深圳市铨顺宏科技有限公司

ShenZhen Fuwit Technology Co., Ltd.

Product Approval Datasheet

P/N: GM5931 Module

品 名 / 規格 DESCRIPTION			客 戶 CUSTOMER
发 行 MADE	检 查 CHECKED	承 认 APPROVED	
Dence	Jeary	Henry	
DATE：2013/12/30			DATE：

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1.Overview ：

GM5931 is a WLAN 11n SDIO Module, which fully supports the features and Functional compliance of IEEE 802.11n,e and i standards.

It supports up to 150Mbps high-speed wireless network connections.

It is designed to provide excellent performance with low power Consumption and enhance the advantages of robust system and cost-effective.

It is targeted at competitive superior performance, better power Management applications.

2. WIFI Features

2.1 General

- 48 -pin Stamp hole
- CMOS MAC, Baseband PHY, and RF in a single chip for IEEE 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4GHz band
- 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- Compatible with 802.11n specification
- Backward compatible with 802.11b/g devices while operating in 802.11n mode

2.2 Interface

- Complies with SDIO 2.0 for WLAN

2.3 Standards Supported

- IEEE 802.11b/g/n compatible WLAN
- IEEE 802.11e QoS Enhancement (WMM)
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services

2.4 WLAN MAC Features

- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- PHY-level spoofing to enhance legacy compatibility
- Power saving mechanism
- Channel management and co-existence

- Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth

2.5 WLAN PHY Features

IEEE 802.11n OFDM

- One Transmit and one Receive path (1T1R)
- 20MHz and 40MHz bandwidth transmission
- Short Guard Interval (400ns)
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4,and 5/6
- Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n
- Hardware antenna diversity in per packet base
- Selectable receiver FIR filters
- Programmable scaling in transmitter and receiver to trade quantization noise againstincreased probability of clipping
- Fast receiver Automatic Gain Control (AGC)
- On-chip ADC and DAC
  - Built-in hardware modem engine for access code correlation, header error correction, forward err correction, CRC, whitening, and encryption
  - Channel quality driven data rate adaptation
  - Channel assessment for AFH

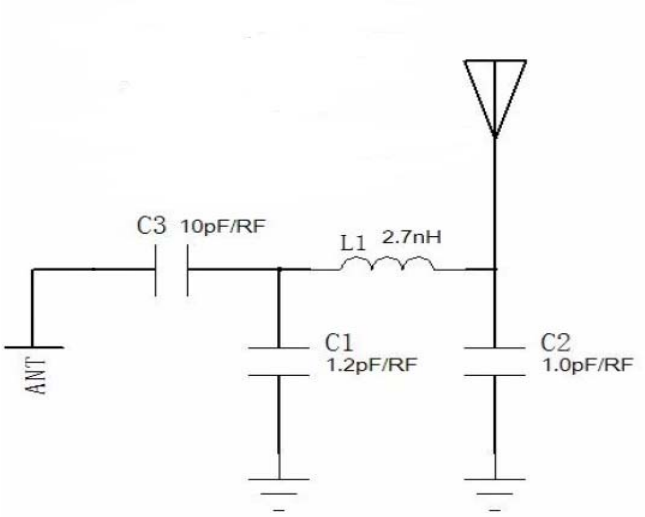
- **Platform features**
  - 32-bit RISC microprocessor
  - Integrated LDO enables direct connection to battery.
  - Wide range of frequency of crystal and external reference clock support.
  - High speed UART supports up to 4Mbps baud rate
  - Built-in RAM and ROM with patch system.
  - External LPO clock support for sleep mode.
  - Supports standard HCI interface.
  - Idle mode and sleep mode design enables ultra low power performance

3. General Specification

Model	**GM5931-1450**
Product Name	WLAN 11n SDIO 1T1R +BT2.1 UART module
Major Chipset	MT5931SA
Standard（WIFI）	802.11b/g/n, 802.3, 802.3u
DataTransfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 150Mbps
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM
Frequency Band	2.4~2.4835 GHz ISM Band
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
RF Output Power	< 14dBm@11n，< 15dBm@11g，< 19dBm@11b
Operation Mode	Ad hoc, Infrastructure
Receiver Sensitivity	11Mbps-86dBm@8%,54Mbps -73dBm@10%,130Mbps，-66dBm@10%
OperationRange	Up to 180 meters in open space
LED	NO
OS Support	Windows 2000,XP32-64,Vista 32/64,Win7 32/64,Linux,Mac, Android，WIN CE
Security	WEP, TKIP, AES, WPA, WPA2
Interface	SDIO
Power Consumption	DC3.3V　Maximum power dissipation in 80MA
Operating Temperature	-10~ +65° C ambient temperature
Storage Temperature	-20 ~ 75°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	14.5 x 14.5 x 1.6mm (LxWxH) +-0.2MM

4. External antenna reference design

This part needs to be done 50R the impedance of the LAYOUT of the line is a straight line or curve, and not more than 20 mm if you want to do is compatible with the wrapping as far as possible don't have feedback



