



IEEE 802.11 b/g/n 1T/1R IOT Module SPECIFICATION SHEET

Model No. WL11M1000

**Prepared by David Qiu
on behalf of FRUITION CO., LTD.**

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1 Product Overview

1.1 General Description

This document provides the hardware specification of the WL11M1000 802.11b/g/n 1T1R module. It is based on the MTK MT7682 low-power chipset complied with the IEEE 802.11n standard, and is backward-complied with IEEE 802.11b/g standards from 2.4–2.5GHz. It can be used to provide up to 54 Mbps under the IEEE 802.11g standard, 11 Mbps under the IEEE 802.11b standard, and 150Mbps under the IEEE 802.11n standard.

With seamless roaming and security compliance with the WEP standard, our WL11M1000 802.11b/g/n module offers absolute interoperability between nearly all available wireless access points.

1.2 Features

- Supports all data rates of the IEEE 802.11g standard, including 6, 9, 12, 18, 24, 36, 48 and 54 Mbps.
- Supports short GI and all data rates of 802.11n including MCS0 to MCS7.
- Compliant with wireless security protocols WEP, WPA2 and WPS.
- Supports SoftAP and sniffer modes.
- Supports MediaTek Smart Connection.
- Supports multi-cloud connectivity.
- Interface multiplexing with GPIO.
- Lightweight TCP/IP protocol.
- RoHS compliant.

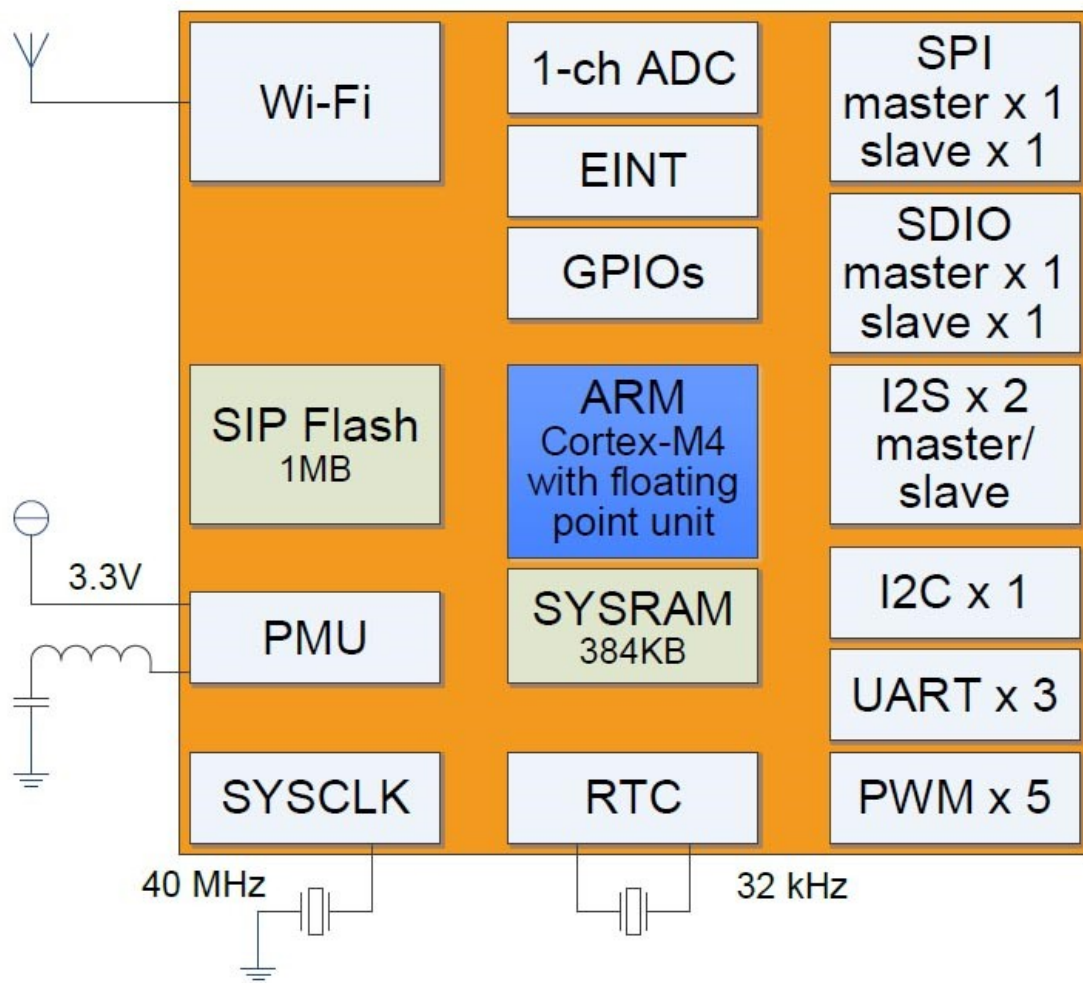


Figure 1.1: Functional block diagram of the WL11M1000 wireless module.

