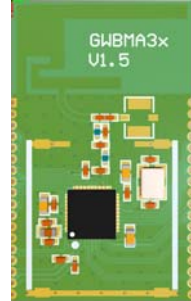


## ***GWBMA3x 2.4G / Bluetooth Multi-mode Wireless***

### ***Audio Module***

GWBMA3x is a highly integrated module with 2.4G and Bluetooth connectivity and high performance application MCU and DSP, which specialize in wireless audio applications. Besides its standard Bluetooth profiles, Gigawit has also ported its market proven 2.4G protocols and low latency codecs into this platform, make it ideally for the Bluetooth wireless sound-bar, true wireless stereo applications.

This is a pre-approved module, thus reduces the work and cost for a range of qualifications and let our customers to delivery their products to market more efficiently.



#### **1. Applications**

- Bluetooth Speakers
- Bluetooth Sound-bar with wireless subwoofer
- True Wireless Stereo Bluetooth Speakers
- Bluetooth Audio Dongle
- Bluetooth Headphones
- Wireless Gaming Headphone
- Wireless TV Headphone
- Wireless Microphone

#### **2. Features**

- Bluetooth v4.2 specification compliant and supports BR/EDR.
- Programmable output RF power up to +4dBm
- -92dBm sensitivity for better RF range.
- Support A2DP 1.3.1, HFP 1.5 and AVRCP 1.6.1
- Support multiple Bluetooth /Proprietary link for wireless subwoofer, true wireless stereo and wireless surround speakers.
- Rich and flexible peripheral I/O as UART/I2C/SPI/I2S/ADC/PWM/USB etc.
- I2S for external audio codec.
- On board 24bit stereo DAC and two channel 24bit ADC.
- Support MP3 / SBC / WMA / AAC decoder.
- Optional ipex socket for external Antenna.

### 3. Pin Assignment

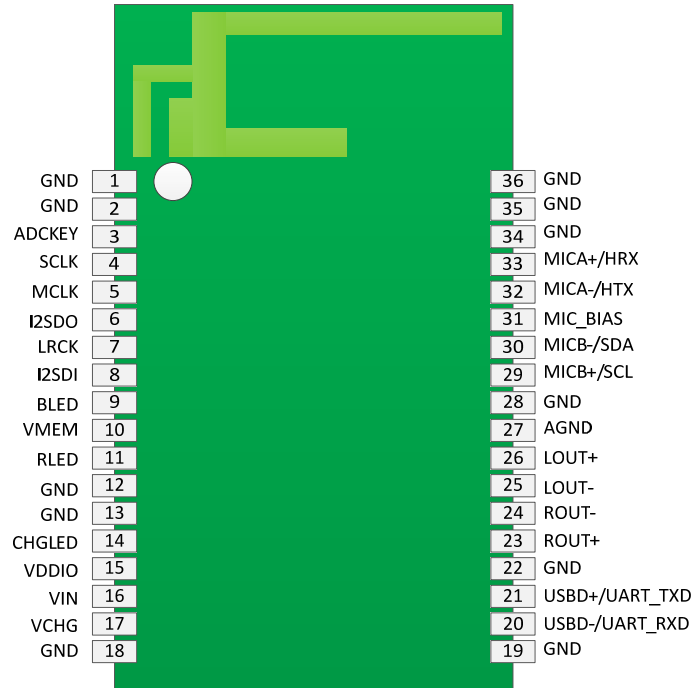


Figure [3]: GWBMA3x Pin Assignment

Pin #	Pin name	Type	Description
1	GND	GND	Ground
2	GND	GND	Ground
3	ADCKEY	I/O	12bit General ADC input or General purpose I/O
4	SCLK	I/O	I2S Bit Clock
5	MCLK	I/O	I2S Master Clock, default 12.288MHz
6	IS2DO	I/O	I2S Data Output
7	LRCK	I/O	I2S Left/Right Clock
8	I2SDI	I/O	I2S Data Input
9	BLED	I/O	Bluetooth LED or General purpose I/O
10	VMEN	Power	Power of flash memory
11	RLED	I/O	Red LED or General purpose I/O

