G-NiceRF®

SK100

Industrial remote control
Wireless single way switch module

Product Specification



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Note: Revision History

Revision	Date	Comment
V1.0	2013-10-12	First Release
V2.0	2014-9-5	Revise part of parameters
V3.0	2015-4-25	Graphic description added
V3.1	2015-8-15	transmitter description added
V3.2	2017-06	Logo updated
V3.3	2017-11	Add some description
V3.4	2020-12	Update description

1. Introduction

SK100 series is industry level remote wireless single switch control modules, output power range from 100MW to 5W for optional. It provides a single way signal input and a single way control output interface, simple, reliable, and so on. Users can also be combined with a friendly PC interface to configure the modified module's working channel in a wireless way. Making multiple simultaneous communications will not interfere with each other and easy to use. With this module users can easily replace the original wired environment to wireless control, thereby greatly reducing the cost of manual wiring.

SK100 strictly uses lead-free process for production and testing, and meets RoHS and Reach standards.

2. Features

- Power of SK100-TX is optional (100mW~5W)
- 40 channels for option
- Parameters set wireless by PC
- Working mode is optional (Please inform when you place order)
- GFSK modulation
- Antenna matches automatically and Bi-directional switch control
- Sensitivity up to -121 dBm
- Working temperature:-40 ~ +85 °C

3. Applications

- Remote switch control
- Security system
- Home automation remote sensing
- Wireless remote telemetry
- Pump wireless control
- Access Control System

4. SK100-TX and SK100-RX Parameters

Note: Below parameters base on 25℃ testing environment.The following is the electrical parameters of SK100-TX module:

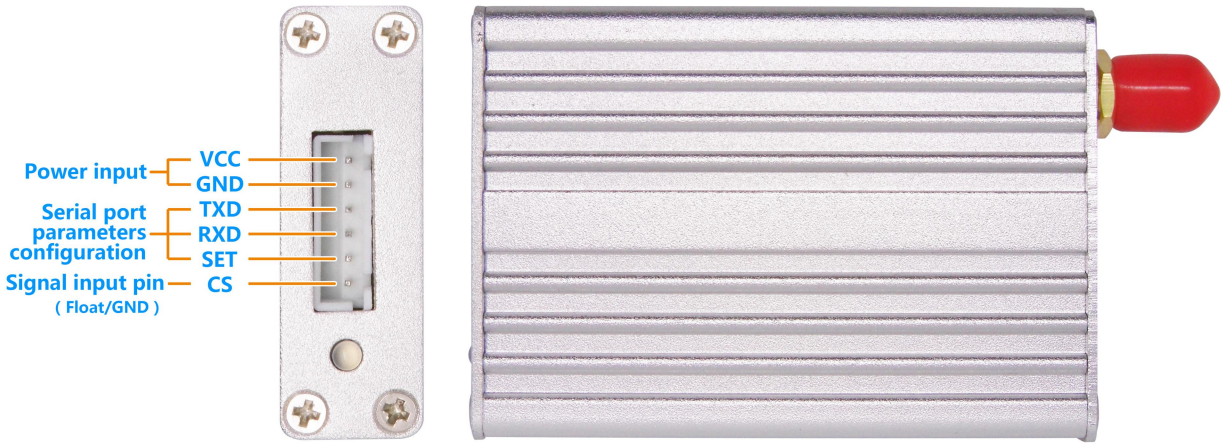
Parameter	Min	Typ.	Max	Unit	Condition
Condition					
Working voltage	3.3	5.0	6.5	V	@100mW,500mW
	4.5	5.0	6.5	V	@2W
	9	12	18	V	@3W
	9	12	30	V	@5W
Working temperature	-40	25	+85	℃	
Rx Current					
Standby current	25	30	33	mA	
Tx current		95		mA	@100mW
		350		mA	@500mW
		900		mA	@2W
		600		mA	@3W
		1.8		A	@5W

Note: Below parameters base on 5V power supply/ 25℃ testing environment.The following is the electrical parameters of SK100-RX module:

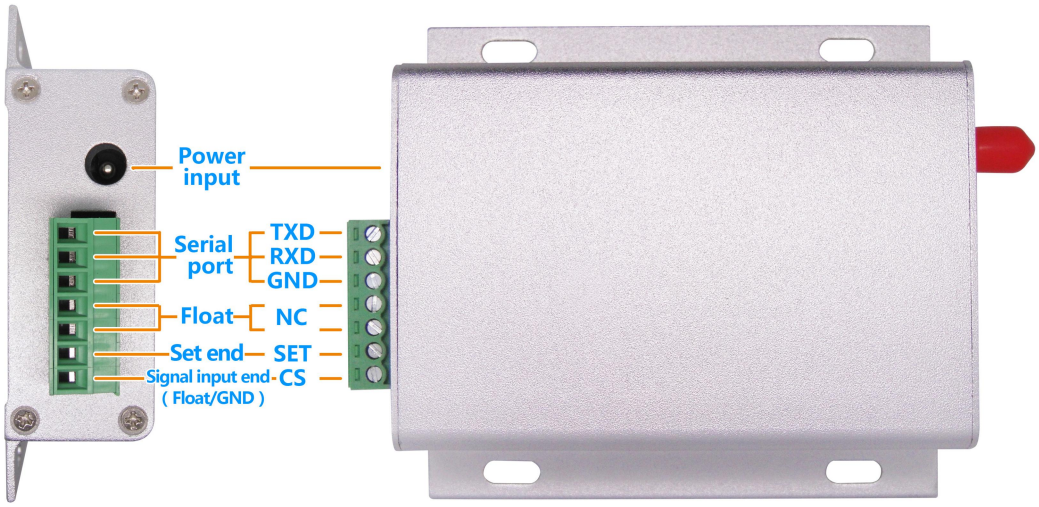
Parameter	Min	Typ	Max	Unit	Condition
Condition					
Working voltage	4.5	5.0	6.0	V	
Working temperature	-40	25	+85	℃	
Current Consumption					
Rx current		25		mA	
Standby current		< 5		uA	
RF Parameters					
Sensitivity		-121		dBm	

5. Interface description

a) **The interface of transmitter SK100-TX (100mW,500mW,2W) is described as below picture:**



b) **The interface of transmitter SK100-TX (3W,5W) is described as below picture:**



c) The interface of Receiver is described as below picture:



6. Working Mode:

Note: After the receiver is power-on reset, the relay is OFF by default (for pull-state, please contact us for pull version)

Version	IO state of transmitter input	Normal CLOSE relay	Normal OPEN relay
A	1 (High level or float)	CLOSE	OPEN
	0 (short to GND)	OPEN	CLOSE
B	1 (High level or float)	OPEN	CLOSE
	0 (short to GND)	CLOSE	OPEN

1) Normal working mode:

Under normal communication, there are several modes for the customer to choose, in order to meet the needs of different customers:

Note: The following three modes are in accordance with the requirements of their application (one of three)

- **Real-time mode:** (Default factory release)

In real-time mode, it is a bi-directional communication. The change of input will be synchronized to the output of the module in other side. All the output relays will be resumed open if no acknowledge signal received for continuous 3 times inquiry.

Note：No "failed" indication in this mode.

- **Timing mode:**

In timing mode, the module works in master mode or slave mode. The communication is one way. Communication is from master to slave. The master transmits the wireless signal to slave regularly(default 1s), the corresponding relay of the slave will be synchronized after got the signal. The relay will resume to open state if no synchronized message received for continuous 3 times interval.

➢ **Serial control mode:**

Beside of above two modes，there is another serial contorl mode.

User can controlthe switch status of receiving module via the serial port of SV modules, communication protocol as below：

