EC20 STK

AT Commands Manual

LTE Module Series

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About the Document

History

Revision	Date	Author	Description
1.0	2015-09-04	Chris PENG	Initial

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1 Introduction

EC20 provides AT commands to support SIM (USIM) Application Toolkit (STK). This document is a reference guide to all the AT commands defined for SIM (USIM) Application Toolkit.

1.1. The Process of Using STK AT Command

Step 1: Enable STK functionality by command AT+QSTK=1 or AT+QSTK=2, then reboot the module.
Step 2: When +QSTKURC: <cmd_type> has been reported, the proactive command information can be obtained by command AT+QSTKGI=<cmd_type>, and the terminal response for proactive command can be sent by command AT+QSTKRSP=<cmd_type>,<result>[…].
Step3: When +QSTKURC: 253 has been reported, it indicates the STK has been finished, and there is no active proactive command. At this time, the STK session can be re-started by command AT+QSTKRSP=253,<result>,<item_id>.
Step4: The STK session can be terminated by command AT+QSTKRSP= 254 at any time.
Step 5: Disable STK functionality by AT+QSTK=0, then reboot the module.

1.2. STK States

There are three kinds of states: automatic response state, terminal response state and waiting state. For more details, please refer to Chapter 2.3. The following figure shows the state transition.

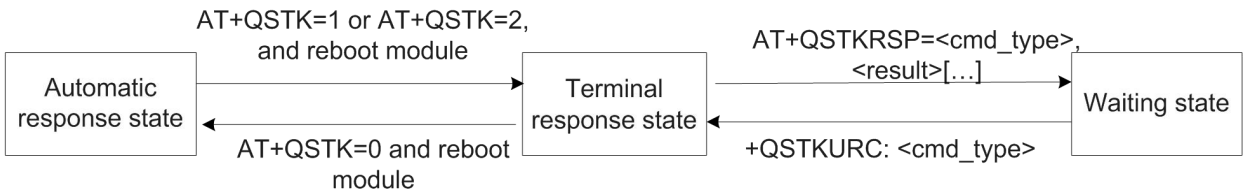

Figure 1: STK States Transition

1.3. Proactive Command Response

When STK functionality is disabled, module will automatically respond to the proactive command. When STK functionality is enabled, you should send terminal response for proactive command (Refer to Chapter 2.7). If you do not send terminal response for proactive command in some time , then URC of timeout response will be reported and module will automatically respond to proactive command.

Table 1: Response of Proactive Command

Proactive Command	Automatic Response	User Response	Timeout Response
SET UP CALL (16)	48	0, 4, 16, 32, 34, 35, 48	50
SEND SS (17)	48	0, 4, 20, 32, 48	50
SEND USSD (18)	48	0, 4, 20, 32, 48	50
SEND SHORT MESSAGE (19)	48	0, 4, 32, 48	50
SEND DTMF (20)	48	0, 4, 16, 32, 48	50
PLAY TONE (32)	48	0, 4, 16, 32, 48	50
DISPLAY TEXT (33)	0	0, 4, 16, 17, 18, 32, 48	48
GET INKEY (34)	48	0, 4, 16, 17, 18, 19, 32, 48	48
GET INPUT (35)	48	0, 4, 16, 17, 18, 19, 32, 48	48
SELECT ITEM (36)	48	0, 4, 16, 17, 18, 19, 32, 48	48
SET UP MENU (37)	0	0, 4, 32, 48	48
SET UP IDLE MODE TEXT(40)	0	0, 4, 32, 48	48
LANGUAGE NOTIFICATION(53)	0	0	48

1.4. STK Character Set

The STK AT command interface supports the following character sets:

- GSM character set (default)
- UCS2 character set

The character set can be configured by AT+QSTK=<stk_mode>[,<alphabet>][,<response_timeout>] (Refer to Chapter 2.1), < alphabet > become effective after setting, and it will affect STK AT command to input parameter and output information. If UCS2 character cannot convert to GSM character, it will convert to 0x20(space).

2 Description of AT Command

2.1. AT+QSTK Enable STK Functionality

AT+QSTK command is used to enable STK functionality and configure the <alphabet> and <response_timeout>. The <stk_mode> and <response_timeout> will be effected after reboot module.

AT+QSTK Enable STK Functionality	
Test Command **AT+QSTK=?**	Response **+QSTK: (0,1,2),(0,1),(1-65535)** **OK**
Read Command **AT+QSTK?**	Response **+QSTK: <stk_mode>,<alphabet>,<response_timeout>** **OK**
Write Command **AT+QSTK=<mode>[,<alphabet>[,<response_timeout>]]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<stk_mode>	Enable STK functionality. 0 Disable STK functionality 1 Enable STK functionality, and the STK mode is dedicate format 2 Enable STK functionality, and the STK mode is raw format
<alphabet>	Alphabet set 0 GSM character set 1 UCS2 character set
<response_timeout>	STK auto response timeout, default value: 300, unit: second.

2.2. AT+QSTKPD Download STK Profile

AT+QSTKPD command is used to get SIM profile. Profile refers to ETSI TS 102 223.

AT+QSTKPD Download STK Profile	
Test Command **AT+QSTKPD=?**	Response **OK**
Read Command **AT+QSTKPD?**	Response **+QSTKPD: <profile>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<profile>	Hex string; STK profile

2.2.1. AT+QSTKSTATE Query STK State

When executing AT+QSTKGI or AT+QSTKRSP, you should refer to the value of <cmd_type>. When <state> is 0 or 2, <cmd_type> will be ignored.

When <cmd_type> is 253, it indicates that STK session has finished, and there is no active proactive command, so you can't obtain proactive command information by command AT+QSTKGI=<cmd_type>. And at this time, you can send STK envelope command by AT+QSTK=253,<result>,<item_id>.

