四川爱联

WF-Q379-USA1Series
IEEE 802.11a/b/g/n/ac 2T2R USB WiFi Module

特性 Features：

➢ **接收制式 Reserving System**
IEEE Std. 802.11a
IEEE Std. 802.11b
IEEE Std. 802.11g
IEEE Std. 802.11n
IEEE Std. 802.11ac

➢ **芯片方案 Chip Solution**
Qualcomm 9379-7

➢ **结构大小 Size**
18.0mm x 27.0mm x 3.0mm

型号预览 Model Overview：

型号	安装方式	支持标准	速率	频段	天线接口	备注
WF-Q379-USA1	SMD	IEEE 802.11a/b/g/n/ac	866.7Mbps	2.4G/5G	外置天线	3.3V 供电

四川爱联科技有限公司
Sichuan AI-Link Technology Co.,Ltd.
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客户确认反馈
Feedback of customer's Confirmation

经确认，我方承认该规格书
We accept the specification after Confirmed

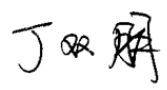| 客户名称 Customer name	客户签字 Customer signature	确认日期 Confirmation Date

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地址：四川省绵阳市安州工业园区

ADD： Anzhou,lndustrial park,Mianyang,Sichuan

公司：四川爱联科技有限公司
Factory： Sichuan AI-Link Technology Co.,Ltd.

批准 Approved	审核 Checked	拟制 Designed	产品 Product	无线模块 WiFi Module
			型号 Model	WF-Q379-USA1
			日期 Date	2018-03-06

更改记录 Record of Modification

序号 No	更改日期 Date of modification	主要更改内容 Main content of modification	更改原因 Reason of modification	更改通知编号 Serial number of modification	确认 Confirm
1	2018/03/06	首次承认			黄伟

1. Introduction

WF-Q379-USA1 module design is based on Qualcomm 9379-7 solution, The QCA9379-7 is a highly integrated single chip which has built in a 2x2 dual-band wireless LAN radio. The Module is a highly integrated MAC/BBP and 2.4/5GHz PA/LNA single chip which supports a 866.7Mbps PHY rate. The Module is designed to support standard-based features in the areas of security, quality of service, and international regulations, giving end users the greatest performance anytime and in any circumstance. This documentation describes the engineering requirements specification.

1.1 RF module Overview

The general HW architecture for the module is shown in Figure 1. This WLAN Module design is based on Qualcomm QCA9379-7. It is a highly integrated single-chip MIMO(Multiple In Multiple Out) Wireless LAN (WLAN) network interface controller complying with the 802.11 specification and Bluetooth over USB interface. It combines a MAC, a 2T2R capable baseband, and RF in a single chip. An intelligent Wi-Fi coexistence algorithm is implemented to provide the best harmonized Wi-Fi radio performance.
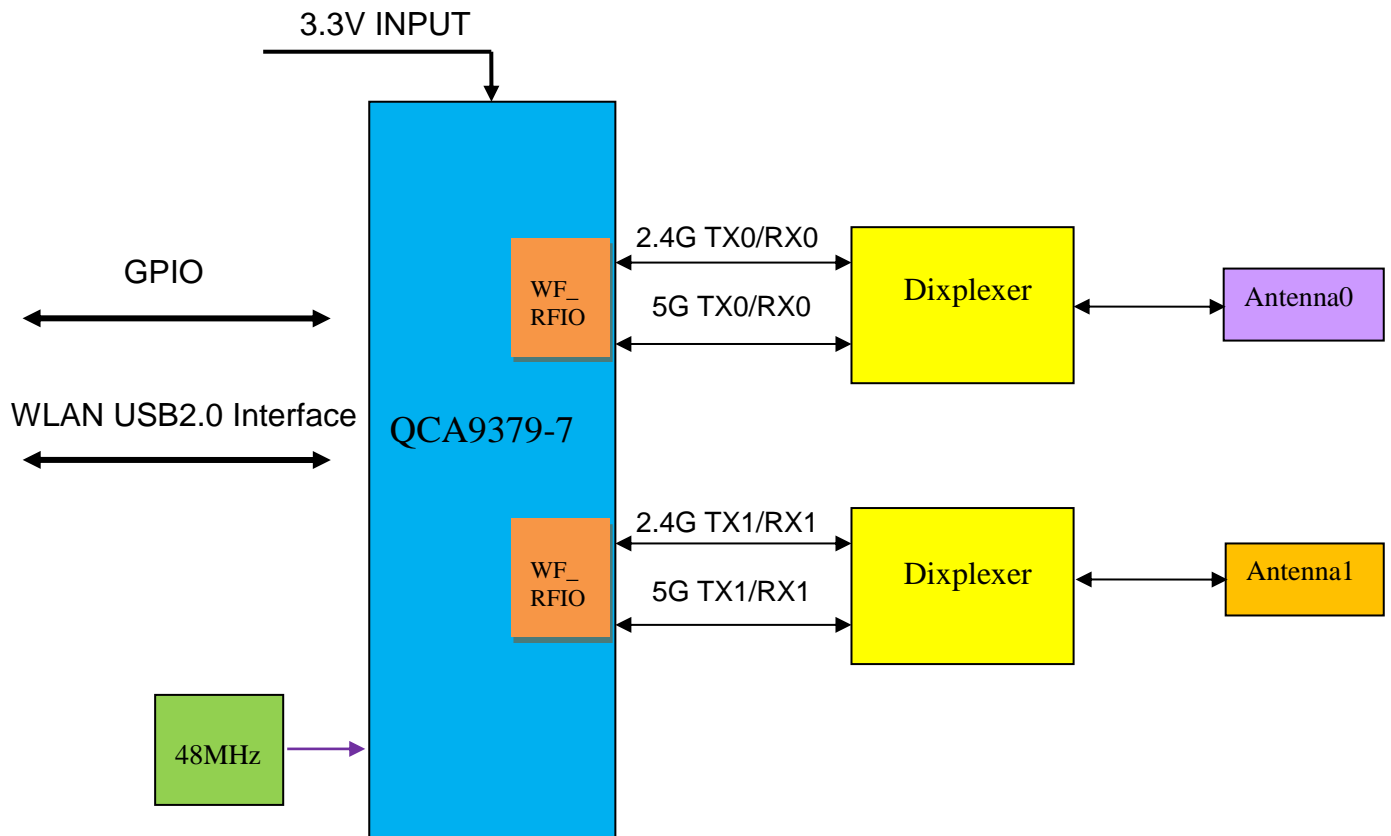

