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Revision history

| v ersion | **release date** | Change the inner volume |  |
| --- | --- | --- | --- |
| 0.1 | 2016-1-20 | first draft |  |
| 0.2 | 2016-3-24 | 1. Add error branch processing 2. Enhance fault tolerance 3. Add a new management configuration interface |  |
| 0.32 | 2016-5-14 | 1. Add a redirected user list interface definition   Add the minimum receive level message interface definition |  |
| 0.34 | 2016-5-31 | Increase the GPS status report |  |
| 0.35 | 2016-6-7 | Added I2C interface: 4.5.34 4.5.39 |  |
| 0.36 | 2016-6-16 | Add the delay domain field 4.5.28  Increase the return result by 4.5.37 |  |
| 0.37 | 2016-6-17 | Synchronous message reporting is increased by frequency point, PCI, TAC, RSSI information |  |
| 0.38 | 2016-6-19 | Increase the GPS status by 4.5.20 |  |
| 0.39 | 2016-6-19 | Modify some parts where the text description is inconsistent |  |
| 0.40 | 2016-6-22 | Modify 4.5.28 and 4.5.20. Increase the synchronization state nmm auxiliary frequency bias; the initial configuration increases whether to save frequency bias |  |
| 0.41 | 2016-6-23 | Add GPS latitude and longitude; add working band for initial configuration; change support band of equipment startup information to working band |  |
| 0.42 | 2016-6-27 | Modify 4.5.6: Add the version number of the physical layer and the kernel |  |
| 0.43 | 2016-7-9 | Modification 4.4.23: Support for all redirection |  |
| 0.44 | 2016-7-30 | Support 5M |  |
| 0.45 | 2016-8-30 | 4.5.6: Add the hardware version number |  |
| 0.46 | 2016-9-1 | 4.5.22: The GPS status is changed to valid and invalid |  |
| 0.47 | 2016-9-23 | 4.5.40-4.5.43: Add the EPC \_ TX \_ POWER \_ STD process |  |
| 0.48 | 2016-10-13 | 4.5.44-4.5.47: Add the EPC \_ TX \_ POWER \_ STD \_ DBM process |  |
| 0.52 | 2017/6/7 | 1. Update the community configuration and the community update information 2. Add UE filter mode setting, Scan mode setting, upper frequency point setting, and runtime parameter setting messages |  |
| 0.53 |  | Update the cell update message |  |
| 0.54 |  | Add the interference detection function |  |
| 0.55 |  | Increase the priority field in the sweep result |  |
| 0.56 |  | Increase redirect direct release whitelist target list |  |
| 0.57 |  | Add the field strength report to carry CRNTI  Enhance the TMSI localization |  |
| 0.58 | 2017/12/24 | Perfect the interface description to make it clearer and clearer. |  |
| 0.59 | 2019/01/15 | The device startup process increases the reported IP address and the MAC address |  |
| 0.60 | 2019/02/25 | Add the tube and control mode setting, see the runtime parameter configuration, and increase the maximum support number of the positioning target imsi list |  |
| 0.61 | 2019/04/17 | Add functionality to disable TAC updates in runtime parameters. |  |
| 0.62 | 2019/0/25 | Add the information interface of the reported adjacent areas |  |

# foreword

This document provides the interface definition of the 4G code detection device and the control management device, describes the management configuration of the code detection device, the reporting status and process of the code detection device, and explains the communication mode, message definition, error code and error processing mode of the two parties.

## Write the purpose

This document details the interactive interface between the controller and the two peer-to-peer communication and response modes.

## Readers are expected to advise

* Product Manager: Suggest reading it all;
* Project Manager: Suggest reading them all;
* Software developer: I recommend reading it all;
* System Tester: I recommend reading them all.

## Refer to documentation

【1】

## abbreviation

3GPP Third Generation Partnership Project

SOW Statement Of Work

# introduce

# Interface process

## definition

TCP Use the agreement.

Main control board port: 32790; base station port: 31790.

In the base station side profile, specify the IP address of the master board.

Network byte order is used for transmission

## Business function process

### Link keeping

After completing the system startup process, the master console sends HEARTBEAT messages every 5 seconds, and the base station replies to HEARTBEAT\_ACK.

1. *If the main control board does not receive HEARTBEAT\_ACK for 5 consecutive times, the BBU is considered to lose its connection.*
2. *If the base station does not receive the HEARTBEAT within 25 seconds, it resumes the device startup process and sends the INIT\_NOTIFICATION message every 5s.*

### Base station equipment startup process

1. When the base station starts, an INIT\_NOTIFICATION message is sent every 5s, carrying the supported Band and system. After receiving the INIT\_NOTIFICATION\_RSP, enter the base configuration state.
2. When the master board receives the INIT\_NOTIFICATION message, it should return the INIT\_NOTIFICATION\_RSP to indicate successful access.
3. The main control board issues the basic configuration message, except for the heartbeat, the other messages are not available
4. After the base station completes the base configuration, the transmission base configuration is completed and the equipment is available

### Scan frequency flow

After the device startup process ends, the scan can start. The message process is as follows:

1. *The master sends SNIFFER\_START to start scanning, the base station returns SNIFFER\_START\_RSP, and the master does not receive the response message within 5s*
2. *After the scan ends, the base station reports the scan results SNIFFER\_RESULT\_REPORT in batches (30 pieces each time), the main control board returns to SNIFFER\_RESULT\_REPORT\_RSP, and the BBU continues to report the next batch. After all the results are reported, the base station will send SNIFFER\_RESULT\_REPORT\_END, indicating that all the results have been reported. The motherboard needs to return the SNIFFER\_RESULT\_REPORT\_END\_RSP*
   1. Use the ping-pong method to send the scan results in batches
   2. The base station can only wait for the last batch of message response to report the next batch of results
   3. After a timeout wait for 5s, the current message is repeated
   4. The base station reports all the sweep results
3. According to the information reported by the scan results, the main control board determines the system working parameters of the current community according to certain principles, such as the frequency point, PCI and the configuration of the adjacent community, and issues the cell configuration CELL\_CONFIG message;
4. Before the next scan, send the reset command SNIFFER\_REST, and the base station returns SNIFFER\_REST\_RSP

### Community configuration process

This process completes the process of scanning the automatic cell configuration or configuring the community alone, and completes the necessary information such as PLMNID, TAC, PCI, the community frequency point of the community, the PCI of the same frequency community and the frequency point configuration information of the different frequency community.

