452-92854-001C

AT Commands for SHOUT ts

Version C

May 1, 2025

9385 Discovery Boulevard, Suite 300
Manassas, Virginia 20109 USA
Phone: 703-392-1136 x203
E-mail: contact@nalresearch.com

LEGAL DISCLAIMER AND CONDITION OF USE

This document contains information for the SHOUT ts tracking device and accompanying accessories ("Product") is provided "as is." Reasonable effort has been made to make the information in this document reliable and consistent with specifications, test measurements and other information. However, NAL Research Corporation and its affiliated companies, directors, officers, employees, agents, trustees or consultants ("NAL Research") assume no responsibility for any typographical, technical, content or other inaccuracies in this document. NAL Research reserves the right in its sole discretion and without notice to you to change Product specifications and materials and/or revise this document or withdraw it at any time. User assumes the full risk of using the Product specifications and any other information provided.

NAL Research makes no representations, guarantees, conditions or warranties, either express or implied, including without limitation, any implied representations, guarantees, conditions or warranties of merchantability and fitness for a particular purpose, non-infringement, satisfactory quality, non-interference, accuracy of informational content, or arising from a course of dealing, law, usage, or trade practice, use, or related to the performance or nonperformance of any products, accessories, facilities or services or information except as expressly stated in this guide and/or the Product and/or satellite service documentation. Any other standards of performance, guarantees, conditions and warranties are hereby expressly excluded and disclaimed to the fullest extent permitted by the law. This disclaimer and exclusion shall apply even if the express limited warranty contained in this guide or such documentation fails of its essential purpose.

In no event shall NAL Research be liable, whether in contract or tort or any other legal theory, including without limitation strict liability, gross negligence or negligence, for any damages in excess of the purchase price of the Product, including any direct, indirect, incidental, special or consequential damages of any kind, or loss of revenue or profits, loss of business, loss of privacy, loss of use, loss of time or inconvenience, loss of information or data, software or applications or other financial loss caused by the Product (including hardware, software and/or firmware) and/or the Iridium satellite services, or arising out of or in connection with the ability or inability to use

the Product (including hardware, software and/or firmware) and/or the Iridium satellite services to the fullest extent these damages may be disclaimed by law and whether advised of the possibilities of such damages. NAL Research is not liable for any claim made by a third party or made by you for a third party.

.

REVISION HISTORY

Revision	Date	Description
1.0.0	05/17/2016	Initial version
A	09/20/2022	Formal release
B	03/09/2023	Updated section 11.6 ^IGPS – INCLUDE GPS IN MESSAGES Was: Read Command: +IGPS Now: Read Command: ^IGPS
C	05/01/2025	Corrected missing hyperlinks

REFERENCE DOCUMENTS

The latest revisions of the NAL documents are available from the NAL Research website at https://www.nalresearch.com/.

TABLE OF CONTENTS

1 General Commands

1.1 AT – Attention

This is the prefix for all commands except A/ and +++. When entered on its own, the SHOUT will respond with OK.

NOTE: Also available in Tracking and Charger modes.

1.2 A/ – Repeat Last Command

Repeats the last command issued unless power was interrupted or the SHOUT is reset. A/ is not followed by a carriage return.

1.3 +++ – Enter Command Mode

Forces the SHOUT to enter Command mode from Tracking mode. After +++ is entered but before command mode will accept user input, the device will send the information response of “COMMAND MODE: Started”. Once command mode is ready to accept commands the response “COMMAND MODE: Ready for Input” is sent.

1.4 E – Echo

Exec Command: E[<n>]

Turns echo on or off.

<n>: If omitted, 0 will be used.

0	Off. Characters are not echoed to the DTE
1	On. Characters are echoed to the DTE (default)

Read Command: E?

Indicates the current value.

1.5 I – Identification

Exec Command: I[<n>]

Request the device to display information about itself.

<n>: If omitted, 0 will be used.

0 "2400" (for compatibility only)

1 "0000" (for compatibility only)

2 "OK" (for compatibility only)

3 "SHOUT ts VX.X.XrXXXX-XXXXrXXX" (software revision level of micro- controller)

"TAXXXXX" (software revision level of 9602 RF board)

4 "NAL Research Corporation: SHOUT ts" (product description)

5 "8816" (for compatibility only)

6 "XXX" (9602 RF board factory identity)

7 "XXXXXXXX" (9602 RF board hardware specification)

1.6 Q – Quiet Mode

Exec Command: Q[<n>]

Turns quiet mode on or off.

<n>: If omitted, 0 will be used.

0 Off. Responses are sent to the DTE (default)

1 On. Responses are not sent to the DTE

Read Command: Q?

Indicates the current value.

1.7 V – Verbose Mode

Exec Command: V[<n>]

Turns verbose mode on or off.

<n>: If omitted, 0 will be used.

0 Off. Numeric responses

1 On. Textual responses (default)

Read Command: V?

Indicates the current value.

1.8 Z – Soft Reset Active General Profile

Exec Command: Z[<n>]

Soft resets the device's active general profile to a user-defined general profile that has been previously stored using &Wn. The active general profile will revert back to the user-defined general profile designated under the &Yn command at power reset.

<n>: If omitted, 0 will be used.

0 Restores user-defined general profile 0

1 Restores user-defined general profile 1

1.9 ZT – Soft Reset Active Tracking Profile

Exec Command: ZT[<n>]

Soft reset the device's tracking profile to a user-defined tracking profile that has been previously stored using &WTn. Valid values for n are 0 through 11.

1.10 &F – Restore Factory Settings to Active General Profile

Exec Command: &F[<n>]

Soft resets the device's active general profile to the factory-default general profile. The active general profile will revert back to the user-defined general profile designated under the &Yn command at power reset. This does not reset ^RUP, encryption/decryption keys or the crypto officer password.

<n>: If omitted, 0 will be used.

0 Recall factory-default general profile

1.11 &FT – Restore Factory Settings to Active Tracking Profile

Exec Command: &FT[<n>]

Soft reset the device's active tracking profile to factory-default tracking profile.

<n>: If omitted, 0 will be used.

0 Recall factory-default tracking profile

1.12 &V – View Active and Stored General Profiles

Exec Command: &V

Displays the active and stored general profiles.

Exec Response:

<label>:

<profile>

…

<label>: Either ACTIVE PROFILE, or STORED PROFILE #, where # is the number of the profile.

<profile>: A list of settings for a general profile. The profile has the following format, where pound signs (#) are used as place holders for the values of each command. The pound signs do not necessarily indicate the number of digits in a value.

E# Q# V# ^ID# ^RMF# ^GAO# ^UE# ^START# ^TPN# ^TPE# ^ICV### +PNAV#
+SBDMTA# +SBDAREG# +CIER#### *R# *S# +PP# +PG#,#,#,####
^ECOM# ^PR# ^MSW# ^MSB#,#,# ^MSE# ^MSR#,# ^TRKBLKOUT#
^TRKDEBUG# ^TRKE# ^DLTRK# ^SSI# ^LEDS#,# ^SSR# ^ERQM#
^RUTC# ^TZ#.# ^TF# ^DF# ^MBXCHK#.# ^MBKCHKE# ^LCB# ^LCC#
^MNDN#,#,# ^MNDNTD# ^MNDNA#

NOTE: Even though a command appears in the response, if it is not documented in this document, it may not be implemented or have any function.

1.13 &VT – View Active and Stored Tracking Profiles

Exec Command: &VT[=<n>]

Displays all or one of the active and stored tracking profiles.

<n>: Which tracking profile to display. If omitted, the active tracking profile and all stored tracking profiles will be displayed.

"A" The active tracking profile will be displayed.

0-11 The specified stored tracking profile will be displayed.

Exec Response:

<label>:

<profile>

…

<label>: Either ACTIVE PROFILE, or STORED PROFILE #, where # is the number of the profile.

<profile>: A list of settings for a tracking profile. The profile has the following format, where pound signs (#) are used as place holders for the values of each command. The pound signs do not necessarily indicate the number of digits in a value.

^TBR#.# ^TTKT# ^TBRA#.# ^TTKTA# ^CAL# ^GFCF#,#.#

^LNK# ^ERQ#,# ^UAMS#

^MSA# ^BIGR# ^SPSR#,#,#,# ^RF# ^DFR# ^DFRA#

NOTE: Even though a command appears in the response, if it is not documented in this document, it may not be implemented or have any function.

1.14 &W – Store Active General Profile

Exec Command: &W[<n>]

Stores the active general profile as a user-defined general profile in non-volatile memory for later use.

<n>: If omitted, 0 will be used.

0	Store active general profile as user-defined general profile 0
1	Store active general profile as user-defined general profile 1

1.15 &WT – Store Active Tracking Profile

Exec Command: &WT[<n>]

Stores the active tracking profile as a user-defined tracking profile in non-volatile memory for later use.

<n>: 0-11. If omitted, 0 will be used.

1.16 &Y – Designate Default Reset Profile

Exec Command: &Y[<n>]

Selects the user-defined general profile to use after power-up.

<n>: If omitted, 0 will be used.

0 Select user-defined general profile 0 (default)

1 Select user-defined general profile 1

Read Command: &Y?

Indicates the current value.

1.17 *F – Flush to EEPROM

Exec Command: *F

Responds with "OK". Included for compatibility.

1.18 *R – Radio Activity

Exec Command: *R<n>

Enables or disables radio activity.

<n>:

0 Disable

1 Enable (default)

While radio activity is disabled:

- SBD sessions cannot be initiated; they will fail immediately.
- No SBD RING alerts will be issued for automatic-MT messages.
- No location updates will be performed.
- The baseband circuitry is still active and the Data Transceiver still accepts AT commands.

This command allows the FA to reduce detectable emissions from the RF circuitry during the idle periods between SBD sessions, and also provides a degree of power saving in cases where it may be inconvenient for the FA to power down the data transceiver.

Read Command: *R?

Returns the current value.

1.19 *S – IRIDIUM RF POWER STATE

Exec Command: *S<n>

Control power state of the 9602 transceiver in Command mode. The Iridium transceiver power is controlled automatically for Tracking mode.

<n>:

0 Change the state of the Iridium transceiver board to off

1 Change the state of the Iridium transceiver board to on (default)

Read Command: *S?

Returns the current value.

1.20 *W – WAIT

Exec Command: *W=<w>,<m>,<s>

Power down most circuits in the SHOUT ts for <m> minutes and <s> seconds. This is equivalent to a tracking mode sleep. The unit can only be woken early by the power button, emergency button, or the motion sensor.

<w>:

0 the motion sensor is disabled during wait time.

1 detection on the motion sensor will stop the wait immediately

<m>:

Number of minutes to wait. Valid values are between 0 and 99.

<s>:

Number of seconds to wait. Valid values are between 0 and 59.

NOTE: If <m> and <s> are both 0 an ERROR will be returned.

Command Response:

This will return OK, the unit will go into Sleep mode, and nothing else will be returned.

Test Command: *W=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Since the active general profile is not preserved over a sleep period the unit will revert back to the stored general profile when it wakes up.

1.21 +CGMI/+GMI – Manufacturer Identification

Exec Command: +CGMI/+GMI

Querys the manufacturer.

1.22 +CGMM/+GMM – Manufacturer Model

Exec Command: +CGMM/+GMM

Querys the model.

1.23 +CGMR/+GMR – Manufacturer Revision

Exec Command: +CGMR/+GMR

Querys the revision.

1.24 +CGSN/+GSN – Serial Number

Exec Command: +CGSN/+GSN

Querys the Iridium serial number (IMEI).

1.25 +CIER – Indicator Event Reporting

Exec Command: +CIER=[<mode>[,<sigInd>[,<svcInd>[,<antInd>]]]]

Enables or disables sending of the +CIEV unsolicited result code from the SHOUT to the DTE in case of indicator state changes.

<mode>: Controls the processing of the +CIEV unsolicited result codes.

0 Disable indicator event reporting. +CIEV unsolicited result codes will not be sent to the DTE. Rather, the most recent indicator event for each indicator is buffered in the data transceiver (default).

1 Enable indicator event reporting. The most recent +CIEV unsolicited result code for each indicator will be buffered when the modem interface is reserved (e.g. in SBD data mode) and then flushed to the DTE after

reservation. Otherwise the result code will be forwarded directly to the DTE.

<sigInd>: Controls reporting of "signal quality" indicator changes.

0 No "signal quality" indicator reporting (default).

1 Enable "signal quality" indicator reporting using result code +CIEV:0,<value> where <value> is:

- 0 Equivalent to 0 bars on the signal strength indicator
- 1 Equivalent to 1 bars on the signal strength indicator
- 2 Equivalent to 2 bars on the signal strength indicator
- 3 Equivalent to 3 bars on the signal strength indicator
- 4 Equivalent to 4 bars on the signal strength indicator
- 5 Equivalent to 5 bars on the signal strength indicator

<svcInd>: Controls reporting of "service availability" indicator changes.

0 No "service availability" indicator reporting (default).

1 Enable "service availability" indicator reporting using result code +CIEV:1,<value> where <value> is:

0 Network service is currently unavailable.

1 Network service is available.

<antInd>: Controls reporting of "antenna fault" indicator changes.

0 No "antenna fault" indicator reporting (default).

1 Enable "antenna fault" indicator reporting using result code +CIEV:2,<value> where <value> is:

- 0 No antenna fault detected, or antenna fault cleared.
- 1 Antenna fault detected, further transmission impossible.

