

USER MANUAL

Project Name	WIFI Module
Approval Sheet RVE.	1.1
Model NO.	WF4101-R0
Panasonic Part NO.	C5ZZZ0000096

Prepared by	Reviewed by	Approved by
Mickey	Ye dongcheng	Wen qing

1. Revision History

Date	Document revision	Change Description
2014-10-30	REV1.0	The first edition
2014-11-26	REV1.1	Increasing the crystal match report

2. Manufacturing Information

Manufacture Country:

Made in china

Manufacturer:

Company Name: DaLian Golden Hualu Digital Technology Co., Ltd

Manufacturer Address:

No.1 Hua Road, Dalian High-Tech Industrial Zone, Dalian, China.

3. Product Overview

The WF4101-R0 802.11b/g/n module provides wireless modem functionality utilizing direct sequence spread spectrum and OFDM/CCK technology, This module is based on Mediatek MT7601 solution which is integrated 2.4GHz IEEE802.11 b/g/n (MAC /baseband /radio) and power amplifiers (PA).

3.1 Application scope

The wireless LAN is compliant to IEEE802.11b and IEEE802.11g and IEEE802.11n standard. The data rate of 802.11b is up to 11Mbps and fallback rates of 5.5, 2,

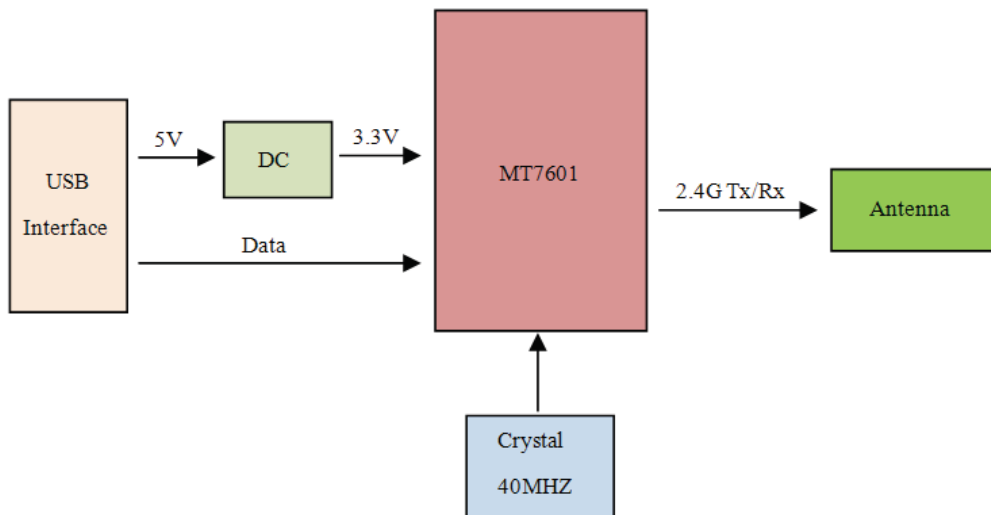
1Mbps. The data rate of 802.11g is up to 54Mbps and fallback rates of 48, 36, 24, 18, 12, 9, 6Mbps. The data rate of 802.11n HT20 with 800ns GI is up to 65Mbps and fallback rates of 58.5, 52, 39, 26, 19.5, 13, 6.5Mbps; the data rate of 802.11n HT20 with 400ns GI is up to 72.2Mbps and fallback rates of 65, 57.8, 43.3, 28.9, 21.7, 14.4, 7.2Mbps ; The data rate of 802.11n HT40 with 800ns GI is up to 135Mbps and fallback rates of 121.5, 108, 81, 54, 40.5, 27, 13.5Mbps. The data rate of 802.11n HT40 with 400ns GI is up to 150Mbps and fallback rates of 135, 120, 90, 60, 45, 30, 15Mbps.

This module is installed as a client device in BD Player PF and so on.