AT+QSTKSTATE Query STK State	
Test Command **AT+QSTKSTATE=?**	Response **+QSTKSTATE: (0-2),(16-20,32-37,40,53,253)** **OK**
Read Command **AT+QSTKSTATE?**	Response **+QSTKSTATE: <state>[,<cmd_type>]** **OK**

Parameter

<state>	STK state 0 Automatic response state 1 Terminal response state 2 Waiting state
<cmd_type>	Integer type, type of command. Its value is 16-20,32-37,40,53,253

2.3. AT+QSTKGI Get Proactive Command Information

When URC: +QSTKURC: <cmd_type> has been reported, the STK proactive command information can be obtained via AT+QSTKGI=<cmd_type>.
If STK mode is dedicate format, the proactive command PDU is decoded, and decoded information refer to 2.7, If STK mode is raw format, the proactive command PDU is not decoded, and the information reported as a hex string.

AT+QSTKGI Get Proactive Command Information	
Test Command **AT+QSTKGI=?**	Response **+QSTKGI: (16-20,32-37,40,53)** **OK**
Write Command **AT+QSTKGI=<cmd_type>**	Response Response varies with the **<cmd_type>**. Please refer to Chapter 2.7 for details.

Parameter

<cmdtype>	Integer type, type of proactive command, refer to the Table 1

2.4. AT+QSTKRSP STK Terminal Response

After the URC +QSTKURC: <cmd_type> has been reported, the proactive command information can be obtained via command AT+QSTKGI=<cmd_type>, and the terminal response for proactive command can be sent via command AT+QSTKRSP.

The AT+QSTKRSP=253,<result>,<item_id> command is used to send STK envelope command, it can only be used after receiving +QSTKURC: 253. Terminate STK session via AT+QSTKRSP=254 command, and then +QSTKURC: 253 will be reported.

AT+QSTKRSP STK Terminal Response	
Test Command **AT+QSTKRSP=?**	Response **+QSTKRSP: (16-20,32-37,40,53,253,254)** **OK**
Write Command(envelope command) **AT+QSTKRSP=253,<result>,<itemID>**	Response It's used to select menu item. **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(terminate STK session) **AT+QSTKRSP=254**	Response It's used to terminate the current STK session. **OK** **ERROR**
Write Command(terminal response for proactive command) **AT+QSTKRSP=<cmdtype>,<result>[…]**	Response Inputted parameters and response vary with the <cmdtype>. Please refer to Chapter 2.7 for details.

Parameter

<cmdtype>	Integer type, type of proactive command, refer to the Table 1	
<result>	Command result	
	0	Trigger modem to select menu
	19	Help information required by the user
<itemID>	Menu item ID	

2.5. Summary of URC

The STK URC reported as the type of "+QSTKURC: <cmd_type>", It contains URC of proactive command, STK session finished, SIM lost and timeout response.

2.6.1 URC of Proactive Command

When STK session is not finished, this URC will be reported to indicate the proactive command information can be obtained via command AT+QSTKGI=<cmdtype> and the terminal response for proactive command can be sent via command via AT+QSTKRSP=<cmdtype>,<result>[…].

URC of Proactive Command	
+QSTKURC: <cmd_type>	Indication of proactive command

Parameter

<cmdtype>	A numeric parameter indicates the proactive command to be reported, its value will be 16-20,32-37,40,53

2.6.2 URC of STK Session Finished

When STK session is finished, this URC “+QSTKURC: 253” will be reported. it indicates there is no active proactive command, so you can’t obtain proactive command information by command AT+QSTKGI=<cmd_type> and send terminal response for proactive command by command AT+QSTKRSP=<cmd_type>,<result>[…]. And at this time, the STK session can be actived by AT+QSTKRSP=253,<result>,<item_id>

URC of STK Session Finished	
+QSTKURC: 253	Indication of STK session finished

2.6.3 URC of SIM Lost

When SIM is lost, this URC will be reported. For example, SIM pulls out or CFUN changes from 1 to 0.

URC of SIM Lost	
+QSTKURC: 254	Indication of SIM lost

2.6.4 URC of Timeout Response

When the terminal response for proactive command has not been sent in some time, this URC will be reported and module will automatically respond to the proactive command.the timeout value of each proactive command, please reference to chapter 4.3

URC of Timeout Response	
+QSTKURC: 255,<cmd_type>	Indication of timeout response

Parameter

<cmdtype>	A numeric parameter indicates timeout response of the proactive command, its value will be 16-20,32-37,40,53

2.6. Details of Proactive Command <cmdtype>

The proactive command information can be obtained repeatedly before sending terminal response for the proactive command. And In RAW STK mode, how to parse proactive command PDU, please refer to 4.2.

Table 2: Type of Proactive Command (Refer to Chapter 13.4 in 3GPP TS 11.14)

<cmdtype>	Name
16	Set up call
17	Send SS
18	Send USSD
19	Send SMS
20	Send DTMF
32	Play tone
33	Display text
34	Get inkey
35	Get input
36	Select item
37	Set up menu
40	Set up idle mode text
53	Language notification

2.7.1 Set up Call (16)

After receiving +QSTKURC: 16, you can get information via AT+QSTKGI=16, then respond to proactive

command via AT+QSTKRSP=16,<result>[,<additional_info>].

Set up Call (16)	
Write Command(dedicate format) **AT+QSTKGI=16**	Response **+QSTKGI: 16,<command_details>,<confirm_info>,<callnum>,<call_setup_info>,<confirm_icon_qualifier>,<confirm_iconID>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=16**	Response **+QSTKGI: 16,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=16,<result>[,<additional_info>]**	Response **+QSTKRSP: 16,<termination_qualifier>[,<termination_cause_text>]** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Details of call set up command 0 Set up call, only if no currently busy calls 1 Set up call, only if no currently busy calls, support redial 2 Set up call, hold on all other calls (if any) 3 Set up call, hold on all other calls (if any), support redial 4 Set up call, disconnect all other calls (if any) 5 Set up call, disconnect all other calls (if any), support redial 6-255 RFU (Reserved for Future Use)
<confirm_info>	String type; confirmation information
<callnum>	String type; called number
<call_setup_info>	String type; call set up information
<confirm_icon_qualifier>	Confirmation of icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is non self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<confirm_iconID>	Confirmation of icon ID 0 No icon 1-255 ID of icon
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No Icon 1-255 ID of Icon
<hex_string>	Proactive Command PDU
<result>	Command result code. 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session is terminated by user 20 USSD/SS transact is terminated by user 32 UE is unable to process command currently 34 User did not accept the proactive command. Indicate that the user has denied the call request 35 User cleared call before connection or network release 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

<termination_qualifier>	Termination qualifier	
	0	The proactive command is successfully finished
	1-255	The proactive command is performed incorrectly
<termination_cause_text>	The text contains information regarding to the termination cause	

2.7.2 Send SS (17)

After receiving +QSTKURC: 17, you can get information via AT+QSTKGI=17, then respond via AT+QSTKRSP=17,<result>[,<additional_info>].

