Data Sheet

EMW3162

Embedded Wi-Fi module

2.2 **Date : 2013-08-11** **Data Sheet**

Overview

EMW3162 is a low-power embedded Wi-Fi module integrates a wireless LAN MAC/baseband /radio, and a Cortex-M3 microcontroller STM32F205 that runs a unique "self-hosted" Wi-Fi networking library and software application stack. EMW3162 has 1M bytes flash, 128k RAM and rich peripherals for your embedded Wi-Fi applications.

EMW3162 is also an **mxchipWNet™** compatible platform, users can build their own embedded Wi-Fi applications based on **mxchipWNet™** library which manage all of the Wi-Fi MAC and TCP/IP stack processing. We also provide several **mxchipWNet™** firmware to meet typical applications: wireless UART, wireless audio, wireless sensor etc.

When using **mxchipWNet™** -DTU firmware, you can establish Wi-Fi networking for any device with a micro-controller and a UART interface. Quick development cycles enables fast time to market.

EMW3162 and EMW3280 are pin compatible.

Applications

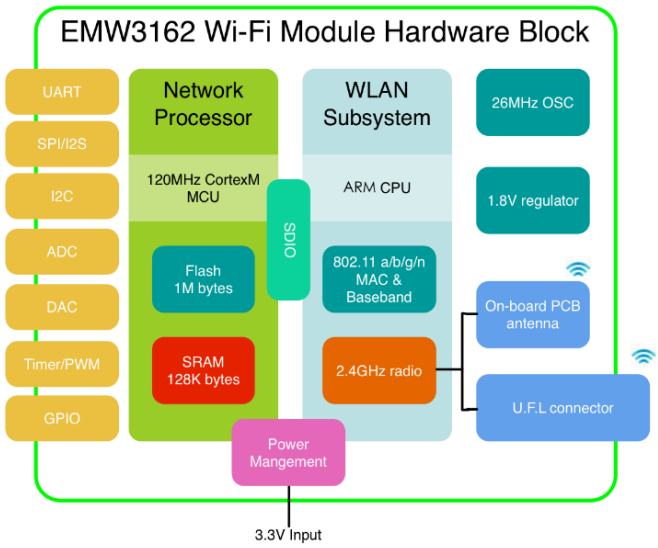
- Building Automation / Access Control
- Smart home appliances
- Medical/Health Care
- Industrial Automation Systems
- Point Of Sale system (POS)
- Auto electronics

Product list

Module	-	Antenna	
EMW3162	-	P	On-board PCB antenna
	-	E	IPEX connector

Firmware/Library	Function
mxchipWNet™ -DTU	Predefined firmware: UART/Wi-Fi conversion
mxchipWNet™ Library	Software library used to develop custom firmware
mxchipWNet™ Library Plus	Software library based on RTOS
WICED™ Firmware development kit	WICED™ source codes with TCP/IP, Wi-Fi MAC RTOS and GCC tool chain

Hardware block



Contents

1 Introduction

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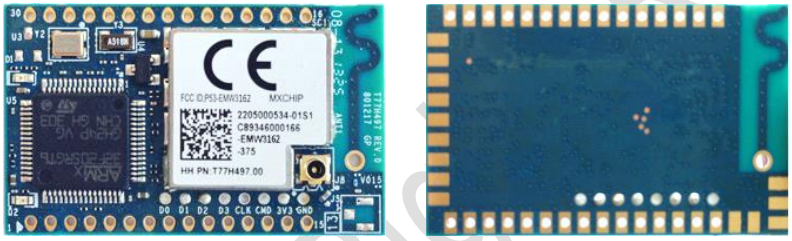
EMW3162 and EMW3280 are pin compatible.



1.1 Features

★ Single operation voltage：3.3V

★ Power consumption:

Only ~7mA while module is connected to access point and no data is transmitting,

Only ~24mA while sending data under 20kbps,

Only 8μA under standby mode.

★ STM32F2 MCU frequency: 120MHz，flash size: 1M bytes，RAM size: 128k bytes.

★ On-chip functionality Single-chip: MAC/BB/RF

★ Peripherals：

- 32 x GPIOs
- 2 x UARTs，includes hardware flow control
- 1 x SPI/I2S
- 8 x ADC input channels，2 DAC output channel
- 1 x USB OTG, 2 x CAN
- 1 x I2C
- PWM/Timer input/output available on every GPIO pin
- SWD debug interface

- ★ Wi-Fi connectivity
  - 802.11b, 802.11g, 802.11n (single stream) on channel 1-14@2.4GHz
  - WEP, WPA/WPA2 PSK/Enterprise
  - Transmit power：18.5dBm@11b，15.5dBm@11g，14.5dBm@11n
  - MIN Receiver Sensitivity: -96 dBm
  - Max Data rate：11Mbps@11b，54Mbps@11g，72Mbps@11n HT20
  - Wi-Fi modes：Station, Soft AP and Wi-Fi direct
  - Advanced 1x1 802.11n features
    - Full/Half Guard Interval
    - Frame Aggregation
    - Space Time Block Coding (STBC)
    - Low Density Parity Check (LDPC) Encoding
  - Hardware Encryption: WEP, WPA/WPA2
  - WPS 2.0, EasyLink
  - Multiple power save modes
  - On-board chip antenna，IPEX connector for external antenna
  - CE，FCC compliant
- ★ Operating Temperature: -40℃ to 85℃
- ★ MSL level 3

2 Interface

2.1 Led

Table 2.1 LED functions

Name	Color	GPIO
D1	Green	PB0
D2	Red	PB1

2.2 Pinouts

EMW3162 has two groups of pins (1X15 +1X15). The lead pitch is 2mm.

