

USER MANUAL

FOR MODBUS READER V4.02

■ Part One – Demo Tool setup 软件设置与操作方法

1. 设备连接好以后，打开测试软件 right click from my computer to manage your computer, go to device to see the related USB serial COM Port(below shows COM8), after that run demo tool and select COM8 for connection



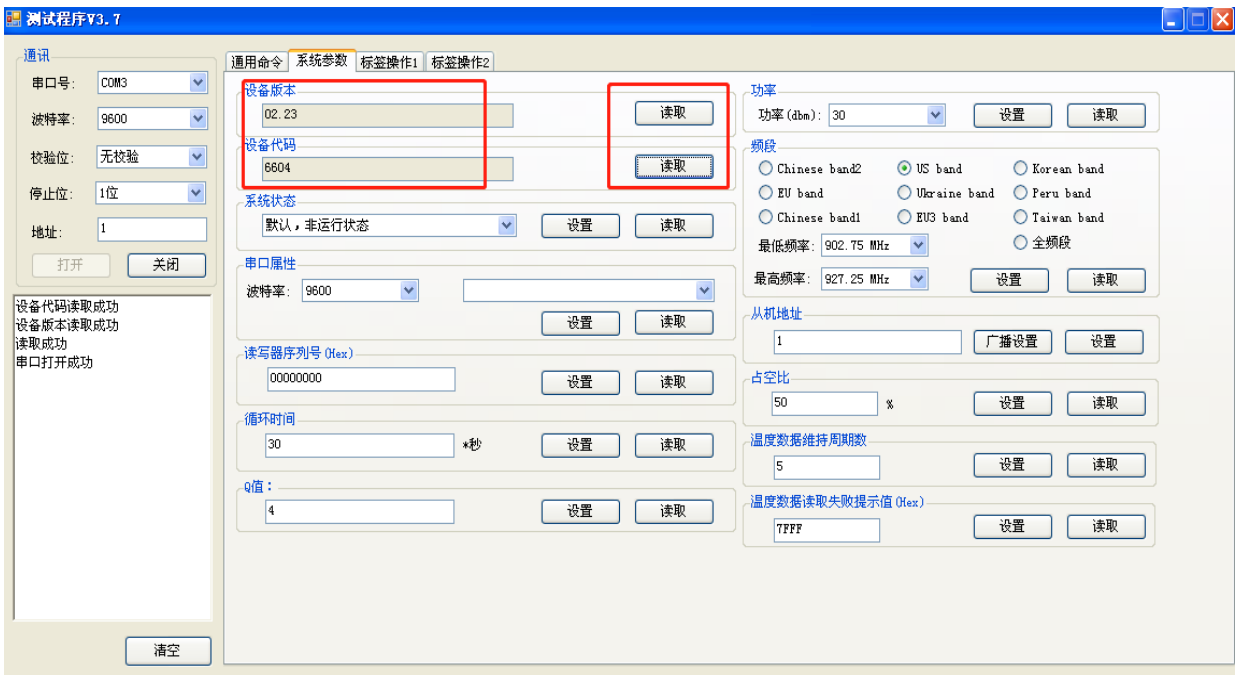
出厂波特率是 9600，选择串口号，点“打开”按钮，连接读写器

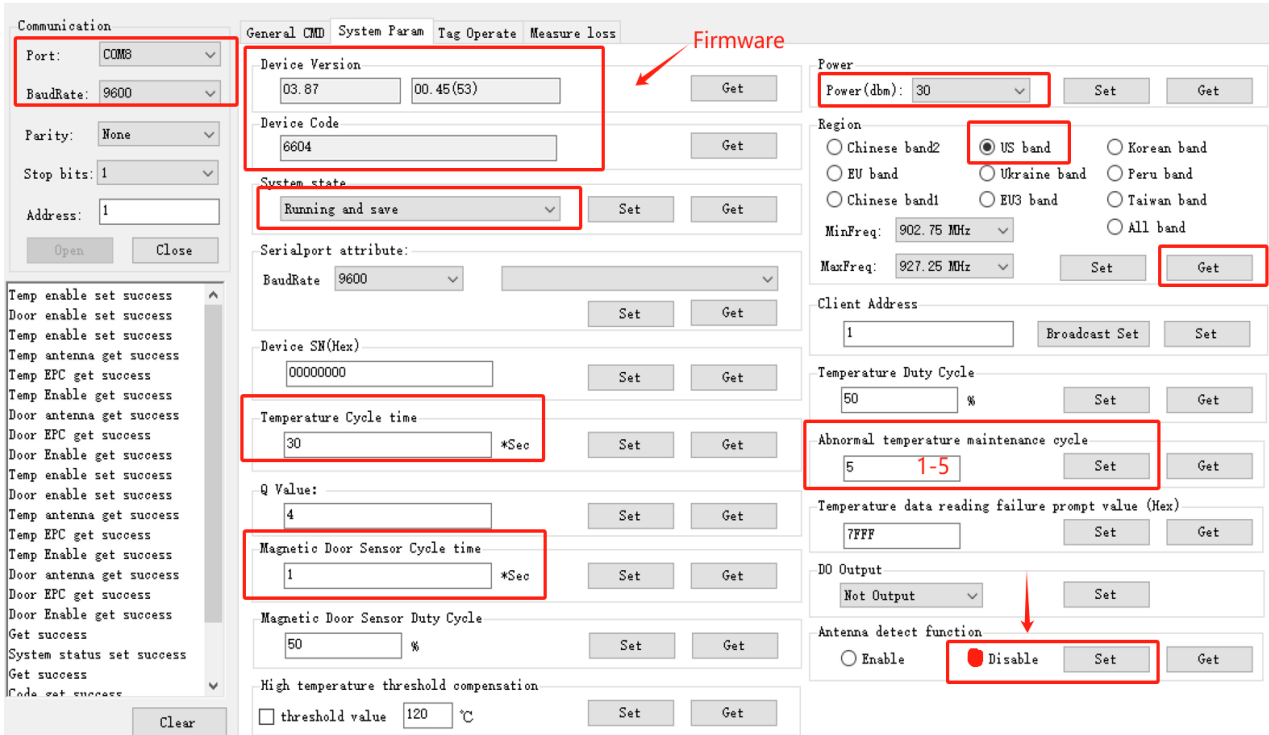
Default baud rate 9600, connect to the reader



2. 串口打开以后, 切换到系统参数界面, 如果能读取到版本号, 设备代码, 则表示连接正常, 如果读不到, 检查串口号或者 TX,RX 有没有反接

