**TR7600 RF Transceiver**

***Summary***

*Normal conditions*

Operating temperature : 0°C ~ 40°C
Storage temperature : - 40°C ~ 60°C
Humidity : 5% ~ 95%

*Technical Specifications*

Operating voltage : 24VDC
Operating current : 400+/-30Ma (max)
Safety fuse : 250V, 1A (delay)
Operating frequency : center frequency 8.2MHz (adjustable 7.6~8.9MHz)

Detection speed : ⩾2m/s

*Power Supply*

EG107 : built-in power supply PCB, one power supply per antenna
Input voltage : 120VAC 50/60Hz (voltage range 187 ~ 242 VAC)
Output voltage : 24VAC 1400mA
Wire connection : 30m (max, Ø0.3mm)

*Detection*

TR7600 PCB can be used in EG2266, EG2268, EG2280 and EG2288 antenna frames. For multiple antennae installation, synchronization is necessary. Table 1 shows the detection in thegeneralenvironment:

Table 1

| Model / Tag/Label \ Detection | EG2266/EG2288/EG2268 |
|---|---|
| 4x4cm label | Average 0.75m, Max 1m（per side） |
| UFO tag（Q⩾220）（15767, Ø0.55mm） | Average 1m, Max 1.3m（per side） |

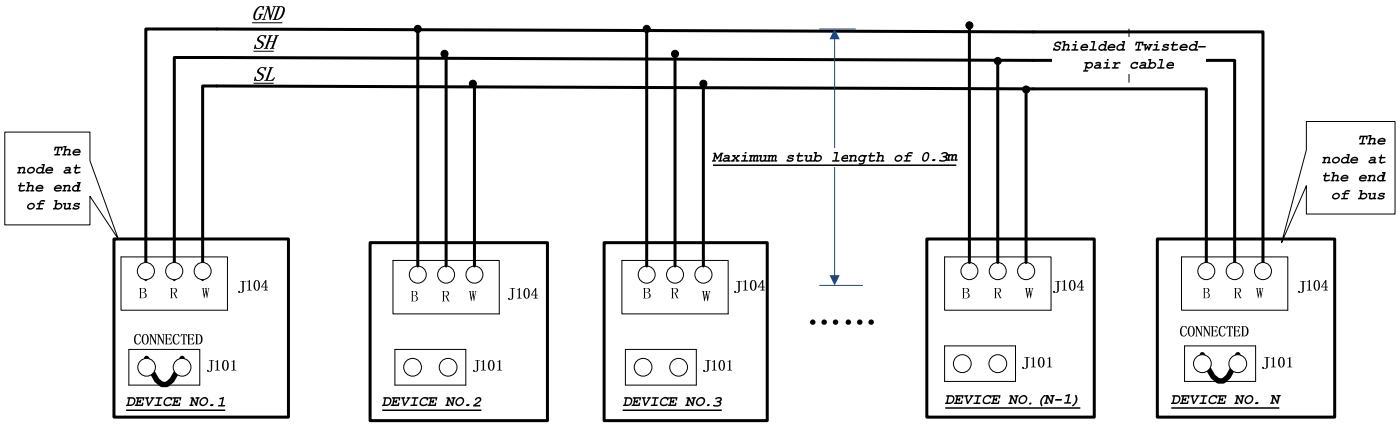
When positioning antennae, take note of high power equipment such as air-conditioning, freezer, soldering machine, etc. and data line such as power line, communication cable, CCTV cable, etc. as this would cause interference to systems. It is best to keep a distance of 0.6m apart. We strongly suggest testing the system at the desired site without securing the nuts and bolts before permanently fixing into position. Often repositioning the system by a few cm may resolve interference.

RF swept will interfere RF transceiver systems if placed within 10m from RF transceiver. If there is interference, the detection of RF transceiver will reduce by 20~30%.

