

AT Command Manual

V1.0

Notice:

The AT Command may have a little different for different model/version, this AT command document is a basic description of the AT command for your reference.

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1. AT+CFUN: Wireless link enable switch configuration

Command	Possible response(s)
AT+CFUN=[<fun>[,<rst>]]	
AT+CFUN?	+CFUN:<fun>
AT+CFUN=?	+CFUN:(list of supported<fun>s),(list of support<rst>s)

Description

Run the command to set the MT's <fun> function level, full functionality is the highest level, minimum Functionality is the minimum level, there is a user-defined level between the highest and lowest levels, the < RST > parameter is valid if the user defines the level.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<fun>: integer type

0: Minimum Functionality

1: Full functionality

<rst>: integer type

0: do not reset the MT before setting it to <fun> power level.

Example

```
AT+CFUN=1<CR>
<CR><LF>OK<CR><LF>
AT+CFUN?<CR>
<CR><LF>+CFUN:1<CR><LF>
<CR><LF>OK<CR><LF>
AT+CFUN=?<CR>
<CR><LF>+CFUN:(0~1)<CR><LF>
<CR><LF>OK<CR><LF>
```

2. AT+CMEE: Indicates that the AT command is abnormal

Command	Possible response(s)
AT+CMEE=[<n>]	
AT+CMEE?	+CMEE:<n>
AT+CMEE=?	+CMEE:(list of supported<n>s)

Description

Run this command to enable or disable the format of the final ERROR report. When MT is turned on, the format of the ERROR report is +CME ERROR:<err> instead of general ERROR. However, if the ERROR is caused by invalid parameter values or syntax errors, the ERROR is normally reported as well.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<n>: integer type

0: disable +CME ERROR:<err> result code and use ERROR instead

1: enable +CME ERROR:<err> result code and use numeric <err> value.

2: enable +CME ERROR:<err> result code and use verbose <err> value.

Example

```
AT+CMEE=1<CR>
<CR><LF>OK<CR><LF>
AT+CMEE?<CR>
<CR><LF>+CMEE:1<CR><LF>
<CR><LF>OK<CR><LF>
AT+CMEE=?
<CR><LF>+CMEE:(0-2)<CR><LF>
<CR><LF>OK<CR><LF>
```

3.AT^DACS: access status

Command	Possible response(s)
AT^DACS=<n>	
AT^DACS?	^DACS: <n>,<state>
AT^DACS=?	^DACS: (list of supported <n>s)

Description

The DACSI: <state> command is used to set the status of the DACSI: <state> report. The status of the DACSI: <state> report is reported by default when the DACSI: <state> is started. Active reporting When this function is enabled, the UE proactively reports the access status indicator after successful access. After the network of the main control node is successfully deployed, the main control node is successfully connected. Query commands are used to query the status of the current reporting switch and access status. Test commands are used to test whether the command is supported and query the value range of <n> parameters.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<n>: integer type: indicates the status of the proactively reported switch

0: shut down

1: open

2: queries the current access status

<state>: integer type, indicating the access status

Zero: no access

1: have access

Example

```
AT^DACS=1<CR><LF>
<CR><LF>^DACSI: 0<CR><LF>
<CR><LF>OK<CR><LF>
<CR><LF>^DACSI: 1<CR><LF>
AT^DACS?<CR><LF>
<CR><LF>^DACS: 1, 1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DACS=?<CR><LF>
<CR><LF>^DACS: (0-2)<CR><LF>
<CR><LF>OK<CR><LF>
```

4.AT^DRPC: Connected wireless parameters take effect in real time

Command	Possible response(s)
AT^DRPC=<freq>[,bandwidth] [,<cellid>]	
AT^DRPC?	^DRPC: (<freq>,<bandwidth>), (<scellfreq>,<scellBandwidth>), cellid
AT^DRPC=?	^DRPC: (list of supported <freq>s), (list of supported <bandwidth>s), (list of supported <cellid>s)

Description

Run commands to set parameters in the access state.

Query commands are used to query the current parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

NOTE: If CA is supported, cellid must be set and cannot be empty.If CA is not supported, cellid cannot be set.

For the default preset frequency points, see the appendix. The preset frequency points must be in the preset frequency points list. If they are not in the list, setting failure is displayed.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<freq>: integer type, indicating the point frequency, in the unit of 100KHz (5660-6780, 14200-15300)

<bandwidth>: integer type: indicates the bandwidth

Zero: 1.4 M

1: 3M

2: 5M

3: 10M

4: 15M(not supported)

5: 20M

<cellid> integer type , Physical cell id

0: Pcell primary cell

1: Scell second cell

Other value reserved.

Example

The AT ^ DRPC = 14300,3,0 < CR > < LF >

< CR > < LF > OK < CR > < LF >

AT^DRPC?< CR > < LF >

< CR > < LF > ^ DRPC: (14300, 3), 0655 (35), and 0 < CR > < LF >

< CR > < LF > OK < CR > < LF >

The AT ^ DRPC = 14300,5,1 < CR > < LF >

AT^DRPC?< CR > < LF >

< CR > < LF > ^ DRPC (14300, 3), (14600, 3), 1 < CR > < LF >

< CR > < LF > OK < CR > < LF >

AT^DRPC=?< CR > < LF >

< CR > < LF > ^DRPC:(5660-6780, 14200-15300),(0-5) ,(0-1)< CR > < LF >

< CR > < LF > OK < CR > < LF >

5.AT^DRPS: Disconnected wireless parameter configuration

Command	Possible response(s)
AT^DRPS=<freq>,<bandwidth>,<power>[,<cellid>]	
AT^DRPS?	^DRPS: (<freq>,<bandwidth>,<power>), (<scellfreq>,<scellPower>),cellid
AT^DRPS=?	^DRPS: (list of supported <freq>s), (list of supported <bandwidth>s, (list of supported <power>s, (list of supported <cellid>s)

Description

The command is used to save the parameters to NVRAM, which will take effect after the flight.

Query commands are used to query the current NVRAM parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

NOTE: If CA is supported, cellid must be set and cannot be empty.If CA is not supported, cellid cannot be set.

For the default preset frequency points, see the appendix. The preset frequency points must be in the preset frequency points list. If they are not in the list, setting failure is displayed

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<freq>: integer type, indicating the point frequency, in the unit of 100KHz (5660-6780, 14200-15300)

<bandwidth>: integer type: indicates the bandwidth

Zero: 1.4 M

1: 3M

2: 5M

3: 10M

4: 15M(not supported)

5: 20M

<power>: "integer" type, indicating power, in dBm, ranging from "-40" to "40"

<cellid> integer type , Physical cell id

0: Pcell primary cell

1: Scell second cell

Other value reserved.