Pinout is shown in the Figure 2.1. Table 2.2 lists the pin functions.

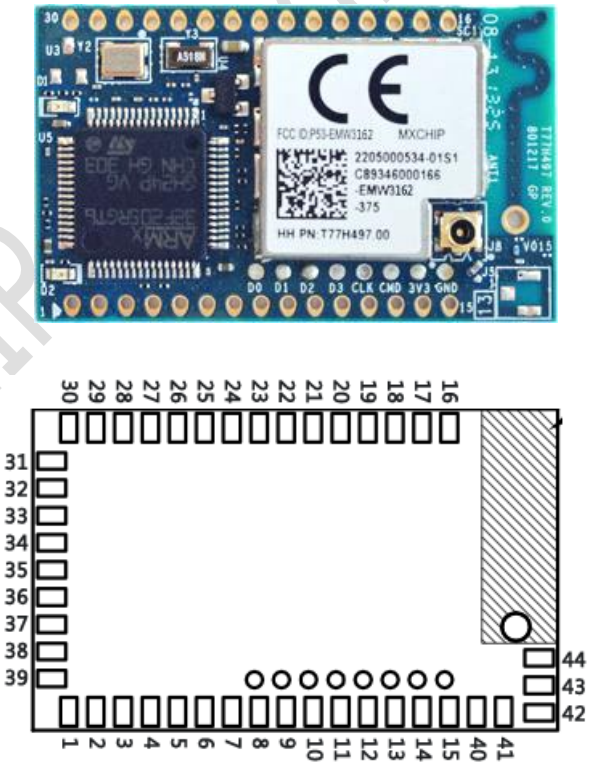


Figure2.1 EMW3162: appearance and pinout

2.3 Pin Arrangement

Figure 2.2 EMW3162 pin arrangement

Pins	Name	Type	IO level	Main function (after reset)	Alternate functions	Other functions
1	PB6	I/O	FT	PB6	I2C1_SCL/ USART1_TX / TIM4_CH1 / CAN2_TX	
2	PB7	I/O	FT	PB7	I2C1_SDA / USART1_RX/ TIM4_CH2	
3	PA13	I/O	FT	SWDIO		
4	PC7	I/O	FT	PC7	I2S3_MCK / TIM8_CH2/ TIM3_CH2 / USART6_RX	
5	PA3	I/O	FT	PA3	TIM5_CH4 / TIM9_CH2 / TIM2_CH4 /	ADC123_IN3
6	PA4	I/O	TT	PA4	SPI1_NSS / SPI3_NSS / I2S3_WS	ADC12_IN4 / DAC1_OUT
7	PB3	I/O	FT	JTDO/ TRACESWO	JTDO/ TRACESWO/ I2S3_SCK / TIM2_CH2 / SPI1_SCK / SPI3_SCK/	
8	PB4	I/O	FT	NJTRST	NJTRST/ SPI3_MISO / TIM3_CH1 / SPI1_MISO/	
9	PB5	I/O	FT	PB5	I2C1_SMBA / TIM3_CH2 / SPI1_MOSI/ SPI3_MOSI / CAN2_RX	
10	PB8	I/O	FT	PB8	TIM4_CH3 / TIM10_CH1 / I2C1_SCL / CAN1_RX	
11	PA1	I/O	FT	PA1	TIM5_CH2 / TIM2_CH2	ADC123_IN1
12	PC2	I/O	FT	PC2		ADC123_ IN12
13	PB14	I/O	FT	PB14	TIM1_CH2N / TIM12_CH1 / TIM8_CH2N/	
14	PC6	I/O	FT	PC6	TIM8_CH1 / TIM3_CH1 / USART6_TX	
15	GND					
16	PB1	I/O		PB1	TIM3_CH4 / TIM8_CH3N/ TIM1_CH3N/	ADC12_IN9
17	nRESET					
18	PA15	I/O	FT	JTDI	JTDI/ SPI3_NSS/ I2S3_WS/ TIM2_CH1_ETR / SPI1_NSS	
19	PB11	I/O	FT	PB11	TIM2_CH4	
20	PA12	I/O	FT	PA12	USART1_RTS / CAN1_TX/ TIM1_ETR/ OTG_FS_DP	

