Common Problems in Ultra High Frequency (UHF)

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2 Please verify the power high/low of the write; write tag need a higher power.

3 Please verify whether the tag is locked or not?

4 Please verify the rationality of tag number and the accuracy of filter.

5 Please verify the accuracy of input parameter.

6 Making several attempts

● **The difference between block and writable word**

Block applies to all tags, word only applies to the new tag and word is faster than block.

● **Reading tid will change**

Tid is usually four blocks, six blocks (word), the beyond part, may be uncertain. Determined by the manufacturers.

● **Reader's check-inventory and the memory flow of read and write tags**

Check-inventory process:

1 Set and connect the reader

2 Set the power [by default]

3Set session, the default settings 0, if the tag is too much, set 1 [by

default]

4 Set the protocol, Gen2 protocol in general [by default]

5 Set the detection antenna, the default detection [by default]

6 Set epc maximum length, the default 96, if larger than 96, set 496 [by default]

7 Set the mode of check-inventory, select the antenna

8 Operation check-inventory

Flow of reading and tag memory:

1 Set and connect the reader

2 Set the power [by default]

3 Set session, the default settings 0, if tag is too much, set 1 [by default]

4 Set the protocol, set Gen2 protocol in general [by default]

5 Set the detection antenna, the default detection [by default]

6 Set the operation single antenna

7Set epc maximum length, the default 96, if larger than 96, set 496 [by default]

8 Set Password [optional]

- **The common parameters which affect reading effects**

1 Power, set according to the actual environment

2 When in session mode, tags should less use 0, the tags use1 in general, use 2 or 3 when read only once

3 Read time refers to the time that reader check the tag

4 Interval refers to the time of read function, adding the interval time to it contribute to protecting the reader life.

5 Using of antenna

● **Read the USER region data**

There are two ways to read the user region of multiple tags:

The first kind: first count tags, and then according to the only epc number as a filter condition, read user region function ReadTagMemWords in turn. Read out each tag user region data.

The second kind: first configure the embedded data ParamSet ("EmbededCmdOfInventory", EmbededCmdData Object), and then the inventory tag, you can return the array element attribute EMDDataString to read out the additional data. Require module support.

● **Gen2 tag protocols**

EPC Class l gen2 protocol or ISO18000-6c

● **The region number of Gen2 tag and the function of each region**

A Gen2 tag generally has four zones.

Unit: block, one 16bit two bytes. The minimum unit of each read and write is the block

Reservation region is used to store the password. 0,1 store disposal password, kill the label at all the time, 2,3 block access password

EPC region, tag id, epc encoding (global Internet of things unified item code), the general 96 bits total of 6 blocks, there are 64 bits. Extensions

can support 496 bits, the first two blocks are check block and pc block (pc indicates epc length).

Note: read and write is beginning from the second block, a total of six blocks.

TID region is generally factory fixed which is not modified, read only, usually 64-bit, 96-bit, tag id.

User region specifically for the user to store data region, can read and write, starting from 0, 512bits

GEN2 tag region operation, read out the word number of hex system, write word number of hex system which needs 4 times.

Tid region is not written, only to read.

Reserve region and user region can be read can write, 0~1 block to destroy the password, 2~ 3 block access password.

EPC region can only write from the second block, can be read, 0 pc 1 block check, 2~6 epc id.

Keep 0~3 blocks total of 4   epc 2~8 blocks   total of 6   user 0~31 blocks in general   total of 32 blocks   tid six blocks in general
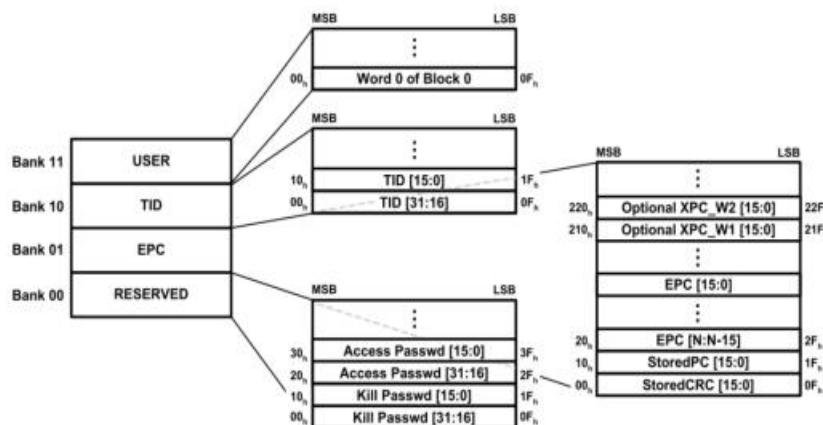

Figure 6.17 – Logical memory map

Gen2 logical memory map

How to temporarily lock the user region, permanently lock epc region?