Example

The AT ^ DRPS = 14300, 3, '40 ", 0 < CR > < LF >

< CR > < LF > OK < CR > < LF >

AT^DRPS?< CR > < LF >

< CR > < LF > ^ DRPS: (14300, 3, '40 "), (0655, 35, "15"), and 0 < CR > < LF >

< CR > < LF > OK < CR > < LF >

The AT ^ DRPS = 14300, 5, 10 ", "1 < CR > < LF >

< CR > < LF > OK < CR > < LF >

```

AT^DRPS?<CR><LF>
<CR><LF> ^ DRPS (14300, 3, '40 " ), (14500, 3, "10" ), 1 <CR> <LF >
<CR><LF>OK<CR><LF>
AT^DRPS=?<CR><LF>
<CR> <LF > ^ DRPS: (5660-6780, 14200-15300), (0 to 5), (" - "~ 40" 40 " ), (0-1) <CR> <LF >
<CR><LF>OK<CR><LF>

```

6.AT^DRPR: Wireless parameter reporting

Command	Possible response(s)
AT^DRPR=<n>	
AT^DRPR?	^DRPR: <n>
AT^DRPR=?	^DRPR: (list of supported <n>s)

Description

Run the following command to set local wireless parameters for reporting ^DRPRI:

```

<cell_index>,<earfcn>,<cell_id>,<NodeFlag>,<IPV4
address>,<SN >,<index>,<rssi>,<pathloss>,<rsrp>,<snr>,<distance>,<tx_power>,<rx_throughput_total_tbs>
,<rx_tb_error_per>,<max_data_per_second>,< tx_mcs >,< tx_rb_num >,< rx_mcs >,< rx_rb_num >,<
wide_cqi >,< ri >,< rx_tb_error_percent_total >,< max_snr >,< minr > switch state, The initial startup is
disabled by default.

```

Query commands are used to query the current parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<n>: integer type: indicates the status of the proactively reported switch

0: shut down

1: open

2: queries the reported value

<cell_index>: INTEGER type, indicating primary cell or secondary cell

Zero: Pcell (Main area)

1: Scell (auxiliary cell)

<earfcn>: integer type

<cell_id>: integer type

< NodeFlag >: integer type, which identifies whether the neighboring one-hop node is a one-way node

0: dual-pass node

1: single-pass node

<IP address> String type. The value consists of four groups of digits (0-255) separated by periods (.) in the format of A1.A2.A3.A3.A4.

<SN>: indicates a one-hop neighbor node. The value is a 7-digit hexadecimal number ranging from 0000000 to FFFFFFFF

<index>: integer type, indicating the port index number

1: port 1

2: port 2

< rSSI >: string type, dBm, rSSI measurement of port 1 and port 2 on a hop adjacent node, format "±value"(except "0")

"-141" to "-44": indicates the RSSI measurement value

" + 32767" : invalid values
 <pathloss>: integer type, pathloss value,dBm
 0 to 191: road damage
 32767: invalid values
 < RSRP >: string type, dBm, RSRP measurement value, format "±value"(except "0")
 "-141" to "-44": RSRP measurement value
 "+ 32767" : invalid values
 < SNR >: string type,SNR measurement value. Format: "±value"(except "0")
 "-50" to "+50": SNR measurement value
 "+ 32767" : invalid values
 < distance >: integer type, distance from the peer node, in meters, range [0, 5000]
 < tx_power >:string type, transmission power sent by this node to each one-hop neighbor node, in dBm, in the format of "±value"(except "0").
 "-50" to "+50": indicates the transmitted power
 "+ 32767" : invalid values
 < rx_throughput_total_tbs > : integer type, receives the throughput information, the total size of TB in the reporting period, the unit of Byte, the range of [0,200000]
 < rx_tb_error_per >: INTEGER type, receiving Bler structure, percentage of error bits in the reporting period, range from 0 to 100
 < max_data_per_second >: integer type: indicates the theoretical peak rate when the packet is filled.
 < tx_MCS >: integer type specifies the instantaneous MCS of the last data sent within the reporting period. The value ranges from 0 to 29.
 <tx_rb_num>: integer type specifies the instantaneous rb_num of the last data sent within the reporting period. The value ranges from 6,100.
 < rx_MCS >: integer type specifies the last instantaneous MCS received from a neighboring node in the reporting period. The value ranges from 0 to 29.
 <rx_rb_num>: integer type specifies the instantaneous rb_num of a neighboring node received for the last time in the reporting period. The value ranges from 6,100.
 < wiDE_CQI >: integer type, indicating the received broadband CQI of the neighboring node. The value ranges from 1 to 15, and the average value is reported within a period
 <ri>: integer type, rank ri with neighboring nodes. The value range is [1,2]. Ri =2 indicates that MIMO is enabled.
 < rx_tb_percent_total >: integer type, after entering the connection state, receive the cumulative bit error rate corresponding to the neighboring node data, range [0,100]
 <max_snr>: integer type, the maximum SNR in 1000ms of the two antennas corresponding to the data received from the adjacent node. The value range is [-40,40].
 <minr>: integer type, the minimum SNR in 1000ms for the two antennas corresponding to the data received from adjacent nodes, [-40,40]

Example

```
AT^DRPR=1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DRPR?<CR><LF>
<CR><LF>^DRPR: 1<CR><LF>
<CR><LF>OK<CR><LF>
<CR><LF>^DRPRI: 0,1,1000,16, "192.168.1.13", 4020096, "- 46", 20, "60", "195", "0", 4000, "- 36",
10000000500000,10,1,15,3,15 < CR > < LF >
< CR > < LF > ^ DRPRI: 1, 2100 dec, "192.168.1.13", 4020096, "106", 115, "100", "194", "+ 20, 4000," - 36
", 10000000500000,10,2, 15,3,15 < CR > < LF > the AT ^ DRPR =?<CR><LF>
<CR><LF>^DRPR: (0-2)<CR><LF>
<CR><LF>OK<CR><LF>
```

7.AT^DAOCNDI: user frequency band configuration

Command	Possible response(s)
---------	----------------------

AT^DAOCNDI=<band_bitmap> [,<scell_band_bitmap>]	
AT^DAOCNDI?	^DAOCNDI: <band_bitmap> , <scell_band_bitmap>
AT^DAOCNDI=?	

Description

This command is used to set the working frequency band of the AD hoc network communication device. Query commands are used to query information about the working frequency band of AD hoc communication devices.

Test commands are used to test whether the command is supported.

NOTE: If CA is supported, scell_band_bitmap must be set. If CA is not supported, scell_band_bitmap cannot be set.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<band_bitmap>: string type(without double quotes), in hexadecimal format, the rightmost bit is the least significant bit (LSB/bit0).

Bit0: (reserved)

Bit2: 1.4g band: [1420,1530]MHz, corresponding to band66

Bit3: (reserved)

Bit4: (reserved)

Bit5: (reserved)

Bit6: (reserved)

Bit7: (reserved)

Bit8: (reserved)

Bit9: (reserved)

Bit10: 600M band: [566,678] MHz, corresponding to Band71

<scell_band_bitmap>: string type(without double quotes), in hexadecimal format, the right most bit is the least significant bit (LSB/bit0).

