

ABBLUE TECHNOLOGY

Radio Specifications:

Parameter	Min.	Typ.	Max.	Unit
Frequency Range	2402		2480	MHz
Maximum Output Power		+8		dBm
Rx Sensitivity Level, BLE1 Mbps		-95		dBm
Rx Sensitivity Level, BLE Long Range 125 kbps		-103		dBm
Data Rate on air	125		2000	kbps
Operating Temperature Range	-40	25	85	°C

Radio current consumption (transmitter):

Parameter	Min.	Typ.	Max.	Unit
TX only current (DC/DC, 3 V) PRF = +8 dBm		14.0		mA
TX only current (DC/DC, 3 V) PRF = +4 dBm		9.4		mA
TX only current (DC/DC, 3 V) PRF = +0 dBm		4.9		mA
TX only current (DC/DC, 3 V) PRF = -4 dBm		3.8		mA
TX only current (DC/DC, 3 V) PRF = -8 dBm		3.4		mA
TX only current (DC/DC, 3 V) PRF = -20 dBm		2.7		mA

Radio current consumption (Receiver):

Parameter	Min.	Typ.	Max.	Unit
RX only current (DC/DC, 3 V) 1 Mbps BLE		4.7		mA
RX only current (DC/DC, 3 V) 2 Mbps BLE		5.2		mA

Operating Conditions:

Parameter	Min.	Typ.	Max.	Unit
Supply voltages				
VDD	1.7	3.0	+3.6	V
VDDH	2.5	3.7	+5.5	V
VBUS	4.35	5	+5.5	V
Operating Temperature Range	-40	25	85	°C

Absolute Maximum Ratings:

Parameter	Min.	Max.	Unit
Supply voltages			
VDD	-0.3	+3.9	V
VDDH	-0.3	+5.8	V
VBUS	-0.3	+5.8	V
VSS	0	0	V
I/O pin voltage			

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Voltage on GPIO pins ($V_{DD} \leq 3.6V$)	-0.3	VDD + 0.3	
Voltage on GPIO pins ($V_{DD} > 3.6V$)	-0.3	+3.9	
NFC antenna pin current		80	mA
RF input level		10	dBm
Environmental			
ESD Human Body Model		3	kV
ESD Human Body Model Class		2	
ESD Charged Device Model		1	kV
Storage temperature	-40	125	°C
Flash memory Endurance		10000	Write/erase cycles

Note: Exceeding one or more of the limiting values may cause permanent damage to the module.

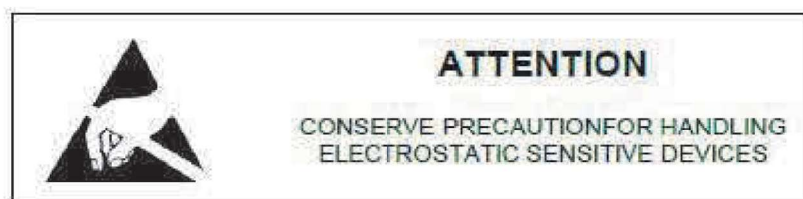
Notes and Cautions:

Design Notes

- (1) It is critical to following the recommendations of this document to ensure the module meets the specifications.
- (2) Power supply must be free of AC ripple voltage. If such noise is present, it is critical to provide proper filtering and decoupling.
- (3) The module should not be stressed mechanically after installation.
- (4) Exposing the module to significant temperatures will result in degradation and decreased lifetime.
- (5) Keep module away from other high frequency devices which may interfere with operation such as other transmitters and devices generating high frequencies.
- (6) Avoid static electricity, ESD and high voltage as these may damage the module.

Handling and Storage

- (1) Keep module away from other high frequency devices which may interfere with operation such as other transmitters and devices generating high frequencies.
- (2) Do not expose the module to the following conditions: Corrosive gasses such as Cl₂, H₂S, NH₃, SO₂, or NO_x Extreme humidity or salty air Prolonged exposure to direct Sunlight Temperatures beyond those specified for storage.
- (3) Do not apply mechanical stress.
- (4) Do not drop or shock the module.
- (5) Avoid static electricity, ESD and high voltage as these may damage the module.