1 First, set Access password: xxxxxxxx 8 -digit number

(The software operation chooses reserve region, start from the second block, write in the data bits xxxxxxxx, press the write button to send the order of writing)

2 The temporary lock is chosen at user region

Press the lock button to send the order of lock.

3 The permanently lock is chosen at epc region

Press the lock button to send the order of lock

● **How to kill a tag?**

1 First, set disposal password: xxxxxxxx 8 -digit number

(The software operation chooses reserve region, start from 0 block, write in the data bits xxxxxxxx, press write button to send the order of writing)

2 Press destruction button to send the order of destroy

● **Filter tag operation?**

The id of filter tag, the head is 0F (00001111), and write in the data 12345678 in the user region from the second block. Simple steps?

1 Operation parameter is in configuration,

Fill in the filter data: 00001111

Match rule: Match

The start address: 2

Filter bank: epc bank

Password to access: If the password has been set, just fill in, and choose √ for the following check box of access password , otherwise do not need to do.

Select the antenna:

Enable the Data Filtering: choose √

2 In tag operation

The start address: 2

Bank: select user region

  Fill in the data: 12345678

3 Press the write button to send the order of writing

● **GEN2 Region operation to tag?**

Read bit data is hex system number of characters, write hex system which needs 4 times the number of characters.

Tid region cannot write, only read

Reserve region and user region can be read and write 0 ~ 1 block destroy the password   2 ~ 3 blocks access password EPC region can only be

written from the second block, can be read

0 block pc 1 block check   2 ~ 6 blocks epc id

keep 0 ~ 3 blocks   total of 4 blocks epc 2 ~ 8 blocks   total of 6 blocks

user 0 ~ 31 blocks in general   total of 32 blocks   tid 6 blocks

● **The problem of reading short distance?**

1. Check the antenna, feeder

2. Obtain power to confirm if it needs to reset the power

3. Environment: the metal and water have a major influence

● **Tag protection?**

Locking is supported by all gen2 AgreementAgreement

One tag has four zones, reserve region is dedicated to put the password, kill password and access password. Epc region, tid region, user region. You can use the password to do different types lock operation for these regions. That is to say the operating unit is the region.

Once the reserve region is locked, it cannot be read unless the password is used or unlocked (temporarily locked)

Once locked at epc region, , can be read but cannot be modified unless the password or unlock (temporarily lock)

Tid region is universally locked in leaving factory

Use region is the same as epc

Lock consists of temporary lock and permanent lock

If you want the tag of epc region cannot be read, you need tag support function, it belongs to the private function which is not in the range of gen2 Agreement.

Similarly, lock any block is also a function of some tags.

●**How to deal with the frequent failure in write tag?**

1 Please confirm the Agreement kinds of tag, good or bad, whether exists the writable region or not?

2 Please confirm the size of power of writing; write tag should be a higher power.

3 Please confirm whether the tag is locked or not?

4 Please confirm whether the number of tag is too many or not.

5 Please confirm whether the function of input parameter is right or not.

6 Please confirm whether the function of filter is included, and whether it is match with the data.

●**Users need to save a lot of information?**

1 It is best to use 496 bits of epc

2 Use the user region, and use epc as a symbol at the same time

●**Save words or Chinese at the tag ?**

Write conversion with alphabetical data

String -> (ascii) -> bytes ---> write

Read the letter data

Read-> bytes - (ascii) -> string

Write conversion with Chinese data

String - (gbk) -> bytes ---> write or Unicode

Read the Chinese data

Read --- bytes ^ (gbk) -> string

● **How to extract RSSI from instruction?**

RSSI lbyte, the tag signal strength, the unit is DBM, the value has symbol

First, verify whether 1 is the highest bit of rssi byte

 1 is negative, 0 is positive

Positive number is directly transferring

Negative: the value is 0xff-a + 1, the symbol is negative (a is the byte value)

-75 to -20 or so   units is dBm

● **The frequency range of reader**

902-928 mhz

● **How many the maximum bits of writing data of rfid?**

Question: demo can only show 24 bits

Answer: epc - is 96 bites, unless it is extended with 496, if needs must set 496 bit mode first, and then write the data on the tag, then you can read more than 24 bits.