4. Module Hardware Overview

4.1 Block diagram

The general H/W architecture is shown below Figure

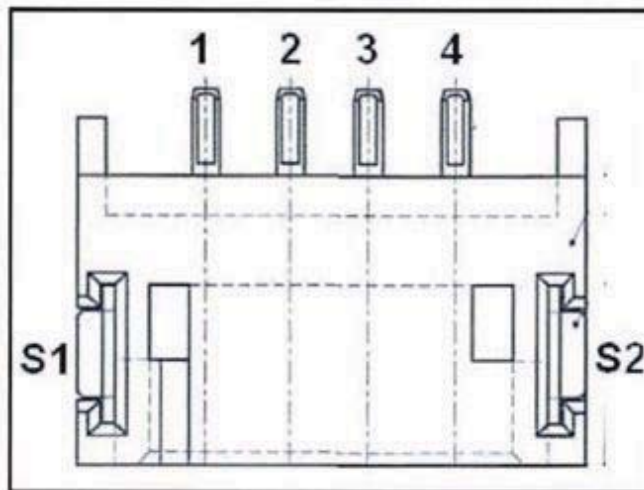


4.2 Features

- IEEE802.11b/g/n (1X1) based on MediaTek MT7601 solution, support HT40;
- USB 2.0 Interface, High and Full Speeds supported;
- Module is powered by the host with a 5.0V +/- 5% supply;
- One PCS PCB printed antenna;
- Two layers through hole PCB design with halogen free FR4 material
- Advanced Security: Supports 64/128 WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES)

4.3 Interface and Connector

- Pin definition:



Pin Number	Symbol Name	Status	Pin definition
1	VSS		Ground
2	D+	I/O	USB positive data
3	D-	I/O	USB negative data
4	VDD	P	USB +5v power input
S1	GND		Ground
S2	GND		Ground

5. Electrical Specification

5.1 Absolute maximum rating

Element	Symbol	Min	Typ	Max	Unit
DC supply voltage	VDD	4.5	5.0	5.5	(V)

5.2 Recommended operating rating

Element	Symbol	Min	Typ	Max	Unit
DC supply voltage	VDD	4.75	5.0	5.25	(V)

5.3 DC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
VDD	Supply voltage	4.75	5.0	5.25	(V)
	Tx Current(1M.)	--	190	255	(mA)
	Tx Current(6M.)	--	180	245	(mA)
	Tx Current(11M)	--	175	230	(mA)
	Tx Current(54M.)	--	130	170	(mA)
	Tx Current(MCS0.)	--	185	245	(mA)
	Tx Current(MCS0.)	--	175	230	(mA)
	Tx Current(MCS7)	--	130	170	(mA)
	Tx Current(MCS7)	--	115	150	(mA)
	Rx Current	--	75	100	(mA)

5.4 ESD Information

Mode	Level	Unit
HBM	+/-2K	V
MM	+/-200	V

5.5 Environment Storage Condition

Environment condition	
Temperature	Operating Temperature: 0 deg.C ~ 55 deg.C
	Storage Temperature: -40 deg.C ~ 80 deg.C
Humidity	Operating Humidity: 20% ~ 90%
	Storage Humidity: 20% ~ 90%

