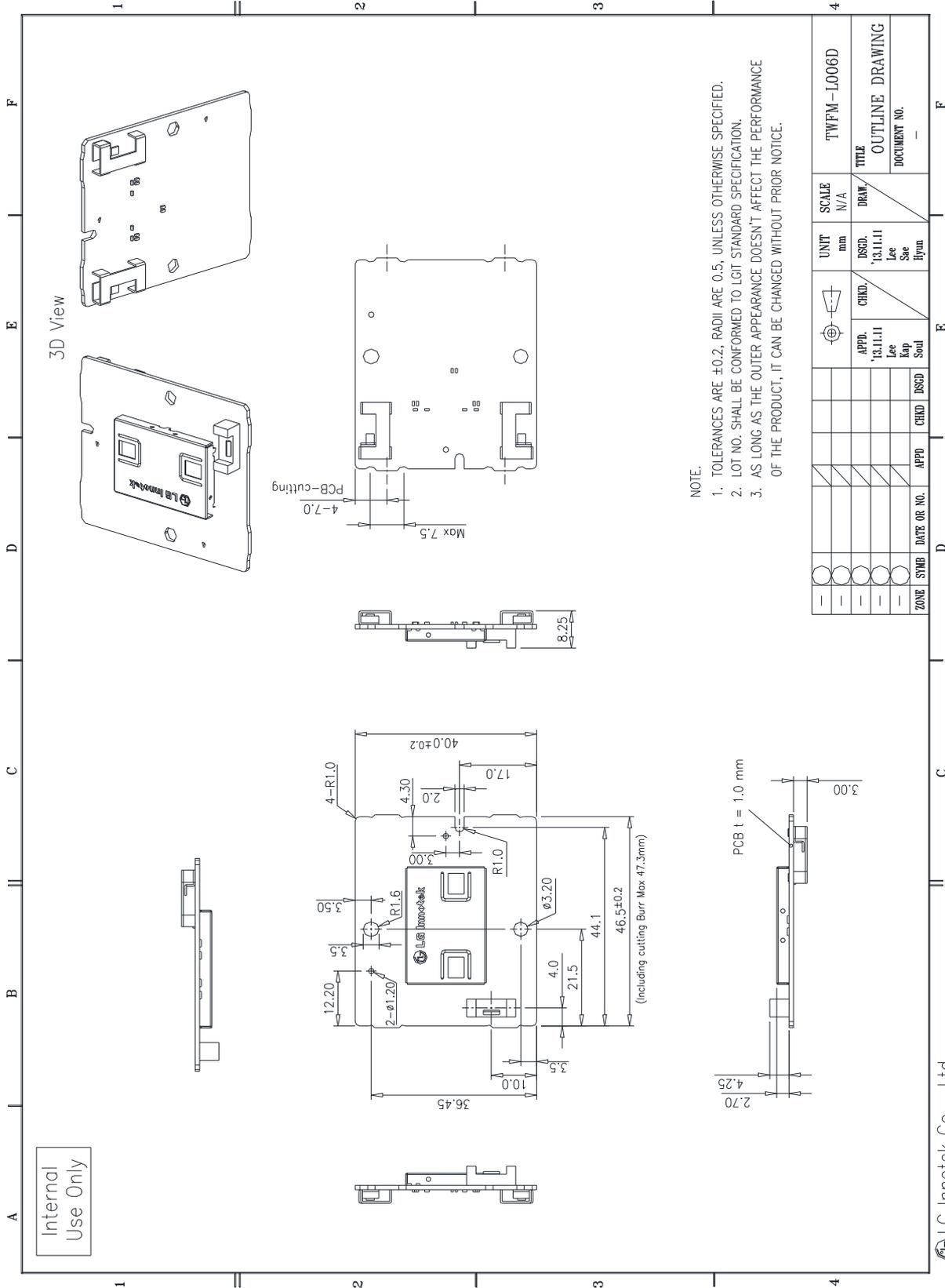| Pin No.	Pin Name	I/O	Pin Description
1	VDD	I	VDD 5.0V
2	USB_DN	I/O	USB Communication signal USB_DN
3	USB_DP	I/O	USB Communication signal USB_DP
4	GND	-	GND
5	WoWLAN	I	Wake on Wireless LAN
6	GND	-	GND

< Top View >
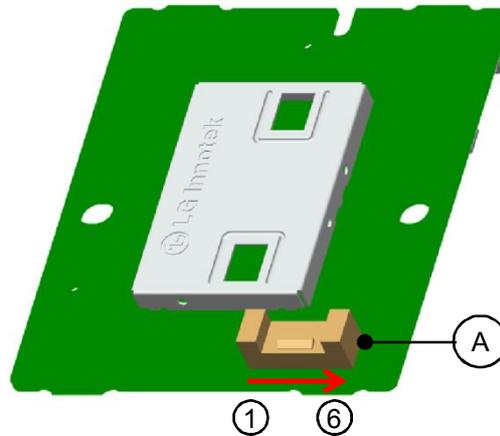
Note.