Bit0: (reserved)

Bit2: 1.4g band: [1420,1530]MHz, corresponding to band66

Bit3: (reserved)

Bit4: (reserved)

Bit5: (reserved)

Bit6: (reserved)

Bit7: (reserved)

Bit8: (reserved)

Bit9: (reserved)

Bit10: 600M band: [566,678] MHz, corresponding to Band71

Example

```
AT^DAOCNDI=04<CR><LF>// Set pcell band as 1.4g <CR><LF>OK<CR><LF>
```

```
AT^DAOCNDI?<CR><LF>
```

```
<CR><LF>^DAOCNDI: 04<CR><LF>
```

```
<CR><LF>OK<CR><LF>
```

```
AT^DAOCNDI=?<CR><LF>
<CR><LF>OK<CR><LF>
```

8.AT^DAPI: Access key configuration

Command	Possible response(s)
AT^DAPI=<password_id>	
AT^DAPI?	^DAPI: <password_id>
AT^DAPI=?	

Description

Setting commands are used to set the PASSWORD ID of the AD hoc network device.

Query commands are used to query the PASSWORD ID of the AD hoc network device.

Test commands are used to test whether the command is supported.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<password_id>: string type, in HEX format

The length of the input parameter configuration must be even.

Example

```
The AT ^ fbfa DAPI = "30313233" < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT^DAPI?<CR><LF>
< CR > < LF > ^ DAPI: "30313233 fbfa" < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT^DAPI=?<CR><LF>
< CR > < LF > OK < CR > < LF >
```

9.AT^DIPAN: Query the SN list of all reachable nodes

Command	Possible response(s)
AT^DIPAN=<n>	^DIPAN: <m>[,<SN_1>[,<SN_2>,...[,<SN_m>]]]
AT^DIPAN?	^DIPAN: <n>
AT^DIPAN=?	^DIPAN: (list of supported <n>s)

Description

Run this command to enable or disable active SN reporting for reachable nodes. This function is enabled by default. If this function is enabled, the current reachable node information will be reported once. Actively to open, the current of node information is changed, modem active reporting ^ DIPANI: < m > [, < SN_1 > [, SN_2 > ,... [, < SN_m >]]].

Query commands are used to query the status of the reporting switch.

Test commands are used to test whether the command is supported and query the value range of <n>.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Unsolicited result code

^DIPANI: <m>[,< SN_1>, [,SN_2>,...[,<SN_m>]]]

Defined values

<n>: integer type: indicates the status of the proactively reported switch

0: shut down

1: open

2: Queries information about the current reachable nodes

<m>: integer type, indicating the number of reachable nodes

<SN>: a hexadecimal number of 7 digits ranging from 0000000 to FFFFFFFF

Example

```
AT^DIPAN=1<CR><LF>
<CR><LF>^DIPAN: 0<CR><LF>
<CR><LF>OK<CR><LF>
<CR><LF>^DIPANI: 1, A020001<CR><LF>
<CR><LF>^DIPANI:2, A020001, A021201<CR><LF>
AT^DIPAN?<CR><LF>
<CR><LF>^DIPAN: 1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DIPAN=?<CR><LF>
<CR><LF>^DIPAN: (0-2)<CR><LF>
<CR><LF>OK<CR><LF>
```

10. AT^DUBR: Com-uart baud rate configuration

Command	Possible response(s)
AT^DUBR=<rate>	
AT^DUBR?	^DUBR: <rate>
AT^DUBR=?	^DUBR: (list of supported <rate>s)

Description

Run this command to set the baud rate parameters of the COM-UART port.

Query commands are used to query the current parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<rate>: integer type, indicating the baud rate of the UART port. The values are as follows:

1200: 1200 byte/s

2400: 2400 byte/s

4800: 4800 byte/s

9600: 9600 byte/s

19200: 19200 byte/s

28800: 28800 byte/s

38400: 38400 byte/s

57600: 57600 byte/s
 76800: 76800 byte/s
 115200: 115200 byte/s

Example

```
AT^DUBR=57600<CR>
<CR><LF>OK<CR><LF>
AT^DUBR?<CR><LF>
<CR><LF>^DUBR: 57600<CR><LF>
<CR><LF>OK<CR><LF>
AT^DUBR=?<CR>
< CR > < LF > ^ DUBR: (1200240 0480 0960 0192 00288 00384 00576 00768 00115 200) < CR > < LF >
<CR><LF>OK<CR><LF>
```

11. AT^DSONRIRPT: Switch of route information reporting

Command	Possible response(s)
AT^DSONRIRPT=<operation_type>	^DSONRIRPT: <routeinfotype>,<destSN>,<hop>,<nextSN>
AT^DSONRIRPT=?	(list of supported <operation_type>s)

Description

Run these commands to enable or disable the active route report function or query the current route information. When the route information reporting switch is enabled, the terminal reports ^DSONRIRPTI: <routeInfoType >,<destSN>,<hop>,<nextSN> whenever the route information changes. Test commands are used to test whether the command is supported and query the value range of <operation_type>

Final result code

OK

Successful.

ERROR or +CME ERROR: <err>

Command performing failed.

Unsolicited result code

^DSONRIRPTI: <routeinfotype>,<destSN>,<hop>,<nextSN>

this unsolicited result code is returned when the route information changed.

Defined values

<operation_type>: integer type, which identifies the type of operation to be performed

0: Close route info report Disables active route information reporting

1: Open route info Report Enables active route information reporting

2: Query route info Queries routing information

< routeInfoType > : integer type, indicating the type of the route information

0: indicates a dynamic routing table. Routing algorithms are generated

1: static routing table, which is manually configured and generated

<destSN> : indicates the SN of the destination node. The value ranges from 0000000 to FFFFFFFF, for example, 4020006.

<nextSN> : indicates the SN of the next hop node. The value is a 7-digit hexadecimal number ranging from 0000000 to FFFFFFFF, for example, 4020006.

<hop>: integer type, indicating the number of hops

Example

```
AT^DSONRIRPT=?<CR>
```

```

<CR><LF>^DSONRIRPT: (0-2)<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONRIRPT=1<CR>
<CR><LF>OK<CR><LF>
<CR><LF>^DSONRIRPTI: 0, 4134567412345 <CR><LF>
AT^DSONRIRPT=2<CR>
<CR><LF>^DSONRIRPT: 0, 4134567412345 <CR><LF>
<CR><LF>OK<CR><LF>

```

12. AT^DSONRICFG: fixed route management configuration

Command	Possible response(s)
AT^DSONRICFG=<Op>,<DstSN>,<NxtSN>	
AT^DSONRICFG=?	(list of supported <Op>s)

Description

The <DstSN> parameter is used as the identifier of each route record. That is, if the same <DstSN> route record already exists when you add a route record, the original record will be overwritten. If the same <DstSN> route record does not exist when you delete a route record, the deletion is ignored and success is displayed. Added routing entries to support saving in NVRAM.

Test commands are used to test whether the command is supported and query the range of the <Op> parameter

Note: Add each route entry to a destination node. You can only set the number of next hop nodes to 1.

Final result code

OK

Successful.

ERROR or +CME ERROR: <err>

Command performing failed.

Defined values

<Op>: INTEGER type, which identifies the operation type to be performed

0: Adds a route record

1: deletes a route record

2: Deletes the entire static routing table. In this operation, delete all routes and restart the static routes or save the original static routes

3: Deletes the entire static routing table. After the restart, static routes are empty

<DstSN>: indicates the SN of the destination node. The SN of the destination node is a 7-digit hexadecimal number ranging from 0000000 to FFFFFFFF, for example, 4020006.

