Hughes

SMS Remote Control Feature

User Guide

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Overview:

The SMS Remote Control Feature provides remote management of a target BGAN unit via SMS. The feature allows a user to send commands within SMS messages to a Remote BGAN unit. Upon reception and authentication of a Remote Control SMS message, the Remote BGAN unit will process the user request, such as activate/deactivate PDP context or retrieve GPS information, etc. Command syntax details are given below.

The Remote SMS control feature (enable/disable) and the Authentication Password can be configured on the BGAN unit on the Web UI Security page.

Due to inherent limitations in the Satellite Gateways and the SMS protocol, the Remote SMS commands & response SMS messages may sometimes take a few minutes to be delivered and processed.

NOTICE

Please exercise patience as it may take up to 5-10 minutes for the two-way SMS messages to reach the recipients. Also wait at least 10 minutes before re-sending an SMS request.

Table 1 shows which features were added in which release.

Release	Feature
5.9.1.4	Added optional APN configuration fields to the _IREMWEB AT and SMS commands.
5.9.2.0	Handle any encoding of underscore (_) for ATCO remote SMS to support reception of SMS from any service provider. Support 15th digit of IMEI in ADPWRST remote SMS. No need to specify a dot "." For default ftp directory.
5.9.3.0	Added IP address option to ACTIVATE and DEACTIVATE remote control SMS commands to allow the control of PDP contexts via IP address. Added response messages for the DEACTIVATE SMS. Allow longer user name and passwords in ATCO commands. (Increased from 15 to 63 characters.)
5.8.3.0, 5.7.2.0 6.0.0.0	Added full remote SMS support to 9202, 9450 and 9211.
5.9.4.3 and others after 7/2015	Added filename to IGETFW response. Added directory and filename parameters to IGETFW. Added IHDEFAPN command
5.9.4.4 and others after 6/2016	Added ARP option to GETINFO command

Table 1: Feature Matrix

SMS Remote Command Summary:

The available SMS Remote Commands are summarized in Table 2, and parameter values are summarized in Table 3.

Command	Parm1	Parm2	Parm3	Parm4	Parm5	Parm6	Parm7	Password
ACTIVATE	<qos>	<PC/TE type>	<apn>	<user>	<pwd>			<rsms_pwd>
DEACTIVATE	<qos>	<PC/TE type>						<rsms_pwd>
CLEAR	<category>	SMS						<rsms_pwd>
GETINFO	<info_mode>	<dataset>						<rsms_pwd>
RESTART	<reset_type>	BGAN						<rsms_pwd>
WATCHDOG	<wdog_op>	<ping1>	<ping2>	<ping3>	<ping_ always>	<ping_ interval>	<wdog_ enable>	<rsms_pwd>
ATCO	<resp_mode>	<rsms_pwd>	<at_cmd>					(in Parm2)
ADPWRST	1	<imei>						<rsms_pwd>

Table 2: SMS Remote Commands

Parameter	Values	Interpretation
<qos>	**1**	Standard/background
	2	32kbps streaming service
	3	64kbps streaming service
	4	128kbps streaming service
	5	176kbps streaming service
	6	256kbps streaming service
	7	X-Stream
	8	½ HDR
	9	HDR
<PC/TE type>	**DHCP**	All TE's known via DHCP
	STATIC	All TE's known via ARP
	AWO	"Always On", deactivate context but leave UT up
	<name>	Name of specific TE, as known by DHCP server
	<IP addr>	IP Address of specific TE (or Global IP for DEACTIVATE)
	ANY	Any/all TE's attached
<apn>	*<APN>*	APN name, e.g. "bgan.inmarsat.com" (no quotes)
	NA	Placeholder when no APN is specified

Parameter	Values	Interpretation
<user>	*<string>*	Username associated with APN
	NA	placeholder when no APN username is specified
<pwd>	*<string>*	Password associated with APN username
	NA	Placeholder when no APN password is specified
<rsms_pwd>	*<string>*	Remote SMS password
<category>	**1**	Delete only Read SMS messages
	2	Delete Read and Sent
	3	Delete All except Unread
	4	Delete All SMS messages
<info_mode>	**1**	For non-GPS queries: verbose mode (with titles) For GPS query: position data only
	2	For non-GPS queries: terse mode (no titles) For GPS query: position data plus SMS usage
<dataset>	**GPS**	GPS position
	ARP	TE octet/MAC address and connection type list
	USAGE	Cumulative call time and data usage
	ALL	GPS position plus UT information
<reset_type>	**1**	Normal delay restart.
<wdog_op>	**1**	Get watchdog configuration
	2	Set watchdog parameters
<ping[1/2/3]>	*<IP addr>*	Up to three ping destination addresses
	NA	placeholder when no address is specified
<ping_always>	**0**	Send ping only if no traffic
	1	Always send ping, regardless of data traffic
	NA	placeholder when no value is specified
<ping_interval>	*<integer>*	Interval between pings (minutes)
	NA	placeholder when no value is specified
<wdog_enable>	**0**	Disabled
	1	Enabled
	NA	placeholder when no value is specified
<resp_mode>	**0**	"None" – send no responses to AT commands
	1	"Immediate" – immediate responses, but not unsolicited
	2	"Final" – suppress immediate if 'OK', plus unsolicited
	3	"All" – send both immediate and unsolicited responses
<at_cmd>	*<string>*	AT command, without prefix "AT"
<imei>	*<14 digits>*	IMEI of UT, without dashes or check digit

Table 3: SMS Remote Command Parameters

SMS Remote Command Definitions:

This section describes each SMS Remote Command in detail, providing complete syntax and parameter descriptions.

Syntax conventions

Syntax definitions use the following conventions:

- <parm> indicates that a parameter (without '<' and '>') must be filled in by the user.
- { <opt1> | <opt2> | … | NA } indicates that one of various options must be chosen by the user.
- There are no optionally present parameters – use "NA" when no value is defined (without the double-quotes).
- Keywords and parameters are separated by the space (ASCII 32) character.
- No distinction is made for numeric vs. string parameters, i.e. quotes are not required to delimit string parameters. If present, a quote will be treated as a character in the parameter. ATCO commands whose AT-command syntax requires quotes **do** still need the quotes in the SMS message, however.
- The command name and all keywords must be in upper case; most user-provided parameters are case sensitive but may be either case.

Common parameters

Parameters in this section are common to all Remote SMS commands.