5. DC Characteristics

Note:All results are measured at the antenna port and VBAT is 3.6V

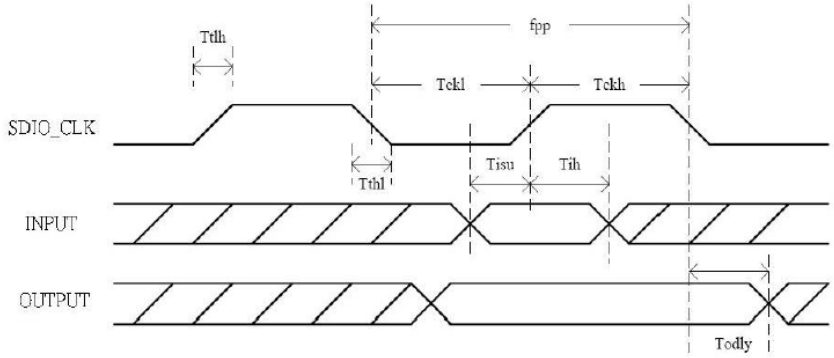
Description	Performance	
	TYP	UNITS
Off	15	μA
Rx active,BW40,HT40 MCS7	53.8	mA
Rx active,BW20,all supported rates	48.9	mA
Rx listen	36.2	mA
Sleep mode	74	μA
Rx power saving,DTIM=1	0.54	mA
TX HT40,MCS7@11dBm	164	mA
TX HT20,MCS7@14dBm	170	mA
TX OFDM,54M@15.5dBm	187	mA
TX CCK,11M@18.5dBm	190	mA

Operating mode	Current consumption	Unit
Deep sleep mode	50	μA
Bluetooth continuous transmit (TX output power: 10dBm)	49	mA
Bluetooth continuous receive (TX power: -90dBm)	34	mA
Bluetooth SCO connection, HV3 packets	-	mA
Bluetooth sniff mode + page scan (Page scan interval = 1.28 sec, sniff interval = 500ms.)	-	mA
Bluetooth page scan + inquiry scan (Page scan interval = 1.28s, inquiry scan interval = 2.56s)	0.5	mA
Bluetooth page scan (Page scan interval = 1.28s)	0.34	mA

6. Power Consumption

Parameters	Conditions	Typ	Unit
Receiving Tests the biggest receive	11MBPS	90	MA
	54MBPS	90	MA
	65MBPS	90	MA
	135MBPS	90	MA
Transmission Biggest transmission test	11MBPS	120	MA
	54MBPS	110	MA
	65MBPS	110	MA
	135MBPS	105	MA
The depth waits for an opportunity		5	MA
Deep sleep		5	MA
Browse the webcurrent		90	MA
High-definition current		100	MA

7. SDIO interface electrical characteristics



8. Pin Description

Terminal NO.	Terminal Name	Terminal Voltage
1	SYSRST_B	
2	WIFI_EN	
3	WIFI_EN	
4	WIFI-INT	
7	GND	
8	WIFI_INT	
9	VBAT	
10	VBAT	3.4V
11	SD_DAT0	SDIO
12	SD_DAT2	SDIO
13	SD_CLK	SDIO
14	SD_CMD	SDIO
15	SD_DAT1	SDIO
16	SD_DAT3	SDIO
27	GND	
32	GND	

33	BT_PWR_EN	BT_PMU_EN
44	GND	
45	WIFI_ANT	WIFI_RFPORT
46	FSOURCE	
48	GND	

9. Matters needing attention before patch installed the WIFI module

9.1 The customer must be at the time of open stencil will solder hole up WIFI module, please press 1 to 1 0.7 Mm is widened to open outward again, according to the thickness of 0.12 Mm.

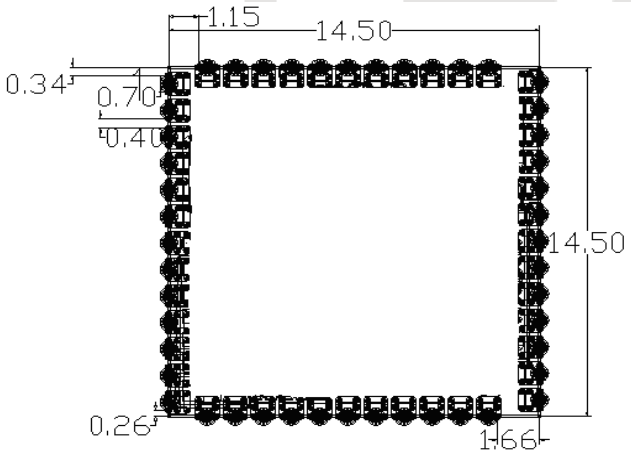
9.2 The WIFI module before launch patch must bake for 12 hours, the temperature at 120 degrees + - 5 degrees.

9.3 Baking advice online immediately after OK, don't after a baking OK will all WIFI module Block out of baking box. How many Suggestions posted how much per hour.

9.4 There is need to get the WIFI module must not be light to get WIFI module, be sure to wear On the gloves and static ring.

9.5 A furnace temperature according to the size of the customer the mainboard, generally like to stick on the tablet 250 + - 5 degrees.

10. PCB size



Note: we have green, colors of PCB