1. *The motherboard sends the CELL \_ CONFIG to the base station*
2. When the base station completes parsing the message, CELL \_ CONFIG \_ RSP is returned. If successful, the status code is 0, otherwise the corresponding error cause is indicated
3. If the master console does not receive a response from the base station in 5s, reissue the message

### Community information update process

In the process of equipment operation, the PLMNID, TAC and frequency point of the cell can be modified online, and the system information can be updated without the system restart.

1. *The motherboard sends CELL \_ UPDATE to start the cell information update, and the base station returns CELL \_ UPDATE \_ RSP, which should support the timeout retransmission function*
2. After receiving the CELL \_ UPDATE message, the base station extracts the relevant system information to determine whether the current system information is consistent with the existing information. If consistent, the response message prompts no update, otherwise the base station is triggered to update the relevant system information and return to success

### Redirected release update process

Provide terminal release redirection function during equipment operation or system startup, support different systems, and frequency points can be configured

1. The master board sends RELEASE\_REDIRECT to start the configuration redirection, the base station checks whether the configuration parameters are legal, and it is sent to the protocol stack for redirect configuration; if illegal, directly sending RELEASE \_ REDIRECT \_ RSP carries the reason for the redirect failure
2. *After receiving the redirect configuration of the protocol stack, the RELEASE \_ REDIRECT \_ RSP redirect configuration is sent to the master panel with the status code 0.*

## Operation and maintenance function process

### Set the system time

The master controller uses messages to synchronize the date of the base station (year, month, day and second), and the base station responds

### Base station output power control

Configuration of T2K plate output power attenuation class (0, indicates non-attenuation, total 64 levels, each class: 0.5; greater than 64 indicates off power)

### version management

1. Version query

The master console sends the version query request, and the base station returns the version number

1. Version upgrade

The master control board sends the version upgrade command, with ftp address, user name, password, version number, the base station returns the download version response, status code 0 indicates success, and non-0 indicates the corresponding reason for the error. After the base station is successfully downloaded, the version upgrade is returned to complete the command. 0 means the installation is successful, and non-0 indicates the corresponding reason for the error.

### Status management

Normal operation status report (every minute, every 10 seconds): the specific status and alarm waiting definition

### asset management

The device hardware resource management (asset management) related interface needs to be defined. The information file is reserved on the single board, which can be configured and queried through the interface. For example: hardware version, BOM number, factory date, maintenance condition, TDD / FDD, etc

### Synchronous mode setting

Configure the system synchronization mode through SYNC \_ MODE, uses air port synchronization or GPS synchronization, the base station receives the synchronization mode setting message to configure the site synchronization mode, and returns to SYNC \_ MODE \_ RSP response after the configuration is completed to determine whether the modification is successful or not

### System sync status query

The master controller can query the current synchronization state of the system through SYNC \_ STATUS \_ REQ, the base station SYNC \_ STATUS \_ REPORT reports the current synchronization state, and the base station can also actively report the synchronization state when the synchronization state changes

### The GPS synchronization information query

Support GPS synchronization, and provide GPS synchronization status query and status reporting function

# Message definition

## architectural structure

* Communication uses the network byte order
* Common Message Definition:

|  |  |
| --- | --- |
| **type** | **description** |
| u i n t8\_t | Protocol Number.  0x01 is business-related, and 0x02 represents an operation and maintenance class |
| uint8\_t | Signal Type. See Section 4.2 and 4.3 |
| uint16\_t | Length of message |
| uint8\_t | Tag |
| uint16\_t | Length of tag ’s content |
| array of uint8\_t | Value |
| … | |