<NxtSN>: indicates the SN of the next hop node. The value is a 7-digit hexadecimal number ranging from 0000000 to FFFFFFFF, for example, 4020006.

Example

The AT ^ DSONRICFG = 0400001401210 < CR >

```

<CR><LF>OK<CR><LF>

```

```

AT^DSONRICFG=1, 4002001<CR>

```

```

<CR><LF>OK<CR><LF>

```

```

AT^DSONRICFG=?<CR>

```

```

<CR><LF>^DSONRICFG: (0-3)<CR><LF>

```

```

<CR><LF>OK<CR><LF>

```

13. AT^DSONMIRPT: Reports information about the logical main control node

Command	Possible response(s)
---------	----------------------

AT^DSONMIRPT=<n>	^DSONMIRPT: <MstrSN>
AT^DSONMIRPT?	^DSONMIRPT: <n>
AT^DSONMIRPT=?	(list of supported <Op>s)

Description

Run commands to enable or disable the active information reporting function of the main control node or query the information about the current main control node. When the main control node information reporting switch is turned on, the terminal reports ^DSONMIRPTI: <MstrSN> whenever the main control node information changes.

Query commands are used to query the status of active information reporting on the current main control node.

Test commands are used to test whether the command is supported and query the range of the <Op> parameter

Final result code

OK

Successful.

ERROR or +CME ERROR: <err>

Command performing failed.

Unsolicited result code

^DSONMIRPTI: <MstrSN>

this unsolicited result code is returned when the master node information changed.

Defined values

<n>: integer type, which identifies the operation type

0: Disables the active information reporting function of the main control node

1: Enable the active information reporting function of the main control node

2: Queries information about the current main control node

<MstrSN>: indicates the SN of the main control node. The value is a 7-digit hexadecimal number ranging from 0000000 to FFFFFFFF, for example, 4020006.

Example

```
AT^DSONMIRPT?<CR>
<CR><LF>^DSONMIRPT: 0<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONMIRPT=1<CR>
<CR><LF>OK<CR><LF>
<CR><LF>^DSONMIRPTI: 4023456<CR><LF>
AT^DSONMIRPT=2<CR>
<CR><LF>^DSONMIRPT: 4023456<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONMIRPT=?<CR>
<CR><LF>^DSONMIRPT: (0-2)<CR><LF>
<CR><LF>OK<CR><LF>
```

14. AT^DSONIPNN: Query the IP address of the network node

Command	Possible response(s)
AT^DSONIPNN=<Mode>	^DSONIPNN: <Num>,<RecvMsgAll>[,<SN1>[,<SN2>,...[,<SNm>]] When Mode=3 ^DSONIPNN: <Num>,<RecvMsgAll>

	[,<SN1>,<IPAddr1> [, SN2 >,< IPAddr2 >,... [,<SNm>,<IPAddrm>]]]
AT^DSONIPNN?	^DSONIPNN: <Mode>
AT^DSONIPNN=?	^DSONIPNN: (list of supported <Mode>s)

Description

Run these commands to enable or disable active node information reporting. When the reporting switch is turned on, the terminal reports ^DSONIPNNI: <Num>,<RecvMsgAll>[,<SN1> [,SN2>...[,<SNm>]] whenever the network node information changes in the entire network.

Query commands are used to query the status of active node reporting.

Test commands are used to test whether the command is supported and the range of query parameters.

When mode is 0 or 1, the parameters need to be stored in NVRAM, which will take effect after the flight.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Unsolicited result code

^DSONIPNNI: <Num>,<RecvMsgAll>[,<SN1> [,SN2>...[,<SNm>]]]

Defined values

<Mode>: integer type: indicates the status of the switch that is proactively reported

0: shut down

1: open

2: queries the information about the current nodes on the network

3: Query the IP address and SN of the current node on the network

<Num>: integer type, which indicates the number of nodes in the network

<RecvMsgAll> : integer type, indicating whether the information of the entire network is collected (SIB1 messages may be segmtd, and the reported information needs to be indicated)

0: Not collected

1: Collect everything

<SN>: indicates the SN of the network node. The value is a hexadecimal number ranging from 0000000 to FFFFFFFF, for example, 4020006

<IPAddr>: indicates the IPV4 address. The value consists of four groups of digits (0-255) separated by periods (.) in the format of A1.A2.A3.A3.A4.

Example

```
AT^DSONIPNN?<CR><LF>
```

```
<CR><LF>^DSONIPNN: 0<CR><LF>
```

```
<CR><LF>OK<CR><LF>
```

```
AT^DSONIPNN=1<CR><LF>
```

```
<CR><LF>OK<CR><LF>
```

```
<CR><LF>^DSONIPNNI: 1, 1, A023456<<CR><LF>
```

```
<CR><LF>^DSONIPNNI: 2, 1, A023456, A120345<<CR><LF>
```

```
AT^DSONIPNN=3<CR><LF>
```

```
<CR><LF>^DSONIPNN: 2, 1<CR><LF>
```

```
A023456, 170.168.1.56 < CR > < LF >
```

```
A120345, 170.168.1.45 < CR > < LF >
```

```
AT^DSONIPNN=?<CR><LF>
```

```
<CR><LF>^DSONIPNN: (0-3)<CR><LF>
<CR><LF>OK<CR><LF>
```

15. AT^DSONNMF: subnet merge control switch

Command	Possible response(s)
AT^DSONNMF=<fun>	
AT^DSONNMF?	^DSONNMF: <fun>
AT^DSONNMF=?	^DSONNMF: (list of supported <fun>s)

Description

Run this command to enable or disable the subnet merging function.

Query commands are used to query whether the subnet merge function is enabled.

The set parameters are stored in NVRAM and take effect after they are saved in and out of flight.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<fun>: INTEGER type, which indicates whether the subnet merging function is enabled or disabled. Range: 0: disabled. 1: Open.

Example

```
AT^DSONNMF=1<CR>
<CR><LF>OK<CR><LF>
AT^DSONNMF?<CR>
<CR><LF>^DSONNMF: 1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONNMF=?<CR>
<CR><LF>^DSONNMF: (0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

16. AT^DSONNST: network stability time

Command	Possible response(s)
AT^DSONNST=<time>	
AT^DSONNST=?	^DSONNST: <time>
AT^DSONNST?	

Description

Run this command to set the step for stabilizing a subnet. The actual time for stabilizing a subnet is 15 seconds.

Query commands are used to query the current step size.

Test commands are used to test whether the command is supported.

The set parameters are stored in NVRAM and take effect after they are saved in and out of flight. The default save step in Nvram is 4, which means the subnet stability time is 60 seconds.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<time>: INTEGER type indicates the step of the subnet stability time. The unit is 15 seconds. If the value is set to 1, the value is 15 seconds, and if the value is set to 2, the value is 30 seconds, and so on.

Example

