



PRODUCT SPECIFICATION

Version 1.1

IEEE 802.11 b/g/n 1T/1R USB Module

Model Number: W79M1510S

客户认可 Custom Approval Section		
Custom Name		
Department		
Approval		Date:

拟制 DESIGN	审核 CHECK	批准 APPROVAL
王仕友		
2015-08-10		

惠州高盛达科技有限公司
HUIZHOU GAOSHENGDA TECHNOLOGY CO.,LTD

中国惠州仲恺高新技术开发区华宇路 75 号

HUA YU RD., NO.75, ZHONGKAI HIGH-TECH DEVELOPMENT AREA, HUIZHOU, CHINA

TEL: (0752) 2096932

FAX: (0752) 2096628

E-mail: wangsy@hz-gsd.com

Document revision history

Revision	Date	Approved by	Remarks
Version 1.0	2015-07-20		Draft
Version 1.1	2015-08-10	王仕友	Update Page4:Add Schematic diagram Page5:Add Part List Page10:Add label list &Package Page12:Add Antenna Specifications

1. General Description

This document is to specify the product requirements for 802.11 b/g/n USB Module. This Module is based on Media Tek MT7601U chipset that complied with IEEE 802.11g, IEEE 802.11b, IEEE 802.11n standard from 2.4G-2.5GHz, and it can be used to provide up to 54Mbps for 802.11g, 11Mbps for 802.11b and 150Mbps for 802.11n to connect your wireless LAN.

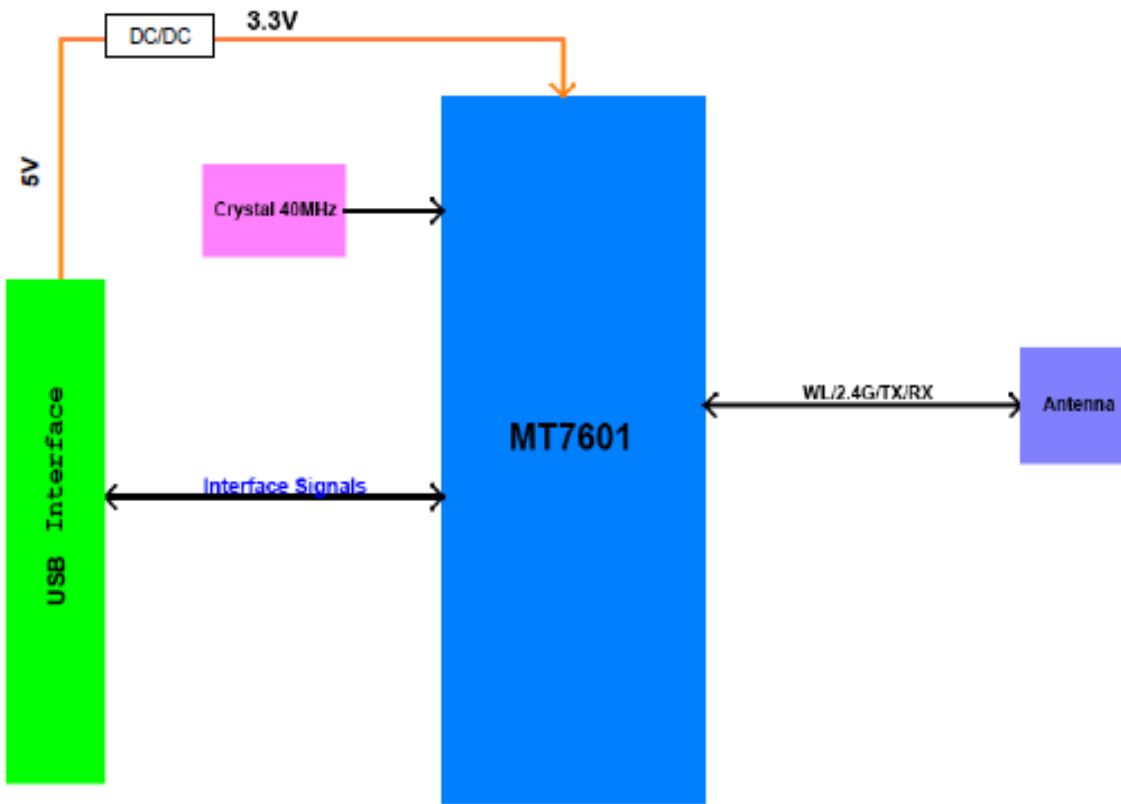
With seamless roaming, fully interoperability and advanced security with WEP standard, 802.11b/g/n USB Module offers absolute interoperability with different vendors 802.11 b, 802.11 g, 802.11n Access Points through the wireless LAN.