***Installation***

*Multiple antennae*

To maximize detection distance and minimize interference between systems, we recommend synchronizing each antenna by interconnecting them. Here belowis a diagram explaining the interconnecting of systems at multiple installations:



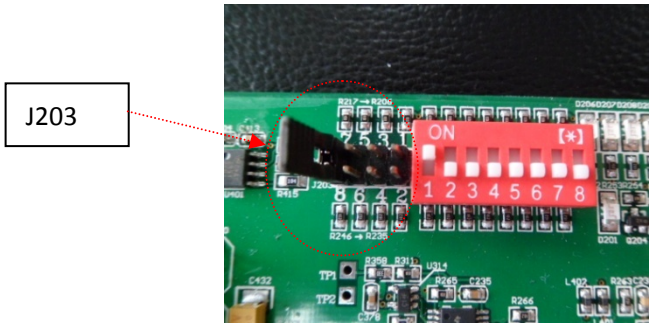

Note:

NOTES:

1. Shielded twisted pair cable should be used for connection.
2. The maximum distance of the whole interconnection is 50m, i.e. the connection distance count from the first antenna to the last antenna should be less than 50m.
3. Each set of antennae can have only one Master and the other Slaves. One Master antenna can link with a maximum of 30 Slave antennae.
4. Distance of each synchronization cable should not be more than 30cm from main cable.

*Master Antennae Set-up*

Select any one of the antennae as Master and in that PCB, J203, short-circuit 7&8 by placing plastic cap as shown below. In the Red selector next to J203, choose one number out of 1 to 6 and turn to ON. In the diagram below, 1 is selected. If there is another set of antennae with another Master, a different number should be used.




*Slave Antenna Set-up*

For the Slaves, do not short circuit any one of the connectors at J203 above.

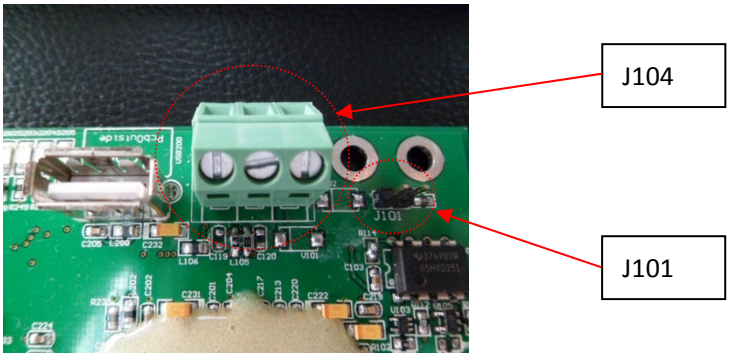
In the Red selector next to J203, select the same number to ON position as per Master. In the diagram above, 1 is selected. For another set with different Master, use the number as indicated in that particular Master.

*Synchronization*

J104 is the connector for synchronization. There are threecolors on it:-

| | | | |
|---|---|---|---|
| Black | : | GND | (connect to shielded layer of the twisted pair cable) |
| Red | : | SH | (connect tohigh signal cable) |
| White | : | SL | (connect tolow signal cable) |

At either end of the multiple connections (namely, the first and the last antenna), J101 needs to be short circulated i.e. closing with a plastic cap.




***Software Tuning***

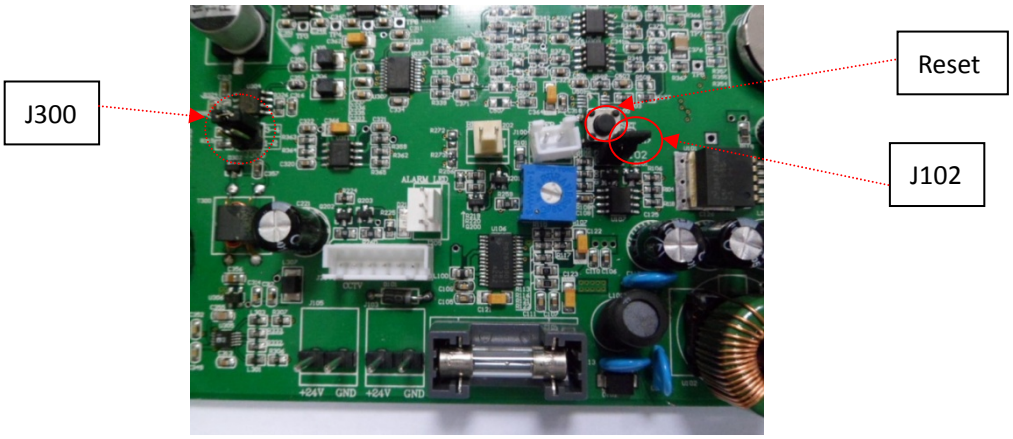
In normal circumstances, there is no need for software adjustments as at factory setting, the electronics are set to the optimal level. However, should the environmental condition differ significantly or there are strong interference, changing the system settings via software may enhance system operation.