Figure 1 WF-Q379-USA1 Block Diagram

1.2 Specification reference

This specification is based on additional references listed below.

_ IEEE Std. 802.11a
_ IEEE Std. 802.11b
_ IEEE Std. 802.11g
_ IEEE Std. 802.11n
_ IEEE Std. 802.11ac

## 1.3 System Functions

Table1: General Specification as below:

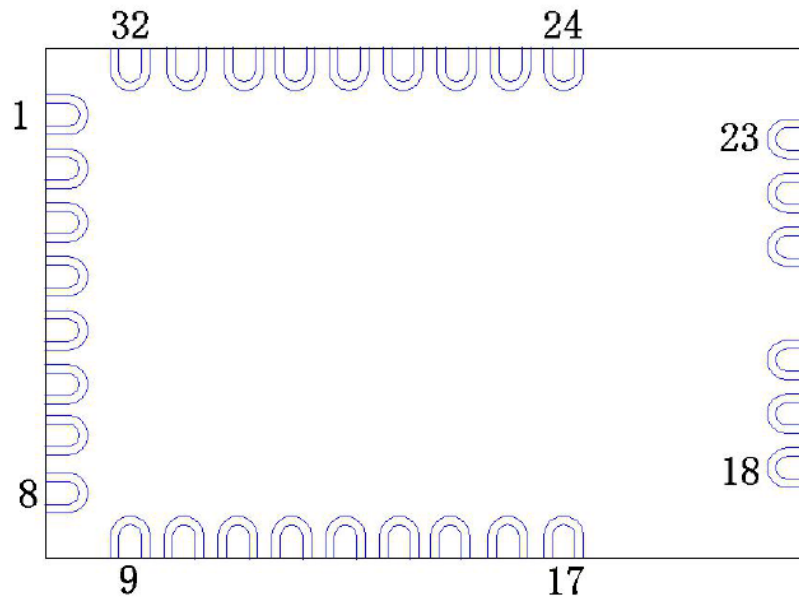|	
Main Chipset	Qualcomm QCA9379-7
Operating Frequency	2.4G/5G
WiFi Standard	802.11a/b/g/n/ac (2x2)
Modulation	WIFI:11b: DBPSK, DQPSK and CCK and DSSS 　　　11a/g: BPSK, QPSK, 16QAM, 64QAM and OFDM 　　　11n: BPSK, QPSK, 16QAM, 64QAM and OFDM 　　　11ac: BPSK, QPSK, 16QAM, 64QAM,256QAM and OFDM
Data rates	11b: 1, 2, 5.5 and 11Mbps 11a/g: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps 11n:　MCS0~15, up to 300Mbps 11ac: MCS0~9, Nss=2, up to 866.7Mbps
Form factor	32pins ,
Host Interface	USB 2.0 for WLAN
PCB Stack	6-layers design
Dimension	Typical，18mm x 27mm x 3mm
Antenna	External Antennas Design
Operation Temperature	0℃ to +70℃
Storage Temperature	-15℃ to +45℃
Operation Voltage	3.3V +/-10%

