Shenzhen Uascent Technology Co., Ltd

Universal Ascent Holdings Limited

UAM026-A0

Wi-Fi Single-band 1T1R 802.11b/g/n

Module Datasheet

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Customer Approval : _____ Company

_____ Title

_____ Signature

_____ Date

_____ Uascent

Revision History.

Version	Date	Revision Content	Draft	Approved
1.0	2023/06/14	New version	Bella	

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1 Overview.

1.1 Introduction.

UAM026 is a cost-effective WIFI+BLE module developed by Uascent Technology, supporting Bluetooth dual mode 5.1 and IEEE 802.11 b/g/n protocol standards, lightweight TCP/IP protocol stack, STA, AP, and Direct modes, and Matter protocol. Users can use this module to add networking functions to existing devices or build independent network controllers.

1.2 Features.

- Operate at ISM frequency bands (2.4GHz).
- Standard IEEE 802.11b/g/n.
- Support WiFi+Bluetooth 5.1.
- Support Wi-Fi and BLE coexist.
- Support BLE assists in fast Wi-Fi connection.
- Built-in low-power 32-bit MCU speed up to 120 MHz, can be used as an application processor.
- Built-in 256KB RAM, 2MB or 4MB internal Flash, 32 bytes eFUSE.
- Built-in lightweight TCP/IP stack.
- Built-in TR switch, BALUN, LNA, PA, and PCB onboard antenna.
- Support remote firmware OTA upgrade, support start upgrade through AT command.
- Support STA and AP and Direct working modes.
- Support WPS/WEP/WPA/WPA2 Personal/WPA2 Enterprise/WPA3 security protocol.

1.3 Recommended Operating Rating.

Description		Min	Typ	Max	Unit
Ambient Temperature (TA)		-40	25	105	deg.C
Vcc		3.0	3.3	3.6	V
(VOL)	Output low voltage	VSS	/	VSS+0.3	V
(VOH)	Output high voltage	VCC-0.3	/	VCC	V

1.4 Reference power consumption for conventional continuous operation.

Parameter	Condition / Notes	Typ.	Unit
TX model			
I_{RF}	11b 11M	270	mA
I_{RF}	11g 54M	260	mA

I_{RF}	11n HT20 MCS7	250	mA
RX model			
I_{RF}	11b 11M	80	mA
I_{RF}	11g 54M	80	mA
I_{RF}	11n HT20 MCS7	80	mA

1.5 ESD Specifications

Item	Description	Value	Unit
Human Body Mode (HBM)	Electrostatic Discharge Tolerance under Human Body Model	±4	KV
CDM	Electrostatic Discharge Tolerance under Charged Device Model	±0.2	KV

2 Module usage precautions.

When using the WIFI module of Uascent Technology, a certain tolerance should be reserved for the output current of the power supply. It is recommended that the output current of the power supply be ≥ 500mA, and a suitable power supply IC packaging should be selected. When supplying LDO power, attention should be paid to the issue of heating, and when supplying DC-DC power, attention should be paid to the issue of overshoot at the moment of power on.

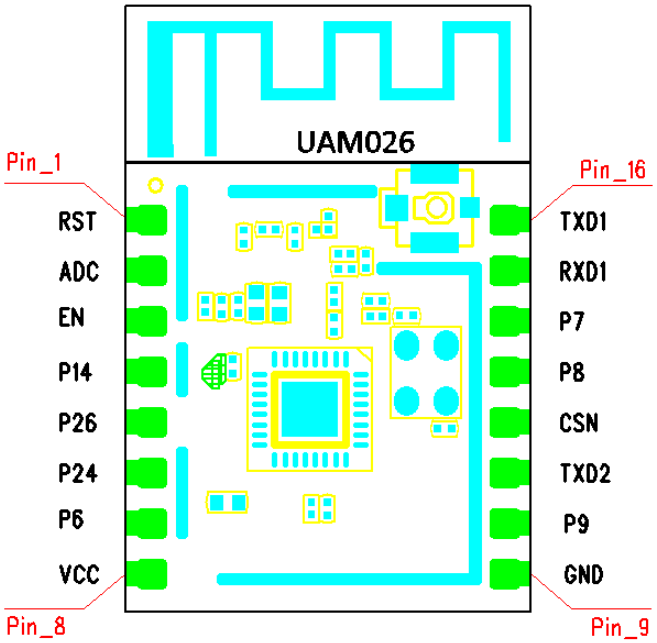
3 WiFi Specification.