a, Prior to using the software:

J102 in PCB should be short circulated by placing plastic cap. Once adjustment is made, the plastic cap in J102 should be disconnected.

b, Reset to Factory Setting:

1. short circuit J102 by placing plastic cap
2. short circuit 5& 6 at J203 by placing plastic cap
3. press RESET and allow PCB to restart
4. when self-testing completes, disconnect the plastic cap in 5&6 at J203.
5. disconnect the plastic cap in J102
6. press RESET again



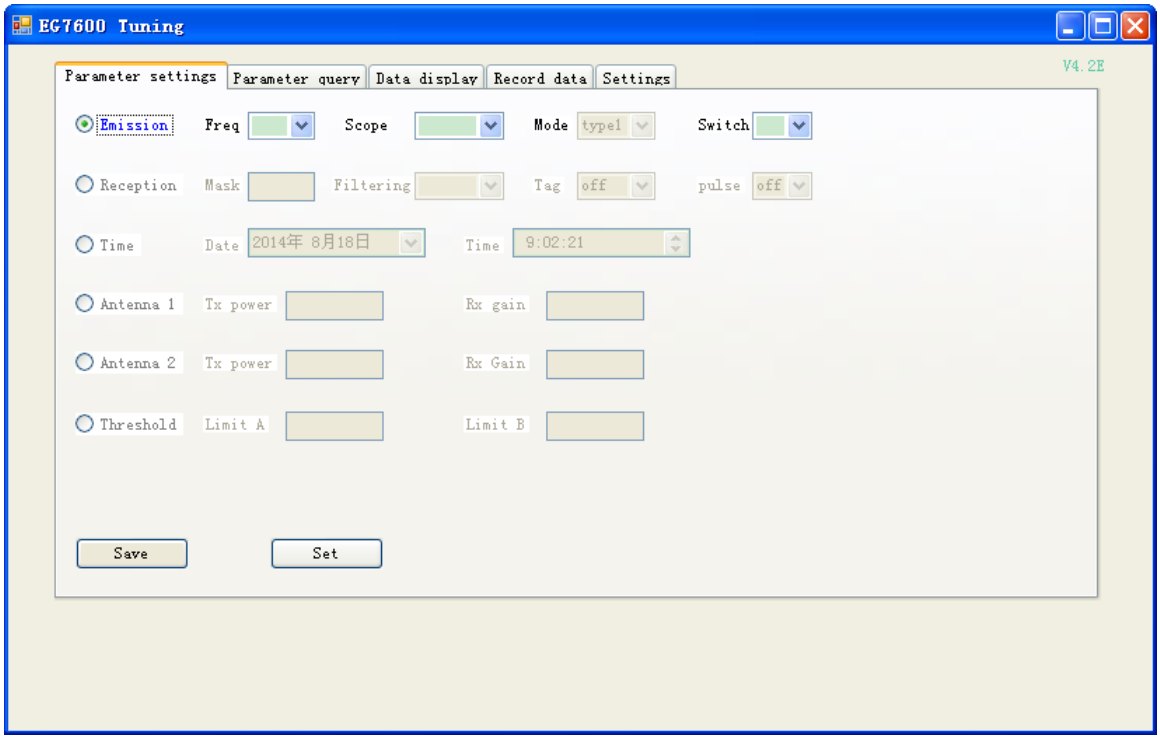

c, USB Connection:

Connect one end of the USB to the computer and the other end to the PCB.