2. Features

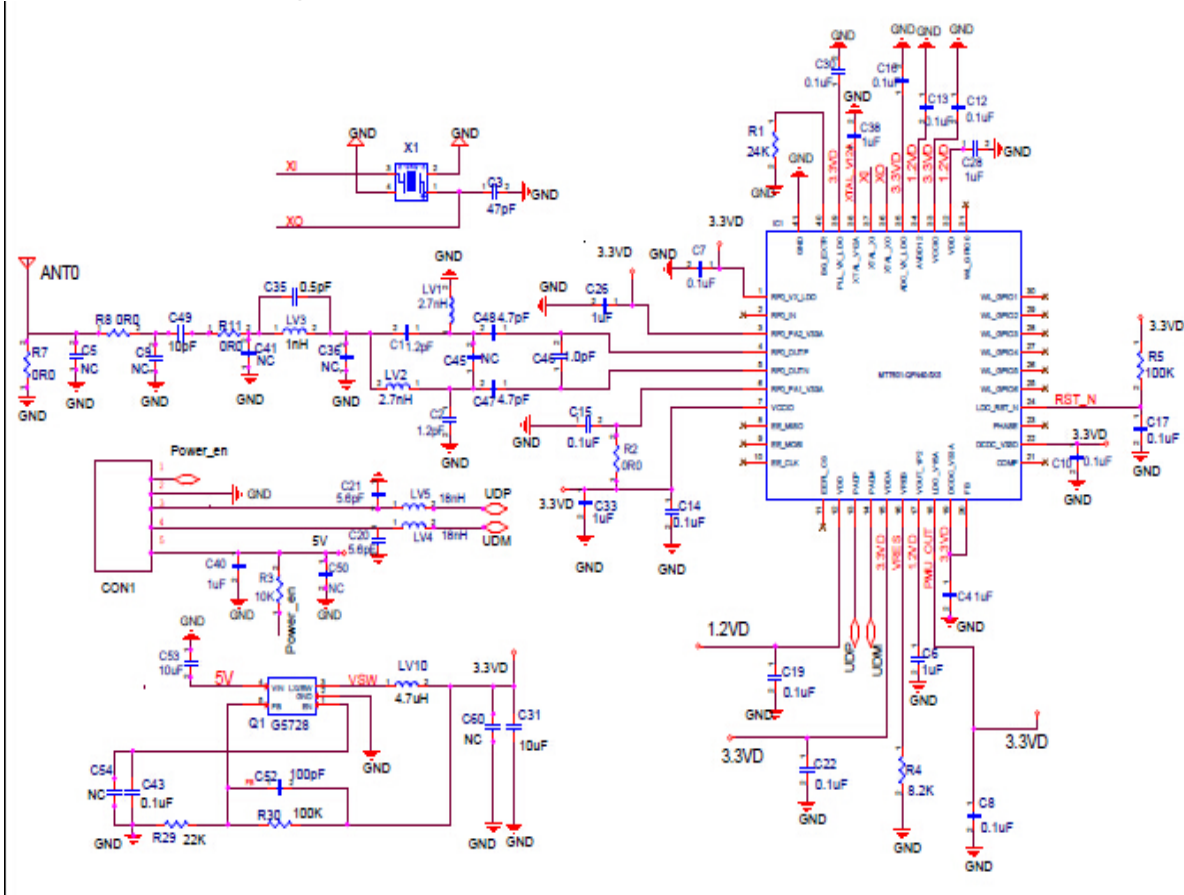
- Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate.
- Compatible with IEEE 802.11g standard to provide wireless 54Mbps data rate.
- Compatible with IEEE 802.11n standard to provide wireless 150Mbps data rate.
- Operation at 2.4G-2.5GHz frequency band to meet worldwide regulations
- Supports WEP, WPA, WPA2, TKIP, AES enhanced security
- Drivers support Windows XP 32/64, 2000, 7, Vista 32/64, Linux OS
- High speed USB 2.0 interface
- RoHS compliant

3. Application Diagrams

3.1 Functional Block Diagram



3.2 Schematic diagram



4. Part List

4.1 Part List

Type	Specification model	Number	Manufacturer
IC	MT7601U	1	MTK
	G5728	1	GUOCHAN
Capacitance	0201/50V/1pF/±0.1pF/COG	1	Murata
	0201/16V/100nF/±10%/X5R	2	
	0402/50V/0.5pF/±0.1pF/C0G	1	
	0402/50V/1.2pF/±0.1pF/C0G	2	
	0402/50V/4.7pF/±0.25pF/C0G	2	
	0402/50V/5.6pF/±0.25pF/C0G	2	
	0402/50V/10pF/±0.5pF/C0G	1	
	0402/50V/47pF/±5%/C0G	1	
	0402/50V/100pF/±5%/C0G	1	
	0402/16V/100nF/±10%/X7R	11	
	0402/10V/1uF/±10%/X5R	7	
	0603/6.3V/10uF/±20%/X5R	2	
	Resistance	0201 1/20W 100KΩ ±5%	
0402 1/16W 0Ω ±5%		4	
0402 1/16W 8.2KΩ ±1%		1	
0402 1/16W 10KΩ ±5%		1	
0402 1/16W 22KΩ ±5%		1	
0402 1/16W 24KΩ ±1%		1	
0402 1/16W 100KΩ ±5%		1	
Inductance	0402/1.0nH/±0.3nH	1	Muralist
	0402/2.7nH/±5%	2	
	0402/18nH/±5%	2	
	0805/4.7uH/±20%/700mA	1	
Crystal oscillator	40MHz,CL=15pF, 10ppm, LF SMD/3.2X2.5	1	GUOCHAN
Connector	1.25mm/WS/5/ 镀锡黑色 /A1253WRA-S5PN6BT1T00R	1	燦達
Shield	WF7E(不锈钢)	1	GUOCHAN

