



Product Specification

Model: HD9803

Description: Bluetooth Module

Version: V1.7

Release Date: 2025/1/11

Modification record:				
Time	Page number	Modify the content	Version	Person in charge
2023/12/06	ALL	Newly revised	V1.0	
2024/08/05		Modify the content of the command table	V1.1	
2024/08/12		Add the 0x10 command to remove the automatic power-on reconnection function	V1.5	
2024/08/13		Add FLASH read and write commands	V1.6	
2025/01/11		RF adjustment	V1.7	

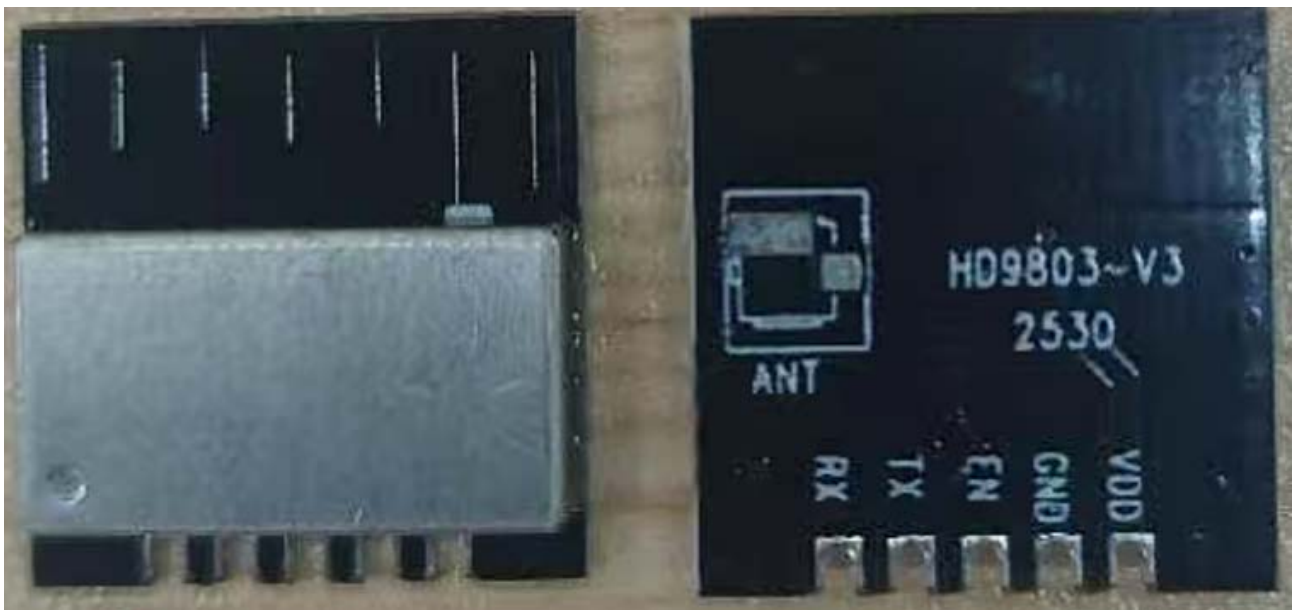
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I: Productdescription

HD9803 is a device that adopts a Bluetooth time synchronization module. It breaks through the limitations of traditional apps and enables time calibration without the need to install an APP or mini-program. Supports custom Bluetooth names and automatic reconnection to the last paired phone;Enable the module to be widely used in products such as digital clocks

PS: Android phones need to support Map1.2 or above



Integration instructions for host product manufacturers according to KDB

996369 D03 OEM Manual v01◆

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the Modular.

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

Operation of 2402 MHz ~ 2480 MHz.

2.4 Limited module procedures

Not applicable



2.5 Trace antenna designs.

Not applicable.

2.6 RF exposure considerations

To maintain compliance with FCC' s RF Exposure guidelines, this equipment should be installed and operated with minimum distance of 20cm from your body.

2.7 Antennas

Internal Identification	Antenna Description	Antenna type	Impedance	Maximum antenna gain
Antenna	Bluetooth Antenna (Antenna on I/O Board)	PCB	50 Ω	-0.58dBi

2.8 Label and compliance information

The module with label, FCC ID: 2BTRC-YUEXIN2011 listed. Please refer to label.

The final end product must be labeled in a visible area with the following" Contains FCC ID: 2BTRC-YUEXIN2011"

2.9 Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.

NOTICE:

- ◆Please keep this product and its accessories out of the reach of children;
- ◆Do not splash water or other liquids on the surface of the product to damage;
- ◆Please keep the product away from flammable materials or open flames;
- ◆Please do not repair this product by yourself, it should only be repaired by professionals
- ◆For more information, please contact us at: Shenzhen YueXin Electronics Co., Ltd.