2 Detailed Specifications

2.1 Physical Dimensions

Size: 12 mm x 12 mm x 0.8 mm.

Weight: 0.4 g

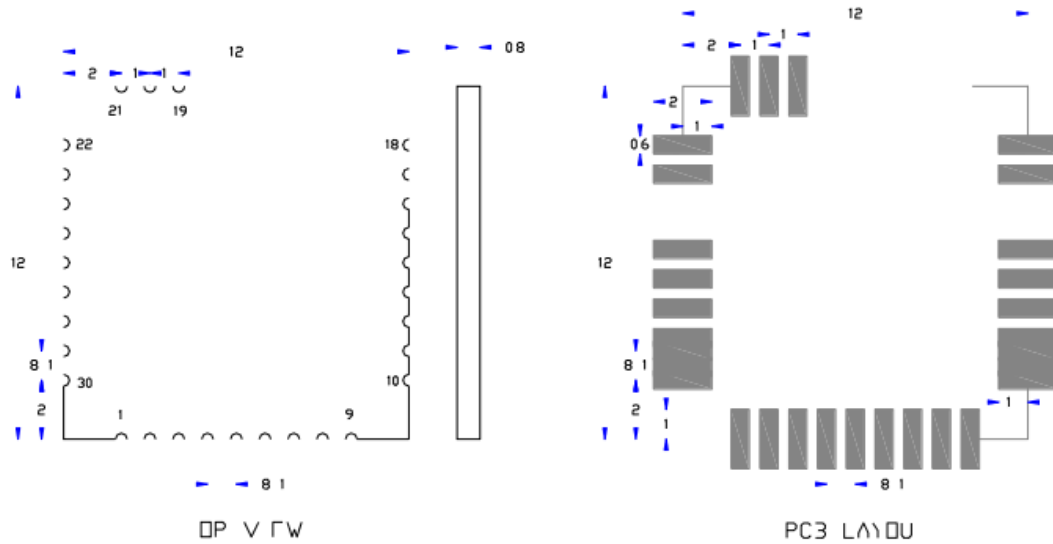


Figure 2.1: Dimensions of the WL11M1000 wireless module.

2.2 I/O Specifications

All data listed below were recorded at 25 °C.

Operating voltage: (3.3 ± 0.3) V

Maximum current usage: 120 mA (RX) or 300 mA (TX)

Table 2.1: I/O specifications for the WL11M1000 wireless module under the IEEE 802.11b standard.

Feature	Description
Standard	IEEE 802.11n
Radio and Modulation Type	BPSK QPSK 16QAM 64QAM with OFDM
Operating Frequency	2400–2483.5MHz
Maximum Data Rate	”
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power at Antenna Connector	12±2 dBm
Receiver Sensitivity at Antenna Connector	-68 dBm

Table 2.2: I/O specifications for the WL11M1000 wireless module under the IEEE 802.11g standard.

Feature	Detailed Description
Standard	IEEE 802.11g
Radio and Modulation Type	QPSK BPSK 16QAM 64QAM with OFDM
Operating Frequency	2400–2483.5MHz ISM band
Channel Numbers	13 channels for Worldwide
Maximum Data Rate	54 Mbps
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power at Antenna Connector	14±2 dBm at 54Mbps
Receiver Sensitivity at Antenna Connector	-71 dBm at 54 Mbps

Table 2.3: I/O specifications for the WL11M1000 wireless module under the IEEE 802.11n standard.

Feature	Description
Standard	IEEE 802.11n
Radio and Modulation Type	BPSK QPSK 16QAM 64QAM with OFDM
Operating Frequency	2400–2483.5MHz
Maximum Data Rate	150 Mbps
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power at Antenna Connector	12±2 dBm
Receiver Sensitivity at Antenna Connector	-68 dBm

2.3 Memory Specifications

- Up to 384 KB SRAM, with zero-wait state, and a maximum frequency of 96 MHz.

- Up to 32 KB L1 cache with high bit rate, zero-wait state, and a maximum frequency of 192 MHz.
- Embedded 8 Mbits flash, with less than 0.1 μA (typical), and a maximum frequency of 80 MHz.

2.4 Electrical and Thermal Conditions

Table 2.4: Temperature limit ratings for the WL11M1000 wireless module.