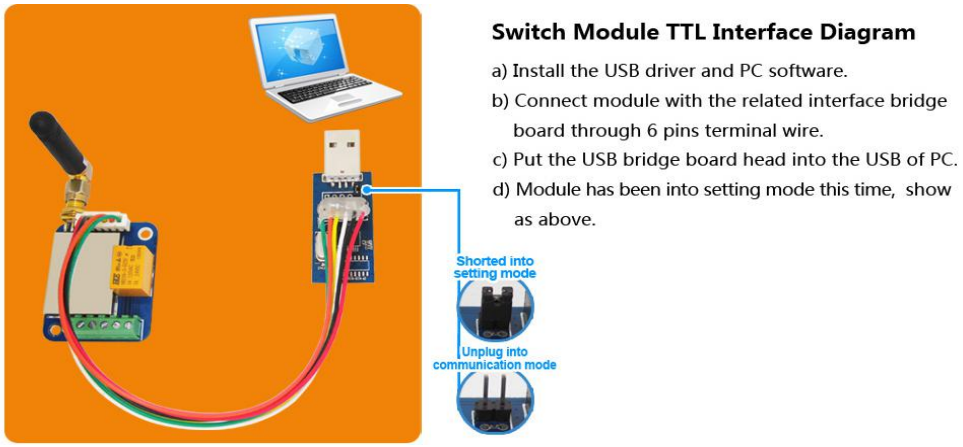
0x53 NODEID1 NODEID0 IO IO^0xFF 0x57

The NODEID receing module is the address，it is possible to be read the modified by PC software.

Note：No "failed" indication in this mode.

2) Configuration mode:

In configuration mode, user can configure the parameters by SK108-S or PC software. The configurable parameters include NET ID, RF data rate, frequency channels, modules can communicate with each other when parameters matched. PC software show as below：



✧ **NET ID**

This parameter is 4byte, range from 00 00 00 00 to FF FF FF FF. This parameter should be the same for all modules.

✧ **NODE ID**

This parameter is 2byte, range from 00 00 to FF FF.. It can be used under serial control mode.

✧ **RF RATE**

This parameter is the air rate, default is 9600

✧ **CHANNEL**

Each module has 40 frequency channels, users can choose one of the channels to use via DIP switch, the corresponding frequency of the 40 channels can be modified via PC software. We suggest users using the default frequency value, or set the frequency value near the centre frequency to get better performance.

✧ **Stop Bit**

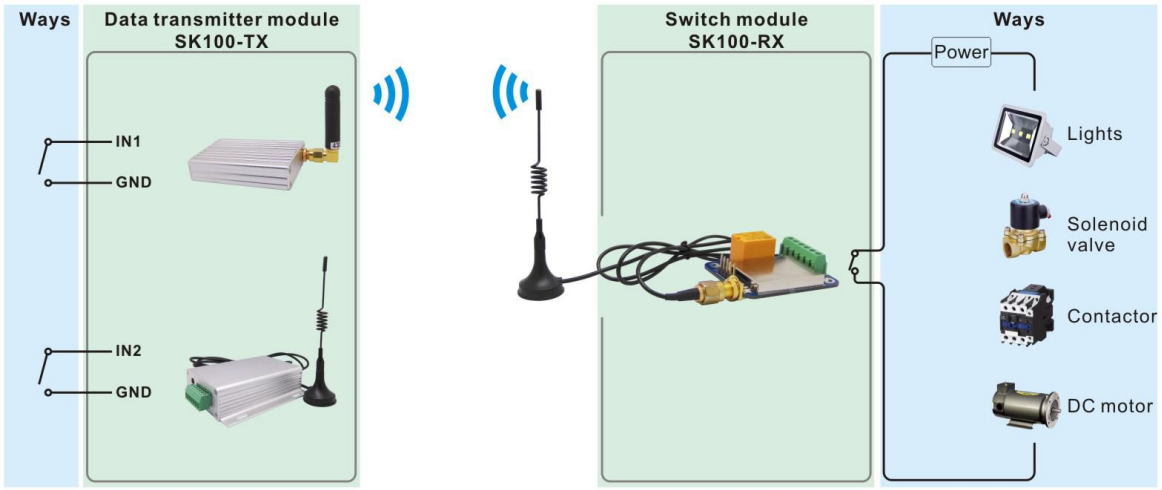
Stop Bit=1，Timing mode;

Stop Bit=2，Real-time mode.

7. Application connection

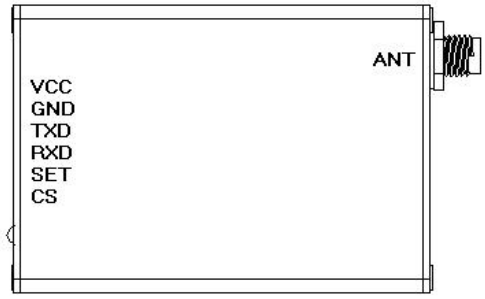
The input port is pulled up internally, leave open or connect with 3.3V will result in high level, it is low level when connect to GND.