5. General Requirements

5.1 IEEE 802.11b Section

#	Feature	Detailed Description
5.1.1	Standard	<ul style="list-style-type: none"> IEEE 802.11b
5.1.2	Radio and Modulation Schemes	<ul style="list-style-type: none"> DQPSK , DBPSK , DSSS , and CCK
5.1.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2497MHz ISM band
5.1.4	Channel Numbers	<ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries(Default) 14 channels for Japan
5.1.5	Data Rate	<ul style="list-style-type: none"> 11,5.5,2,and 1Mbps
5.1.6	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK
5.1.7	Transmitter Output Power at Antenna Connector	<ul style="list-style-type: none"> Typical RF Output Power at each RF chain,Data Rate and at room Temp. 25degree C 17dBm(± 2dB) at 1,2,5.5,11Mbps
5.1.8	Receiver Sensitivity at Antenna Connector	<ul style="list-style-type: none"> Typical Sensitivity at Which Frame(1000-byte PDUs)Error Rate=8% at room Temp 25 degree C -90 dBm at 2Mbps -81 dBm for 11Mbps

5.2 IEEE 802.11g Section

#	Feature	Detailed Description
5.2.1	Standard	<ul style="list-style-type: none"> IEEE 802.11g
5.2.2	Radio and Modulation Type	<ul style="list-style-type: none"> QPSK , BPSK , 16QAM ,64QAM with OFDM
5.2.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2483.5MHz ISM band
5.2.4	Channel Numbers	<ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries(Default) 13 channels for Japan
5.2.5	Data Rate	<ul style="list-style-type: none"> 6,9,12,18,24,36,48,54Mbps
5.2.6	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK
5.2.7	Transmitter Output Power at Antenna Connector	<ul style="list-style-type: none"> Typical RF Output Power(tolerance± 2dB) at each RF chain, Data Rate and at room Temp. 25 degree C 17± 2dB dBm at 6,9Mbps 17± 2dB dBm at 12,18Mbps 17± 2dB dBm at 24,36Mbps 16± 2dB dBm at 48,54Mbps
5.2.8	Receiver Sensitivity at Antenna Connector	<ul style="list-style-type: none"> Typical Sensitivity at each RF chain. Frame(1000-byte PDUs)Error Rate=10% at room Temp 25 degree C -87 dBm at 6Mbps -86 dBm at 9Mbps -84 dBm at 12Mbps -82 dBm at 18Mbps -80 dBm at 24Mbps -76 dBm at 36Mbps -72 dBm at 48Mbps



PRODUCTS SPECIFICATION

W79M1510S

		. -71 dBm at 54Mbps
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5.3 IEEE 802.11n Section

