# AT Commands for SHOUT nano

Version A

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# REVISION HISTORY

| Revision | Date | Description |
|----------|------|-------------|
| 1.0.3 | 10/15/2018 | Initial version |
| 1.1 | 08/09/2021 | Updated to new template |
| A | 04/25/2022 | Formal release |

# TABLE OF CONTENTS

# ACRONYM LIST

GPS ..............................Global Positioning System

SBD .............................short burst data

# 1  INTRODUCTION

This document is intended as a reference guide to the usage of AT commands for the SHOUT nano satellite tracker. Note that AT commands may be periodically modified, removed, or added; therefore, always check for the latest revision by signing on to NAL Research's anonymous ftp site (https://www.nalresearch.com/resource-database/resources/).

The SHOUT nano is a handheld, global, two-way satellite messaging and personal tracking device. It utilizes Iridium's Short Burst Data (SBD) service to provide location information determined by a Global Positioning System (GPS) receiver, two-way inbound and outbound status, text messaging, and emergency/alert notifications. The SHOUT nano significantly improves service reliability over existing tracking products by allowing two-way communications and confirmation of the nature of the distress to the first responder community. This reduces false alerts; helps identify the nature of the emergency so that the correct assets can be deployed, thereby reducing search and rescue costs; and provides communications feedback capability to the user to assist in rescue efforts. The SHOUT nano is 100% backward compatible with the SHOUT.

# 2   GENERAL COMMANDS

## 2.1   AT – ATTENTION

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

## 2.2   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.

## 2.3   +++ – ENTER COMMAND MODE

Forces the SHOUT to enter command mode. Before entering command mode, the device will display the information response of "COMMAND MODE".

## 2.4   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.

## 2.5   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      "XXXXXXXX" (software revision level of micro-controller/GPS) then on the next line

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

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

5      "8816" (for compatibility only)

6      "XXX" (9602 RF board factory identity)

7      "XXXXXXXX" (9602 RF board hardware specification)

## 2.6    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.

## 2.7    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.

## 2.8    Z – SOFT RESET

**EXEC COMMAND: Z[<N>]**

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

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

    0        Restores user-defined operating profile 0

    1        Restores user-defined operating profile 1

## 2.9    &F – RESTORE FACTORY SETTINGS

**EXEC COMMAND: &F[<N>]**

Soft resets the device's active operating profile to the factory-default operating profile. The active operating profile will revert back to the user-defined operating 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 operating profile

## 2.10    &V – VIEW ACTIVE AND STORED CONFIGURATIONS

**EXEC COMMAND: &V**

Displays the current active operating profile and stored operating profiles.

**EXEC RESPONSE:**

ACTIVE PROFILE:

    <profile>

STORED PROFILE 0:

    <profile>

STORED PROFILE 1:

<profile>

<profile>: A list of settings for either the active profile, profile 0, or profile 1. 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# ^CAL# ^CALE# ^TBR#.# ^TTKT# ^UE# ^START#

+IPR# +CIER#### +PNAV# +PG#,#,#,#### ^BIGR# ^ERF# ^TBRE#.# ^TTKTE#

^TBRA#.# ^TTKTA# ^TBREA#.# ^TTKTEA#

^PR# ^MSA###,0,0 ^MSW# ^SPSR#,#,#,# ^SSR#

^MSB#,# ^MSE# ^MSWE# ^STEW# ^SPSRE#,#,#,#

^LCB# ^LCC# ^DLTRK# ^LEDS#,#,# ^DF# ^TF# ^TZ#.# ^MBXCHK# ^SFTKY#,#

^IGPS# ^AUDM#,#,# ^BREV# ^GPSACC# ^MUTE# ^TRKE#

**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.

## 2.11 &W – STORE ACTIVE CONFIGURATION

**EXEC COMMAND: &W[<N>],[<PASSWORD>]**

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

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

0       Store current active configuration profile as user-defined operating profile 0

1       Store current active configuration profile as user-defined operating profile 1

<password>: Required if a password has been set with ^CPASS.

## 2.12 &Y – DESIGNATE DEFAULT RESET PROFILE

**EXEC COMMAND: &Y[<N>],[<PASSWORD>]**

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

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

　　0　　Select user-defined operating profile 0 (default)

　　1　　Select user-defined operating profile 1

<password>: Required if a password has been set with ^CPASS.

**READ COMMAND: &Y?**

Indicates the current value.

## 2.13 *F – FLUSH TO EEPROM

**EXEC COMMAND: *F**

Flushes all pending writes to EEPROM, shuts down the radio and prepares the data transceiver to be powered down. The command returns OK upon completion, at which point it is safe to remove the power without losing non-volatile data.

