

USER MANUAL

802.11n, 2.4G 1T1R Wireless LAN USB Module

WN4639R(5V)

MediaTek MT7601U

Version 1.1

Change History

Revision	Date	Author	Change List
Version 1.0	2015/08/08	Ben J Chen	Preliminary
Version 1.1	2015/09/05	Ben J Chen	Update Antenna SPEC

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*****WUGT'O CP WCN

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**Networking B.U.
Lite-on Technology Corporation
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Chung Ho, New Taipei City 235, Taiwan, R.O.C.**

Customer Approval: _____ (Signature)
_____ (Title)
_____ (Company)
_____ (Date)

(Please Sign Back by FAX. For Confirming the Spec Only, not an Official Agreement for OEM/ODM Business)

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PRODUCT FEATURES

- Operate at ISM frequency Band (2.4GHz)
- IEEE Standards Support, 802.11b, 802.11g and 802.11n
- Fully comply with USB 2.0 high speed mode
- Enterprise level security supporting: WPA, WPA2, WPS, WAPI
- One-stream IEEE 802.11n support for 20MHz and 40MHz bandwidth channels provides PHY layer rates up to 150Mbps
- Support Wi-Fi Direct
- Support Wake-On WLAN
- RoHS compliance
- Low Halogen compliance

Applications:

This module is applied to TV product which limit to fixed application.

PRODUCT SPECIFICATIONS

MAIN CHIPSET

MAC/ Baseband/ RF: MediaTek MT7601U

FUNCTIONAL SPECIFICATIONS

Wi-Fi Function	
Standard	IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	USB2.0
Data Rate	<p>802.11b: 11, 5.5, 2, 1 Mbps</p> <p>802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps</p> <p>802.11n: MCS 0 to 7 for HT20MHz MCS 0 to 7 for HT40MHz</p>
Media Access Control	CSMA/CA with ACK
Modulation Techniques	<p>802.11b: CCK, DQPSK, DBPSK</p> <p>802.11g: 64QAM, 16QAM, QPSK, BPSK</p> <p>802.11n: 64QAM, 16QAM, QPSK, BPSK</p>
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	<p>2.4GHz</p> <p>11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan</p>
Frequency Range	<p>802.11bg 2.412 ~ 2.4835 GHz</p>
Transmit Output Power – 1x1 (Tolerance: ±1.5dBm)	<p>802.11b: 15 dBm@1~11Mbps</p> <p>802.11g: 14 dBm@6~54Mbps</p> <p>802.11n: 20MHz: 14 dBm@MCS0~7 40MHz: 14 dBm@MCS0~7</p>
Receiver Sensitivity	<p>802.11b: -84 dBm@11Mbps</p> <p>802.11g: -71 dBm@54Mbps</p> <p>802.11n: 20MHz -70 dBm@MCS7 40MHz -67 dBm@MCS7</p>

Security	WPA, WPA2, WPS, WEP 64b&128bit, IEEE 802.1X, IEEE 802.11i		
Operating Voltage	5V ± 5% I/O supply voltage		
OS Supported	Microsoft Windows Win7/Win8; Linux based		
Power Consumption	<i>Mode</i>	<i>Average</i>	<i>Peak</i>
	<i>TX</i>		
	<i>RX</i>		
	<i>Unassociated Idle</i>		
	<i>Standby</i>		
Antenna Type	One is Metal Antenna, the other is U.FL connector for plugging external PIFA antenna		

RECOMMENDED OPERATION CONDITIONS

Symbol	Rating	Min	Typ	Max	Units
VCC	5V Supply Voltage	4.75	5	5.25	V
VDD33	3.3V Supply Voltage	2.97	3.3	3.63	V
VDD12	1.2V Supply Voltage	1.14	1.2	1.26	V
VDD15	1.5V Supply Voltage	1.425	1.5	1.575	V