2. Mechanical Specification

2.1 Mechanical Outline Drawing
Typical Dimension (W x L x H): 18.0mm x 27.0mm x 3.0mm

General tolerance: ±0.15mm
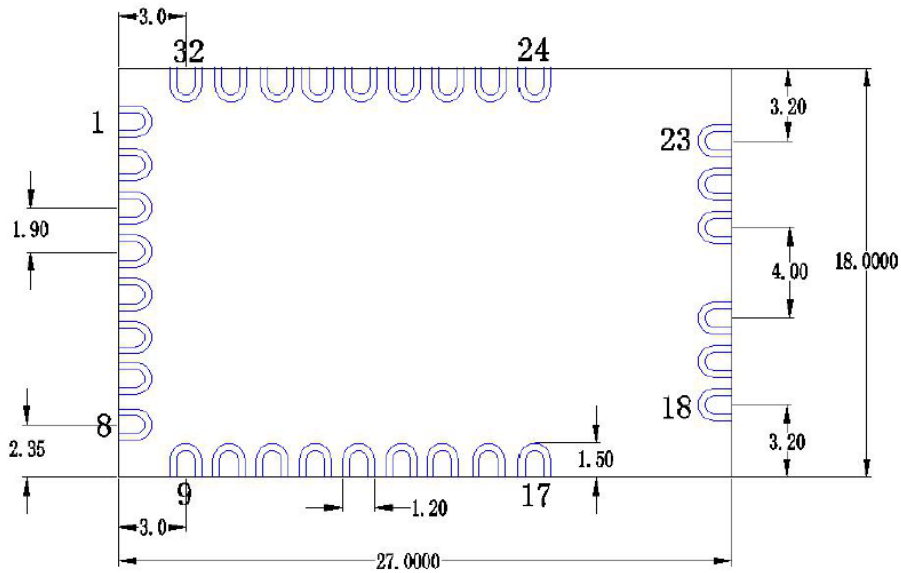
2.2 Pin definition

Pin	Define	Description	Pin	Define	Description
1	NC	NC	17	NC	NC
2	NC	NC	18	GND	Ground
3	NC	NC	19	WL_RF0	Wi-Fi RF port0，connect to external antenna
4	NC	NC	20	GND	Ground
5	GND	Ground	21	GND	Ground
6	WL_USB_DP	WLAN USB2.0 DP Signal	22	WL_RF1	Wi-Fi RF port1，connect to external antenna
7	WL_USB_DM	WLAN USB2.0 DM Signal	23	GND	Ground
8	GND	Ground	24	GND	Ground
9	NC	NC	25	GND	Ground
10	NC	NC	26	QOW(GPIO 35)	General GPIO single.
11	GND	Ground	27	BT_EN	Bluetooth enable，active high
12	BT_RF	BT RF Output，connect to external antenna	28	WLAN_EN	WLAN enable，active high
13	GND	Ground	29	GND	Ground
14	BT_WAKE_HOST (GPIO24)	Bluetooth wakeup the host，active high	30	VDD_3.3V	3.3V input
15	HOST_WAKE_BT (GPIO33)	Host wakeup Bluetooth through UART，active low	31	3D_SYNC (GPIO34)	Frame sync signals from TV to sync with 3D glass via Bluetooth
16	NC	NC	32	GND	Ground

2.3 Product Picture
2.4

TOP VIEW
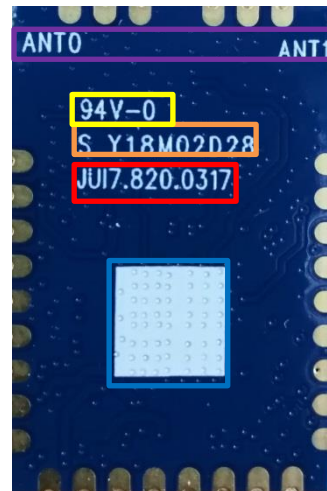
BOTTOM VIEW

丝印说明:
    1、红色框内为我司 **PCB** 图号；
    2、橙色框内为生产批次号；
    3、黄色框内为阻燃标志；
    4、蓝色框内为 **SMT** 管控丝印；
    5、紫色框内为天线通道说明；

3. Electrical Specification

This Specification is based-on conductive DVT testing result. The extreme condition include overall temperature (0℃,+25℃,+40℃) and overall voltage (3.0V,3.3V,3.6V).