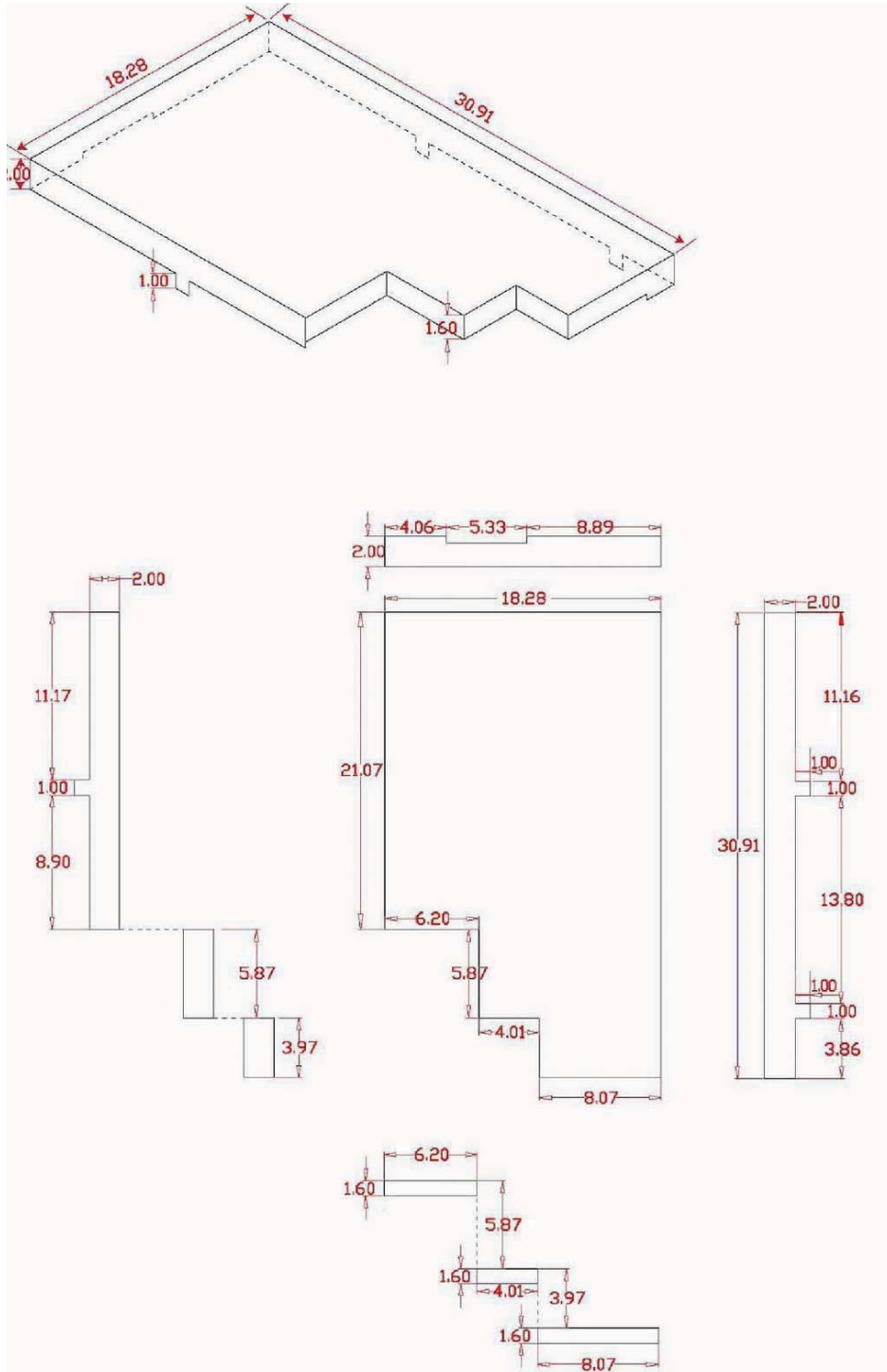
6. Mechanical Specifications

6.1 Shielding Cover Dimension

Dimension (LXWXH): 30.91mm x 18.28mm x 2mm

MATERIAL: Copper-Nickel-Zinc Alloy

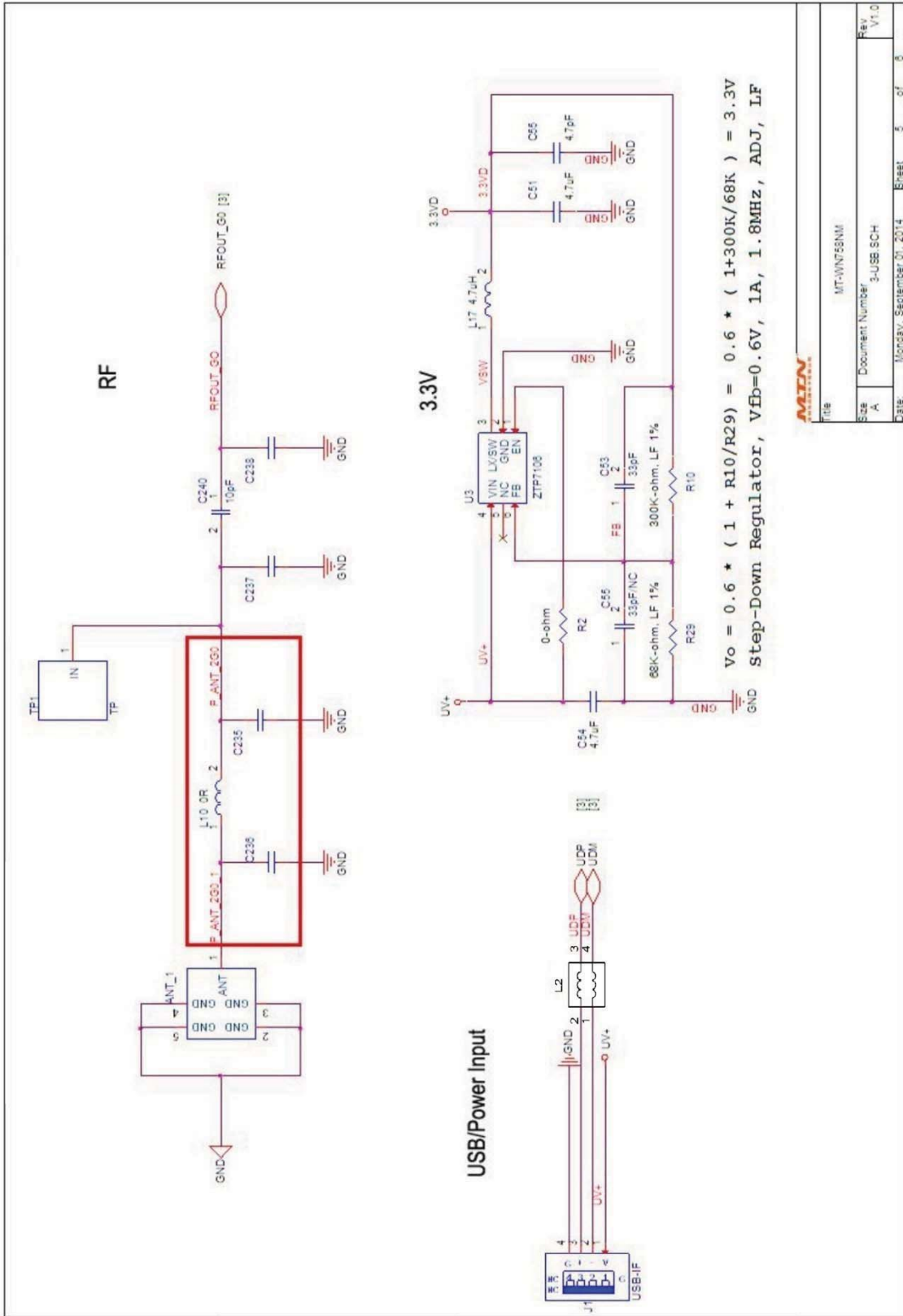
Thickness: 0.2mm



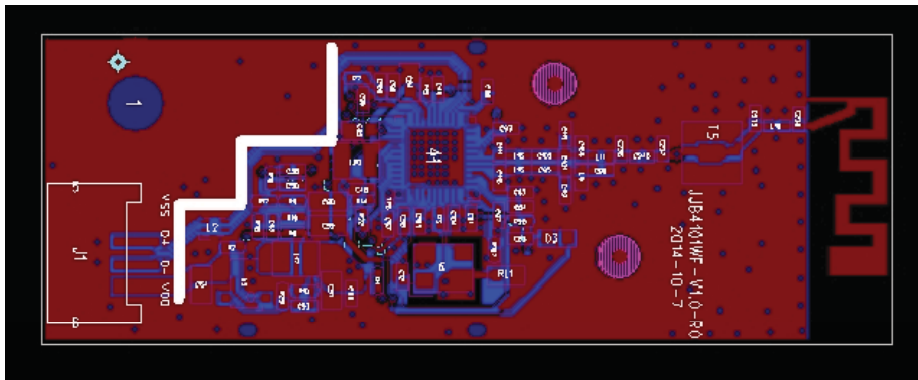