12	GND	GND	Ground
13	GND	GND	Ground
14	CHG_LED	O	Led output for charger
15	VDDIO	Power	Power output of digital IO
16	VIN	Power	Power input of module
17	VCHG	I/O	Charger power input
18	GND	GND	Ground
19	GND	GND	Ground
20	USBD-/ UART_RXD	I/O	USB Data-/ UART_RXD
21	USBD+/UART_TXD	I/O	USB Data+/ UART_TXD
22	GND	GND	Ground
23	ROUT+	A,O	Digital right output positive
24	ROUT-	A,O	Digital right output negative
25	LOUT-	A,O	Digital left output positive
26	LOUT+	A,O	Digital left output negative
27	AGND	GND	Analog Ground/Code Ground
28	GND	GND	Ground
29	MICB+/SCL	Analog	MicA Input -/I2C Clock
30	MICB-/SDA	Analog	MicA Input +/I2C Data
31	MIC_BIAS	Analog	Mic Bias voltage
32	MICA-/HTX	Analog	MicA Input -/Debug interface TX
33	MICA+/HRX	Analog	MicA Input +/Debug interface RX
34	GND	GND	Ground
35	GND	GND	Ground
36	GND	GND	Ground

Table [2]: GWBMA3x Pin Description

#### 4. Mounting Requirements

GWBMA3x is a sensitive RF part; it needs to be mounted at the corner of the mother circuit board and reserve some keep out space to the components on the mother board. Try to keep them away with metal components like Speakers, Transformers, Batteries, Big Aluminum Capacitors, Heat Sinks and Metal Panels.

The figure below illustrates how to mount the GWBMA3x module. **Improper mounting will decrease the RF performance dramatically.**