3. 1 IEEE 802.11g/a Section:

Items	Contents				
Specification	IEEE802.11g & IEEE802.11a				
Mode	BPSK, QPSK, 16QAM, 64QAM and OFDM				
Channel	CH1 to CH13 @ 11g CH36 to CH165 @ 11a				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels					
1) 16.5dBm Target (For Each antenna port) @ 11g/6Mbps~24Mbps	14.5	16.5	18.5	dBm	
2) 16dBm Target (For Each antenna port) @ 11g 36Mbps	14	16	18	dBm	
3) 15.5dBm Target (For Each antenna port) @ 11g 48Mbps	13.5	15.5	17.5	dBm	
4) 14.5dBm Target (For Each antenna port) @ 11g 54Mbps	12.5	14.5	16.5	dBm	
5) 15.5dBm Target (For Each antenna port) @ 11a/6Mbps~36Mbps	13.5	15.5	17.5	dBm	
6) 14.5dBm Target (For Each antenna port) @ 11a 48Mbps	12.5	14.5	16.5	dBm	
7) 13.5dBm Target (For Each antenna port) @ 11a 54Mbps	11.5	13.5	15.5	dBm	
2. Spectrum Mask @ Target Power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3. Constellation Error(EVM) @ Target Power					
1) 6Mbps	-	-	-5	dB	
2) 9Mbps	-	-	-8	dB	
3) 12Mbps	-	-	-10	dB	
4) 18Mbps	-	-	-13	dB	
5) 24Mbps	-	-	-16	dB	
6) 36Mbps	-	-	-19	dB	
7) 48Mbps	-	-	-22	dB	
8) 54Mbps	-	-	-25	dB	
4. Frequency Error					
1) IEEE802.11g	-25	-	25	ppm	
2) IEEE802.11a	-30		30	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5. Minimum Input Level Sensitivity(each chain)					
1) 6Mbps (PER ≦10%)	-	-	-82	dBm	
2) 9Mbps (PER ≦10%)	-	-	-81	dBm	
3) 12Mbps (PER ≦10%)	-	-	-79	dBm	
4) 18Mbps (PER ≦10%)	-	-	-77	dBm	

	Min.	Typ.	Max.	Unit	Remark
5) 24Mbps (PER ≦10%)	-	-	-74	dBm	
6) 36Mbps (PER ≦10%)	-	-	-70	dBm	
7) 48Mbps (PER ≦10%)	-	-	-66	dBm	
8) 54Mbps (PER ≦10%)	-	-	-65	dBm	
6. Maximum Input Level (PER ≦10%)					
1) IEEE802.11g	-20	-	-	dBm	
2) IEEE802.11a	-30			dBm	

3.2 IEEE 802.11b Section:

Items	Contents				
Specification	IEEE802.11b				
Mode	DBPSK, DQPSK and CCK and DSSS				
Channel	CH1 to CH13				
Data rate	1, 2, 5.5, 11Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels(Calibrated)					
1) 17dBm Target (For Each antenna port) @1Mbps~11Mbps	15.5	17.5	19.5	dBm	
2. Spectrum Mask @ Target Power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
3. Constellation Error(EVM) @ Target Power					
1) 1Mbps	-	-	-10	dB	
2) 2Mbps	-	-	-10	dB	
3) 5.5Mbps	-	-	-10	dB	
4) 11Mbps	-	-20	-10	dB	
4. Frequency Error	-25	-	25	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5. Minimum Input Level Sensitivity(each chain)					
1) 1Mbps (FER ≦8%)	-	-83	-76	dBm	
2) 2Mbps (FER ≦8%)	-	-80	-76	dBm	
3) 5.5Mbps (FER ≦8%)	-	-79	-76	dBm	
4) 11Mbps (FER ≦8%)	-	-76	-76	dBm	
6. Maximum Input Level (FER ≦8%)	-10	-	-	dBm	