Features	Descriptions
Main Chipset	BEKEN： BL2028N
Operating Frequency	2.412～2.484GHz
Operating Voltage	3.0~3.6V
WIFI Standard	IEE 802.11b/g/n
PHY Data rates	Wi-Fi: 802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps HT20 MCS0-MCS7
Transmit Output Power	Wi-Fi: 802.11b@11Mbps 16±2dBm 802.11g@54Mbps 15±2dBm 802.11n@HT20 MCS7 14±2dBm
EVM	802.11b /11Mbps: EVM≦-10dB 802.11g /54Mbps: EVM≦-25dB 802.11n /HT20 MCS7: EVM≦-27dB

Receiver Sensitivity (HT20)	802.11b@8% PER11Mbps≦ -88dBm
	802.11g@10% PER 54Mbps≦ -74dBm
	802.11n@10% PER MCS 7≦-71dBm
Operating Channel	Wi-Fi 2.4GHz: 11: (Ch. 1-11) – United States(North America) 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Antenna	PCB onboard antenna

4 Pin Descriptions.

4.1 Pin Outline.



<TOP>

4.2 Pin Definition.

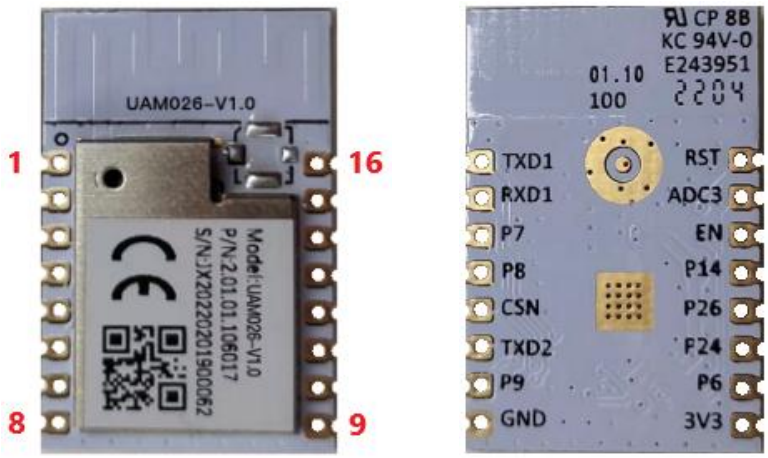
Pin No.	Name	Type	Description	Voltage
1	RST	I/O	Module reset low effective	
2	ADC	I/O	GPIO23/ADC	
3	EN	I/O	Enable pin, internally pulled up	
4	P14	I/O	GPIO14	
5	P26	I/O	GPIO26/PWM5	
6	P24	I/O	GPIO24/PWM4	
7	P6	I/O	GPIO6/PWM0	
8	VCC	P	Supply 3.3V	3.3V

9	GND	P	Ground	
10	P9	I/O	GPIO9/PWM3	
11	TXD2	I/O	GPIO0/UART_TX2	
12	CSN	I/O	GPIO21/Mode selection pin, external Pull-up resistor is required when using	
13	P8	I/O	GPIO8/PWM2	
14	P7	I/O	GPIO7/PWM1	
15	RXD1	I/O	GPIO10/UART1_RXD	
16	TXD1	I/O	GPIO11/UART1_TXD	