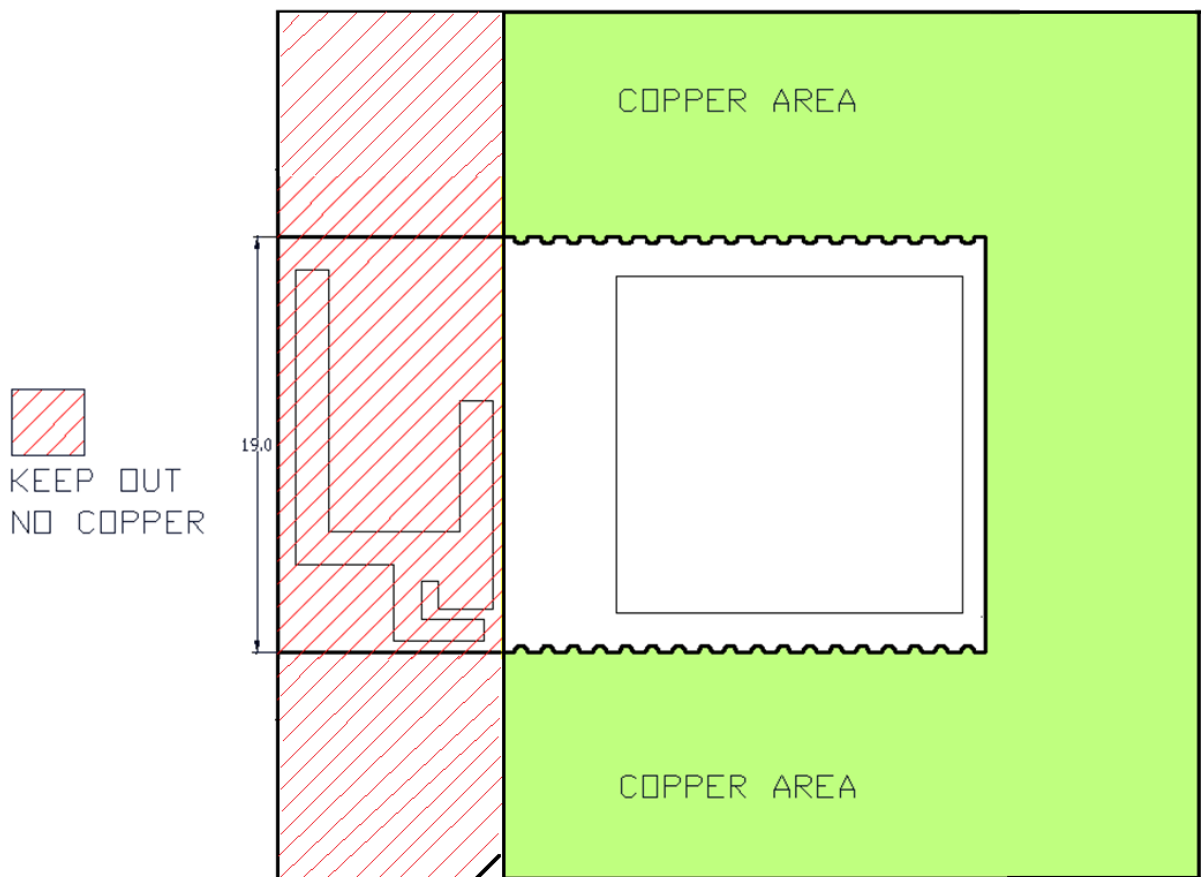


Figure [8]: GWBMA3x Mounting Rule

## 5. Physical Dimension

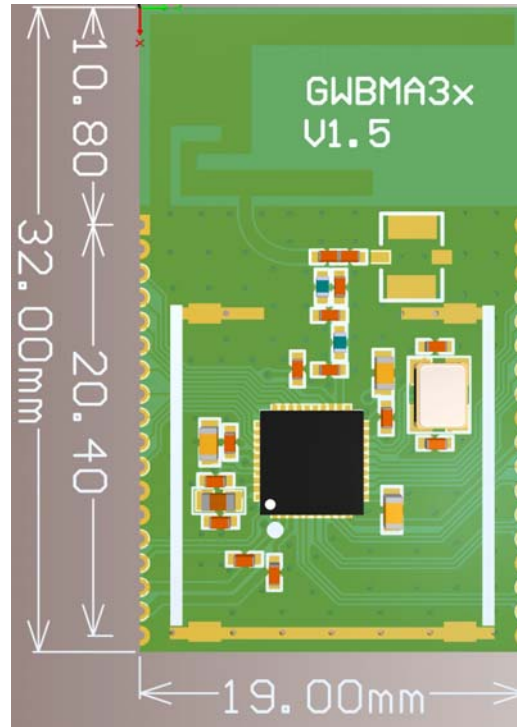


Figure [9]: GWBMA3x Dimension

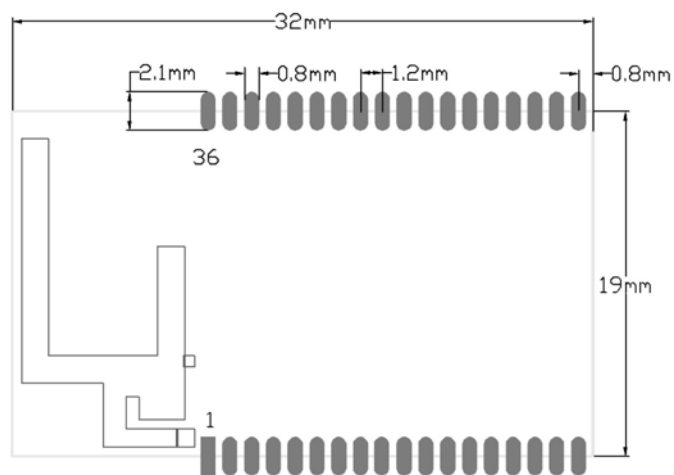
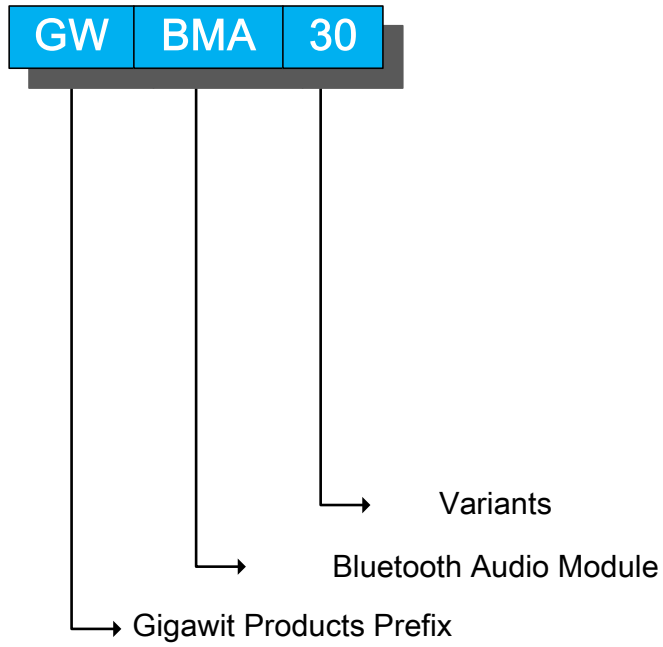