`<rsms_pwd>`

The Remote SMS password field is used for protected access to the remote BGAN unit (prevents unauthorized access). The default password for the service is "remote". The Remote SMS management and the Remote password can be re-configured using security settings on the Web UI.

The Remote SMS password is typically the last parameter in the command string.

"ACTIVATE" and "DEACTIVATE" commands – PDP Context Management

Syntax

```
ACTIVATE <qos> {DHCP|STATIC|<name>|<IP addr>|ANY} {NA|<apn>}
    {NA|<apn_user>} {NA|<apn_pwd>} <rsms_pwd>
```

Activates a PDP context for the PC(s) connected to the BGAN unit with the specified connection type, optionally using a user-defined APN, username and password.

```
DEACTIVATE <qos> {DHCP|STATIC|AWO|<name>|<IP addr>|ANY} <rsms_pwd>
```

Deactivates and deletes the PDP context(s) for the PC(s) connected to the BGAN unit with the specified connection type.

Parameters

`<qos>`

A numeric value identifying the QoS for the data connection to be activated. For the 9502, only standard (background) QoS is supported. Streaming rates available depend on terminal class, e.g. only the 9211 supports HDR.

1: Standard (background) data service
2: 32kbs streaming service
3: 64kbps streaming service
4: 128kbps streaming service
5: 176kbps streaming service
6: 256kbps streaming service
7: X-Stream
8: ½ HDR
9: HDR

`PC/TE type`

String parameter used for PC/TE Identification on the Remote BGAN unit. This parameter can have one of the following values:

DHCP: Set this parameter to **DHCP** when the PDP context you're attempting to activate is for a PC (or PCs) that were connected to the Remote BGAN unit with dynamic IP address(es) (via DHCP). Note that all PCs that are connected and set up as DHCP clients to the target unit will be affected by this command, *i.e.* each DHCP-PC client will have a PDP context established (if ACTIVATE is used) or torn down (if DEACTIVATE is used).

STATIC: Set this parameter to **STATIC** when the PDP context you're attempting to activate is for a PC (or PCs) that were connected to the Remote BGAN unit with static IP address(es) (meaning without use of DHCP address resolution/assignment from the target unit). Note that all PCs that are connected and set up with static IP addresses to the target unit will be affected by this command, *i.e.* each connected Static PC will have a PDP

context established (if ACTIVATE is used) or torn down (if DEACTIVATE is used).

AWO: Set this parameter to AWO when the system is setup for Always On and Watchdog configuration. This option is intended for use with the DEACTIVATE command. It is equivalent to the "ANY" value (described below) with the following additional action: the PDP context will be deactivated and the Watchdog task will reboot the unit some time later based on the configured ping time. To return the system to a fully functional state use the SMS RESTART, NOT the ACTIVATE, command to reactivate the Always On context.

<name>: If you wish to perform the PDP activation on a specific PC name, set this parameter to that PC's name (without quotes or double-quotes).
Note: This feature works only when the desired PC is connected as a DHCP client (i.e. it was assigned a dynamic IP address). Note that the name of the PC also cannot contain any spaces.

The name definition differs somewhat between the most common operating systems:

> **Windows**: The computer name (on a PC, you can retrieve/change its name by right-clicking on the *My Computer* icon on the desktop and selecting *Properties*, then [click *Advanced Settings* on left bar (on newer Windows PCs, then] click the *Computer Name* tab, then click the *Change* button and use the "Computer name" field). Note that the PC name used in the ACTIVATE and DEACTIVATE commands must exclude the domain part (typically follows the computer name and begins with a dot (".")).
>
> **MacOs X**: The DHCP client ID as defined in the System Preferences pane
>
> **Linux**: The host name

<IP addr>: If you wish to perform the PDP activation on a specific PC's IP address, set this parameter to that PC's IP address (without quotes or double-quotes). Note that the PC does not need to be connected to the UT at the time. Be sure the IP address provided includes all 4 octets (with dots), and is in the same subnet as the UT IP address.

If you wish to perform a PDP deactivation on a specific PC that already has a PDP context active, set this parameter to that PC's IP address (all 4 octets, without quotes or double-quotes). You may alternatively specify the Global IP Address for the desired TE in this field, and the UT will deactivate the appropriate PDP context.

ANY: If you wish to perform the PDP activation for any PC connected to the Remote BGAN unit, use this parameter.

<apn>

APN name, e.g. bgan.inmarsat.com

<apn_user>

username to access the APN. If not required, use NA.

<apn_pwd>

password to access the APN. If not required, use NA.

Reply format

The response SMS for the Activate command has the following format:

```
IP: <global_IP_addr> ({<host_name>|<local_IP_addr>})
SMS-Free: {<free>|<total>}
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

… which includes the following data items:

<global_IP_addr>

Global IP address assigned to the PDP context by the network.

<host_name>

The hostname of the PC on the local LAN, if known by DHCP, for which the PDP context was created. If not known, <local_IP_addr> is displayed instead.

<local_IP_addr>

Local IP address for the PDP context, i.e. the IP address of the PC for which the context was created. This value is typically seen, instead of <host_name>, when IP addresses are statically configured on the local LAN.

<free>

Number of empty slots in the SIM for SMS message storage.

<total>

Total number of slots in the SIM for SMS message storage.

Usage examples

"ACTIVATE" Command Example 1: Activate PDP contexts with Standard data rate (background) service for all PCs that are connected to the target unit with dynamic IP addresses (via DHCP), using default APN/username/password and "remote" as the Remote SMS password:

```
ACTIVATE 1 DHCP NA NA NA remote
```

"ACTIVATE" Command Example 2: Activate a PDP context with Standard data rate (background) service for any PC that is connected to the target unit, using default APN/username/password and "remote" as the Remote SMS password:

```
ACTIVATE 1 ANY NA NA NA remote
```

"ACTIVATE" Command Example 3: Activate a PDP context with Standard data rate (background) service for the PC whose local IP address is 192.168.128.104, using default APN/username/password and "remote" as the Remote SMS password:

```
ACTIVATE 1 192.168.128.104 NA NA NA remote
```

"ACTIVATE" Response Examples: here are sample replies for the Activate commands shown above:

```
IP: 161.30.180.199 (lablt8)
SMS-Free: 88/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

And:

```
IP: 161.30.180.205 (192.168.128.251)
SMS-Free: 88/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

And:

```
IP: 161.30.164.157 (192.168.128.104)
SMS-Free: 74/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