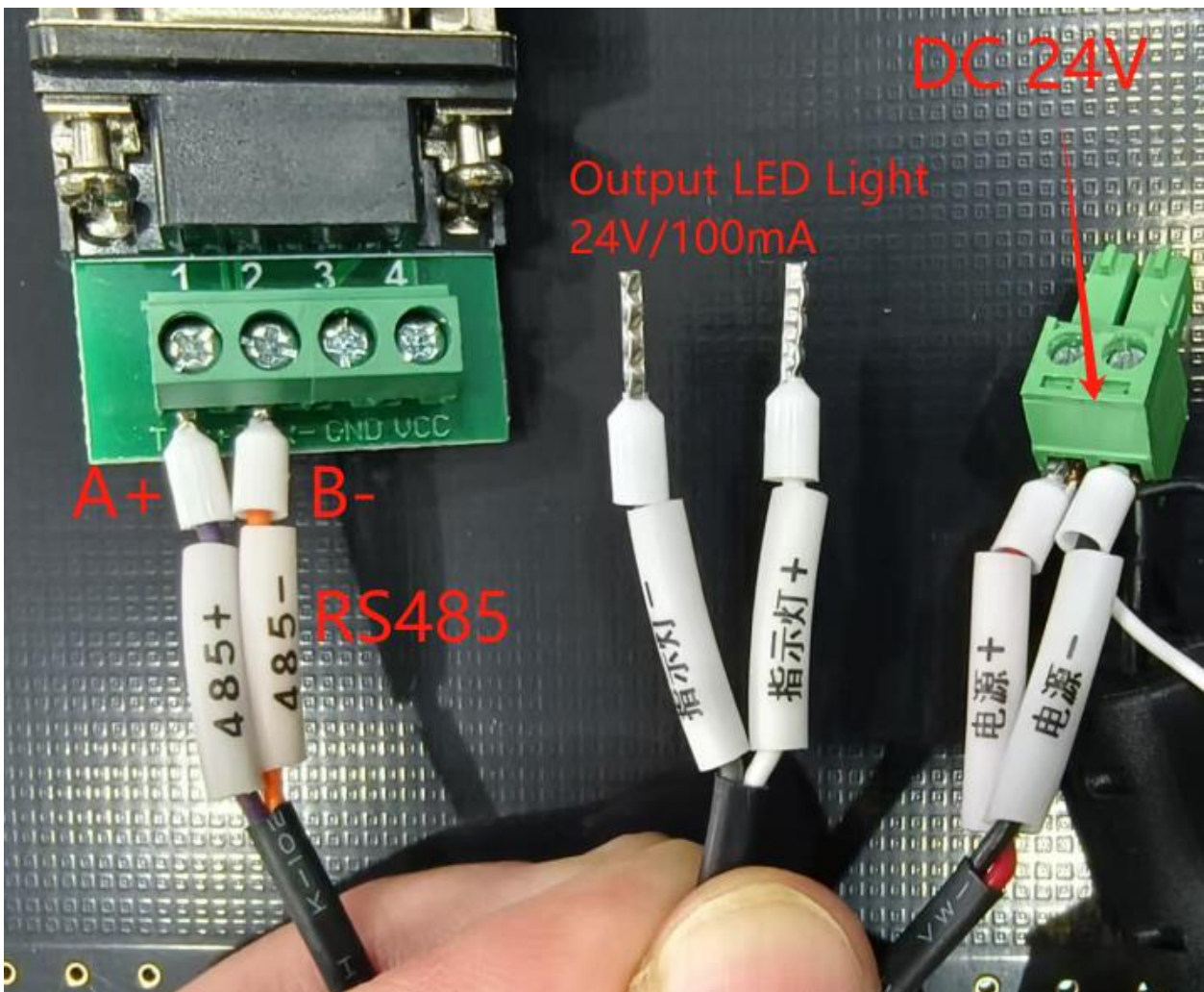
Check below firmware whether it's the latest version, if the reader didn't response back with correct version properly, please double check the cable connection if Tx/Rx A+/B- was opposite connected.