6.2 PCB Assembly Dimension

Dimension(W×L): 55mm×20mm

PCB Two layer HF-FR4 design



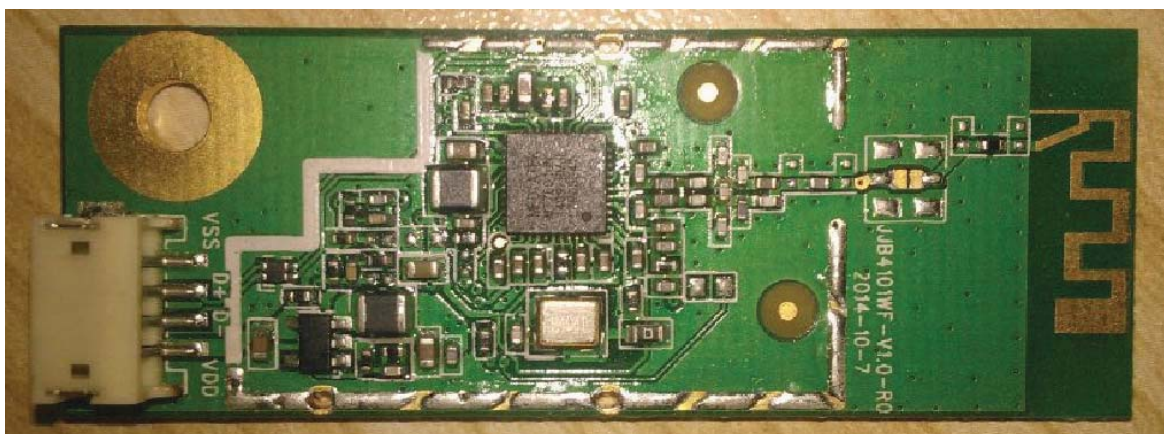
8. Layout Pattern



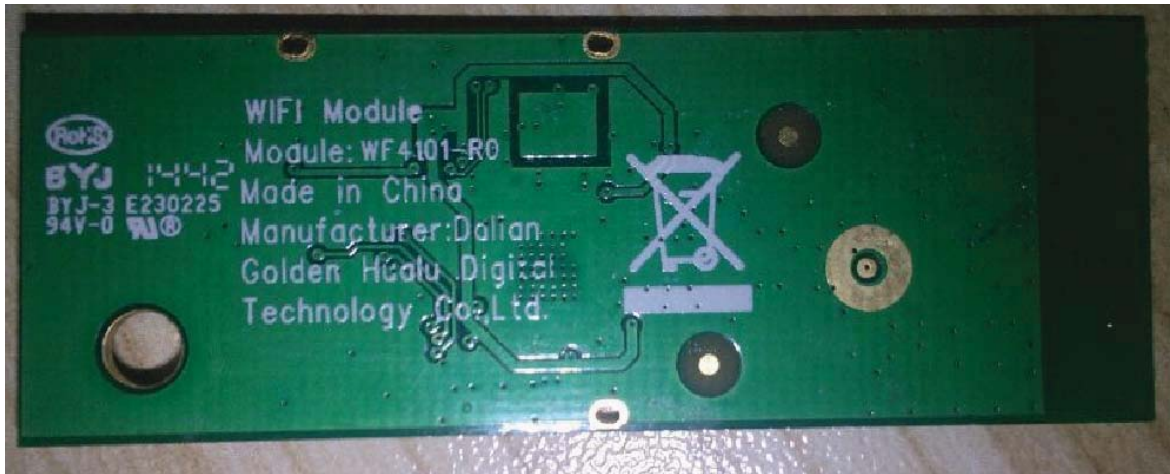
TOP Layer



Bottom Layer



Top View



Bottom View

Description:



→ RoHS mark



→ PCB Vendor Logo



→ Manufacturing Data code (2014 Year, 42 week)



→ PCB Vendor material certification number



→ UL Number



→ Flammability



→ UL Logo

9. Label information

9.1 MAC ID Label

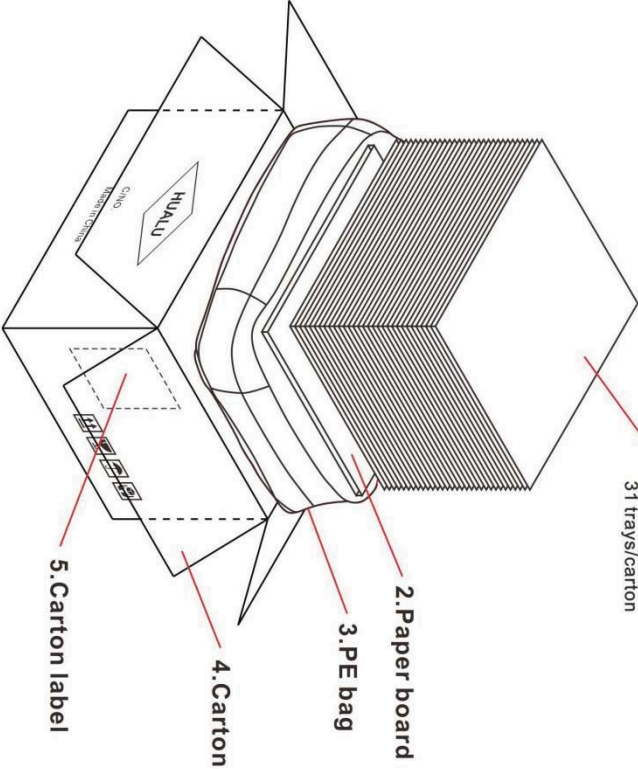
Label stick position:



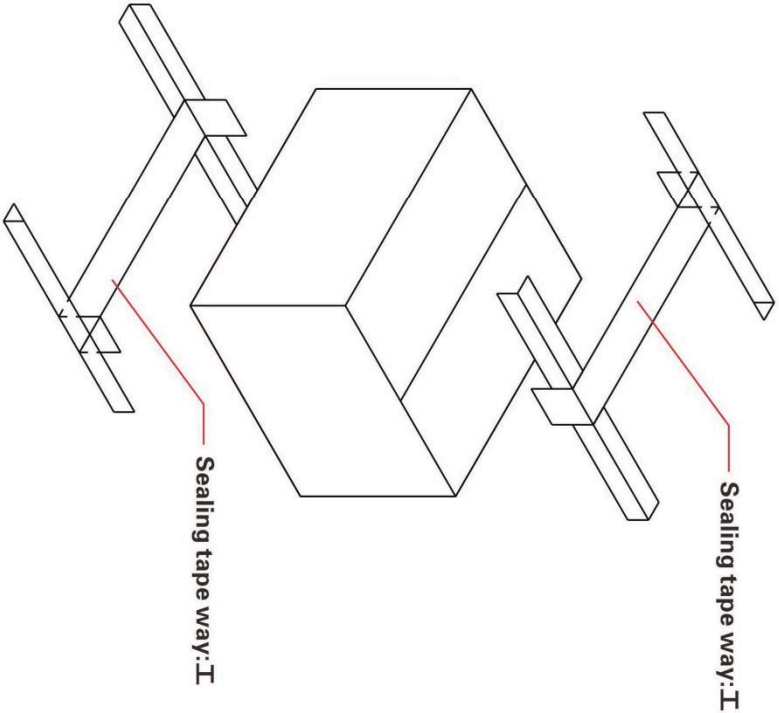
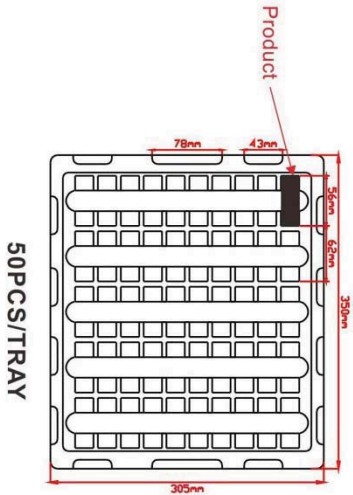
(Picture just for reference)

10. Package information

10.1 Carton ASSY



1. Tray
Don't put product into the top tray.
31 trays/carton



QTY: 1 CARTON=30 TRAYS=50pcs*30 trays=1500PCS

12. E-fuse content

IP means interpolation

Address	Register Name	Value
00h	CHIP ID	7601
02h	EEPROM Version	0D00
04h	Mac Address(15:0)	Unique
06h	Mac Address(31:16)	Unique
08h	Mac Address(47:32)	Unique
0Ah	Reserved	FFFF
0Ch	Reserved	FFFF
0Eh	Reserved	FFFF
10h	ASIC Reserved	0201
12h	USB descriptor:Vendor ID	04DA
14h	USB descriptor:Product ID	23FC

16h	ASIC Reserved	0000
18h	ASIC Reserved	004A
1Ah	ASIC Reserved	0001
1Ch	ASIC Reserved	5080
1Eh	ASIC Reserved	0008
20h	ASIC Reserved	0003
22h	ASIC Reserved	0002
24h	ASIC Reserved	0000
26h	USB String Index Head	01FF
28h	USB String Index	6040
2Ah	USB String Index	FF80
2Ch	USB String Index	FFFF
2Eh	USB String Index	FFFF
34h	NIC Configuration 0	FF11
36h	NIC Configuration 1	1004
38h	Country Region 2.4G band	FFFF
3Ah	LED Mode	012C
3Ch	Reserved	FFFF
3Eh	Reserved	9999
40h	Reserved	888C
42h	NIC Configuration 2	07FF
44h	Extamal LNA gain for 2.4G Band	0008
46h	2.4G RSSIO offset	0000
48h	TX mixer gain setting for 2.4Ghz BAND	0000
4Eh	Reserved for use	0000
50h	20M/40M BW Power delta for 2.4G band	0083
52h	Channel 2 TX0 power (ALC)	0000
54h	Channel 4 TX0 power (ALC)	0000
56h	Channel 6 TX0 power (ALC)	0000
58h	Channel 8 TX0 power (ALC)	0000
5Ah	Channel 10 TX0 power (ALC)	0000
5Ch	Channel 12 TX0 power (ALC)	0000
5Eh	Channel 14 TX0 power (ALC)	0000
6Eh	TX0 TSSI offset for group0	0080
70h	TX0 TSSI offset for group2	0000
75h	2.4G TSSL OFFSET COMPENSATION	0000
D0h	25C TEMP SENSOR CALIBRABON	F920
DAh	Frequenoy offset compensation	0000
DEh	TX power for CCK 5.5M/11M	0002
E0h	TX power for OFDM 12M/18M	3A3A
E2h	TX power for OFDM 48M/54M	3B3B
E4h	TX power for HT MCS=2,3	3A3A