#	Feature	Detailed Description																																																	
5.3.1	Standard	. IEEE 802.11n																																																	
5.3.2	Radio and Modulation Type	. BPSK , QPSK , 16QAM ,64QAM with OFDM																																																	
5.3.3	Operating Frequency	. 2400 ~ 2483.5MHz																																																	
5.3.4	Data Rate(Mbps)	<table border="1"> <thead> <tr> <th rowspan="2">MCS</th> <th colspan="2">GI=800ns</th> <th colspan="2">GI=400ns</th> </tr> <tr> <th>20MHz</th> <th>40MH</th> <th>20MHz</th> <th>40MHz</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>6.5</td> <td>13.5</td> <td>7.2</td> <td>15</td> </tr> <tr> <td>1</td> <td>13</td> <td>27</td> <td>14.4</td> <td>30</td> </tr> <tr> <td>2</td> <td>19.5</td> <td>40.5</td> <td>21.7</td> <td>45</td> </tr> <tr> <td>3</td> <td>26</td> <td>54</td> <td>28.9</td> <td>60</td> </tr> <tr> <td>4</td> <td>39</td> <td>81</td> <td>43.3</td> <td>90</td> </tr> <tr> <td>5</td> <td>52</td> <td>108</td> <td>57.8</td> <td>120</td> </tr> <tr> <td>6</td> <td>58.5</td> <td>121.5</td> <td>65.0</td> <td>135</td> </tr> <tr> <td>7</td> <td>65</td> <td>135</td> <td>72.2</td> <td>150</td> </tr> </tbody> </table>	MCS	GI=800ns		GI=400ns		20MHz	40MH	20MHz	40MHz	0	6.5	13.5	7.2	15	1	13	27	14.4	30	2	19.5	40.5	21.7	45	3	26	54	28.9	60	4	39	81	43.3	90	5	52	108	57.8	120	6	58.5	121.5	65.0	135	7	65	135	72.2	150
		MCS		GI=800ns		GI=400ns																																													
			20MHz	40MH	20MHz	40MHz																																													
		0	6.5	13.5	7.2	15																																													
		1	13	27	14.4	30																																													
		2	19.5	40.5	21.7	45																																													
		3	26	54	28.9	60																																													
		4	39	81	43.3	90																																													
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6	58.5	121.5	65.0	135																																															
7	65	135	72.2	150																																															
5.3.5	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK 																																																	
5.3.6	Transmitter Output Power at Antenna Connector	<ul style="list-style-type: none"> Typical RF Output Power(tolerance±2dB) at each RF chain,Data Rate and at roomTemp. 25degree C HT-20 <ul style="list-style-type: none"> 16±2dBm at MCS0~7 HT-40 <ul style="list-style-type: none"> 16±2dBm at MCS0~7 																																																	
5.3.7	Receiver Sensitivity at Antenna Connector	<ul style="list-style-type: none"> Typical Sensitivity at Which Frame(1000-byte PDUs)Error Rate=10% at roomTemp. 25degree C HT-20 <ul style="list-style-type: none"> -87dBm at MCS0/8 -84dBm at MCS1/9 -82dBm at MCS2/10 -79dBm at MCS3/11 -76dBm at MCS4/12 -72dBm at MCS5/13 -70dBm at MCS6/14 -69dBm at MCS7/15 HT-40 <ul style="list-style-type: none"> -84dBm at MCS0/8 -81dBm at MCS1/9 -80dBm at MCS2/10 -76dBm at MCS3/11 -73dBm at MCS4/12 -69dBm at MCS5/13 -68dBm at MCS6/14 -66dBm at MCS7/15 																																																	

6. Electrical and Thermal Characteristics

6.1 Temperature Limit Ratings

Parameter	Minimum	Maximum	Units
Storage Temperature	-40	+80	°C
Ambient Operating Temperature	0	+60	°C
Junction Temperature	0	+125	°C

6.2 General Section

#	Feature	Detailed Description
6.2.1	Antenna Type	<ul style="list-style-type: none"> PIFA antenna
6.2.2	Operating Voltage	<ul style="list-style-type: none"> 5.0V±10%
6.2.3	Current Consumption	<ul style="list-style-type: none"> 350mA at continuous transmit mode 220mA at receive mode w/o receiving packet
6.2.4	Form Factor and Interface	<ul style="list-style-type: none"> High Speed USB2.0 Interface
6.2.5	Connector	<ul style="list-style-type: none"> 1.25-5 pin connector (see appendix)

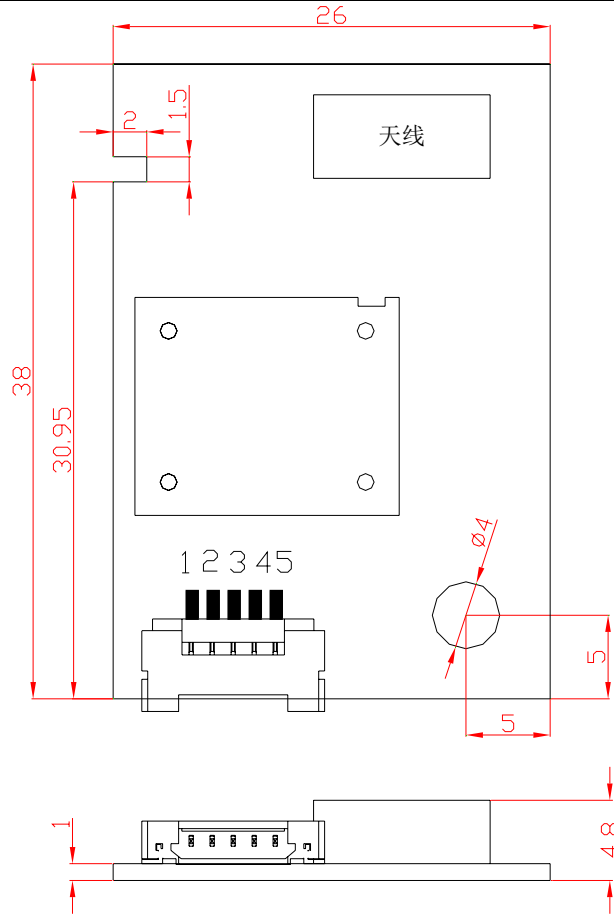
6.3 Software

Driver	Windows XP 32/64, 2000, 7,Vista 32/64, Linux OS
Security	WEP ,WPA ,WPA2,TKIP,AES

6.4 Mechanical Requirements

#	Feature	Detailed Description
6.4.1	Length	<ul style="list-style-type: none"> 38mm(PCB) MAX: 38.9mm
6.4.2	Width	<ul style="list-style-type: none"> 26mm
6.4.3	Height	<ul style="list-style-type: none"> 1.0mm(PCB) MAX: 5.2mm

6.5 Mechanical Dimensions



·注1*: 未标注公差±0.3mm.