```
AT^DSONNST=1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONNST=?<CR><LF>
<CR><LF>^DSONNST: 1<CR><LF>
<CR><LF>OK<CR><LF>
  AT^DSONNST?<CR><LF>
<CR><LF>OK<CR><LF>
```

17.AT^DSONSDA: indicates the destination address of the Com-uart data transmission.

Command	Possible response(s)
AT^DSONSDA=<IPV4 address>	
AT^DSONSDA?	^DSONSDA: <IPV4 address>
AT^DSONSDA=?	

Description

Setting commands are used to set the destination ADDRESS of com-UART packets.

Query command To query the packet address of the current COM-uART port.

Test commands are used to test whether the command is supported.

Final result code

OK

Successful.

ERROR or +CME ERROR: <err>

Command performing failed.

Defined values

<IPV4 address> String type. Only IPV4 addresses are supported

Example

```
The AT ^ DSONSDA = "192.168.1.20" < CR > < LF >
<CR><LF>OK<CR><LF>
AT^DSONSDA?<CR><LF>
< CR > < LF > ^ DSONSDA: "192.168.1.20" < CR > < LF >
<CR><LF>OK<CR><LF>
AT^DSONSDA=?<CR><LF>
<CR><LF>OK<CR><LF>
```

18.AT^DCIAC: encryption algorithm selection

Command	Possible response(s)
AT^DCIAC=<arith>	
AT^DCIAC?	^DCIAC: <arith>
AT^DCIAC=?	^DCIAC: (list of supported <arith>s)

Description

Run these commands to set the encryption and security algorithms. The Settings take effect for inbound and outbound flights.

Query commands are used to query the current parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

Note: The network node algorithm is based on the network node. The user-configured algorithm will adjust itself during the access process.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<arith>: integer type: indicates the encryption and completion algorithm. The value range is as follows:

0: none ciphering and integrity

1: SNOW3G

2: AES

3: ZUC

Example

```
AT^DCIAC=2<CR>
<CR><LF>OK<CR><LF>
AT^DCIAC?<CR><LF>
<CR><LF>^DCIAC: 2<CR><LF>
<CR><LF>OK<CR><LF>
AT^DCIAC=?<CR>
<CR><LF>^DCIAC: (0-3) <CR><LF>
<CR><LF>OK<CR><LF>
```

19.AT^DSONSFTP: Fixed Tx power configuration

Command	Possible response(s)
AT^DSONSFTP=<Mode>[,<Power>[,<cellid>]]	
AT^DSONSFTP?	^DSONSFTP: <Mode>,<pcellpower>[,<scellpower>,cellid]
AT^DSONSFTP=?	^DSONSFTP: (list of supported < Mode>s), (list of supported < power>s) [, (list of supported < cellid>s)]

Description

This command is used to enable or disable the fixed power setting. The fixed power enabling switch takes effect immediately. The switch is saved to NVRAM and disabled by default. When turned on, the switch allows the user to set fixed power, which takes effect immediately and is saved to NVRAM.

Query commands are used to query the current NVRAM parameter Settings.

Test commands are used to test whether the command is supported and the range of query parameters.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<Mode>: INTEGER type: indicates the control status of the fixed power switch configured by the user

0: shut down

1: open

<power>: integer type: specifies the fixed transmission power of a node, expressed in dBm. The value ranges from -40 to 40. If the value exceeds the maximum value supported by the terminal, the value is the maximum value supported by the terminal.

<cellid> integer type , Physical cell id

0: Pcell primary cell

1: Scell second cell

Other value reserved.

Example

```

The AT ^ DSONSFTP = 1, "- 10", 0 < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT ^ DSONSFTP ? < CR > < LF >
< CR > < LF > 1, "10", "0", 0 < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT ^ DSONSFTP = ? < CR > < LF >
< CR > < LF > ^ DSONSFTP: (0-1), "- 40", "40", (0-1) < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT ^ DSONSFTP = 0 < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT ^ DSONSFTP ? < CR > < LF >
< CR > < LF > 0, "10", "0", 0 < CR > < LF >
< CR > < LF > OK < CR > < LF >
The AT ^ DSONSFTP = 1, "- 10" < CR > < LF >
< CR > < LF > OK < CR > < LF >
AT ^ DSONSFTP ? < CR > < LF >
< CR > < LF > 0, "10" < CR > < LF >
< CR > < LF > OK < CR > < LF >

```

20.AT^DSONSNA: Node movement attribute configuration

Command	Possible response(s)
AT^DSONSNA=<MobilityType>	
AT^DSONSNA?	^DSONSNA: <MobilityType>
AT^DSONSNA=?	^DSONSNA: (list of supported < MobilityAttribute >s)

Description

Run this command to set the node attributes of the device. The mobility attribute is used to set whether the node is a mobile node or a non-mobile node.

Query commands are used to query the properties of the current controller. Stored in NVRAM for in-and-out flight.

Test commands are used to test whether the command is supported

NOTE1: If it is an unmovable product model, failure is returned when the node attribute is set to move. If the

product model is mobile, you can set the node to be mobile or fixed.

NOTE2: non-mobile nodes serve as backbone routing trunks.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

< MobilityType >: integer type, indicating whether the node attribute is moved or fixed;

0: fixed

1: mobile

Example

```
AT^DSONSNA=1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONSNA=?<CR><LF>
<CR><LF>^DSONSNA: 1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONSNA=?<CR>
<CR><LF>^DSONSNA: (0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

21. AT^DSONSBR: set the operating frequency range

Command	Possible response(s)
The AT ^ DSONSBR = < band >, < earfcn_start >, < earfcn_end > [, < band >, < earfcn_start >, < earfcn_end > [, < band >, < earfcn_start >, < earfcn_end >]...].	
AT^DSONSBR?	^ DSONSBR: < band >, < earfcn_start >, < earfcn_end > [, < band >, < earfcn_start >, < earfcn_end > [, < band >, < earfcn_start >, < earfcn_end >]...].
AT^DSONSBR=?	^DSONSBR: <band>,(list of supported <earfcn>s), <band>,(list of supported <earfcn>s),...

Description

These commands are used to configure the frequency range of each sub-band, save the configuration to NVRAM, and take effect in and out flight.

Query commands are used to query the configurations of subband ranges.

Test commands are used to test whether the command is supported and the allowed frequency range of each subband.