3.3 IEEE 802.11n HT20 Section:

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4G IEEE802.11n HT20 @ 5G				
Mode	BPSK, QPSK, 16QAM, 64QAM and OFDM				
Channel	CH1 to CH13 @ 2.4G CH36 to CH165 @ 5G				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels					
1) 16.5dBm Target (For Each antenna port) @ 2.4G/MCS0~MCS2	14.5	16.5	18.5	dBm	
2) 16dBm Target (For Each antenna port) @ 2.4G/MCS3~MCS4	14	16	18	dBm	
3) 15dBm Target (For Each antenna port) @ 2.4G/MCS5~MCS6	13	15	17	dBm	
4) 14.5dBm Target (For Each antenna port) @ 2.4G/MCS7	12.5	14.5	16.5	dBm	
5) 15.5dBm Target (For Each antenna port) @ 5G/MCS0~MCS2	13.5	15.5	17.5	dBm	
6) 15dBm Target (For Each antenna port) @ 5G/MCS3~MCS5	13	15	17	dBm	
7) 14.5dBm Target (For Each antenna port) @ 5G/MCS6	12.5	14.5	16.5	dBm	
8) 13.5dBm Target (For Each antenna port) @ 5G/MCS7	11.5	13.5	15.5	dBm	
2. Spectrum Mask @ Target Power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
3. Constellation Error(EVM) @ Target Power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-	-	-28	dB	
4. Frequency Error					
1) IEEE802.11n HT20 @ 2.4G	-25	-	25	ppm	
2) IEEE802.11n HT20 @ 5G	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5. Minimum Input Level Sensitivity(each chain)					
1) MCS0 (PER ≦10%)	-	-	-82	dBm	
2) MCS1 (PER ≦10%)	-	-	-79	dBm	
3) MCS2 (PER ≦10%)	-	-	-77	dBm	
4) MCS3 (PER ≦10%)	-	-	-74	dBm	
5) MCS4 (PER ≦10%)	-	-	-70	dBm	
6) MCS5 (PER ≦10%)	-	-	-66	dBm	

	Min.	Typ.	Max.	Unit	
7) MCS6 (PER ≦10%)	-	-	-65	dBm	
8) MCS7 (PER ≦10%)	-	-	-64	dBm	
6. Maximum Input Level (PER ≦10%)					
1) IEEE802.11n HT20 @ 2.4G	-20	-	-	dBm	
2) IEEE802.11n HT20 @ 5G	-30	-	-	dBm	

3.4 IEEE 802.11n HT40 Section:

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4G IEEE802.11n HT20 @ 5G				
Mode	BPSK, QPSK, 16QAM, 64QAM and OFDM				
Channel	CH3 to CH11 @ 2.4G CH38 to CH163 @ 5G				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels (Calibrated)					
1) 15.5dBm Target (For Each antenna port) @ 2.4G/MCS0~MCS2	13.3	15.5	17.5	dBm	
2) 15dBm Target (For Each antenna port) @ 2.4G/MCS3~MCS4	13	15	17	dBm	
3) 14dBm Target (For Each antenna port) @ 2.4G/MCS5~MCS6	12	14	16	dBm	
4) 13.5dBm Target (For Each antenna port) @ 2.4G/MCS7	11.5	13.5	15.5	dBm	
5) 14.5dBm Target (For Each antenna port) @ 5G/MCS0~MCS2	12.5	14.5	16.5	dBm	
6) 14dBm Target (For Each antenna port) @ 5G/MCS3~MCS5	12	14	16	dBm	
7) 13.5dBm Target (For Each antenna port) @ 5G/MCS6	11.5	13.5	15.5	dBm	
8) 12.5dBm Target (For Each antenna port) @ 5G/MCS7	10.5	12.5	14.5	dBm	
2. Spectrum Mask @ Target Power					
1) at fc +/-21MHz	-	-	-20	dBr	
2) at fc +/-40MHz	-	-	-28	dBr	
3) at fc > +/-60MHz	-	-	-45	dBr	
3. Constellation Error(EVM) @ Target Power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-	-	-28	dB	
4. Frequency Error					
1) IEEE802.11n HT20 @ 2.4G	-25	-	25	ppm	
2) IEEE802.11n HT20 @ 5G	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	

5. Minimum Input Level Sensitivity(each chain)					
1) MCS0 (PER ≦10%)	-	-	-79	dBm	
2) MCS1 (PER ≦10%)	-	-	-76	dBm	
3) MCS2 (PER ≦10%)	-	-	-74	dBm	
4) MCS3 (PER ≦10%)	-	-	-71	dBm	
5) MCS4 (PER ≦10%)	-	-	-67	dBm	
6) MCS5 (PER ≦10%)	-	-	-63	dBm	
7) MCS6 (PER ≦10%)	-	-	-62	dBm	
8) MCS7 (PER ≦10%)	-	-	-61	dBm	
6. Maximum Input Level(PER ≦10%)					
1) IEEE802.11n HT20 @ 2.4G	-20	-	-	dBm	
2) IEEE802.11n HT20 @ 5G	-30	-	-	dBm	

