

智能硬件解决方案提供商

Track Number: AN0049EN Version: 1.0 Category: Application Note MXCHIP Co., Ltd 2017.08.10 Open

EMW3239 Hardware design guide

Abstract

This document lists the consideration in each step during designing product with MXCHIP module. In order to achieve rapid mass production, Users should be familiar with the document to pre-consider and avoid problems effectively in designing, producing, programming and testing.

More Help

For more products information please visit: http://mxchip.com/

For more development data please go to MiCO developer bbs: http://mico.io/

For more Fogcloud data please go to Fogcloud developer center: http://easylink.io/

Copyright Notice

Mxchip copyrights this specification. No part of this specification may be reproduced in any form or means(specially brand, type name, part number and pictures), without the prior written consent of Mxchip.

Version Record

Date	Version	Details
2016-9-23	0.1	Initial document
2016-9-29	0.2	Add reference circuit Add description of pin function and design consideration Add position figure of PCB
2016-12-2	0.3	Add Module downloading method
2016-12-6	0.4	Add module testing method
2016-12-8	0.5	Update format and other problem
2016-12-28	0.6	Update Hardware Block
2017-08-10	1.0	Update module photo, and antenna placement guide

Content

EM	W3239	Hardware design guide	1
Ver	sion Re	cord	1
1.	Intro	luction	5
2.	Consi	derations in Hardware Design	7
	2.1	MECHANICAL SIZE	7
	2.2	Reference Package Design	7
	2.3	DC POWER DESIGN	8
	2.4	REFERENCE CIRCUIT DESIGN AND ILLUSTRATION	8
	2.5	RF DESIGN	13
		2.5.1 On-board PCB Antenna Design	13
		2.5.2 External Antenna	15
	2.6	ESD DESIGN	16
3.	Down	loading Firmware and Storage Test Method	17
	3.1	PREPARATIONS	17
	3.2	SWITCH SET UP IN DOWNLOADING MODE	17
	3.3	SYSTEM CONNECTION	18
	3.4	SERIAL PORT SELECTION	18
	3.5	J-FLASH	18
	3.6	J-FLASH SET UP	19
	3.7	FWUPDATE SET UP	20
	3.8	DOWNLOADING	21
	3.9	TESTING	22
		3.9.1 Environment Set Up	22
		3.9.2 Switch Set Up	23
		3.9.3 QC Set Up	23
	3.10	IMPORTANT STATEMENT	25
4.	SMT		26
	4.1	STENCILS	26
	4.2	TEMPERATURE CURVE OF SECONDARY REFLOW	26
5.	Mass	Production Test and Product Update	27
	5.1	MODULE TEST	27
		5.1.1 Half Secondary Development of Firmware	27
		5.1.2 Complete Secondary Development of Firmware	27
	5.2	PRODUCT UPDATE	27
6.	Techn	ical Support	

Figure Content

Figure 1.1 Top View of EMW3239-P	. 5
Figure 1.2 Top View of EMW3239-E	. 6

Figure 1.3 Hardware Block
Figure 2.1 Top View of Mechanical Size
Figure 2.2 Side View of Mechanical Size
Figure 2.3 SMT Package
Figure 2.4 Conversion Circuit of USB to Serial Port Debugging
Figure 2.5 Wi-Fi Circuit
Figure 2.6 3.3V UART-5V UART Conversion Circuit
Figure 2.7 PCB Design
Figure 2.8 Minimum PCB Clearance Area
Figure 2.9 Position of the Module
Figure 2.10 Size of External Antenna
Figure 3.1Switch Set Up
Figure 3.2Power Light
Figure 3.3 Name in Device Manager
Figure 3.4 Install J-Flash
Figure 3.5 J-Flash signature
Figure 3.6 Target Interface Set Up
Figure 3.7 MCU Set Up
Figure 3.8 Production Set Up
Figure 3.9 Address Input
Figure 3.10 J-Flash
Figure 3.11 FWUpdate
Figure 3.12 FWUpdate V2.4 Downloading
Figure 3.13 Complete
Figure 3.14 Position of Routers
Figure 3.15 Switch Set Up in Testing Mode
Figure 3.16 QC Set Up
Figure 3.17 Test OK
Figure 3.18 Test Fail
Figure 4.1 Stencils size
Figure 4.2 Temperature Curve of Secondary Reflow

Table Content

Table 2.1 Switch Mode	11
Table 3.1Device List	17

Table 3.2Download Websites

1. Introduction

This document lists the consideration in each step during designing product with MXCHIP module. In order to achieve rapid mass production, Users should be familiar with the document to pre-consider and avoid problems effectively in designing, producing, programming and testing.

