



深圳市美中杰科技有限公司

Shenzhen MZJ Technology Co., Limited

MZJ BlueArchModule

USER MANUAL



Shenzhen MZJ Technology Co., Limited

FVIN: 1.0

2016/03/28



FCC Compliance Statement:

This device 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.

Note:

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 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.

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Jawbone may void the user's authority to operate the equipment.

- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product which integrates this module.

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

The final end product must be labeled in a visible area with the following" Contains TX
FCC ID: 2AHUL-786-MZJ001BLE.

The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.



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IC Caution:

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

- French:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final sur la façon d'installer ou supprimer ce module RF dans le mode d'emploi du produit final qui intègre ce module. L'utilisateur final manuel doit comprendre toutes les mesures réglementaires de présentation d'informations / d'avertissement requis comme ils sont présentés dans ce manuel

Ce module est destiné à l'intégrateur OEM. L'intégrateur OEM est toujours responsable de l'exigence de conformité FCC du produit final qui intègre ce module.

Le produit final doit être étiqueté dans une zone visible de ce qui suit "Contient TX

IC: 21408-786MZJ01BLE.



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Overview

MZJ BlueArch module is based on low power Bluetooth module (BLE), can be widely used in short distance wireless communication field. With low power consumption, small volume, long transmission distance, strong anti-jamming capability, etc. Module is equipped with high-performance chip antenna.

The module can be used to develop based on Bluetooth 4.0 (Bluetooth) BLE, low power consumption of consumer electronics products, mobile phone peripheral products, products for customers with intelligent mobile communication to provide rapid BLE solution.



Version update records

Version number	File date	Update content
V1.0		The first release



Module parameters:

- Flexible Power Management
 - Supply voltage range 1.8 V to 3.6 V
 - 2.5 μ s wake-up using 16 MHz RCOSC
 - 0.4 μ A @ 3 V OFF mode
 - 0.5 μ A @ 3 V in OFF mode + 1 region RAM retention
 - 2.3 μ A @ 3 V ON mode, all blocks IDLE
- Working Frequency Band: 2400~2483.5MHz
- Max launch power: +5 dBm (normal 0 dBm output)
- 2.4 GHz transceiver
 - -93 dBm sensitivity in Bluetooth® low energy mode
 - 250 kbps, 1 Mbps, 2 Mbps supported data rates
 - TX Power -20 to +4 dBm in 4 dB steps
 - TX Power -30 dBm Whisper mode
 - 13 mA peak RX, 10.5 mA peak TX (0 dBm)
 - RSSI (1 dB resolution)
- Working temperature : -20°C~ +85°C
- Storage temperature : -50°C~ +125°C

As shown in figure 1 shows the Module pin diagram, table 1 for each pin definition.