Send SS (17)	
Write Command(dedicate format) **AT+QSTKGI=17**	Response **+QSTKGI: 17,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=17**	Response **+QSTKGI: 17,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=17,<result>[,<additional_info>]**	Response **+QSTKRSP: 17,<termination_qualifier>[,<termination_cause_text>]** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU
<text>	String type; text
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 20 USSD/SS transact is terminated by user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255
<termination_qualifier>	Termination qualifier 0 The proactive command is successfully finished 1-255 The proactive command is performed incorrectly
<termination_cause_text>	The text contains information regarding to the termination cause

2.7.3 Send USSD (18)

After receiving +QSTKURC: 18, you can get information via AT+QSTKGI=18, then respond via AT+QSTKRSP=18,<result>[,<additional_info>].

Send USSD (18)	
Write Command(dedicate format) **AT+QSTKGI=18**	Response **+QSTKGI:** **18,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=18**	Response **+QSTKGI: 18,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=18,<result>[,<additional_info>]**	Response **+QSTKRSP:** **18,<termination_qualifier>[,<termination_cause_text>]** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU
<text>	String type; text
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 20 USSD/SS transact is terminated by user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255
<termination_qualifier>	Termination qualifier 0 The proactive command is successfully finished 1-255 The proactive command is performed incorrectly
<termination_cause_text>	The text contains information regarding to the termination cause

2.7.4 Send SMS (19)

After receiving +QSTKURC: 19, you can get information via AT+QSTKGI=19, then respond via AT+QSTKRSP=19,<result>[,<additional_info>].

Send SMS (19)	
Write Command(dedicate format) **AT+QSTKGI=19**	Response **+QSTKGI:** **19,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=19**	Response **+QSTKGI: 19,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=19,<result>[,<additional_info>]**	Response **+QSTKRSP:** **19,<termination_qualifier>[,<termination_cause_text>]** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU	
<text>	String type; text	
<icon_qualifier>	Icon qualifier	
	Bit 1	0: Icon is self-explanatory and can replace text
		1: Icon is not self-explanatory and shall be displayed with The text determined value only if associated icon ID is not 0 (an icon exists)
	Bit 2-8	RFU
<iconID>	Icon ID	
	0	No icon
	1-255	ID of icon
<hex_string>	Proactive Command PDU	
<result>	Command result code	

	0	Command performed successfully. Indicate that the user has accepted the call request
	4	Command performed successfully, but requested icon could not be displayed
	32	UE is unable to process command currently
	48	Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255	
<termination_qualifier>	Termination qualifier	
	0	The proactive command is successfully finished
	1-255	The proactive command is performed incorrectly
<termination_cause_text>	The text contains information regarding to the termination cause	

2.7.5 Send DTMF (20)

After receiving +QSTKURC: 20, you can get information via AT+QSTKGI=20, then respond via AT+QSTKRSP=20,<result>[,<additional_info>].

Send DTMF (20)	
Write Command(dedicate format) **AT+QSTKGI=20**	Response **+QSTKGI: 20,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=20**	Response **+QSTKGI: 20,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=20,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU
<text>	String type; text
<icon_qualifier>	Icon qualifier
	Bit 1 0: Icon is self-explanatory and can replace text
	1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists)
	Bit 2-8 RFU
<iconID>	Icon ID
	0 No icon
	1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code
	0 Command performed successfully. Indicate that the user has accepted the call request
	4 Command performed successfully, but requested icon could not be displayed
	16 Proactive SIM session is terminated by user
	32 UE is unable to process command currently
	48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.6 Play Tone (32)

After receiving the +QSTKURC: 32, you can get information via AT+QSTKGI=32, then response via AT+QSTKRSP=32,<result>[,<additional_info>].

Play Tone (32)	
Write Command(dedicate format) **AT+QSTKGI=32**	Response **+QSTKGI: 32,<command_details>,<text>,<tone>,<duration_unit>,<duration>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=32**	Response **+QSTKGI: 32,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=32,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU
<text>	String type; text
<tone>	Tone generated by the UE. 01-08 are standard supervisory tones and 16-18 are UE proprietary tones “01” Dial tone “02” Called subscriber busy “03” Congestion “04” Radio path acknowledge “05” Radio path not available/call dropped “06” Error/special information “07” Call waiting tone “08” Ringing tone “16” General beep “17” Positive acknowledgement tone “18” Negative acknowledgement or error tone
<duration_unit>	Duration unit 0 Minutes 1 Seconds 2 A tenth of a second
<duration>	Duration of tone in units, range is 1-255
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code. 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session is terminated by user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223 Range is 0-255

2.7.7 Display Text (33)

After receiving the +QSTKURC: 33, you can get information via AT+QSTKGI=33, then respond via

AT+QSTKRSP=33,<result>[,<additional_info>].

Display Text (33)	
Write Command(dedicate format) **AT+QSTKGI=33**	Response **+QSTKGI: 33,<command_details>,<text>,<immediate_response>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=33**	Response **+QSTKGI: 33,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=33,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Number parameter; display text command details, its value is 0-255 Bit 1 0: Normal priority 1: High priority Bit 2-7 RFU Bit 8 0: Clear message after a delay 1: Wait for user to clear message
<text>	String type; text
<immediate_response>	Immediate response 0 Send terminal response when text is cleared from screen 1 Send terminal response immediately and continue to display the text until one of the following events occurs: ● A subsequent proactive command is received, containing displayed data ● A short delay notified with <command_details> has expired ● User intervention ● A higher priority event occurs, e.g. a mobile terminated call
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session is terminated by user 17 Backward move in the proactive SIM session is requested by the user 18 No response from user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.8 Get Inkey (34)

After receiving the +QSTKURC: 34, you can get information via AT+QSTKGI=34, then respond via

AT+QSTKRSP=34,<result>,<input_string>[,<additional_info>].