Suitable module type:

EMW3239

Phase of attention:

- Hardware design;
- Firmware testing;
- SMT;
- Online update.

Basic Characteristics:

- Each module has a unique MAC address;
- PCB antenna and external antenna;
- Support Bluetooth classic and BLE;
- Maximum instantaneous current 360mA@3.3V;
- Testing mode inside;
- OTA inside;
- Secondary reflow soldering at SMT
- Working temperature: -30° C to $+70^{\circ}$ C

EMW3239 Top View



Figure 1.1 Top View of EMW3239-P



Figure 1.2 Top View of EMW3239-E

EMW3239

Module type	Antenna Type	Illustration		
EMW3239-P	On-board PCB	Default		
EMW3239-E	IPEX	Optional		

Hardware Block



Figure 1.3 Hardware Block

2. Considerations in Hardware Design

2.1 Mechanical Size

Mechanical size of EMW3239 (Unit: mm)



2.2 Reference Package Design

Solder mask openness has the same size with land, as shown in figure 2.3 (Unit: mm)



Figure 2.3 SMT Package

2.3 DC Power Design

Peak current of the module is approximately 360mA. DC/DC with maximum output current 600mA is suggested as power supply. DC/DC is better than LDO in low power consumption.

Route should be particularly aware for DC/DC power supply. Compact element, excellent connection between input and output ground, long distance between feedback signal and inductance and Schottky diode are required for route. Details about the requirements should refer to the datasheet of DC/DC device.

Maximum output current and dissipate heat should be aware for the using of LDO. voltage drop is 1.7V when voltage reduce from 5V to 3.3V. If the current is 300mA, power consumption is1.7V * 360mA=612mW, PowerDisspation is a parameter on LDO datasheet which should be over 510mW (same methods are used to calculate other input voltage).

The problem rate about final product would be reduced by fully consideration of power design.

2.4 Reference Circuit Design and Illustration

EMW3239 reference circuit is shown below.



DC/DC 5V to 3.3V Conversion Circuit



LDO 5V to 3.3V Conversion Circuit



Figure 2.4 Conversion Circuit of USB to Serial Port Debugging

							VDD
			U3	EMW3239			T
VBAT C13 100nF	PB2 PB15/SPI2_MOSI PB12/SPI2_NSS PB13/SPI2_SCK PB14/SPI2_MISO PC6/UART6_TXD PA15/ELINK VBAT PC7/UART6_RXD RESET PC0/WAKEUP PC13 PB8/I2C1_SCL PB9/I2C1_SDA PB10	$ \begin{array}{r} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 10 \\ 11 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 18 \\ 19 \\ 20 \\ \end{array} $	NC GPIO1 NC SPI_MOSI SPI_NSS SPI_SCK SPI_MISO DBG_TXD GPIO2 VBAT NC DBG_RXD RESET WAKEUP NC GPIO3 I2C_SCL I2C_SDA GPIO4 GND	VDD_3V VDD_3V GPIO9 GPIO8 USB_DP USB_DM GPIO7 USB_ID NC GPIO6 UART_TXD UART_RXD NC GPIO5 JTMS JTCK JTRST JTDI JTDO GND	40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 41	PA4/ADC4 PB0/STATUS PA12/BOOT PA11 PA5 PA10 PB4 PB6/UART1_TXD PB7/UART1_RXD PB3 PA13/SWDIO PA14/SWCLK	
				ANT	41	-	

Figure 2.5 Wi-Fi Circuit

Q1 is Conversion transistor, could be chosen as S8050 or MBT2222ADW1, DC-DC is suitable for chip which has rated current over 600mA such as RT8059, TD6817 or LDO. Voltage input should be PTC or TVS in order to avoid input voltage unstable. SMD0805P100TF or SMFJ6.0A are reasonable choices.