"DEACTIVATE" Command Example 1: Deactivate all PCs connected to the UT via DHCP:

```
DEACTIVATE 1 DHCP remote
```

"DEACTIVATE" Command Example 2: Deactivate all PCs connected to the UT (includes DHCP and static IP address PCs):

```
DEACTIVATE 1 ANY remote
```

"DEACTIVATE" Command Example 3: Deactivate the PC whose local IP address is 192.168.128.104:

```
DEACTIVATE 1 192.168.128.104 remote
```

"DEACTIVATE" Response Examples: For deactivation, the corresponding messages from the examples above are:

```
LOCAL IP 192.168.128.101 DEACTIVATED
SMS-Free: 95/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

And:

```
LOCAL IP 192.168.128.251 DEACTIVATED
SMS-Free: 61/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

And:

```
LOCAL IP 192.168.128.104 DEACTIVATED
SMS-Free: 77/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly remote-SMS-
control
```

"CLEAR" command – SMS deletion

Syntax

```
CLEAR <category> SMS <rsms_pwd>
```

Deletes the requested SMS messages from the SIM card residing on the Remote BGAN unit

Parameters

```
<category>
```

A numeric value identifying the SMS category messages to be deleted.

1: READ messages
2: READ + SENT messages
3: READ + SENT + UNSENT messages
4: READ + UNREAD + SENT + UNSENT messages (ALL)

Reply format

No response SMS is sent for the CLEAR request.

Usage examples

The following examples show the SMS message format for deletion of user-selected SMS messages from the Remote BGAN unit.

Delete only the incoming SMS messages which have been read:

```
CLEAR 1 SMS remote
```

Delete incoming messages which have been read, plus messages which have been sent:

```
CLEAR 2 SMS remote
```

Delete incoming messages which have been read, plus messages which have been sent and "draft" messages which have not yet been sent:

```
CLEAR 3 SMS remote
```

Delete all messages in SIM storage:

```
CLEAR 4 SMS remote
```

"GETINFO" command – Information retrieval

Syntax

```
GETINFO <info_mode> {GPS|ARP|ALL|USAGE} <rsms_pwd>
```

Retrieves current information from the Remote BGAN unit

Parameters

`<info_mode>`

A numeric value indicating the desired response format. For the **GETINFO GPS** operation:

1: GPS Position data only
2: GPS Position data with SMS usage summary

For the **GETINFO ALL** and **GETINFO USAGE** operations:

1: **verbose** mode, with descriptive titles for each field
2: **terse** mode, for raw data without titles

For the **GETINFO ARP** operation, the value of <info_mode> is ignored (must use a '1' or '2' value, though).

Reply format

For the **GETINFO GPS** operation, the response SMS format is:

```
LAT:<latitude>
LON:<longitude>
FIX:<State: ACQ/2D/3D/STORED> <policy: OK/Barr>
TIME:<timestamp>
SMS-Free: <SMS Storage Unused> | <Total SMS Storage>  (SMS Summary)
```

The last line is included when <info_mode> is "2"; it is omitted when <info_mode> is "1".

For the **GETINFO ARP** operation, the response SMS format is:

```
<Last 2 octets of IP 1>,<MAC Address 1>,<'D'HCP or 'S'tatic connection>
<Last 2 octets of IP 2>,<MAC Address 2>,<'D'HCP or 'S'tatic connection>
<…>
```

This shows the last 2 octets of each connected TE's IP Address, the MAC address for each TE, and whether it is a DHCP (D) or Static (S) connection. Note that if more than 5 TEs are connected, only 5 will be shown, and the response will have the following as the last line returned:

```
+x MORE
```

where 'x' is the number of additional TEs detected.

For the **GETINFO ALL** operation, the **verbose** response SMS format is:

```
IMSI: <IMSI value>
IMEI: <IMEI value>
LAT: <latitude> LON:<longitude>
SW: <version>
C/N0: <beam strength>
BEAM: <Beam number>
Uptime: <time since last reboot in seconds>
GIP: <Global IP address of first active PDP context>
```

For the **GETINFO ALL** operation, the **terse** response SMS format is:

```
<UT's IMSI value> <UT's IMEI> <latitude> <longitude> <current software
version> <current signal-to-noise ratio> <current beam number> <
seconds since last reboot> <Global IP address of first active context.
'0.0.0.0' means no active context>
```

For the **GETINFO USAGE** operation, the **verbose** response SMS format is:

```
CS: <secs> sec
PS: <Mbytes> MB
```

. . . where <secs> is the cumulative time of all CS calls, in seconds, and <Mbytes> is the cumulative number of bytes transported by all PDP contexts, in megabytes.

For the **GETINFO USAGE** operation, the **terse** response SMS format is:

```
<secs> <Mbytes>
```

Usage examples

Example 1: Remote SMS message to request GPS position data only:

```
GETINFO 1 GPS remote
```

Returned data:

```
LAT: 32.89495
LON:-117.20205
FIX:3D OK
TIME:12/04/17 01:21:25
```

Example 2: Remote SMS message to request GPS Position & SMS Summary:

```
GETINFO 2 GPS remote
```

Returned data:

```
LAT: 32.89495
LON:-117.20205
FIX:3D OK
```

```
TIME:12/04/17 01:21:25
SMS-Free: 89/100
```

Example 3: Remote SMS message to request ALL info with verbose response:

```
GETINFO 1 ALL remote
```

Returned data:

```
IMSI: 901112112456789
IMEI: 35393803001003
LAT: 32.89495 LON:-117.20205
SW: 0.0.0.31
C/N0: 66
Beam: 84
Uptime: 59483
GIP: 161.30.23.43
```

Example 4: Remote SMS message to request USAGE info with terse response:

```
GETINFO 2 USAGE remote
```

Returned data:

```
0 37
```

Example 5: Remote SMS message to request ARP data for connected TEs:

```
GETINFO 1 ARP remote
```

Returned data:

```
128.101,00:1A:24:60:C5:E8,D
128.200,3C:37:52:5E:40:70,S
```

"RESTART" command – Terminal reboot

Syntax

```
RESTART <reset_type> BGAN <rsms_pwd>
```

Restarts the Remote BGAN unit. A delay of 40 seconds (nominally) occurs before rebooting.

The command is rejected if less than 15 minutes have transpired since the last reboot.

Parameters

`<reset_type>`

A numeric value identifying the reset type; must be set to 1.

1: Default (normal delayed reboot)

Reply format

No response is sent.