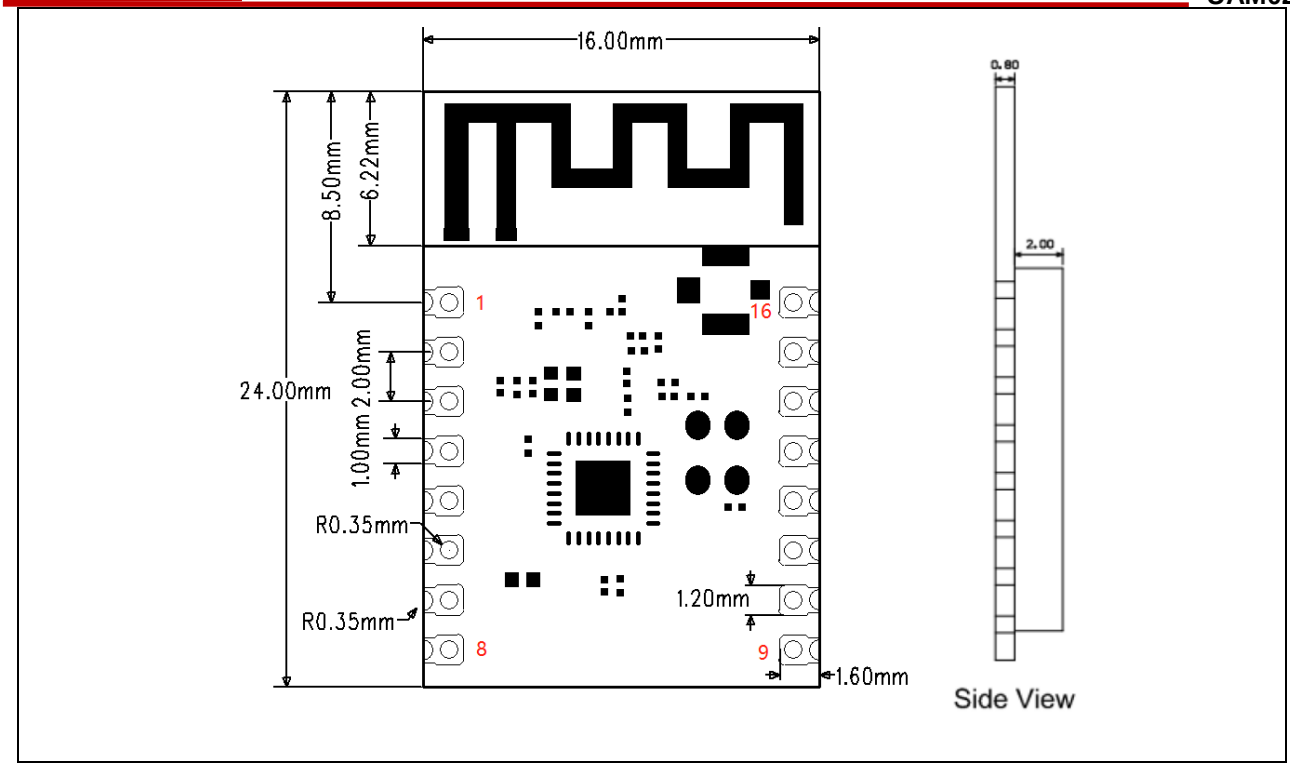
※ P:POWER I:INPUT O:OUTPUT

5 Dimensions.

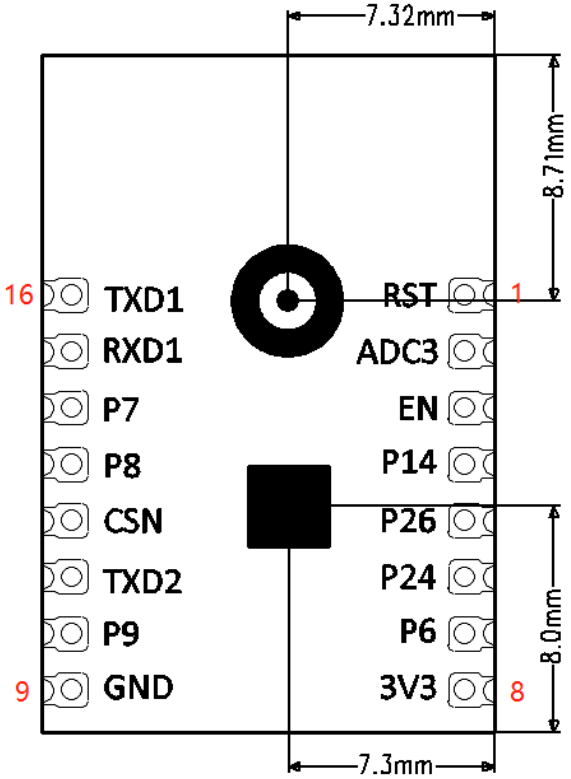
5.1 Module Picture.