Get Inkey (34)	
Write Command(dedicate format) **AT+QSTKGI=34**	Response **+QSTKGI: 34,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=34**	Response **+QSTKGI: 34,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=34,<result>,<input_string>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Number parameter; get inkey command details, its value is 0-255 Bit 1 0: Digits only 1: Alphabet set Bit 2 0: SMS default alphabet (GSM character set) 1: UCS2 alphabet Bit 3 0: Character sets defined by bit 1 and bit 2 are enabled 1: Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested Bit 4-7 RFU Bit 8 0: No help information is available 1: Help information is available
<text>	String type; text
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session is terminated by user 17 Backward move in the proactive SIM session requested by the user 18 No response from user 19 Help information is required by the user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<input_string>	Input string
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.9 Get Input (35)

After receiving the +QSTKURC: 35, you can get information via AT+QSTKGI=35, then respond via AT+QSTKRSP=35,<result>,<input_string>[,<additional_info>].

Get Input (35)	
Write Command(dedicate format) **AT+QSTKGI=35**	Response **+QSTKGI: 35,<command_details>,<text>,<input_min>,<input_max>,<default_input>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=35**	Response **+QSTKGI: 35,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=35,<result>,<input_string>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Number parameter; get input command details, its value is 0-255 Bit 1 0: Digits only 1: Alphabet set Bit 2 0: SMS default alphabet (GSM character set) 1: UCS2 alphabet Bit 3 0: ME may echo user input on the display 1: User input shall not be revealed in any way Bit 4 0: User input in unpacked format 1: User input in SMS packed format Bit 5-7 RFU Bit 8 0: No help information available 1: Help information available
<text>	String type; text
<input_min>	Minimum length of user input
<input_max>	Maximum length of user input
<default_input>	String type; default input text
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session is terminated by user 17 Backward move in the proactive SIM session requested by the user 18 No response from user 19 Help information is required by the user 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<input_string>	Input string
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.10 Select Item (36)

After receiving the +QSTKURC: 36, you can get information via AT+QSTKGI=36, then respond via

AT+QSTKRSP=36,<result >,<itemID> [,<additional_info>].

Select Item (36)	
Write Command(dedicate format) **AT+QSTKGI=36**	Response The response for first line of output: **+QSTKGI: 36,<command_details>,<item_num>,<title>,<default_itemID>,<item_icons_present>,<item_icons_qualifier>,<title_icon_qualifier>,<title_iconID>** **OK** There are repeated lines with total number of <item_num>, and here just lists one line of every item: **+QSTKGI: 36,<itemID>,<item_text>,<next_actionID>,<item_iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=36**	Response **+QSTKGI: 36,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=36,<result>,<itemID> [,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Details of selected item command Bit 1 0: Presentation type is not specified 1: Presentation type is specified in bit 2 Bit 2 0: Presentation as a choice of data values, if bit 1='1' 1: Presentation as a choice of navigation options if bit 1='1' Bit 3 0: No selection preference 1: Using soft key preferred to select Bit 4-7 RFU Bit 8 0: No help information is available 1: Help information is available
<item_num>	Number of items in the list
<title>	String type; title
<default_itemID>	Default item ID 0 No default item is issued 1-255 ID of the default Item
<item_icons_present>	Presence of item icon 0 No icon 1 Icon is presented
<item_icons_qualifier>	Item icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<title_icon_qualifier>	Title icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<title_iconID>	Title icon ID 0 No Icon 1-255 ID of Icon
<itemID>	Item identifier
<item_text>	String type; item text
<next_actionID>	The next proactive command type to be issued upon execution of the menu item.
<item_iconID>	Item Icon ID 0 No Icon 1-255 ID of Icon
<hex_string>	Proactive Command PDU

<result>	Command result code 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 16 Proactive SIM session terminated by user 17 Backward move in the proactive SIM session requested by the user 18 No response from user 19 Help information required by the user 32 UE is unable to process command currently 48 Command beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.11 Set up Menu (37)

After receiving the +QSTKURC: 37, you can get information via AT+QSTKGI=37, then respond via AT+QSTKRSP=37,<result>[,<additional_info>]. Especially, you can get main menu via AT+QSTKGI=37 at any time.

Set up Menu (37)	
Write Command(dedicate format) **AT+QSTKGI=37**	Response The response for first line of output: **+QSTKGI: 37,<command_details>,<item_num>,<title>,<item_icons_present>,<item_icons_qualifier>,<title_icon_qualifier>,<title_iconID>** There are repeated lines with total number of <item_num>, and here just lists one line of every item: **+QSTKGI: 37,<itemID>,<item_text>,<next_actionID>,<item_iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=37**	Response **+QSTKGI: 37,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=37,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Details of set up menu command Bit 1 0: No selection preference 1: Using soft key preferred to select Bit 2-7 RFU Bit 8 0: No help information is available 1: Help information is available
<item_num>	Number of items in the list
<title>	String type; title
<item_icons_present>	Presence of item icon 0 No icon 1 Icon is presented
<item_icons_qualifier>	Item icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<title_icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<title_iconID>	Title icon ID 0 No Icon 1-255 ID of Icon
<itemID>	Item identifier
<item_text>	String type; item text
<next_actionID>	The next proactive command type to be issued upon execution of the menu item.
<item_iconID>	Item Icon ID 0 No Icon 1-255 ID of Icon
<hex_string>	Proactive Command PDU
<result>	Command result code. 0 Command performed successfully. Indicate that the user has accepted the call request. 4 Command performed successfully, but requested icon could not be displayed 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.12 Set up Idle Mode Text (40)

After receiving the +QSTKURC: 40, you can get information via AT+QSTKGI=40, then respond via AT+QSTKRSP=40,<result>[,<additional_info>]. This command provides text, and an icon will be displayed by the TE optionally when the display is idle.