Usage examples

The following is the message format to RESTART the Remote BGAN unit.

```
RESTART 1 BGAN remote
```

"WATCHDOG" command – Connection status detection

Syntax

Retrieve current Watchdog settings:

```
WATCHDOG 1 <rsms_pwd>
```

Modify current Watchdog configuration:

```
WATCHDOG 2 {<ping1>|NA} {<ping2>|NA} {<ping3>|NA} {<mode>|NA}
    {<interval>|NA} {<enabled>|NA} <rsms_pwd>
```

Parameters

`<ping1>, <ping2>, <ping3>`

Configure one to three ping IP addresses that can be pinged by the UT over the satellite link.

`<mode>`

If this field is set to 1, the UT will always send pings at the defined interval. If the field is set to 0, the UT will not send pings if any IP data traffic was sent or received within the ping interval. This setting reduces the number of pings sent over the air

`<interval>`

Controls the interval, in minutes, at which the UT sends pings to check for connectivity. The minimum value is 5 minutes.

`<enabled>`

To enable the watchdog to detect problems and auto-recover, set this field to 1. Set to 0 to disable the watchdog function.

Reply format

The response SMS format for the get WATCHDOG request (there is no response to the set WATCHDOG unless there is an error):

```
IMEI: <UT's IMEI >
<Ping Address 1> <Ping Address 2> <Ping Address 3>
Ping Req = <YES/NO>
Ping Freq = <frequency in minutes>
Watchdog Enabled = <Yes/NO>
```

Usage examples

Example 1: Set all 3 ping addresses, require pings regardless of other data, ping frequency is 23 minutes and Watchdog function is enabled:

```
WATCHDOG 2 4.2.2.1 8.8.8.8 200.245.234.222 1 23 1 remote
```

Example 2: Change only second ping address leaving all other parameters as is:

```
WATCHDOG 2 NA 8.8.8.9 NA NA NA NA remote
```

Example 3: Disable operation of the Watchdog function:

```
WATCHDOG 2 NA NA NA NA NA 0 remote
```

Retrieve configuration parameters of the Watchdog function:

```
WATCHDOG 1 remote
```

"ATCO" command – AT Command access

This section describes the details of the ATCO Remote SMS command. For a list of which AT commands are supported by the ATCO command, and usage syntax and examples, see the "ATCO Commands " section which starts on page 24.

Syntax

```
ATCO <resp_mode> <rsms_pwd> <at_cmd>
```

Passes an AT command to the AT command handler and returns the response(s) in SMS messages.

The AT command is not case-sensitive, but for some AT commands, certain parameters may be, such as usernames and passwords.

Note that unlike other Remote SMS commands, the RSMS password is not the final parameter on the command line. This allows for AT command strings containing whitespace characters, which would otherwise confuse the Remote SMS command parsing function.

Parameters

```
<resp_mode>
```

A numeric value indicating which AT command results to send back to the user.

0: "None" – Send no response at all.

1: "Immediate Only" – Send only one response, consisting of the first N characters of any output, and the result code returned

immediately by the command, typically “OK” or “ERROR”. Unsolicited responses from the command are not sent.

2: “Final Only” – Send an SMS response containing the immediate result code only if it is an error indication, then sends an SMS for subsequent unsolicited result codes generated by the command function. This is the recommended value.

3: “All” – Send an SMS response containing the first N characters of any output (as many as will fit within a single SMS message), the immediate result code (“OK” or “ERROR”), and also send an SMS for subsequent unsolicited result codes generated by the command function.

`<at_cmd>`

AT command text, without the leading “AT”, e.g. “_IREMWEB=0”.

Note that quote characters should be included in the command only as expected by the AT command parser.

Reply format

The response SMS format for the ATCO request may have two forms. For the immediate response of an AT command, the format is:

```
ATCO:{OK|ERROR} <: response text from AT command>
```

For unsolicited responses, the format is:

```
<command>: <response code>, <response text>
```

… where <command> is the AT command function which generated the unsolicited response, e.g. “_IUPDFW”, <response code> is a numeric value, and <response text> is a textual description of the unsolicited response.

Usage examples

This Remote SMS command will cause a BGAN terminal to download and activate a new application binary image file:

```
ATCO 2 remote _IGETFW=1
```

If successful, the SMS response would be:

```
_IGETFW: 0, Complete
```

For more examples and a complete description of all available AT commands and responses, refer to the “ATCO Commands ” section, page 24.

“ADPWRST” command – Admin password control

Syntax

```
ADPWRST 1 <imei> <rsms_pwd>
```

Resets the UT admin password to “admin”. Must provide the 14 digit unit IMEI (command will also accept the 15 digit IMEI and ignore the check digit). UT returns a success SMS if the command is accepted and the password is reset. If any parameters are wrong, it discards the SMS.

Parameters

```
<imei>
```

14-digit IMEI (without the check digit) of the BGAN UT.

Reply format

The response SMS format for the ADPWRST command:

```
ADMIN RESET SUCCESS
SMS-Free: 88/100
WARNING: Ensure SMS-free > 5. Cleanup old msgs for orderly Remote SMS
Control
```

Usage example

Example of Remote SMS command to reset the Admin password of a UT with IMEI 363538-06-012345:

```
ADPWRST 1 36353806012345 remote
```

Reject Responses:

If the Remote BGAN unit encounters an error in processing the Remote SMS message, a reject response SMS message will be sent back indicating the cause. However, all kinds of errors are not guaranteed to result in an SMS back to the originator. The following table summarizes the various Reject responses sent by the Remote BGAN unit and possible causes.

Reject Response SMS	Possible Cause
WRONG PASSWORD	Authentication Failure
WRONG QOS	Invalid QoS Requested (only a QoS of 1 is valid).
WRONG CONNECTION TYPE(NO DHCP TE)	No DHCP TEs connected to the Remote Unit
WRONG CONNECTION TYPE(NO STATIC TE)	No Static TEs connected to the Remote Unit
WRONG CONNECTION TYPE(NO TEs)	No TEs are connected to the Remote Unit
ACT/DEACT PARM PROBLEM	The <IP addr> provided for an ACTIVATE or DEACTIVATE command is incorrect (for ACTIVATE, it must be in same subnet as the UT IP and not be the UT IP; for DEACTIVATE, it must exist as a local or global IP address in the existing PDP table).
INVALID RESTART REQUEST	Attempt to perform restart before UT has been running for at least 15 minutes
INVALID WATCHDOG PING ADDRESS	Entered Ping address is out of range (0.0.0.0 – 255.255.255.254)
INVALID WATCHDOG PING FREQUENCY	Requested Ping Frequency is less than the minimum (5 minutes)
INVALID WATCHDOG REQUEST	"Ping required" or "wdog enabled" fields incorrect in remote sms message, or watchdog request other than "get" attempted
ATCO ERROR	Unable to send AT command to ATC handler
COMMAND NOT SUPPORTED	Attempt to use an SMS command not supported by the target platform

Table 4: Reject Responses

ATCO Commands and Operation

This section provides details of the AT commands supported by the ATCO Remote SMS command. For command syntax and other details about the ATCO command itself, refer to the "ATCO command" section on page 20.