Pins	Name	Type	IO level	Main function (after reset)	Alternate functions	Other functions
21	PA11	I/O	FT	PA11	USART1_CTS / CAN1_RX / TIM1_CH4 / OTG_FS_DM	
22	PA9	I/O	FT	PA9	USART1_TX/ TIM1_CH2	OTG_FS_VBUS
23	PA10	I/O	FT	PA10	USART1_RX/ TIM1_CH3/ OTG_FS_ID	
24	VCC					
25	GND					
26	NC					
27	BOOT0	I		BOOT0		
28	PA14	I/O		JTCK- SWCLK	JTCK-SWCLK	
29	PA0-WKUP	I/O		PA0-WKUP	TIM2_CH1_ETR/ TIM5_CH1 / TIM8_ETR	ADC123_IN0/ WKUP
30	PB9	I/O		PB9	TIM4_CH4/ TIM11_CH1 / I2C1_SDA / CAN1_TX	
31	PA5	I/O	TT	PA5	SPI1_SCK / TIM2_CH1_ETR/ TIM8_CHIN	ADC12_IN5 /DAC2_OUT
32	PA6	I/O	FT	PA6	SPI1_MISO / TIM8_BKIN/TIM13_CH1 / TIM3_CH1 / TIM1_BKIN	ADC12_IN6
33	PA8	I/O	FT	PA8	MCO1 / USART1_CK/ TIM1_CH1/ I2C3_SCL	
34	PB15	I/O	FT	PB15	TIM1_CH3N / TIM8_CH3N / TIM12_CH2 /RTC_50Hz	
35	PC3	I/O	FT	PC3		ADC123_ IN13
36	PC4	I/O	FT	PC4		ADC12_IN14
37	NC					
38	NC					
39	GND					
40	GND					
41	GND					
42	GND					
43	GND					
44						

1. FT = 5 V tolerant; TT = 3.6 V tolerant.
2. FT = 5 V tolerant except when in analog mode or oscillator mode (for PC14, PC15, PH0 and PH1).
3. I = input, O = output, S = supply.
4. STM32 peripherals are not listed if they cannot be presented on current pins

3 Electrical Parameters

3.1 Absolute maximum ratings:

3.1.1 Voltage & Current

Stresses above the absolute maximum ratings may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these conditions is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

Symbol	Ratings	Min	Max	Unit
V_{DD}–V_{SS}	Voltage	–0.3	4.0	V
V_{IN}	Input voltage on five volt tolerant pin	V_{SS} −0.3	5.5	V
V_{IN}	Input voltage on any other pin	V_{SS} −0.3	V_{DD}+0.3	V

Symbol	Ratings	Max	Unit
I_{VDD}	Total current into VDD power lines (source)	320	mA
I_{VSS}	Total current out of VSS ground lines (sink)	320	
I_{IO}	Output current sunk by any I/O and control pin	25	
	Output current source by any I/O and control pin	-25	

3.2 Operating conditions

3.2.1 Voltage & Current

Symbol	Note	Conditions	Specification			
			Min.	Typical	Max.	Unit
V_{DD}	Voltage		2.4	3.3	3.5	V

WLAN Subsystem

Symbol	Note	Conditions	Typical	Unit
I_{RF}	OFF[1]		2	μA
I_{RF}	SLEEP[4]		200	μA
I_{RF}	Rx(Listen)[2]		52	mA
I_{RF}	Rx(Active)[3]		59	mA
I_{RF}	Power Save[5 6]		1.9	mA
I_{RF}	Tx CCK[7 10]	11 Mbps at 18.5 dBm	320	mA
I_{RF}	Tx OFDM[8 10]	54 Mbps at 15.5 dBm	270	mA
I_{RF}	Tx OFDM[9 10]	65 Mbps at 14.5 dBm	260	mA

Note 1: Power is off.

Note 2: Carrier Sense (CCA) when no carrier present

Note 3: Carrier Sense (CS) detect/Packet Rx

Note 4: Intra-beacon Sleep

Note 5: Beacon Interval = 102.4ms, DTIM = 1, Beacon duration = 1 ms @1 Mbps.

Integrated Sleep + wakeup + Beacon Rx current over 1 DTIM interval.

Note 6: In WLAN power-saving mode, the following blocks are powered down: Crystal oscillator, Baseband PLL, AFE, RF PLL, Radio

Note 7: CCK power at chip port. Duty cycle is 100%. Includes PA contribution.

Note 8: OFDM power at chip port. Duty cycle is 100%. Includes PA contribution.

Note 9: OFDM power at chip port is 16 dBm, duty cycle is 100%, includes PA contribution.

Note 10: Absolute junction temperature limits maintained through active thermal monitoring and dynamic Tx duty cycle limiting.

Microcontroller Subsystem

Typical and maximum current consumption in Run mode, code with data processing running from Flash memory (ART accelerator enabled) or RAM

Symbol	Conditions	f_{HCLK}	Running Mode	Sleep Mode	Unit
			T_A=25°C	T_A=25°C	
I_{MCU}	External clock, all peripherals enabled	120MHz	49	38	mA
		90MHz	38	30	
		60MHz	26	20	
		30MHz	14	11	
		25MHz	11	8	
		16MHz	8	6	
		8MHz	5	3.6	
		4MHz	3	2.4	
		2MHz	2	1.9	
	External clock, all peripherals disabled	120MHz	21	8	
		90MHz	17	7	
		60MHz	12	5	
		30MHz	7	3.5	
		25MHz	5	2.5	
		16MHz	4	2.1	
		8MHz	2.5	1.7	
		4MHz	2	1.5	
		2MHz	1.6	1.4	