3.5 IEEE 802.11ac Section:

| Items	Contents				
Specification	IEEE802.11ac				
Mode	BPSK, QPSK, 16QAM, 64QAM ,256QAM and OFDM				
Channel	CH36 to CH165　　VHT20 CH38 to CH163　　VHT40 CH42 to CH157　　VHT80				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels (Calibrated)					
1)　15.5dBm Target (For Each antenna port) @VHT20 MCS0~MCS2	13.5	15.5	17.5	dBm	
2)　15dBm Target (For Each antenna port) @VHT20 MCS3~MCS5	13	15	17	dBm	
3)　14.5dBm Target (For Each antenna port) @VHT20 MCS6	12.5	14.5	16.5	dBm	
4)　13.5dBm Target (For Each antenna port) @VHT20 MCS7	11.5	13.5	15.5	dBm	
5)　12.5dBm Target (For Each antenna port) @VHT20 MCS8	10.5	12.5	14.5	dBm	
6)　14.5dBm Target (For Each antenna port) @VHT40 MCS0~MCS2	12.5	14.5	16.5	dBm	
7)　14dBm Target (For Each antenna port) @VHT40 MCS3~MCS5	12	14	16	dBm	
8)　13.5dBm Target (For Each antenna port) @VHT40 MCS6	11.5	13.5	15.5	dBm	
9)　12.5dBm Target (For Each antenna port) @VHT40 MCS7	10.5	12.5	14.5	dBm	
10) 11.5dBm Target (For Each antenna port) @VHT40 MCS8	9.5	11.5	13.5	dBm	
11) 10.5dBm Target (For Each antenna port) @VHT40 MCS9	8.5	10.5	12.5	dBm	
12) 13.5dBm Target (For Each antenna port)	11.5	13.5	15.5	dBm	

	Min.	Typ.	Max.			Unit	
@VHT80 MCS0~2							
13) 13dBm Target (For Each antenna port) @VHT80 MCS3~5	11	13	15			dBm	
14) 12.5dBm Target (For Each antenna port) @VHT80 MCS6	10.5	12.5	14.5			dBm	
15) 11.5dBm Target (For Each antenna port) @VHT80 MCS7	9.5	11.5	13.5			dBm	
16) 10.5dBm Target (For Each antenna port) @VHT80 MCS8	8.5	10.5	12.5			dBm	
17) 9.5dBm Target (For Each antenna port) @VHT80 MCS9	7.5	9.5	11.5			dBm	
2. Spectrum Mask @ Target Power							
1) at fc +/-11MHz /20MHz/30MHz	-	-	-20			dBr	
2) at fc +/-21MHz /40MHz/60MHz	-	-	-28			dBr	
3) at fc +/-41MHz /80MHz/120MHz	-	-	-40			dBr	
3. Constellation Error(EVM) @ Target Power							
1) MCS0	-	-	-5			dB	
2) MCS1	-	-	-10			dB	
3) MCS2	-	-	-13			dB	
4) MCS3	-	-	-16			dB	
5) MCS4	-	-	-19			dB	
6) MCS5	-	-	-22			dB	
7) MCS6	-	-	-25			dB	
8) MCS7	-	-	-27			dB	
9) MCS8			-30			dB	
10) MCS9			-32			dB	
4. Frequency Error	-10	-	10			ppm	
RX Characteristics	Min.	Typ.	Max.			Unit	
5. Minimum Input Level Sensitivity(each chain)			VHT20	VHT40	VHT80		
1) MCS0 (PER ≦10%)	-	-	-82	-79	-76	dBm	
2) MCS1 (PER ≦10%)	-	-	-79	-76	-73	dBm	
3) MCS2 (PER ≦10%)	-	-	-77	-74	-71	dBm	
4) MCS3 (PER ≦10%)	-	-	-74	-71	-68	dBm	
5) MCS4 (PER ≦10%)	-	-	-70	-67	-64	dBm	
6) MCS5 (PER ≦10%)	-	-	-66	-63	-60	dBm	
7) MCS6 (PER ≦10%)	-	-	-65	-62	-59	dBm	
8) MCS7 (PER ≦10%)	-	-	-64	-61	-58	dBm	
9) MCS8 (PER ≦10%)	-	-	-59	-56	-53	dBm	
10) MCS9 (PER ≦10%)	-	-	-57	-54	-51	dBm	
6. Maximum Input Level(PER ≦10%)	-30	-	-			dBm	

4. Software Requirements

The driver supports the following operating systems: Linux, Microsoft Windows XP, Vista and Win7.
Mfg. software tool is QDART.