FCC Statement

15.105

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.

II: Technical Specifications

Main parameters	Unit	MIN	Typical	MAX
Working voltage	V	1.85		3.4
Working current	mA		6	
Peak current	mA			100
Sleep current	uA	1	2	3
Frequency	GHZ	2.4-2.48		
Communication interface		UART/ Baud rate: 9600		
Antenna type		Onboard antenna		
Modulation type		GFSK		
Overall dimensions	mm	16*16*3.35mm		
Operating Temperature		-40℃ to 85℃		
Storage temperature		-40℃ to 85℃		

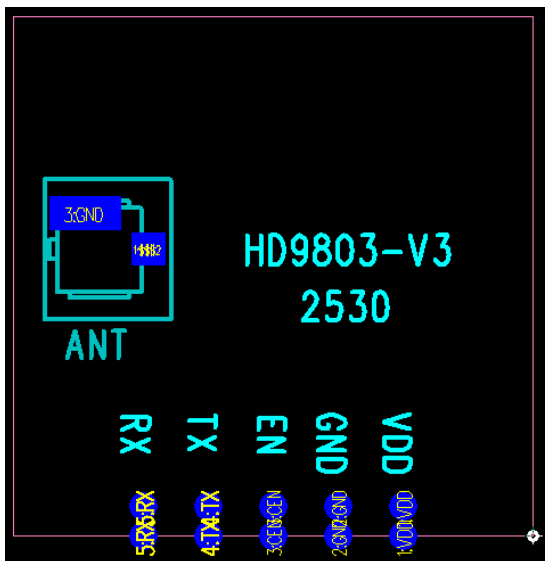
III: Protocol Introduction

Command	Command word	Transmission direction	Length	Content description
Module model	0x11	Module->MCU	1	0x04= Timing Module (HD9803)
Distribution time	0x15	Module->MCU	6	Time = year/month/day/hour/minute/second
Set the module name	0x07	MCU->Module	n	ASCII code example: WT3201=0x57 54 33 32 30 31. The name length cannot exceed 15 bytes
Set the module name to return		Module->MCU		Return as is
Enter pairing mode	0x08	MCU->Module	1	0x01= Set the module to enter pairing mode (it can be discovered and connected) 0x02= The setting module enters the backlink mode (cannot be detected, actively connects to the last paired phone) 0x10= The setting module enters the reconnection mode + pairing mode (can be discovered, can be connected, and actively connect to the last paired phone)
Enter the pairing mode and return		Module->MCU		Return as is
Query instruction	0x01	MCU->Module	1	N= the command word to be queried. For example, N can be equal to 0x11, and N can be equal to 0xC0~CF
Query instruction returns		Module->MCU		Return the command content of the query
Storage instructions	0xC0~0xCF	MCU->Module	n	Write the content that needs to be stored, with a maximum of 32 bytes of content to be written
Storage instruction returns		Module->MCU		Return as is

Set the module name "HD9803"	0x24 08 07 48 44 39 38 30 33 01 42
The Settings module enters the pairing mode	0x24 03 08 01 0a 42
The Settings module enters the backlink mode	0x24 03 08 02 09 42
The Settings module enters the backlink + pairing mode	0x24 03 08 10 1b 42
Query module model	0x24 03 01 11 13 42
Query module storage block 0	0x24 03 01 c0 c2 42
Query module storage block 15	0x24 03 01 cf cd 42