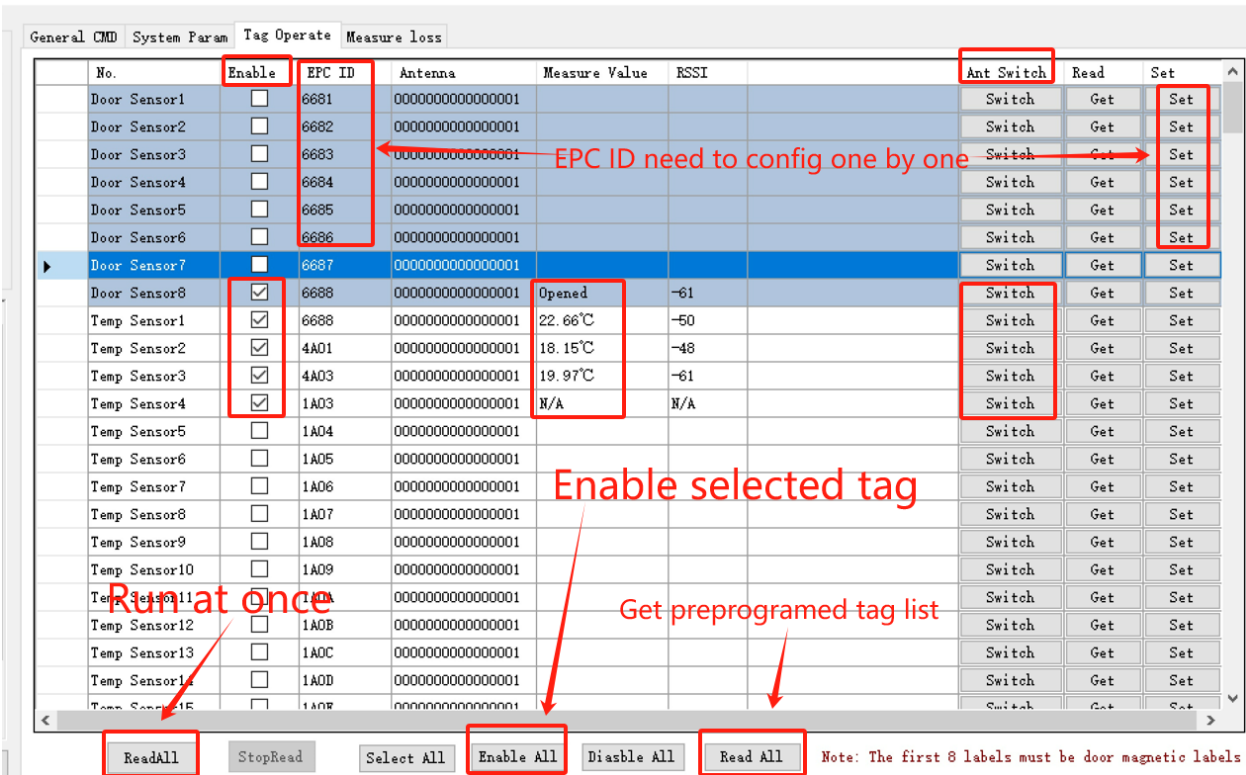
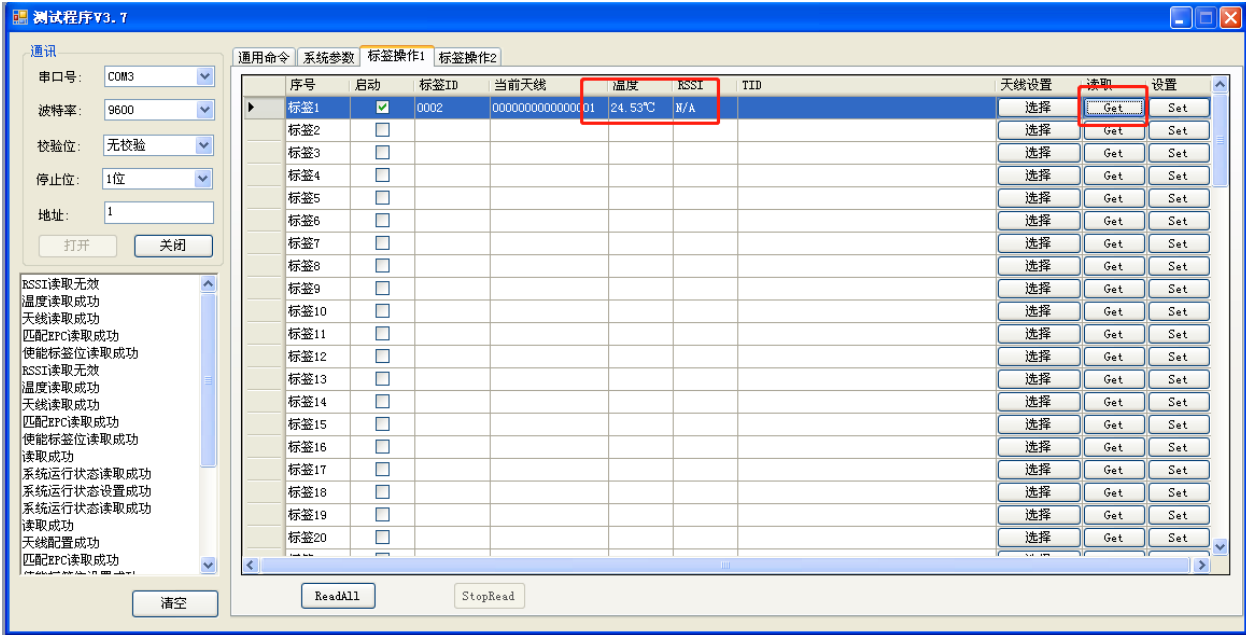
注意：勾选天线的端口号必须确保正确有效，否则会出现 RFID 模块自动复位，而导致系统完全不工作或部分不工作。