High level will make the output of the other side short out. And low level will make the output of the other side open. Below is regular connection:

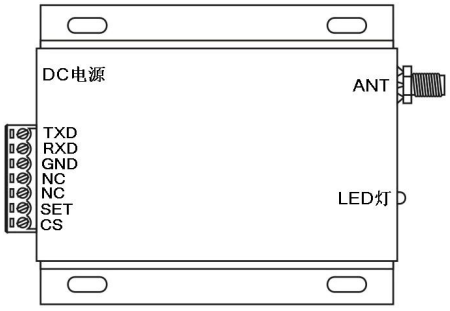


8. Pin definition:

a) SK100-TX transmitter:



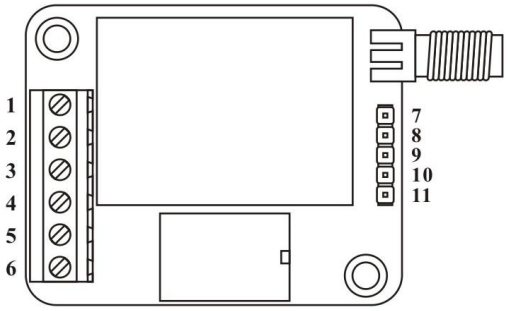
100mW,500mW,2W transmitter



3W,5W transmitter

NO.	Definition	Description
1	VCC	Connected to the positive power supply
2	GND	Connected to ground
3	TXD	Serial transmit data / Configuration mode
4	RXD	Serial receive data / Configuration mode
5	SET	Configuration mode enable（Configurable under low level,default high level）
6	CS	Module working Enable（Pull Low to make the module enter into sleep mode, Leave open or connect high level make the module enter into normal working mode）

b) SK100-RX Receiver:



NO.	Definition	Description
1	VCC	Power Positive
2	GND	Power negative
3~4	OPEN	Contact of relay open
5~6	CLOSE	Contact of relay close
7	VCC	Configuration parameter mode, power supply port
8	GND	
9	TXD	Configuration parameter mode, Serial communication port
10	RXD	
11	SET	Parameter set pin, low level into the configuration mode

9. Accessories:

1) Antenna

The antenna is very important for RF communication, its performance will affect the communication directly. Module needs antenna in 50ohm. Antenna has rubber straight/ elbow/ fold able rod and sucker antenna and etc. Users can order accordingly. To ensure module module in the best performance, we suggest to use the our antennas

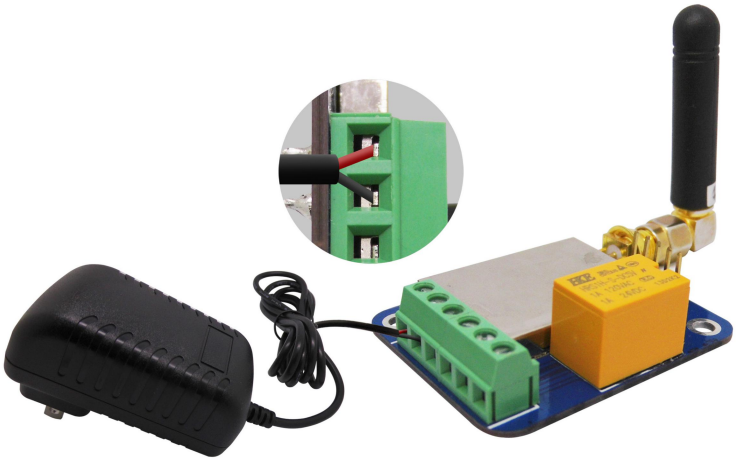


★★ To ensure modules get the best performance, user must obey the following principles when using the antennas：

- Put the antenna away from the ground and abstacle as possible as you could；
- If you choose the sucker antenna, pull straight the lead wire as possible as it can be, the sucker under archesshould be attached on the metal object；