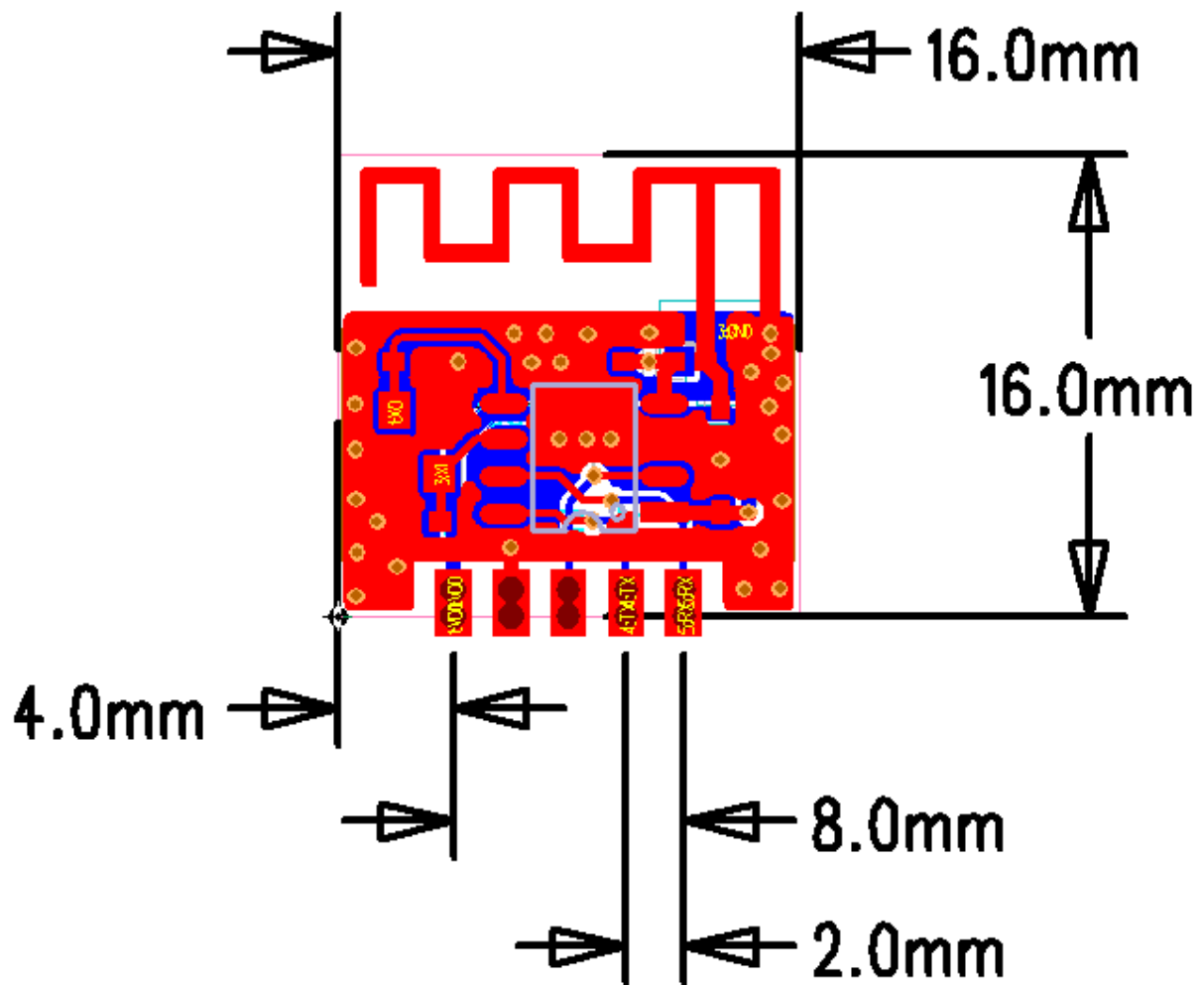
Set the module storage block 0 Content 0x01 02 03 04 05 06	0x24 08 c0 01 02 03 04 05 06 cf 42
Set module storage block 15 Content 0x0A 0B 0C 0D 0E 0F	0x24 08 cf 0a 0b 0c 0d 0e 0f c6 42

IV: Module pin allocation



Pin no	Pin Name	I/o	Description	Remark
1	VDD	I	Supply Voltage	Provide clean and stable supply
2	GND	I	Ground	Assure a good GND connection to all GND pins of the module, preferably with a large ground plane
3	EN	I	External Interrupt	Leave open if not used, Voltage level referred VDD_IO
4	TX	O	Serial Port	UART, leave open if not used, Voltage level referred VDD_IO. Can be configured as TX-ready indication for the DDC interface.
5	RX	I	Serial Port	UART, leave open if not used, Voltage level referred VDD_IO