DC CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Units
V _{IL}	Input Low Voltage	-0.28	-	0.6	V
V _{IH}	Input High Voltage	2.0	-	3.63	V
V _{OL}	Output Low Voltage	-0.28	-	0.4	V
V _{OH}	Output High Voltage	2.4	-	3.63	V

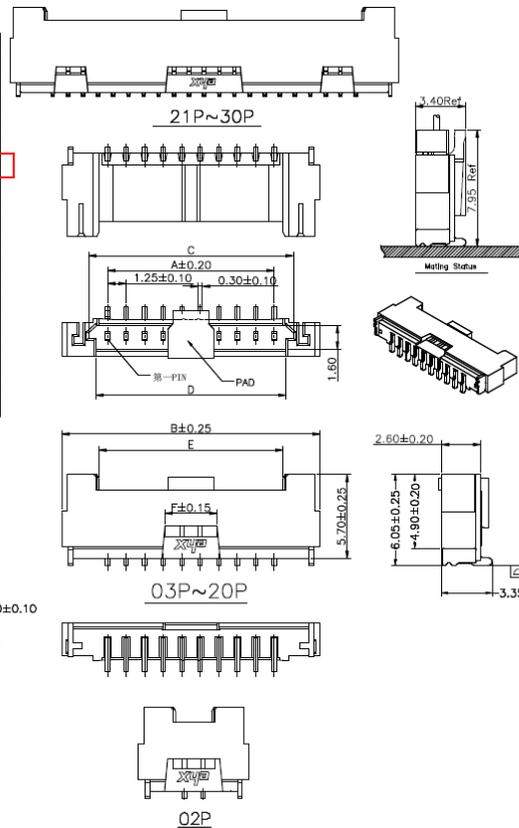
PIN ASSIGMENT

Pin.	Pin Define	Status
1	+5V	YES
2	USB_D-	YES
3	USB_D+	YES
4	GND	YES
5	RESET#(Active Low)	YES
6	WAKE(Active High)	YES



USB CONNECTOR SPEC

No. of Contacts	DIMENSIONS					
	A	B	C	D	E	F
2	1.25	7.45	3.81	2.83	2.43	3.50
3	2.50	8.70	5.06	4.08	3.68	3.50
4	3.75	9.95	6.31	5.33	4.93	3.50
5	5.00	11.20	7.56	6.58	6.18	3.50
6	6.25	12.45	8.81	7.83	7.43	3.50
7	7.50	13.70	10.06	9.08	8.68	3.50
8	8.75	14.95	11.31	10.33	9.93	3.50
9	10.00	16.20	12.56	11.58	11.18	3.50
10	11.25	17.45	13.81	12.83	12.43	3.50
11	12.50	18.70	15.06	14.08	13.68	5.00
12	13.75	19.95	16.31	15.33	14.93	5.00
13	15.00	21.20	17.56	16.58	16.18	5.00
14	16.25	22.45	18.81	17.83	17.43	5.00
15	17.50	23.70	20.06	19.08	18.68	5.00
20	23.75	29.95	26.31	25.33	24.93	5.00
25	30.00	36.20	32.56	31.58	31.18	6.00
30	36.25	42.45	38.81	37.83	37.43	6.00



Ordering Code:

S1315 - XX S V X - S B 3- R H
 ① ② ③④⑤ ⑥ ⑦⑧

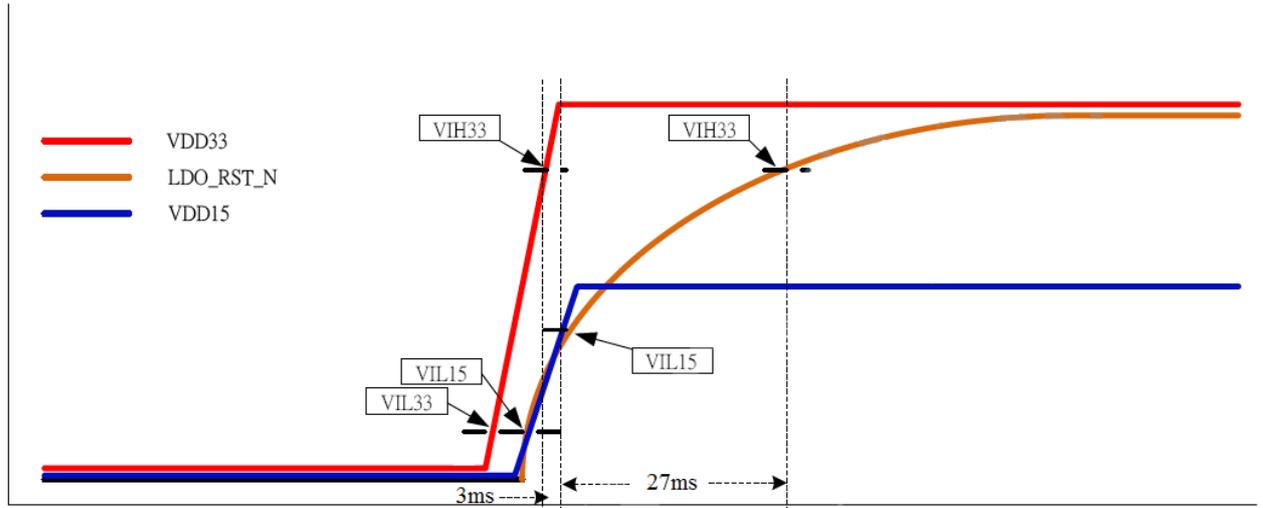
- ① Series NO.
- ② Circuits number
- ③ S: Straight Angle
- ④ V: Prefix "V" means lead free plating
- ⑤ Plating Code:

Definition	Code
④ Tin plated:	A
④ Gold plated:	
flash B	15u" F
10u" E	30u" J
④ Duplex plating:	
flash K	15u" P
10u" N	30u" U
- ⑥ Housing Colour
B: Colour is black
- ⑦ Packing:
Null: Tube
R: Reel+Pad
- ⑧ H: Halogen Free

NOTES: (UNLESS OTHERWISE SPECIFIED)

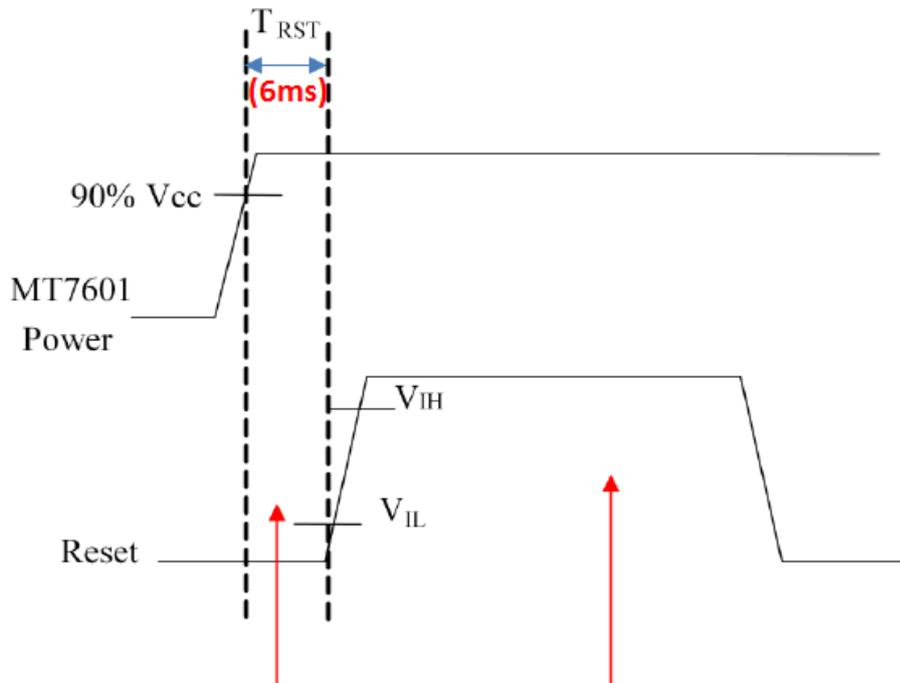
1. Temperature range: -35°C~+85°C
2. Voltage rating: 150V, AC, DC
3. Current rating: 1A
4. Contact resistance: 20mΩ Max.
5. Insulation resistance: 1000MΩ Min.
6. Withstand voltage: 500V, AC/minute
7. I.R. Reflow Temperature: 260°C±5°C For 5 Seconds
8. Material:
Housing: PA9T, UL 94V-0, Color Black
Contact: Phosphor Bronze, Gold Flash Plated On Contact Area.
30u"Min, Nickel Under Plating Over All
Fitting Nail: Brass, Gold Flash Plated On Contact Area.
30u"Min, Nickel Under Plating Over All