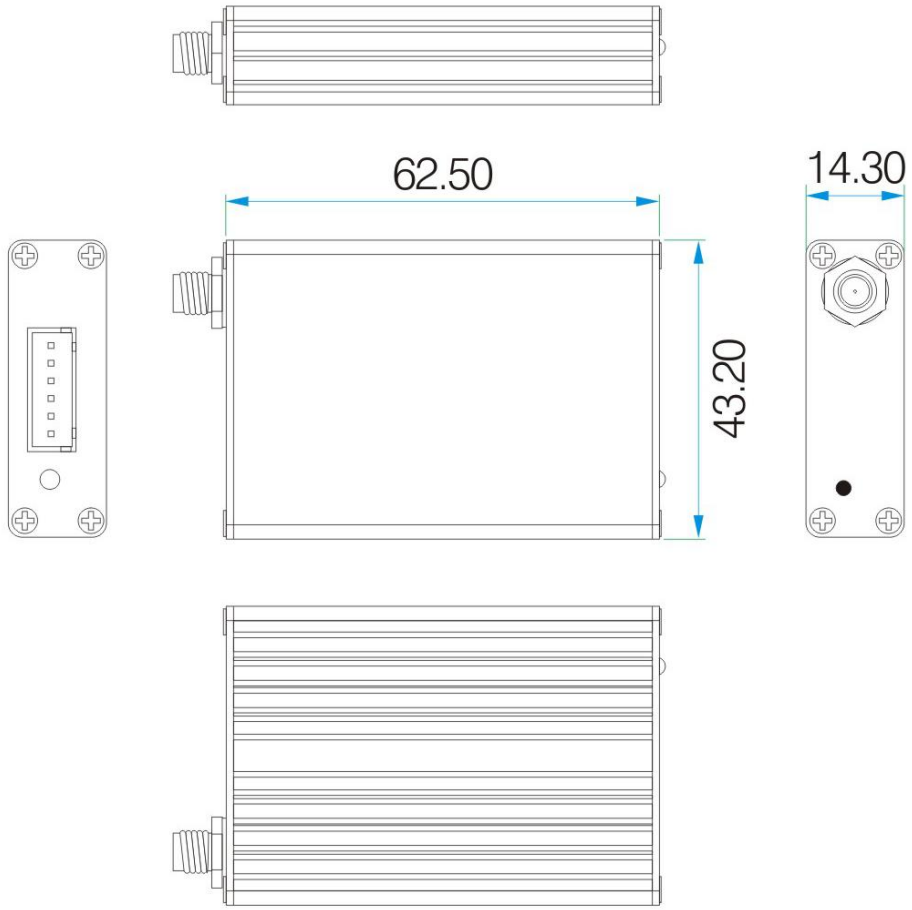
2) Power supply

The standard power supplier for SK100-RX module is DC 5V. Power supply is very important for this module, its performance will affect the communication . We suggest to use our standard power supply to get better performance.