Figure 2.6 3.3V UART-5V UART Conversion Circuit

• Pin Function

Set module in different mode by combo PIN 36 (BOOT), PIN37 (STATUS), PIN9(ELINK).

воот	STATUS	ELINK	FUNCTION
Н	/	1	NORMAL WORK
L	Н	L	ATE
L	L	Н	QC
L	Н	н	BOOTLOADER

Relative contents of the module are sent by pin UART2_TX. Mobile phone could connect to internet and have normal communication with app at NORMAL WORK. Module must in ATE mode when certificate with SRRC, FCC, CE. MFG mode could be used in product storage test. Module must in BOOTLOADER mode when update firmware by UART.

• Reset pin

Pin 13 is reset pin triggered by low level voltage. Voltage must over 2.9V. Pin should be in dangling state when it is not working. There is weak pull-up resistor inside. Please make sure the pin is in high level voltage when the module is powered on.

• SPI

Pin 4~7could be used as off-chip SPI port. Maximum transport rate could be 25Mbps with host and slave mode, duplex mode and simplex mode.

• I2C

Standard mode (100kbps), fast mode (400 kbps), high speed mode (1Mbps) is supported in I2C.

• SWDIO/SWCLK

Module supports with one standard SED port without external pull-up or pull-down resistance. Pin 25 and Pin 26 supports with online debugging and upgrading with J-FLASH or used as GPIO.

• GPIO

EMW3239 has 25 group of GPIO that could be reused as other pins.

• UART

Module has one current control UART communications and one normal UART communication. Pin 29 and Pin 30 are used as serial port of users (Test information, download and communication). Pin 8 and Pin 12 is debugging ports (running log print). Please make sure Wi-Fi RX and TX is connected to host RX and TX.

• VBAT

VBAT supports for RTC, PIN10 is clock source which requires power supply 3.3V. External output compensation calibration in 512HZ could be used in RTC. RTC has programmable alarm and programmable period interruption wake-up from stop mode to standby mode.

Power supply of EMW3239 is from 2.6V to 3.6V. Low voltage working mode is from 2.6V to 3.0V with battery. Common working mode is from 3.0V to 3.6V. Rated power is only used as pressure test parameter. Permanent damage would be caused if the device works in this condition.

• Others

Pins that not be used should be set NC(Not Connected). Pin39 and pin 40 is power supply input that could be added a 10uF ceramic capacitors closing to two pins. Power supply is 2.6V to 3.6V. Module could be breakdown if the voltage is over 3.6V.

Typical PCB design is shown in figure 2.6.

In order to make sure the antenna performance, sufficient clearance zone should be designed in the antenna part. PCB part below antenna could be hollowed up. Copper, route, closing to metal element is not allowed if the structure needed. The circuit for P1~P8 should be surrounded with ground and holes, to avoid interference signal.



Figure 2.7 PCB Design

2.5 RF Design

2.5.1 On-board PCB Antenna Design

The main board PCB should be over 16mm far away from other metal components. Copper, route, closing to metal element is not allowed if the structure needed. P1 to P8 should connect to ground with copper. PCB part below antenna could be hollowed up.



Figure 2.8 Minimum PCB Clearance Area

In order to reduce the influence from metal components to PCB antenna and wireless signal, it is better to mount EMW3239 on four parts.



Figure 2.9 Position of the Module

2.5.2 External Antenna

Size of external antenna is shown in figure 2.10. Make sure the correct size with suppliers before buying the connectors of antenna.



Figure 2.10 Size of External Antenna

2.6 ESD Design

ESD level of the module: Human body model (HBM) is 2000V, charged device model (CDM) is 500V. Position of ESD protected components should be reserved if the products require higher ESD requirement such as pins connect to USB and SD-card.

EMI should be aware when the module operated by connecting external wire. Using shielding wire or reserving common mode choke could avoid EMI.

3. Downloading Firmware and Storage Test Method

3.1 Preparations

Table 3.1Device List				
Device	Quantity			
PC	1			
Tools of downloading firmware	1			
EMW3239	1			
Micro USB	1			
Downloading Software	1			
Testing Software				

Download website is shown in table 3.2.