Usage examples given below include the required ATCO encapsulation for Remote SMS. For these examples, the Remote SMS password is presumed to be "rsmsPwd".

Only certain AT commands are supported by the ATCO Remote SMS command, as enumerated in **Table 5**. See the following sections for details of each command.

Only certain variants of each command are supported by the ATCO command. For example, the "command definition" variant, with "??" after the command name, is not supported. *This document discusses only the variants supported by ATCO.* For complete details on each command, refer to the AT Command reference in the latest release notes.

AT command	Function
_IGETFW	Get new firmware
_IUPDFW	Update unit to new firmware
_ISENDFILE	Send a file from the unit to a server
_IGETFILE	Transfer a file from an FTP server to the unit
_IUPDCFG	Update to a new configuration file
_IREMWEB	Open a connection for remote access to the unit's Web UI
_IATCSCN	Initiate a scan to check for ATC interference
_IATCROBST	Configure the ATC robustness feature
_ICPWD	Change the unit's admin password
_IHDEFAPN	Define and change the default APN

Table 5: Supported AT Commands

Several of the supported AT commands (the first six in the table above) constitute the "Remote Management" feature. They use a common set of unsolicited response codes to return status information to a network administrator. **Table 6** lists the possible response codes and text for the Remote Management feature.

Other AT commands supported by ATCO have their own response mechanisms, described below in each corresponding section.

Code	Text	Explanation
General codes		
0	Complete	Operation completed successfully
1	Unexpected software error	Software error
2	Local file open error	_IGETFW: could not open local file for download _IUPDFW: could not open control file for update parameters _IUPDCFG: could not compute checksum for new config file.
3	Directory not found	Could not find specified directory on UT file system.
4	File not found	Could not find named file (on local file system).
5	Error renaming file	_IUPDFW: Could not restore 'image.txt' after failed upgrade. _IUPDCFG: Could not rename new file to 'config.txt'.
6	Parameter error	Error found in a parameter, e.g. invalid value, string too long, etc.
Context Management codes		
10	No entry in context table	No free entry in context ID table (all 11 contexts in use)
11	Context parameter error	Internal software error
12	Local IP addr error	Internal software error
13	Context activation error	Context activation failed. Could be problem with PS attach, SIM subscription, APN, network or connectivity.
14	Context deactivation error	Context deactivation failed
FTP Management codes		
20	FTP hookup fail	Connection to FTP server failed. Problem could be server unreachable or specified IP address or server name invalid, or connectivity failure.
21	FTP login fail	FTP username or password incorrect
22	FTP 'type' fail	Could not establish "binary" mode.
23	FTP 'cwd' fail	Could not change to working directory on FTP server.
24	FTP data connection fail	Could not establish an FTP data connection with the server.
25	FTP 'nlst' fail	Could not get list of files in current FTP server directory. Directory may be empty.
26	FTP xfer command fail	Could not initiate data transfer on an established connection. May be caused if filename not found.
27	FTP found no filename	Could not find a filename in the current server directory.
28	FTP local file read/write fail	Error while writing downloaded file to UT flash or reading upload file data.
29	FTP socket fail	Error while reading or writing FTP data socket.
30	FTP completion error	Error while closing the current FTP connection.
31	FTP xfer timed out	FTP client timed out waiting for socket ready (read or write), e.g. due to loss of connectivity during transfer.
_IGETFW command codes		
40	File in use, cannot download	The file to be downloaded is the same (by name) as the image currently in use.
41	Starting immediate update…	Normal success. File downloaded successfully, now starting immediate update.
42	Complete	The file listed in the response was successfully downloaded to the UT.
_IUPDFW command codes		
50	New firmware file not found	Could not find filename specified in upgraded control file.
51	New firmware file corrupt	Firmware file failed checksum test.
52	New firmware file failure	The new firmware failed to run or failed to acquire the network and the unit fell back to the old release.

Code	Text	Explanation
53	Upgrade admin file error	Problem with local file manipulation during upgrade process.
54	Upgrade status file error	Problem with local file manipulation during upgrade process
_IGETFILE command codes		
60	Can't overwrite protected file	File specified in AT command was 'config.txt', 'config.chk', 'config_bk.txt', 'config_bk.chk'
_IUPDCFG command codes		
70	Can't use reserved file	Attempt to use one of protected config files as the new config.txt file.
_IREMWEB command codes		
80	Invalid IP address string	An IP address parameter string could not be interpreted as a legitimate IP address.
81	Global IP: <ip_addr>	REMWEB connection set up successfully. Indicates global IP address assigned to the UT's own PDP context, to which an HTTP connection may be made.

Table 6: Response Codes

Syntax conventions

AT Command syntax definitions use the following conventions:

- <parm> indicates that a parameter (without '<' and '>') must be filled in by the user.
- { <opt1> | <opt2> | … | NA } indicates that one of various options must be chosen by the user.
- [<options>] indicates that <options> may or may not be included in the command.

The AT Command parser requires formatting as follows:

- String parameters must be enclosed in double-quotes (ASCII 34) and numeric parameters must not be. Only the ASCII double-quote is recognized; slanted quotes, e.g. from the Windows-1252 or UTF-8 character sets, **are not valid**. Quote characters are shown in the syntax definitions which follow.
- Parameters must be separated by the comma character (ASCII 44), and must be included even if a parameter is absent and a subsequent parameter is present (parameters are assigned specific positions in command strings).

The AT Command parser allows the following:

- The space character (ASCII 32) may be included before or after parameters and commas. Spaces are ignored unless within a string parameter.
- The AT command name is not case-sensitive.

Common parameters

Parameters in this section are common to many AT commands supported by the Remote SMS. Other parameters are described in their respective sections.