Open the software program and the software will indicate available COMM drive. Select desired COMM drive and when all connected properly, Successful Connection will show.

d, Menu:

There are five headings: [Parameter setting], [Parameter query], [Data display], [Record data] and [Setting]:

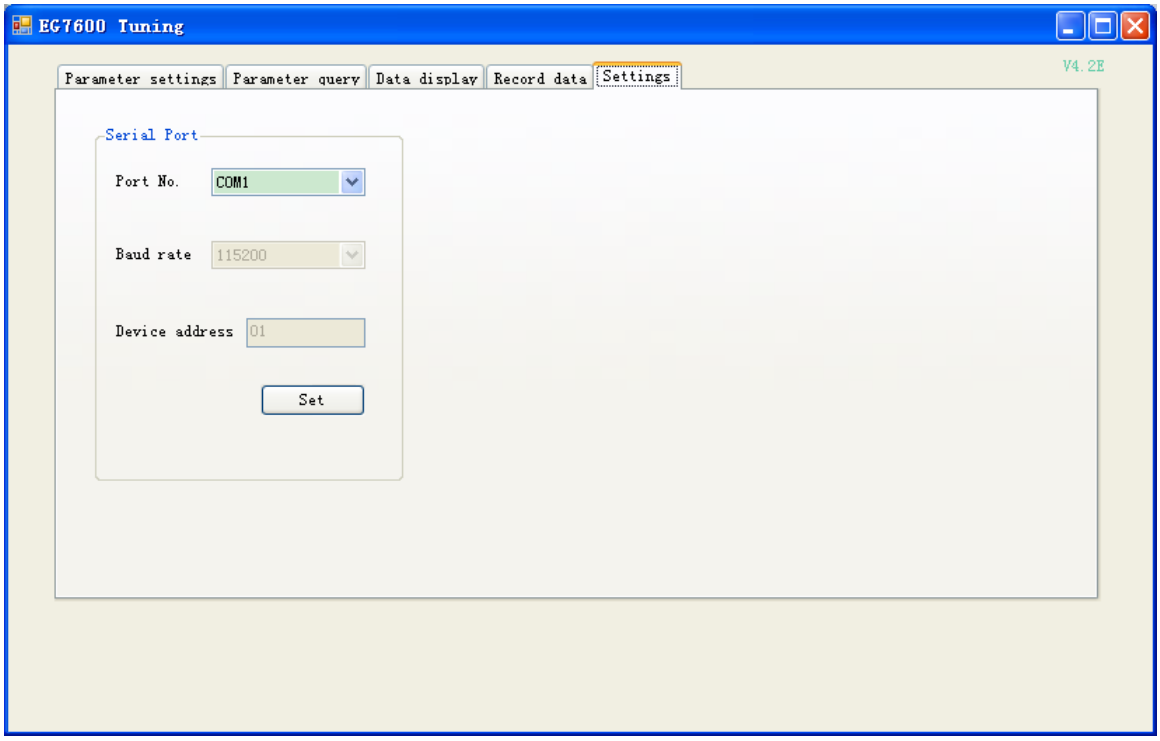



SAVE and LOAD

LOAD: will transmit the latest setting to the PCB but it will not SAVE. It is used to check performance based on changes but when machine is turned off, the latest setting will not be saved.

SAVE: after LOAD then press SAVE and the latest setting will be saved and operate when machine restarts.

***Under [Set-up], there are seven settings:-***




1, Transmission Setting

Center frequency: 8.2 factory setting, others 8.6, 9.0, 9.5

Frequency range: 7.6~8.7 factory setting, range from 7.4~10

Mode: n.a.