Typical and maximum current consumptions in Stop mode

Symbol	Parameter	Conditions	Typ	Max	Unit
			T_A=25°C	T_A=25°C	
I_{MCU}	Supply current in Stop mode with main regulator in Run mode	Flash in Stop mode, low-speed and high-speed internal RC oscillators and high-speed oscillator OFF (no independent watchdog).	0.55	1.2	mA
		Flash in Deep power down mode, low-speed and high-speed internal RC oscillators and high-speed oscillator OFF (no independent watchdog).	0.5	1.2	
	Supply current in Stop mode with main regulator in Low Power mode	Flash in Stop mode, low-speed and high-speed internal RC oscillators and high-speed oscillator OFF (no independent watchdog).	0.35	1.1	
		Flash in Deep power down mode, low-speed and high-speed internal RC oscillators and high-speed oscillator OFF (no independent watchdog).	0.3	1.1	

Typical and maximum current consumptions in Standby mode

Symbol	Parameter	Conditions	Typ	Unit
			T_A=25°C	
I_{MCU}	Supply current in Standby mode	Backup SRAM ON, low-speed oscillator and RTC ON	4.0	μA
		Backup SRAM OFF, low-speed oscillator and RTC ON	3.3	
		Backup SRAM ON, RTC OFF	3.0	
		Backup SRAM OFF, RTC OFF	2.2	

Power consumption in typical operation modes[3]

Symbol	Parameter	Conditions	Min	Average	Max	Unit
			T_A=25°C	T_A=25°C	T_A=25°C	
I_{module}	Total power consumption on EMW3162 module	No Wi-Fi data is transmitting[1]	2.8	7.2	73.5	mA
		Receive data in UDP mode, 20k bps[1]	2.8	12	262	mA
		Send data in UDP mode, 20k bps[1]	3	24	280	mA
		RF off, MCU enter standby mode[2]	4	6	8	μA
		Connecting to AP	52	74	320	mA

Note1: TA=25°C, MCU frequency=120MHz, with data processing running from Flash memory (ART accelerator enabled). Firmware process TCP/IP stack and IEEE 802.11 MAC every 250 milliseconds, enter stop mode when no task is pending.

RF subsystem is connected to an access point and run under power save mode in IEEE 802.11n@14.5 dBm Tx power. AP Beacon Interval = 102.4ms, DTIM = 1.

Note2: Wi-Fi connection is disconnected.

Note3: These data may not be the same depend on different firmware functions.

3.3 Digital I/O port characteristics

3.3.1 Output voltage levels

Symbol	Note	Parameter	Conditions	Min.	Max.	Unit
V_{OL}	UART& IO output voltage	Output low level voltage	I_{IO}= +8 mA 2.7 V < VDD < 3.6 V		0.4	V
V_{OH}		Output high level voltage		V_{DD}-0.4		V
V_{OL}		Output low level voltage	I_{IO}= +20 mA 2.7 V < VDD < 3.6 V		1.3	V
V_{OH}		Output high level voltage		V_{DD}-1.3		V

3.3.2 Output voltage levels

Symbol	Note	Parameter	Conditions	Min.	Max.	Unit
V_{IL}	UART& IO input voltage	Input low level voltage	TTL level	-0.5	0.8	V
V_{IH}		Input high level voltage		2	VDD+0.5	V
		Input high level voltage (5V input tolerant)		2	5.5	V
V_{IL}		Input low level voltage	CMOS level	-0.5	0.35VDD	V
V_{IH}		Input high level voltage		0.65VDD	VDD+0.5	V

3.3.3 nRESET pin characteristics

The nRESET pin input driver uses CMOS technology. EMW3162 contains RC (resistance-capacitance) reset circuit which ensures the module reset accurately when it powers up. If you need to reset manually, just connect the external control signals to the reset pins directly, but the control signal should be Open Drain Mode。

Symbol	Item	Conditions	Min.	Typical	Max.	Unit
$V_{IL(NRST)}$	nRESET input low level		–0.5		0.8	V
$V_{IH(NRST)}$	nRESET input high level		2		VDD+0.5	
R_{PU}	Resistor for Pulling up	V_{IN}= VSS	7.5	8	8.3	kΩ
C_{PD}	Capacitor for charging and Resetting			100	1000	pF

3.4 Other MCU electrical parameters

Please refer to STM32F215RGT6 data sheet.

3.5 Temperature and Humidity

Symbol	Ratings	Max	Unit
T_{STG}	Storage temperature	–55 to +125	℃
T_A	Working temperature	-40 to +85	℃
Humidity	Non condensing, relative humidity	Max. 95%	

3.6 ESD

Absolute maximum ratings: The Electromagnetic Environment Electrostatic discharge

Symbol	Ratings	Conditions	Class	Max	Unit
V_{ESD}(HBM)	Electrostatic discharge voltage (human body model)	TA= +25 °C conforming to JESD22-A114	2	2000	V
V_{ESD}(CDM)	Electrostatic discharge voltage (charge device model)	TA = +25 °C conforming to JESD22-C101	II	500	

3.7 Static latch-up

These tests are compliant with EIA/JESD 78A IC latch-up standard.