`<ftp_server>`

Identifies the FTP server used for file transfers by a command. The field may be specified as an IP address, e.g. "161.30.11.22", or a domain name, e.g. "ftp.inmarsat.com". The UT uses DNS to resolve domain name parameters. The maximum length of the domain name is 127 characters.

`<ftp_uname>`
`<ftp_passwd>`

Login ID and associated password for the FTP server. Max length, 63 characters.

`<apn>`

Identifies the APN to be used in creating a PDP context for Remote Management data traffic.

`<apn_uname>`
`<apn_passwd>`

Login ID and associated password for the APN.

`<local_dir>`

The name of a directory path the UT to be accessed by the file transfer operation. The name is relative to the default non-volatile file system root directory, "/tffs0/". The parameter may be left blank for access to that directory. Other meaningful values:

"/ram0" – allows access to the RAM disk for log files, etc.

"bin" – access the bin folder where application image files reside ("/tffs0/bin").

`<ftp_dir>`

The name of a directory path on an FTP server to be accessed by the file transfer operation. The name is relative to the login directory of the FTP account in use. For example, if the default FTP directory at login is "/netman/" and the desired directory is "/netman/logs/" then the <ftp_dir> parameter should simply be "logs".

In release 5.9.1.4 and older, use "." (a single dot) for this parameter when the desired directory is the default login directory. Newer releases will allow the dot to be omitted.

Note that the string is passed verbatim to the FTP server in the "CWD" primitive operation, so, with most servers, a full path may be specified to access a directory other than in the login account's directory tree. The max length is 63 characters.

`<filename>`

The name of a file to be transferred by FTP. The name must comply with naming conventions on both the FTP server and the UT, or FTP errors may be returned. The name must not include directory path information; specify all directories and paths using the <local_dir> and <ftp_dir> parameters described above.

Filename are typically case sensitive on most FTP servers, and always on the UT. Max length, 63 characters.

"_IGETFW" command – Firmware download

The IGETFW command causes a UT to download a new application file (firmware). It may be sent via the Remote SMS ATCO command to upgrade a UT remotely.

_IGETFW command behavior:

- create context for UT
- delete existing image files (bganx*.bin) in the /tffs0/bin directory, except for the active release
- log into the specified FTP server
- determine the file to download based on default path for the terminal type: e.g. /9502/* , or (in releases after 7/2015) use the directory and filename optionally provided in the command.
- download the file to the "/tffs0/bin" directory
- The first parameter in the command is the upgrade 'mode', if 'mode' is '1', the UT kicks off an immediate update using the downloaded file. If 'mode' is 0, the upgrade must be subsequently initiated via the _IUPDFW command.
- send unsolicited result codes to AT interface or via SMS.

Syntax

```
AT_IGETFW=<mode>[,"<ftp_server>"[,"<ftp_uname>"[,"<ftp_passwd>"
    [,"<apn>"[,"<apn_uname>"[,"<apn_passwd>"[,"<ftp_dir>"[,"<filename>"]
    ]]]]]]]
```

Parameters

(For parameters not listed here, refer to "Common Parameters" on page 27.)

`<mode>`

Flag value indicating whether the newly downloaded application binary should be activated immediately, or deferred until commanded:

0: deferred activation
1: immediate activation

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: Refer to **Table 6** for possible responses.

Usage examples:

Example 1: Command the unit to download the latest firmware using defaults for all FTP and APN parameters. In this case, because the second parameter is "3", up to two responses (SMS) will be received:

```
ATCO 3 rsmsPwd _IGETFW=0
```

If successful, the first SMS response would be:

```
ATCO:OK
```

Followed by the second response SMS:

```
_IGETFW: 0, Complete
```

Or in 2015 releases, it includes the downloaded filename:

```
_IGETFW: 42, Complete: : bganx_5_9_4_3.bin
```

Example 2: Command the unit to download the latest firmware from the default server and immediately upgrade. In this case, with the response mode parameter set to "2", only the second SMS response will be received:

```
ATCO 2 rsmsPwd _IGETFW=1
```

Example 3: Manually specify FTP server, login information, and APN string, assuming APN does not require username or password.

```
ATCO 2 rsmsPwd _IGETFW=0,"ftp.test.com","user","pass",
    "bgan.inmarsat.com"
```

Example 4: With releases after 7/2015 manually specify FTP server, login information, APN string (assuming APN does not require username or password) and directory and filename.

```
ATCO 2 rsmsPwd _IGETFW=0,"ftp.test.com","user","pass",
    "bgan.inmarsat.com",,,"/fwdir","myfw.bin"
```

"_IUPDFW" command – Firmware upgrade

The IUPDFW command causes a UT to activate a new application (firmware) file if it was not immediately activated by setting the 'mode' parameter to '1' in a previous _IGETFW command.

_IUPDFW command behavior:

- check for existence of specified file
- create control files for update operation
- kick off update process by rebooting
- send unsolicited result codes to AT interface or via SMS.

If the new firmware fails to attach to the network or the binary is invalid, the previous running firmware is restored.

Syntax

```
AT_IUPDFW="<filename>"
```

Parameters

```
<filename>
```

The name of a binary image file to be activated. It is presumed to already exist in on the UT in the directory "/tffs0/bin", i.e. where the _IGETFW command downloads files.

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: Refer to **Table 6** for possible responses.

Usage example

Example 1: begin installation of file 'bganx_5_9_1_4.bin', downloaded previously:

```
ATCO 2 rsmsPwd _IUPDFW="bganx_5_9_1_4.bin"
```

"_ISENDFILE" command – Transfer a file from the UT

The ISENDFILE command causes the UT to initiate a connection to an FTP server and upload a file to it.

_ISENDFILE behavior:

- create context for UT
- log into the specified FTP server
- put the specified file to specified directory on the server
- send unsolicited result codes to AT interface or via SMS.

Syntax

```
AT_ISENDFILE=<"local_dir">,<"filename">,<"ftp_dir">,
    <"ftp_server">,<"ftp_uname">,<"ftp_passwd">
    [,"<apn>","<apn_uname>"[,"<apn_passwd>"]]]
```

Parameters

Refer to "Common Parameters" on page 27.

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: Refer to **Table 6** for possible responses.