1) Recommend a Module install sequence for prevent USB device failure
   - Supply 5.0V power
   - Connect to data signal (USB_DP, USB_DN)

2) Connector (A) : Connector A1257WR0-6PS

8. Outline Drawing

NOTE.
1. TOLERANCES ARE ±0.2, RADII ARE 0.5, UNLESS OTHERWISE SPECIFIED.
2. LOT NO. SHALL BE CONFORMED TO LGIT STANDARD SPECIFICATION.
3. AS LONG AS THE OUTER APPEARANCE DOESN'T AFFECT THE PERFORMANCE OF THE PRODUCT, IT CAN BE CHANGED WITHOUT PRIOR NOTICE.

TITLE: OUTLINE DRAWING
TWFM-L006D
DOCUMENT NO. : —
SCALE N/A
UNIT mm
DRAW.
DSGD. '13.11.11 Lee Sae Hyun
CHKD.
APPD. '13.11.11 Lee Kap Soul

3D View

PCB-cutting
4-7.0
Max 7.5
8.25

40.0±0.2
4-R1.0
4.30
2.0
17.0
3.00
R1.0
3.50
R1.6
Ø3.20
44.1
46.5±0.2
12.20
2-Ø1.20
3.5
4.0
21.5
(Including cutting Burr Max 47.3mm)
3.5
10.0
36.45

PCB t = 1.0 mm
3.00
4.25
2.70

Internal Use Only

9. Packing Information
9-1. Inner Box Packing

PACKING SPECIFICATION

o 1 Tray Packing Q'ty : 45 EA
o Tray Material : antistatic PET
o 1 Tray Weight : 0.18kg
       (1 Module Weight : 7.3±0.5g)

o 1 Box Packing Q'ty : 450 EA
o Size : A X B X C (512 X 375 X 121.5)
o Box Material : Corrugated Fibreboards
o 1 Box Packing Weight : 5.7±0.5kg

o All of tray are stacked by zigzag.
o Top of tray is empty.
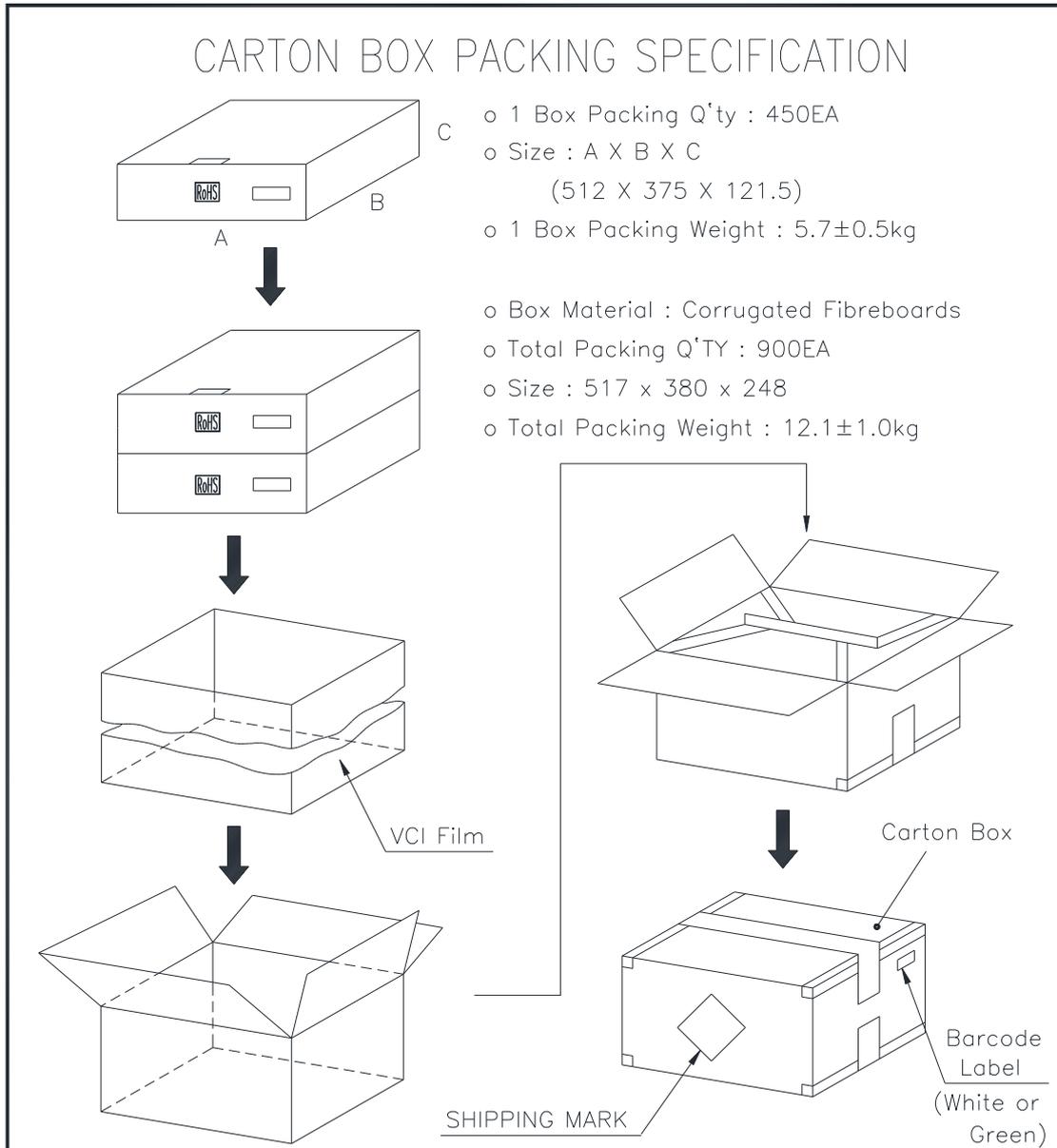
PP Band

