

PRODUCT SPECIFICATION

Name: Wireless Module

Model: A58733A-UUBA

Wi-Fi 2.4G/5G Dual-band 1T1R
IEEE802.11a/b/g/n + BT5.2
Combo Module

Version: V1.0

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

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A58733A-UUBA Module Datasheet

Ordering Information	Part NO.	Description
	1.001.87330000012	RTL8733BU-CG,802.11a/b/g/n,Wi-Fi2.4G/5G+BT5.2, 1T1R,USB,12.2*13mm, 2 Antenna ,without shielding



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Revision History

[illegible]

一、General Description

1.1 Introduction

A58733A-UUBA is a highly integrated module, have 802.11a/b/g/n 1T1R WLAN, and an integrated Bluetooth 5.2 with USB 2.0 multi-function. It combines a WLAN MAC, a 1T1R capable WLAN baseband, BT Protocol Stack (LM, LL, and LE), BT Baseband, modem, and WLAN/BT RF in a combo chip. A58733A-UUBA provides a complete solution for a high-performance integrated wireless LAN and Bluetooth controller. A58733A-UUBA WLAN baseband implements Orthogonal Frequency Division Multiplexing (OFDM) with 1 transmit and 1 receive path and is compatible with the 802.11n specification. Features include one spatial stream transmission, short guard interval (GI) of 400ns, spatial spreading, and transmission over 20MHz and 40MHz bandwidth.

1.2 Description

Model Name	A58733A-UUBA
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L12.2 mm *W13 mm(± 0.3 mm)
Wi-Fi Interface	USB
BT Interface	USB
OS supported	Android /Linux
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 85°C

二、General Description

- IEEE 802.11a/b/g/n compatible WLAN
- Complete 802.11n solution for both 2.4GHz and 5GHz band
- Complies with USB2.0 for WLAN and BT controller
- USB Multi-Function for both WLAN
- USB LPM and USB Selective Suspend supported
- 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- Backward compatible with 802.11b/g devices while operating in 802.11n mode
- 802.11i(WPA, WPA2). Open, shared key, and pair-wise key authentication services
- Compatible with Bluetooth v2.1+EDR and v5.2 Systems
- Bluetooth 5.2 Dual Mode support: Simultaneous LE and BR/EDR

四、General Specification

4.1 2.4GHz RF Specification

Feature	Description	
WLAN Standard	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n	
Frequency Range	2400 ~ 2483.5MHz	
Number of Channels	2.4GHz: Ch1~Ch11	
Test Items	Transmit Value	EVM
Output Power	802.11b /11Mbps:6dBm ± 2 dBm	EVM ≤ -13 dB
	802.11g /54Mbps:7dBm ± 2 dBm	EVM ≤ -25 dB
	802.11n /MCS7:6dBm ± 2 dBm	EVM ≤ -27 dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	± 20 ppm	
Test Items	Standard Value	
SISO Receive Sensitivity (11b,20MHz) @8% PER	11Mbps ≤ -82 dBm	
SISO Receive Sensitivity (11g,20MHz) @10% PER	54Mbps ≤ -72 dBm	
SISO Receive Sensitivity (11n,20MHz) @10% PER	MCS7 ≤ -70 dBm	
SISO Receive Sensitivity (11n,40MHz) @10% PER	MCS7 ≤ -66 dBm	
Antenna Reference	Small antennas with 0~2 dBi peak gain	

Note: The RF specification will be updated in future version

4.2 5GHz RF Specification

Feature	Description		
WLAN Standard	IEEE 802.11a, IEEE 802.11n		
Frequency Range	5150 MHz ~ 5850MHz		
Number of Channels	5.8GHz		
	Band range	Operating Channel Numbers	Channel center frequencies(MHz)
	5150MHz~5250MHz	36	5180
		40	5200
		44	5220
		48	5240
	5250MHz~5350MHz	52	5260
		56	5280
		60	5300
		64	5320
	5470MHz~5725MHz	100	5500
		104	5520
		108	5540
		112	5560
		116	5580
		120	5600
		124	5620
		128	5640
		132	5660
		136	5680
	5725MHz~5850MHz	140	5700
		149	5745
		153	5765
		157	5785
		161	5805
		165	5825
Test Items	Transmit Value		EVM
Output Power	802.11a /54Mbps:12dBm $\pm$ 2dBm		EVM $\leq$ -25dB
	802.11n /MCS7:12dBm $\pm$ 2dBm		EVM $\leq$ -27dB
Test Items	Standard Value		
Receive Sensitivity (11a,20MHz) @10% PER	54Mbps $\leq$ -70dBm		