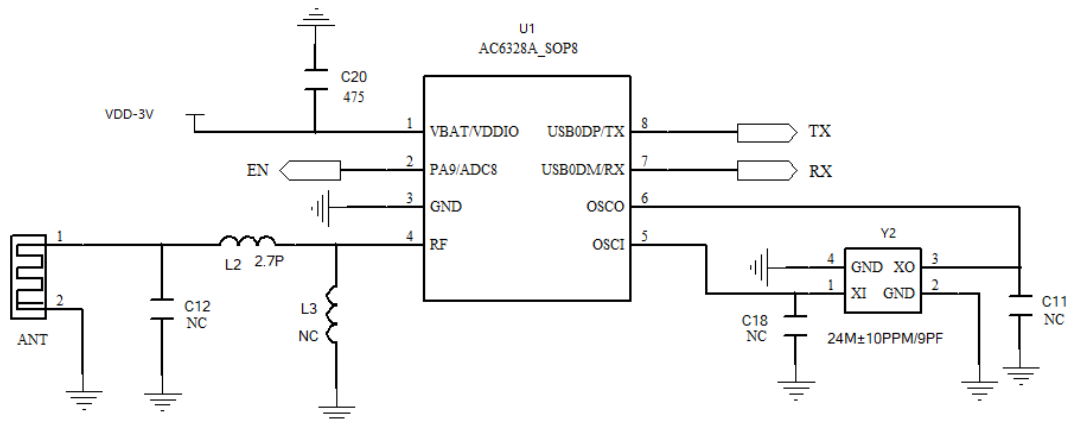
V: Module pad size



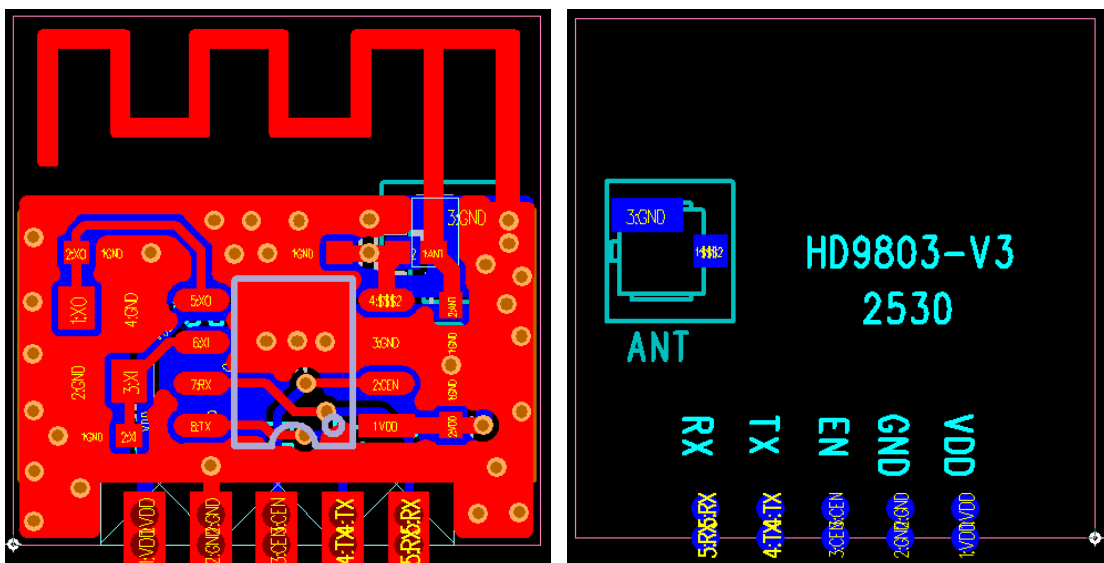
VI: Application Circuit:

1: Schematic Diagram

OTP PROGRAM WRITE PIN: VDD. GND. TX. RX



2: Module Information: PCBA (TOP/BOT)



TOP

BOT

VII: Mobile Phone Operating Instructions:

Apple:

Open the Bluetooth interface of your iPhone and find the device name, for example: AUTO-3312

Click on the device name to connect



Android:

1. Open the Bluetooth interface of your Android phone and find the device name: for example: AUTO-3312

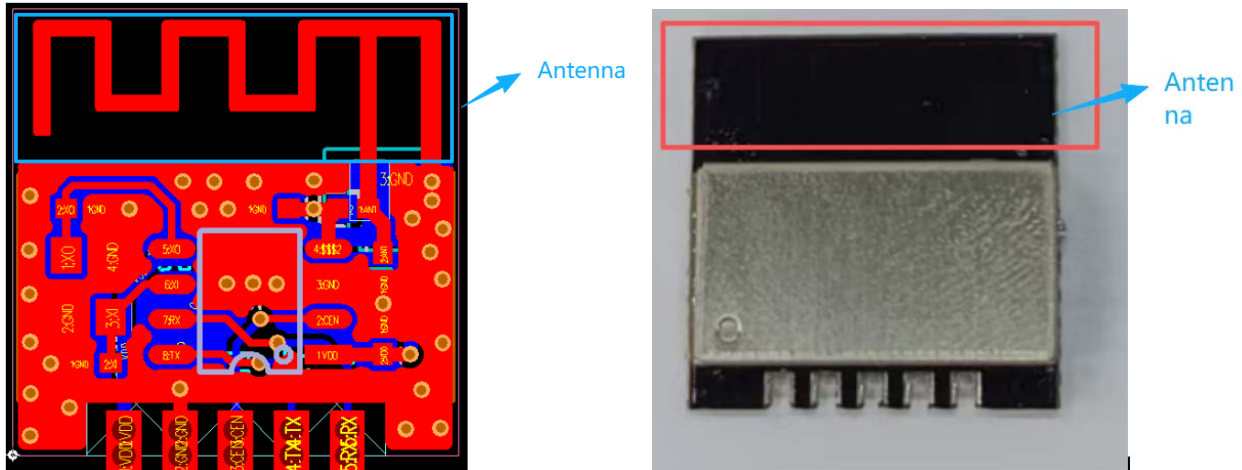
2 Click "Match"