## Business message type

|  |  |  |  |
| --- | --- | --- | --- |
| **Message type** | **short-cut process** | **description** | **direction** |
| INIT\_NOTIFICATION | 1 | [Device startup notification](#_设备启动通知) | Base station- -> Main control board |
| INIT\_NOTIFICATION\_RSP | 2 | [Device starts notification response](#_设备启动通知响应) | Main control board- -> Base station |
| HEARTBEAT | 3 | [heartbeat](#_心跳) | Main control board- -> Base station |
| HEARTBEAT\_ACK | 4 | [Heartbeat response](#_心跳响应) | Base station- -> Main control board |
| SNIFFER\_START | 5 | [Start sweep frequency](#_1、启动扫频) | Main control board- -> Base station |
| SNIFFER\_START\_RSP | 6 | [Start the sweep response](#_2、启动响应) | Base station- -> Main control board |
| SNIFFER\_STOP | 7 | [Stop sweeping](#_3、停止) | Main control board- -> Base station |
| SNIFFER\_STOP\_RSP | 8 | [Stop the sweep response](#_4、停止响应) | Base station- -> Main control board |
| SNIFFER\_REST | 9 | [reset](#_5、复位)sweep frequency | Main control board- -> Base station |
| SNIFFER\_REST\_RSP | 10 | [Reset sweep response](#_6、复位响应) | Base station- -> Main control board |
| SNIFFER\_RESULT\_REPORT | 11 | [The sweep result is reported](#_扫频结果上报) | Base station- -> Main control board |
| SNIFFER\_RESULT\_REPORT\_RSP | 12 | [Report the scan results in response](#_扫频结果上报响应) | Main control board- -> Base station |
| SNIFFER\_RESULT\_REPORT\_END | 13 | [The scan result is reported over](#_扫频结果上报结束) | Base station- -> Main control board |
| SNIFFER\_RESULT\_REPORT\_END\_RSP | 14 | [The sweep result reports the end response](#_扫频结果上报结束响应_1) | Main control board- -> Base station |
| CELL\_CONFIG | 15 | [Community configuration](#_小区配置) | Main control board- -> Base station |
| CELL\_CONFIG\_RSP | 16 | [Community configuration response](#_小区配置响应) | Base station- -> Main control board |
| CELL\_UPDATE | 17 | [Community update](#_小区更新) | Main control board- -> Base station |
| CELL\_UPDATE\_RSP | 18 | [Community update response](#_小区更新响应) | Base station- -> Main control board |
| UEID\_REPORT | 19 | [Detect code report](#_侦码结果上报) | Main control board- -> Base station |
| UEID\_REPORT\_RSP | 20 | [Detective response](#_侦码结果上报响应) | Base station- -> Main control board |
| NMM\_STATUS\_REQ | 21 | [Scan frequency status query](#_14、NMM状态查询) | Main control board- -> Base station |
| NMM\_STATUS\_REPORT | 22 | [Scan frequency state reply](#_15、Sniffer状态回复) | Base station- -> Main control board |
| RSSI\_THRLD\_CONFIG | 23 | RSSI, with the threshold setting | Main control board- -> Base station |
| RSSI\_THRLD\_CONFIG \_RSP | 24 | The RSSI threshold setting response | Base station- -> Main control board |
| RSSI\_THRLD\_REQUEST | 25 | Obtain the RSSI threshold value | Main control board- -> Base station |
| RSSI\_THRLD\_RSP | 26 | Return to the RSSI threshold value | Base station- -> Main control board |
| UE\_REDIREC | 27 | [redirect](#_重定向（待定）) | Main control board- -> Base station |
| UE\_REDIREC\_RSP | 28 | [Redirect response](#_重定向响应) | Base station- -> Main control board |
| LTE\_SCAN\_REQ | 29 | LTE interference detection | Main control board- -> Base station |
| LTE\_SCAN\_RSP | 30 | The LTE interference detection response | Base station- -> Main control board |
| SNIFFER\_RESULT\_INTER\_FREQ\_INFO | 32 | LTE neighborhood information report | Base station- -> Main control board |
| UE\_NOT\_REDIRECT\_CFG | 33 | Does not redirect the user configuration | Main control board- -> Base station |
| UE\_NOT\_REDIRECT\_CFG\_RSP | 34 | Does not redirect the user configuration response | Base station- -> Main control board |
| SNIFFER\_RESULT\_INTER\_FREQ\_INFO\_END | 35 | The LTE neighborhood information report is over | Base station- -> Main control board |
| SNIFFER\_RESULT\_INTER\_FREQ\_INFO\_END\_RSP | 36 | LTE neighborhood information report end response | Main control board- -> Base station |
| SIB3\_MSG | 37 | SIB 3 in the LTE sweep plot | Base station- -> Main control board |
| SIB4\_MSG | 38 | SIB 4 in the LTE sweep plot | Base station- -> Main control board |
| SIB5\_MSG | 39 | SIB 5 in the LTE sweep plot | Base station- -> Main control board |
| SIBX\_END\_RPT | 40 | L TE S IB Message reporting ends | Base station- -> Main control board |