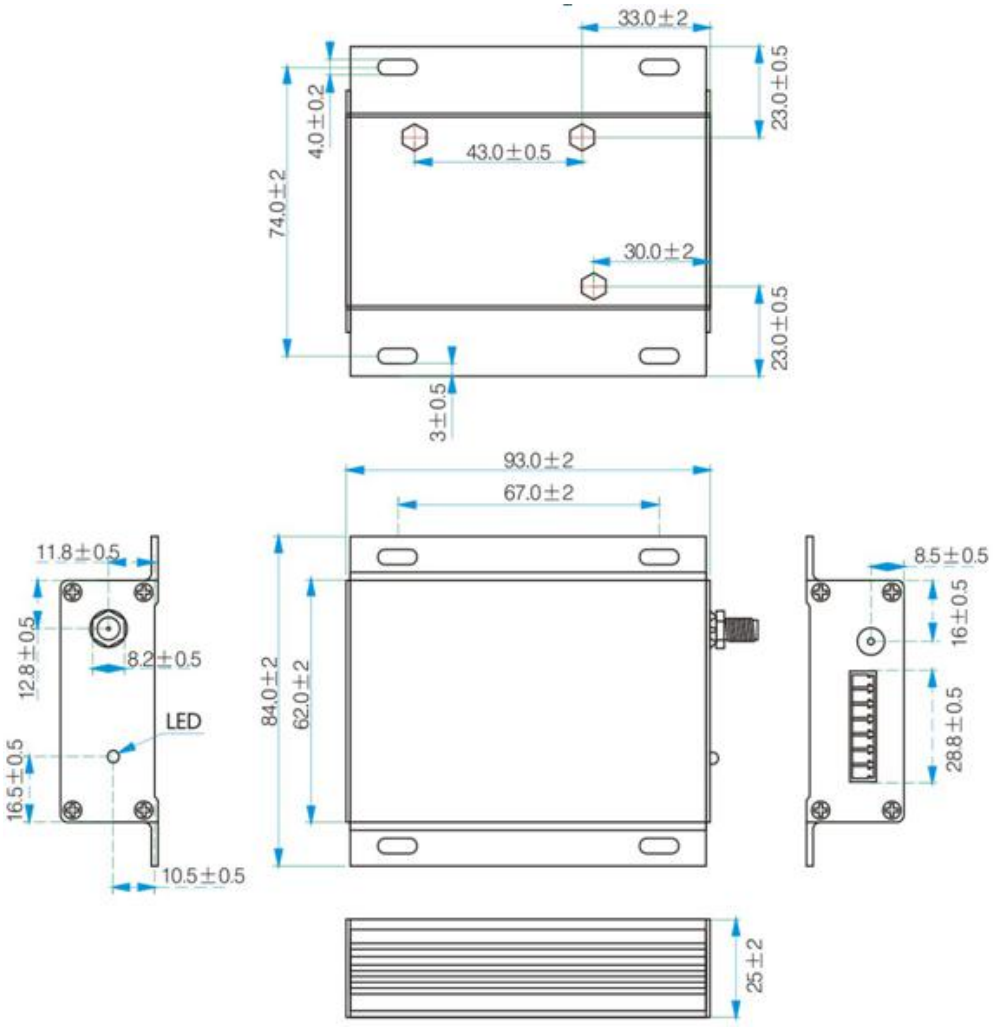


10. Mechanical dimension:(Unit:mm)

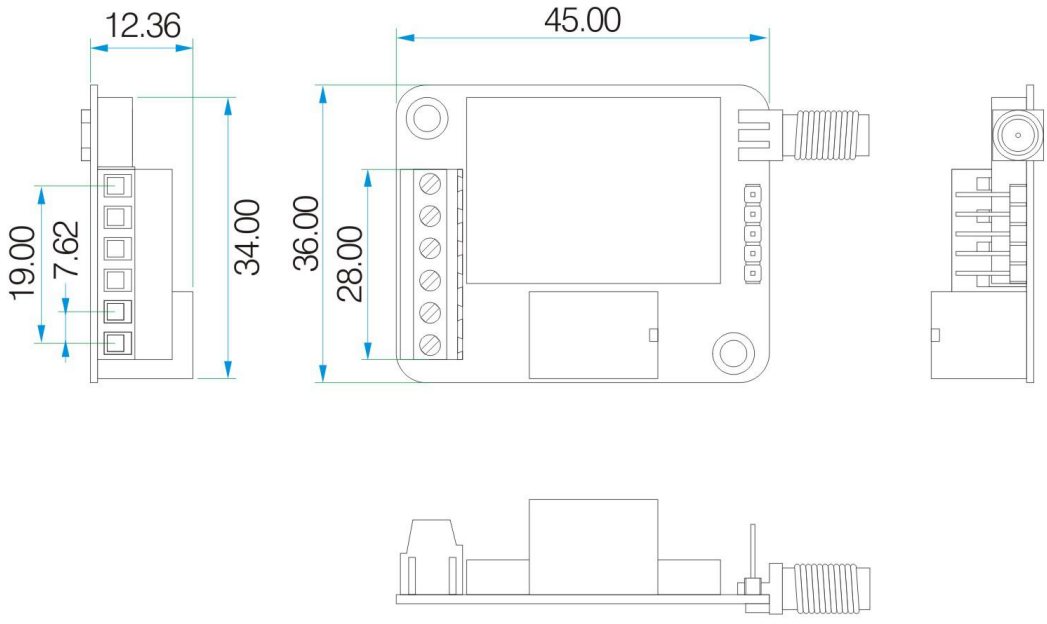
a) Transmitter (100mW / 500mW / 2W)



b) Transmitter (3W / 5W)



c) Receiver



11. FAQ

a) Why can't communicate between modules?

1) Check if power supply is connected correctly;

2) Check if modules in normal communication mode(SET as high level);

3) Check if the frequency band, channel, of each module are the same;

4) Check if module is damaged (LED flash when powered on?);

b) Why communication range is not so far as expected?

1) Check if the Power supply is stable;

2) Check if the antenna well matched and install properly;

3) Check if any existent same strong frequency interference;

4) Check if the surrounding environment is good;