3 Click "Allow" to complete the connection



VIII: Module antenna specifications and module RF diagram

1. Ant spec: Onboard PIFA antenna
2. The antenna location diagram is as follows



3. Test Report for Onboard PIFA Antenna

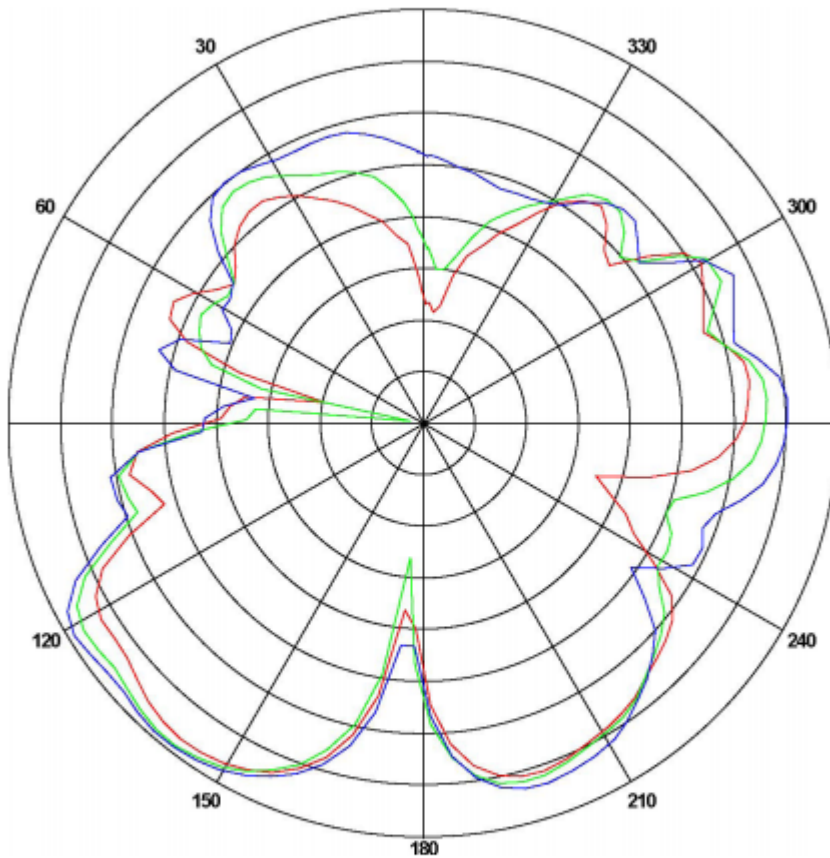
ITEM	ANT SPEC					
Model Name	2.4G ANT					
Center Frequency	Horizontal			Vertical		
	2400MHz	2400MHz	2500MHz	2400MHz	2400MHz	2500MHz
	-1.26	-0.76	-0.58	-5.25	-2.46	-1.86
MAX. Gain	-0.58dB					
Polarization	Horizontal and Vertical					
Azimuth Beam Pattern	Omni-directional					
Impedance	50 Ohm					
Antenna Length	38.20mm					
Manufacture	ZHUHAI JIELI TECHNOLOGY CO.,LTD					

IX. Block RF diagram

Horizontal: 2400 MHz 2450 MHz 2500 MHz

Power (dBm)