Table 3.2Download Websites

Name	Function	Websites
FWUpdate	Download	http://pan.baidu.com/s/1kVEwnNh
MicoQcAutoCheck4.0	Test	http://pan.baidu.com/s/1kVEwnNh
CP210x_VCP_Windows	USB Drever	http://www.silabs.com/products/mcu/Pages/SoftwareDownloads.aspx

Firmware program is sent by FAE of MXCHIP or client which is 600K (application code). 'Test.bin' is shown in this note.

3.2 Switch set up in Downloading Mode

3 switches on develop board of EMW3239 are shown in figure 3.1. Set Easylink as high, STATUS as high and BOOT as L.





Decompress file 'CP210X_VCP_WINDOWS.ZIP'. 32 or 64 is based on the computer operating system. It could be checked from device manager after installing.

3.3 System Connection

Module connects to develop board of EMW3031 with USB. Green light D1 on the develop board enable when connecting.



Figure 3.2Power Light

3.4 Serial Port Selection

Find COM number of develop board connect to PC, such as COM4 in figure 3.3. (Note: Enhanced COM Port must be used in serial number).

✓ 員 端口 (COM 和 LPT)
■ Silicon Labs Dual CP210x USB to UART Bridge: Enhanced COM Port (COM4)
■ Silicon Labs Dual CP210x USB to UART Bridge: Standard COM Port (COM3)

Figure 3.3 Name in Device Manager

3.5 J-Flash

Install 'Setup_JLink_V600i.exe'.

Choose optional components Choose optional components to be installed	i.		J Link
Choose optional components that should be	e installed:		
Install USB Driver for J-Link			
Choose options for creating shortcuts:			
Create entry in start menu			
Add shortcuts to desktop			

Figure 3.4 Install J-Flash

'JFlash V6.00' would be found after installing.



Figure 3.5 J-Flash signature

3.6 J-Flash Set Up

Use 'ALT+F7' or open 'Options' then click 'project settings'. Select 'SWD' in Target Interface, 'ST STM32F412RG' in MCU, 'Start application' in Production.

General Target Interface MCU Flash Production SWD speed blore init steps Auto selection 4000 HHz WH2 Auto selection 4000 HHz 	Project settings	?	×
SWD speed before init steps ・ Auto selection ・ 4000 ・ kHz ・ 4000 ・ kHz ・ 4000 ・ kHz	General Target Interface MCU Flash Production		
	General Target Interface MCU Flash Production SwD speed before init steps SwD speed after init steps C Auto selection C Auto selection C 4000 KHz C 4000		
	确定 取消	应用((A)

Figure 3.6 Target Interface Set Up

	Project settings	? ×	
	General Target Interface MCU Flash Production		
	Use J-Link script file		
	Device Check core ID IST STM32F412RG ID Core Mask 0F000FFF		
	Little endian ▼		
	Init steps		
	# Action Value0 Value1 Comment 0 Reset 0 0 ms Reset and halt target		
	Add Insert Delete Edit Up Down		
		1100番(の)	
Pr	Figure 3.7 MCU Set Up		
	General Target Interface MCU Flash Production		
	Operation Deration Deration		1
	Auto operates on Affected sectors Delay before start 20 ms		
	□ <u>Disconnect after each operation</u> □ Perform <u>blank check before program</u> □ <u>Skip blank areas on read</u>		
	Program serial number Enable VTref monitor		
	Address 00000000 Len 4 VTref min. 1000 mV Next SN 1 Increment 1 VTref max. 5500 mV		
	Actions performed by "Auto"		
	Ease Sectors if not blank Erase 15000 ms Program 10000 ms 10000 ms 10000 ms		
	✓ Yerify Via CRC ✓ Yerify 10000 ms		
	确定	取消 应用(A)	[]

Figure 3.8 Production Set Up

Click 'OK' after set up. There would be no more set up in following downloading if save the set up.