NOTE: Antenna detect function suppose to be disable in order to avoid RFID reboot issue if unstable connection was made by operator.



3. 切换到标签操作页面 Tag operate Menu

记录标签最大数量 256 个标签（含默认的第 1-8 条记录为 门磁标签 6681-6688） Maximum record in Modbus register is 256pcs tags including temperature sensor and first 8 records of door sensor):

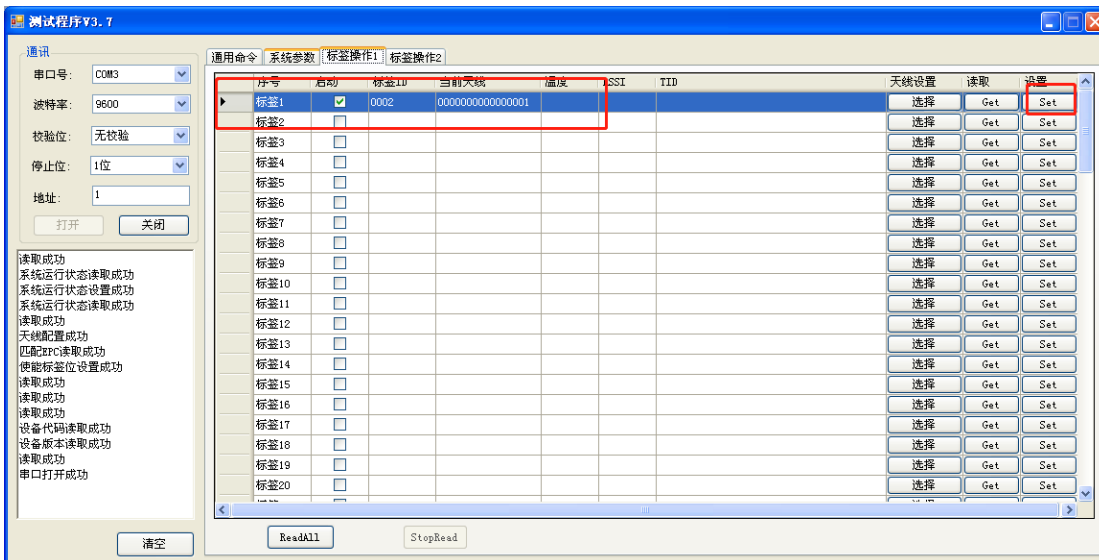


在此页面勾选”启动”，则启动对应门磁标签功能 或者 温度标签 检测功能

“标签 ID”处输入标签的 EPC 号(EPC 号只能是 4 位，如果不是需要用读写器设备先改好)，

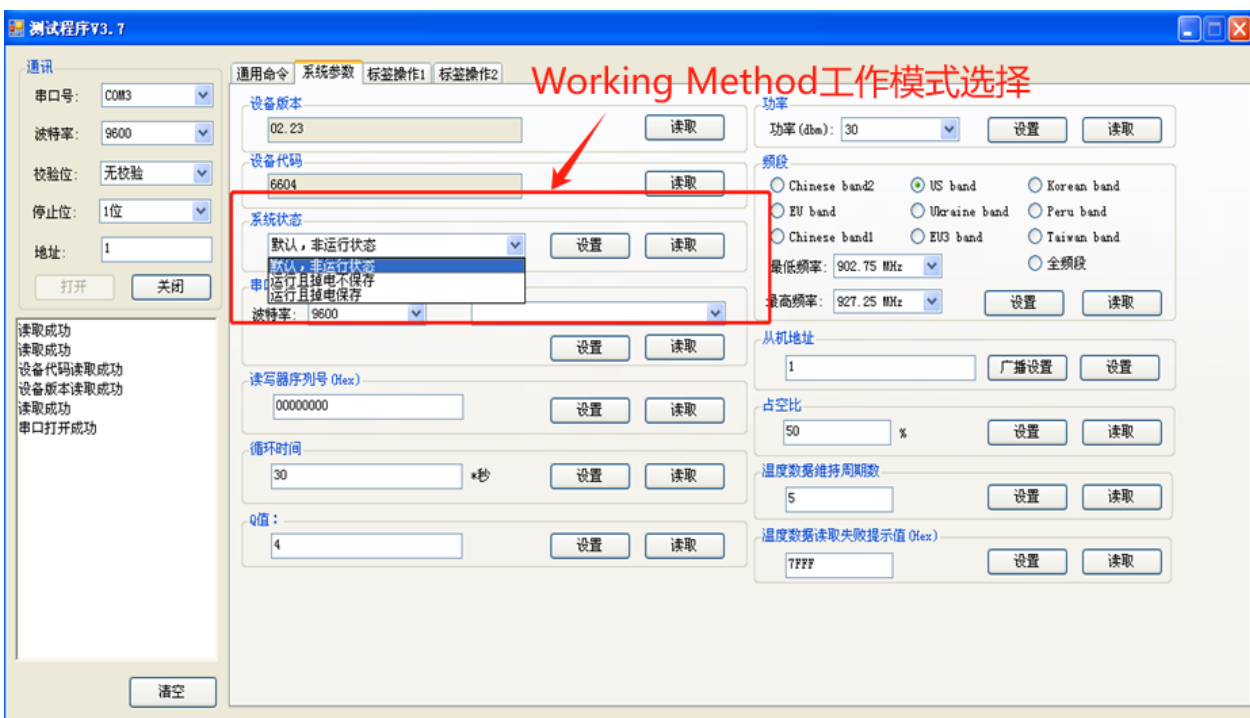
”天线设置”设置处点选择按钮，勾选读卡的天线（允许勾选多个天线）如下图：

“Star” box selected means it will star to work for temperature measurement or door sensor measurement, EPC length must be 2bytes only(4 digits), Ant switch is allowed for antenna adjust, default setting is for 8channels of modbus reader.



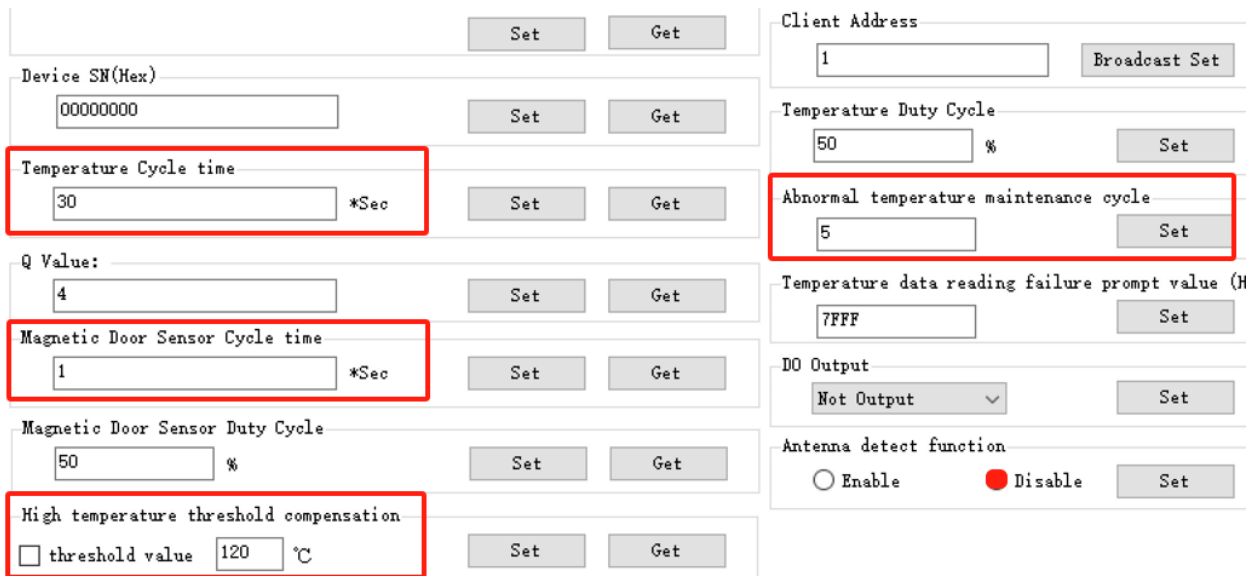
EPC 修改完以后，点右边的 Set 按钮。则此项配置完成，如果有多个标签，按上面的方式逐个去设置。
 Modifying EPC number is required to set one by one, "Enable All" won't save EPC number to the register.