● The structure of 6B tag

Uid is the id of 6b tag, the first 8 bytes are uid, and the next 216 bytes (8-224) can save data.

● **Can multi-threaded control reader?**

Yes, but whether it is single-threaded, multi-threaded, in short, it must follow the reader; a question must correspondence the answer, so generally add a exclusion lock in multi-threaded. For example: a thread operate GPIO, another thread control read and write, then also need to ensure that only one operation in a moment.

● **How to deal with the failure of getnexttag function?**

Generally, getnexttag will not fail, do not keep getnexttag once failing, but can inventory_raw again

● **Analysis on the structure of Get_NextTag_BaseType**

Assuming outbuf is the output buffer array of bytes, the following is the structure analysise of tag.

outbuf [0] = tag.ReadCnt; 1 byte the read number of tag .

outbuf [1] = tag.RSSI; 1Byte the strength of tag signal

outbuf [2] = tag.AntennaID; 1 byte antenna No.

outbuf [3-6] = tag.Frequency; 4 bytes frequency point

outbuf [7～10] = tag.TimeStamp; 4 bytes time

outbuf [11～12] = tag.Res; 2 bytes reserve

outbuf [13～14] = tag.Epclen; 2 bytes the length of epc

outbuf [15～16] = tag.PC;2 bytes epc pc value

outbuf [17~17+tag.Epclen-1] tag.Epclen length epcid No.

outbuf [17+tag.Epclen～18+tag.Epclen] = tag.CRC; 2 bytes crc

outbuf [19+tag.Epclen～20+tag.Epclen] = tag.EmbededDatalen; 2 bytes the length of embedded data

outbuf [21+tag.Epclen22+tag.Epclen+tag.EmbededDatalen] embedded data

•What is the meaning of the timeout in the sdk check-inventory function?

Timeout is the return time, that is, the time to specify the reader to read the tag. If you want the reader to keep working, you need to use the timer event or set a thread to keep calling, or use sdk background work mode (varies according to the different equipment).

• **Epcid and tid**

Epcid is the only item of the world, can be group read, check-inventory is read epcid, tid is the world's only id of tag, fixed cann't be modified but is generally a single tag to read.

• What is the difference between write epc and write memory?

Write memory can write epc region, reserve region, tid region, user region which does not change the original length and will not change the length of epcid, that is, when the length of epcid, write epc, is specifically initialized epcid. Write from the second block will change the length (modify the pc block, in the epc region 0), that is, in the epcid check-inventory period, epcid will change with the length of the data.

• What is the time to write a label and read a tag?

Write a label, usually at least 100ms, read the label for at least 20ms

● Are there any epc codes in the new label?

Does the new tag have an EPC code? Is it necessary to initialize the settings?

The new tags have an epc code (can be changed), tid (cannot change), reserved and user regions are all 0, do not need to re-initial, however, if the epc code is same you may need to rewrite epc.

Cannot read the tag, or read wrong tag?

1. Check the power, turn high power

2 Check the antenna port, antenna and feeder

3 Check the tag protocol, memory, tag placement, whether the tag is

damaged

4 Check whether start up the filter function, the additional data function

5 Check the setting of region band

6 Check whether session2 is set up

7 Check whether the antenna is connected

8 Check whether there is other interrogator interference

• **Prc is the Chinese region, the difference of prcl and prc2**

China 1 (prcl) 920-925

China 2 (prc2) 840-845

• **Read successfully but write failed**

Write distance is about read distance 2/3, please close to write.

• **How much is the tag capacity?**

Gen2 tag epc has 96-bit in general, 12 bytes; user 512 bit in general, 64 bytes, total of 76 bytes