Set up Idle Mode Text (40)	
Write Command(dedicate format) **AT+QSTKGI=40**	Response The response for first line of output: **+QSTKGI: 40,<command_details>,<text>,<icon_qualifier>,<iconID>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=40**	Response **+QSTKGI: 40,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=40,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	RFU
<text>	String type; text to be displayed when TE is in idle mode
<icon_qualifier>	Icon qualifier Bit 1 0: Icon is self-explanatory and can replace text 1: Icon is not self-explanatory and shall be displayed with the text determined value only if associated icon ID is not 0 (an icon exists) Bit 2-8 RFU
<iconID>	Icon ID 0 No icon 1-255 ID of icon
<hex_string>	Proactive Command PDU
<result>	Command result code. 0 Command performed successfully. Indicate that the user has accepted the call request 4 Command performed successfully, but requested icon could not be displayed 32 UE is unable to process command currently 48 Command is beyond UE's capabilities
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

2.7.13 Language Notification (53)

After receiving the +QSTKURC: 53, you can get information via AT+QSTKGI=53, then respond via AT+QSTKRSP=53,<result>[,<additional_info>].

Language Notification (53)	
Write Command(dedicate format) **AT+QSTKGI=53**	Response The response for first line of output: **+QSTKGI: 53,<command_details>,<lang>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command(raw format) **AT+QSTKGI=53**	Response **+QSTKGI: 53,<hex_string>** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+QSTKRSP=53,<result>[,<additional_info>]**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**

Parameter

<command_details>	Details of language notification command Bit 1 0: Non-specific language notification 1: Specific language notification Bit 2-8 RFU
<lang>	Language code string is provided as a pair of alpha-numeric characters, defined in ISO 639. Each alphanumeric character is coded on one byte using the SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038
<hex_string>	Proactive Command PDU **<result>** Command result code 0 Command performed successfully. Indicate that the user has accepted the call request
<additional_info>	Optional additional command status; for possible values refer to ETSI TS 102 223. Range is 0-255

3 Examples of STK AT Command

3.1. Enable STK Function with Dedicate Format

3.1.1 Enable STK Function and Set up Menu

1. Switch on the module and enable STK function.

```
AT+QSTK=1,1,300                    //Enable STK function.
OK
```

2. Reset the module and you will receive the URC of the first proactive command, as follow:

```
+QSTKURC: 37
```

3. Request menu parameter information and respond to the menu setup proactive command.

```
AT+QSTKGI=37                       //Get menu setup proactive command information.
+QSTKGI: 37,0,13,"52A8611F57305E2600530049004D5361",0,0,0,0
+QSTKGI: 37,13,"621176848EAB4EFD8BA48BC1",0,0
+QSTKGI: 37,14,"77ED4FE17FA453D1",0,0
+QSTKGI: 37,17,"4E1A52A163A88350",0,0
+QSTKGI: 37,1,"00530049004D84254E1A5385",0,0
+QSTKGI: 37,2,"59296C1467E58BE2",0,0
+QSTKGI: 37,3,"62117684624B673A62A5",0,0
+QSTKGI: 37,4,"6211768498DE4FE1",0,0
+QSTKGI: 37,5,"621176845F6994C3",0,0
+QSTKGI: 37,6,"65E07EBF97F34E504FF14E5090E8",0,0
+QSTKGI: 37,7,"00310032003500380030 4FE1606F67E58BE2",0,0
+QSTKGI: 37,8,"68218BAF901A",0,0
+QSTKGI: 37,9,"94F64FE1901A",0,0
+QSTKGI: 37,15,"00530049004D53614FE1606F",0,0

OK
AT+QSTKRSP=37,0                    //Respond to menu setup proactive command.
OK

+QSTKURC: 33                       //Display text proactive command notification.
```

```
AT+QSTKGI=33                                    //Get the displayed text proactive command information.
+QSTKGI: 33,1,"6CA19519FF0162115C31662F004D002D005A006F006E00654EBA",0,0,0

OK
AT+QSTKRSP=33,0                                 //Respond to displayed text proactive command.
OK

+QSTKURC: 253                                   //URC indicates that the proactive session has ended.
```

3.1.2 Menu Selection and Set up Call

1. Select menu item.

```
AT+QSTKRSP=253,0,7                              //Select menu item, ID is 7.
OK
```

2. Select item.

```
+QSTKURC: 36                                    //Select item proactive command notification.

AT+QSTKGI=36                                    //Get the selected item proactive command information.
+QSTKGI: 36,0,3,"",0,0,0,0,0
+QSTKGI: 36,30,"4E1A52A14ECB7ECD",0,0
+QSTKGI: 36,31,"786E8BA462E86253",0,0
+QSTKGI: 36,51,"83DC53557BA17406",0,0

OK
AT+QSTKRSP=36,0,31                              //Respond to the selected item proactive command and the
                                                item (ID is 31) is selected.
OK
```

3. Set up call.

```
+QSTKURC: 16                                    //Set up call proactive command notification.
AT+QSTKGI=16                                    //Get the call proactive command information which you have
                                                set up.
+QSTKGI: 16,0,"","12580","",0,0,0,0

OK
AT+QSTKRSP=16,0                                 //Respond to the call proactive command.
+QSTKRSP: 16,0

OK
```

```
+QSTKURC: 253                          //URC indicates that the proactive session has ended.
```