On/Off: ON, when label is detected, transmission power will reduce

OFF, no change to transmission power (factory setting)

2, Receiver Setting

[coding]: to shield interference signal. Refer to [Data]. Factory setting FFFF.

[filter]: four types of filter to counter noise A, B C and D. D strongest but detection time slowest. Factory setting A.

[Hard tags]: n.a.

[ ]: n.a.

3, Date and Time

Synchronize time and date to PCB

4 , Antenna configuration 1

Transmission power: 0 ~ 31 (31 being highest). Factory setting, 28

Receiver gain: 0 ~ 31 (31 being highest). Factory setting, 28

5, Antenna configuration 2, as per above

6, [Gate adjustment], refer to [Data]

[Gate A]: factory setting 0, range from 0 ~ 200

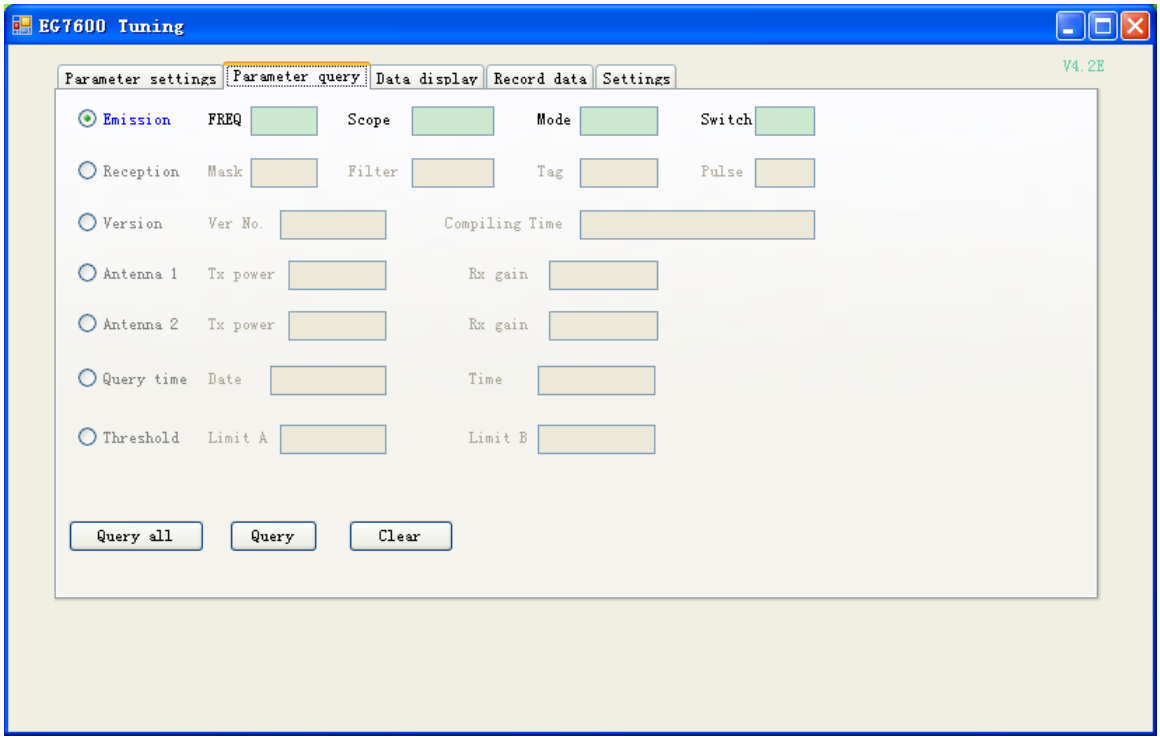
[Gate B]: factory setting 0, range from 0 ~ 200

7, Alarm volume

Adjustment level: 0 ~ 31

For PCB with R258 adjustment, volume adjust manually.