NOTE: In <mode> 1, the DTE may miss some indicator state changes if they occur while the modem interface is reserved. However, the buffering mechanism ensures that the most recent change for each indicator during reservation will be flushed to the DTE

after reservation; thus the DTE is always made aware of the latest state of each indicator.

NOTE: The DTE may initiate an SBD session even if service is unavailable; In this case, the Data Transceiver makes an immediate search for the network and, if successful, starts the SBD session, otherwise the SBD session fails.

Read Command: +CIER?

Indicates the current values.

Test Command: +CIER=?

Returns a fixed message indicating the range of acceptable values.

1.26 +CMEE – Report Mobile Equipment Error

Exec Command: +CMEE=[<x>]

Set mobile equipment error reporting level.

<x> takes the following values:

0 Disable error reporting (use ERROR result code) (default).

1 Enable numeric error reporting.

An example of an error report is:

+CME ERROR: <y>

where <y> can be the number or text listed below:

0 phone failure

1 no connection to phone

2 phone-adaptor link reserved

3 operation not allowed

4 operation not supported

5 PH-SIM PIN required

6 PH-FSIM PIN required

7 PH-FSIM PUK required

10 SIM not inserted

11 SIM PIN required

12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
28	number is SIM fixed dialing restricted
30	no network service
31	network timeout
32	emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
100	unknown

Read Command:+CMEE?

Query mobile equipment error reporting level. The response is in the form:

+CMEE: <x>

Test Command: +CMEE=?

List the supported error reporting level. The response is in the form:

+CMEE: (supported <x>s)

1.27 +CRIS – RING INDICATION STATUS

Exec Command: +CRIS

Querys the ring indication status, returning the cause for the latest assertion of the ring indicator.

Exec Response:

+CRIS:<tri>,<sri>

<tri>: Indicates the telephony ring indication status.

0 No telephony ring alert received.

<sri>: Indicates the SBD ring indication status.

0 No SBD Ring Alert received.

1 SBD Ring Alert received.

1.28 +CSQ[F] – SIGNAL QUALITY

Exec Command: +CSQ[F]

Returns the received signal strength indication from the ISU.

Exec Response:

+CSQ[F]:<rssi>

<rssi>: The received signal strength indication.

0 Equivalent to 0 bars displayed on the signal strength indicator

1 Equivalent to 1 bar displayed on the signal strength indicator

2 Equivalent to 2 bars displayed on the signal strength indicator

3 Equivalent to 3 bars displayed on the signal strength indicator

4 Equivalent to 4 bars displayed on the signal strength indicator

5 Equivalent to 5 bars displayed on the signal strength indicator

Note**:** The +CSQ form waits for an updated signal strength response to become available. This will usually be within two seconds of issuing the command. If the SHOUT is in the process of acquiring the system or in a satellite handoff, a delay in response of up to 10 seconds may be experienced. To avoid a delayed response due to registration problems, issue the +CREG command to verify registration prior to entering the +CSQ command to obtain signal strength.

NOTE: The +CSQF form returns immediately, reporting the last known signal strength.

Test Command: +CSQ[F]=?

Returns a fixed message indicating the range of possible response values.

1.29 +CULK – UNLOCK

Exec Command: +CULK=<key>

Unlocks the SHOUT's Iridium transceiver. While the transceiver is locked, it is unable to perform any SBD sessions. Any attempts to start a session will return an error code indicating that the transceiver is locked.

<key>: The key to unlock the transceiver. Must be a string of 16 hexadecimal digits.

Exec Response:

+CULK:<status>

<status>: Indicates the lock status of the transceiver following the unlock attempt.

0 Unlocked. Transceiver is not locked and is permitted to perform SBD sessions.

1 Locked. Transceiver is locked and unable to perform SBD sessions. It must be unlocked by supplying the correct unlock key to the +CULK command.

2 Permanently locked. Transceiver is locked and unable to perform SBD sessions. It cannot be unlocked and must be returned to the supplier.

Read Command: +CULK?

Querys the current lock status of the transceiver. The response is in the following form.

+CULK:<status>

<status>:

0 Unlocked

1 Locked

2 Permanently locked

1.30 -MSSTM – REQUEST SYSTEM TIME

Exec Command: -MSSTM

Querys for the latest system time received from the network.

Exec Response:

-MSSTM: <systemTime>

<systemTime>: This could be "no network service", which means that the SHOUT has not yet received the system time from the Iridium network. Otherwise, the value will be the current Iridium system time available from the network. The system time as received through the Iridium Air Interface, is a 32-bit integer count of the number of 90 millisecond intervals that have elapsed since the epoch. The return value is formatted as an ASCII hexadecimal number. The counter will rollover approximately every 12 years.

Iridium system time epoch: June 1, 1996, 00:00:13 (GMT)

Iridium system time source: The system time is available and valid only after the SHOUT has registered with the network and has received the Iridium system time from the network. Once the time is received, the SHOUT uses its internal clock to increment the counter. In addition, at least every 8 hours, or on location update or other event that requires re-registration, the SHOUT will obtain a new system time from the network.

Time localization: None. The system time value is always expressed in GMT time.

Resolution and accuracy: The resolution of the system time is one Iridium frame tick, or 90 ms. Accuracy as measured by the difference between the time reported and the actual time.

1.31 ^BATTLVL – BATTERY LEVEL

Exec Command: ^BATTLVL

Queries the current battery level (updated every 5 seconds). The level returned is the whole number percentage of battery life remaining (0-100).

NOTE: Also available in Tracking mode.

1.32 ^BATTTEMP – BATTERY TEMPERATURE

Exec Command: ^BATTTEMP

Queries the current battery temperature. The temperature returned is in degrees Celsius with up to two decimal places.

NOTE: Also available in Tracking mode.

1.33 ^ECOM – ENABLE AT COMMANDS IN OTHER MODES

Exec Command: ^ECOM=<n>

Sets whether AT commands are allowed to be entered in modes other than Command mode.

<n>:

0	Disabled (default)
1	Enabled

Read Command: ^ECOM?

Returns the current value of <n>.

Test Command: ^ECOM=?

Returns a fixed message indicating the range of acceptable values.

1.34 ^SHUTDOWN – SHUTDOWN

Exec Command: ^SHUTDOWN

Powers down the device.

NOTE: Also available in Tracking mode.

1.35 ^SSI – SEND START UP INFORMATION

Exec Command: ^SSI=<n>

This command is used to show modem information upon power cycle

<n>:

0	Disabled
1	Enabled (default)

1.36 ^STARTUP – STARTUP

Exec Command: ^STARTUP=<n>

Powers on the device.

<n>: 1-120 seconds. The minimum amount of time the device will stay on before being allowed to power down because of idling.

Test Command: ^STARTUP=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Only available in Charger mode.

1.37 ^STR – SELF TEST RUN

Exec Command: ^STR

Causes the SHOUT to run self tests and report the status. This is the same self tests that the SHOUT runs at start up, which include a self test of the AES encryption and whether the calculated EDC (Error Detection Code) matches with that which is stored in memory.

NOTE: Also available in Tracking mode.

1.38 ^TIME – TIME

Exec Command: ^TIME=[<n>]

Gets the system time in the format YYYYMMDDHHmmSS. If the system time is unavailable, ERROR will be returned.

<n>:

0 Return UTC time (default)

1 Return local time according to the ^TZ setting

Read Command: ^TIME?

Returns <n> indicating the system time validity.

<n>:

0 System time is invalid

1 System time is valid

Test Command: ^TIME=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

2 GPS COMMANDS

NOTE: The GPS receiver cannot be used at the same time as the 9602 module. Therefore, in order for the following GPS commands to work properly, the RF module must be turned off using the AT*S0 command.

2.1 +PA – ALL OF NMEA MESSAGE

Exec Command: +PA=<n>

Returns a complete NMEA message with no modifications.

<n>: The NMEA message to return.

1	GGA
2	GLL
3	GSA
4	GSV
5	GRS
6	RMC
7	VTG
8	ZDA
9	GST
A	PUBX,00: Latitude && Longitude (Vertical Velocity)
B	PUBX,01: UTM Position Data
C	PUBX,04: Time && Clock Information

2.2 +PD – DATE (UTC)

Exec Command: +PD

Returns the UTC date with the format shown below. "Invalid Position Fix" will appear only if the GPS receiver could not acquire a position fix.

+PD:

UTC Date=<mm>-<dd>-<yyyy>

[Invalid Position Fix]

Satellites Used=<ss>

<dd>: Day (01-31)

<mm>: Month (01-12)

<yyyy>: Year (0000-9999), 0000 may appear for an Invalid Position Fix

2.3 +PG – PROVIDE GPS

Exec Command: +PG=<cd>[,<mode>[,<rate>[,<msg>]...]]

Causes the SHOUT to provide GPS information to the connected DTE equipment. The GPS information will be sent in NMEA format and will be delivered at certain timed intervals. Omitted parameters will not be changed.

<cd>: States of CD line for which to send GPS information.

0 Neither when CD is low or high (default)

1 When CD is low

2 When CD is high

3 When CD is low or high.

<mode>: Modes for which to send GPS information.

1 Command mode (default)

2 Tracking mode

3 Both tracking and command mode

<rate>: Rate at which to send GPS information in seconds. The default is 1.

<msg>: Message to send. This parameter may be repeated to cause the unit to send multiple messages.

1 GGA (default)

2 GLL

6 RMC

7 VTG

8 ZDA

A PUBX,00: Latitude && Longitude (Vertical Velocity)

B PUBX,01: UTM Position Data

Examples:

AT+PG=2,2,1,1

Sends the GGA message every second when CD is high (during a data call) in tracking mode.

AT+PG=3,2,10,6,7

Sends the RMC and VTG messages every 10 seconds at all times in tracking mode.

Read Command: +PG?

Indicates the current values. The response is in the following form.

<cd>,<mode>,<rate>,<msgs>

<msgs>: A four digit hex number whose value represents the selected messages. This value is computed using the following formula. 2^<msg> + 2^<msg> + 2^<msg>... Therefore, if messages 1, 6, and A were selected, <msgs> would be 2^1 + 2^6 + 2^A = 2 + 64 + 1024 = 1090 = 0x0442.

Test Command: +PG=?

Returns a fixed message indicating the range of acceptable values.

2.4 +PL – POSITION

Exec Command: +PL

Returns the position with the format shown below. "Invalid Position Fix" will appear only if the GPS receiver could not acquire a position fix.

+PL:

Latitude=<ll>:<mm>.<nnnn> <N/S>

Longitude=<ooo>:<pp>.<qqqq> <E/W>

Altitude=<#> meters

[Invalid Position Fix]

Satellites Used=<ss>

<ll>: Latitude in degrees (00 - 90)

<mm>: Latitude minutes (00 - 59)

<nnnn>: Fraction of latitude minutes (0000 - 9999)

<N/S>: North or South depending on the direction

<ooo>: Longitude in degrees (000 - 180)

<pp>: Longitude minutes (00 - 59)

<qqqq>: Fraction of longitude minutes (0000 - 9999)

<E/W>: East or West depending on the direction

<#>: The height of the antenna. This number has 1 digit after the decimal point.

<ss>: Number of satellites used to obtain information

2.5 +PLOC – More Accurate Position

Exec Command: +PLOC

Returns the position with the format shown below.

+PLOC:

Latitude=<ll>:<mm>.<nnnnn> <N/S>

Longitude=<ooo>:<pp>.<qqqqq> <E/W>

Altitude=<#> meters

<Position Fix>

Satellites Used=<ss>

<ll>: Latitude in degrees (00 - 90)

<mm>: Latitude minutes (00 - 59)

<nnnnn>: Fraction of latitude minutes (00000 - 99999)

<N/S>: North or South depending on the direction

<ooo>: Longitude in degrees (000 – 180)

<pp>: Longitude minutes (00 - 59)

<qqqqq>: Fraction of longitude minutes (00000 - 99999)

<E/W>: East or West depending on the direction

<#>: The height of the antenna. This number has 1 digit after the decimal point.

<Position Fix>: Invalid Position Fix, Valid Position Fix, or Dead Reckoning

<ss>: Number of satellites used to obtain information

2.6 +PNAV – GPS: NAVIGATION SETTINGS

Exec Command: +PNAV=<n>

This command increases the accuracy of the GPS receiver by specifying the environment, where <n> takes on one of the following values:

0	Portable
2	Stationary
3	Pedestrian
4	Automotive
5	Sea
6	Airborne low dynamics (< 1g)
7	Airborne medium dynamics (< 2g)
8	Airborne high dynamics (< 4g)

Read Command: +PNAV?

This command lists the current setting of the +PNAV command.

Test Command: +PNAV=?

This command lists the supported settings of the +PNAV command.

2.7 +PP – TURN GPS ON/OFF

Exec Command: +PP=<n>

Turns the GPS receiver on or off. This only has an effect in command mode.

<n>:

0	Turn off
1	Turn on (default)

Read Command: +PP?

Indicates the current value.

2.8 +PT – TIME (UTC)

Exec Command: +PT

Returns the UTC time with the format shown below. "Invalid Position Fix" will appear only if the GPS receiver could not acquire a position fix.

+PT:

UTC Time=<hh>:<mm>:<ss>.<xxx>

[<Invalid Position Fix>]

Satellites Used=<zz>

<hh>: Hours (01 - 24)

<mm>: Minutes (00 - 59)

<ss>: Seconds (00-59)

<xxx>: Hundredths (000-999)

<zz>: Number of satellites used to obtain information

2.9 +PV – VELOCITY

Exec Command: +PV

Returns the velocity (consisting of speed in km/hr and direction) with the format shown below. "Invalid Position Fix" will appear only if the GPS receiver could not acquire a position fix.