L:24.00 x W:16.00 x H:2.8 (±0.2) unit=mm

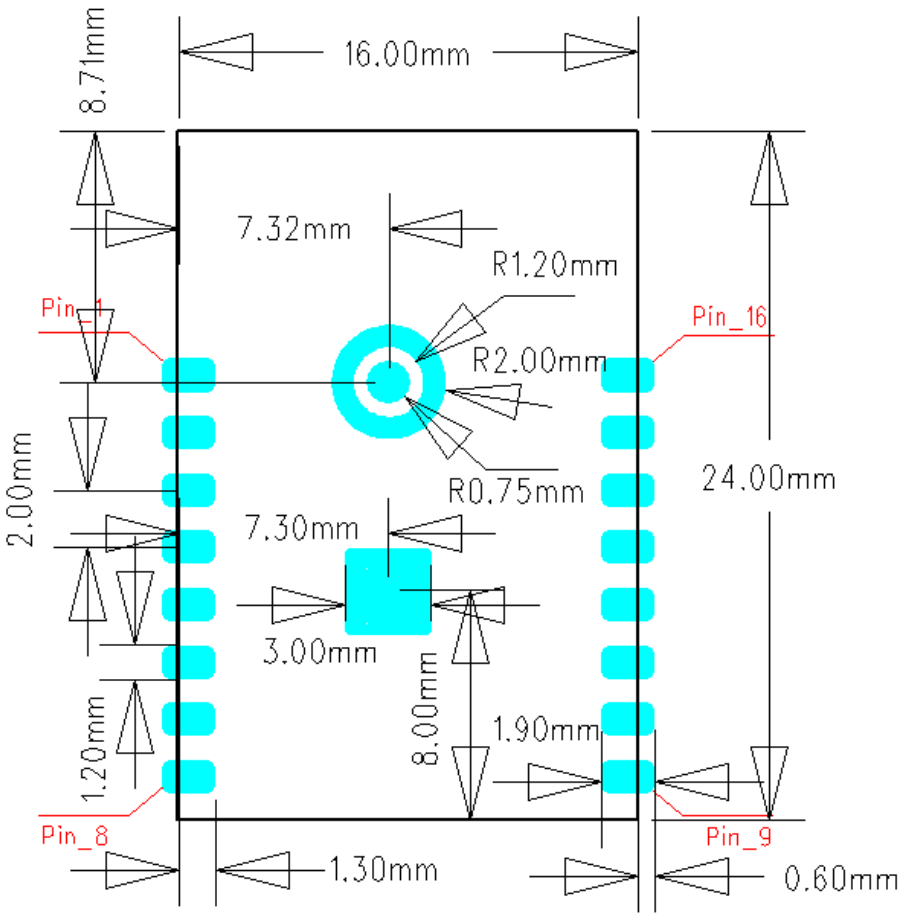


5.2 Module Mechanical Dimensions.



BOTTOM (unit=mm)

5.3 PCB Layout Reference.



(unit=mm)

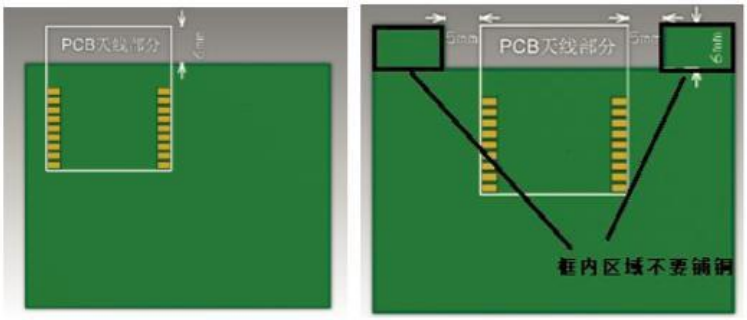
6 Antenna Information.