5. Antenna matching

The BT RF ，ANT0 and ANT1 Pin connect to antenna, please refer to design demand
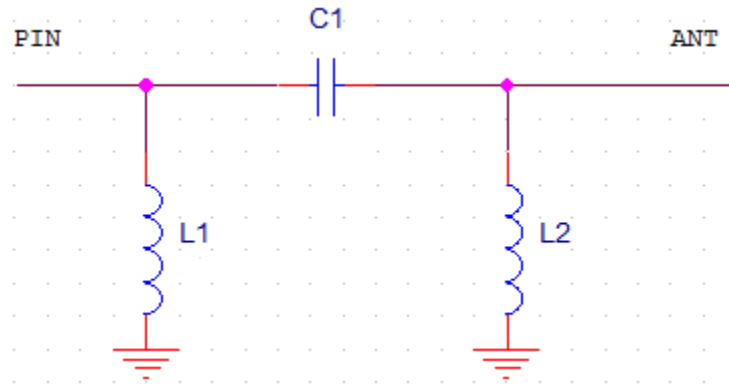
a). 模块和天线要求远离干扰源，模块地和天线地要求为一个整体。

b). PIN12,PIN19和PIN22为模组的RF接口，与天线之间布线要求共面阻抗为50Ω，建议使用弧线和直线，长度尽可能短。

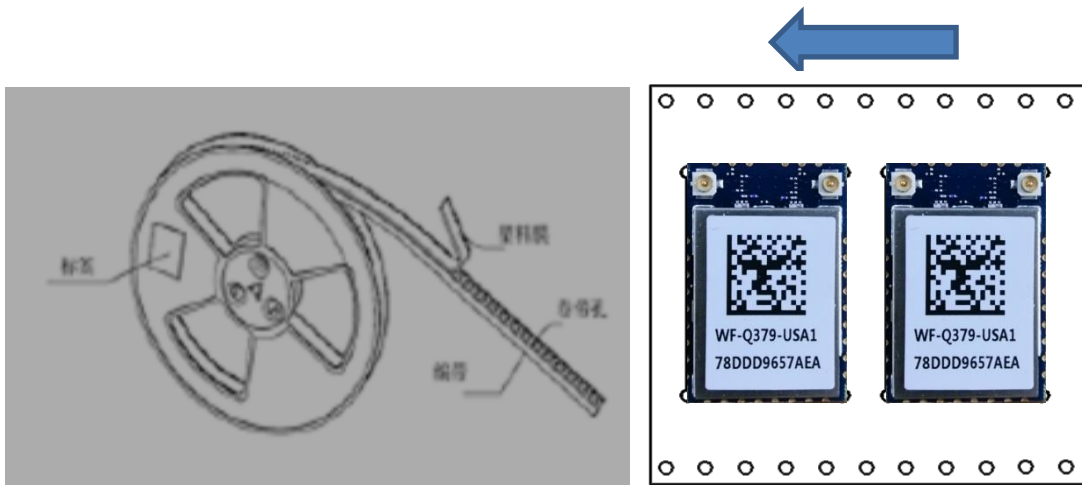c). L1, L2, C1组成π型匹配网络并靠近天线接口设计，具体根据天线推荐及排版设计的实测效果进行调整。

6. Key component List

序号	关键件名称	型号	规格/材料	生产者	备注
1	集成电路	QCA9379-7	QFN	Qualcomm	
2	PCB	JUI7.820. 0317系列	FR-6,4LAY	顺　络 英创力 昌盛艺龙	
3	晶体振荡器		SMD2520-48M	晶威特 Hosonic 加高 TXC	
4	双工器		1608	ACX TDK 华新科 顺络	