Receive Sensitivity (11n,20MHz) @10% PER	MCS7 $\leq$ -67dBm
Receive Sensitivity (11n,40MHz) @10% PER	MCS7 $\leq$ -65dBm
Antenna Reference	Small antennas with 0~2 dBi peak gain

Note: The RF specification will be updated in future version

4.3 Bluetooth Specification

Feature	Description
General Specification	
Bluetooth Standard	Bluetooth V5.2 of 1, 2 and 3Mbps
Host Interface	USB
Frequency Band	2400 MHz ~ 2483.5 MHz
Number of Channels	79 (0~78)
Modulation	GFSK; $\pi/4$ -DQPSK; 8-DPSK
RF Specification	
Output Power	0-10dBm
Sensitivity, tolerance : /	
Sensitivity @ BER=0.1% for GFSK (1Mbps)	-92dBm
Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)	-92dBm
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)	-85dBm
Maximum Input Level	GFSK (1Mbps):-20dBm
	$\pi/4$ -DQPSK (2Mbps) :-20dBm
	8DPSK (3Mbps) :-20dBm

Note: The RF specification will be updated in future version

19	HST_WAKE_WL	HOST to wake-up Wi-Fi device
20	WL_WAKE_HST	WIFI device to wake-up HOST

六、Electrical Specifications

6.1 Power Supply DC Characteristics

Parameter	Min.	Typ.	Max.	Unit
Operating Temperature	0	-	+70	°C
VD33	3.15	3.3	3.45	V

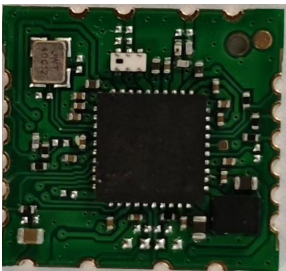
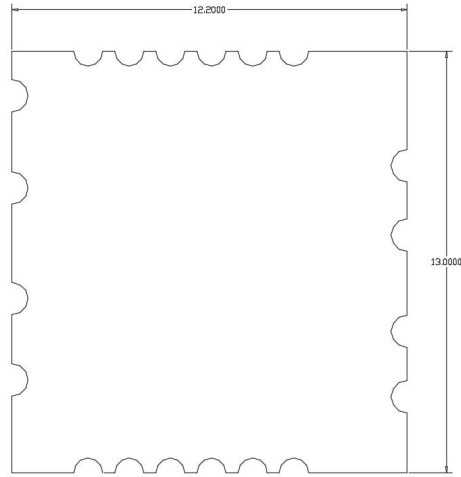
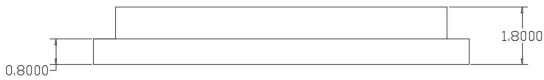
七、ID setting information