Note:

- 1) This setting is overridden. If only one frequency band is set, the node is considered to support only one frequency band.
- 2) Ensure that the frequency band set by this command overlaps with that set by AT^DAOCNDI. If not, set AT^DAOCNDI before the restart. Otherwise, the frequency band set by sub-frequency band is supported.
- 3) Ensure that the preset frequency point information of the current bandwidth supported by the node is included in the subband range (set by AT^DSONPFCFG); otherwise, the node will select the center frequency point supporting the subband range as the preset frequency point, and the supported bandwidth may change.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<band>: integer type, subband number

64: BAND64 (reserved)

65: BAND65 (reserved)

66: BAND66

67: BAND67 (reserved)

68: BAND68 (reserved)

69: BAND69 (reserved)

46: BAND46 (reserved)

71: BAND71

< EARfCN_start >: integer type, starting frequency number. The value range is related to the subband and must not be greater than < EARfCN_end >

BAND64: (Reserved)

BAND65: (Reserved)

BAND66: 14200-15300

BAND67: (Reserved)

BAND68: (Reserved)

BAND69: (Reserved)

BAND46 :(reserved)

BAND71:5660-6780

< EARfCN_end >: integer type, indicating the end frequency. The value range is related to the subband and cannot be smaller than <earfcn_start>

BAND64 :(reserved)

BAND65 :(reserved)

BAND66: 14200-15300

BAND67 :(reserved)

BAND68 :(reserved)

BAND69 :(reserved)

BAND46 :(reserved)

BAND71:5660-6780

Example

The AT ^ DSONSBR = 66142, 00148, 00 < CR > < LF >

< CR > < LF > OK < CR > < LF >

AT ^ DSONSBR ? < CR > < LF >

< CR > < LF > ^ DSONSBR: 66142 00148 0 < CR > < LF >

< CR > < LF > OK < CR > < LF >

AT ^ DSONSBR = ? < CR > < LF >

< CR > < LF > ^ DSONSBR: 66,(14200-15299), < CR > < LF >

< CR > < LF > OK < CR > < LF >

22. AT ^ DFHC: Frequency hopping switch control

Command	Possible response(s)
AT ^ DFHC = <n>	

	range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)> [...]]
AT^DSONTFT=?	^DSONTFT: (list of supported <op_type>s), (list of supported <data_pri>s), (list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <source address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <destination port range>s),(list of supported <source port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s) [<CR><LF>^DSONTFT: ...]

Description

Setting commands are used to delete, set, and update the TFT in the MT. Currently, only IPv4 TFT parameters are supported.<data_pri> indicates the service priority that meets the TFT filtering configuration. It determines the data bearer where the TFT to be set resides.<op_type> indicates the operation type. To customize TFT Settings, you can run AT^DSONTFT=1, XXX, XXX...Set custom TFT rules one by one, and then run AT^DSONTFT=2, XXX to make the previous custom TFT rules take effect. Note: The previous custom TFT rules take effect only after you run AT^DSONTFT=2, XXX.

To customize TFT rules, you need to configure them before AT+CFUN=1. After the configuration, the TFT rules will not reset when you fly in and out again. The previous configuration will be cleared only when you power on and off again.

The read command returns the current settings for all Packet Filters for each defined Bearer.

The test command returns values supported as a compound value. In current version, only IPv6(IP type) is supported.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<op_type>: integer type, specifies the operation type.

0: Delete All Customized (All Default and Dedicated Bearers)

1: Set Customized TFT Packet filter

2: Update Customized TFT already set

<data_pri>: INTEGER type,specifies each TFT's priority matched with the same priority Bearer. Indicates the data carrying priority. The value ranges from 1 to 3. A smaller value indicates a higher priority

<packet filter identifier>: integer type,TFT id

1-16: Valid range of TFT ID.

<evaluation precedence index>: integer type

0-255: Valid range of index

<source address and subnet mask>: string type(without double quotes),Consists of dot-separated numeric parameters on the form 'a1.a2.a3.a4.m1.m2.m3.m4', for IPv4 and 'a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16', for IPv6.
 0-255.
 <protocol number (ipv4) / next header (ipv6)>: integer type
 0-255: Valid range of parameters
 <destination port range>: string type(without double quotes),Consists of dot-separated numeric parameters on the form 'f.t'.
 0-65535: Valid range of each number
 <source port range>: string type(without double quotes),Consists of dot-separated numeric parameters on the form 'f.t'.
 0-65535: Valid range of each number
 <ipsec security parameter index (spi)>: string type(without double quotes),Hexadecimal parameter
 00000000 - FFFFFFFF: Valid range
 <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>: string type(without double quotes),Dot-separated numeric parameters on the form 't.m'.
 0-255.
 <flow label (ipv6)>: string type(without double quotes),Hexadecimal parameter,valid for IPv6 only.
 0000 - FFFF
 <direction>: integer type,specifies the transmission direction in which the packet filter shall be applied.
 0: Pre-release 7 TFT filter (see 3GPP TS 24.008 [8], Table 10.5.162)
 1: the Uplink
 2: Downlink
 3: Birectional (Up & Downlink) (Default if omitted)

Implementation

Optional

Example

```
The AT ^DSONTFT = 1, 1, 0,
1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16,,1.1 6, 2.2, 1.3, and 1 < CR >
<CR><LF>OK<CR><LF>
The AT ^DSONTFT = 2, 1 < CR >
<CR><LF>OK<CR><LF>
AT^DSONTFT?<CR>
<CR><LF>^DSONTFT: 1,2,1,0, ,1.1
1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.165, 6, 2.2, 1.3, and 1 < CR > <
LF > ^DSONTFT: 2,2,1,0, ,1.1
1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.165, 6, 2.2, 2.3, and 1 < CR > <
LF > ^DSONTFT: 3,2,1,0 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.165,,1.1
6, 2.2, 3.3, and 1 < CR > < LF >
<CR><LF>OK<CR><LF>
AT^DSONTFT=?<CR>
^DSONTFT: (0-2), (1-3), (1-16), (0-255), ('
a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m1
3.m14.m15.m16'),(0-255), (0-65535).(0-65535),(0-65535).(0-65535),(0x00000000-0xFFFFFFFF),(0-255).(0-
255),(0x00000-0xFFFFF),(0-3)<CR><LF>
<CR><LF><CR><LF>OK<CR><LF>
```

24.AT^DSONMOC: Channel measurement switch configuration

Command	Possible response(s)
---------	----------------------

AT^DSONMOC=<value>	
AT^DSONMOC?	^DSONMOC: <value>
AT^DSONMOC=?	^DSONMOC: (list of supported <value>s)

Description

Run commands to set measurement objects.

Query commands are used to query measurement objects.

The set parameters are stored in NVRAM and take effect after they are saved in and out of flight.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<value>: INTEGER type: indicates the type of the measurement object.

0: detects only frequency points under the current bandwidth.

1: detects the frequency points of all bandwidths currently supported;

Example

```
AT^DSONMOC=1<CR>
<CR><LF>OK<CR><LF>
AT^DSONMOC?<CR>
<CR><LF>^DSONMOC: 1<CR><LF>
<CR><LF>OK<CR><LF>
AT^DSONMOC=?<CR>
<CR><LF>^DSONMOC: (0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

25. AT^DSONSMFL: Network node scale configuration

Command	Possible response(s)
AT^DSONSMFL=<value>	
AT^DSONSMFL?	^DSONSMFL: <value>
AT^DSONSMFL=?	^DSONSMFL: (list of supported <value>s)

Description

Run this command to set the maximum number of nodes on a subnetwork.

Query commands are used to query the maximum number of nodes on a subnetwork.

The set parameters are stored in NVRAM and take effect after they are saved in and out of flight.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<value>: integer type, which indicates the maximum number of nodes.

0: 32.

1: indicates 16.

2: indicates eight.

3: indicates four.

Example