E6h	TX power for HT MCS=6,7	3C3C
E8h	TX power for HT MCS=10,11	0000
EAh	TX power for HT MCS=14,15	0002
ECh	TX power for STBC MCS=2,3	0000
EEh	TX power for STBC MCS=6,7	0002
110h	Reserved for Customer	FFFF
112h	Reserved for Customer	FFFF
114h	Reserved for Customer	FFFF
116h	Reserved for Customer	FFFF
118h	Configured 2.4G Channels	FFFF
11Eh	Reserved for Customer	FFFF
140h-17fh	USB String Descriptor	FFFF

13. Reliability Test Report

Package Reliability Test Report

NO.	Item	Test Condition	Unit	Test Period	Test Result																																							
1	Package Drop Tset	1m.one corner,three edges,six faces	1 carton	1. Visual Inspection-Match with IPC-A-610D 2. Function test Pass	Pass																																							
2	Package Shock Test	Mximum Acceleration is 200G Duration time is 2ms 3 times per each Direction then totall 3 x 6 directions = 18 times	1 carton	1. Visual Inspection-Match with IPC-A-610C 2. Function test Pass	Pass																																							
3	Package Vibration Test	<table border="1"> <thead> <tr> <th>Direction</th> <th>HZ</th> <th>m²/s²</th> <th>g²/HZ</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Z axis</td> <td>5</td> <td>1.15248</td> <td>0.01200</td> <td rowspan="3">54min</td> </tr> <tr> <td>50</td> <td>1.15248</td> <td>0.01200</td> </tr> <tr> <td>200</td> <td>0.05762</td> <td>0.00060</td> </tr> <tr> <td rowspan="7">X.Y axis</td> <td>5</td> <td>0.60149</td> <td>0.00720</td> <td rowspan="7">27min</td> </tr> <tr> <td>20</td> <td>0.60149</td> <td>0.00720</td> </tr> <tr> <td>40</td> <td>0.71625</td> <td>0.00120</td> </tr> <tr> <td>60</td> <td>0.86097</td> <td>0.00886</td> </tr> <tr> <td>80</td> <td>0.86097</td> <td>0.00886</td> </tr> <tr> <td>100</td> <td>0.01058</td> <td>0.00011</td> </tr> <tr> <td>200</td> <td>0.00096</td> <td>0.00011</td> </tr> </tbody> </table>	Direction	HZ	m ² /s ²	g ² /HZ	Duration	Z axis	5	1.15248	0.01200	54min	50	1.15248	0.01200	200	0.05762	0.00060	X.Y axis	5	0.60149	0.00720	27min	20	0.60149	0.00720	40	0.71625	0.00120	60	0.86097	0.00886	80	0.86097	0.00886	100	0.01058	0.00011	200	0.00096	0.00011	1 carton	1. Visual Inspection-Match with IPC-A-610C 2. Function test Pass	Pass
Direction	HZ	m ² /s ²	g ² /HZ	Duration																																								
Z axis	5	1.15248	0.01200	54min																																								
	50	1.15248	0.01200																																									
	200	0.05762	0.00060																																									
X.Y axis	5	0.60149	0.00720	27min																																								
	20	0.60149	0.00720																																									
	40	0.71625	0.00120																																									
	60	0.86097	0.00886																																									
	80	0.86097	0.00886																																									
	100	0.01058	0.00011																																									
	200	0.00096	0.00011																																									
4	Package Storage at High Temperature and High Humidity	Temperature:60 °C Humidity:90%R.H Duration:120hrs	1 carton	1. Visual Inspection-Match with IPC-A-610C 2. Function test Pass	Pass																																							