+PV:

Ground Velocity=<#g> km/hr, <#h> degrees from true North

[<Invalid Position Fix>]

Satellites Used=<ss>

<#g>: Speed displayed

<#h>: Heading in degrees from true north ranging from 0 to 360

<ss>: Number of satellites used to obtain information

2.10 +PVEL – VELOCITY WITH VERTICAL COMPONENT

Exec Command: +PVEL

Returns the velocity (consisting of speed in km/hr, direction, and vertical speed in m/sec) with the format shown below.

+PVEL:

Ground Velocity=<#g> km/hr, <#h> degrees from true North

Vertical Velocity=<#v> m/sec

<Position Fix>

Satellites Used=<ss>

<#g>: Speed displayed

<#h>: Heading in degrees from true north ranging from 0 to 360

<#v>: Vertical component of velocity. Value may be negative.

<Position Fix>: Invalid Position Fix, Valid Position Fix, or Dead Reckoning

<ss>: Number of satellites used to obtain information

2.11 +PSREG – SBD REGISTRATION UTILIZING GPS

Exec Command: +PSREG

Internally issues the +SBDREG command with a location obtained from the GPS receiver.

NOTE: When encryption is enabled the +PSREG command will be disabled.

Exec Response:

The response is the same as the response for the +SBDREG command except that if there is an invalid position fix, the unit will respond with "No GPS Fix" before issuing the response of the +SBDREG command. In this case, no location is added.

2.12 +PSIX[A] – INITIATE EXTENDED SBD SESSION UTILIZING GPS

Exec Command: +PSIX[A]

Internally issues the +SBDIX[A] command with a location obtained from the GPS receiver.

NOTE: When encryption is enabled the +PSIX[A] command will be disabled.

Exec Response:

The response is the same as the response for the +SBDIX[A] command except that if there is an invalid position fix, the unit will respond with "No GPS Fix" before issuing the response of the +SBDIX[A] command. In this case, no location is added.

2.13 ^ICV – INVALID COURSE VALUE

Exec Command: ^ICV=<v>

When the GPS receiver is unable to determine the course, this value is sent in GPS reports to indicate an invalid course. If the set value is too large for the GPS report, the value will be truncated to the maximum that the field in the report can hold.

<v>0 - 999, default 0

3 SHORT BURST DATA COMMANDS

3.1 +SBDRB – SHORT BURST DATA READ BINARY

Exec Command: +SBDRB

Transfers the contents of the single mobile terminated buffer in the SHOUT to the DTE with a length and a checksum. The mobile terminated buffer can contain only one message at a time.

NOTE: For security reasons this command is not allowed when encryption is enabled and the decryption key is all 0s.

NOTE: The mobile terminated buffer will be empty upon power-up.

Exec Response:

<msgLength><message><checksum>

<msgLength>: A two byte field that represents the length, in bytes, of the following SBD message. This length does not include the length of the checksum after the message. The high order byte will be sent first. The maximum mobile terminated SBD message length is 270 bytes (256 with encryption).

<message>: The SBD message, which is the contents of the mobile terminated buffer.

<checksum>: The least significant two bytes of the summation of each byte of the SBD message. The high order byte will be sent first. For example, if the ISU were to send the word "hello" encoded in ASCII to the DTE, the binary stream in hex would be 00 05 68 65 6c 6c 6f 02 14.

NOTE: If the mobile terminated buffer is empty, the message length and checksum fields will be zero.

3.2 +SBDRT – Short Burst Data Read Text

Exec Command: +SBDRT

Transfers the contents of the single mobile terminated buffer in the SHOUT to the DTE. The mobile terminated buffer can contain only one message at a time. This command is similar to +SBDRB but does not provide a length or checksum. The intent of this command is to provide a human friendly interface to SBD for demonstrations and application development. It is expected that most usage of SBD will be with binary messages.

NOTE: For security reasons this command is not allowed when encryption is enabled and the decryption key is all 0s.

NOTE: The mobile terminated buffer will be empty upon power-up.

Exec Response:

+SBDRT:<CR><message>

<message>: The SBD message, which is the contents of the mobile terminated buffer. The maximum mobile terminated SBD message length is 270 bytes (256 with encryption).

3.3 +SBDWB – Short Burst Data Write Binary

Exec Command: +SBDWB=<msgLength>

Transfers a binary SBD message from the DTE to the single mobile originated buffer in the SHOUT. If any data is currently in the mobile originated buffer, it will be overwritten.

<msgLength>: The length, in bytes, of the SBD message to be entered. This length does not include the length of the checksum, which will be entered after the message. Must be from 1 to 340 (336 with encryption).

Once the command is entered, the SHOUT will indicate that it is prepared to receive the message by sending "READY<CR><LF>" (hex 52 45 41 44 59 0D 0A) to the DTE. Once the DTE receives the READY indication, the SBD message must be sent from the

DTE followed by a two byte checksum. The checksum is the least significant two bytes of the summation of each byte of the SBD message. The high order byte must be sent first. For example, if the DTE were to send the word "hello" encoded in ASCII to the SHOUT, the binary stream, in hex, would be 68 65 6c 6c 6f 02 14.

NOTE: The mobile originated buffer will be empty upon power-up.

Exec Response:

0 SBD message successfully written to the SHOUT.

1 SBD message write timeout. An insufficient number of bytes were transferred to the SHOUT during the transfer period of 60 seconds.

2 SBD message checksum sent from DTE does not match the checksum calculated at the SHOUT.

3 SBD message length is not correct. Check that the <msgLength> parameter is in range.

3.4 +SBDWT – Short Burst Data Write Text

Exec Command: +SBDWT[=<message>]

Transfers a text SBD message from the DTE to the single mobile originated buffer in the SHOUT. If any data is currently in the mobile originated buffer, it will be overwritten. The message may be entered as part of the command or separately.

To enter the message as part of the command...

- Use the +SBDWT=<message> form of the command.
- The message is terminated when the carriage return is entered.

To enter the message separately...

- Use the +SBDWT form of the command.
- Once the command is entered, the SHOUT will indicate that it is prepared to receive the message by sending "READY<CR><LF>" (hex 52 45 41 44 59 0D 0A) to the DTE.

- Once the DTE receives the READY indication, the text message must be sent, terminated by a carriage return.

Regardless of the way the message is entered, it must be from 1 to 340 (336 with encryption) bytes in length.

NOTE: The mobile originated buffer will be empty upon power-up.

Exec Response:

When the message is entered as part of the command:

OK SBD message successfully stored in mobile originated buffer.

ERROR An error occurred while trying to store the SBD message in the mobile originated buffer.

When the message is entered separately:

0 SBD message successfully stored in mobile originated buffer.

1 SBD message write timeout. No terminating carriage return was sent within the transfer period of 60 seconds.

3.5 +SBDTC – Short Burst Data Transfer MO Buffer to MT Buffer

Exec Command: +SBDTC

Transfers the contents of the mobile originated buffer to the mobile terminated buffer. Developers of DTE can use this command to test reading and writing to the SHOUT without actually initiating SBD sessions with the ESS.

NOTE: For security reasons this command is not allowed when encryption is enabled.

Exec Response:

0 Mobile originated buffer transferred successfully

1 An error occurred while transferring the mobile originated buffer.

3.6 +SBDD – Short Burst Data Delete Message Buffer(s)

Exec Command: +SBDD<n>

Clears the mobile originated buffer, mobile terminated buffer, or both.

<n>: Identifies which buffers to clear.

0 Mobile originated buffer

1 Mobile terminated buffer

2 Both the mobile originated and mobile terminated buffers

NOTE: Using this command or power cycling the phone are the only means by which both buffers are cleared. Sending a message from the SHOUT to the ESS does not clear the mobile originated buffer. Reading a message from the SHOUT does not clear the mobile terminated buffer. However, the mobile terminated buffer will be cleared when an SBD session is initiated.

Exec Response:

0 Buffer(s) cleared successfully.

1 An error occurred while clearing the buffer(s).

3.7 +SBDLOE – Short Burst Data: Traffic Management Status

Exec Command: +SBDLOE

This command returns the remaining time, in seconds, to the end of the current SBD traffic management period. The command may not return immediately, as it will wait if necessary up to 10 seconds to try to acquire the Iridium system time.

Exec Response:

+SBDLOE:<status>,<time>

<status>: The status indicates whether the time to the end of the current SBD traffic management period could be determined. This requires the SSD to know the Iridium system time and hence may fail if the Iridium network is not currently visible.

0 <time> is valid

1 <time> could not be determined

<time>: This is the time, in seconds, to the end of the current SBD traffic management period. If no traffic management period is active this will be zero.

During a traffic management period, SBD sessions attempted will result in error code 38. The DTE application may use the +SBDLOE command to determine the time left until the end of the traffic management period.

NOTE: Power cycling the ISU has no effect on the traffic management period.

3.8 +SBDREG – SHORT BURST DATA REGISTRATION

Exec Command: +SBDREG[=<location>]

Triggers an SBD session to perform a manual SBD registration. This command initiates an SBD session to perform a manual SBD registration, consisting of an attach and location update. This session does not transfer any MO or MT messages.

NOTE: The SHOUT restricts the number of manual and automatic registrations to one every 3 minutes. Successive attempts within 3 minutes will return an error code indicating that the FA should try again later (see error 36 below).

NOTE: A user can send an MO SBD message and register at the same time by using the +SBDIX command. The +SBDIX command always performs a registration attempt and should be used for an application requiring SBD ring alerts. The +SBDI command never includes an SBD registration and should be used for an application that does not require SBD ring alerts.

<location>: The location of the SHOUT. This will be used to more efficiently route SBD ring alerts to the unit. The location must be in the format: [+|-]<DD><MM>.<MMM>,[+|-]<ddd><mm>.<mmm>. The optional sign indicators specify latitude North (+) or South (-), and longitude East(+) or West(-). If omitted, the default is +. For example, 5212.483,-00007.350 corresponds to 52 degrees 12.483 minutes North, 0 degrees 7.35 minutes West.

<DD>: Degrees latitude (00-89)

<MM>: Minutes latitude (00-59)

<MMM>: Thousandths of minutes latitude (000-999)

<ddd>: Degrees longitude (000-179)

<mm>: Minutes longitude (00-59)

<mmm>: Thousandths of minutes longitude (000-999)

NOTE: For security reasons the optional position will not be allowed when encryption is enabled.

Exec Response: +SBDREG:<status>,<error>

<status>: Indicates the resulting registration status of the ISU.

0 Detached. The SHOUT is detached as a result of a successful +SBDDET or +SBDI command.

1 Not registered. The SHOUT is attached but has not provided a good location since it was last detached.

2 Registered. The SHOUT is attached with a good location. Note that this may be the case even when the most recent attempt did not provide a good location.

3 Registration denied. The GSS is denying service to the SHOUT.

<error>: Values < 16 are gateway-reported whereas values >= 16 are SHOUT-reported.

0 No error.

2 Session completed but the requested Location Update was not accepted.

3..14 Reserved, but indicate Location Update failure if used.

15 Access is denied.

16 SHOUT has been locked and may not make SBD calls. (see +CULK command)

17 Gateway not responding (local session timeout).

18 Connection lost (RF drop).

19 Link failure (A protocol error caused termination of the call).

20..31 Reserved, but indicate failure if used.

32 No network service, unable to initiate call.

33 Antenna fault, unable to initiate call.

34 Radio is disabled, unable to initiate call (see *R command).

35 SHOUT is busy, unable to initiate call.

36 Try later, must wait 3 minutes since last registration.

37 SBD service is temporarily disabled.

38 Try later, traffic management period (see +SBDLOE command).

39..63 Reserved, but indicate failure if used.

64 Band violation (attempt to transmit outside permitted frequency band).

65 PLL lock failure; hardware error during attempted transmit.

Read Command: +SBDREG?

Querys the current SBD registration status of the SHOUT. The response is of the form +SBDREG:<status>.

<status>:

0 Detached

1 Not registered

2 Registered

3 Registration denied

NOTE: The registration status is stored in the SHOUT non-volatile memory, and can therefore be queried by the FA after powering up.

3.9 +SBDAREG – SHORT BURST DATA AUTOMATIC REGISTRATION

Exec Command: +SBDAREG=<mode>

Sets the SHOUT's auto-registration mode.

<mode>:

0 Disable automatic registration (default).

1 Set the auto-registration mode to "Automatic"

2 Set the auto-registration mode to "Ask"

NOTE: During auto registration, the location of the unit is sent out unencrypted regardless of whether encryption is enabled.

When auto-registration is enabled, mode 1 or 2, the SHOUT monitors its current location and triggers an SBD auto-registration when it determines that the SHOUT has moved sufficiently far away from its last registered location. Note that auto-registration runs only while the SHOUT is attached to the GSS, i.e. the registration status is "Not registered" or "Registered"

Auto-registration may only be used with system-provided location. If the FA is providing its own location (e.g. GPS), the FA should use the manual registration command, +SBDREG.

Upon triggering in mode 1, "Automatic", the SHOUT autonomously initiates an SBD session in order to perform a registration with the updated location of the SHOUT. This session does not transfer any MO or MT messages.