4. 上述配置完成以后，回到系统参数页面 When tag operate is well done, back to change working method for auto-running and save, next time when power on, the reader will automatically to perform measurement process by itself without any other devices.



系统状态选择运行且掉电保存，点设置按钮，则读写器启动测温；默认状态是“非运行状态，则不启动测温”。

5. More feature parameters can be adjusted depending on the exact requirement such as frequency band, RF power, update frequency, fail retry times and so on as above pictures. 根据需求设置频段、功率和数据更新时间，频段选择 Chinese band2 (中国频段 2)，功率根据实际需求更改（功率越高，读取距离越远）



循环时间：读标签的循环总周期，即单个周期内所有多天线组轮循读标签的总时长，建议，单天线可以设置 1 天线*2s=2s，如果 2 个天线*2s=4s，如果 8 个天线则建议 8*2s=16s，最大循环时间为 60s（如果循环时间周期内未读到标签则会出现 N/A），建议设置值 $> 2 * \text{外接天线数量}$

Temperature cycle time: more tags and more external antennas will required more times, maximum is 60second, default setting 30s for reading upto 15tags

门磁循环时间：独立循环，1 秒代表每秒更新一次数据，20 秒则代表每 20s 更新一次数据

Door sensor cycle time: the time how often to flash sensor measurement, for example above is every one second. Suggestion is to flash every 10 or 20s for lower update frequency.