7. Packaging Information:

编带尺寸：
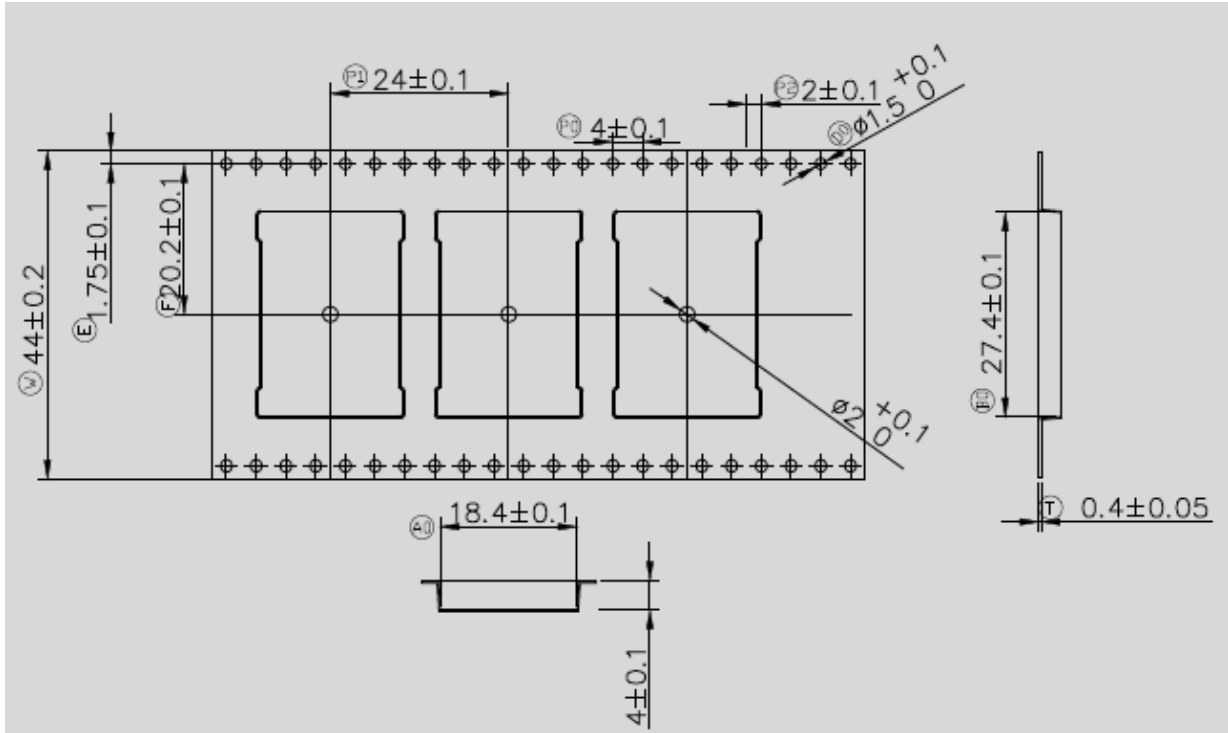
编带方向：（箭头代表编带走向）

包装示意图：

注：上图 3 个框示处为内盒标签粘贴位置。

注：红色箭头处为外箱标签粘贴位置。

标签样式：

内盒标签示例

外箱装箱清单标签示例

包装说明：

1.产品放置方向、标签粘贴位置、包装按示意图进行；

2.每卷放600只产品，每小盒放1卷，大箱共5装个小盒，产品数量共3000只/箱；

3.外箱尺寸：378mm*297mm*370mm，小盒尺寸：355mm*355mm*50mm；

4.真空包内放置2g干燥剂2袋，6色湿度卡1张;

5.其它按CVTE包装要求执行;

FCC 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.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

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.

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

Please notice that 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 FCC ID: 2AFG6-WF-Q379-USA1" any similar wording
that expresses the same meaning may be used.

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

The module is limited to OEM installation ONLY.

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile or fixed application.

A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

There is requirement that the grantee provide guidance to the host manufacturer for compliance with Part 15B requirements

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules
Part 15.247 and Part 15.407

2.3 Specific operational use conditions
The module is limited to installation in mobile or fixed application.
A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

2.4 Limited module procedures
Not applicable as this is not a limited modular.

2.5 Trace antenna designs
Not applicable as there is no trace antenna design in this modular.

2.6 RF exposure considerations
For the end host, the antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

2.7 Antennas
For BT&LE

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1		TB-SR-41Y	Dipole	N/A	2.76

For WIFI 2.4G &5G

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	South star	N/A	PCB	N/A	3.95(2.4G) 3.33(5G)
2	South star	N/A	PCB	N/A	3.95(2.4G) 3.33(5G)

2.8 Label and compliance information
Host product manufacturers are required to provide a physical or e-label stating "Contains FCC ID: 2AFG6-WF-Q379-USA1" with their finished product.

2.9 Information on test modes and additional testing requirements
Test modes should take into consideration different operational conditions for a stand-alone

modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

2.10 Additional testing, Part 15 Subpart B disclaimer

This modular transmitter is **only** FCC authorized for FCC Part 15.247&15.407 as listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.