



FCC ID: 2ARZJ-TX-M2540

OEM/Integrators Installation Manual

2ARZJ-TX-M2540

BLE Module

1. General Description

FCC ID: 2ARZJ-TX-M2540

Software Version : 1.0

Hardware Version : 1.0

Complies with Bluetooth LE, Supports up to 8
Bluetooth Smart connections
4-byte Unique Chip ID(UID)

<Processing performance>

Embedded 32-bit MCU with clock up to 48MHz
Dedicated Link Layer Processor
AES-128 bit encryption Processor

<Memories>

32 kB SRAM without retention in deep sleep
32kB SRAM with retention in deep sleep
Internal 512KB Flash memory

<Power management>

Embedded DCDC(1.8 ~ 4.3)
Battery Monitor : Supports low battery detection

General purpose, Capture and Sleep timers

<Digital interfaces>

General purpose I/Os: 32
UARTs with hardware flow control and 7816 Protocol support
SPI
USB
I2C
MIC(both Digital Mic and Analog Mic)
Stereo Audio output
I2S

<Analog interfaces>

14-bit 10-Ch SAR ADC

2. Applications & Pin Description

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TX-M2540-F48 can be applied to IoT(Internet of Things) and HID(Human Interface Devices) applications, such as BLE smart devices.

- Smartphone and tablet accessories
- RF Remote control
- Sports and fitness tracking
- Wearable devices
- Wireless toys
- Smart Lighting, Smart home devices
- Building Automation
- Smart Grid
- Health Care

Smart home : heating control and lighting control

<Pin Description>

Confidential

2. Applications & Pin Description

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Confidential

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3. Electrical Characteristics

FCC ID: 2ARZJ-TX-M2540

Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature Range	-40		85	°C
Supply Voltage : VBAT	-0.		3.6	V

Recommended Operating Conditions

T_a = 20 °C, unless otherwise noted.

Parameter	Min.	Typ.	Max.	Unit
Operating Temperature Range	-30		80	°C
Supply Voltage : VBAT	2.35		3.3	V

Digital Input/Output

Parameter	Min.	Typ.	Max.	Unit
V _{IH} (High level Input voltage)	0.7VDD		VDD	V
V _{IL} (Low level Input voltage)	VSS		0.3VDD	V
V _{OH} (High level output voltage)	0.9VDD		VDD	V
V _{OL} (Low level output voltage)	VSS		0.1VDD	V

4. RF Characteristics

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Transmitter

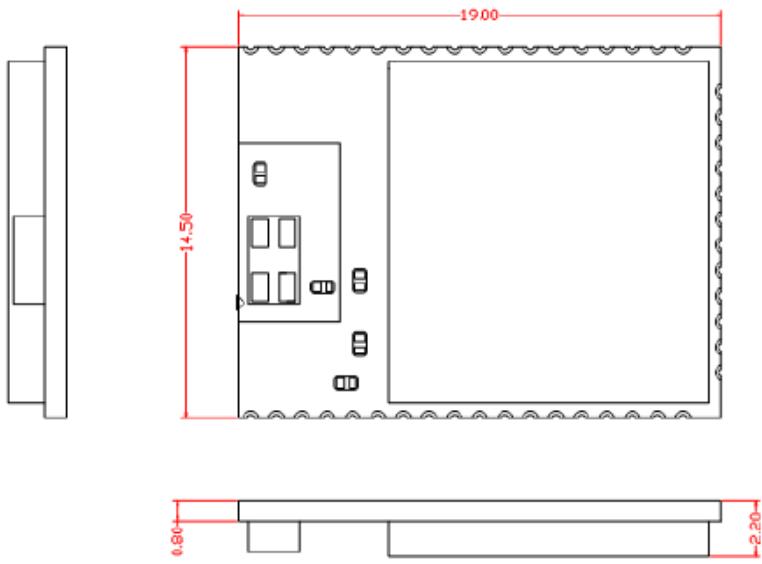
Item	Conditions	Min	Typ	Max	Unit
Output power			TBD		dBm
Modulation Characteristics	Δf_1 avg Δf_2 Pass Rate	225 99.9		275 100	kHz %
Carrier frequency offset and drift	$ f_{TX}-f[n] \leq 150.0\text{KHz}$ $ f[0]-f[n] \leq 50.0\text{KHz}$ $ f[1]-f[0] \leq 20.0\text{KHz}$ $ f[n]-f[n-5] \leq 20.0\text{KHz}$	-150 -50 -20 -20		150 50 20 20	kHz kHz kHz kHz

Receiver

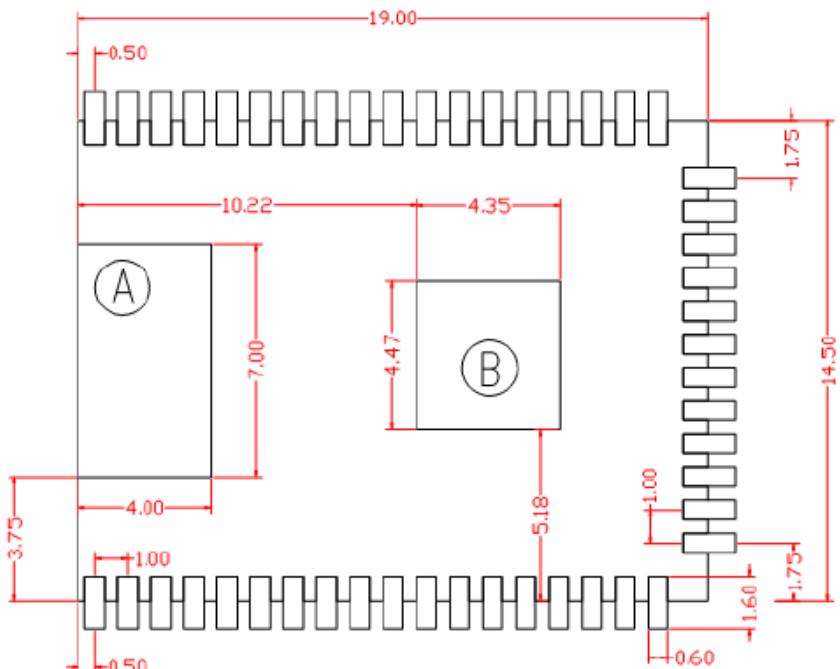
Items		Min	Typ	Max	Unit
Rx Sensitivity(per $\leq 30.80\%$)			TBD		dBm