**NOTE:** This command stops the 9602 from responding to any more commands, but does not actually power it down. The FA must remove the power upon receipt of OK.

**NOTE:** After an SBD session, the new SBD MOMSN is always flushed to EEPROM before the +SBDI result is issued.

## 2.14 *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 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.

## 2.15   *S – RF POWER STATE

**EXEC COMMAND: *S=<N>**

Puts the Iridium RF board into an on or off state.

<n>:

  0        Change the state of the Iridium transceiver board to off

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

Once the Iridium RF board is off, the unit can only communicate with the data terminal equipment (DTE) with flow control off.

**READ COMMAND: *S?**

Returns the current value.

## 2.16   +CGMI/+GMI – MANUFACTURER IDENTIFICATION

**EXEC COMMAND: +CGMI/+GMI**

Querys the manufacturer.

## 2.17 +CGMM/+GMM – MANUFACTURER MODEL

EXEC COMMAND: **+CGMM/+GMM**

Querys the model.

## 2.18 +CGMR/+GMR – MANUFACTURER REVISION

EXEC COMMAND: **+CGMR/+GMR**

Querys the revision.

## 2.19 +CGSN/+GSN – SERIAL NUMBER

EXEC COMMAND: **+CGSN/+GSN**

Querys the serial number (IMEI).

## 2.20 +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.

## 2.21   +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. This is included only for compatibility with 9522A applications and should be ignored for the SHOUT.

    0      No telephony ring alert received.

<sri>: Indicates the SBD ring indication status.

    0      No SBD Ring Alert received.

    1      SBD Ring Alert received.

## 2.22   +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.

## 2.23   +CULK – UNLOCK

EXEC COMMAND: **+CULK=<KEY>**

Unlocks the SHOUT's 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

# 2.24    -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 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.

## 2.25  ^FFW – FLASH FIRMWARE

### EXEC COMMAND: ^FFW

Prepares the SHOUT to be flashed with new firmware through the USB. After executing this command, the unit will enter flashing mode until a new firmware is flashed. Extreme caution must be taken when executing this command because an error may put the unit into an irrecoverable state.

## 2.26  ^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.

# 3    GPS COMMANDS

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

## 3.1    +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 |

## 3.2    +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

## 3.3 +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.

## 3.4    +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

## 3.5    +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

## 3.6 +PNAV – GPS: NAVIGATION SETTINGS

**EXEC COMMAND: +PNAV=<N>**

This command increases the accuracy of the GPS receiver by specifying the environment.

<n>:

0      Portable. Suitable for most situations; for applications with low accelerations; maximum altitude of 12 km; maximum velocity of 310 m/sec; maximum vertical velocity of 50 m/sec; sanity check type: altitude and velocity; maximum position deviation: medium. (Default)

2      Stationary. Used in timing applications (antenna must be stationary) or other stationary applications; velocity is constrained to 0 m/s; zero dynamics assumed; maximum altitude of 9 km; maximum velocity of 10 m/sec; maximum vertical velocity of 6 m/sec; sanity check type: altitude and velocity; maximum position deviation: small.

3      Pedestrian. Applications with low acceleration and low speed, as a pedestrian would move; assuming low accelerations; maximum altitude of 9 km; maximum velocity of 30 m/sec; maximum vertical velocity of 20 m/sec; sanity check type: altitude and velocity; maximum position deviation: small.

4      Automotive. Used for applications that can be compared with the dynamics of a passenger car; assuming low vertical acceleration; maximum altitude of 6 km; maximum velocity of 84 m/sec; maximum vertical velocity of 15 m/sec; sanity check type: altitude and velocity; maximum position deviation: medium.

5      Sea. Recommended for applications at sea; assuming zero vertical velocity; maximum altitude of 500 m; maximum velocity of 25 m/sec; maximum vertical velocity of 5 m/sec; sanity check type: altitude and velocity; maximum position deviation: medium.

6    Airborne low dynamics ( < 1g ). Used for applications that have to handle a higher dynamic range than a car and higher vertical accelerations; no 2D position fixes supported; maximum altitude of 50 km; maximum velocity of 100 m/sec; maximum vertical velocity of 100 m/sec; sanity check type: altitude; maximum position deviation: large.

7    Airborne medium dynamics ( < 2g ). Recommended for typical airborne environment; no 2D position fixes supported; maximum altitude of 50 km; maximum velocity of 250 m/sec; maximum vertical velocity of 100 m/sec; sanity check type: altitude; maximum position deviation: large.

8    Airborne high dynamics ( < 4g ). Only recommended for an extreme dynamic environment; no 2D position fixes supported; maximum altitude of 50 km; maximum velocity of 500 m/sec; maximum vertical velocity 100 m/sec; sanity check type: altitude; maximum position deviation: large.