Max: 0 Min: -40 Scale: 5/div

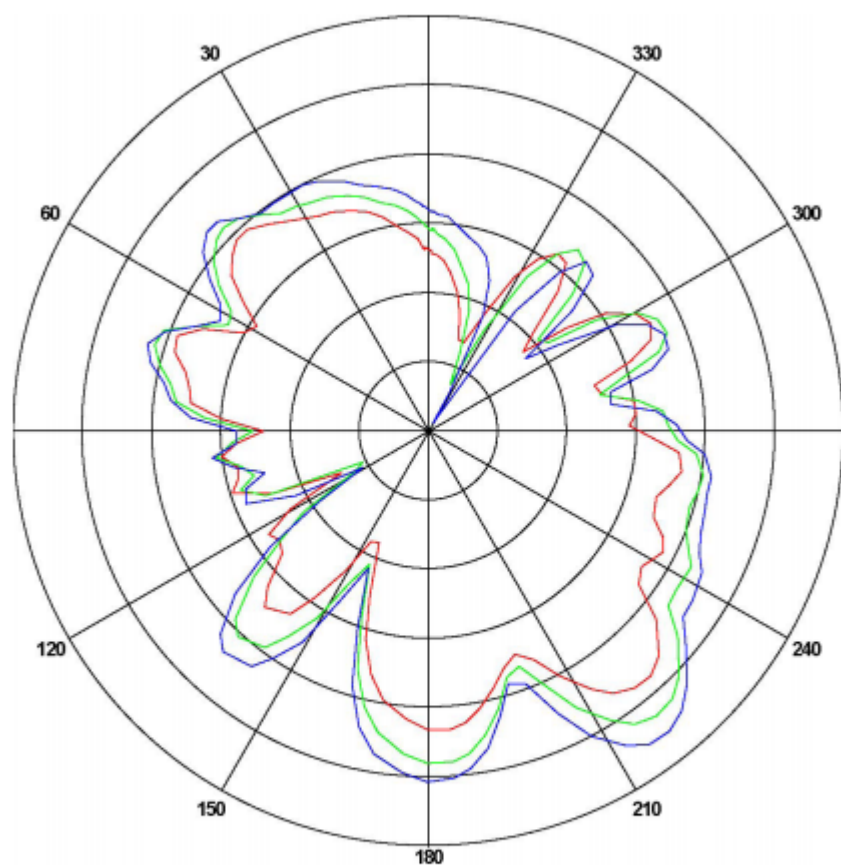


Frequency (MHz)	Gain(dB)		
	Max	Min	Avg
2400	-1.26174	-30.0801	-7.18716
2450	-0.765802	-36.5604	-7.48023
2500	-0.585582	-22.0315	-6.59127

Vertical: 2400 MHz 2450 MHz 2500 MHz

Power (dBm)

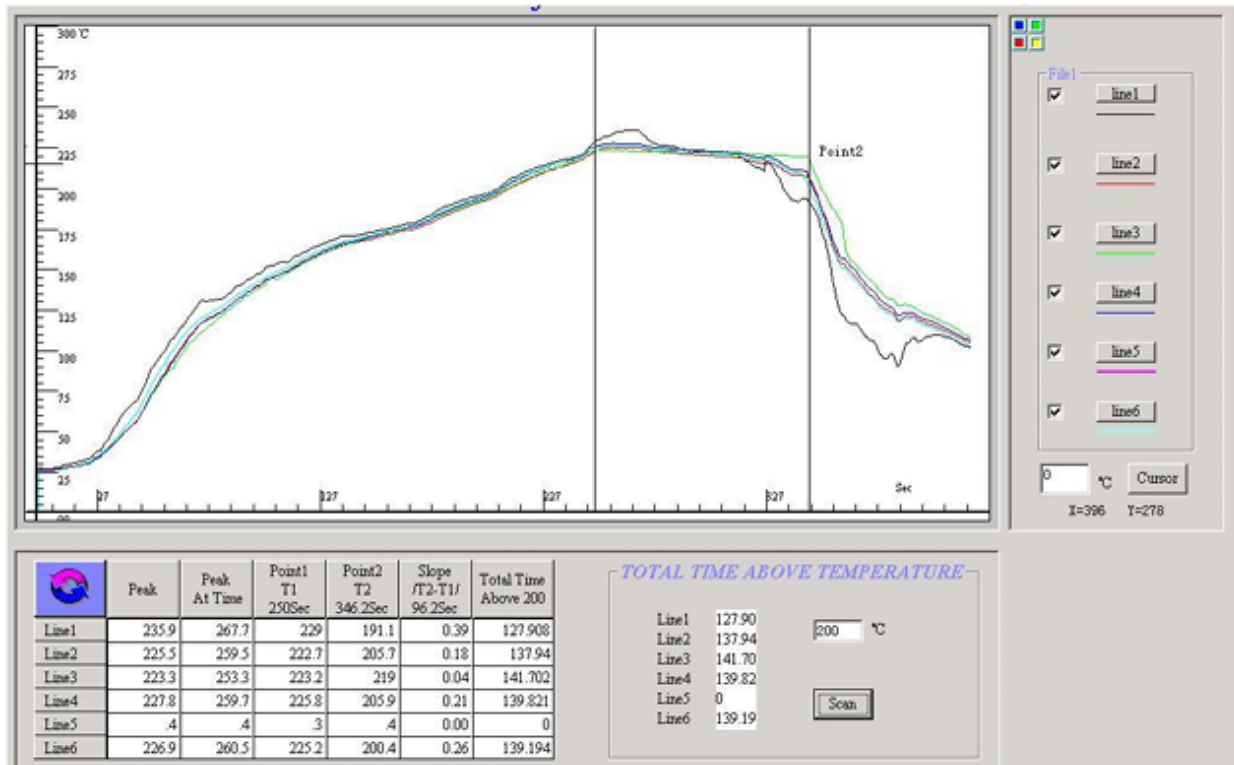
Max: 0 Min: -30 Scale: 5/div



Frequency (MHz)	Gain(dB)		
	Max	Min	Avg
2400	-5.2537	-22.1424	-12.4294
2450	-2.4652	-24.5837	-10.4702
2500	-1.86120	-29.5214	-9.20432