POWER ON SEQUENCE TIMING



Note :
 1. 3.3V need to be ready before 1.5V ready (>3ms)
 2. VIH15 must be early than LDO_RST_N VIH33 ready(>27ms)

RESET TIMING SPEC



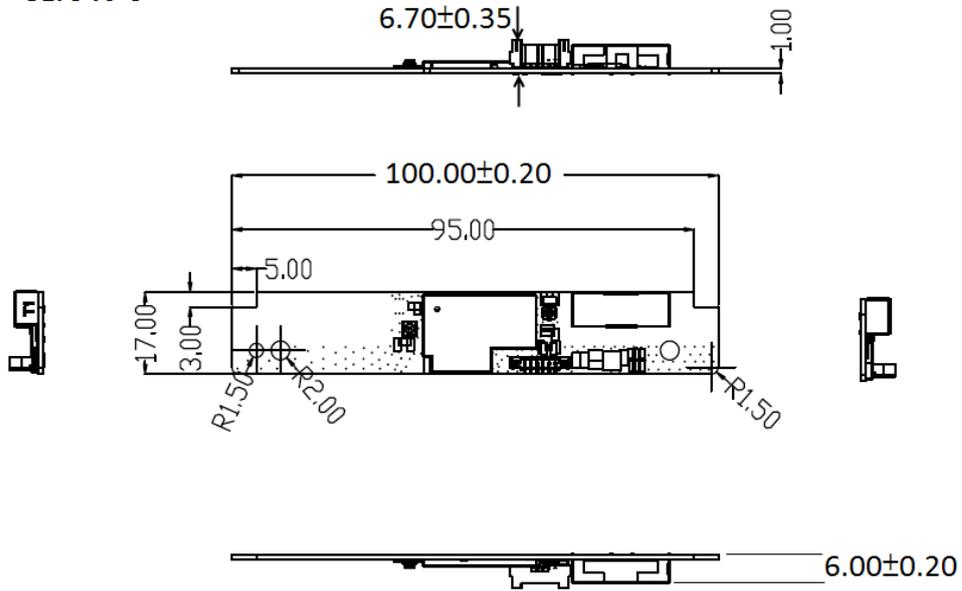
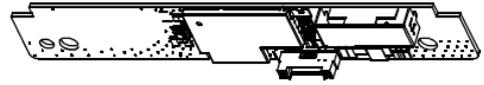
Keep Reset under V_{IL} (0.8V) over 6mS for MT7601 and don't access WIFI module via USB (Reset State)

Normal State

MECHANICAL

PCB Material:

- FR4
- Tg ≥ 140°C
- UL: 94V-0

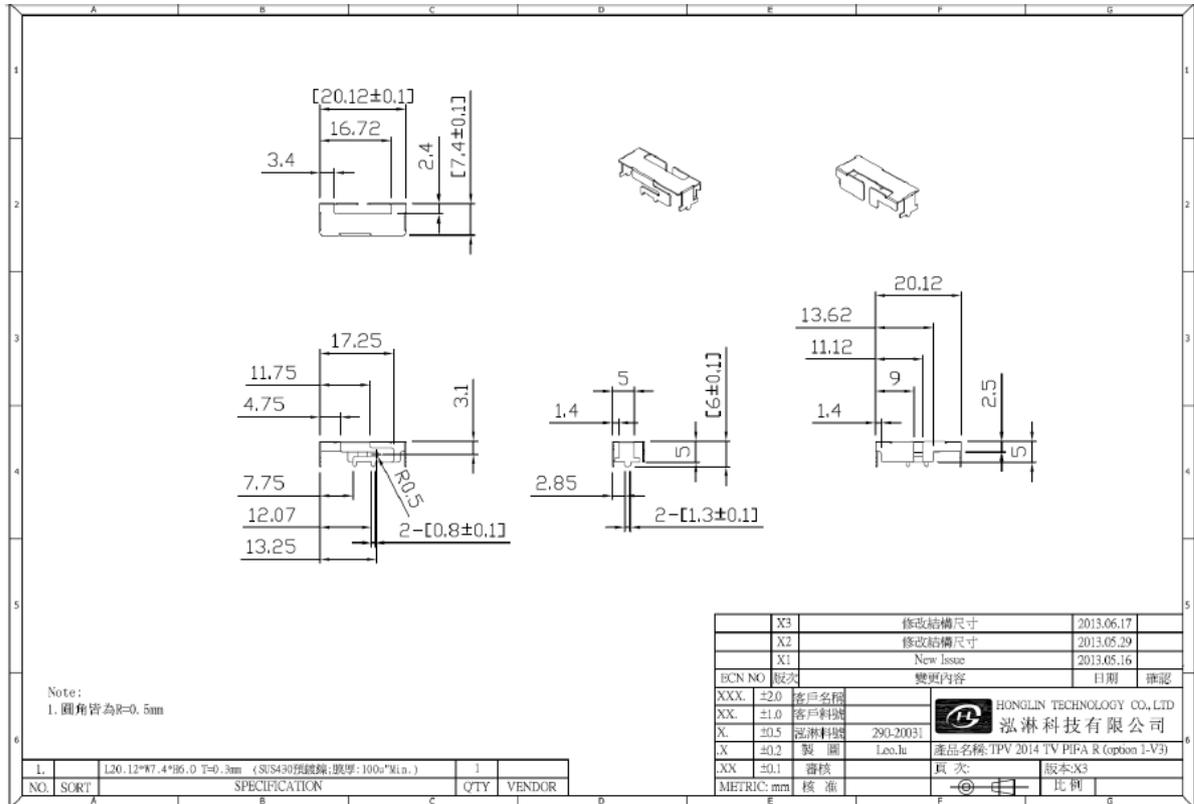


Unit: mm

Tolerance: ±0.10mm

ANTENNA SPEC

Metal Wifi Antenna (Q'ty:1) For RX



1 Specification

1.1 Electrical Properties

- 1.1.1 Frequency Range----- 2.4GHz~2.5GHz
4.9GHz~5.85GHz
- 1.1.2 Impedance----- 50Ω
- 1.1.3 VSWR----- 1.92:1
- 1.1.4 Return Loss----- -10dB
- 1.1.5 Peak Gain----- 2.2 dBi(2G)
4.6 dBi(5G)
- 1.1.6 Admitted Power----- 1W
- 1.1.7 Antenna type----- PIFA type

1.2 Physical Properties

- 1.2.1 Antenna Body-----SUS430 Plated Ni
- 1.2.2 Operating Temp----- -10°C~+60°C
- 1.2.3 Storage Temp----- -10°C~+70°C

ELECTRICAL CHARACTERISTICS

Item	Specification
Working Frequency Range	2.4 ~2.5 GHz
Return Loss	-10dB(Max)
VSWR	2 max.
Peak Gain	3.11 dBi
Polarization	Linear Vertical
Radiation Pattern	Directional
Impedance	50Ω