***Under [Set-upConfig], there are three keys":-***

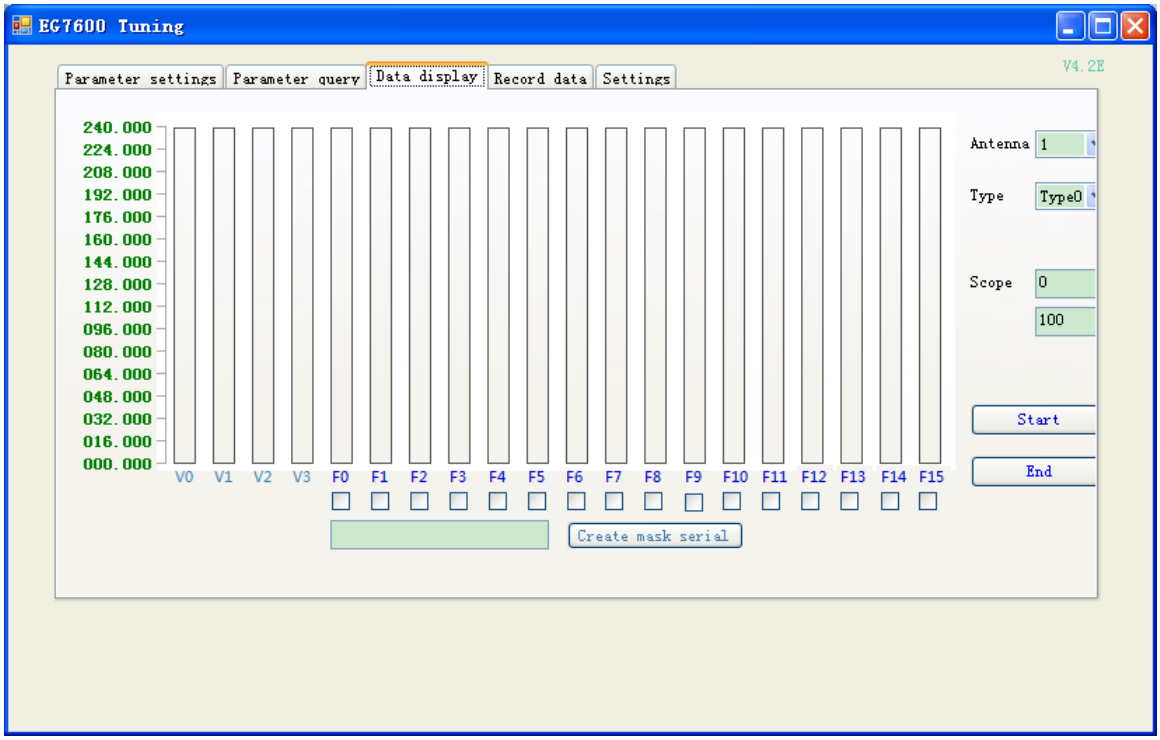



1, [Clear]: clear all entries

2, [Inquire]: show the latest changes made

3, [Inquire All]: show all entries

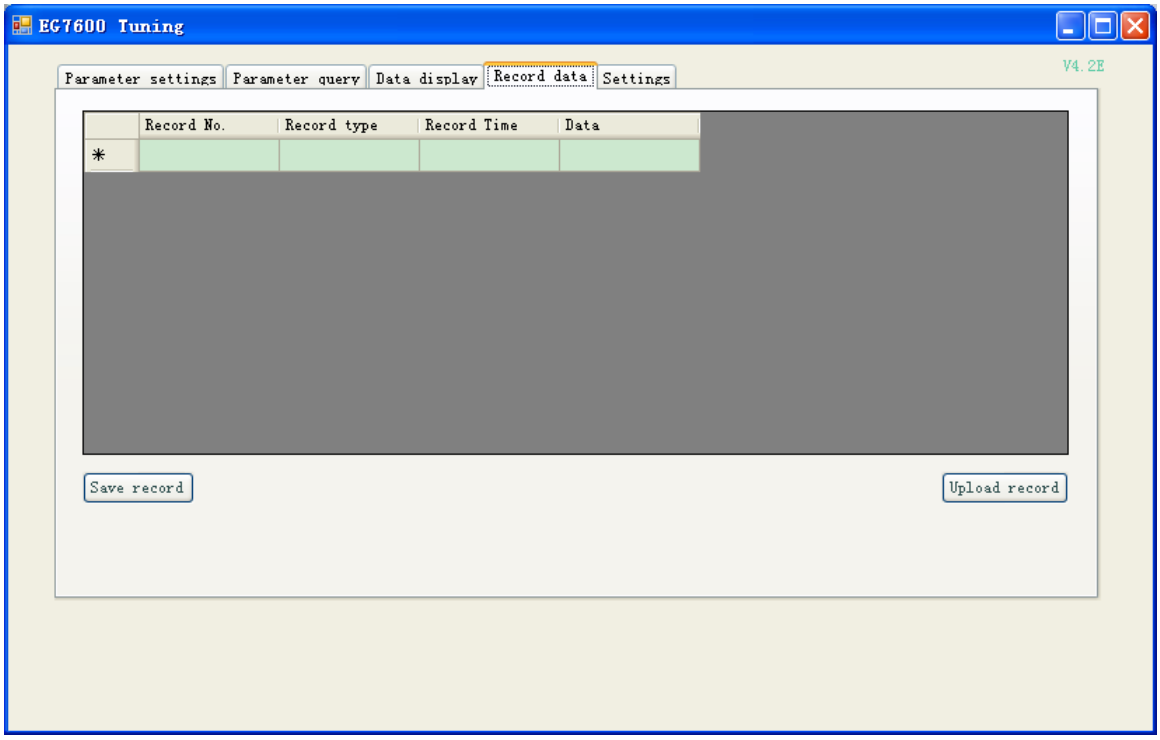
***Under [Data]:-***




The software can show signal strength of antenna from 16 different points. This will allow technicians to identify and reduce, eliminate area with interference.

1, [Antenna configuration]: can only one configuration at a time
2, [Type]: ??
3, [Range]: to adjust size of display
4, V0 ~ V3
   V0 : [Gate A]  V1: [Gate B] Adjust whichever Gate has a higher reading.
   Objective: Adjust so that V3 is greater than V2 by 1.5 times.
5, F0 ~ F15: signal strength of the 16 points
6, Create [Coding]: ???