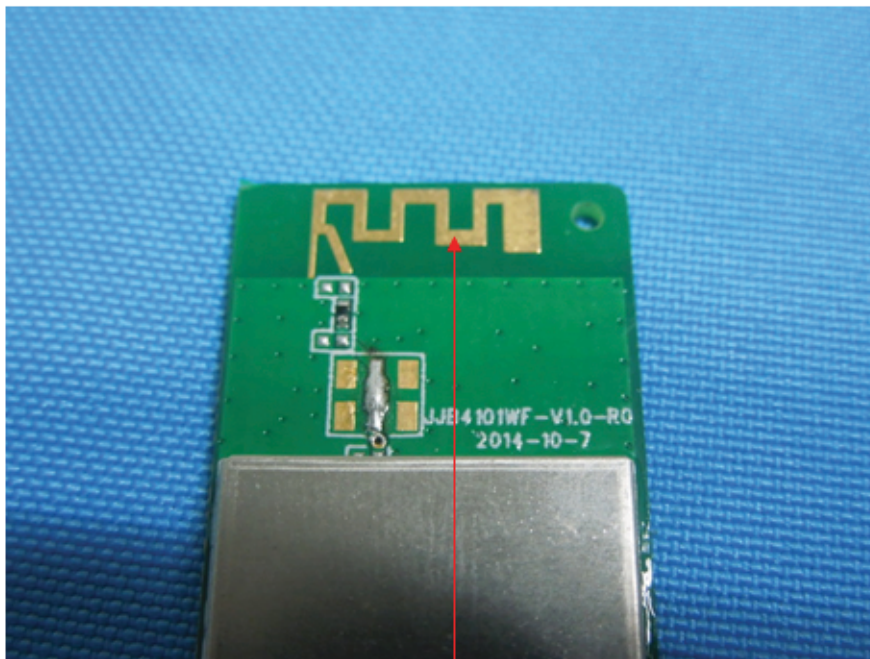
15. Antenna Specification

Antenna Type: Printed Antenna

↵

MAX. Gain: 1.55dBi

↵

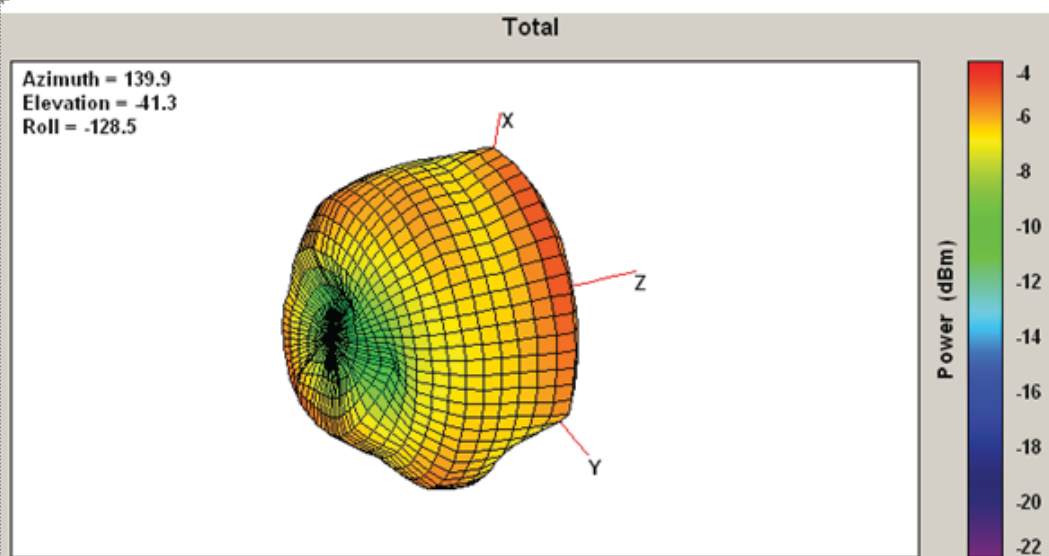


Antenna Location

Test Result (Gain)

Frequency (MHz)	Max Gain (dBi)
2400	-0.28
2410	-0.10
2420	0.16
2430	0.22
2440	0.40
2450	0.71
2460	0.94
2470	1.23
2480	1.33
2490	1.55
2500	1.55

Antenna Pattern



16. FCC

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2ADKJWF4101 Or Contains FCC ID: 2ADKJWF4101 "

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

Canada Statement

This device complies with Industry Canada licence-exempt RSS . 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.

IC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body. Cette modulaire doit être installé et utilisé à une distance minimum de 20 cm entre le radiateur et le corps de l'utilisateur.

If the IC number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 12493A-WF4101"

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. This device complies with Industry Canada's licence-exempt RSSs. 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.

2. Cet appareil est conforme aux CNR exemptes de licence d'Industrie Canada . Son fonctionnement est soumis aux deux conditions suivantes :

(1) Ce dispositif ne peut causer d'interférences ; et

(2) Ce dispositif doit accepter toute interférence , y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

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