## Operation maintenance message type

|  |  |  |  |
| --- | --- | --- | --- |
| **Message type** | **short-cut process** | **description** | **direction** |
| SYSTEM\_TIME | 1 | Set the system time | Main control board- -> Base station |
| SYSTEM\_TIME \_RSP | 2 | Set up the system time response | Base station- -> Main control board |
| TX\_POWER\_ATT | 3 | Set the output power gain | Main control board- -> Base station |
| TX\_POWER\_ATT\_RSP | 4 | Set the output power gain response | Base station- -> Main control board |
| SOFTWARE\_INFO\_REQ | 5 | Software version query | Main control board- -> Base station |
| SOFTWARE\_INFO \_R EPORT | 6 | Software version query response | Base station- -> Main control board |
| SOFTWARE\_UPGRADE (not supported) | 7 | software upgrading | Main control board- -> Base station |
| SOFTWARE \_ UPGRADE \_ RSP (not supported) | 8 | Software upgrade response | Base station- -> Main control board |
| SOFTWARE\_UPGRADE\_REPORT (not supported) | 9 | Software upgrade status report | Base station- -> Main control board |
| SYSTEM\_STATUS\_REQ | 10 | System status query | Base station- -> Main control board |
| SYSTEM \_STATUS\_ RE PORT | 11 | System status reporting | Base station- -> Main control board |
| EQUIP\_ASSETS\_REQ | 12 | Asset information inquiry | Main control board- -> Base station |
| EQUIP\_ASSETS\_REPORT | 13 | Asset information reporting | Base station- -> Main control board |
| EQUIP\_RESET | 14 | Equipment reset | Main control board- -> Base station |
| EQUIP\_RESET\_RSP | 15 | Device reset response | Base station- -> Main control board |
| EQUIP\_RESET\_ACCIDENT | 16 | Device accident reset notification | Base station- -> Main control board |
| SYNC\_MODE | 17 | Set synchronization mode | Main control board- -> Base station |
| SYNC\_MODE\_RSP | 18 | Set the synchronization mode response | Base station- -> Main control board |
| SYNC\_STATUS\_REQ | 19 | Synchronous status query | Main control board- -> Base station |
| SYNC\_STATUS\_REPORT | 20 | Synchronous status reporting | Base station- -> Main control board |
| GPS\_INFO\_REQ | 21 | The GPS synchronization information query | Main control board- -> Base station |
| GPS\_INFO\_REPORT | 22 | GPS synchronization information report | Base station- -> Main control board |
| PA\_SETTING (not supported) | 23 | PA set up | Main control board- -> Base station |
| PA \_ SETTING \_ RSP (not supported) | 24 | The PA sets up the response | Base station- -> Main control board |
| PA \_ STATUS \_ REQ (not supported) | 25 | The PA status query | Main control board- -> Base station |
| PA \_ STATUS \_ RSP (not supported) | 26 | PA status reply | Base station- -> Main control board |
| ALARM \_ REPORT (not supported) | 27 | Report to the police | Base station- -> Main control board |
| INIT\_CONFIG | 28 | initial configuration | Main control board- -> Base station |
| INIT\_CONFIG\_COMP | 29 | The initial configuration is complete | Base station- -> Main control board |
| RX\_LEV\_MIN\_CONFIG | 30 | Minimum access level setting | Main control board- -> Base station |
| RX\_LEV\_MIN\_CONFIG\_RSP | 31 | Minimum access level setting response | Base station- -> Main control board |
| LOCATION\_MODE\_SETTING | 32 | IMSI positioning mode setting | Main control board- -> Base station |
| LOCATION\_MODE\_SETTING\_RSP | 33 | IMSI positioning mode setting response | Base station- -> Main control board |
| I2C\_TYPE\_SETTING | 34 | The I2C type setting | Main control board- -> Base station |
| I2C\_TYPE\_SETTING\_RSP | 35 | The I2C type to set the response | Base station- -> Main control board |
| I2C\_INFO\_GET | 36 | The I2C power amplifier information is read | Main control board- -> Base station |
| I2C\_INFO\_GET\_RSP | 37 | The I2C power amplifier information | Base station- -> Main control board |
| I2C\_INFO\_WRITE | 38 | I2C power amplifier information write | Main control board- -> Base station |
| I2C\_INFO\_WRITE\_RSP | 39 | The I2C power amplifier information writes to the response | Base station- -> Main control board |
| NMM\_DELAY\_REPORT\_MSG | 40 | Position field strong report | Base station- -> Main control board |
| TX\_POWER\_STD\_CFG | 41 | Configure the STD transmission power | Main control board- -> Base station |
| TX\_POWER\_STD\_CFG\_RSP | 42 | Configure STD send power response | Base station- -> Main control board |
| TX\_POWER\_STD\_GET | 43 | Obtain the STD transmission power | Main control board- -> Base station |
| TX\_POWER\_STD\_GET\_RSP | 44 | Return to the STD transmission power | Base station- -> Main control board |
| TX\_POWER\_DBM\_STD\_GET | 45 | Get the STD DBM value | Main control board- -> Base station |
| TX\_POWER\_DBM\_STD\_GET\_RSP | 46 | Returns the STD DBM value | Base station- -> Main control board |
| TX\_POWER\_DBM\_CONFIG | 47 | configure DBM | Main control board- -> Base station |
| TX\_POWER\_DBM\_CONFIG\_RSP | 48 | Returns the configuration DBM result | Base station- -> Main control board |
| UEID\_FILTER\_CFG | 49 | Configure the UE filter mode | Main control board- -> Base station |
| UEID\_FILTER\_CFG\_RSP | 50 | Returns the configuration result | Base station- -> Main control board |
| SCAN\_MODE | 51 | Configure scan mode | Main control board- -> Base station |
| SCAN\_MODE\_RSP | 52 | Configure the scan-mode response | Base station- -> Main control board |
| UL\_ARFCN\_CFG | 53 | Upline frequency point configuration | Main control board- -> Base station |
| UL\_ARFCN\_CFG\_RSP | 54 | The upper frequency point configuration response | Base station- -> Main control board |
| RUN\_TIME\_PARA\_CFG | 55 | Runtime parameter configuration | Main control board- -> Base station |
| RUN\_TIME\_PARA\_CFG\_RSP | 56 | Runtime parameter configuration response | Base station- -> Main control board |
| INTERFERENCE\_ENABLE | 57 |  |  |
| LOCATION\_STMSI\_NOTIFY | 58 | STMSI Location configuration | Main control board- -> Base station |
| LOCATION\_STMSI\_NOTIFY\_RSP | 59 | STMSI Position the configuration response | Base station- -> Main control board |
| R ESET\_RESON | 62 | Reason for the last restart | Baseband- -> Master Control Board |
| SINR\_RPT\_FOR\_MC\_MODE | 63 | Report the I MSI and field strength information | Master control- -> Baseband plate |
| REPORT\_USING\_DL\_EARFCN | 64 | Report the current usage frequency point | Baseband- - -> Master control |
| NUM\_OF\_M SG1\_TO\_MSG5\_REQ | 65 | Message 1 to message 5 number query | Master control- -> Baseband plate |
| NUM\_OF\_M SG1\_TO\_MSG5\_REPORT | 66 | Message 1 to message 5 number is reported | Baseband Board-> master control |
| LOCATION\_LIST\_UNDER\_CONTROL | 69 | Configure the location list under the control system | Master control- -> Baseband plate |
| LOCATION\_LIST\_UNDER\_CONTROL\_RSP | 70 | Configure location list response under control | Baseband board->master control |

## Description of the business message type structure

All messages need to carry the following tag, sequence number, to determine whether lost, whether repeatedly received, sequence number self-add, different messages need different seqNo.