3.1.3 Select Menu and Send SMS

1. Select menu item.

```
AT+QSTKRSP=253,0,14                    //Select menu item, ID is 14.
OK
```

2. Select item and edit SMS.

```
+QSTKURC: 36                           //Select item proactive command notification.

AT+QSTKGI=36                           //Get the selected item proactive command information.
+QSTKGI: 36,0,6,"",0,0,0,0,0
+QSTKGI: 36,1,"65B07F1677ED4FE1",0,0
+QSTKGI: 36,2,"5DF2653677ED4FE1",0,0
+QSTKGI: 36,3,"7EC454587BA17406",0,0
+QSTKGI: 36,4,"589E52A07FA47EC4",0,0
+QSTKGI: 36,5,"7FA47EC46539540D",0,0
+QSTKGI: 36,6,"522096647FA47EC4",0,0

OK
AT+QSTKRSP=36,0,1                      //Respond to the selected item proactive command and the
                                         item (ID is 1) is selected.
OK

+QSTKURC: 35                           //Get input proactive command notification.
AT+QSTKGI=35                           //Get the input proactive command information.
+QSTKGI: 35,3,"8F93516551855BB9FF1A",100,1,"",0,0      //Indicate input SMS content.

OK

AT+QSTKRSP =35,0,"00310038003200320036003600320031003100300036" //Respond to the input
                                                                   proactive command
                                                                   and input content.
OK

+QSTKURC: 36
AT+QSTKGI=36
+QSTKGI: 36,0,3,"",0,0,0,0,0
+QSTKGI: 36,1,"900962E97FA47EC4",0,0
+QSTKGI: 36,2,"900962E953F77801",0,0
+QSTKGI: 36,3,"8F93516553F77801",0,0
```

```
OK
AT+QSTKRSP=36,0,3
OK

+QSTKURC: 35
AT+QSTKGI=35
+QSTKGI: 35,0,"8F93516553F77801FF1A",16,3,"",0,0      //Indicate input SMS number.

OK
AT+QSTKRSP =35,0,"00310038003200320036003600320031003100300036"
OK

+QSTKURC: 36
AT+QSTKGI=36
+QSTKGI: 36,0,3,"",0,0,0,0,0
+QSTKGI: 36,1,"53D1900177ED4FE1",0,0
+QSTKGI: 36,2,"7EE77EED6DFB52A0",0,0
+QSTKGI: 36,3,"67E5770B63A56536800552178868",0,0

OK
AT+QSTKRSP=36,0,1
OK
```

3. Send SMS.

```
+QSTKURC: 19                                    //Send SMS proactive command notification.
AT+QSTKGI=19                                    //Get the sent SMS proactive command information.
+QSTKGI: 19,0,"7B2C003000315C01002C65364FE14EBA003A672A547D540D",0,0

OK
AT+QSTKRSP=19,0                                 //Respond to the SMS proactive command and send SMS.
+QSTKRSP: 19,0

OK
```

3.1.4 STK Session Termination and Timeout Response

1. Terminate STK session.

```
AT+QSTKRSP=253,0,7                              //Select menu item. ID is 7.
OK

+QSTKURC: 36                                    //Select item proactive command notification.
```

```
AT+QSTKGI=36                          //Get the selected item proactive command information.
+QSTKGI: 36,0,3,"",0,0,0,0,0
+QSTKGI: 36,30,"4E1A52A14ECB7ECD",0,0
+QSTKGI: 36,31,"786E8BA462E86253",0,0
+QSTKGI: 36,51,"83DC53557BA17406",0,0

OK
AT+QSTKRSP=254                        //Terminate STK session.
OK

+QSTKURC: 253                         //URC indicates that the proactive session has ended.
```

2. Timeout response of STK session.

```
AT+QSTKRSP=253,0,7                    //Select menu item, ID is 7.
OK

+QSTKURC: 36                          //Select item proactive command notification.
AT+QSTKGI=36                          //Get the selected item proactive command information.
+QSTKGI: 36,0,3,"",0,0,0,0,0
+QSTKGI: 36,30,"4E1A52A14ECB7ECD",0,0
+QSTKGI: 36,31,"786E8BA462E86253",0,0
+QSTKGI: 36,51,"83DC53557BA17406",0,0

OK

+QSTKURC: 255,36                      //Indicate the timeout response of STK session.

+QSTKURC: 253                         //URC indicates that the proactive session has ended and
                                        entered into main menu (different SIM cards may have
                                        different performances).
```

3.2. Enable STK Function with Raw Format

3.2.1 Enable STK Function and Set up Menu

1. Switch on the module and enable STK function.

```
AT+QSTK=2,1,300                       //Enable STK function.
OK
```

2. Reset the module and you will receive the URC of the first proactive command, as follow:

```
+QSTKURC: 37
```

3. Request menu parameter information and respond to the menu setup proactive command.

```
AT+QSTKGI=37                                    //Get menu setup proactive command information.
+QSTKGI:
37,D081D2810301250082028185118052A8611F57305E2600530049004D53618F0E0D80621176848
EAB4EFD8BA48BC18F0A0E8077ED4FE17FA453D18F0A11804E1A52A163A883508F0E0180005300
49004D84254E1A53858F0A028059296C1467E58BE28F0C038062117684624B673A62A58F0A04806
211768498DE4FE18F0A0580621176845F6994C38F10068065E07EBF97F34E504FF14E5090E88F140
78000310032003500380030 4FE1606F67E58BE28F08088068218BAF901A8F08098094F64FE1901A8
F0E0F8000530049004D53614FE1606F

OK

AT+QSTKRSP=37,0    //Respond to menu setup proactive command.
OK

+QSTKURC: 33          //Display text proactive command notification.

AT+QSTKGI=33          //Get the displayed text proactive command information
+QSTKGI:
33,D026810301210182028102 8D1B086CA19519FF0162115C31662F004D002D005A006F006E00654
EBA

OK

AT+QSTKRSP=33,0    //Respond to displayed text proactive command.
OK

+QSTKURC: 253      //URC indicates that the proactive session has ended
```

3.2.2 Menu Selection and Set up Call

1. Select menu item.

```
AT+QSTKRSP=253,0,7                          //Select menu item, ID is 7.
OK
```

2. Select item.

```
+QSTKURC: 36                                //Select item proactive command notification.

AT+QSTKGI=36                                //Get the selected item proactive command information.
+QSTKGI:
```

```
36,D02D810301240082028182 8F0A1E804E1A52A14ECB7ECD8F0A1F80786E8BA462E862538F0A3
38083DC53557BA17406

OK
AT+QSTKRSP=36,0,31                    //Respond to the selected item proactive command and the
                                      item (ID is 31) is selected.
OK
```