Parameter	Operating Range
Storage Temperature	-40–80 °C
Ambient Operating Temperature	0–60 °C
Junction Temperature	0–125 °C

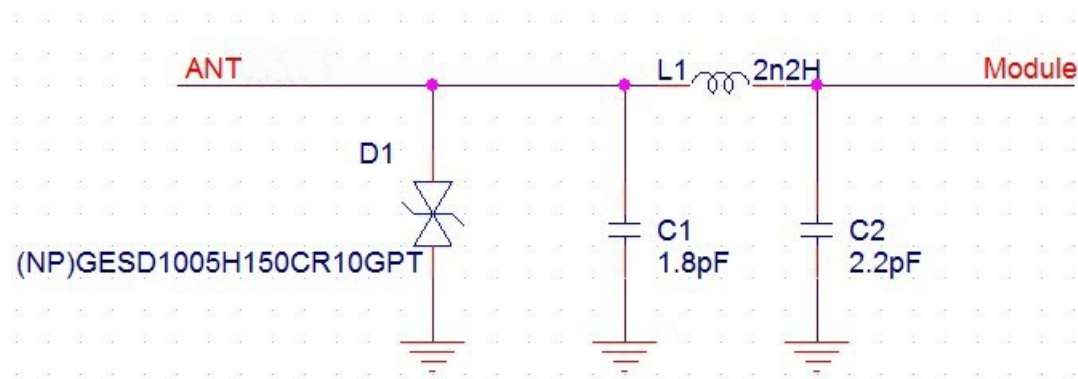
3 Programming Interface

Figure 3.1: Pin definitions of the WL11M1000 wireless module.

Pin	Symbol	Description	Pin	Symbol	Description
1	32K_X1	Input pin for External 32K crystal	16	VCC	3.3V power input
2	32K_X2	Input pin for External 32K crystal	17	n.c	n.c
3	RTC_EINT	Dedicate EINT input in RTC	18	GND	Ground
4	VRTC	RTC domain power supply	19	GND	Ground
5	EXT_PWR_EN	PMU enable	20	RF	RF I/O
6	CHIP_EN	Chip enable	21	GND	Ground
7	GPIO0	General purpose input/output	22	GND	Ground
8	GPIO1	General purpose input/output	23	GPIO16	General purpose input/output
9	GPIO21	General purpose input/output	24	GPIO17	General purpose input/output
10	GPIO22	General purpose input/output	25	GPIO11	General purpose input/output
11	GPIO3	General purpose input/output	26	GPIO12	General purpose input/output
12	GND	Ground	27	GPIO15	General purpose input/output
13	GPIO4	General purpose input/output	28	GPIO14	General purpose input/output
14	GPIO2	General purpose input/output	29	GPIO13	General purpose input/output
15	VDDIO	Power input of GPIO	30	GND	Ground

Ball Name	Aux Func.0	Aux Func.1	Aux Func.2	Aux Func.3	Aux Func.4	Aux Func.5	Aux Func.6	Aux Func.7	Aux Func.8	Aux Func.9	Aux Func.10
GPIO_0	GPIO0	EINT0		U1RTS	SCL1	I2S_RX	JTDI		WIFI_ANT_S ELO	BT_PRI1	PWM0
GPIO_1	GPIO1	EINT1		U1CTS	SDA1	I2S_TX	JTMS		WIFI_ANT_S EL1	BT_PRI3	PWM1
GPIO_2	GPIO2	EINT2		URXD1	PWM0	I2S_WS	JTCK	CLK00		BT_PRI0	WIFI_ANT_S EL4
GPIO_3	GPIO3	EINT3		UTXD1	PWM1	I2S_CK	JTRST_B			WIFI_ANT_S EL2	I2S_CK
GPIO_4	GPIO4	SPISLV_A_SIO2	SPIMST_A_SIO2	EINT4		I2S_MCLK	JTDO			WIFI_ANT_S EL3	I2S_MCLK
GPIO_11	GPIO11	EINT11	PWM3	URXD2	MA_MC0_CK	SLV_MC0_CK	CLK02			WIFI_ANT_S ELO	I2S_RX
GPIO_12	GPIO12	SPISLV_B_SIO3	SPIMST_B_SIO3	UTXD2	MA_MC0_C M0	SLV_MC0_C M0	EINT12			WIFI_ANT_S EL1	I2S_TX
GPIO_13	GPIO13	SPISLV_B_SIO2	SPIMST_B_SIO2	U2RTS	MA_MC0_D A0	SLV_MC0_D A0	CLK04		EINT13		I2S_WS
GPIO_14	GPIO14	SPISLV_B_SIO1	SPIMST_B_SIO1	TDM_RX	MA_MC0_D A1	SLV_MC0_D A1	PWM4		EINT14		CLK04
GPIO_15	GPIO15	SPISLV_B_SIO0	SPIMST_B_SIO0	TDM_TX	MA_MC0_D A2	SLV_MC0_D A2	SCL1		EINT15		PWM3
GPIO_16	GPIO16	SPISLV_B_SCK	SPIMST_B_SCK	TDM_WS	MA_MC0_D A3	SLV_MC0_D A3	SDA1		EINT16		
GPIO_17	GPIO17	SPISLV_B_CS	SPIMST_B_CS	TDM_CK	PWM5	CLK03	AUXADC0		EINT17		BT_PRI0
GPIO_21	GPIO21	URXD0	EINT19	SCL1		PWM5					
GPIO_22	GPIO22	UTXD0	EINT20								