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 1 | uint32\_t | 1 | serial number |

### Device startup notification

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 21 | uint8\_t | 1 | Represents the frequency band supported by the base station |
| 22 | uint8\_t | 1 | Support for either the TDD or the FDD:  0：TDD  1：FDD |
| 17 | uint8\_t[] | 1 | An IP address, a string format, such as "192.168.178.212" |
| 40 | uint8\_t[] | 1 | MAC address, string format, such as "00:12:34:1d: 42:22" |

### Device starts notification response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | condition code:  0: Success  Other values reserved |

### heartbeat

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Heartbeat response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Start sweep frequency

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | PCI, number of PCI in the list, 0 indicates no PCI list |
| 3 | array of uint16\_t | 0…1 | PCI tabulation |
| 4 | uint8\_t | 1 | Represent the number of earfcn\_range |
| 5 | array of earfcn\_range | 1 | List of frequency point ranges. |
| 13 | uint16\_t | 1 | RSSI value: 0...128 |
| 26 | uint8\_t | 0…1 | Scan result reporting strategy:  0: Report all the results  1: For only scan to RSSI, but can not search the cell, and does not appear in the list of different frequency adjacent areas, do not report |

**earfcn\_range (Each frequency point is saved in a network byte order)**

| **Elements** | **Value** | **Type** | **Description** |
| --- | --- | --- | --- |
| start\_earfcn | 0..65535 | uint 16\_t | The beginning of the frequency point |
| end\_earfcn | 0..65535 | uint 16\_t | The end of the frequency |

### Start the sweep response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | Returns the result, and 0 indicates a success  1: Message resolution failed  2: Illegal parameters  3: Internal software error  4: Scan is in progress |

### Stop sweeping

After receiving the message, the base station stops the scan, but does not clear the result

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### Stop the sweep response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | Return status code, 0 indicates success, non-0 indicates error cause, error code is pending |

### Reset sweep frequency

After the base station receives this message, clear the sweep frequency result

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### Reset sweep response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | Return status code, 0 indicates success, non-0 indicates error cause, error code is pending |

### The sweep result is reported

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 10 | uint16\_t | 1 | Number of sweep results |
| 11 | array of sniffer\_result | 0…30 | Scan frequency results |

***sniffer\_result (each element is transferred in network byte order)***

| **element** | **short-cut process** | **type** | **remarks** |
| --- | --- | --- | --- |
| frequency point | 0..65535 | uint 16\_t |  |
| PCI | 0…503 | uint 16\_t | 0xffff, indicates no measurement |
| TAC |  | uint16\_t | 0xffff, indicates no measurement |
| RSSI | 0…128 | uint16\_t | 0xffff, indicates no measurement |

### Report the scan results in response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### The scan result is reported over

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### The scan result reports the end response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### Scan frequency status query

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### Scan frequency state reply

After receiving the reset request, the base station will return to the idle state and can start the next scan again

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 12 | uint8\_t | 1 | 0: Invalid  1: Sentence  2: In the RSSI measurement  3: In the community search  4: It indicates that the system information is being read  5: Done |

### Community configuration

Function: Configuration content includes: PLMNID, TAC, PCI, same frequency cell list and different frequency cell list

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 8 | uint16\_t | 1 | Lower line frequency point |
| 9 | uint16\_t | 1 | village PCI |
| 23 | uint32\_t | 0…n | PLMN list |
| 14 | uint16\_t | 1 | TAC |
| 2 | uint8\_t | 1 | PCI, number of PCI in the list, 0 indicates no PCI list |
| 3 | array of uint16\_t | 0…1 | The PCI list of the same-frequency cell area |
| 7 | uint8\_t | 1 | Change the number of times |
| 24 | array of uint16\_t | 0…1 | List of frequency points |
| 31 | uint16\_t | 0…1 | Upper frequency point, FDD configuration |
| 32 | int16\_t | 0…1 | transmitting power |
| 33 | uint8\_t | 0…1 | Do you want to enable measurement  0: Not enabled;  1: Enable |
| 34 | uint32\_t | 1 | Number of PLMN |

### Community configuration response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | 0 Represents success,  1: The resolution has failed  2: indicates that the frequency point is not supported  3: Internal software error |

### Community update

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 23 | uint32\_t | 0…n | PLMN list |
| 14 | uint16\_t | 0…1 | TAC |
| 8 | uint16\_t | 0…1 | Downlink EARFCN |
| 31 | uint16\_t | 0…1 | Upper frequency point, FDD configuration |
| 32 | int16\_t | 0…1 | transmitting power |
| 33 | uint8\_t | 0…1 | Do you want to enable measurement  0: Not enabled  1: Enable |
| 34 | uint32\_t | 1 | Number of PLMN |

### Community update response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | 0 indicates success, non-0 indicates error, and error code is pending |

### Detect code report

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 27 | uint8\_t | 1 | UEID quantity |
| 28 | array of uint8\_t | 1 | UEID bunch  form:  IMSIIMEIIMSIIMEI  If the IMEI does not exist, fill in the 0 |

### The detection code reports the response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### redirect

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 29 | uint8\_t | 1 | 0 indicates a closed redirection  Non-0 means open, and you need to carry the following message |
| 25 | uint8\_t | 0…1 | standard:  0：LTE ；  1：GERAN ；  2：UTRA-FDD ；  3：UTRA-TDD ；  4：CDMA2000-HRPD  5：CDMA2000-1XRTT  Do not carry when closing |
| 21 | uint8\_t | 0…1 | frequency band Band  LTE \ UTRA is not required when carry. Do not carry when closing |
| 7 | uint8\_t | 0…1 | Number of frequency points, do not need to carry when closed |
| 24 | array of uint16\_t | 0…1 | List of frequency points. Do not carry when closing |
| 30 | array of uint8\_t | 0…1 | IMSI bunch.  The UE that appears does not send a REJECT message,  When not carried means not sent to all UEs |
| 39 | array of uint8\_t | 0…1 | IMSI tabulation.  The UE configured in the list is not redirected |

### Redirect response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | 0 indicates success, non-0 indicates error, and error code is pending  1: Message resolution failed  2: failed the grammar check  3: Software error  4: When redirecting to 4G, the BBU is not configured with a working frequency point  5: redirect 4G, frequency point and working frequency band repeat |

### LTE interference detection

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |

### The LTE interference detection results

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 35 | uint32\_t | 1 | Number of probed results |
| 36 | uint8\_t[]  array of scan\_result | 0…1 | Detection results |

**Scan \_ result (saved in network byte order)**

| **Elements** | **Value** | **Type** | **Description** |
| --- | --- | --- | --- |
| plmn |  | uint8\_t[8] |  |
| tac |  | uint 16\_t |  |
| pci |  | uint16\_t |  |
| earfcn |  | uint16\_t |  |
| rsrq |  | uint32\_t |  |
| rsrp |  | uint32\_t |  |
| rssi |  | uint32\_t |  |
| priority |  | uint32\_t |  |

### LTE neighborhood message report

After the sweep, if there is relevant information to the community will be reported through the message. Report all the neighborhood information of one community at a time.