Upon triggering in mode 2, "Ask", the SHOUT reports to the FA that it should register with the system because the SHOUT location has changed (see <event> below). It is then the responsibility of the FA to register via +SBDREG or +SBDIX. +SBDIX allows the FA to register while including an MO message and/or retrieving any MT message that is pending at the GSS.

When auto-registration is enabled, mode 1 or 2, the SHOUT reports relevant events to the FA by issuing an unsolicited result code of the following format.

+AREG:<event>,<error>

<event>:

0 Suggest FA makes a registration attempt (mode 2 only).

1 Auto-registration has been performed successfully (mode 1 only).

2 Auto-registration has failed and will be retried after a delay (mode 1 only).

<error>: Values < 16 are gateway-reported whereas values >= 16 are SHOUT-reported.

0 No error.

2 Session completed but the requested Location Update was not accepted.

3..14 Reserved, but indicate Location Update failure if used.

15 Access is denied.

16 SHOUT has been locked and may not make SBD calls (see +CULK command).

17 Gateway not responding (local session timeout).

18 Connection lost (RF drop).

19 Link failure (A protocol error caused termination of the call).

20..31 Reserved, but indicate failure if used.

32 No network service, unable to initiate call.

33 Antenna fault, unable to initiate call.

34 Radio is disabled, unable to initiate call (see *R command).

35 ISU is busy, unable to initiate call.

36 Try later, must wait 3 minutes since last registration.

37 SBD service is temporarily disabled.

38 Try later, traffic management period (see +SBDLOE command)

39..63 Reserved, but indicate failure if used.

64 Band violation (attempt to transmit outside permitted frequency band).

65 PLL lock failure; hardware error during attempted transmit.

Read Command: +SBDAREG?

Indicates the current value.

Test Command: +SBDAREG=?

Returns a fixed message indicating the range of acceptable values.

3.10 +SBDDET – Short Burst Data Detach from Gateway

Exec Command: +SBDDET

Initiates an SBD session to instruct the gateway to disable (detach) SBD ring alerts for the calling SHOUT. Successful completion of the detach command implies that the gateway has performed the requested detach action and the SHOUT is no longer registered for SBD ring alerts. This session does not transfer any MO or MT messages.

NOTE: A user can send an MO-SBD message and request a detach at the same time by using the +SBDI command. The +SBDI command always requests a detach.

Exec Response:

+SBDDET:<status>,<error>

<status>:

0 Detach successfully performed

1 An error occurred while attempting the detach

<error>: Values < 16 are gateway-reported, whereas values >= 16 are SHOUT-reported.

0 Detach successfully performed.

1..4 Reserved, but indicates success if used.

5..14 Reserved, but indicate failure if used.

15 Access is denied.

16 SHOUT has been locked and may not make SBD calls (see +CULK command).

17 Gateway not responding (local session timeout)

18 Connection lost (RF drop).

19 Link failure (A protocol error caused termination of the call).

20..31 Reserved, but indicate failure if used.

32 No network service, unable to initiate call.

33..34 Reserved, but indicate failure if used.

35 SHOUT is busy, unable to initiate call.

36.. Reserved, but indicate failure if used.

3.11 +SBDI – SHORT BURST DATA INITIATE SESSION

Exec Command: +SBDI

Initiates an SBD session between the SHOUT and the gateway. If there is a message in the mobile originated buffer it will be transferred to the gateway. Similarly if there is

one or more messages queued at the gateway the oldest will be transferred to the SHOUT and placed into the mobile terminated buffer.

This command will always preform an SBD detach. Therefore, FAs wishing to use SBD ring alerts should use the +SBDIX command instead of this command.

For SBD sessions invoked with this command...

- The SBD session type is fixed at type 0 (MO call).
- The SBD delivery short code will be the value specified by the +SBDDSC command.
- An SBD detach is performed.
- No SBD location update is performed.

Exec Response:

+SBDI:<moStatus>,<momsn>,<mtStatus>,<mtmsn>,<mtLength>,<mtQueued>

<moStatus>: MO session status provides an indication of the disposition of the mobile originated transaction. The field can take on the following values:

0 No SBD message to send from the SHOUT.

1 SBD message successfully sent from the SHOUT to the gateway.

2 An error occurred while attempting to send SBD message from SHOUT to gateway.

<momsn>: The Mobile Originated Message Sequence Number (MOMSN) is a value assigned by the SHOUT when sending a mobile-originated message to the gateway. This value is incremented each time an SBD session is successfully completed between the SHOUT to the gateway. This wrap around counter can range from 0 to 65535.

<mtStatus>: The MT status provides an indication of the disposition of the mobile terminated transaction. The field can take on the following values:

0 No SBD message to receive from the gateway.

1 SBD message successfully received from the gateway.

2 An error occurred while attempting to perform a mailbox check or receive a message from the gateway.

<mtmsn>: The Mobile Terminated Message Sequence Number (MTMSN) is assigned by the gateway when forwarding a message to the SHOUT. This value is indeterminate if the field <MT status> is zero. This wrap around counter can range from 0 to 65535.

<mtLength>: The length in bytes of the mobile terminated SBD message received from the gateway. If no message was received, this field will be zero.

<mtQueued>: A count of mobile terminated SBD messages waiting at the gateway to be transferred to the SHOUT.

3.12 +SBDIX – Short Burst Data Initiate Extended Session

Exec Command: +SBDIX[A][=<location>]

Initiates an SBD session between the SHOUT and the gateway. If there is a message in the mobile originated buffer it will be transferred to the gateway. Similarly if there is one or more messages queued at the gateway the oldest will be transferred to the SHOUT and placed into the mobile terminated buffer.

This command will always attempt an SBD registration, consisting of attach and location update, during the SBD session in order to support SBD ring alerts. If this is not desired, the +SBDI command should be used. The FA should append an 'A' to the command, i.e. +SBDIXA, when the SBD session is in response to an SBD ring alert.

For SBD sessions invoked with this command...

- The SBD session type is set according to the type of command +SBDIX or +SBDIXA.
- The delivery short code will be the value specified by the +SBDDSC command.
- An SBD registration is attempted.
- A location update is performed.

<location>: The location of the unit. This will be used to more efficiently route SBD ring alerts to the unit. The location must be in the format: [+|-]<DD><MM>.<MMM>,[+|-]<ddd><mm>.<mmm>. The optional sign indicators specify latitude North (+) or South (-), and longitude East(+) or West(-). If omitted, the default

is +. For example, 5212.483,-00007.350 corresponds to 52 degrees 12.483 minutes North, 0 degrees 7.35 minutes West.

<DD>: Degrees latitude (00-89)

<MM>: Minutes latitude (00-59)

<MMM>: Thousandths of minutes latitude (000-999)

<ddd>: Degrees longitude (000-179)

<mm>: Minutes longitude (00-59)

<mmm>: Thousandths of minutes longitude (000-999)

NOTE: For security reasons the optional position will not be allowed when encryption is enabled.

NOTE: If encryption is enabled and the decryption key is set to all 0s, in tracking mode, a session will only be initiated with the +SBDI command.

Exec Response:

+SBDIX:<moStatus>,<momsn>,<mtStatus>,<mtmsn>,<mtLength>,<mtQueued>

<moStatus>: MO session status provides an indication of the disposition of the mobile originated transaction. Values < 16 are gateway-reported, whereas values >= 16 are SHOUT-reported.

0	MO message, if any, transferred successfully.
1	MO message, if any, transferred successfully, but the MT message in the queue was too big to be transferred. MO message, if any, transferred successfully, but the requested Location Update was not accepted.
3..4	Reserved, but indicates MO session success if used.
5..8	Reserved, but indicated MO session failure if used.
10	GSS reported that the call did not complete in the allowed time.
11	MO message queue at the gateway is full.
12	MO message has too many arguments.
13	Gateway reported that the session did not complete.
14	Invalid segment size.

15 Access is denied.

16 SHOUT has been locked and may not make SBD calls (see +CULK command).

17 Gateway not responding (local session timeout).

18 Connection lost (RF drop).

19 Link failure (A protocol error caused termination of the call).

20..31 Reserved, but indicate failure if used.

32 No network service, unable to initiate call.

33 Antenna fault, unable to initiate call.

34 Radio is disabled, unable to initiate call (see *R command).

35 SHOUT is busy, unable to initiate call.

36 Try later, must wait 3 minutes since last registration.

37 SBD service is temporarily disabled.

38 Try later, traffic management period (see +SBDLOEcommand).

39..63 Reserved, but indicate failure if used.

64 Band violation (attempt to transmit outside permitted frequency band).

65 PLL lock failure; hardware error during attempted transmit.

<momsn>: The Mobile Originated Message Sequence Number (MOMSN) is a value assigned by the SHOUT when sending a mobile-originated message to the gateway. This value is incremented each time an SBD session is successfully completed between the SHOUT to the gateway. This wrap around counter can range from 0 to 65535.

<mtStatus>: The MT status provides an indication of the disposition of the mobile terminated transaction. The field can take on the following values:

0 No SBD message to receive from the gateway.

1 SBD message successfully received from the gateway.

2 An error occurred while attempting to perform a mailbox check or receive a message from the gateway.

<mtmsn>: The Mobile Terminated Message Sequence Number (MTMSN) is assigned by the gateway when forwarding a message to the SHOUT. This value is indeterminate if the field <MT status> is zero. This wrap around counter can range from 0 to 65535.

<mtLength>: The MT length is the length in bytes of the mobile terminated SBD message received from the gateway. If no message was received, this field will be zero.

<mtQueued>: MT queued is a count of mobile terminated SBD messages waiting at the gateway to be transferred to the SHOUT.

3.13 +SBDC – Short Burst Data Clear MOMSN

Exec Command: +SBDC

Clears (sets to 0) the mobile originated message sequence number (MOMSN) stored in the SHOUT.

NOTE: The MOMSN is maintained even after power cycle.

Exec Response:

0 The MOMSN was cleared successfully.

1 An error occurred while clearing the MOMSN.

3.14 +SBDDSC – Short Burst Data Delivery Short Code

Exec Command: +SBDDSC=<n>

Sets the Delivery Short Code (DSC), which provides dynamic routing or control information for MO or MT messages. This is an 8-bit value providing the ability to set individual fields. Value 0x80 (hexadecimal) sets the most significant bit. Value 0x01 sets the least significant bit. Flag values can be added together to achieve a combination of settings. Some fields are overridden during certain SBD sessions (e.g. an +SBDREG registration sets flag 0x80).

<n>: DSC to be used for subsequent uploaded messages. Must be from 0 to 255. Default is 0. The bits are interpreted as follows.

0x80 Hold MT message deliveries

0x40 Leave MT message in queue after delivery

0x20 Destination in MO payload

Read Command: +SBDDSC?

Indicates the current value.

3.15 +SBDMTA – Short Burst Data Mobile-Terminated Alert

Exec Command: +SBDMTA=<mode>

Enables or disables ring indications for automatic Mobile-Terminated SBD messaging.

<mode>:

0 Disable ring indication

1 Enable ring indication (default)

When ring indication is enabled, the Data Transceiver asserts the RI line and issues the unsolicited result code RING when a ring alert is received.

Read Command: +SBDMTA?

Indicates the current value.

Test Command: +SBDMTA=?

Returns a fixed message indicating the range of acceptable values.

3.16 +SBDS – Short Burst Data Status

Exec Command: +SBDS

Returns the current state of the mobile originated and mobile terminated buffers.

Exec Response:

+SBDS:<moFlag>,<momsn>,<mtFlag>,<mtmsn>

<moFlag>: The MO flag indicates the existence of a message in the mobile originated buffer. The response from the SHOUT is one of the following numeric codes:

0 No message in mobile originated buffer

1 Message in mobile originated buffer

<momsn>: The MOMSN identifies the sequence number that will be used during the next mobile originated SBD session.

<mtFlag>: The MT flag indicates the existence of a message in the mobile terminated buffer. The response from the SHOUT is one of the following numeric codes:

0 No message in mobile terminated buffer

1 Message in mobile terminated buffer

<mtmsn>: The MTMSN identifies the sequence number that was used in the most recent mobile terminated SBD session. This value will be -1 if there is nothing in the mobile terminated buffer.

3.17 +SBDSX – Short Burst Data Status Extended

Exec Command: +SBDSX

Returns the current state of the mobile originated and mobile terminated buffers and the SBD ring alert status.

Exec Response:

+SBDSX:<moFlag>,<momsn>,<mtFlag>,<mtmsn>,<raFlag>,<msgWaiting>

<moFlag>: Indicates the existence of a message in the mobile originated buffer.

0 No message in mobile originated buffer

1 Message in mobile originated buffer

<momsn>: The MOMSN identifies the sequence number that will be used during the next mobile originated SBD session.

<mtFlag>: Indicates the existence of a message in the mobile terminated buffer

0 No message in mobile terminated buffer

1 Message in mobile terminated buffer

<mtmsn>: The MTMSN identifies the sequence number that was used in the most recent mobile terminated SBD session. This value will be -1 if there is nothing in the mobile terminated buffer.

<raFlag>: The RA flag indicates whether an SBD ring alert has been received and still needs to be answered. The RA flag is set whenever the SHOUT receives an SBD ring alert. This happens even if the +SBDMTA setting specifies that SBD ring indications are disabled. The RA flag is cleared only on successful completion of an SBD mailbox check, i.e. an SBD session invoked with +SBDI[X[A]] in which the returned MT status indicates that no error occurred. The value of the RA flag is stored in non-volatile memory so it is preserved across power cycling of the SHOUT.