Symbol	Parameter	Class	Class
LU	Static latch-up class	TA= +105 °C conforming to JESD78A	II level A

3.8 RF characteristics

3.8.1 Basic RF characteristics

Item	Specification
Operating Frequency	2.412~2.484GHz
Wi-Fi Standard	802.11b/g/n(single stream n)
Modulation Type	11b: DBPSK, DQPSK,CCK for DSSS 11g: BPSK, QPSK, 16QAM, 64QAM for OFDM 11n: MCS0~7,OFDM *
Data Rates	11b:1, 2, 5.5 and 11Mbps 11g:6, 9, 12, 18, 24, 36, 48 and 54 Mbps 11n: MCS0~7, up to 72Mbps
Antenna type	One U.F.L connector for external antenna PCB printed ANT (Reserve)

3.8.2 IEEE802.11b mode

Item	Specification
Modulation Type	DSSS / CCK
Frequency range	2400MHz~2484MHz
Channel	CH1 to CH14
Data rate	1, 2, 5.5, 11Mbps

TX Characteristics	Min.	Typical	Max.	Unit
Transmitter Output Power				
11bTarget Power		18.5		dBm
Spectrum Mask @ target power				
fc +/-11MHz to +/-22MHz			-30	dBr
fc > +/-22MHz			-50	dBr
Frequency Error	-20		+ 20	ppm
Constellation Error(peak EVM)@ target power				
1~11Mbps		-17	-10	

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
1Mbps (FER≦8%)		-97	-83	dBm
2Mbps (FER≦8%)		-93	-80	dBm
5.5Mbps (FER≦8%)		-91	-79	dBm
11Mbps (FER≦8%)		-89	-76	dBm
Maximum Input Level (FER≦8%)	-10			dBm

3.8.3 IEEE802.11g mode

Item	Specification
Modulation Type	OFDM
Frequency range	2400MHz~2484MHz
Channel	CH1 to CH14
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps

TX Characteristics	Min.	Typical	Max.	Unit
Transmitter Output Power				

11gTarget Power		15.5		dBm
Spectrum Mask @ target power				
fc +/-11MHz			-20	dBr
fc +/-20MHz			-28	dBr
fc > +/-30MHz			-40	dBr
Frequency Error	-20		+ 20	ppm
Constellation Error(peak EVM)@ target power				
6Mbps			-5	dB
9Mbps			-8	dB
12Mbps			-10	dB
18Mbps			-13	dB
24Mbps			-16	dB
36Mbps			-19	dB
48Mbps			-22	dB
54Mbps		-30	-25	dB
Transmit spectrum mask				
@ 11MHz			-20	dBr
@ 20MHz			-28	dBr
@ 30MHz			-40	dBr

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
6Mbps (FER≦10%)		-90	-82	dBm
9Mbps (FER≦10%)		-88	-87	dBm
12Mbps (FER≦10%)		-86	-79	dBm
18Mbps (FER≦10%)		-85	-77	dBm
24Mbps (FER≦10%)		-82	-74	dBm
36Mbps (FER≦10%)		-79	-70	dBm
48Mbps (FER≦10%)		-75	-66	dBm
54Mbps (FER≦10%)		-72	-65	dBm
Maximum Input Level (FER≦10%)	-20			dBm

3.8.4 IEEE802.11n 20MHz bandwidth mode

Item	Specification
Modulation Type	MIMO-OFDM

Channel	CH1 to CH14
Data rate	MCS0/1/2/3/4/5/6/7

TX Characteristics	Min.	Typical	Max.	Unit
Transmitter Output Power				
11n HT20 Target Power		14.5		dBm
Spectrum Mask @ target power				
fc +/-11MHz			-20	dBr
fc +/-20MHz			-28	dBr
fc > +/-30MHz			-45	dBr
Frequency Error	-25	-1.2	+25	ppm
Constellation Error(peak EVM)@ target power				
MCS0			-5	dBm
MCS1			-10	dBm
MCS2			-13	dBm
MCS3			-16	dBm
MCS4			-19	dBm
MCS5			-22	dBm
MCS6			-25	dBm
MCS7		-32	-28	dBm
Transmit spectrum mask				
@ 11MHz			-20	dBr
@ 20MHz			-28	dBr
@ 30MHz			-40	dBr

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
MCS0 (FER≦10%)		-89	-82	dBm
MCS1 (FER≦10%)		-86	-79	dBm
MCS2 (FER≦10%)		-84	-77	dBm
MCS3 (FER≦10%)		-82	-74	dBm
MCS4 (FER≦10%)		-78	-70	dBm
MCS5 (FER≦10%)		-74	-66	dBm
MCS6 (FER≦10%)		-72	-65	dBm
MCS7 (FER≦10%)		-69	-64	dBm
Maximum Input Level (FER≦10%)	-20			dBm