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 8 | uint16\_t | 1 | The frequency point of the sweep cell |
| 9 | uint16\_t | 1 | PCI in the sweep plot |
| 41 | u int8\_t | 1 | Signal intensity of the sweep plot |
| 43 | uint16\_t | 1 | Priority of the sweep cells  0xffff, indicates no measurement |
| 42 | array of inter \_freq\_info | …..030 | The neighborhood information of the sweep cell |

***inter \_ freq \_ info (each element is transferred in a network byte order)***

| **element** | **short-cut process** | **type** | **remarks** |
| --- | --- | --- | --- |
| frequency point | 0..65535 | uint 16\_t |  |
| Re-select priority | 1…7 | uint16\_t | 0xffff, indicates no measurement |

### Does not redirect the user configuration

In the case of open redirection to all users, do not redirect to some users

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 39 | array of uint8\_t | 0…1 | IMSI bunch.  If not carried, do not redirect the list |

### Does not redirect the user configuration response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | uint8\_t | 1 | 0 indicates success, non-0 indicates error, and error code is pending  1: Message resolution failed  2: failed the grammar check  3: Software error |

### The LTE neighborhood information report is over

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### LTE neighborhood information report end response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### SIB 3 in the LTE sweep plot

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 8 | uint16\_t | 1 | The frequency point of the sweep cell |
| 9 | uint16\_t | 1 | PCI in the sweep plot |
| 43 | uint16\_t | 1 | Priority of the sweep cells  0xffff, indicates no measurement |
| 44 | uint16\_t | 1 | Sweep the frequency of the communityThe ating parameters for re-selection of the same frequency cells  0xffff, indicates no measurement |
| 45 | uint16\_t | 1 | Sweep the frequency of the communityGating parameters for reselection measurements in different frequency cells  0xffff, indicates no measurement |

### SIB 4 in the LTE sweep plot

|  |  |  |  |
| --- | --- | --- | --- |
| **TAG price** | **type** | **The number of times it can appear** | **description** |
| 8 | uint16\_t | 1 | The frequency point of the sweep cell |
| 9 | uint16\_t | 1 | PCI in the sweep plot |
| 46 | array ofi ntra \_freq\_black\_pcis | 0…1 | Priority of the sweep cells  0xffff, indicates no measurement |

i ntra\_freq\_black\_pcis

| **element** | **short-cut process** | **type** | **remarks** |
| --- | --- | --- | --- |
| Pci origin | 0..503 | uint 16\_t | 0xffff, indicates no measurement |
| Pci finish | 0..503 | uint16\_t | 0xffff, indicates no measurement |

### SIB 5 in the LTE sweep plot

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 8 | uint16\_t | 1 | The frequency point of the sweep cell |
| 9 | uint16\_t | 1 | PCI in the sweep plot |
| 47 | array of i ntra \_freq\_sib5\_info | 0…1 | Priority of the sweep cells  0xffff, indicates no measurement |

i ntra\_freq\_sib5\_info

| **element** | **short-cut process** | **type** | **remarks** |
| --- | --- | --- | --- |
| Different frequently point | 0…65535 | uint 16\_t |  |
| Overfrequency heavySelect priority | 1..7 | uint16\_t | priority  0xffff, indicates no measurement |
| incoming level |  | uint16\_t | 0xffff, indicates no measurement |
| thresh-High |  | uint16\_t | 0xffff, indicates no measurement |
| thresh-Low |  | uint16\_t | 0xffff, indicates no measurement |
| array \_of\_black\_pci | 0…..30 |  |  |

array \_of\_black\_pci

| **element** | **short-cut process** | **type** | **remarks** |
| --- | --- | --- | --- |
| Pci origin | 0..503 | uint 16\_t | 0xffff, indicates no measurement |
| Pci finish | 0..503 | uint16\_t | 0xffff, indicates no measurement |

### L TE S IB Message reporting ends

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

## Operation maintenance message type structure description

All messages need to carry the following tag, sequence number, to determine whether lost, whether repeatedly received, sequence number self-add, different messages need different seqNo.

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 1 | uint32\_t | 1 | serial number |

### Set the system time

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 3 | uint64\_t |  | UTC |

### Set up the system time response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | Return status code, 0 indicates success, non-0 indicates error cause, error code is pending |

### Base station output power setting

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 4 | uint8\_t | 0…1 | Output power decay value (0-255)  255 indicates the closure |
| 18 | uint8\_t | 0…1 | Input power decay value (0-76) |

### Base station output power setting response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | Return the status code, and 0 indicates a success  1: Message resolution failed  2: Illegal parameters |

### Version query

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take TAG |  |  |  |

### Version reply

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 6 | array of uint8\_t | 1 | Software version number: Format is " xx.xx.xx ” |
| 51 | array of uint8\_t | 1 | Physical layer version number |
| 52 | array of uint8\_t | 1 | Kernel version number |
| 56 | array of uint8\_t | 1 | Hardware version number |

### Version upgrade request

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 7 | array of uint8\_t | 1 | Server address (username: password@x.x.x.x:port ) |
| 13 | array of uint8\_t | 1 | MD5 checksum |
| 28 | array of uint8\_t | 1 | document name |
| 35 | uint8\_t | 0…1 | 0: Use the FTP mode  1: Use the TFTP mode  FTP mode is used by default |