0 No SBD ring alert

1 SBD ring alert has been received and needs to be answered

<msgWaiting>: The message waiting flag indicates how many SBD mobile terminated messages are currently queued at the gateway awaiting collection by the SHOUT. This flag is updated after every SBD session, including +SBDI, +SBDIX, +SBDIXA, +SBDREG and +SBDDET.

4 TRACKING COMMANDS

4.1 ^BIGR – BLOCK INVALID GPS REPORTS

Exec Command: ^BIGR=<n>

This command sets whether periodic GPS position reports with an invalid fix will be blocked or sent. This will only block tracking reports with an invalid fix; canned and free text messages, check-ins, callouts and waypoints are unaffected.

<n>:

0 Do not block (default)

1 Block

Read Command: ^BIGR?

Indicates the current value for this command

Test Command: ^BIGR=?

Returns a fixed message indicating the range of acceptable values.

^BIGR:(0-1)

4.2 ^CAL – CALLABLE

Exec Command: ^CALn

The SHOUT ts sends GPS reports at a pre-defined frequency. In between GPS reports, the unit can put all internal electronic circuits in power-saving states known as “Sleep between reports” (Mode 0). It can also leave the primary communication link on in between GPS reports to listen for remote update requests known as “Callable between reports” (Mode 1). A third option is that the unit runs Mode 0 when it is not in motion and Mode 1 when in motion. In Mode 1, the primary link is also always turned on to receive incoming alerts and data. Mode 0 uses the least power. Mode 1 uses the most power.

<n>:

0 Sleep between reports (default)

1 Callable between reports (Modem stays on)

2 Sleep while not in motion and callable while moving

NOTE: ^CAL2 works differently than with earlier NAL trackers. The functionality that utilized ^TBRA and ^TTKTA has been broken out into the command ^UAMS

Read Command: ^CAL?

Indicates the current value for this command.

Test Command: ^CAL=?

Returns a fixed message indicating the range of acceptable values.

^CAL:(0-2)

4.3 ^DFR – Delay First Report

Exec Command: ^DFR=<n>

Delays the first report by the 'time between reports' (^TBR) value when switching between tracking modes or when tracking is started.

<n>:

0 Do not delay any reports (default)

1 Delay report

Read Command: ^DFR?

Indicates the current state for this command

Test Command: ^DFR=?

Returns the range of acceptable values

^DFR: (0-1)

4.4 ^DFRA – Awake Delay First Report

Exec Command: ^DFRA=<n>

Delays the first report by 'awake time between reports' (^TBRA) value when ^UAMS is enabled and motion has started.

<n>:

0 Do not delay any reports (default)

1 Delay report

Read Command: ^DFRA?

Indicates the current state for this command

Test Command: ^DFRA=?

Returns the range of acceptable values

^DFRA: (0-1)

4.5 ^DLE – DATA LOG ERASE

Exec Command: ^DLE

This command erases all of the logged GPS reports.

4.6 ^DLR – DATA LOG READ

Exec Command: ^DLR[=<maxToDisplay>]

Displays the stored GPS reports.

<maxToDisplay>: The maximum number of reports from the data log to display. If omitted, all report from the data log will be displayed.

Exec Response:

Each report will be returned in the following format. In this format, () specifies a list of possible values separated by |, [] specifies an option value, and <> specify a variable. The formats for the date, time, latitude, and longitude are specified without any special syntax.

(Emergency|Normal)

UTC Time=hh:mm:ss.ff

UTC Date=mm-dd-yyyy

Latitude=dd:mm.ffff (South|North)

Longitude=ddd:mm.ffff (West|East)

Altitude=<alt> meters

Ground Velocity=<gndVel> km/h at <course> degrees from True North

Vertical Velocity=<verVel> m/s

Satellites Used=<ss>

HDOP=<hdop>

VDOP=<vdop>

[Motion]

Read Command: ^DLR?

Query the number of logged reports. The response is in the form:

^DLR: <count>

Test Command: ^DLR=?

Returns a fixed message indicating the range of acceptable values.

4.7 ^DLTRK – DATA LOG TRACKING

Exec Command: ^DLTRK=<n>

This command sets whether to log GPS reports during tracking.

<n>:

0	GPS reports are not stored in the data log
1	GPS reports are stored in the data log (default)

Read Command: ^DLTRK?

Indicates the current value for this command.

Test Command:^DLTRK=?

Returns a fixed message indicating the range of acceptable values.

^DLTRK:(0-1)

4.8 ^EMRCLR – EMERGENCY CLEAR

Exec Command: ^EMRCLR

This command causes the unit to forget that it was in an emergency state by clearing the emergency indication in memory. When the unit is power cycled, it will no longer be in an emergency state.

4.9 ^EMRE – EMERGENCY ENABLE

Exec Command: ^EMRE=<n>

Activates or cancels the emergency button. Emergency activation is equivalent to pressing the emergency button. Emergency cancelation is equivalent to using the Cancel 911 menu item. <n>:

0 Cancel Emergency Mode

1 Activate Emergency Mode

Read Command: ^EMRE?

Returns the current emergency state. 0 - normal, 1 - emergency.

Test Command: ^EMRE=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking and Charger modes. In Charger mode, however, the ^EMRE=0 is not supported and will return ERROR.

4.10 ^ERQ – QUEUE RESTRICTED

Exec Command: ^ERQ=<b>[,<f>]

This command is used to set the restricted reports and failed reports resend properties. Restricted reports are tracking reports that are scheduled to send while all communication links are disabled. Failed reports are tracking reports that fail all attempts in the allowed retry period.

<b>:

0 No reports are queued when communication links are disabled.

1 Queue restricted reports for later delivery

<f>:

0 No reports are queued after the transmit attempt fails.

1 Queue failed reports for later delivery

Read Command: ^ERQ?

Indicates the current value for this command.

Test Command: ^ERQ=?

Returns a fixed message indicating the range of acceptable values.

^ERQ:(0-1)[,(0-1)]

4.11 ^ERQC – Queue Restricted Count

Exec Command: ^ERQC

This command gives the number of queued restricted and failed reports

4.12 ^ERQM – Maximum Queued Reports

Exec Command: ^ERQM=<i>

This command set the max number of restricted and failed reports that can be queue.

<i>:Number of reports

Test Command: ^ERQM=?

Returns a fixed message indicating the range of acceptable values.

^ERQM:(0-100)

4.13 ^GAO – GPS Always On

Exec Command: ^GAO<n>

This command controls whether or not the GPS receiver "goes to sleep" between reports. If battery life is not a concern, it is recommended that this option is on to give more accurate and faster GPS position acquisition.

<n>:

0 GPS Receiver is off between reports.

1 GPS Receiver is always on.

Read Command: ^GAO?

This command responds with the current setting of the ^GAO command

NOTE: The GPS receiver will be turned off if the SHOUT is allowed to sleep or turn off.

4.14 ^ID – CHANGE THE IDENTIFIER

Exec Command: ^ID=<n>[,<id>]

Allows a unique static identifier to be entered and added to the GPS report. When <n> takes on a value of 1, an<id> of up to 50 characters long must appear immediately after and enclosed inside two double quotes (“ “).

<id>: The static identifier to be included in every GPS report, enclosed by “ “, and can be up to 50 characters long.

Read Command: ^ID?

Indicates the current ID status and displays the static identifier if available

IMPORTANT: Iridium charges a minimum of 30 bytes for each SBD message. The SHOUT ts compresses each GPS report to 30 bytes, not including the static identifier, to minimize airtime cost. Thus, keeping static ID short will reduce per message cost.

NOTE: The ID is only included in reports when ^RMF is set to 1, 2 or 3.

4.15 ^MBXCHK – MAILBOX CHECK

Exec Command: ^MBXCHK=<n>

This command specifies the time between mailbox checks. The default is 10 minutes.

<n>: May take on a value between 0 to 10080 minutes in increments of 0.5 minute (30 seconds)

Read Command: ^MBXCHK?

Returns the current value for this command.

Test Command: ^MBXCHK=?

Returns a fixed message indicating the range of acceptable values.

^MBXCHK:(0-10080)

4.16 ^MBXCHKE – Mailbox Check Enable

Exec Command: ^MBXCHKE=<n>

Sets whether the unit will perform mailbox checks in Tracking mode.

<n>:

0 Mailbox checks disabled (default)

1 Mailbox checks enabled

Read Command: ^MBXCHKE?

Returns the current value for this command.

Test Command: ^MBXCHKE=?

Returns a fixed message indicating the range of acceptable values.

4.17 ^MSA – Motion Sensor Awake

Exec Command: ^MSA=<enabled>

This command determines whether to monitor activity on the motion sensor. When enabled, internal motion start (see ^MSB) and end events (see ^MSE) are triggered. These events drive other motion features including ^CAL2, ^UAMS, ^MNDN and ^MSR

<enabled>:

0 Disables motion sensor.

1 Enables the motion sensor. Default is 1

Read Command: ^MSA?

Returns the current value for Motion Sensor awake

Test Command: ^MSA=?

Returns a fixed message indicating the range of acceptable values.

^MSA:(0/1)

4.18 ^MSB – Motion Sensor Begin

Exec Command: ^MSB=<wc>,<s>,<ws>

This determines the criteria under which the motion start event triggers. The motion detection is broken into three different parameters: the search window duration, search window count, and sensitivity. For a detection to occur the sensitivity (number of detected motions) must be satisfied for a number of consecutive search windows.

<wc>: Window Count – Required number of consecutive search windows. The range is 0 – 60 with default being 3 windows. A value of 0 indicates that the unit wakes up after sensing a single motion.

<s>: Sensitivity – Number of motions that must be detected in a single search window. For each detection there is a (ws / 30) ignore period where activity of the motion sensor is ignored. The range is 1 – 26 where 1 requires the least motion and 26 require the most motion.

<ws>: Window Size – Number of seconds in each search window. The range is 1 – 60 seconds with default being 60 seconds.

Read Command: ^MSB?

Returns the current state for this command

Test Command: ^MSB=?

Returns a fixed message indicating the range of acceptable values.

^MSB:(0-60),(1-26),(1-60)

4.19 ^MSE – Motion Sensor End

Exec Command: ^MSE=<m>

This sets the criteria under which the motion end event is triggered. The motion end event will trigger if <m> minutes go by where no motion is detected, and the motion start event has previously occurred.

<m>: Number of minutes of no motion that must pass before the motion end event triggers. The range is 1 – 60 with default being 3.

NOTE: While the device is awake, the countdown to the end is extended anytime the motion sensor detects motion. However, while sleeping, the count is only extended when the criteria defined by ^MSB is satisfied.

Read Command: ^MSE?

Returns the current state for this command

Test Command: ^MSE=?

Returns a fixed message indicating the range of acceptable value.

^MSE:(1-60)

4.20 ^MSR – MOTION SENSOR REPORTING

Exec Command: ^MSR=<n>[,<m>]

This command determines whether to send a report when a motion start and/or end event triggers. This setting requires that ^MSA is enabled and ^MSB, ^MSE, ^MSW are set to desired values. When motion start reporting is enabled and a motion start event triggers, a GPS version 6 report is sent with short code 20, Motion Start Notice. When motion end reporting is enabled and a motion end event triggers, a GPS version 6 report is sent with short code 21, Motion End Notice. In the case of ^CAL0 and motion end reporting is enabled, if the unit sleeps before ^MSE minutes of no motion, the unit will wake when ^MSE expires and send a motion end report. In the case of ^CAL2 and motion end reporting is enabled, the unit will not sleep until motion ends, according the behavior of ^CAL2, and the motion end report will be sent at expiration of ^MSE minutes of no motion.

<n>

0 Don’t send a notice when a motion start event occurs. (Default)

1 Send a notice when a motion start event occurs.

<m>

0 Don’t send a notice when a motion end event occurs. (Default)

1 Send a notice when a motion end event occurs.

Read Command: ^MSR?

Returns the current state for this command.

Test Command: ^MSR=?

Returns a fixed message indicating the ranges this can be set to.

^MSR: (0-1),(0-1)

4.21 ^MSW – MOTION SENSOR WAIT

Exec Command: ^MSW=<m>

This determines how long the motion detection is disabled after the SHOUT sleeps.

<m>: Number of minutes to wait. Default is 0.

Read Command: ^MSW?

Returns the current state for this command

Test Command: ^MSW=?

Returns a fixed message indicating the range of acceptable value.

^MSW:(0-1440)

4.22 ^RF – REPORT FLOOD

Exec Command: ^RF=<n>

This command sets the number of reports that will be sent out continuously when first entering tracking mode. After <n> reports have been sent the interval value set by ^TBR will take effect. If <n> is zero, the tracker will use ^TBR to determine the rate at which reports are sent. The range is 0 – 255 and default value is 0.

Read Command: ^RF?

Indicates the current value for this command

Test Command: ^RF=?

Returns a fixed message indicating the range of acceptable values.

^RF:(0-255)

4.23 ^RMF – Report Message Format

Exec Command: ^RMF=<n>

This command sets the format of reports that will be sent to the recipient.

<n>:

1	GPS version 3 (format used on older A3LA series tracking units)
2	GPS version 4 (includes HDOP, VDOP, Motion)
3	GPS Version 5 (includes input and output pin states)
4	PECOS P3
5	PECOS P4
6	GPS version 6 (includes short codes and free text)
7	10 byte GPS version 0

Read Command: ^RMF?

Indicates the current value.

Test Command: ^RMF=?

Returns a fixed message indicating the range of acceptable values.