3.7 FWUpdate Set Up

Find file 'FWUpdate V2.4.exe' in 'FWUpdate-3239' and set as below:



FWUpdate V2.4	– 🗆 🗙	
选择bin文件和配置文件,再打开串口	计数 EMW3239. ~	
BCM43438A1-17.45.45.17.bin 349.21K	浏览 取消文件 烧写成功:1 失败:0	
操作 1 串口: COM13 ✓ 打开 复位	操作 2 串口: COM12 ~ 打开 复位	
OK计时: 0 秒	OK计时:	
bootloader for EMW3239_1, v3.0, HARDWARE_RE		
就绪,开始发送新固件 		
g作 3	操作 4	
出山: COM12 ∨ 打井 复位	串口: COM12 ~ 打开 复位	
OK计时:	OK计时:	
	发送命令前发送3个空格	

3.8 Downloading

Put 'Test.bin' into J-Flash and type start address '8000000'.

Enter start add	lress	×
Start address	8000000	ок
		Cancel

Figure 3.9 Address Input

J-Flash: Use 'F7', or click 'AUTO' in Target to start downloading.

		Y	ion noip	_										_							
🔜 Project - nev	w p 🖸 🖻 🔀		C:\Users	mxc	hip\[Desk	top\	wifi r	modu	ule/E	MW		316	5烧录	₹\EM	W31	166 /	TEV	1.7.b	in 🗖 🖻	Σ
Name	Value	1	Address:	0x80	00000			x1	x2	×4											
Host connection	USB [Device 0]	l r		0		0	2	4	-			0	0	•	n	0	n	F	P	00011	_
Target interface	SW/D		Haaress	90	1	4	3	4	5	6		8	7	H	B	С ПО	00	E	r	HSGII	
Init SWD speed	Auto recognition	11	8000020	00	99	99	00	00	00	00	00	00	00	00	00	19	02	99	08	·····y··	•
SWD speed	Auto recognition		8000030	77	02	99	89	99	00	00	00	79	62	00	89	49	10	99	89	yyi	•
NCU	CT CTM00E410DC	- -	8000040	79	02	00	89	- 79	02	00	89	79	62	00	89	D1	03	00	89	yyy	•
Fore	Cortex-M4		8000050	29	02	00	68	-79	02	00	80	89	03	00	68	HJ	03	00	68	yy	·
Endian	Little	11-	8000020	80	63	ыN	68	27	63	ыn	68	61	63	99	68	29	62	99	68	way	•
Check core ID	Yes (0x4BA00477)		8000070	79	02	00	08	79	02	00	08	79	02	00	08	79	02	00	08	yyyy.	•
Use target RAM	128 KB @ 0x20000000		8000080	79	02	00	08	79	02	00	08	79	02	00	08	79	02	00	08	yyyy.	•
Elseb memory	Internal bank ()		J-Flash												\rightarrow	B	03	00	08	yyyK	-
Base address	0x8000000		- Frasing ta	net m	emor											9	02	00	08	yyyy.	-
Flash size	1024 KB		Lidoling (d	goen	iomorj	r										9	02	00	08	yyyy.	-
		- I L	Erasing ra	nae (x0804	40000) - Oxf	1805F	FFF (1 sec	tor. 12	28 KB)				9	02	00	08	yyyy.	-
								2	5%			,				9	02	00	08	yyyy	
		11														9	02	00	08	5yyy	-
							_									9	02	00	08	yyyy	
								Ca	ncel							9	02	00	08	9929	
		11	0000110	00	00	00					00	00	00	00	00	-0	00	00	00		
			8000120	79	02	00	08	41	02	00	08	5D	02	00	08	79	02	00	08	vA]v	
		11	8000130	29	Ø2	00	ØR	00	00	00	00	00	00	00	00	88	00	80	00		

Figure 3.10 J-Flash

'Wait for start' is shown in FWUpdate.





Figure 3.11 FWUpdate

FWUpdate v2.4 would start downloading after J-Flash completing, as shown below.



Figure 3.12 FWUpdate V2.4 Downloading

Timer would count after successfully downloading firmware.

1	🔒 FWUpdate V2.4	- 0 X
	选择bin文件和配置文件,再打开串口	H数 EMW3239. ~ 清零
	BCM43438A1-17.45.45.17.bin 349.21K	浏览 取消文件 烧写成功:5 失败:1
	操作 1 串口: COM13 ∨ 打开 复位	操作 2 串口: COM12 ∨ 打开 夏位
	ok计时: 438 秒	ок计时:
	Succeed请换模块	

Figure 3.13 Complete

3.9 Testing

3.9.1 Environment Set Up

Turn on 5 routers that randomly located around test module in a range of 2 to 5 meters.