```
AT^DSONSMFL=1<CR>
```

```
<CR><LF>OK<CR><LF>
```

```
AT^DSONSMFL?<CR>
```

```
<CR><LF>^DSONSMFL: 1<CR><LF>
```

```
<CR><LF>OK<CR><LF>
```

```
AT^DSONSMFL=?<CR>
```

```
<CR><LF>^DSONSMFL: (0-3)<CR><LF>
```

```
<CR><LF>OK<CR><LF>
```

26. AT^DSONSCAP: MIMO and CA feature selection configuration switch

Command	Possible response(s)
AT^DSONSCAP=<mode>[,<type>]	
AT^DSONSCAP?	^DSONSCAP: <mode>,<type>
AT^DSONSCAP=?	^DSONSCAP: (list of supported <mode>s), (list of supported <type>s)

Description

Setting commands are used to enable or disable THE CA MIMO capability. Incoming and outgoing flight Settings take effect; When type is 1, you can set the full network capability only after the node is connected to the network. When Type is 0, there is no restriction on the setting time.

Query commands are used to query the status of the CA MIMO capability.

The test command returns the supported <mode>,<type> values;

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<mode>: integer type, the type of operation to be performed

0: CA MIMO is not supported

1: CA is supported (reserved)

2: Supports MIMO

3: CA+MIMO(reserved)

<type>:integer type, which limits the operation to the whole network or the local node
 0: changes the local node
 1: Change the whole network

Example

```
The AT ^ DSONSCAP = 1, 0 < CR >
<CR><LF>OK<CR><LF>
AT^ DSONSCAP?<CR>
< CR > < LF > ^ DSONSCAP: 1, 0 < CR > < LF >
<CR><LF>OK<CR><LF>
AT^DSONSCAP=?<CR>
<CR><LF>^DSONSCAP: (0-3) ,(0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

27.AT^DSONPFCFG: preset frequency point list configuration

Command	Possible response(s)
The AT ^ DSONPFCFG = < mode > [, < Freq1 > [, < BandWidthBit1 >] [, < Freq2 > [, < BandWidthBit2 >]]... [, < Freqn > [, < BandWidthBitn >]]]	
AT^DSONPFCFG?	^DSONPFCFG: <totalNum>[, (< Freq1>,<BandWidthBit1>)]... [, (<Freqn>,<BandWidthBitn>)]
AT^DSONPFCFG=?	^DSONPFCFG: (list of supported <mode>s)

Description

Setting commands are used to add, delete, or clear the prememory frequency points. The set frequency points are saved in NVRAM, which will take effect after entering and leaving flight.

Query commands are used to query information about all pre-stored frequency points in NVRAM.

Test whether the command is supported and query the parameter value range.

Note: When adding the pre-stored frequency point, ensure that the frequency band is within the range supported by the node (can be changed through AT^DAOCNDI and AT^DSONSBR); otherwise, an error will be returned.

Final result code

OK

Successful.

ERROR or +CME ERROR: <err>

Command performing failed.

Defined values

<mode>: integer type, which identifies the operation type to be performed

0: adds the prememory frequency point

1: deletes the prememory frequency points

2: Clear all prestorage frequency points

<totalNum>: total number of pre-stored frequency points

<Freq>: frequency information

<BandWidthBit> : when a certain frequency point is added, the bandwidth information corresponding to the frequency point is represented by bitmap, where:

Bit0: indicates whether it belongs to 1.4M

Bit1: indicates whether it belongs to 3M

Bit2: indicates whether it belongs to 5M

Bit3: indicates whether it is 10M

Bit4: Indicates whether it belongs to 15M

Bit5: indicates whether it belongs to 20M

If a frequency point belongs to multiple bandwidths, the corresponding bits are set to 1

Example

The AT ^ DSONPFCFG = 0, 51600, 47579, 00,47 < CR >

<CR><LF>OK<CR><LF>

AT^DSONPFCFG?<CR>

^DSONPFCFG: 15, 51600,47,52050,47,52500,47,52950,47,53400,47,53850, 47543, 00, 47547, 50, 47552, 00, 47556, 50, 47561, 00, 50, 47565 47570, 00, 47574 50, 47579, 00,47 < CR > < LF >

<CR><LF>OK<CR><LF>

AT^DSONPFCFG=?<CR>

<CR><LF>^DSONPFCFG: (0-2) <CR><LF>

<CR><LF>OK<CR><LF>

28.AT^DSONMWLS: Whitelist switch configuration

Command	Possible response(s)
AT^DSONMWLS=<mode>	
AT^DSONMWLS?	^DSONMWLS: <mode>
AT^DSONMWLS=?	^DSONMWLS: (list of supported <mode>s)

Description

Setting commands are used to enable or disable the MAC address whitelist function.It can be set only after the node is connected to the network, and takes effect after entering and leaving the flight;Before changing the enabling status, ensure that the enabling status of the entire network is consistent. Otherwise, the enabling status fails.

Query commands are used to query the status of the MAC address whitelist function.

Test commands return supported <mode> values;

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<mode>: integer type, the type of operation to be performed

0: Disables the MAC address whitelist function

1: Enables the MAC address whitelist function

Example

```
AT^DSONMWLS=1<CR>
<CR><LF>OK<CR><LF>
AT^DSONMWLS?<CR>
^DSONMWLS: 1
<CR><LF>OK<CR><LF>
AT^DSONMWLS=?<CR>
^DSONMWLS: (0-1)
<CR><LF>OK<CR><LF>
```

29.AT^DSONMWLM: Whitelist list configuration

Command	Possible response(s)
AT^DSONMWLM=<mode>[,<MacAddr1>[,<MacAddr2>]...[,<MacAddrn>]]	
AT^DSONMWLM?	^ DSONMWLM: < totalNum >, < n > [, < MacAddr1 > [, < MacAddr2 >]... [, < MacAddrn >]] [< CR >< LF > ^ DSONMWLM: < totalNum >, < n >, < MacAddr1 > [, < MacAddr2 >]... [, < MacAddrn >] [...]]
AT^DSONMWLM=?	

Description

Setting commands are used to add or delete records from the MAC address whitelist. A maximum of 16 records can be added or deleted at a time. A maximum of 32 records can be saved in the MAC address whitelist. The setting takes effect immediately. You can change the whitelist only after the whitelist switch is turned on. Otherwise, failure is returned.

If the whitelist check is not enabled, the whitelist operation fails.

Query commands are used to query all records in the CURRENT MAC address whitelist.

Test whether the command return supports the command;

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<mode>: integer type, the type of operation to be performed

0: Adds records to the MAC address whitelist

1: Deletes the MAC address whitelist

2: Deletes all records from the MAC address whitelist

<totalNum>: indicates the total number of MAC addresses in the whitelist
 <n>: indicates the number of MAC addresses returned by this message
 The < MacAddr > : MAC address

Example

```
The AT ^ DSONMWLM = 0, "00:01:00:12:23:34", "00:01:02:12:34:56 < CR >"
<CR><LF>OK<CR><LF>
AT^DSONMWLM?<CR>
^ DSONMWLM: 2, 2, "00:01:00:12:23:34", "00:01:02:12:34:56"
<CR><LF>OK<CR><LF>
AT^DSONMWLM =?<CR>
<CR><LF>OK<CR><LF>
```

30.AT^MACCFG: private MAC address configuration

Command	Possible response(s)
AT^MACCFG =<selif>[,<mac address>]	
AT^MACCFG?	^ MACCFG: < 0 >, < mac_address > ^ MACCFG: < 1 >, < mac_address >
AT^MACCFG =?	^MACCFG: (list of supported < selif >s)

Description

Run this command to set the MAC address (note that after setting AT^ MACCFG =0, you need to manually restart the system).