^RMF:(1-7)

4.24 ^SPSR – Same Place, Skip Reports

Exec Command: ^SPSR=<n>[,<d>[,<b>[,<c>]]]

If the unit is not moving this will limit the number of GPS reports that are sent out. When enabled, ^SPSR causes the unit to be bounded by a sphere with radius <d>. Report sending is halted when the unit remains in the sphere for a time specified by <b>. Report sending will resume once the unit has left the sphere. Upon leaving the bounding sphere, a new boundary will be created at the current location of the unit. If the unit remains in the boundary for an extended period of time a report may be sent depending on the mode <n> and the number of cycles specified by <c>. An example of how ^SPSR may be useful is if used on a truck the number of reports sent when the truck is parked would be limited

<n>:

0 Turn of the feature

1 Enable this feature for a set number of reports

2 Never send another report until it movies

<d>: The radius of a 3D sphere to not send reports in meters. Range is 10 to 65535. Depending on GPS signal conditions, the position may drift some point to point. The radius should be selected such that the expected drift does not exceed the radius.

<b>: Number of reports to send while stationary before skipping takes effect. Range is 0 to 65535.

<c>: The number of cycles to skip sending out GPS reports if the unit has not moved. Range is 1 to 65535.

NOTE: <b> and <c> are measured in report cycles. In general, report cycles last ^TBR seconds. For example, if the unit is to be configured to wait 10 minutes before report skipping begins and ^TBR is set to 2 minutes, <b> should be set to 5 cycles. (Desired time / ^TBR = <b>)

NOTE: If SPSR is enabled and the SHOUT attempts to send a report without a valid GPS fix, SPSR will not process its report skipping logic. The command ^BIGR must be used to block reports with an invalid GPS fix from being sent.

Read Command: ^SPSR?

Returns the current settings for this command

Test Command: ^SPSR=?

Returns a fixed message indicating the range of acceptable values and an explanation of what they mean.

^SPSR:(0-2)[,(10-65535)[,(0-65535)[,(1-65535)]]]

4.25 ^SSR – Successful Send Required

Exec Command: ^SSR=<n>

This command restricts when tracking mode switches are allowed. A tracking mode switch occurs when emergency is activated/deactivated and/or a geofence is entered/departed.

<n>:

0	Disabled. Tracking mode will switch immediately (default)
1	Must attempt one report before switching
2	Must successfully send one report before switching

Read Command: ^SSR?

Indicates the current value for this command

Test Command: ^SSR=?

Returns a fixed message indicating the range of acceptable values.

^SSR:(0-2)

4.26 ^START – Start Up Mode

Exec Command: ^STARTn

Set the operation at power up. This will be reset by &F.

<n>:

0	Start in command mode
1	start in tracking mode (default)

Read Command: ^START?

Indicates the current value.

4.27 ^STATS – View Tracking Statistics

Exec Command: ^STATS

This command displays statistics for transmissions that occur during tracking and messaging.

4.28 ^STATSE – ERASE TRACKING STATISTICS

Exec Command: ^STATSE

This command erases the statistics.

4.29 ^TBR – TIME BETWEEN REPORTS

Exec Command: ^TBR=<n>

This command sets the time between reports (TBR).

<n>: Time between reports in minutes. May take on a value between 0 to 10080 minutes in increments of 0.5 minute (30 seconds). The default value is 10.

When TBR is set to a value between 0.5 minute and 10080 minutes, an additional parameter called Time To Keep Trying or TTKT dictates how long the device tries to acquire a fix and send a report in a single reporting cycle. The value of TTKT can be changed using the ^TTKT command. The device will attempt to acquire a valid GPS fix up to 30 seconds before the end of the TTKT time window. Once the device acquires a fix or there are only 30 seconds left in the TTKT window, the device will turn off the GPS receiver and will turn on the communication link. The device will then wait for an acceptable signal strength and send the report. If the device fails to send the report, it will retry until the TTKT time expires. Once the reporting cycle is over, the device will immediately go to sleep for the remaining time before the next reporting cycle unless the user is interacts with the device. Therefore, there are three possible outcomes of a reporting cycle as shown below:

- A GPS report with a valid position fix is transmitted
- A GPS report with an invalid position fix is transmitted
- No GPS report is transmitted

When TBR is set to 0, the device will send GPS reports as described above, but there is no idle time between reports. After a report transmits, another acquisition and transmission cycle is started immediately. The device will never go into power-saving

mode, but will keep all its electronic circuits on to allow the fastest possible transmission rate.

Read Command: ^TBR?

Indicates the current value.

Test Command: ^TBR=?

Returns a fixed message indicating the range of acceptable values.

^TBR:(0-10080) 0 means continuous, otherwise minutes

4.30 ^TBRA – AWAKE TIME BETWEEN REPORTS

Exec Command: ^TBRA=<n>

This command sets the time between reports for use with the ^UAMS feature. The command functions the same as ^TBR above but applies to the 'Awake' tracking described in section **4.4 ^DFRA – AWAKE DELAY FIRST REPORT**. The default value is 5.

Read Command: ^TBRA?

Returns the current time between reports value.

Test Command: ^TBRA=?

Returns a fixed message indicating the range of acceptable values.

^TBRA:(0-10080) 0 means continuous, otherwise minutes

4.31 ^TMF – TEXT MESSAGE FORMAT

Exec Command: ^TMF=<n>

This command sets the format of text messages that will be sent to the recipient.

<n>:

4,5	PECOS
6	NAL Version 6 (default)

Read Command: ^TMF?

Indicates the current value for this command

Test Command: ^TMF=?

Returns a fixed message indicating the range of acceptable values.

^TMF:(4-6)

4.32 ^TTKT – TIME TO KEEP TRYING

Exec Command: ^TTKT=<n>,<incrementsOrMins>[,<secs>]

This command sets the time window to obtain a valid GPS position fix and to send a GPS report successfully.

<n>: Whether the time to keep trying is being entered in 5 second increments or minutes and seconds.

0 The time to keep trying is being entered in 5 second increments.
<incrementsOrMins>: The number of 5 second increments to keep trying.
<secs>: Must be left out.

1 The time to keep trying is being entered in minutes and seconds.
<incrementsOrMins>: The minutes component of the time to keep trying
<secs>: The seconds component of the time to keep trying. Must be divisable by 5.

The time to keep trying can be set to one of the following values regardless of the way it is entered.

- 0 seconds: The current time between reports will be used as the time to keep trying. However, the unit will only attempt a single transmission. If no signal is available for the selected comm link by the end of the time period, no attempt will be made.
- 90 - 1270 seconds: The entered value will be used as the time to keep trying.
- 1275 seconds: The current time between reports will be used as the time to keep trying.

The default value is 120 seconds.

Read Command: ^TTKT?

Indicates the current value in 5 second increments.

Test Command: ^TTKT=?

Returns a fixed message indicating the range of acceptable values.

^TTKT:0,(0-255) or 1,(0-21),(0-55)

4.33 ^TTKTA – AWAKE TIME TO KEEP TRYING

Exec Command: ^TTKTA=<n>,<incrementsOrMins>[,<secs>]

This command sets the time to keep trying for use with the ^UAMS feature. The command functions the same as ^TTKT above but applies to the 'Awake' tracking described in section **4.4 ^DFRA – AWAKE DELAY FIRST REPORT**. The default value is 120 seconds.

Read Command: ^TTKTA?

Indicates the current value in 5 second increments.

Test Command: ^TTKTA=?

Returns a fixed message indicating the range of acceptable values.

^TTKTA:0,(0-255) or 1,(0-21),(0-55)

4.34 ^TPE – TRACKING PROFILE EMERGENCY

Exec Command: ^TPE=<n>

This command specifies which tracking profile to use for emergency state. Default is profile 1

<n>: (0 – 11) tracking profile

Read Command: ^TPE?

Returns the current setting for this command

Test Command: ^TPE=?

Returns a fixed message indicating the range of acceptable values.

^TPE:(0-11)

4.35 ^TPN – Tracking Profile Normal

Exec Command: ^TPN=<n>

This command specifies which tracking profile to use for normal state. Default is profile 0

<n>: (0 – 11) tracking profile

Read Command: ^TPN?

Returns the current setting for this command

Test Command: ^TPN=?

Returns a fixed message indicating the range of acceptable values.

^TPN:(0-11)

4.36 ^TRK – Enter Tracking Mode

Exec Command: ^TRK

This command causes the SHOUT ts to leave Command mode and enter Tracking mode. Must be the last command in an AT command String

4.37 ^TRKBLKOUT – Tracking Block Output

Exec Command: ^TRKBLKOUT=<n>

Suppresses the output of unsolicited AT commands while in tracking mode. Unsolicited result codes are still displayed.

<n>:

0 Do not suppress commands. (default)

1 Suppress commands.

Read Command: ^TRKBLKOUT?

Returns the current value of <n>.

NOTE: Also available in Tracking mode.

4.38 ^TRKDEBUG – ENABLE TRACKING DEBUG OUTPUT

Exec Command: ^TRKDEBUG=<n>

Sets whether to enable outputting of URC in Tracking mode to indicate the send activity.

<n>:

0 Disabled (default)

1 Enabled. The following URCs will be displayed.

Idle

Acquiring GPS

Acquiring Link

Sending

Read Command: ^TRKDEBUG?

Returns the current value for this command.

Test Command: ^TRKDEBUG=?

Returns a fixed message indicating the range of acceptable values.

4.39 ^TRKE – ENABLE TRACKING

Exec Command: ^TRKE<n>

This command sets whether to enable the periodic tracking while in Tracking mode. This setting can be modified in the device GUI through the yes/no option in the "Report Rate" menu.

<n>:

0 The device will not track when in Tracking mode

1 The device will track when in Tracking mode

Read Command: ^TRKE?

Indicates the current value for this command.

Test Command:^TRKE=?

Returns a fixed message indicating the range of acceptable values.

^TRKE:(0-1)

4.40 ^TRKLR – Last Report Sent

Exec Command: ^TRKLR

This command causes the unit to display the last report sent by the modem.

4.41 ^UAMS – Use Alternate Motion Settings

Exec Command: ^UAMS=<enabled>

This command determines whether to use the 'Awake' (^TBRA, ^TTKTA, ^DFRA) tracking settings when the device is in motion. When enabled, tracking will switch to use the 'Awake' settings once the motion start (^MSB) event occurs. The 'Awake' settings will continue to be used until the motion end event (^MSE) occurs.

NOTE: This feature when combined with ^CAL2 functions similarly to the ^CAL2 setting on earlier NAL trackers like the 9602-LP v1.

<enabled>:

0 Does not use alternate motion settings. (Default)

1 Use alternate motion settings.

Read Command: ^UAMS?

Indicates the current value.

Test Command: ^UAMS=?

Returns a fixed message indicating the range of acceptable values.

^UAMS:(0-1)

4.42 ^WMF – Write Message Format

Exec Command: ^WMF=<n>

This writes to the SBD buffer a GPS report in the format determined by <n>.

Note: This command must be executed in its own AT command string. After this is done a message similar to a GPS report can be sent by sending the +SBDI or the +SBDIX command.

<n>:

1	GPS version 3 (format used on older A3LA series tracking units)
2	GPS version 4 (includes HDOP, VDOP, Motion)
3	GPS Version 5 (includes input and output pin states)
4	PECOS P3
5	PECOS P4
6	GPS version 6 (includes short codes and free text)
7	10 byte GPS version 0

Read Command: ^WMF?

Indicates the current value.

Test Command: ^WMF=?

Returns a fixed message indicating the range of acceptable values.

^WMF:(1-7)

5 Remote Update Commands

5.1 ^RUP – Remote Update Password

Exec Command: ^RUP='<password>'

Changes the password used while making remote updates. This command does not require the crypto officer role in order to change.

<password>: Should contain printable keyboard characters and must be exactly 8 characters. This password must agree with the password in the remote update message in order for a remote update to be made.

The default remote update password is "12345678".

Read Command: ^RUP?

Returns the current remote update password.

5.2 ^RUTC – Remote Update Timestamp Check

Exec Command: ^RUTC=<enabled>

Enables or disables the remote update time check. When the remote update time check is enabled, remote updates with a time less than or equal to the last remote update time are not applied. Version 0, 1, and 2 remote updates can bypass the time check by providing a time equal to the UNIX epoch. Version 3 remote updates can bypass the time check by not providing a time in the first tag.

<enabled>:

0: Disable this feature (default)

1: Enable this feature

Read Command: ^RUTC?

Returns the current remote update password.

Test Command: ^RUTC=?

Returns a fixed message indicating the range of acceptable values.

^RUTC:(0-1)

6 CALLOUT COMMANDS

6.1 ^COA – ADD CALL OUT

Exec Command: ^COA="<t>"[,<e>]

This command adds an entry to a list of call outs. A call out is specified with time of day and enable setting. If during tracking mode one or more callouts are present, a report will be sent daily at each specified time.

<t>: Time – "hh:mm:ss"

<e>: Sets if the call out is enabled or not. The call out can be enabled or disabled through the menu. If this parameter is omitted, the call out will be added as enabled.

0 Callout is added disabled

1 Callout is added enabled

Test Command: ^COA=?

Returns a message indicating the range of acceptable values

^COA:"hh:mm:ss",[0-1]

6.2 ^COD – DELETE CALL OUT

Exec Command: ^COD=<i>

This command deletes the call out at the specified index. Use the index from the ^COR command. After deleting, the indexes are updated. To delete multiple, run ^COR before each delete.