RoHS Marking   Barcode Label
                        (White)

o Total Packing Q'TY : 900 EA
o Total Packing Weight : 11.4±0.8kg
o RoHS Marking : Label, Stamp, Printing
o Marking Color : Gray or Red for Stamp, Label,
                  Printing on the Board and etc.
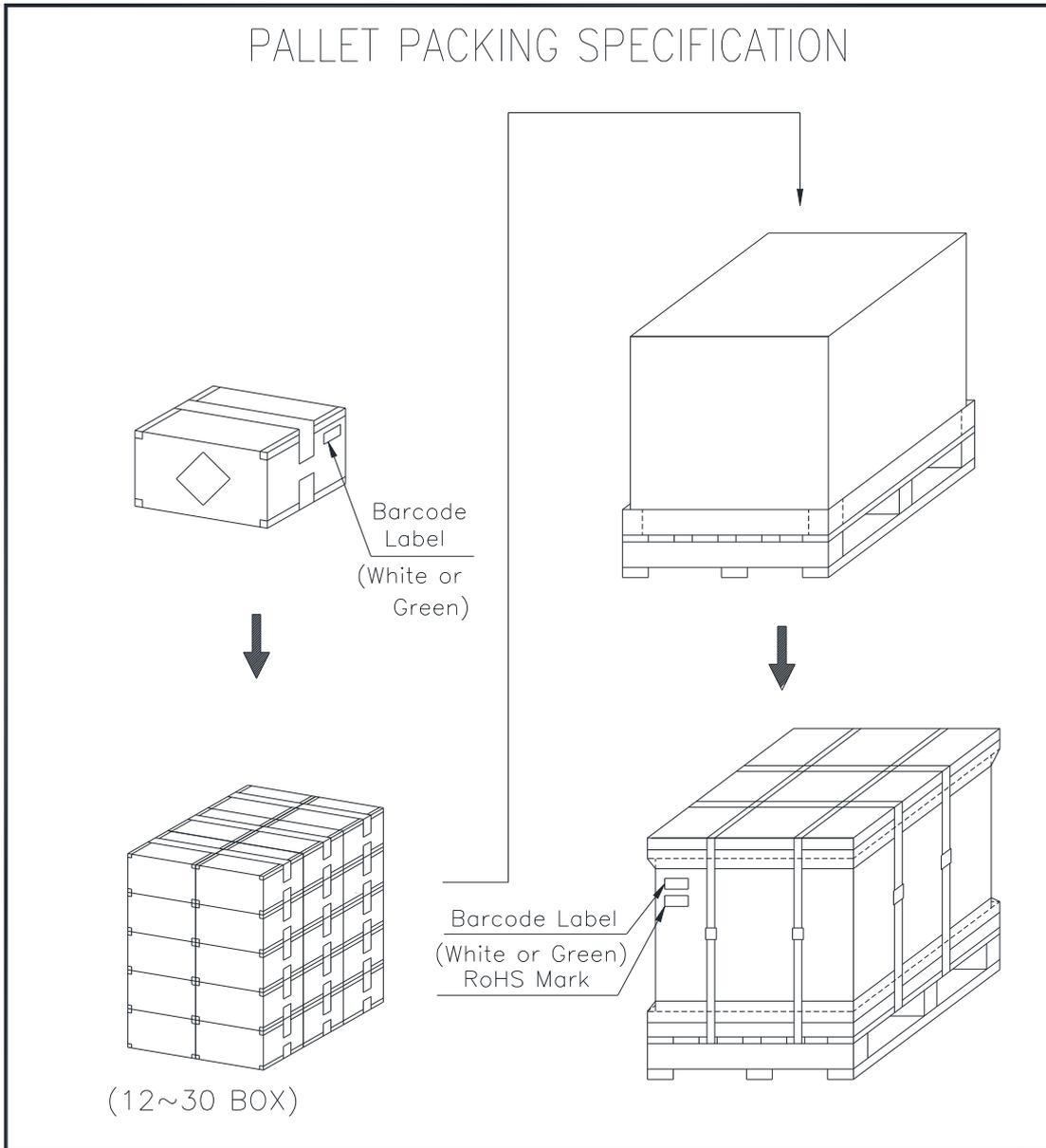   Black only for Printing on Label.