WI-FI

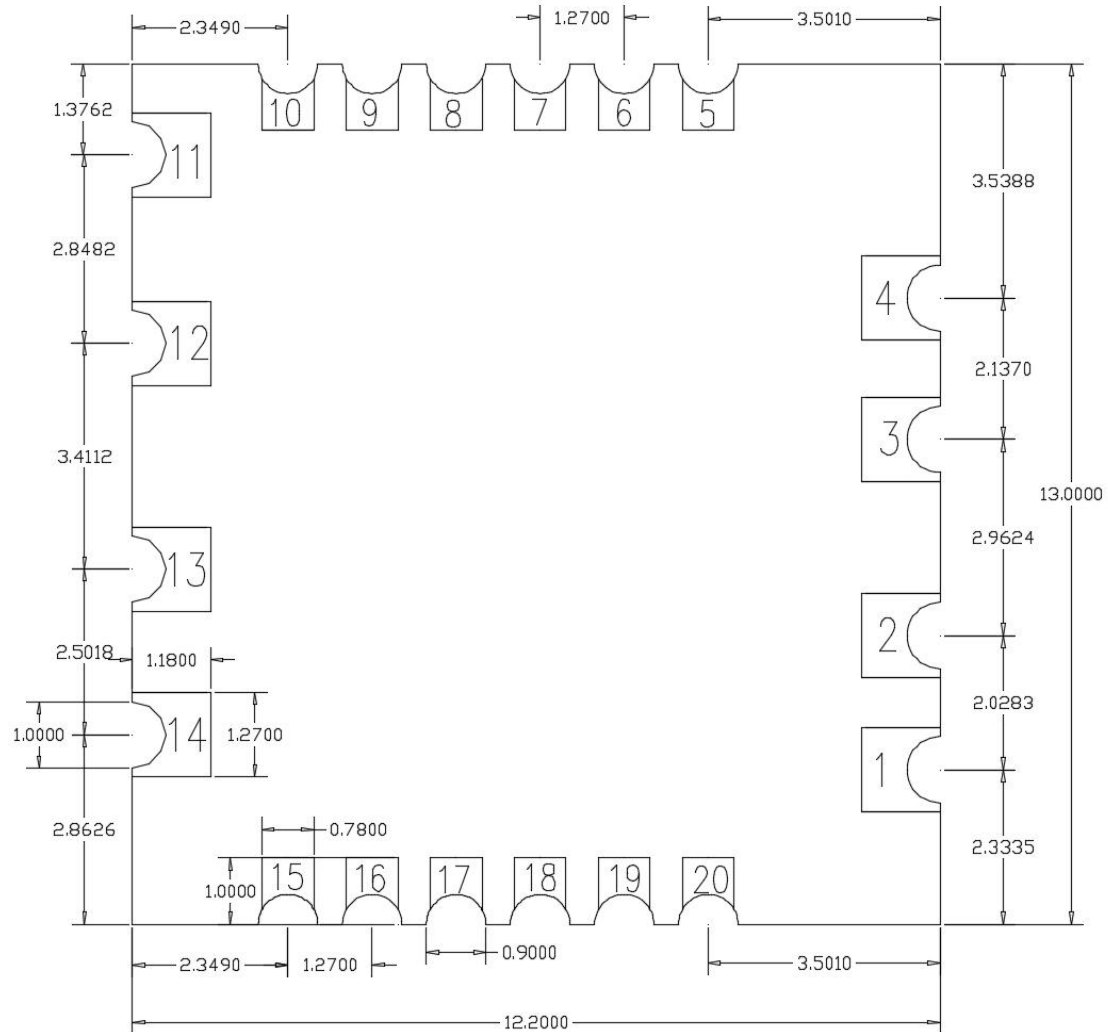
Vendor ID	
Product ID	

八、Size reference

8.1 Module Picture

L×W:13×12.2 (±0.3 mm) 1.001.87330000012: TOP  BOTTOM 			
1.001.87330000012	H: 1.8 (±0.3) mm		

8.2 Outline Drawing (Unit: $\pm 0.3\text{mm}$)



PCB LAYOUT

九、The Key Material List

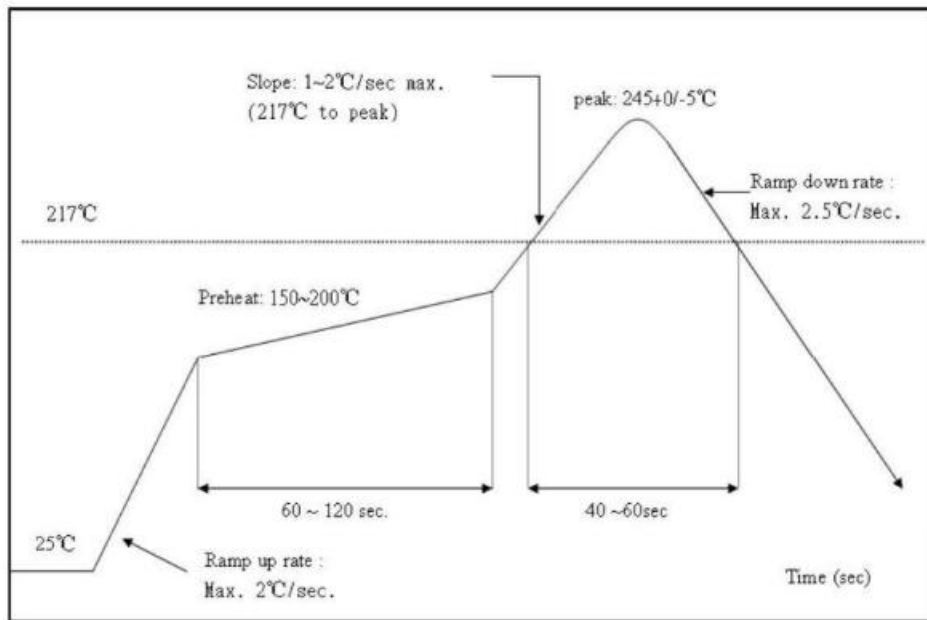
Item	Part Name	Description	Manufacturer
1	Chipset	RTL8733BU-CG	RTL
2	PCB	FR4,2LAYER,GREEN,12.2×13 ×0.8mm	Kingshine
3	Inductor	2016 2.2uH 20%	HUACUI/InMicro
4	Crystal	X2016 40M 12PF 10PPM	JWT/LK
5	Diplexer	FLT18D254959D-3206A	FTR