X: SMT surface mount temperature curve chart

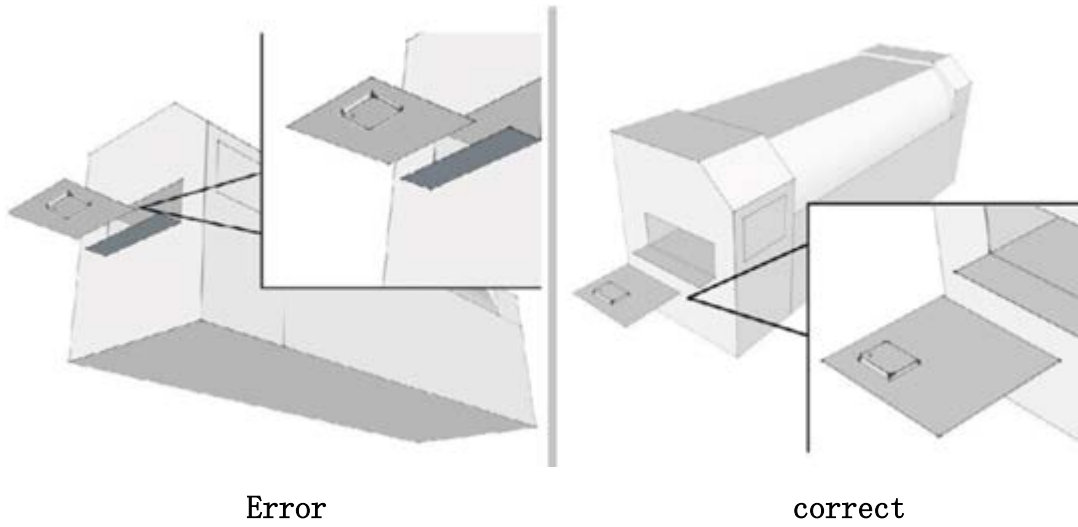
1. SMT surface mount temperature curve chart



X I: SMT surface mount temperature curve chart

Warning on other precautions during reflow soldering process:

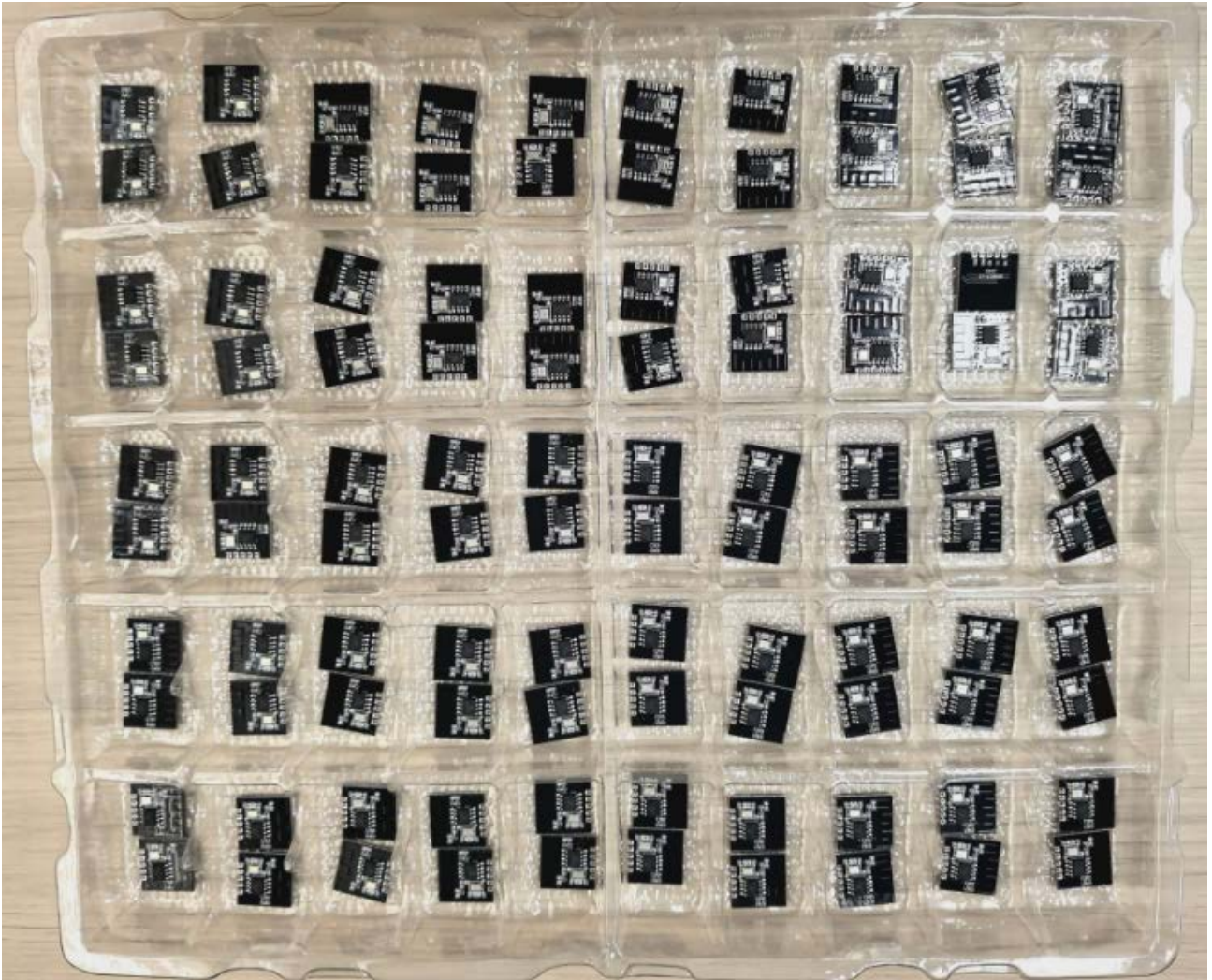
1. Pre baking of SMT reflow soldering process that must be experienced before the module.
2. The use of solder paste should follow the principle of "first in, first out". Opening the solder paste needs to be monitored and recorded in a timely manner.
3. Temperature and humidity must be controlled in the SMT production line and storage area. Temperature of 23 ° C, humidity of 60 ± 5% RH.Degree suggestion.
4. When performing solder paste printing, please note that if the amount of solder paste is excessive or insufficient, these two conditions may lead to issues such as Defects such as insufficient electricity and empty solder.
5. Ensure that the vacuum throat can withstand the weight of the module to prevent position movement during loading.
6. During the reflow soldering process of the front PCBA, the operator should conduct a visual inspection to see if there is any positional deviation to the module.
7. The reflux temperature and its distribution data must be measured and matched with the IPQC settings and guidelines before SMT process. If the SMT protection line runs on a double-sided PCBA, please handle the module in the second pass to avoid The risk of repeated reflow of modules.



SMT assembly guide

- ◆Refer to [tc-A-15111]_TurboX Common SMT Assembly Guidelines_V1.1
- ◆For more information, please contact us at: Shenzhen YueXin Electronics Co., Ltd.

XII: Packaging Instructions



- 1: Tray packaging, tray size: 25 * 30 * 2.5CM
- 2: Each pallet contains 100PCS

XIII: Other warning statements

Note: Precautions for motherboard PCB layout

1: The antenna should be placed as close as possible to the PCB frame and away from metal components (such as screws, speakers, USB ports, TF card slots, transformers, motors, batteries, etc.) and other conductors

2: In the module soldering section of the motherboard, it is strictly prohibited to expose copper in other traces. The trace holes should avoid the antenna/heat dissipation pad. Add silk-screen printing in the module section of the motherboard and hollow out the antenna section of the module

3: The module reserves a 2.54mm* 5-pin pin header burning port, which is convenient for burning or updating: VDD, GND, TX, RX

FCC ID: 2BTRC-YUEXIN2011

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

Canada Statement

RSS-Gen (P23) :

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L' émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d' Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L' exploitation est autorisée aux deux conditions suivantes :

- 1) L' appareil ne doit pas produire de brouillage;
- 2) L' appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d' en compromettre le fonctionnement.

RSS-102 (P9) :

The device meets the exemption from the routine evaluation limits of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l' exemption des limites courantes d' évaluation dans de RSS 102 et la conformité à l' exposition de RSS-102 rf, utilisateurs peut obtenir l' information canadienne sur l' exposition et la conformité de rf.



This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

The final product must be labeled in a visible area with the following: "Contains IC: 34477-YUEXIN2011".

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 34477-YUEXIN2011 ".