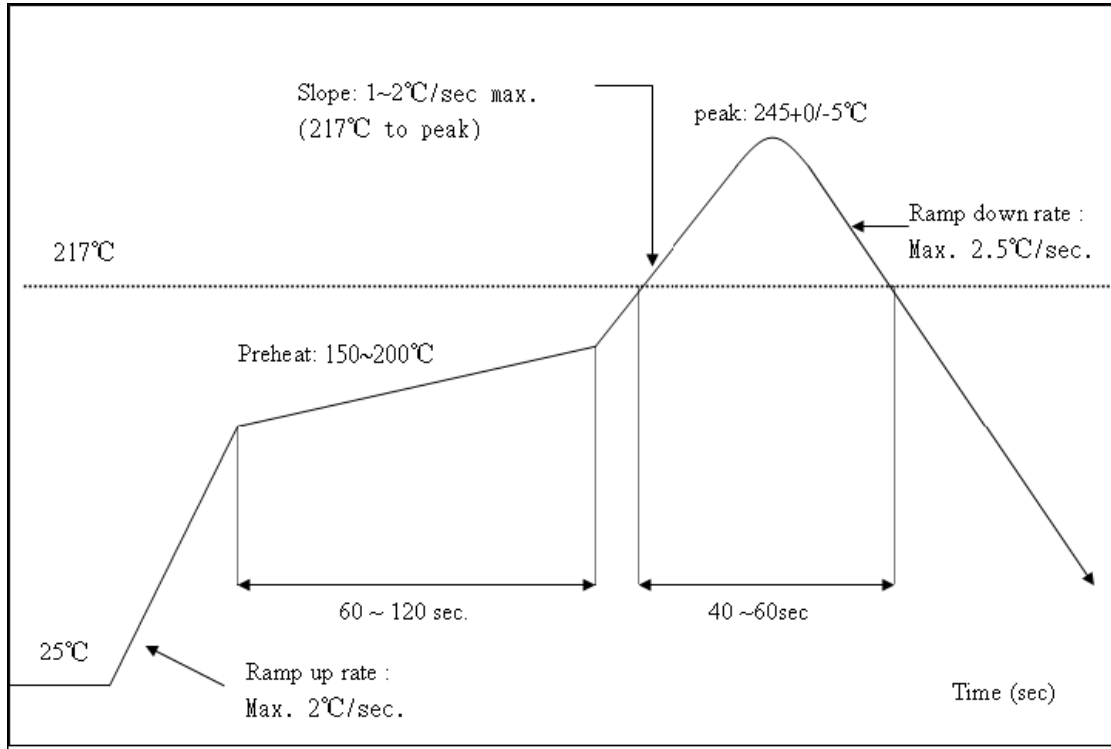
4 General Recommendations



Wireless antennae matching circuits C1, C2, and L1 have been soldered on the board in advance. Ensure the RF input on the motherboard has an impedance of 50 ohms. It is also not recommended to have a 90 degree cable route, as the cable's length does not exceed 20 mm.

Reflow profile was determined according to the IPC/JEDEC standard. It is recommended to use a peak temperature less than 250 °C, repeated two or fewer times.

Figure 4.1: Recommended reflow profile.



Upon opening the package, it is strongly advised to use nitrile gloves and an anti-static ring while handling the modules. Generally, it is advised to use a furnace temperature of 250 °C. Limit the module's exposure to humidity and ambient conditions. The module has a storage life of 12 months, and should be stored under 40 °C and under 90% humidity. Modules should also be baked at 125 °C for 8 hours to remove excess moisture, improving storage lifetime. Remember to place dessicant packages following baking.



5 Module Packaging

The outer box has dimensions of 426 mm × 378 mm × 220 mm.

The inner box has dimensions of 414 mm × 365 mm × 38 mm.

The anti-static vacuum packaging has dimensions of 360 mm × 430 mm.

Each package contains 7500 pieces a carton, with 5 inner boxes containing 1500 pieces each.

Figure 5.1: Packaging protocol of the WL11M1000 wireless module prior to shipping.