### Version upgrade response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | condition code:  0: Successful download; 1: Parsing error  2: Internal software error  3: Download failed |

### Version upgrade completed

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | condition code:  0: Success; non-0 indicates error, error code to be determined |

### Status query

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Status report

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 11 | uint32\_t | 1 | Software status:  0: BBU, is initializing  1: BBU, search for the master control board  2: BBUs are on standby  3: BBU is scanning  4. The BBU is configuring the community  5: The BBU is investigating the code  6: In BBU initial configuration |
| 12 | array of uint8\_t | 1 | Software status description string |
| 31 | uint8\_t | 1 | CPU temperature |
| 32 | uint8\_t | 1 | CPU utilization, percentage |
| 33 | uint8\_t | 1 | Memory usage, percentage |
| 34 | uint8\_t | 1 | Single board temperature |

### Asset Management Request (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Asset Management request response (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| indeterminate |  |  | Hardware number |
|  |  |  | BOM number |
|  |  |  | date of manufacture |
|  |  |  | Maintenance situation |
|  |  |  | TDD/FDD |

### Equipment reset

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 5 | array of uint8\_t | 1 | Reset Cause (string) |

### Device reset response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | condition code:  0: The message is successful, restart immediately  1: Message resolution failed;  2: Software error |

### Accident reset of equipment

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Set synchronization mode

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 14 | uint8\_t | 1 | condition code:  0: cnm (by default)  1：GPS  2: Mixed mode (preferred GPS, synchronization failure) |

### Set the synchronization mode response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | condition code:  0: Success  1: Failure |

### Synchronous status query

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### Synchronous status reporting

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 15 | uint8\_t | 1 | Type code:  0：cnm  1：GPS  2: Mixed mode (preferred GPS, synchronization failure)  3: nm auxiliary frequency correction |
| 16 | uint8\_t | 1 | 0: The synchronization is not started  1: Initial synchronization failed  2: Initial synchronization was successful  3: The CNM has failed  4: The CNM synchronization occurred successfully  5: Lost step  6: The GPS is not synchronized  7: GPS synchronization  8: Serial port initialization failed  9: Lock star failure  10: GPS and scan failure  11: The GPS is currently initializing |
| 38 | uint16\_t | 1 | frequency point |
| 39 | uint16\_t | 1 | PCI |
| 40 | uint16\_t | 1 | RSSI |
| 41 | uint16\_t | 1 | TAC |

### The GPS synchronization information query

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not take tag |  |  |  |

### GPS synchronization information report

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 17 | uint8\_t | 1 | GPS state:  0: valid  1: invalid |
| 48 | int32\_t | 1 | longitude |
| 49 | int32\_t | 1 | latitude |
|  |  |  | altitude |

### PA settings (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 19 | uint8\_t | 1 | action code:  1: Open the power  2: Turn off the power release  3: Reset the power  4: Set the decay value |
| 20 | uint8\_t | 0…1 | When the opcode is equal to 4, you need to carry the attenuation value, the range [0-50] |

### PA response (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | condition code:  0: Success  1: Failure |

### PA status query (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 21 | uint8\_t | 1 | Query object code:  1: temperature  2：SWR  3：ATT  4: Output power |

### PA status reply (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 21 | uint8\_t | 1 | Query object code:  1: temperature  2：SWR  3：ATT  4: Output power |
| 22 | int8\_t | 0…1 | Temperature, to be carried when the object code is equal to 1, range [-40,100] |
| 23 | uint8\_t | 0…1 | SWR, when the object code is equal to 2, the range is to be determined |
| 20 | uint8\_t | 0…1 | ATT, when the object code is equal to 3, you need to carry it, and the range is to be determined |
| 24 | uint8\_t | 0…1 | Output power, when the object code is equal to 4, you need to carry, range [0,45] |

### Alarm reporting (not supported)

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 25 | uint8\_t | 1 | 0: Report alarm  1: Cancel the alarm |
| 26 | uint32\_t | 1 | Alarm code |

### initial configuration

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 27 | uint8\_t | 0…1 | Bandwidth: 0 means 10M, 120M and 25M |
| 46 | int32\_t | 0…1 | Time ay domain (0.01us, 1 PPS delay versus frame projection) |
| 14 | uint8\_t | 0…1 | Sync mode:  0：CNM  1：GPS  2: Mixed mode (preferred GPS, synchronization failure)  3: nm auxiliary frequency correction |
| 47 | uint8\_t | 0…1 | Whether to save frequency bias |
| 50 | uint8\_t | 1 | Work frequency band |

### The initial configuration is complete

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success |

### Minimum receiving level setting

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 29 | int16\_t | 1 | RxLevMin  Range: -140- -40 |
| 30 | uint8\_t | 1 | RxLevMinOffset  Range: 1-8 |

### The minimum receiving level is set for the response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: Syntax check failed  3: Internal software error |

### IMSI positioning mode setting

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 36 | uint8\_t | 1 | Whether to open  0: Close  1: Open |
| 37 | array of uint8\_t | 0…1 | IMSI tabulation. It can be equipped with 1,000 pieces. There are limits to the base station capacity. A 15-bit string. Do not carry when closing |

### IMSI positioning mode setting response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure |

### The I2C type setting

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 42 | uint8\_t | 1 | 0: Type 0  1: Type 1  2: Type 2 |

### The I2C type to set the response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid  3: Internal software error |

### The I2C power amplifier information is read

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 43 | uint8\_t | 1 | address |
| 45 | uin8\_t | 1 | The length of the acquisition |

### The I2C power amplifier information

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 44 | array of uint8\_t | 0…1 | Content (bring the content when the return code is 0) |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid  3: Software error |