5. Dimension

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unit : mm



- Note-

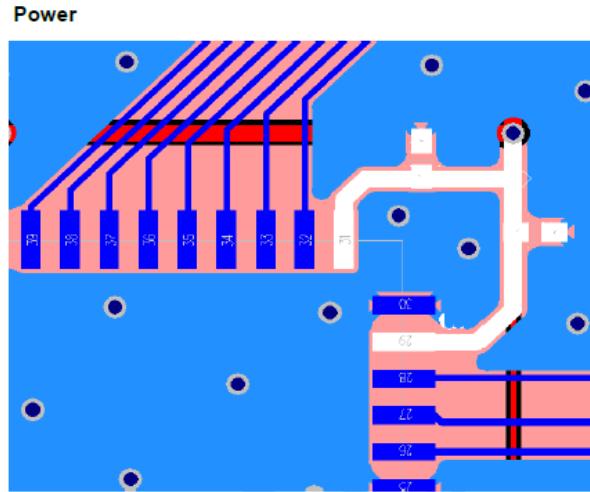
A : Copper cut out area

B : Thermal area

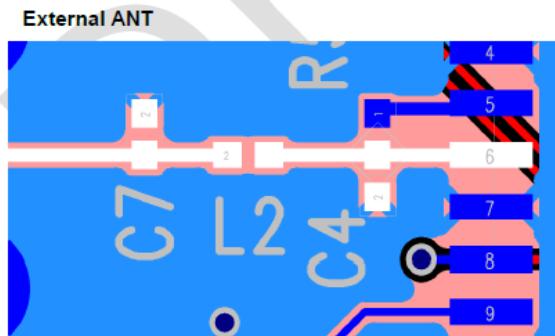
(PAD Dimension< top view>)

6. Recommended Circuit

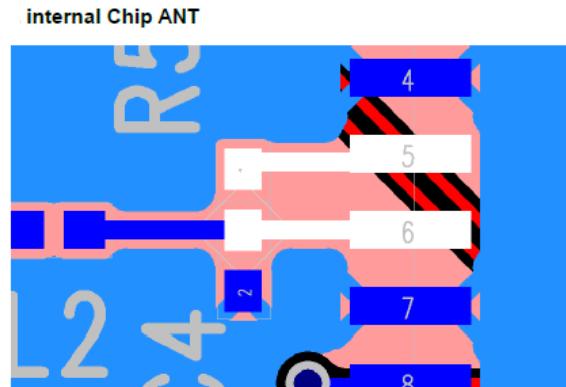
FCC ID: 2ARZJ-TX-M2540



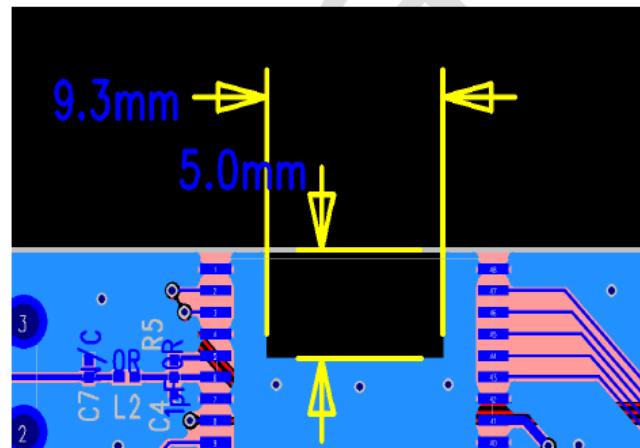
- Add to shunt cap(1uF) on Power input(Pin29, 31, 41)



- Add to π -type LPF(C-L-C) on RF Paths
- RF paths : 50Ω impedance



- RF out(Pin 6) \leftrightarrow RF in(Pin 5) connection : 0Ω



- Module position on the outside PCB
- Chip ANT Copper cut out area (Min 7mm x 4mm)

Federal Communication Commission 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device is compliant with RF exposure requirement.

Federal Communication Commission Statement

OEM Responsibilities to comply with FCC

- The module is limited to OEM installation only.
- The OEM integrator is responsible for ensuring that the end-user has no manual instructions to remove or install module.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
- The OEM integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.
- The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

Also, the OEM integrator is responsible to provide to the host manufacturer for compliance with the Part 15B requirements.

- The module is a limited single-modular transmitter that complies with the § 15.212(a)(1) modular rules which requires the host operating condition as : The host device of this module should supply the regulated power of 3.3V DC to TX-M2540.

Host User Manual

The host manual shall include the following regulatory statement:

Part 15.19: 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.

Part 15.21: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

RF exposure: This device is complies with RF exposure requirement.

Host Product labeling

The module is labeled with its own FCC. If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following: "Contains FCC ID: 2ARZJ-TX-M2540"