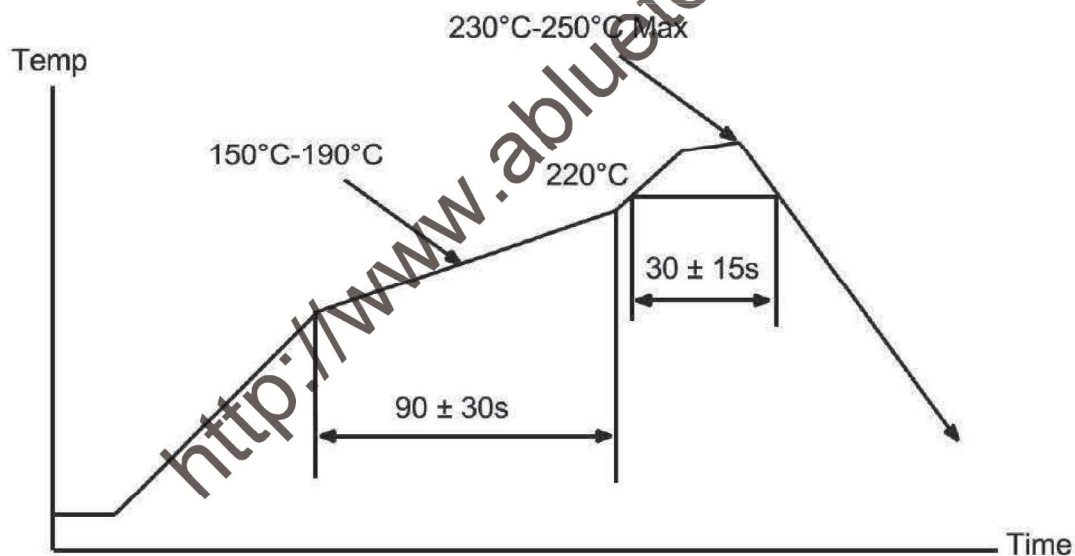
Moisture Sensitivity

All plastic packages absorb moisture. During typical solder reflow operations when SMDs are mounted onto a PCB, the entire PCB and device population are exposed to a rapid change in ambient temperature. Any absorbed moisture is quickly turned into superheated steam. This sudden change in vapor pressure can cause the package to swell. If the pressure exerted exceeds the flexural strength of the plastic mold compound, then it is possible to crack the package. Even if the package does not crack, interfacial delamination can occur.

Since the device package is sensitive to moisture absorption, it is recommended to bake the product before assembly.



Solder Reflow Temperature-Time Profile



Life Support Applications

Products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Customers using or selling these products for use in such applications do so at their own risk.

Additional Customization

We provide extensive customization, design and manufacturing services to ensure the perfect fit for your product. Our wide selection of modules allows developers to create any number of products. Should you

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need more information and assistance in integrating this module or developing your product, please contact us.

- Custom Hardware design including Modules, RF and Antenna Design
- Bluetooth Low Energy and Firmware Development
- Mobile Apps for iOS and Android
- Cloud Platform

Trademarks

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc., Other trademarks and tradenames are those of their respective owners. ”