十、Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : $< 250^{\circ}\text{C}$

Number of Times : ≤ 2 times



十一、RoHS compliance

All hardware components are fully compliant with EU RoHS directive

十二、Precautions before installing the WIFI module

WIFI module installed note:

1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.18 mm thickness When open a stencil
2. Take and use the WIFI module, please insure the electrostatic protective measures.
3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at $250 \pm 5^{\circ}\text{C}$ for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:

1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: $< 40^{\circ}\text{C}$, relative humidity: $< 90\%$ r.h.

2. 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: $\leq 30^{\circ}\text{C}$, $\leq 60\%$ r.h..

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

3. 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°C , 8 hours.

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

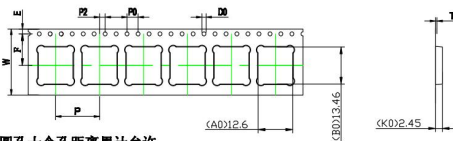
It needs to comply with IPC/JEDEC J-STD-033

十三、PACKING INFORMATION

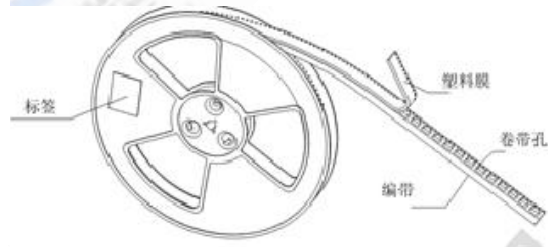
Put the product into the load belt, one roll of load belt can put 1700PCS, one roll with an aluminum foil bag, into the humidity card, desiccant together packaging, 5 rolls for a box, a box of 8500PCS.

Humidity sensitivity class: MSL3

symbol	AO	BO	KO	PO	P	P2	长度/13"盘
Spec	12.0±0.10	13.48±0.10	2.45±0.10	4.00±0.10	18.0±0.10	2.00±0.10	27.8M
symbol	W	T	E	F	DO		元件/13"盘
Spec	24.0±0.30	0.30±0.05	1.75±0.10	11.5±0.10	1.50±0.10		1740PCS



1. 上圆孔十个孔距离累计允许公差为±0.2mm
2. 带长250mm内容许弯曲度1mm
3. 所有尺寸定义依据EIA-481-2A标准则定义之设计
4. 材料: 黑色PS材料
5. 材料厚度: $0.30 \pm 0.05\text{mm}$
6. 13"单卷可装长度: 27.8米
7. 13"单卷可装粒数: 1740 pcs



Note: Shenzhen MiaoMing may make improvements and/or changes in this document or in the product described in this document at any time. This document could include technical inaccuracies or typographical errors.

Shenzhen MiaoMing Intelligent Technology Co.,Ltd Reserves the final interpretation power.

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules This module has been tested for compliance to FCC Part 15.247, FCC Part 15.407, FCC Part 2.1091

2.3 Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

2.4 Limited module procedures Guangdong Qiming Intelligent Industrial Co., Ltd. will retain control over the final installation of the modular such that compliance of the end product is assured. In such cases, an operating condition on the limit modular approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer. C2PC or new certificate should be apply to get approval, if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance ,then it is illegal.

2.5 External Antenna designs Not applicable

2.6 RF exposure considerations This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users. Antenna Type External AAntenna

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: “Contains FCC ID: 2BVLX-A58733A-UUBA”. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

FCC Warning

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

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: Additional testing and certification may be necessary when multiple modules are used.

Note 4: The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator.

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.