3.9 Mechanical Dimensions

3.9.1 EMW3162 Mechanical Dimensions

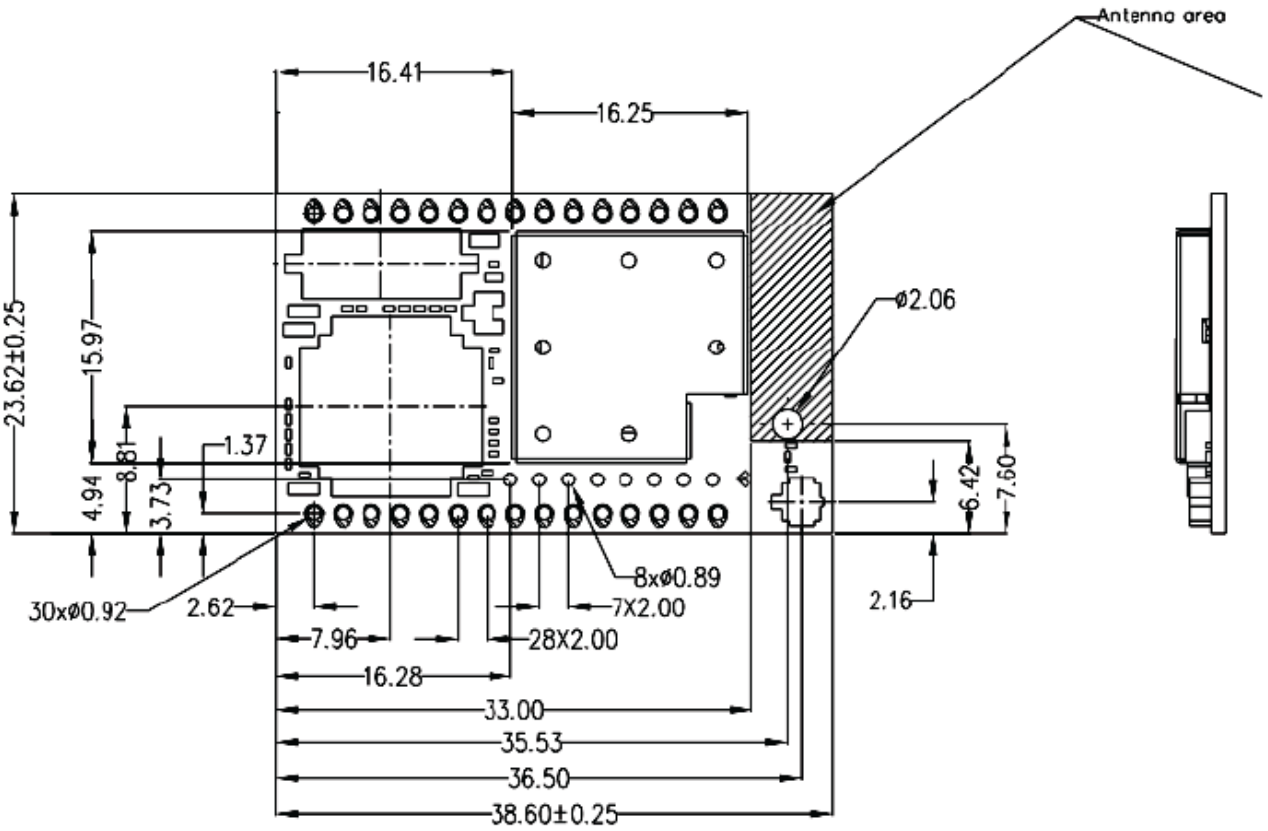


Figure 3.1 EMW3162 top view(Metric units)

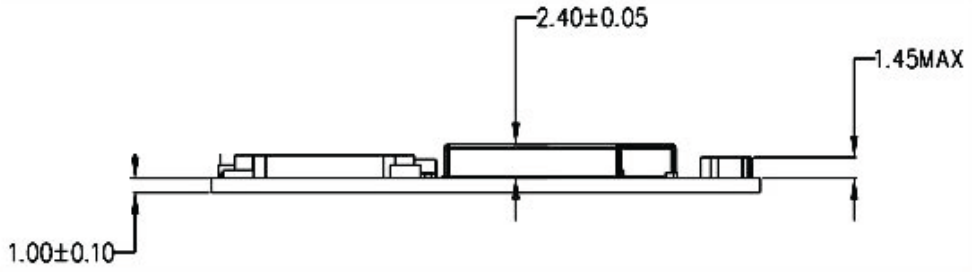


Figure 3.2 EMW3162 side view(Metric units)