<i>: Call Out Index

6.3 ^COE – ERASE CALL OUT

Exec Command: ^COE

Erases all call outs

6.4 ^COR – READ CALL OUT

Exec Command: ^COR

This command reads out all entries in the call out list sorted by time.

Response format : <i>, <t>, <e>

<i>: Index of call out entry

<t>: Time of day schedule for the entry

<e>: Whether or not the call out is enabled

7 GEOFENCING COMMANDS

7.1 ^GFAP – ADD GEOFENCE POINT

Exec Command: ^GFAP=<lat>,<lng>

This command adds a point to a geofence. This can only be run after ^GFS and before ^GFF. At least 3 points must be added before a fence can be completed with the ^GFF command.

<lat>: latitude of the point. (-90.0 to 90.0)

<lng>: longitude of the point. (-180.0 to 180.0)

Test Command: ^GFAP=?

Returns a message indicating the range of acceptable values

^GFAP:(-90.0 - 90.0),(-180.0 - 180.0)

7.2 ^GFCF – GEOFENCE CHECK FREQUENCY

Exec Command: ^GFCF=<n>[,<i>]

This command sets the GPS search period and the maximum time between position updates to check if the device is in a geofence. If a valid GPS position is seen before the next check, the countdown to the next check is restarted.

Defaults to ^GFCF = 30, 5.0

<n>: period to search for valid GPS signal in **seconds.**

<i>: time between each Geofence check in **minutes**. Entered in 0.5 minute increments

Read Command: ^GFCF?

Indicates the current value for this command

Test Command: ^GFCF=?

Returns a message indicating the range of acceptable values

^GFCF:(15-255),(0-10080)

7.3 ^GFD – Delete Geofence

Exec Command: ^GFD=”<id>”

This command is used to delete a geofence

<id>: Geofence identifier

Test Command: ^GFD=?

Returns a message indicating the range of acceptable length of identifier

^GFD:"(1-8)"

7.4 ^GFE – Erase Geofence

Exec Command: ^GFE

This command is used to erase all geofences.

7.5 ^GFF – Finish Adding Geofence Points

Exec Command: ^GFF

This command is used to save the information entered with ^GFAP and ^GFS

7.6 ^GFM – Modify Geofence

Exec Command: ^GFM=“<o>”,[”<n>”],[<op>],[<p>],[<i>]

This command is used to modify an existing geofence.

Where

<o>: Old identifier

<n>: New identifier

<op>: New options – Enable, Arrival notice, Depart notice

<p>: New tracking profile (0 – 11)

<i>: Image ID

Test Command: ^GFM=?

Returns a message indicating the range of acceptable values

^GFM:"(1-8)",["(1-8)"],[(0-255)],[(0-11)],[(0-4294967295)]

7.7 ^GFR – READ GEOFENCE POINTS

Exec Command: ^GFR=["<id>"]

This command is used to display a list of stored geofences.

Where

<i>: If present, only the geofence with the specified identifier will be displayed.

Test Command: ^GFR=?

Returns a message indicating the range of acceptable value

^GFR:["(1-8)"]

7.8 ^GFS – START GEOFENCE

Exec Command: ^GFS = "<i>",<o>,<p>

This command is the first command to be used to save a Geofence. It should be followed by ^GFAP to add a point to the fence.

Where

<i>: Text identifier, can be up to 8 characters long.

<o>: This is a bit field of options. For each option wanted, sum the values below:

Enable – 1

Arrival notice - 2

Depart notice - 4

<p>: Tracking profile (0 – 11) that will be used while inside the fence

Test Command: ^GFS=?

Returns a message indicating the range of acceptable values

^GFS:"(1-8)",(0-255),(0-11)

8 MANDOWN COMMANDS

8.1 ^MNDN – MANDOWN

Exec Command: ^MNDN = <enabled>,<countdown>,<response>

This command is used to setup the mandown feature. When enabled, the mandown feature will begin monitoring the motion sensor when a motion start event occurs (^MSB). If the device does not see motion often enough (^MNDNTD) while it is monitoring, the a popup menu will show asking "Are You OK?". When this menu is allowed to count down or the user selects "No", up to three different mandown responses will trigger.

Locator Alert – a configurable audio alert (^MNDNA).

Start Emergency Mode – starts emergency mode as if the red emergency button was pressed.

Send Mandown Message – sends a text message with short code 15.

<enabled>:

0: Disable this feature (default)

1: Enable this feature

<countdown>: The number of seconds to show the "Are You OK" screen before automatically triggering the response. The default is 60 seconds.

<response>: This is a bit field of options. For each option wanted, sum the values below:

Locator Alert – 1

Start Emergency Mode - 2

Send Mandown Message - 4

Read Command: ^MNDN?

Indicates the current settings.

Test Command: ^MNDN=?

Returns a message indicating the range of acceptable values

^MNDN:(0/1),[(1-65535)],[(0-7)]

8.2 ^MNDNA – MANDOWN AUDIO

Exec Command: ^MNDNA = <n>

This command sets which alert sound will play when the Mandown Locator Alert triggers.

<n>

0: SOS

1: Siren (default)

2: Shrill

Read Command: ^MNDNA?

Indicates the current setting.

Test Command: ^MNDNA=?

Returns a message indicating the range of acceptable values

^MNDNA:(0-2)

8.3 ^MNDNTD – MANDOWN TIME DOWN

Exec Command: ^MNDNTD = <n>

The Mandown Time Down setting is the number of seconds, <n>, of no detected motion that must pass before the "Are You OK?" screen will appear. The acceptable range is 1 – 65535. See the Mandown command (^MNDN) for detail.

Read Command: ^MNDNTD?

Indicates the current setting.

Test Command: ^MNDNTD=?

Returns a message indicating the range of acceptable values

^MNDNTD:(1-65536)

9 LINK COMMANDS

9.1 ^LNK – LINKS ALLOWED

Exec Command: ^LNK = <i>

This command sets whether the Iridium link is allowed to send data in tracking mode.

Where

<i>: Links allowed

0: None

1: IRIDIUM

Read Command: ^LNK?

Indicates the current links set.

Test Command: ^LNK=?

Returns a message indicating the range of acceptable values

^LNK:(0-1)

10 ENCRYPTION COMMANDS

10.1 ^CCOP – CHANGE CRYPTO OFFICER PASSWORD

Exec Command: ^CCOP='<old>','<new>'

Changes the Crypto Officer's password from a factory-set/old value to a new value. The password must include only printable keyboard characters. The password will not be reset by the AT&F command. When the device is set to echo, all entries are replaced with asterisks (*) instead of the actual typed values. All passwords must be between 8 and 16 characters in length. The factory-set password is 'temp password' and must be changed before encryption can be used.

<old>: The old password.

<new>: The new password.

10.2 ^KD – KEY FOR DECRYPTION

Exec Command: ^KD='<password>','<key>'

Sets the AES decryption key. The password and key will not be reset by the &F command. The password and key will not be echoed. This command must be entered twice before an update is made.

NOTE: The decryption key must match the encryption key at the network operation center (NOC).

<password>: The Crypto Officer password. The Crypto Officer password must be changed from its factory-set value before this command will work.

<key>: The decryption key. This can only have characters 0-9 or A-F and must be 64 bytes long. Every two hexadecimal characters represent the value of one byte in the key.

10.3 ^KE – KEY FOR ENCRYPTION

Exec Command: ^KE='<password>','<key>'

Sets the AES encryption key. The password and key will not be reset by the &F command. The password and key will not be echoed. This command must be entered twice before an update is made.

NOTE: The encryption key must match the decryption key at the NOC.

<password>: The Crypto Officer password. The Crypto Officer password must be changed from its factory-set value before this command will work.

<key>: The encryption key. This can only have characters 0-9 or A-F and must be 64 bytes long. Every two hexadecimal characters represent the value of one byte in the key.

10.4 ^KZ – KEY ZEROIZATION

Exec Command: ^KZ='<password>'

Resets or zeroizes the encryption and decryption keys and stops encryption until the keys are re-entered with the ^KD and ^KE commands. The Crypto Officer password must be changed from its factory-set value before this command will work.

<password>: The Crypto Officer password.

10.5 ^UE – USE ENCRYPTION

Exec Command: ^UE='<password>',<n>

Sets whether to use encryption at power up. Setting the ^UE command will take effect only after power has been cycled. This command will return an error if the encryption password has not been set.

<password>: The Crypto Officer password.

<n>:

0	Do not use encryption at power up (default)
1	Use encryption at power up

Read Command: ^UE?

Returns whether <n> is set to 0 or 1 and then one of the following messages will appear:

- "Encryption Disabled No Keys Entered"
- (“Encryption Currently Enabled” OR “Encryption Currently Disabled”) AND ("Set to be Enabled Next Power Cycle" OR "Set to be Disabled Next Power Cycle")
- "Encryption Feature Not Included"

11 UNIT SETTINGS COMMANDS

11.1 ^ACLPIN – ACCESS CONTROL LIST PIN

Exec Command: ^ACLPIN=<pin>

Sets the PIN that must be entered to modify the Access Control List using the menu. The PIN must be 1 – 4 numbers long and enclosed in single quotes. The PIN is disabled by default.

The PIN is disabled by entering the command with empty quotes:

AT^ACLPIN=''

Read Command: ^ACLPIN?

Indicates the current PIN value or "No ACL PIN set" if there is no PIN set.

Test Command: ^ACLPIN=?

Returns a fixed message indicating the range of acceptable values.

11.2 ^ACLSET – SET ACCESS CONTROL LIST

Exec Command: ^ACLSET=<acl>

Sets the Access Control List. This is a list of menu options that should be shown in the menu. The list is entered in hexadecimal format using a bitmask. The mapping of the bits is as follows:

Audio	0x0000 0000 0001
Backlight	0x0000 0000 0002
Block Reports	0x0000 0000 0004
Brevity Code	0x0000 0000 0008
Calibrate	0x0000 0000 0010
Callout	0x0000 0000 0020
Cancel Emergency	0x0000 0000 0040
Check-In	0x0000 0000 0080
Check Iridium	0x0000 0000 0100
Check GPS	0x0000 0000 0200

Check Mailbox	0x0000 0000 0400
Compose	0x0000 0000 0800
Configure Links	0x0000 0000 1000
Address Book	0x0000 0000 2000
Contrast	0x0000 0000 4000
Data Logging	0x0000 0000 8000
Drafts	0x0000 0001 0000
Favorites	0x0000 0002 0000
Geofences	0x0000 0004 0000
GPS Settings	0x0000 0008 0000
Inbox	0x0000 0010 0000
Include GPS	0x0000 0020 0000
Language	0x0000 0040 0000
LED	0x0000 0080 0000
Mailbox Check Rate	0x0000 0100 0000
Mandown	0x0000 0200 0000
Memory	0x0000 0400 0000
Outbox	0x0000 0800 0000
Queue Reports	0x0000 1000 0000
Reporting Rate	0x0000 2000 0000
Reset	0x0000 4000 0000
Search	0x0000 8000 0000
Settings	0x0001 0000 0000
Sent	0x0002 0000 0000
Test Report	0x0004 0000 0000
Messaging	0x0008 0000 0000
Time and Date	0x0010 0000 0000
Tracking Statistics	0x0020 0000 0000
Tracking	0x0040 0000 0000

Tracking Format	0x0080 0000 0000
Unit Information	0x0100 0000 0000
User Information	0x0200 0000 0000
Utilities	0x0400 0000 0000
Waypoints	0x0800 0000 0000

To format the desired mask, the values above should be summed together. For example, to enable access to only the Reporting Rate and Compose menus, you would add the mask for Tracking, Reporting Rate, Messaging and Compose: 0x0048 2000 0800. The Tracking and Messaging menus are included because Reporting Rate and Compose are found under those menus respectively. The bitmask is then entered in a quoted string without the '0x' and whitespace: AT^ACLSET="004820000800"

Read Command: ^ACLSET?

Indicates the current PIN value or "No ACL PIN set" if there is no PIN set.

Test Command: ^ACLSET=?

Returns a fixed message indicating the range of acceptable values.

11.3 ^DF – DATE FORMAT

Exec Command: ^DF =<n>

Sets the date format for the user interface.

<n>:

0 DD-mmm-YY. For example 03-Jan-10. (default)

1 DD/MM/YY

2 DD-MM-YY

3 DD.MM.YY

4 MM/DD/YY

5 YY-MM-DD

Read Command: ^DF?

Indicates the current value.

11.4 ^TF – TIME FORMAT

Exec Command: ^TF<n>

Sets the time format for the user interface.

<n>:

0 24 Hour (default)

1 AM/PM

Read Command: ^TF?

Indicates the current value.

11.5 ^TZ – TIME ZONE

Exec Command: ^TZ=<n>

Sets the time zone for the user interface.

<n>: Must be in the range of -14.0 to 14.0 in .5 increments. The default value is 0.

Read Command: ^TZ?

Indicates the current value.

Test Command: ^TZ=?

Returns a fixed message indicating the range of acceptable values.

11.6 ^IGPS – INCLUDE GPS IN MESSAGES

Exec Command: ^IGPS[<n>]

Sets whether GPS information will included in messages. Position reports will always include GPS information regardless of this setting.

<n>: If omitted, 0 will be used.

0 No. GPS information will not be included. (default)

1 Yes. GPS information will be included.

Read Command: ^IGPS?

Indicates the current value.