WiFi Testing Environment



Figure 3.14 Position of Routers

3.9.2 Switch Set Up

Set BOOT and STATUS as L, ELINK as H.

Serial number could be found in Device Manager with Enhanced COMPort.



Figure 3.15 Switch Set Up in Testing Mode

3.9.3 QC Set Up

Open QC and set up with the product test package information. Set baud band as 921600.

MXCHIP®

用户	[ì	数	#29±9±0	1/00 (t)me	. 0000		
I号:	220			84	1943 H J H J H	I(+IZIII)			
产品型号:	EMW 3239-P		数量:	400	发产	则命令	□ 使用扫描桁		
订单编号:			备注:		串口波	特室:	921600	添加	具
配置									
SN:	0000.0000.0001				额外测试项				
APP CRC:	E2EC			现航	式项		测试内容		
PID:									
Bootffi 本·	EMW3239 1 v3.0 9	921600			GPIC		PASS		
医肠大,	32390002.050								
库放(中)	MCO PLATANE M	TO X O Luid	-1.17.70						
APP版本:	MICO BIDETOOUT MI	-G 1.0, Dulid	at 15:25	3:56 NOV 5 2L					
arrahir'+	willia Jun 10 2016 1	2140105 100	cion 7 41	AE 17 (+644					
驱动威华:	vii0. Juli 15 2010 2	.2.40.00 VEI	50117.7.	FF01) (1.CF)	** - 16 m/				
					监牙检测		10-50-15-70	1	100
SSID 1:	MXCHIP-RFT1	RSSI	-55		ADDR 1:	04:99:	4C:50:1F:70	RSSI	-100
SSID 2:	MXCHIP-RFT2	RSSI	-60		ADDR 2:	B4:99:4	C:5D:31:FE	RSSI	-100
SSID 3:	MXCHIP-RFT3	RSSI	-55		ADDR 3:	B4:99:4	+C:5D:20:8E	RSSI	-100
SSID 4:	MXCHIP-RFT4	RSSI	-60		ADDR 4:	EB:44:8	B:A3:61:BF	RSSI	-100
SSID 5:	welcomemxchip	RSSI	-55		ADDR 5:			RSSI	0
				-	登出				

Figure 3.16 QC Set Up

Select 'Enhanceded COM Port', and click 'Start'.

书口信息:				
Serial Number App CRC: El Boottoader V. Library Version APV Version Driver: wilo: ADDR: B4: ADDR: B4: BLE scan cor MAC: 04-78. SCan AP Suc SSID: MXCI SSID: MXCI SSID: mxch SSID: mxch	r: 0000.0001.0001 EC ersion: EMW3239_1 v3.0 9 on: 3239002.050 MICO BlueTooth MFG 1.0, Jun 19 2015 22:40:05 versi with Address: 04-78-63-A0-f 91:4C:5D:31:F7, D, RSSI: -94 91:4C:5D:20:8E, RSSI: -92 nplete 63-A0-01-1D cess: dIP-RFT2, RSSI: -42 dIP-RFT2, RSSI: -42 dIP-RFT2, RSSI: -62 ip-offices, RSSI: -64 ip-offices, RSSI: -85 ip-offices, RSSI: -72 ip-offices, RSSI: -72 ip	测试顶结果: SNI页: APPCRCI页: PIDI页: Boot版本页: 库版本页: App版本页: 级动版本页: SSID1: SSID2: SSID3: SSID3:	可送 NO NO N M M 磁牙	i项测试结 O O O O ADDR
	>	SSID5:		NO
<				
< 设备Mac:	04-78-63-A0-01-1D			
< 设备Mac: 扫描Mac:	04-78-63-A0-01-1D			
く 设备Mac: 扫描Mac: 列试状态	04-78-63-A0-01-1D			
< 设备Mac: 扫描Mac: 则试状态	04-78-63-A0-01-1D			串口:

Figure 3.17 Test OK

QC would proofread MAC address automatically in repeated testing. 'X' would show in MAC with 'FAIL' on interface if test failed. Results are saved in file 'log'. Results of inferior module are not shown in the results.