EEPROM INFORMATION

Reg Domain	Worldwide Control by Driver
	Offset 0x38 for 5G: 0xFF Offset 0x39 for 2.4G: 0xFF
Vendor ID	0x148F
Product ID	0x7601

ENVIRONMENTAL**Operating**

Operating Temperature: 0 to 60 °C (32 to 140 °F)

Relative Humidity: 5-90% (non-condensing)

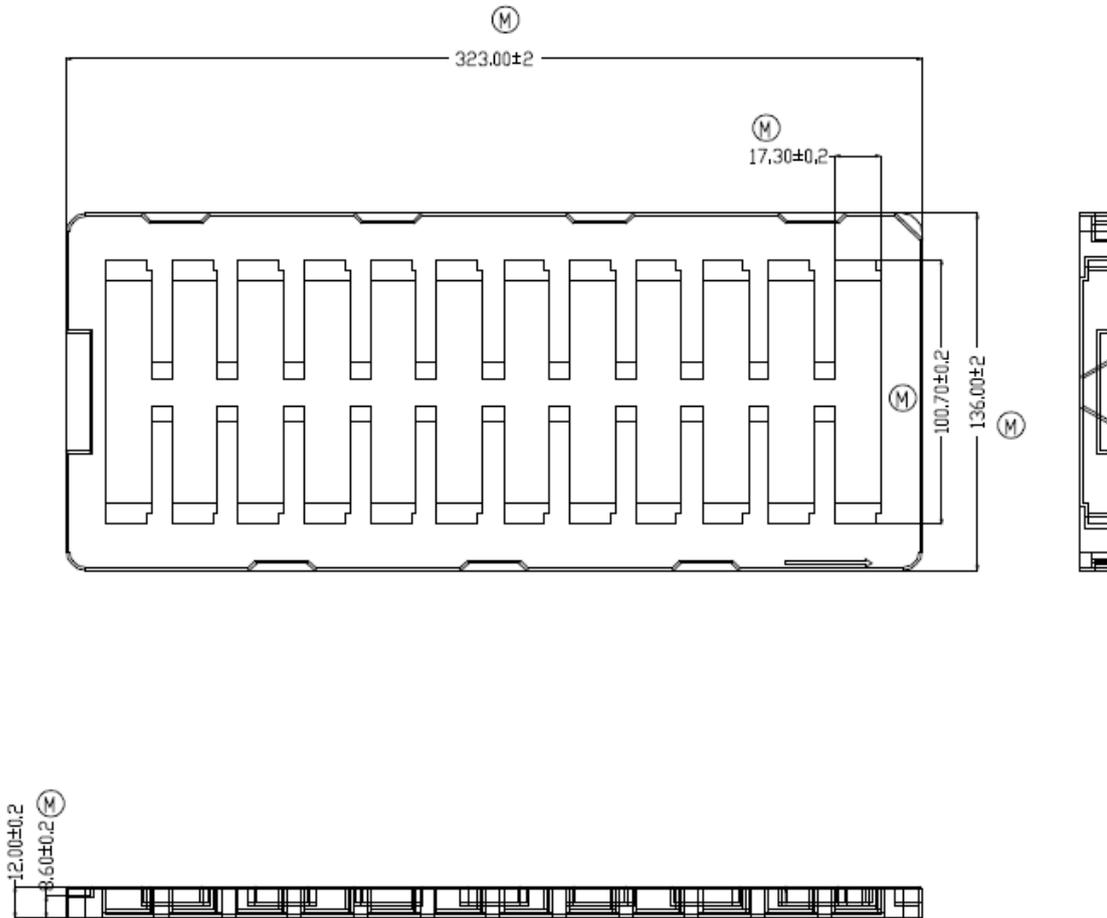
Storage

Temperature: -20 to 70 °C (-4 to 158 °F)

Relative Humidity: 5-95% (non-condensing)