6.6 Pin Description

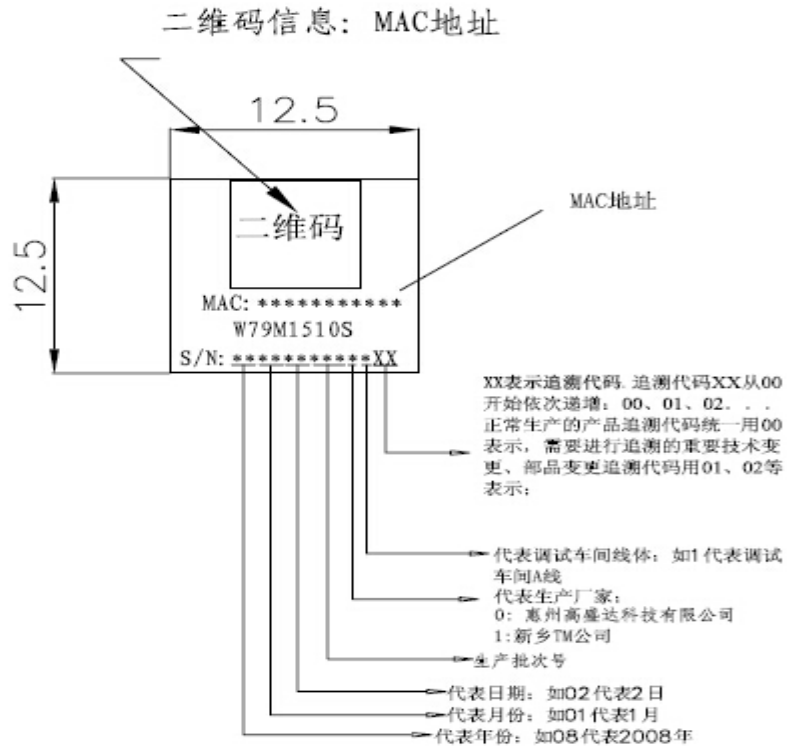
1.25-5 Pin connector

Pin	1	2	3	4	5
Definition	Power_EN	GND	D+	D-	VCC(5V)