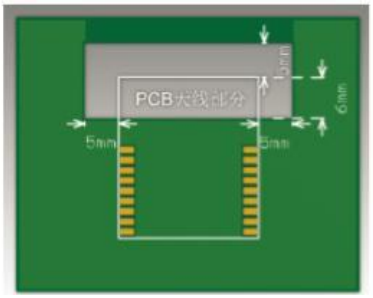
6.1 Antenna type.

This module antenna type is PCB on-board antenna with antenna gain of -1.3dBi (MAX)

6.2 Module layout considerations.

The UAM026-A0 module shall be welded to the PCB board. In order to obtain the best RF performance. Under the PCB on-board antenna, there should be no copper laying, device and wiring. During PCB design, the corresponding area should be cleared. As shown in the following figure.





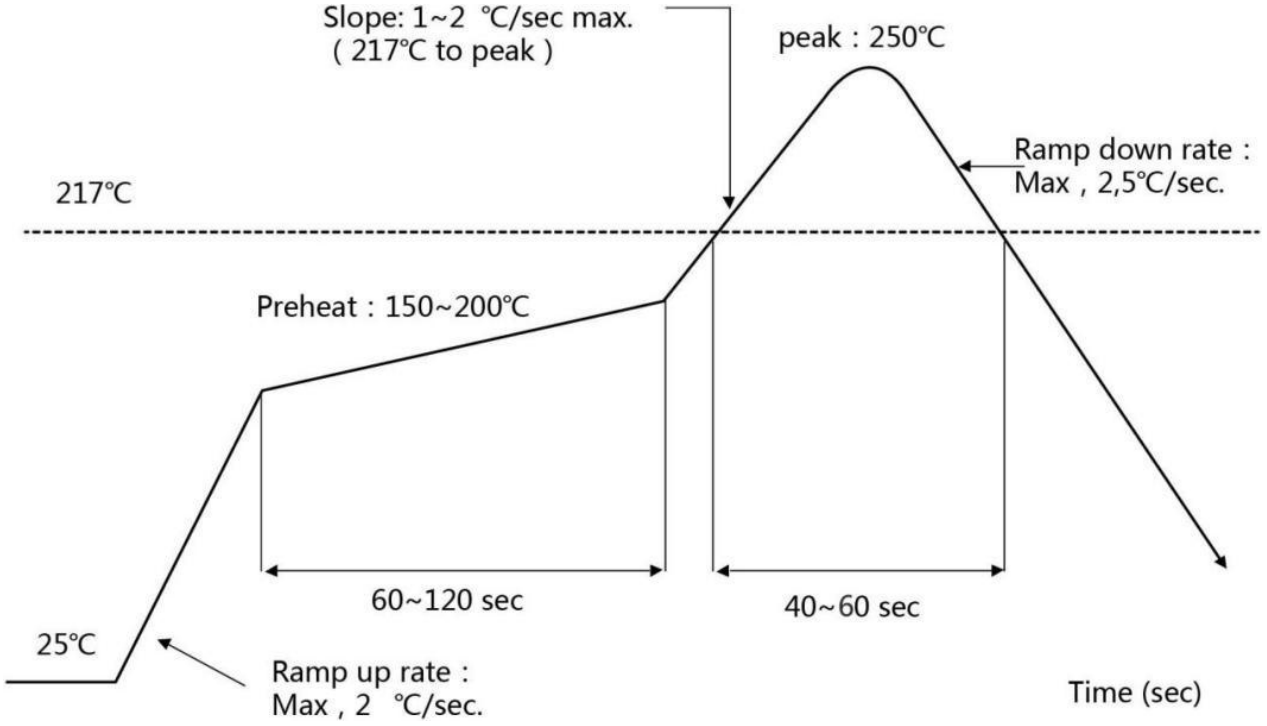
7 Environmental Requirements.

7.1 Recommended Reflow Profile.

Referred to IPC/JEDEC standard.

Peak Temperature : <245°C

Number of Times : ≤2 times



7.2 Note.

Note:Take and use the module, please insure the electrostatic protective measures.

1. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at 250 + 5 ℃ for the MID motherboard. About the module packaging, storage and use of matters needing attention are as follows:

2. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: < 40 ℃, relative humidity: < 90% r.h.