### I2C power amplifier information write

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 43 | uint8\_t | 1 | address |
| 44 | array of uint8\_t | 1 | content |

### The I2C power amplifier information writes to the response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Configure the STD transmission power

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 57 | uint8\_t | 1 | transmitting power |

### Configure STD send power response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Obtain the STD transmission power

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not have |  |  |  |

### Return to the STD transmission power

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 57 | uint8\_t | 1 | transmitting power |

### Get the STD DBM value

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not have |  |  |  |

### Returns the STD DBM value

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 58 | int8\_t | 1 | transmitting power DBM |

### configure DBM

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 58 | int8\_t | 1 | Emission power DBM, range 0 – 43, a value of 127 indicates off transmit power |

### Returns the configuration DBM result

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Configure the UE filter mode

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 59 | uint8\_t | 1 | Is enabled  0: Not enabled  1: Enable |
| 60 | uint32\_t | 0…1 | Timer length, measured in, in seconds |

### Returns the configuration UE filter mode results

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Configure the Scan mode

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 73 | uint32\_t | 1 | Timer length, measured in, in seconds |
| 72 | uint8\_t[] | 0…n | List of following frequency points |

### Returns the configuration Scan, the mode result

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Upline frequency point configuration

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 71 | uint16\_t | 1 | Up-line frequency point |

### Returns the configuration result of the upper frequency point

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure  2: The parameter is invalid |

### Runtime parameter configuration

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 74 | uint8\_t | 0…1 | Configuring the working mode  0: detection, code mode  1: Blacklist mode  2: whitelist mode  The list is sent through the IMSI positioning mode setting message. You need to configure the working mode first, and then install the tag 36 positioning switch and the IMSI list. |
| 75 | uint8\_t | 0…1 | Whether to enable RAN share or not  0: Not enabled  1: Enable |
| 76 | uint8\_t | 0…1 | Carrier type of the nas reject.  0: The default cause when the tag 75 is 0  1: Unicom  2: Telecom  3: Mobile  With the tag 77 needs to appear in pairs |
| 77 | uint8\_t | 0…1 | nas cause 。With the tag 76 needs to appear in pairs |
| 86 | uint8\_t | 0…1 | Whether to start tac auto update under black and white list  0: Not enabled  1: Enable |
| 87 | uint8\_t | 0…1 | Carry the field strength when pushing the imsi  0: Not enabled  1: Enable |

### Runtime parameter response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 78 | uint32\_t | 1 | The number of failed parameters corresponding to the tag, of the |
| 79 | uint8\_t | 0…n | The tag value corresponding to the failed parameter |

### Position field strong report

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 53 | array of uint8\_t | 1 | IMSI |
| 54 | uint16\_t | 1 | time delay |
| 55 | uint32\_t | 1 | SINR |
| 70 | uint16\_t | 1 | RSRP |
| 71 | uint16\_t | 1 | Up-line frequency point |
| 85 | uint16\_t | 1 | CRNTI |

### STMSI Location configuration

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 81 | array of uint8\_t | 1 | STMSI 。1-byte mmec, 4-bytes mtmsi, for a total of 5 bytes.16 The input code stream. |

### STMSI Position the configuration response

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | Return value: 0 indicates success |

### The last restartcause

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 84 | uint8\_t | 1 | 0: Upgrade  1：Software restart  2: Unknown reasons |
| 83 | A rray ofuint8\_t | 0…n | Description of the restart reason |

### Query the number of access to messages 1 to 5

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| not have |  |  |  |

### Report the number of messages 1 to message 5

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 90 | u int 32\_t | 1 | Message 1 number |
| 91 | u int 32\_t | 1 | Message 2 number |
| 92 | u int 32\_t | 1 | Message 3 number |
| 93 | u int 32\_t | 1 | Message 4 number |
| 94 | u int 32\_t | 1 | message 5number |

### Report the I MSI and field strength information

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 53 | array of uint8\_t | 1 | i msi |
| 55 | u int 32\_t | 1 | field strength |
| 85 | uint16\_t | 1 | c rnti |

### Report the current usage frequency point

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 88 | u int 16\_t | 1 | Lower line frequency point |

### Configure the location list under the control system

|  |  |  |  |
| --- | --- | --- | --- |
| 36 | uint8\_t | 1 | Whether to open  0: Close  1: Open |
| 37 | array of uint8\_t | 0…1 | IMSI tabulation. It can be equipped with 1,000 pieces. There are limits to the base station capacity. A 15-bit string. Do not carry when closing |

### Configure location list response under control

| **TAG price** | **type** | **The number of times it can appear** | **description** |
| --- | --- | --- | --- |
| 2 | uint8\_t | 1 | return code  0: Success  1: Analyze failure |

## System alarm (not supported)

#### general format

Composition of the alarm code:

|  |  |  |  |
| --- | --- | --- | --- |
| The highest three:  0: One-time alarm  1: Persistent alarm | Three: level  0：minor  1：major  2：critical | 10-bit: Device type  0： | 16 Sites:  report an emergency |

### Software alarm

### Hardware alarm

| **order number** | **Alarm code (24 bits low)** | **explain** | **type** |
| --- | --- | --- | --- |
| 1 | 0x01 | PA\_OVER\_POWER | Continuous alarm |
| 2 | 0x02 | PA\_OVER\_TEMP | Continuous alarm |
| 3 | 0x03 | PA\_SWR | Continuous alarm |
| 4 | 0x04 | PA\_FAULT\_PA | Continuous alarm |
| 5 | 0x05 | PA\_FAULT\_LNA | Continuous alarm |
| 6 | 0x06 | PA\_SE\_PA | Continuous alarm |
| 7 | 0x07 | PA\_SE\_LNA | Continuous alarm |
| 8 | 0x08 | GPS\_SERIAL\_PORT\_INVALID |  |
| 9 | 0x09 | GPS\_INVALID |  |