Query commands are used to query the MAC address of the current module.

Test commands are used to test whether the command is supported and the range of query parameters.

Response	result
OK	Successful
ERROR or +CME ERROR: <err>	Command performing failed

Defined values

< selif >: integer of default or configed by at command

0:default mac address

1:at config mac address

[,<mac address>]: MAC address

If < selif > is 0, the MAC address is not set

If < selif > is 1, MAC address needs to be set

Example

```
The AT ^ MACCFG = 0
<CR><LF>OK<CR><LF>
The AT ^ MACCFG = 1, "CA. 01.00.00:1 b: 7"
<CR><LF>OK<CR><LF>
AT^MACCFG?<CR><LF>
```

```
<CR><LF>^MACCFG: 1, "CA. 01.00.00:1 b: 7" <CR><LF>
<CR><LF>OK<CR><LF>
AT^MACCFG=?<CR><LF>
MACCFG: (0-1), [hex MAC address]<CR><LF>
<CR><LF>OK<CR><LF>
```

31.AT^DSOCTX: Continuous wireless signal transmitting

Command	Possible response(s)
AT^DSOCTX =<mode>[,<freq >,<bandwidth>,<power>,<tx_ mode>,< single_ tone >[,<modu_ type>]]	
AT^DSOCTX?	^DSOCTX: <mode>[,<freq >,<bandwidth>,<power>,<tx_ mode> ,<single_ tone>[,<modu_ type>]]
AT^DSOCTX=?	^DSOCTX: (list of supported <mode>s), (list of supported <freq>s),(list of supported <bandwidth>s), (list of supported < power >s) ,(list of supported < tx_ mode >s), (list of supported < single_ tone>s), (list of supported < modu_ type>s)

Description

This instruction is used to indicate whether the node is enabled with the function of long hair. After the function is enabled, the node will continuously send and be full in the time domain and frequency domain of each sub-frame. The command takes effect after being reset.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<mode> : integer type, the type of operation to be performed:

0: Turn off long hair function;

1: Enable the function of long hair;

<freq>: integer type, representing the point frequency in 100KHz. Refer to the instruction AT^DSOCTX for the range

<bandwidth>: INTEGER type: indicates the bandwidth. For the modulation mode, only 10M\20M is supported. For the single tone mode, 1.4m \3M\5M\10M\20M is supported

Zero: 1.4 M

1: 3M

2: 5M

3: 10M

4: 15M(not supported)

5: 20M

<power>: integer Type: indicates the power, expressed in dBm. The value ranges from -40 to 40. If the power exceeds the maximum value supported by the terminal, the value is the maximum value supported by the terminal.

< tx_mode >:integer type, indicating the sending mode:
 0: single antenna;
 1: double antenna transmission;

< single_TONE >:integer type, indicating whether it is a single tone. If it is a single tone, modu_type is not set:
 0: not monophonic;
 1: monophonic;

<modu_type >:integer type, indicating the modulation mode:
 QPSK; 0:
 16 QAM.
 "4 qam;

Example

```
The AT ^ DSONCTX = 0, 5, 1145 "23", 0, 0, < CR >
<CR><LF>OK<CR><LF>
AT^DSONCTX?<CR>
^ DSONCTX: 1, 14500, 5, "23", 0, 0
<CR><LF>OK<CR><LF>
AT^DSONCTX=0<CR>
<CR><LF>OK<CR><LF>
AT^DSONCTX =?<CR>
^ DSONCTX: (0 and 1), (14200-15300566-6780), (0 to 5),
(" - "~ 40" 40 "), (0-1), (0-1), (0, 2)
<CR><LF>OK<CR><LF>
```

32.AT^ELFUN: ELog function configuration

Command	Possible response(s)
AT^ELFUN=<mode>	
AT^ELFUN?	^ELFUN : <mode>
AT^ELFUN=?	^ELFUN : (list of supported <mode>s)

Description

Run commands to switch on or off the Elog module.

Query commands are used to query the status of the Elog switch.

Test commands are used to test whether the command is supported and the range of query parameters.

Response	result
OK	Successful
ERROR or +CME ERROR: <err>	Command performing failed

Defined values

< mode >: integer type
 0: Close ELOG Module
 1: Open ELOG Module

Example

```
AT^ELFUN=0<CR><LF>
<CR><LF>OK<CR><LF>
AT^ELFUN?<CR><LF>
<CR><LF>^ELFUN:0<CR><LF>
<CR><LF>OK<CR><LF>
AT^ELFUN=?<CR><LF>
<CR><LF>^ELFUN:(0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

33.AT^APLFUN: APLog function configuration

Command	Possible response(s)
AT^APLFUN=<n>	
AT^APLFUN?	^APLFUN:<n>
AT^APLFUN=?	^APLFUN:(list of supported <n>s)

Description

Run this command to enable the AP LOG function.

Final result code

OK

Successful

ERROR or +CME ERROR: <err>

Command performing failed

Defined values

<n>: integer type, which indicates the fast frequency hopping function setting

0: Disables the AP LOG function

1: Enable the AP LOG function

Example

```
AT^APLFUN=0<CR><LF>
<CR><LF>OK<CR><LF>
AT^APLFUN?<CR><LF>
<CR><LF>^APLFUN:0<CR><LF>
<CR><LF>OK<CR><LF>
AT^APLFUN=?<CR><LF>
<CR><LF>^APLFUN(0-1)<CR><LF>
<CR><LF>OK<CR><LF>
```

34. AT^NETIFCFG: indicates the device IP address

Command	Possible response(s)
AT^ NETIFCFG =<selif>,<master_ip address>[,<sub_ip addresss>]	
AT^ NETIFCFG?	^ NETIFCFG: < 0 >, < ip_address >, < ip_address > ^ NETIFCFG: < 1 >, < ip_address >, < ip_address >
AT^ NETIFCFG =?	^ NETIFCFG: (list of supported < selif >s)

Description

Run this command to set the IP addresses of the primary and secondary modules.

Query commands are used to query the IP address of the current module.

Test commands are used to test whether the command is supported and the range of query parameters.

Response	result
OK	Successful
ERROR or +CME ERROR: <err>	Command performing failed

Defined values

< selif >: integer of the selected network card type

0:RNDIS

1:RJ45

< master_IP address > string of network card interface's IP address, host IP address

< ub_IP addressSS > string of network card interface's IP address, the IP address of the slave machine

Example

The AT ^ NETIFCFG = 0, "192.168.43.128"

<CR><LF>OK<CR><LF>

AT^NETIFCFG?<CR><LF>

< CR > < LF > ^ NETIFCFG: 0, "192.168.43.128" < CR > < LF >

<CR><LF>OK<CR><LF>

AT^NETIFCFG =?<CR><LF>

<CR><LF>^NETIFCFG: (0-1)<CR><LF>

<CR><LF>OK<CR><LF>