3. Set up call.

```
+QSTKURC: 16                          //Set up call proactive command notification.

AT+QSTKGI=16                          //Get the call proactive command information
+QSTKGI: 16,D00F8103011000820281838604812185F0    // which you have set up.

OK

AT+QSTKRSP=16,0                       //Respond to the call proactive command.
+QSTKRSP: 16,0

OK

+QSTKURC: 253                         //URC indicates that the proactive session has ended.
```

3.2.3 Select Menu and Send SMS

1. Select menu item.

```
AT+QSTKRSP=253,0,14                   //Select menu item, ID is 14.
OK
```

2. Select item and edit SMS.

```
+QSTKURC: 36                          //Select item proactive command notification.

AT+QSTKGI=36                          //Get the selected item proactive command information.
+QSTKGI:
36,D05181030124008202818 28F0A018065B07F1677ED4FE18F0A02805DF2653677ED4FE18F0A038
07EC454587BA174068F0A0480589E52A07FA47EC48F0A05807FA47EC46539540D8F0A068052209
6647FA47EC4

OK
AT+QSTKRSP=36,0,1                     //Respond to the selected item proactive command and the
                                      item (ID is 1) is selected.
OK
```

```
+QSTKURC: 35                                    //Get input proactive command notification.
AT+QSTKGI=35                                    //Get the input proactive command information.
+QSTKGI: 35,D01A81030123038202818 28D0B088F93516551855BB9FF1A91020164    //Indicate input
                                                //SMS content.

OK

AT+QSTKRSP =35,0,"00310038003200320036003600320031003100300036"  //Respond to the input
                                                                  proactive command
                                                                  and input content.
OK

+QSTKURC: 36
AT+QSTKGI=36
+QSTKGI:
36,D02D8103012400820281828F0A0180900962E97FA47EC48F0A0280900962E953F778018F0A038
08F93516553F77801

OK
AT+QSTKRSP=36,0,3
OK

+QSTKURC: 35
AT+QSTKGI=35
+QSTKGI: 35,D01A81030123008202818 28D0B088F93516553F77801FF1A91020310 //Indicate input
                                                                  //SMS number.

OK
AT+QSTKRSP =35,0,"00310038003200320036003600320031003100300036"
OK

+QSTKURC: 36
AT+QSTKGI=36
+QSTKGI:
36,D03381030124008202818 28F0A018053D1900177ED4FE18F0A02807EE77EED6DFB52A08F1003
8067E5770B63A56536800552178868

OK
AT+QSTKRSP=36,0,1
OK
```

3. Send SMS.

```
+QSTKURC: 19                                    //Send SMS proactive command notification.
AT+QSTKGI=19                                    //Get the sent SMS proactive command information.
```

```
+QSTKGI:
19,D03F810301130082028183051980 7B2C003000315C01002C65364FE14EBA003A672A547D540D8
6089168310820010 5F00B0F01000B813133195960F50008020033

OK
AT+QSTKRSP=19,0                    //Respond to the SMS proactive command and send SMS.
+QSTKRSP: 19,0

OK
```

3.2.4 STK Session Termination and Timeout Response

1. Terminate STK session.

```
AT+QSTKRSP=253,0,7                 //Select menu item. ID is 7.
OK

+QSTKURC: 36                       //Select item proactive command notification.
AT+QSTKGI=36                       //Get the selected item proactive command information.
+QSTKGI:
36,D02D8103012400820281828F0A1E804E1A52A14ECB7ECD8F0A1F80786E8BA462E862538F0A3
38083DC53557BA17406

OK
AT+QSTKRSP=254                     //Terminate STK session.
OK

+QSTKURC: 253                      //URC indicates that the proactive session has ended.
```

2. Timeout response of STK session.

```
AT+QSTKRSP=253,0,7                 //Select menu item, ID is 7.
OK

+QSTKURC: 36                       //Select item proactive command notification.
AT+QSTKGI=36                       //Get the selected item proactive command information.
+QSTKGI:
36,D02D8103012400820281828F0A1E804E1A52A14ECB7ECD8F0A1F80786E8BA462E862538F0A3
38083DC53557BA17406

OK

+QSTKURC: 255,36                   //Indicate the timeout response of STK session.
```

+QSTKURC: 253	//URC indicates that the proactive session has ended and entered into main menu (different SIM cards may have different performances).

3.3. Disable STK Function

After disabling the STK function, you should reboot the module.

AT+QSTK=0	//Disable STK function.
OK	

4 Appendix

4.1. Reference

Table 3: Related Documents

SN	Document Name	Remark
[1]	3GPP TS 11.14	Specification of the STK for the Subscriber Identity Module - Mobile Equipment
[2]	3GPP TS 11.111	Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)
[3]	ETSI TS 102 223	Smart Cards Card Application Toolkit (CAT)

Table 4: Terms and Abbreviations

Abbreviation	Description
ME	Mobile Equipment
TA	Terminal Adapter
MS	Mobile Station
DTE	Data Terminal Equipment
STK	SIM Application Toolkit
USAT	USIM Application Toolkit
URC	Unsolicited Result Code
SMS	Short Message Service
RFU	Reserved for Future Use

4.2. Common <err> Code

Table 5: Common <err> Code in STK AT Command

Code of <err>	Meaning
3	Operation not allowed
4	Parameters error
21	Invalid index

4.3. STK Protocol Structure

Here list some structures which have been used in this document for better understanding. More details please refer to 3GPP 11.14

4.2.1 Structure of SIM Application Toolkit Communications

Please refer to 3GPP 11.14 Annex D.

BER-TLV data object:

Tag	Length	Value	1..n SIMPLE TLV objects

SIMPLE-TLV data object:

Tag	Length	Value	1..n elements

If Length equal to or less than 0x7F, it only used 1byte, and If Length more than 0x7F, it used 2byte, and first byte equal to 0x81,the second byte indicate the length.