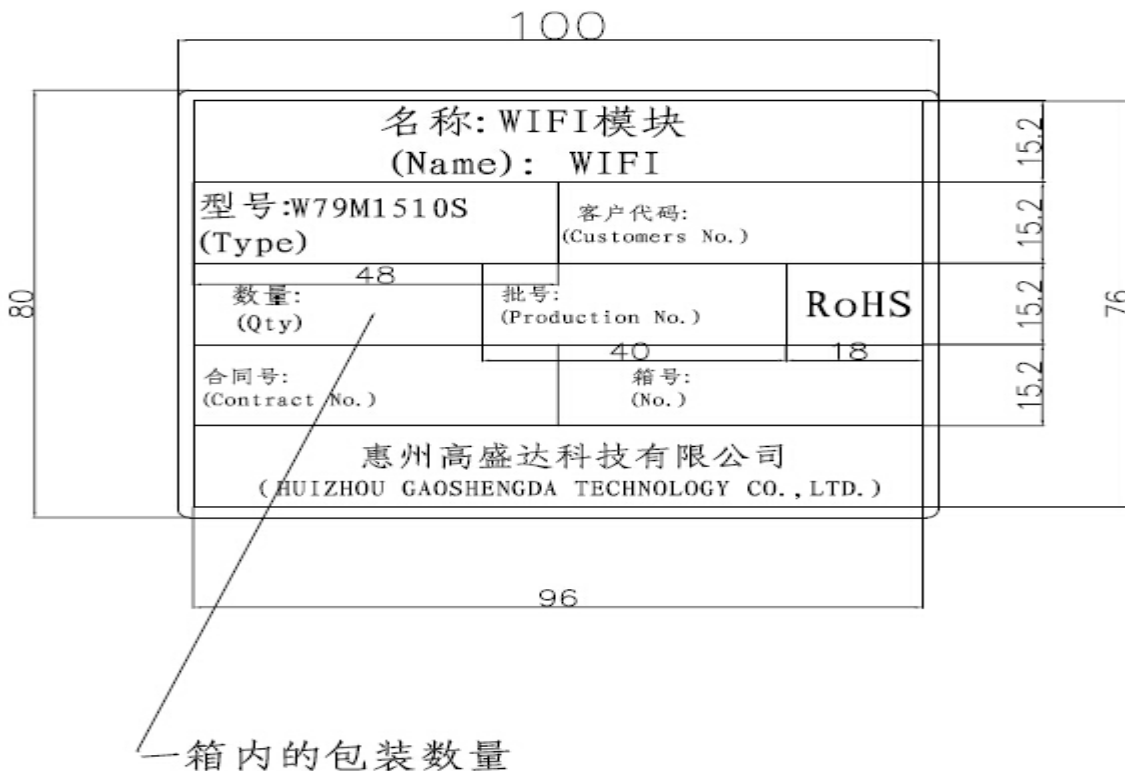
7. label list & Package

7.1 Module label

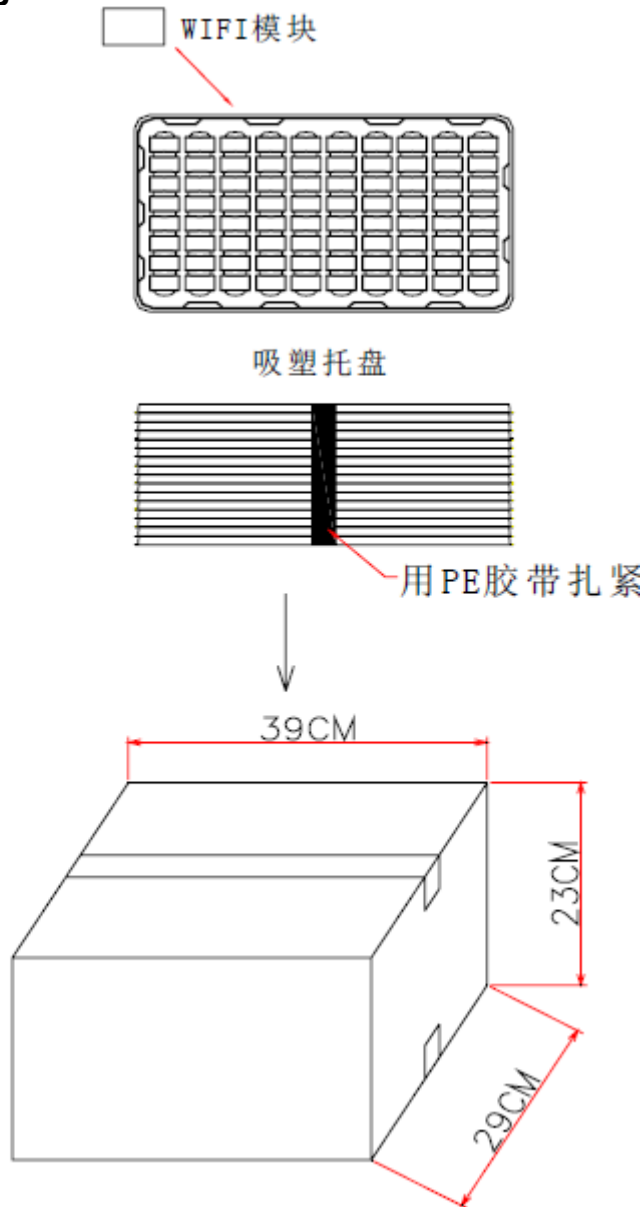
RoHS



7.2 box label



7.3 Package



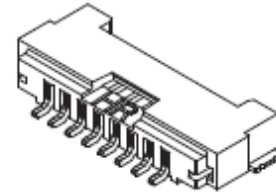
注：每个吸塑托盘装50PCS模组；每只箱装2000PCS模组。

appendix 1: 1.25mm*5PIN SMT connector

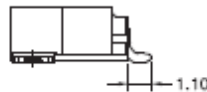
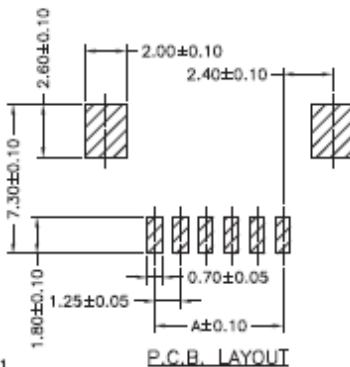
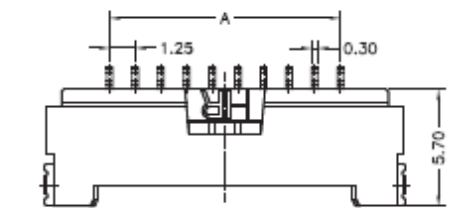
A1253WRA-S — 1,25mm pitch 90° Wafer - SMT TYPE, A TYPE —

Reference Informations:

- *Material: Pin: Brass/Tin-plated
Solder Tabs: Brass/Tin-plated
Wafer: Nylon 6T,UL94V-0
- *Mates with H.R A1253HA series Housing