書口信息: Serial Number: 0000.0001.0001 App CRC: E2EC Bootloader Version: EMW3239_1 v3.0 9 Library Version: EMW3239_1 v3.0 9 Library Version: 32390002.050 APP Version: MiCO BlueTooth MFG 1.0,I Driver: wl0: Jun 19 2016 22:40:05 versi GPI0:PASS Local Bluetooth Address: 04-78-63-A0-C ADDR: 84:99:4C:SD:31:FE, RSSI: -96 ADDR: 84:99:4C:SD:31:FE, RSSI: -96 ADDR: 84:99:4C:SD:1F:7D, RSSI: -96 ADDR: 84:99:4C:SD:1F:7D, RSSI: -86 BLE scan complete MAC: 04-78-63-A0-01-1D Scan AP Success: SSID: MXCHIP-RFT3, RSSI: -55 SSID: mXCHIP-RFT3, RSSI: -54 SSID: mXCHIP-RFT3, RSSI: -70 SSID: mXchip-offices, RSSI: -71 SSID: mXchip-Offices, RSSI: -70 SSID: mXchip-Offices, RSSI: -71 SSID:	清除 测试项结果: SN顶: 可选项测 APPCRC顶: NO NO Boot版本项: NO NO 摩版本项: NO 和pp版本项: MO SSID 1: SSID 1: SSID 2: SSID 3: CONTACT	i式结果
< >>	SSID5:	
设备Mac: 04-78-63-A0-01-1D 扫描Mac:	MicoQcAutoCheck5.2	×
则试状态 FAIL	! 测试没有通过,请记录不	● 使品 确定

Figure 3.18 Test Fail

Common power of hotpot in 2 to 5 meters is 0 to 80.

3.10 Important Statement

MXCHIP has a duty to make sure there is no quality problem when sell the module to customers.

Customers have the rights to ask MXCHIP to exchange goods if the product has quality problem.

If the customer find the problem after welding the module on board without testing at the beginning, MXCHIP is only responsible for the compensation of the module part.

MXCHIP would help customers solve technical problem in developing firmware without save any MVA/bin file. Customers should save different development vision and download relative vision in module before producing.

4. SMT

4.1 Stencils

Stencils thickness is suggested as 0.12mm (0.1~0.15mm) with Laser grinding. Recommended solder paste: No lead SAC305.

Stencils size is shown in figure 4.1, pad holes extend 0.15mm in order to improving solder wicking. If there is no AOI testing, check module by eye is available to reduce the Pseudo Soldering.



Figure 4.1 Stencils size

4.2 Temperature Curve of Secondary Reflow

Pseudo soldering could be reduced by control the furnace with temperature curve of secondary reflow, as shown in figure 4.2.

Secondary reflow times less than 2

Peak temperature: 250°C



Figure 4.2 Temperature Curve of Secondary Reflow

5. Mass Production Test and Product Update

Customers should consider not only the function of product but also the testing method in mass production and update firmware on the product.

5.1 Module Test

In order to avoid inferior module and make sure the correct of downloading firmware, MXCHIP strongly suggests product testing before produce. Fully test is required after producing.

5.1.1 Half Secondary Development of Firmware

Module connects the MCU from customer through serial port. In secondary development, test command could be added into firmware. For example, module could scan hotpot around itself and return the results from serial port by sending testing command through serial port.

5.1.2 Complete Secondary Development of Firmware

Application of customer is based on secondary development of module.

Testing method is variable in complete secondary development mode. Test mode could be set to detect the performance of the module. The default set up could be used as router for testing. Router is connected when the module powers on. Details about the test are decided by the application of customers.

5.2 Product Update

OTA is suggested in upgrading the product. OTA is a method to update by wireless.

If the product has bug or inferior, OTA is a better way to update the product.

Send the latest firmware to Cloud. Module would download the firmware into itself when connects to internet. Latest firmware would be updated after restart automatically.

6. Technical Support

For consultation or purchase the product, please contact Mxchip during working hours:

From Monday to Friday, morning 9:00~12:00, afternoon 13:00~18:00

Telephone: +86-21-52655026

Contact address: 9th Floor, No.5, Lane2145 JinshaJiang Road Putuo District, ShangHai.

Postcode: 200333

Email: sales@mxchip.com