***Under [Record]:-***

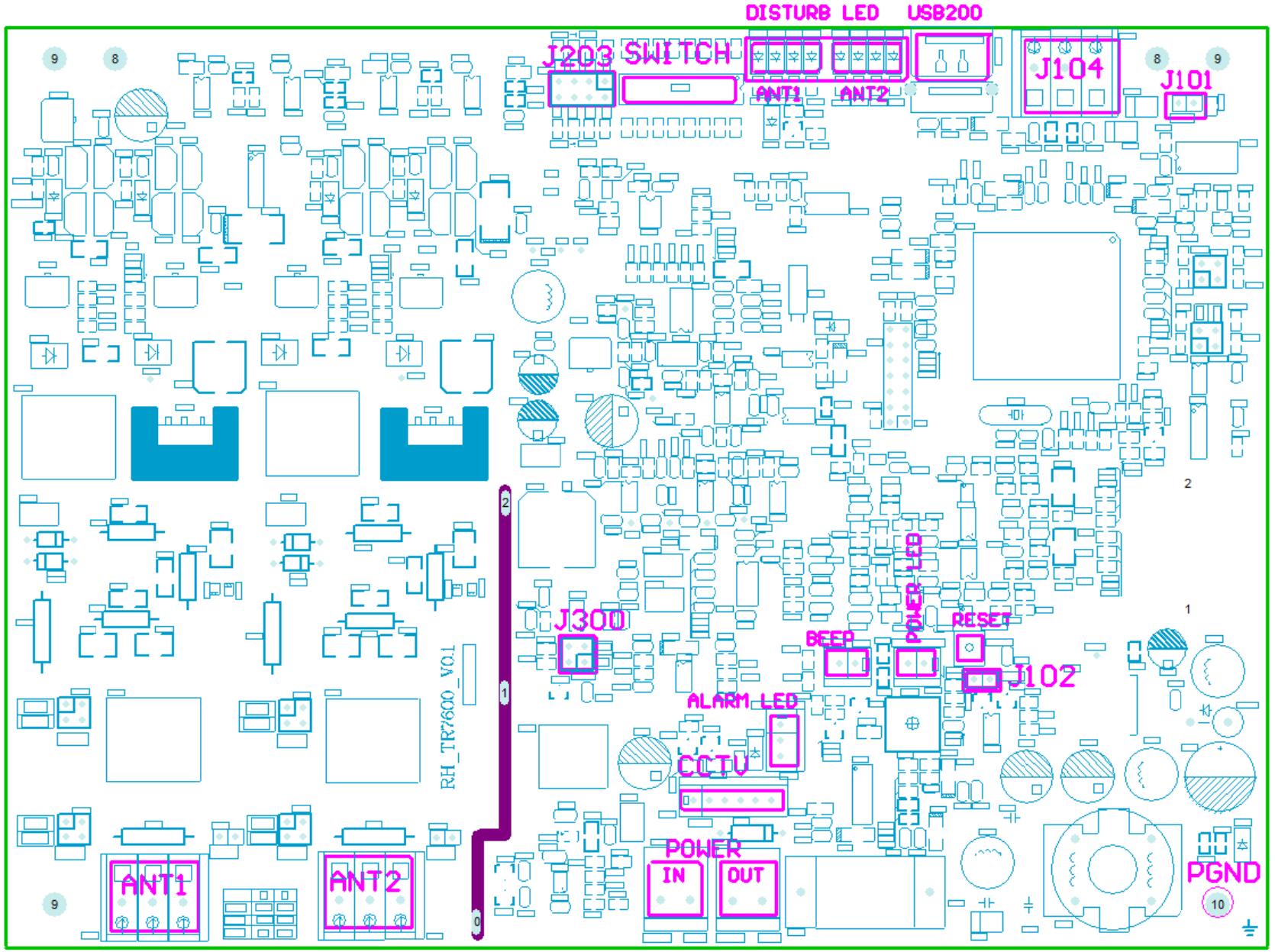



[Signal Noise Ratio]

When there is large interference, it may be necessary to fine tune the ratio via J300 in PCB.

Factory setting, normal ratio: 1&2 open, 3&4 short

Reduce ratio: 1&2 short, 3&4 open


DISTURB LED
USB200
J203 SWITCH
ANT1
ANT2
J104
J101
J300
BEEP
POWER LED
RESET
J102
ALARM LED
CCTV
POWER
IN
OUT
ANT1
ANT2
PGND
RH_TR7600_V0.1

# Interface Reference

J203

7&8 :close to be Master; disclose to be Slave.

5&6： disclose in general; close to reset to factory settings.

3&4:n.a.

1&2：disclose in general; close to increase in high interference environment

SWITCH

Bit1~bit6: single choosing one to be ON, in a same synchronization set all systems should be on the same bit.

DSITURB LED

When properly initialized, alarm LEDs will be on which shows the corresponding transmission timing; if initialization failed, alarm LEDs flashes showing corresponding fault codes; If alarm LEDs flashes in normal working, it means interference from antenna nearby, the more powerful flash show greater the interference, left four LEDs corresponding antenna coil 1, right four LEDs corresponding to antenna coil 2).

USB200：to PC USB

J104：for synchronization

J101：for synchronization matching

J300：Gain selection

3&4: connected in general

1&2: connected in high interference environment

BEEP： to alarm speaker

POWER LED：power indicator LED

RESET：reset

J102：disclose in general, close when reset to factory setting or in software tuning

ALRAM LED：to alarm LED

CCTV：to CCTV alarm systems

POWER：power in/power out

ANT1/ANT2：to antenna

PGND：to antenna shield coil

FCC Warning:

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

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.