Usage examples

Example 1: upload file 'syslog.log' from UT directory '/ram0' to FTP server's default login directory, using default APN:

```
ATCO 2 rsmsPwd _ISENDFILE="/ram0", "syslog.log", ".", "ftp.test.com",
    "user", "pass"
```

Example 2: put a copy of the current configuration file onto the Inmarsat test server in the test/user directory, using the APN 'apn.test.com':

```
ATCO 2 rsmsPwd _ISENDFILE="","config.txt","test/user",
    "161.30.105.72","user1", "pass1","apn.test.com"
```

"_IGETFILE" command – Transfer a file to the UT

The IGETFILE command causes the UT to initiate a connection to an FTP server and download a file from it. Certain files in the UT file system are protected, and an attempt to overwrite them with a new file of the same name will result in an error. For example:

- config.txt, config_bk.txt, config.chk, config_bk.chk
- whatever file is named in image.txt

_IGETFILE command behavior:

- create context for UT
- log into the specified FTP server
- get the specified file from the server
- send unsolicited result codes to AT interface or via SMS.

Syntax

```
AT_IGETFILE="<ftp_dir>","<filename>","<local_dir>","<ftp_server>","<ftp
    _uname>","<ftp_passwd>"[,"<apn>"[,"<apn_uname>"[,"<apn_passwd>"]]]
```

Parameters

Refer to "Common Parameters" on page 27.

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: Refer to **Table 6** for possible responses.

Usage example

Example 1: Download a new configuration file 'config.new' from FTP directory 'mycust' to default directory '/tffs0' from FTP server as specified, using default APN:

```
ATCO 2 rsmsPwd _IGETFILE="mycust","config.new",,
    "ftpserverURL","ftpuser","ftppass"
```

"_IUPDCFG" command – Activate a new 'config.txt' file

The IUPDCFG command causes a UT to start using a new configuration file. Note that the new file cannot be named config.txt, config_bk.txt, config.chk, config_bk.chk or image.txt, as these are protected files.

_IUPDCFG command behavior:

- verify that the name of the new file is not one of the protected file names
- backup the existing config.txt, rename the new file to config.txt and compute checksum
- reboot
- send unsolicited result codes to AT interface or via SMS.

Syntax

```
AT_IUPDCFG="<filename>"
```

Parameters

```
<filename>
```

The name of the new configuration file to be used.

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: Refer to **Table 6** for possible responses.

Usage example

Example 1: Install 'config.new' as the new 'config.txt' and reboot UT to begin using it:

```
ATCO 2 rsmsPwd _IUPDCFG="config.new"
```

"_IREMWEB" command – Enable HTTP access to UT

The IREMWEB command causes a UT to create a PDP context and allow remote access to the web MMI over the wide area network.

_IREMWEB command behavior:

- create context for UT
- create a rule in the UT firewall to allow port 80 traffic only from the specified IP address range
- send unsolicited result codes to AT interface or via SMS.

An unsolicited result code is generated indicating the global IP address assigned to the context, i.e. the IP address at which the UT's web interface may be accessed.

Syntax

```
AT_IREMWEB=<mode>[,"<ip_addr_lo>"[,"<ip_addr_hi>"]][, <APN name>[, <APN
    username>, <APN password>]]
```

Parameters

(For parameters not listed here, refer to "Common Parameters" on page 27.)

`<mode>`

Flag which indicates state of operation:

0: disable, if a REMWEB context exists, take it down
1: enable, create a new context and allow access

If REMWEB is already active and a new command is received with <mode>=1, the existing context is taken down and a new context is created using the new IP address parameters.

`<ip_addr_lo>`

IP address of the HTTP client that should be allowed access through the UT firewall.

Or, the lowest address in a range of IP addresses, if a range of addresses is allowed.

This parameter is ignored if <mode>=0, but must be specified if <mode>=1.

`<ip_addr_hi>`

The upper IP address of a range of allowed IP addresses. This parameter is optional; if omitted, only the specified single IP address <ip_addr_lo> may access the UT.

e.g. AT_IREMWEB=1,"98.150.120.17" allows only the address 98.150.120.17 to access the Web UI.

Responses

Immediate: OK if command accepted for processing, ERROR if command has syntax or parameter errors.

Unsolicited: The IP address assigned to the UT PDP context is returned in an unsolicited response on the AT interface:

```
_IREMWEB: 81, Global IP: <ip_addr>
```

Where <ip_addr> is the address temporarily assigned to the UT.

Refer to **Table 6** for other possible responses.

Usage examples

Example 1: initiate remote web access from a single IP address, 161.20.1.2:

```
ATCO 2 rsmsPwd _IREMWEB=1,"161.20.1.2"
```

If successful, the unsolicited response would be, e.g.:

```
_IREMWEB:81, GlobalIP:161.30.22.25
```

Per **Table 6**, the code 81 indicates success and the Global IP address "161.30.22.25" is the IP address of the UT. To invoke the web user interface, enter "http://161.30.22.25" into the address field of a web browser.

Example 2: Allow computers in IP address range 98.150.120.0 to 98.150.121.254 to remotely access Web UI.

```
ATCO 2 rsmsPwd _IREMWEB=1,"98.150.120.0","98.150.121.254"
```

Example 3: Deactivate a REMWEB context and session. In this example, the response mode is set to "0" so that no response SMS is returned. Success could be verified by noting the failure of the web interface to respond:

```
ATCO 0 rsmsPwd _IREMWEB=0
```

Example 4: initiate remote web access from a single IP address, 161.20.1.2 using a specified APN. Note the comma to indicate no second IP address parameter:

```
ATCO 2 rsmsPwd _IREMWEB=1,"161.20.1.2",,"apn.test.com"
```

REMWEB Usage guidelines

Unlike local access to the web interface, log files cannot be downloaded from the home page via REMWEB because they use a separate IP address and FTP is blocked by the firewall. Use _ISENDFILE instead.

Network Address Translation (NAT) in the Distribution Partner APN may cause problems with IREMWEB. If the UT's global IP address is a private address, only hosts in the same domain may be able to reach it. Also, the IP address (or range) configured for the HTTP client must be that which appears on the network after any address translation. If the client host has a NAT-ed address, use **www.whatismyipaddress.com** to find the global IP address to use in the IREMWEB command, e.g. 'ipconfig' on the host shows private corporate IP address 10.130.25.147, but whatismyipaddress shows, 98.150.120.17, so use the 98… address in the IREMWEB command.

"_IATCSCN" command – Initiate an ATC scan

The IATCSCN command causes a UT to initiate a scan for ATC (ancillary terrestrial component) sources that could cause RF interference. After the scan completes and the terminal reboots, results are returned.