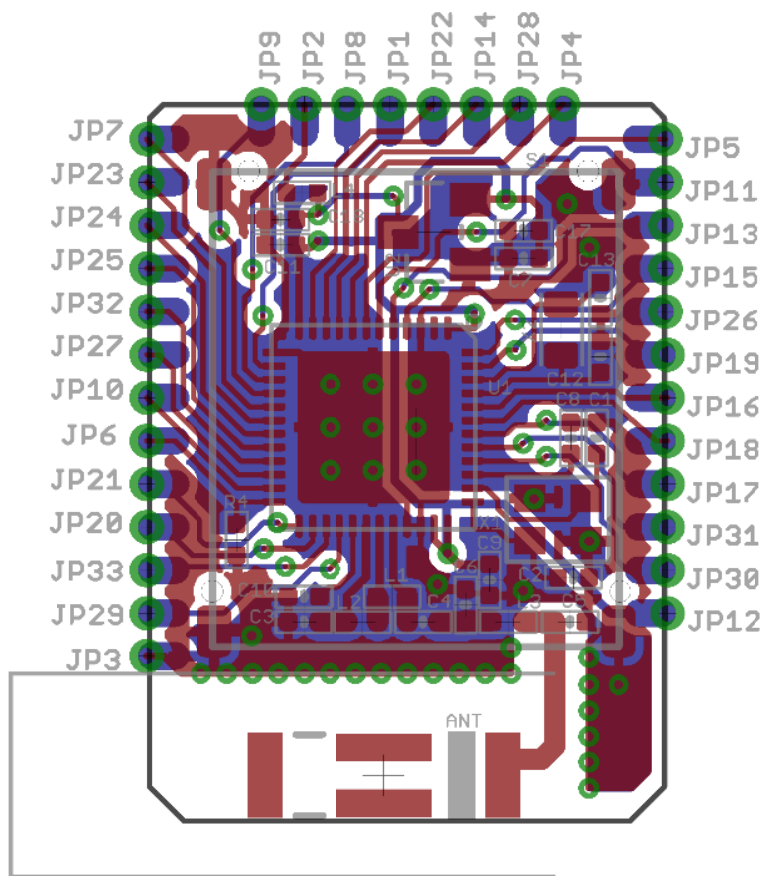


Figure 1 Pin diagram



Table1pindefinition

pin	Name	Function	Note
Pin1	JP07	I/O	
Pin2	JP23	I/O	
Pin3	JP24	GND	GND
Pin4	JP25	I/O	
Pin5	JP32	I/O	
Pin6	JP27	I/O	
Pin7	JP10	I/O	SWDIO/RESET
Pin8	JP06	I/O	SWDCLK
Pin9	JP21	I/O	
Pin10	JP20	I/O	
Pin11	JP33	I/O	
Pin12	JP29	I/O	
Pin13	JP03	I/O	
Pin14	JP12	VCC	Powersupply , 3.3V
Pin15	JP30	I/O	
Pin16	JP31	I/O	
Pin17	JP17	I/O	
Pin18	JP18	I/O	
Pin19	JP16	I/O	
Pin20	JP19	I/O	
Pin21	JP26	I/O	
Pin22	JP15	I/O	
Pin23	JP13	I/O	
Pin24	JP11	I/O	
Pin25	JP05	I/O	
Pin26	JP04	I/O	
Pin27	JP28	I/O	
Pin28	JP14	I/O	
Pin29	JP22	I/O	
Pin30	JP01	I/O	
Pin31	JP08	I/O	
Pin32	JP02	RAW	Powersupply , 5V
Pin33	JP09	I/O	

Current power consumption

Testing environment=+25°C, VBAT=3.3V.

Parameters		Testing conditions	Mini value	Type	Max value	Unit
MCU work	TX	0dbm		17		mA
	RX	High gain mode		9		
MCU sleep	TX					
	RX					
MCULPDS	TX					
	RX					
MCU dormant	TX					uA
	RX			0.7		
The peak current calibration	TX	Voltage=3.3V , Power=4dBm		9.1		mA
	RX	Voltage=3.3V , Power=4dBm		5.9		



RF testing report:

TA=+25°C,VBAT=3.3V , in the 0th channel(2402MHz)the measurement results shown in the table below:

Test item	Parameters	Test value	unit
Transmitter	power	-4.71	dBm
	Frequency shift	20	khz
Receiver	Sensitivity (8%PER)	-92.5	dBm

Layout proposal(antenna location and routing) :

Antenna is Chip antenna on the PCB for free space electromagnetic radiation. Position of the antenna and the scope of the layout in the key to increase data rate and firing range.

Hence,aboutthelayoutproposalofantennalocationandroutingisasfollows:

- 1.PlacetheantennaattheedgeofthePCBboardoronthe corner.
- 2.Ensurethateachlayerundertheantennawithoutsignalwireorcopper foil.
- 3.Itisbesttohollowoutthegreenboxespositioninfigure3,toensureitsaffects isvery small.

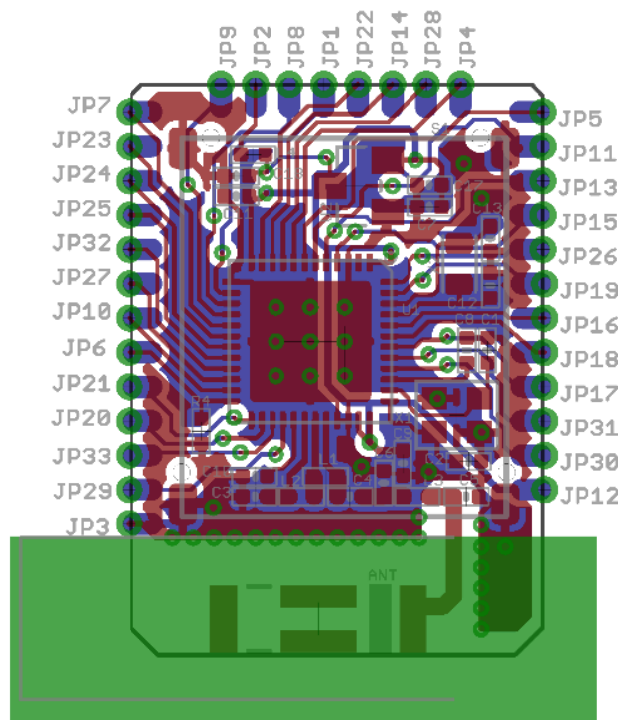


Figure3



Recommended operating conditions:

Function in operation conditions outside the limits of the parameter value in the following form does not guarantee its performance, beyond the limit of operation for a long time more or less affect the long-term reliability of the module.

Note:

- (1) Operating temperature is restricted by the change of the crystal frequency ;
(2) To ensure the wireless RF performance, ripple of the power supply must be less than $\pm 300\text{mV}$

Identification	Min value	Typical value	Max value	unit
Power supply and IO	1.8	3.3	3.8	V
Operation temperature	-40	25	85	°C
Environment hot place	-20		20	°C

Electrostatic discharge caution:



Module will be damaged by electrostatic discharge, RF STAR recommends that all the module should be dealt with under the following three preventive measure:

1. Must follow the anti-static measures, cannot barely hand module.
2. Module must be placed in the storage area to prevent electrostatic.
3. Anti-static circuit of high voltage input or high frequency input should be considered during the product design.

To the result of the static electricity may result in minor performance gradation on to the failure of the entire equipment. Due to the parameters of the very small changes can lead to the value of the equipment does not meet the certification requirements, there by module will be more vulnerable to damage.

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