	A1253WRA-S-05P	N	6	B	T1	T	00	R
①	N=Halogen Free	①	②	③	④	⑤	⑥	⑦
②	Material: 6=Nylon 6T							
③	Color: B=Black							
④	Plating code: T1=Tin-plated, G1=Gold-flash							
⑤	Plating code: T=Tin-plated, G=Gold-flash							
⑥	Option code: 00=Standard							
⑦	Packing code: R=Tape & Reel							



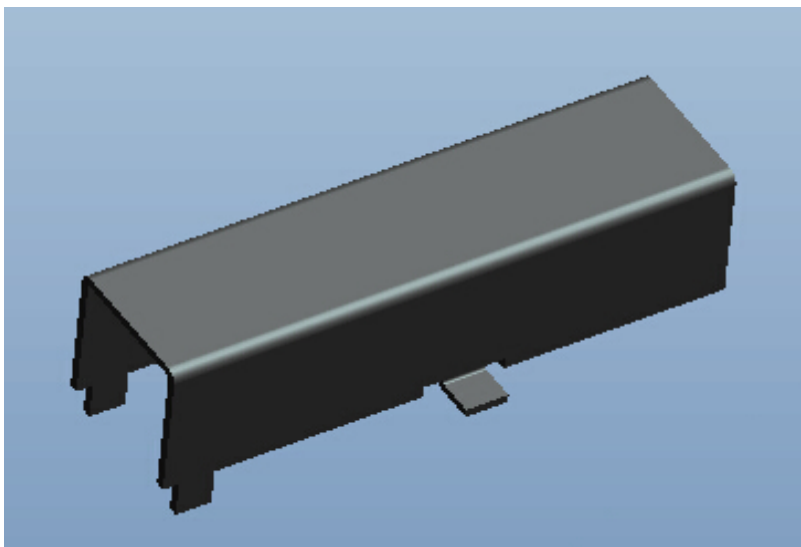
Ordering Information & Dimensions:

PART NO.	Dimensions	
	A	B
A1253WRA-S-02P	1,25	7,45
A1253WRA-S-03P	2,50	8,70
A1253WRA-S-04P	3,75	9,95
A1253WRA-S-05P	5,00	11,20
A1253WRA-S-06P	6,25	12,45
A1253WRA-S-07P	7,50	13,70
A1253WRA-S-08P	8,75	14,95
A1253WRA-S-09P	10,00	16,20
A1253WRA-S-10P	11,25	17,45
A1253WRA-S-11P	12,50	18,70
A1253WRA-S-12P	13,75	19,95
A1253WRA-S-13P	15,00	21,20
A1253WRA-S-14P	16,25	22,45
A1253WRA-S-15P	17,50	23,70
A1253WRA-S-20P	23,75	29,95
A1253WRA-S-25P	30,00	36,20
A1253WRA-S-30P	36,25	42,45