占空比：多标签和多通道天线时，需要适当调整，如 4/8 天线或标签数量超过 20 片时，则建议改成 75%
Door sensor duty cycle is suggested to be 50%, in case of too much tags, then adjust to be higher such as 75%

温度数据维持周期数：默认 1 为实时更新 Flash，多标签和多天线通道时，建议适当降低更新温度的频率，同时也避免 Flash 的内存写 10 万次寿命问题，如果 1 个周期是双天线通道时 4s，那么建议 5 周期即 20s 更新一次数据，避免太多的 N/A 温度数据。

Abnormal Temperature maintenance cycle: higher cycle lower reflashing for the abnormal reading, above 5 means keep latest normal reading result within 5 cycles for no change.

注意：5 个周期代表 5 次温度读取都失败才会更新寄存器为 N/A，否则还会保持最后一次的温度数据，标签越多，天线通道多越多，这个值建议>5

6. 启动测温以后，回到标签操作 1，可以查看标签测量温度 ReadAll to start to load preprogrammed parameters and measure immediately all the enabled temperature tag and sensor tags.



Get 按钮，读单个标签的当前寄存器历史保存的配置或数据信息，不是读标签温度，也不是读门磁标签的状态

一键设置：对已勾选的标签进行批量设置

一键选择：对“标签 ID”不为空的标签自动选择

ReadAll：循环读启动项选中的标签温度。

注意：一键设置功能，不会取消已经保存的寄存器配置信息，如果 Modbus 端已经配置好寄存器，必须逐个清空“启动”并保存生效，否则 轮循读标签时也会正常读标签，占用响应时间，导致读标签响应慢。

(即 Modbus 配置 96 个标签，实际一键设置 6 个标签，程序执行的是 96 个标签的读标动作)

PART 2 Measure Transmit Loss from Reader Antenna 测量天线传递损耗

当出现一直读取温度或标签传感器状态异常时，建议通过 Demo Tool 自带的天线增益检测功能来分析原因 while all the reading or measurement received fail answer, please look at the demo tool and adjust working method to measure antenna loss in order to find out the root cause as below picture.

Communication

Port: COM8

BaudRate: 9600

Parity: None

Stop bits: 1

Address: 1

Open Close

Region get success
Temp enable set success
Door enable set success
Temp enable set success
Temp antenna get success
Temp EPC get success
Temp Enable get success
Door antenna get success
Door EPC get success
Door Enable get success
Temp enable set success
Door enable set success

General CMD System Param Tag Operate **Measure loss**

Freq: 922.625 MHz

Start Measure

Stop

Antenna	Return loss
ANT1	
ANT2	
ANT3	
ANT4	
ANT5	
ANT6	
ANT7	
ANT8	
ANT9	
ANT10	
ANT11	
ANT12	
ANT13	
ANT14	
ANT15	
ANT16	

Return value must be above 5db, otherwise antenna is unstable

PART 3 Data Explanation Rule 数据解析规则

1. 检测到开门时，输出报警信号。该信号上电后不输出，检测到开门时输出报警，检测到闭门时输出不报警，没读到标签不输出 DO 信号。
2. 第 1-8 条寄存器记录 固定是开门检测标签，其温度值寄存器 00000-09999 表示状态闭合，即柜门关闭。10000-19999 表示状态断开，即柜门开启
- 3.其他寄存器均为温度标签及数据 除以 100，即为实际温度。后面是浮点数据，小数点，表示温度精度
4. 读到数据 32767 (Hex: 7FFF)，表示未读到标签 N/A。

See the appendix list for more details.

PART 4 Modbus Register Align Table 寄存器数据解析规则

详见文件“测温读写器寄存器地址表 V3.78.xlsx”

See the appendix list for more details.