4.2.2 BER-TLV tag in SIM TO ME

Please refer to 3GPP 11.14 sub clause 13.2

Description	Length	Value
Proactive SIM command tag	1	D0

4.2.3 BER-TLV tag in ME TO SIM

Please refer to 3GPP 11.14 sub clause 13.1

Description	Length	Value
SMS-PP download tag	1	D1
Cell Broadcast download tag	1	D2
Menu Selection tag	1	D3
Call control tag	1	D4
MO Short message control tag	1	D5

Event download tag	1	D6
Timer expiration	1	D7

4.2.3 Simple TLV Objects

Please refer to 3GPP 11.14 sub clause 13.3 for Simple TLV tag value in both directions.
The structure of simple TLV data object is Tag, Length, Value elements. Below table lists tag value and elements.

Tag		Value	
Description	Value	Elements	Reference in GSM 11.14
Command details tag	01 or 81	Command number	12.6
		Type of command	
		Command Qualifer	
Device identity tag	02 or 82	Source device identity	12.7
		Destination device identity	
Result tag	03 0r 83	General result	12.12
Alpha identifier tag	05 or 85	Alpha identifier(If the first byte is “80”, it means UCS2 coding Schema)	12.2
Address tag	06 0r 86	TON and NPI	12.1
		Dialing number string	
SS string tag	09 or 89	TON and NPI	12.14
		SS or USSD string	
USSD string tag	0A or 8A	Data coding scheme	12.17
		USSD string	
SMS TPDU tag	0B or 8B	SMS TPDU	12.13
Text string tag	0D or 8D	Data coding scheme	12.9
		Text string	
Item tag	0F or 8F	Identifier of item	12.10
		Text string of item(If the first byte is “80”, it means UCS2 coding schema)	
Item identifier tag	10 0r 90	Identifier of item chosen	12.10
Response length tag	11 0r 91	Minimum length of response	12.11
		Maximum length of response	

Type of Command

Value	Name
10	Set up call
11	Send SS
12	Send USSD
13	Send SMS
14	Send DTMF

20	Play tone
21	Display text
22	Get inkey
23	Get input
24	Select item
25	Set up menu
28	Set up idle mode text
35	Language notification

Device identify

Value	Name
01	Keypad
02	Display
81	SIM
82	ME
83	Network

4.2.4 Example of parsing proactive command PDU

```
+QSTKURC: 37

AT+QSTKGI=37                    //Get menu setup proactive command information.
+QSTKGI:
37,D081D2810301250082028185118052A8611F57305E2600530049004D53618F0E0D80621176848
EAB4EFD8BA48BC18F0A0E8077ED4FE17FA453D18F0A11804E1A52A163A883508F0E0180005300
49004D84254E1A53858F0A028059296C1467E58BE28F0C038062117684624B673A62A58F0A04806
211768498DE4FE18F0A0580621176845F6994C38F10068065E07EBF97F34E504FF14E5090E88F140
78000310032003500380030 4FE1606F67E58BE28F08088068218BAF901A8F08098094F64FE1901A8
F0E0F8000530049004D53614FE1606F

OK
```

D0	Proactive SIM command tag
81D2	Total length(0xD2=210)
8103012500	Command details: length=0x03, command number=0X01, command type = 0x25(37: setup meun) command qualifier= 0x00
82028182	Device identity : length = 0x02, Source device=0x81(SIM) Destination device = 0x82(ME)
85118052A8611F57305E2600530049004D5361	Alpha identity:

	length=0x11(17) DCS=0x80(UCS2 coding) Text=52A8611F57305E2600530049004D5361（动感地带 SIM 卡)
8F0E0D80621176848EAB4EFD8BA48BC1	Item: Length= 0x0E(14) Item ID = 0x0D(13) DCS = 0x80(UCS2) Text=621176848EAB4EFD8BA48BC1(我的身份认证)
8F0A0E8077ED4FE17FA453D1	Item: Length= 0x0A(10) Item ID = 0x0E(14) DCS = 0x80(UCS2) Text=77ED4FE17FA453D1 (短信群发)
8F0A11804E1A52A163A88350	Item: Length= 0x0A(10) Item ID = 0x11(17) DCS = 0x80(UCS2) Text=4E1A52A163A88350 (业务推荐)
8F0E018000530049004D84254E1A5385	Item: Length= 0x0E(14) Item ID = 0x01(1) DCS = 0x80(UCS2) Text=00530049004D84254E1A5385 (SIM 营业厅)
8F0A028059296C1467E58BE2	Item: Length= 0x0A(10) Item ID = 0x02(2) DCS = 0x80(UCS2) Text=59296C1467E58BE2 (天气查询)
8F0C038062117684624B673A62A5	Item: Length= 0x0C(12) Item ID = 0x03(3) DCS = 0x80(UCS2) Text=62117684624B673A62A5 (我的手机报)
8F0A04806211768498DE4FE1	Item: Length= 0x0A(10) Item ID = 0x04(4) DCS = 0x80(UCS2) Text=6211768498DE4FE1 (我的飞信)
8F0A0580621176845F6994C3	Item: Length= 0x0A(10) Item ID = 0x05(5)

	DCS = 0x80(UCS2) Text=621176845F6994C3 (我的彩铃)
8F10068065E07EBF97F34E504FF14E5090E8	Item: Length= 0x10(16) Item ID = 0x06(6) DCS = 0x80(UCS2) Text=65E07EBF97F34E504FF14E5090E8 (无线音乐俱乐部)
8F1407800031003200350038003 04FE1606F67E58BE2	Item: Length= 0x14(20) Item ID = 0x07(7) DCS = 0x80(UCS2) Text=00310032003500380030 4FE1606F67E58BE2 (12580 信息查询)
8F08088068218BAF901A	Item: Length= 0x08(8) Item ID = 0x08(8) DCS = 0x80(UCS2) Text=68218BAF901A（校讯通）
8F08098094F64FE1901A	Item: Length= 0x08(8) Item ID = 0x09(9) DCS = 0x80(UCS2) Text=94F64FE1901A（银讯通）
8F0E0F8000530049004D53614FE1606F	Item: Length= 0x0E(14) Item ID = 0x0F(15) DCS = 0x80(UCS2) Text=00530049004D53614FE1606F （sim 卡信息）