11.7 ^LCB – LCD BACKLIGHT

Exec Command: ^LCB<n>

Sets the duration that the LCD backlight says on after user interaction. When the user is composing a message, the backlight will stay on twice as long.

<n>:

0	Always On
1	Always Off
2	Turn off after 5 seconds
3	Turn off after 10 seconds
4	Turn off after 15 seconds
5	Turn off after 30 seconds (default)

Read Command: ^LCB?

Indicates the current value.

11.8 ^LCC – LCD CONTRAST

Exec Command: ^LCC=<n>

Sets the contrast for the LCD screen.

<n>: Can be 0 – 100. The default value is 60.

Read Command: ^LCC?

Indicates the current value.

Test Command: ^LCC=?

Returns a fixed message indicating the range of acceptable values.

11.9 ^LEDS – LEDS

Exec Command: ^LEDS=<s>,<a>

Enables or disables the LEDs.

<s>: Blink power LED when the unit is sleeping

0	Off

1 On (default)

<a>: Turn on power LED when the unit is in emergency state

0 Off

1 On (default)

Read Command: ^LEDS?

Indicates the current value.

Test Command: ^LEDS=?

Returns a fixed message indicating the range of acceptable values.

12 MEMORY COMMANDS

12.1 ^CHKIN – CHECK-IN

Exec Command: ^CHKIN

Adds a check-in report to the outbox.

NOTE: Also available in Tracking mode.

12.2 ^MABD – ADDRESS BOOK DELETE

Exec Command: ^MABD=<code>

Deletes an address book entry by code.

Test Command: ^MABD=?

Returns a fixed message indicating the range of acceptable values.

12.3 ^MABE – ADDRESS BOOK ERASE

Exec Command: ^MABE

Erases all of the address book entries.

12.4 ^MABM – ADDRESS BOOK MODIFY

Exec Command: ^MABM=<code>,"<name>","<email>","<phone>","<location>"

Adds or modifies an address book entry for a particular code.

<code>: Address short code. Sent with message. Must be 2 – 99

<name>: Should be synchronized with the server. 1 – 30 characters long.

<email>: Should be synchronized with the server. 0 – 50 characters long.

<phone>: Should be synchronized with the server. 0 – 30 characters long.

<location>: Should be synchronized with the server. 0 – 30 characters long.

Test Command: ^MABM=?

Returns a fixed message indicating the range of acceptable values.

12.5 ^MABR – ADDRESS BOOK READ

Exec Command:

^MABR[=[<code>],["<name>"],["<email>"],["<phone>"],["<location>"]]

Displays the address book entries that match all of the given parameters. Omitted parameters will match anything. Quoted parameters will match substrings. Trailing commas may be omitted.

Exec Response:

Each matched entry will be returned in the following format.

^MABR:<code>,"<name>","<email>","<phone>","<location>"

<code>: Address short code. Sent with message. 2 – 99.

<name>: Should be synchronized with the server. 1 – 30 characters long.

<email>: Should be synchronized with the server. 0 – 50 characters long.

<phone>: Should be synchronized with the server. 0 – 30 characters long.

<location>: Should be synchronized with the server. 0 – 30 characters long.

Read Command: ^MABR?

Returns the number of address book entries.

Test Command: ^MABR=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.6 ^MAME – All Memory Erase

Exec Command: ^MAME

Erases all of the memory on the device. This includes all messages, waypoints, the address book, canned messages, user settings, GPS report log, geofences, configuration settings, etc.

12.7 ^MCMD – Canned Message Delete

Exec Command: ^MCMD=<code>

Deletes a canned message entry by code.

Test Command: ^MCMD=?

Returns a fixed message indicating the range of acceptable values.

12.8 ^MCME – Canned Message Erase

Exec Command: ^MCME

Erases all of the canned message entries.

12.9 ^MCMM – Canned Message Modify

Exec Command: ^MCMM=<code>,<index>,"<label>","<text>"

Adds or modifies a canned message entry for a particular code.

<code>: Canned Message short code. Sent with message. 30 – 99.

<index>: Index used for sorting messages. 0 - 999.

<label>: Should be synchronized with the server. 1 – 100 characters long.

<text>: Text. Sent with the message. 0 – 310 characters long.

Test Command: ^MCMM=?

Returns a fixed message indicating the range of acceptable values.

12.10 ^MCMR – CANNED MESSAGE READ

Exec Command: ^MCMR[=[<code>],[<index>],["<label>"],["<text>"]]

Displays the canned message entries that match all of the given parameters. Omitted parameters will match anything. Quoted parameters will match substrings. Trailing commas may be omitted.

Exec Response:

Each matched entry will be returned in the following format.

^MCMR:<code>,<index>,"<label>","<text>"

<code>: Canned Message short code. Sent with message. 30 – 99.

<index>: Index used for sorting messages. 0 - 999.

<label>: Should be synchronized with the server. 1 – 100 characters long.

<text>: Text. Sent with the message. 0 – 310 characters long.

Read Command: ^MCMR?

Returns the number of canned message entries.

Test Command: ^MCMR=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.11 ^MSDD – DRAFTS DELETE

Exec Command: ^MSDD=<n>

Deletes a draft message by index.

Test Command: ^MSDD=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.12 ^MSDE – DRAFTS ERASE

Exec Command: ^MSDE

Erases all of the draft messages.

12.13 ^MSDR – DRAFTS READ

Exec Command: ^MSDR

Displays all of the draft messages.

Exec Response:

Each matched entry will be returned in the following format.

^MSDR:<index>,<abCode>,"<emails>",<cmCode>,"<text>"

<index>: Unit assigned unique key for the drafts box.

<abCode>: Address book code.

<emails>: User entered emails.

<cmCode>: Canned message code.

<text>: User entered text.

Read Command: ^MSDR?

Returns the number of draft messages.

NOTE: Also available in Tracking mode.

12.14 ^MSIA – INBOX ADD

Exec Command: ^MSIA=["<t>"],[<r>],[<a>],[<c>],["<m>"]

Adds a message to the inbox.

<t>: Time received formatted as YYYYMMDDHHmmSS.

<r>: 0-1. Whether the message has been read. 0 - unread (default), 1 - read.

<a>: 0-65535. Address book code. 0 is the default.

<c>: 0-99. Canned message code. 3 is the default.

<m>: 0-259. Message text.

NOTE: Default values will be used for parameters that are left out. For string parameters, the default value is a blank string except for the <t> parameter which defaults to the current system time.

NOTE: If adding a message to the inbox from Tracking mode, '+' characters must be escaped using '\' to avoid escaping to Command mode.

Test Command: ^MSIA=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.15 ^MSID – INBOX DELETE

Exec Command: ^MSID=<n>

Deletes an inbox message by index.

Test Command: ^MSID=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.16 ^MSIE – INBOX ERASE

Exec Command: ^MSIE

Erases all of the inbox messages.

12.17 ^MSIR – INBOX READ

Exec Command: ^MSIR

Displays all of the inbox messages.

Exec Response:

Each matched entry will be returned in the following format.

^MSIR:<index>, "<time>",<read>,<abCode>,<cmCode>,"<text>"

<index>: A number (0 - 4294967295) that is unique for the current inbox box messages.

<time>: The time that the message was received formatted as YYYYMMDDHHmmSS. If the date is invalid, "????????" will output in place of YYYYMMDD. If the time is invalid, "??????" will be output in place of HHmmSS.

<read>: 1 if the read, 0 if unread.

<abCode>: Address book code.

<cmCode>: Canned message code.

<text>: User entered text.

Read Command: ^MSIR?

Returns the number of inbox messages.

NOTE: Also available in Tracking mode.

12.18 ^MSOA –OUTBOX ADD

Exec Command: ^MSOA=[<p>],[<q>],["<a>"],["<e>"],[<c>],["<m>"]

Adds a message to the outbox.

<p>: 0-3. Priority. 0 - Critical, 1 - High, 2 - Medium, 3 - Low (default).

<q>: 0-1. Queued indicator. 0 - Not queued, 1 - Queued (default).

<a>: Address book codes, separated by commas. Max of 20 codes. Codes must be 0-65535.

<e>: Emails, separated by commas.

<c>: 3 (default), 30-99. Canned message code.

<m>: Message text.

NOTE: Default values will be used for parameters that are left out. For string parameters, the default value is a blank string.

NOTE: If the combined length of the emails, canned message text, and message text are too long, ERROR is returned. The max combined length varies depending on encryption and PECOS settings. If adding a message to the outbox from Tracking mode, '+' characters must be escaped using '\' to avoid escaping to Command mode.

Test Command: ^MSOA=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.19 ^MSOD –Outbox Delete

Exec Command: ^MSOD=<n>

Deletes an outbox message by index.

Test Command: ^MSOD=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.20 ^MSOE – Outbox Erase

Exec Command: ^MSOE

Erases all of the outbox messages.

12.21 ^MSOR – Outbox Read

Exec Command: ^MSOR

Displays all of the outbox messages.

Exec Response:

Each matched entry will be returned in the following format.

^MSOR:<index>,<priority>,<queued>,<abCode>,"<emails>",<cmCode>,"<text>"

<index>: Unit assigned unique key for the outbox. Will be >= 0.

<priority>: 0 - 3. Lower numbers have higher priority.

<queued>: 1 if queued, 0 if not queued.

<abCode>: Address book code.

<emails>: User entered emails.

<cmCode>: Canned message code.

<text>: User entered text.

Read Command: ^MSOR?

Returns the number of outbox messages.

NOTE: Also available in Tracking mode.

12.22 ^MSSD – SENT BOX DELETE

Exec Command: ^MSSD=<n>

Deletes a sent box message by index.

Test Command: ^MSSD=?

Returns a fixed message indicating the range of acceptable values.

NOTE: Also available in Tracking mode.

12.23 ^MSSE – SENT BOX ERASE

Exec Command: ^MSSE

Erases all of the sent box messages.

12.24 ^MSSR – SENT BOX READ

Exec Command: ^MSSR

Displays all of the sent box messages.

Exec Response:

Each matched entry will be returned in the following format.

^MSSR:<index>,"<time>",<abCode>,"<emails>",<cmCode>,"<text>"

<index>: A number (0 - 4294967295) that is unique for the current sent box messages.

<time>: The time that the message was sent formatted as YYYYMMDDHHmmSS. If the date is invalid, "????????" will be output in place of YYYYMMDD. If the time is invalid, "??????" will be output in place of HHmmSS.

<abCode>: Address book code.

<emails>: User entered emails.

<cmCode>: Canned message code.

<text>: User entered text.

Read Command: ^MSSR?

Returns the number of sent box messages.

NOTE: Also available in Tracking mode.

12.25 ^MUSNM – SET USER NAME

Exec Command: ^MUSNM="<name>"

Sets the user's name.

Read Command: ^MUSNM?

Returns the current value for the user's name.

Test Command: ^MUSNM=?

Returns a fixed message indicating the range of acceptable values.

12.26 ^MUSPN – SET USER PHONE

Exec Command: ^MUSPN="<phone>"

Sets the user's phone.

Read Command: ^MUSPN?

Returns the current value for the user's phone.

Test Command: ^MUSPN=?

Returns a fixed message indicating the range of acceptable values.

12.27 ^MUSAST – SET USER STREET ADDRESS

Exec Command: ^MUSAST="<street>"

Sets the user's street.

Read Command: ^MUSAST?

Returns the current value for the user's street.

Test Command: ^MUSAST=?

Returns a fixed message indicating the range of acceptable values.

12.28 ^MUSACI – SET USER CITY

Exec Command: ^MUSACI="<city>"

Sets the user's city.

Read Command: ^MUSACI?

Returns the current value for the user's city.

Test Command: ^MUSACI=?

Returns a fixed message indicating the range of acceptable values.

12.29 ^MUSASA – SET USER STATE OR PROVINCE

Exec Command: ^MUSASA="<stateOrProvince>"

Sets the user's state or province.

Read Command: ^MUSASA?

Returns the current value for the user's state or province.

Test Command: ^MUSASA=?

Returns a fixed message indicating the range of acceptable values.

12.30 ^MUSAZP – SET USER ZIP CODE

Exec Command: ^MUSAZP="<zipCode>"

Sets the user's zip code.

Read Command: ^MUSAZP?

Returns the current value for the user's zip code.

Test Command: ^MUSAZP=?

Returns a fixed message indicating the range of acceptable values.

12.31 ^MUSACO – SET USER COUNTRY

Exec Command: ^MUSACO="<country>"

Sets the user's country.

Read Command: ^MUSACO?

Returns the current value for the user's country.

Test Command: ^MUSACO=?

Returns a fixed message indicating the range of acceptable values.

12.32 ^MUSE – USER INFORMATION ERASE

Exec Command: ^MUSE

Erases all of the user settings.

12.33 ^WPR – READ WAYPOINTS

Exec Command: ^WPR

Displays all of the waypoints.

Exec Response:

Each waypoint will be returned in the following format. In this format, () specifies a list of possible values separated by |, [] specifies an option value, and <> specify a variable. The formats for the date, time, latitude, and longitude are specified without any special syntax.

Label=<label>

(Emergency|Normal)

UTC Time=hh:mm:ss.ff

UTC Date=mm-dd-yyyy

Latitude=dd:mm.ffff (South|North)

Longitude=ddd:mm.ffff (West|East)

Altitude=<alt> meters

Ground Velocity=<gndVel> km/h at <course> degrees from True North

Vertical Velocity=<verVel> m/s

Satellites Used=<ss>

HDOP=<hdop>

VDOP=<vdop>

[Motion]