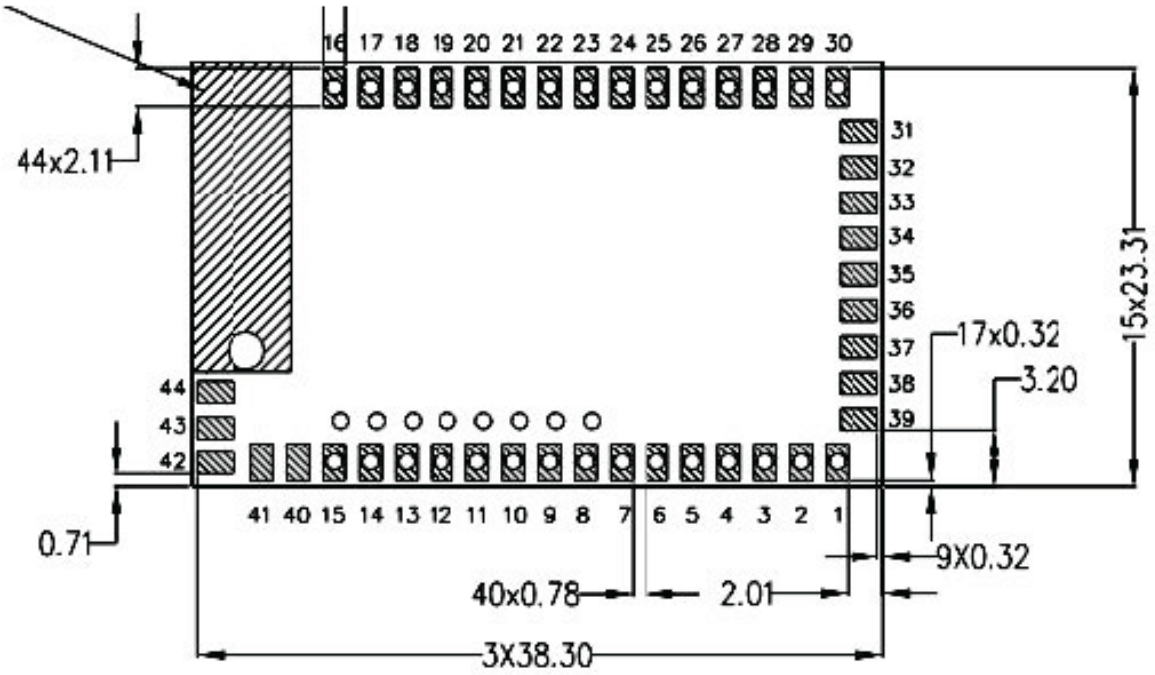


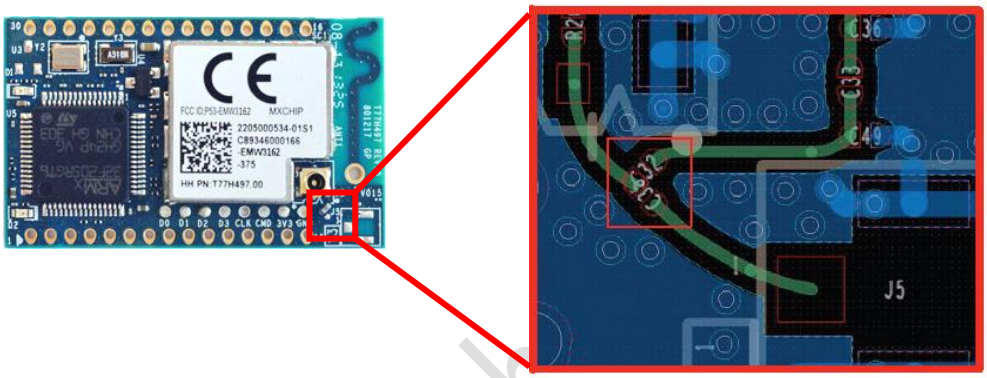
Figure 3.3 EMW3162 bottom view(Metric units)

4 Antenna information

There is co-layout design (C35&C32) for antenna connection. Please order your module carefully. Users can also modify the capacitor position but MXCHIP would not take any responsibility for this behavior.

EMW3280-E load the capacitor C35 (10pF/0201), it means can use U.F.L RF connector for external antenna. If want to use on-board PCB printed antenna, just need load the capacitor from C35 to C32 (EMW3280-P).

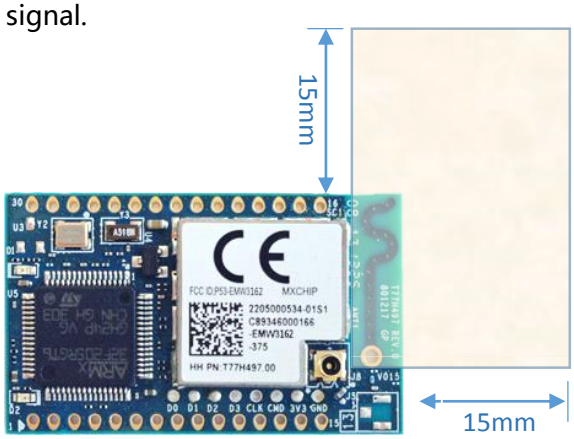
In order to get the maximum performance, strongly suggest customer use external antenna connected with U.F.L RF connector.