PACKING DRAWING

Tray

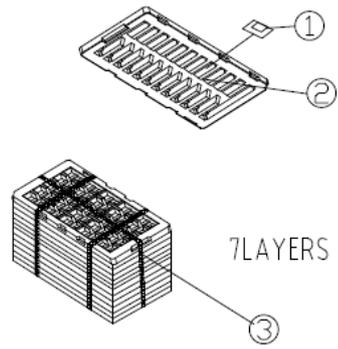
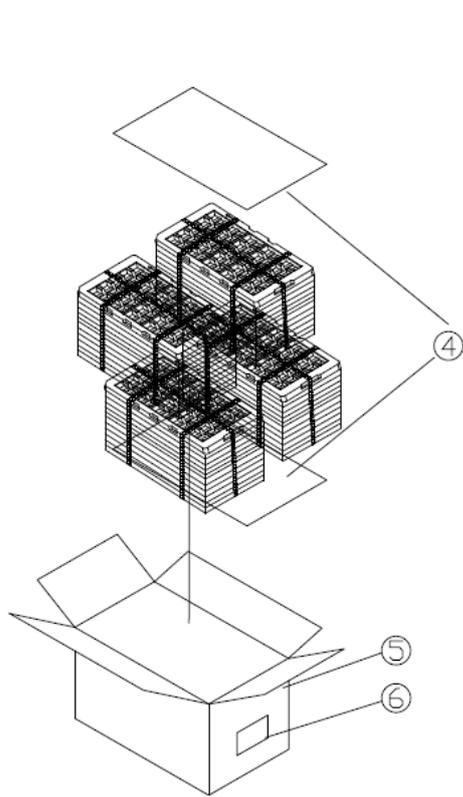


Note:

1. 材質：黑色 PS 1.2mm
2. 未注拔模角度為3度
3. 產品放進去不可以左右移動
4. 靜電阻值 $1 \times 10^4 \sim 1 \times 10^9 \Omega$
5. 鍍面摩擦電壓100V以下



6. Marked (M) IS THE CRITICAL DIMENSION



1 carton=7Layer*4=(6*12+1*0)*4=288pcs

ITEM	P/N	DESCRIPTION	QTY
1	xxxxxxx	product	1
2	5230000486ZD/CD	Clamshell	7/72
3	5210000004ZD	Straps	1.73m/72
4	5160000928XD	Carton sheet	2/288
5	5030000231XD	Carton	1/288
6	MM108xxx	Carton Label	1/288

FCC WARNING 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 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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the 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.

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 C2PC.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

IMPORTANT NOTE:

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.

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.

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: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

OEM/Integrators Installation Manual

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 manual of the end product. The user manual of the end product which is provided by OEM integrators for end users must include the following information in a prominent location.

1. To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product transmitter product procedures. It is the responsibility of the professional installer to ensure that the system.
2. Only those antennas with same type and lesser gain filed under this FCC ID number can be used with this device.
3. The regulatory label on the final system must include the statement: "Contains FCC ID: PPQ-WN4639R".

OEM Integrator Checklist

The party below will implement the LITE-ON Module in host systems in accordance with the instructions specified in this document and the documents referenced herein.

1. The OEM integrator will ensure the Module is integrated in a host systems using only the approved antenna model(s) described in this document.
2. The OEM integrator will ensure the antenna placement inside the host system will maintain the required spacing to end user for RF Exposure compliance, as specified in this document.
3. If other radios are integrated inside the host with the LITE-ON Module, the OEM integrator will contact its test lab, TCB or LITE-ON to determine if additional FCC compliance evaluation is required to meet FCC collocation rules.
4. The OEM integrator will ensure end user documentation will contain the specified regulatory wording and ensure the host system and the Module itself are labeled as specified in this document.
5. The OEM integrator will ensure the Module is programmed in the factory with compliant transmit power not exceeding the levels specified in this document.

LITE-ON requests that the OEM integrator acknowledge its receipt of this document and the above instructions. You may contact LITE-ON with any questions concerning this document or the responsibilities of the OEM integrator.