Figure [10]: PCB Land Pattern

## Naming Rule



## 6. Ordering Information

Gigawit ID.	Description
GWBMA30	Standard Bluetooth Audio
GWBMA3A	Bluetooth Audio with low latency codec
GWBMA3W	Bluetooth Audio with Wireless Subwoofer
GWBMA3S	Bluetooth Audio with True Wireless Stereo
GWBMA3Q	Bluetooth Audio with low latency codec and voice chat for Gaming headphone
GWBMA3H	Proprietary 2.4G wireless low latency mono module

## 7. Contact

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<http://www.gigawit.com>

## 8. Revision History

2016-08-01	Version 0.9, Preliminary
2017-03-20	Version 1.0, Update mounting requirements
2017-04-22	Version 1.1, Update some pinouts

## **FCC Statement**

### **15.19**

1. 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

### **15.21**

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

### **15.105(b)**

**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

## **RF Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

## ORIGINAL EQUIPMENT MANUFACTURER (OEM) NOTES

- The OEM must certify the final end product to comply with unintentional radiators (FCC Sections 15.107 and 15.109) before declaring compliance of the final product to Part 15 of the FCC rules and regulations. Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change.
- The OEM must comply with the FCC labeling requirements. If the module's label is not visible when installed, then an additional permanent label must be applied on the outside of the finished product which states: "Contains transmitter module FCC ID: QECGWBMA3X Additionally, the following statement should be included on the label and in the final product's user manual: "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 interferences, and (2) this device must accept any interference received, including interference that may cause undesired operation."
- The module is limited to installation in mobile or fixed applications. Separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations.
- A module or modules can only be used without additional authorizations if they have been tested and granted under the same intended end-use operational conditions, including simultaneous transmission operations. When they have not been tested and granted in this manner, additional testing and/or FCC application filing may be required. The most straightforward approach to address additional testing conditions is to have the grantee responsible for the certification of at least one of the modules submit a permissive change application. When having a module grantee file a permissive change is not practical or feasible, the following guidance provides some additional options for host manufacturers. Integrations using modules where additional testing and/or FCC application filing(s) may be required are: (A) a module used in devices requiring additional RF exposure compliance information (e.g., MPE evaluation or SAR testing); (B) limited and/or split modules not meeting all of the module requirements; and (C) simultaneous transmissions for independent collocated transmitters not previously granted together.

This Module is full modular approval, it is limited to OEM installation ONLY.

Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change. (OEM) Integrator has to assure compliance of the entire end product include the integrated Module.

Additional measurements (15B) and/or equipment authorizations (e.g Verification) may need to be addressed depending on co-location or simultaneous transmission issues if applicable.

Note: (OEM) Integrator assure the compliance of FCC requirements, please make sure the module(s) is installed and fully operational, or contact us for technical support.

(OEM) Integrator is reminded to assure that these installation instructions will not be made available to the end user of the final host device.