4.1 Minimizing radio interference

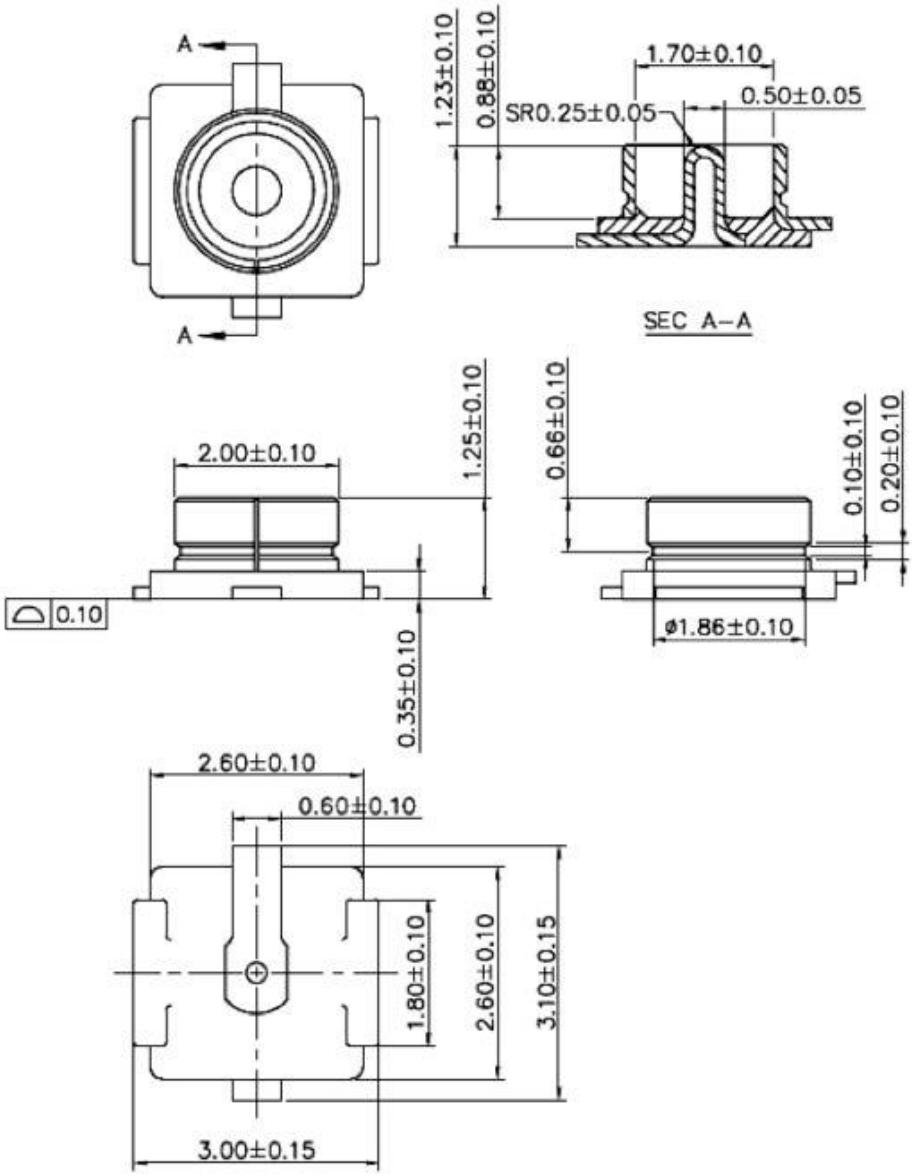
When integrating the Wi-Fi module with on board PCB printed antenna, make sure the area around the antenna end the module protrudes at least 15mm from the mother board PCB and any metal enclosure. If this is not possible use the on board U.FL connector to route to an external antenna.

The area (6.5mmx17.3mm) under the antenna end of the module should be keep clear of metallic components, connectors, vias, traces and other materials that can interfere with the radio signal.



4.2 U.F.L RF Connector

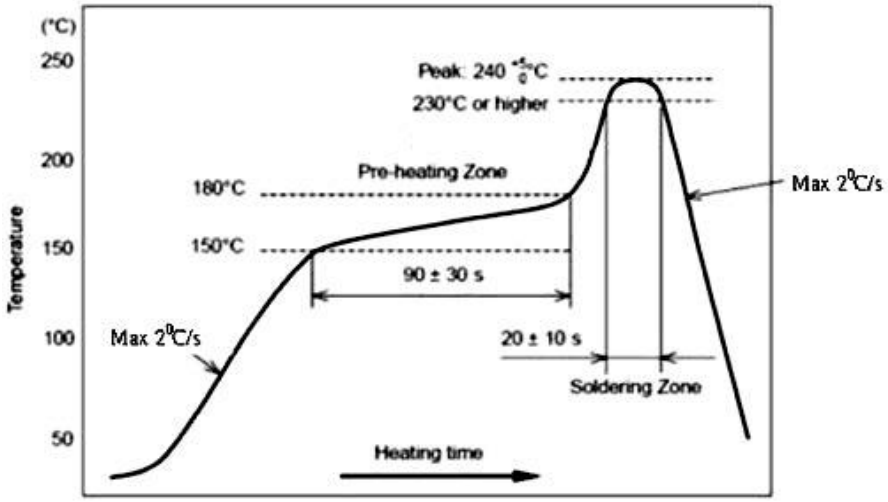
This module use U.F.L type RF connector for external antenna connection.



5 Others

5.1 Recommended Reflow Profile

Reflow times<= 2times (Max.)



Temperature profile for evaluation of solder heat resistance of a component (at solder joint)

5.2 MSL/Storage Condition

CAUTION

This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL **3**

If Blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at < 40°C and < 90% relative humidity (RH)
2. Peak package body temperature: 260 °C
   If Blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
   a) Mounted within: 168 hrs. of factory conditions
   If Blank, see adjacent bar code label
   ≤ 30°C/60%RH, OR
   b) Stored at <10% RH
4. Devices require bake, before mounting, if:
   a) Humidity Indicator Card is > 10% when read at 23 ± 5°C
   b) 3a or 3b not met.
5. If baking is required, devices may be baked for 48 hrs. at 125 ± 5°C

   Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure

Bag Seal Date: _____
If Blank, see adjacent bar code label

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

6 Sales Information

If you need to buy this product, please call MXCHIP during the working hours. (Monday ~ Friday A.M.9:00~12:00; P.M. 1:00~6:00)

Telephone: +86-21-52655026 / 52655025

Address: Room 811, Tongpu Building, No.1220 Tongpu Road, Shanghai

Post Code: 200333

Email: sales@mxchip.com

7 Technical Support

If you need to get the latest information on this product or our other product information, you can visit: http://www.mxchip.com/

If you need to get technical support, please call us during the working hours:

ST ARM technical support

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