3. The module vacuum packing once opened, time limit of the assembly:

Card:1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption. 2.) factory environmental temperature humidity control: ≦ -30 ℃, ≦ 60% r.h..

3). Once opened, the workshop the preservation of life for 168 hours.

4. Once opened, such as when not used up within 168 hours:

1). The module must be again to remove the module moisture absorption.

2). The baking temperature: 125 ℃, 8 hours.

3). After baking, put the right amount of desiccant to seal packages.

7.3 Humidity sensitive control.

CAUTION

This bag contains
MOISTUR-SENSITIVE DEICES

LEVEL

3

If blank, see adjacent bar code label

1. Calculatied shelf life an sealed bag: 12 months at < 40℃ and <90% relative humidity(RH)

2. Peak package body temperature : 260 ℃

3. After bag is opened ,devices that will be subjected to reflow solder of other high temperature process must
   a) Mounted within: 168 hrs. of factory confitions ≤30℃/60%RH, OR
   b) Stored at<10% RH

4. Devices require bake,before mounting, if:
   a) Humidity Indicator Care is > 10% when read at 23 ± 5℃
   b) 3a or 3b not met.

5. If baking is required , devices may be baked for 48 hrs. at 125 ± 5℃

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

bag Seal Date : _____

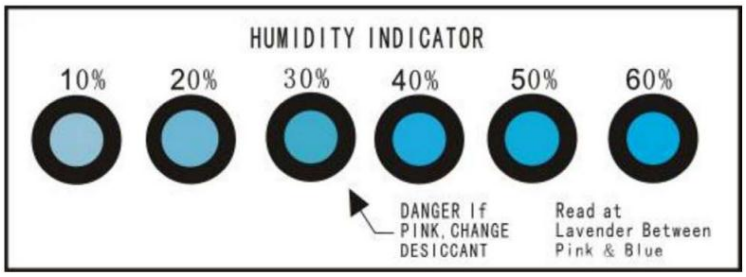
Note : level and body temperature defined by IPC/JEDEC J-STD-020

8 Package style.

8.1 Packaging Detail.

The module and the humidity indicator card are placed together in vacuum anti-static packaging, separated by a certain amount of paper, and neatly placed in the packaging box.The packaging must have reliable moisture-proof and anti-collision measures.

Note1:
There is a "triangular arrow" on the humidity indicator card indicating at 30%RH (as shown in the picture below). If the chemical changes to pink in the circle it points to, the element is damp and needs baking.



Note2:
Please confirm the packaging style with our sales staff before purchasing this product. If no packing style is specified before purchase, we will ship the goods by our own choice of packing method.

9 Transport regulations.

In the process of logistics or express transportation, attention should be paid to handling with care to avoid direct rain and snow.

10 Disclaimer and copyright notice.

All information in this document is provided according to the product status quo and subject to change without notice.

The contents of this document disclaim any warranties, including any warranties of fitness for sale, fitness for a particular purpose or non-infringement, and any warranties mentioned elsewhere in any proposal, specification or sample.

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11 Attention.

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None of the statements, information and recommendations contained in this manual constitute any warranty, express or implied.

12 FCC statements:

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 or more 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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement. The device can be used in mobile exposure condition without 20cm distance

The module is limited to installation in mobile or fixed applications following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users.
2. The transmitter module may not be co-located with any other transmitter or antenna. As long as the two conditions above are met, additional transmitter testing will not be required. However, the

OEM integrator is still responsible for testing their end-product for any additional compliance requirements required for the installed module.
Important Note: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the Federal Communications Commission of the U.S. Government (FCC) and the Canadian Government authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator shall be responsible for re-evaluating the end-product (including the transmitter) and obtaining a separate FCC authorization in the U.S. and candada.
OEM Integrators – End Product Labeling Considerations: This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: " Contains FCC ID: 2A68EJX-UAM026". The grantee’s FCC ID can be used only when all FCC compliance requirements are met.

OEM Integrators – End Product Manual Provided to the End User: The OEM integrator shall not provide information to the end user regarding how to install or remove this RF module in end product user manual. The end user manual must include all required regulatory information and warnings as outlined in this document.