PART NO.	NAME	MATERIAL	SPEC.	FINISH	SIZE
					A4

ZONE	SYMB	DATE OR NO.	APPD	CHKD	DSGD				

			UNIT mm	SCALE	TWFM-L006D Packing Spec.
APPD. '13.12.10 Lee Kap Soul	CHKD.	DSGD. '13.12.10 Lee Sae Hyun	DRAW.	TITLE EXP. Packing Specification	
				DOCUMENT NO. Page (1/3)	

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9-2. Carton Box Packing

CARTON BOX PACKING SPECIFICATION

o 1 Box Packing Q'ty : 450EA
o Size : A X B X C
     (512 X 375 X 121.5)
o 1 Box Packing Weight : 5.7±0.5kg

o Box Material : Corrugated Fibreboards
o Total Packing Q'TY : 900EA
o Size : 517 x 380 x 248
o Total Packing Weight : 12.1±1.0kg

VCI Film

Carton Box

SHIPPING MARK

Barcode Label (White or Green)

PART NO.	NAME	MATERIAL	SPEC.		FINISH	SIZE
						A4
		⊕ ◁	UNIT mm	SCALE	TWFM-L006D Packing Spec. (Carton Box)	
			APPD. '13.12.10 Lee Kap Soul	CHKD.	DSGD. '13.12.10 Lee Sae Hyun	DRAW.	TITLE EXP. Packing Specification
ZONE	SYMB	DATE OR NO.	APPD	CHKD	DSGD	DOCUMENT NO. Page (2/3)

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9-3. Pallet Packing

PALLET PACKING SPECIFICATION

Barcode
Label
(White or
Green)

Barcode Label
(White or Green)
RoHS Mark

(12~30 BOX)

					A4
PART NO.	NAME	MATERIAL	SPEC.	FINISH	SIZE

			UNIT mm	SCALE	TWFM-L006D Packing Spec. (Pallet)
			APPD. '13.12.10 Lee Kap Soul	CHKD.	DSGD. '13.12.10 Lee Sae Hyun	DRAW.	TITLE EXP. Packing Specification

DOCUMENT NO.
Page (3/3)

ZONE | SYMB | DATE OR NO. | APPD | CHKD | DSGD

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FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

(1) This Device may not cause harmful interface, and

(2) This device must accept any interference received, including interference that

may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment 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 correct the interference by one or more of the following measures:

1.1. Reorient or relocate the receiving antenna.

1.2. Increase the separation between the equipment and receiver.

1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.

1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

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

"CAUTION : Exposure to Radio Frequency Radiation.
Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.

IC Information

This device complies with Industry Canada license-exempt RSS standard(s). Operation in 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.

Cet appareil est conforme avec Industrie Canada RSS standard exempts de licence(s), Son utilisation est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

＊ **This device is going to be operated in 5 150 MHz ~ 5 250 MHz frequency range, it is restricted in indoor environment only.**

Information for OEM Integrator

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.

End product labelling

The label for end product must include "Contains FCC ID: YZP-TWFML006D".

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