Syntax

```
AT_IATCSCN
```

Initiates scan operation.

Parameters

No parameters.

Responses

Immediate responses on a regular AT interface: OK if scan started, else ERROR, e.g. if a scan is already in progress.

If the _IATCSCAN command was sent via an ATCO SMS, the first response SMS will contain:

```
ATCO: _IATCSCN: OK
```

Then after the scan completes and the UT reboots, the final SMS response to this message is:

```
_IATCSCN: <code> <text>
ATC Scan Time: <date>, <time> UTC
```

Where <code> and <text> are one of the following:

0 "Scan Success. No ATC source found."
1 "Scan Success. ATC source found."
X "Scan Failure.", where X a number interpreted as:

2 = Not applicable to this platform
3 = General software failure
4 = Channel start, end or width problems.
5 = Failure to read CAL table from NVRAM
6 = Failure to write the updated CAL table to NVRAM
7 = ATC scan already in progress

Usage examples

Example 1: initiate an ATC scan with an ATCO SMS, response mode set to "ALL" (3):

```
ATCO 3 rsmsPwd _IATCSCN
```

Assuming the scan started successfully, this SMS will be received:

```
ATCO: _IATCSCN: OK
```

A short time later, after the scan completes and the unit reboots, this SMS will be received:

```
_IATCSCN: 0 Scan Success. No ATC source found.
ATC Scan Time: 03-Apr-2012, 18:12 UTC
```

"_IATCROBST" command – Enable ATC robustness operation

The IATCROBST command allows a user to manually turn on or off the ATC attenuator.

Syntax

```
AT_IATCROBST=<enable>
```

Parameters

`<enable>`

Flag indicating desired operation:

0: disable attenuation
1: enable attenuation

Responses

Immediate: OK if flag value was stored, ERROR if at ATC Scan operation is in progress.

Unsolicited: none.

Usage examples

Example 1: turn on the ATC robustness:

```
ATCO 2 rsmsPwd _IATCROBST=1
```

"_ICPWD" command – Change the UT's admin password

The ICPWD command sets a password to a new value. Currently, two password types may be set this way, the Administrator password, required for certain UT operations, and the Remote-SMS password, required to process Remote-SMS commands.

Each password is independent and must be modified separately.

Syntax

```
AT_ICPWD="<type>","<old_passwd>","<new_passwd>"
```

Parameters

`<type>`

String which identifies the password to be changed. Allowed values:

- "AD": Administrator password
- "RS": Remote-SMS password

`<old_passwd>`

String which must match the existing password of the same type.

`<new_passwd>`

The new password string.

Responses

Immediate: OK if command password changed, ERROR if command has syntax or parameter errors, such as if <old_passwd> is wrong.

Unsolicited: none.

Usage examples

Example 1: Assuming the admin password is currently "oldadmin", change it to "newadmin":

```
ATCO 2 rsmsPwd _ICPWD="AD","oldadmin","newadmin"
```

"_IHDEFAPN" command – Change the UT's default APN

Supported in releases after 7/2015.

The IHDEFAPN command replaces the current default APN with the new APN supplied in the command.

When the command is executed, it mimics the make default option of the APN web page:

1. Create the APN (with username and/or password if present), unless the exact APN (with un/pw) already exists in the APN file.

2. Make the APN default and update all the ACA entries, except for static ACA or M2M entries not using the current default APN.

3. If the force flag is set to 1, force the new APN (plus un/pw) to all ACA entries, regardless of their current settings.

Syntax

```
AT_IHDEFAPN="<apn>"[,"<apn_username>"[,"<apn_passwd>"[,<force>]]]
```

Parameters

`<apn>`

String with the APN name

`<apn_username>`

Optional string with the username to use with the APN.

`<apn_passwd>`

Optional string with the password to use with the APN.

`<force>`

Optional flag:

0: no force – normal operation (this is the default)
1: force the APN to all ACA entries regardless of current settings.

Responses

Immediate: OK if APN updated, ERROR if command has syntax or parameter errors.

Unsolicited: none.

Usage examples

Example 1: add a new APN and make it the default:

```
ATCO 2 rsmsPwd _IHDEFAPN="new.bgan.inmarsat.com","username","passwd"
```

Assuming the command was successful, this SMS will be received:

```
_IHDEFAPN: 0, Complete
```

Appendix:

Usage guidelines

If an Activate SMS message is sent to a terminal and a PDP context is already active on the target unit's PC of interest, that existing PDP context will be used (the SMS will be discarded and no error will be reported back via SMS). The graceful way of handling re-activation remotely is to first request a **Deactivate,** wait few minutes and send an **Activate** with updated QoS.

If a PDP context was setup manually for a PC of interest and the DEACTIVATE message is sent, that pre-existing PDP context will be torn down, even though it wasn't established via an ACTIVATE command.

SMS Processing Logic

1. When the unit receives duplicate messages and/or multiple ACTIVATE and DEACTIVATE messages:
   a. There is a 10 minute delay in the logic, so if an additional message is received within 10 minutes after receiving the first one, it is discarded.
   b. If the PDP session is active and it receives another message to set up a PDP context for that same device, it will discard the message as well.
2. The receive SMS logic has a few parameter checks that it makes to determine if the SMS message is a standard or a command SMS.
   a. The logic checks the first four characters of the SMS to see if they match one of the recognized commands: ACTIVATE, DEACTIVATE, CLEAR, etc. These are all case-sensitive. If it passes this check, then the message will be processed as a command message.
   b. Next, it looks for the password (case sensitive). If it passes the first check and fails the password check, then it sends an error message saying that the password is incorrect.
   c. Once the first two validations pass, then it checks for the command syntax and parameters. If the syntax or parameters are incorrect, then it sends a parameter error message.
   d. If the "white list" (list of allowed source MSISDNs) is defined, and the MSISDN of the sender of a command SMS is **not** found in the "white list", then the SMS is discarded with no response.
3. When SMS messages are received they are stored in the SIM. They are then processed, and, depending on the message type or status, they may be deleted:

a. If the first 4 characters of an SMS match any of the defined commands (as described above) it will be treated as a command message and will be deleted from the SIM after processing.
b. For the 9502, to ensure that sufficient space is in the SIM to receive command messages, when processing any SMS, if there are less than 5 slots available in the SIM, the new SMS will be deleted regardless of its type.