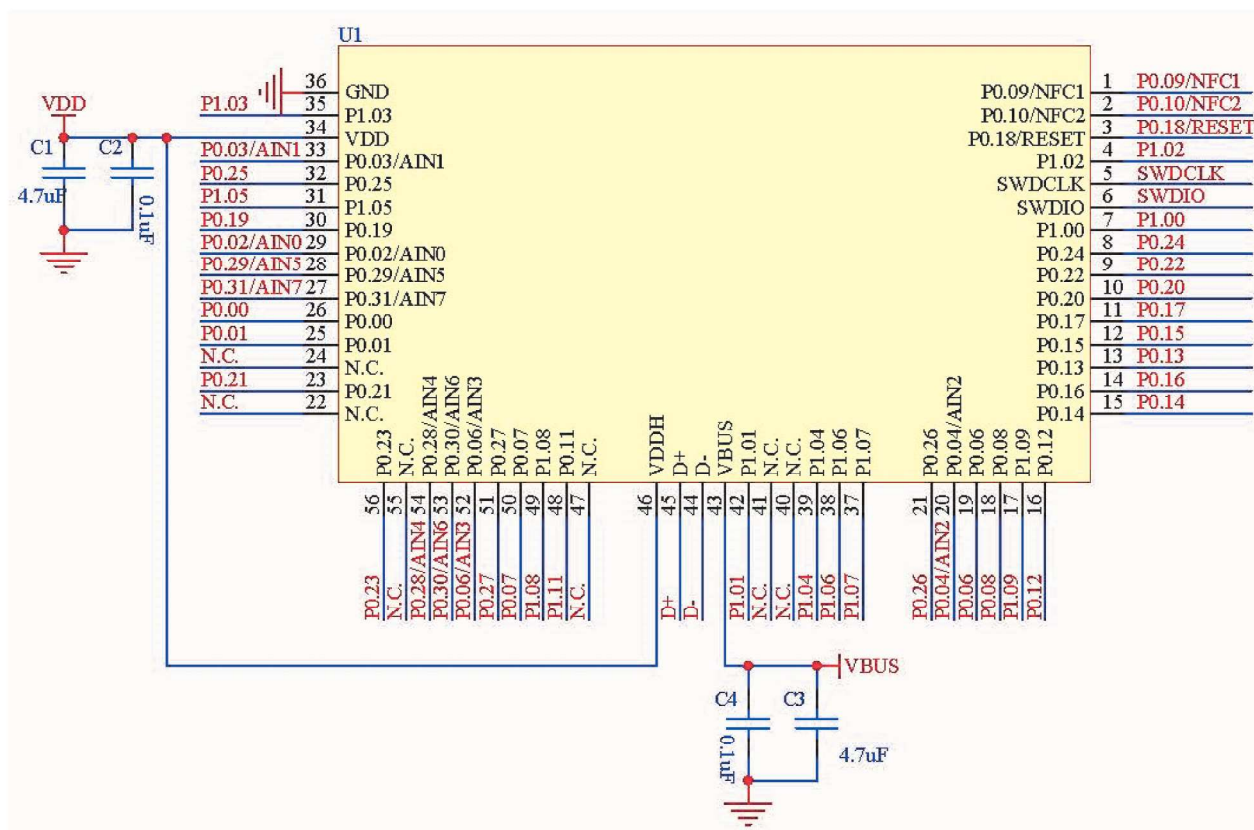
Right and Statements

- Reserves the right to make corrections, modifications, and/or improvements to the product and/or its specifications at any time without notice.
- Assumes no liability for the user's product and/or applications.
- We have a strict and careful check and collation, but can not guarantee this manual without any errors and omissions.
- The contents of this manual by copyright protection law and regulations, without our prior written authorization of any person shall, in any way to copy the copy or manual, this manual will all or any part of any form in any cable or wireless network transmission, or be compiled and translated into any other format, text or code.

Ordering Information:

Part Number	Description
PTR5620+	Bluetooth 5.2 System on Module, use with Ext. IPX Antenna
XANT-IPX-10	2.4GHz FPC Antenna with IPX connector, 2dBigain

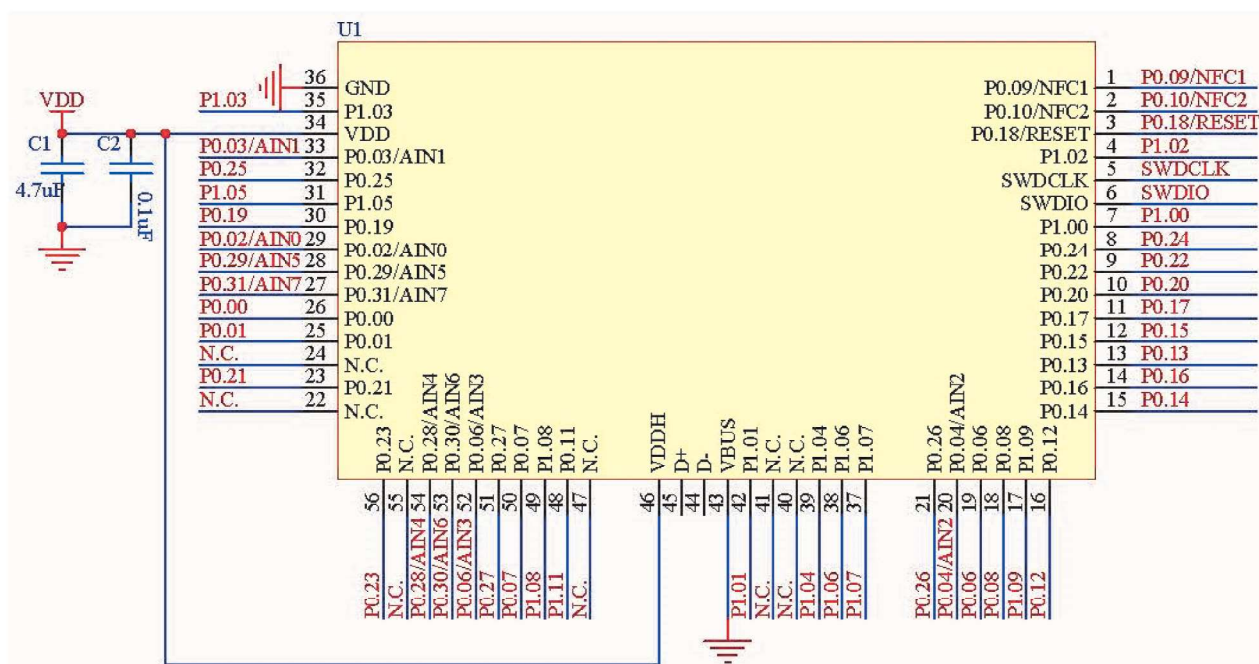
Reference Circuit configuration 3



Configurations summary for reference circuit 3

Config no.	Main Supply		EXT Supply Output	USB
	VDDH	VDD		
Config.3	N/A	Battery/Ext.regulator	No	Yes

Reference Circuit configuration 4



Configurations summary for reference circuit 4

Config no.	Main Supply		EXT Supply Output	USB
	VDDH	VDD		
Config.4	N/A	Battery/Ext.regulator	No	No

Explanation of symbols in reference circuit 4 schematic

Symbol	Parameter	Min.	Typ.	Max.	Units
V _{DD}	Main supply voltage in normal voltage mode	1.7	3	3.6	V

FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Integral antenna , Antenna gain 2dBi

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.

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

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.

FCC Radiation Exposure Statement

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the FCC identification number 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. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2AWMN-PTR5620P Or Contains FCC ID: 2AWMN-PTR5620P ”

When the module is installed inside another device, the user manual of the host must contain below warning statements;

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.

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.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, then the host can be sold legally.