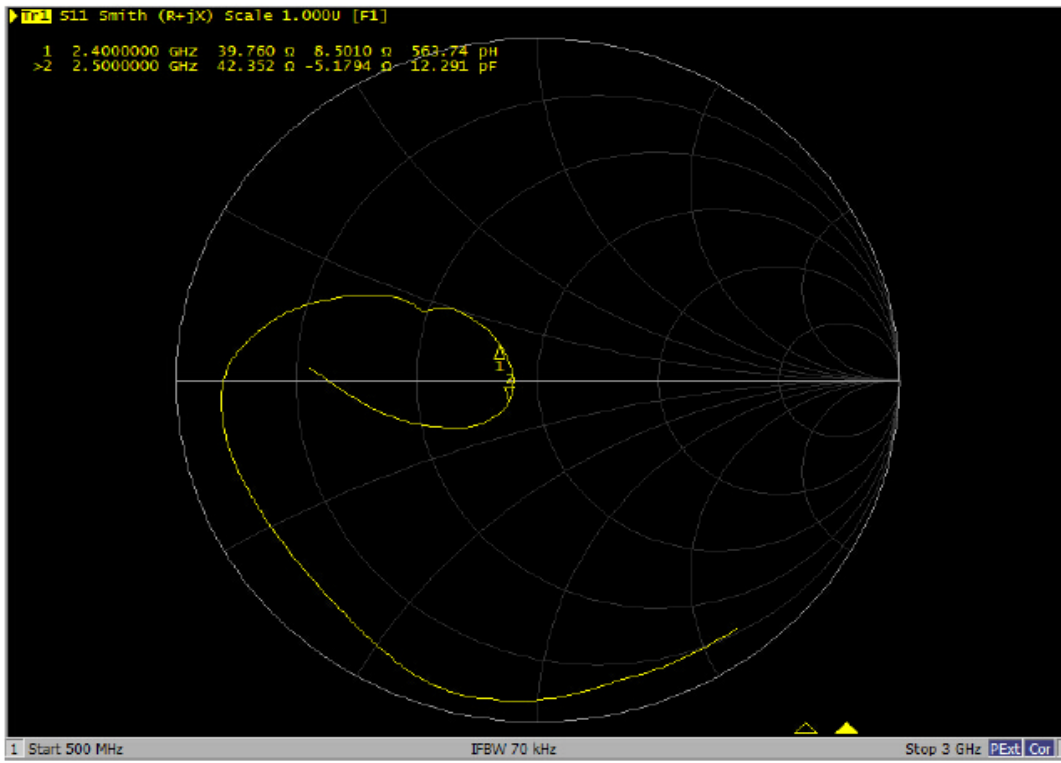
Unit:mm

appendix 2: Antenna Specifications

2.1 Antenna shape chart

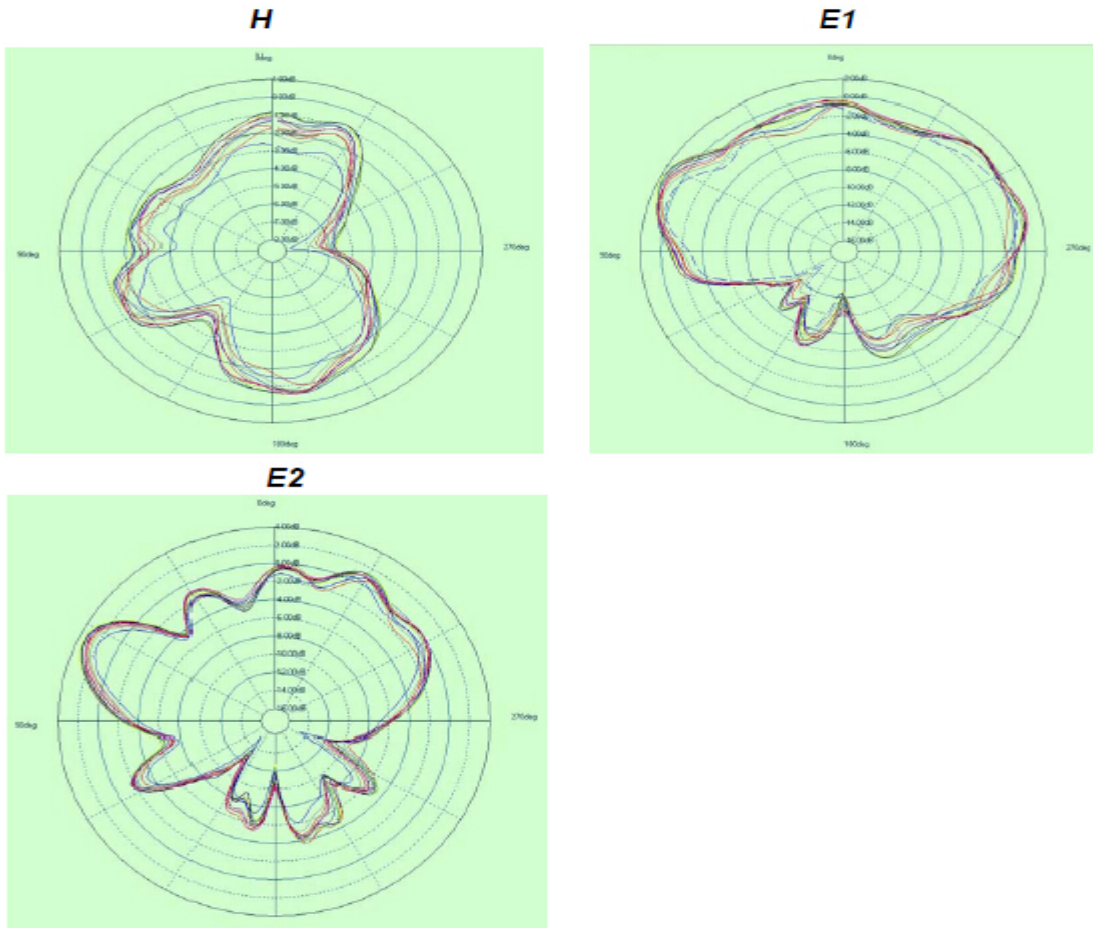


2.2 Smith chart



2.3 Direction chart

方向图





appendix 3:Statement

FCC Important Notes:

(1)

FCC Statement

This equipment 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 equipment 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.

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. Modular could be only used in mobile or fix device, and could not be used in any portable device.

Caution!

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

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 device and it's antennas(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

(2)

Co-location Warning:

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

(3)

OEM integration instructions:

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

The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the integral antenna(s) that has been originally tested and certified with this module.

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.).

(4)

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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.

(5)

End product labeling:

The final end product must be labeled in a visible area with the following:

“Contains Transmitter Module FCC ID: 2AC23-W79M1510S”.

(6)

Information that must be placed in the end user 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'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.



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

IC Statement

- English: "

This device complies with Industry Canada licence-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."

The final end product must be labeled in a visible area with the following:

"Contains Transmitter Module IC ID: 12290A-W79M1510S".

- French:"

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."