**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.

# 3.7    +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.

## 3.8    +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

## 3.9    +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

## 3.10  +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

## 3.11  +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.

## 3.12 +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.

## 3.13 ^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

# 4 SHORT BURST DATA COMMANDS

## 4.1 +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.

## 4.2 +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).

## 4.3 +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.

## 4.4    +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.

## 4.5    +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.

## 4.6    +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).

## 4.7    +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 itwill 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.

## 4.8    +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.

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      Try later, must wait 3 minutes since last registration.

37..    Reserved, but indicate failure if used.

### 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.

## 4.9    +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..34  Reserved, but indicate failure if used.

35      SHOUT is busy, unable to initiate call.

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

37..    Reserved, but indicate failure if used.

### READ COMMAND: +SBDAREG?

Indicates the current value.

### TEST COMMAND: +SBDAREG=?

Returns a fixed message indicating the range of acceptable values.

## 4.10   +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

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.

## 4.11   +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 are 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.

## 4.12 +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 preformed.

<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.

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.

<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.

## 4.13   +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.

## 4.14   +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.

## 4.15    +SBDGW[N] – SHORT BURST DATA GATEWAY

These commands will read back the Iridium gateway that the Short Burst Data messages are configured to be sent to, giving either a textual or numeric result.

### EXEC COMMAND: +SBDGW

The command produces a response of the form "+SBDGW: <Gateway_text>"

<Gateway_text>: 'EMSS' or 'non-EMSS'.

Due to an inaccurate specification for this command, 'EMSS' is used here to indicate the default commercial gateway, although this is actually the name of a different gateway.   The error will not be corrected, to maintain backward compatibility.

### EXEC COMMAND: +SBDGWN

The command produces a response of the form "+SBDGWN: <Gateway_numeric>"

<Gateway_numeric>:

1    The default commercial gateway
2    EMSS gateway

In future software releases, other <Gateway_numeric> values may be output to indicate specific gateways, so for future compatibility the FA should treat any value other than 1 as meaning 'not the default commercial gateway'.

## 4.16    +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.

## 4.17   +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.

## 4.18 +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.

# 5 TRACKING COMMANDS

## 5.1 ^BIGR – BLOCK INVALID GPS REPORTS

**EXEC COMMAND: ^BIGR=<N>**

Sets whether periodic GPS position reports with an invalid fix will be blocked or sent.

This will not block test reports or messages with an invalid fix.

<n>:

    0       Do not block (default)

    1       Block

**READ COMMAND: ^BIGR?**

Indicates the current value.

**TEST COMMAND: ^BIGR=?**

Returns a fixed message indicating the range of acceptable values.

## 5.2 ^BREV – BREVITY CODE

**EXEC COMMAND: ^BREV=<N>**

Sets the brevity code included in report format type PECOS

<n>: A number with range 0-15. Zero is default.

**READ COMMAND: ^BREV?**

Indicates the current value.

**TEST COMMAND: ^BREV=?**

Returns a fixed message indicating the range of acceptable values.

## 5.3 ^DLTRK – DATA LOG TRACKING

**EXEC COMMAND: ^DLTRK<N>**

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.

**TEST COMMAND:**

Returns a fixed message indicating the range of acceptable values.

# 5.4    ^EMRCLR – EMERGENCY CLEAR

**EXEC COMMAND: ^EMRCLR**

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.

# 5.5    ^ERF – EMERGENCY REPORT FLOOD

**EXEC COMMAND: ^ERF=<N>**

Sets the number of reports that will be sent out continuously when first entering emergency mode. After <n> reports have been sent the interval value set by ^TBRE will take effect. If <n> is zero, the tracker will use ^TBRE to determine the rate at which reports are sent. The default value is 0.

**READ COMMAND: ^ERF?**

Indicates the current value.

**TEST COMMAND:**

Returns a fixed message indicating the range of acceptable values.

# 5.6    ^GPSACC – GPS ACCURACY

**EXEC COMMAND: ^GPSACC=<N>**

When "Best" is selected the GPS receiver will perform a complete reacquisition of the GPS satellites for each tracking report cycle. This has a significant impact on battery performance and offers little benefit over the "Standard" accuracy. "Standard" should be used in most applications.

<n>:

0       Best

1       Standard

READ COMMAND: ^GPSACC?

Returns the current value.

TEST COMMAND: ^GPSACC=?

Returns a fixed message indicating the range of acceptable values.

## 5.7     ^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 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.

## 5.8     ^MBXCHK – MAILBOX CHECK

EXEC COMMAND: ^MBXCHK=<N>

Specifies the number of mailbox checks to do between reports. The default is 0.

READ COMMAND: ^MBXCHK?

Returns the current value.

TEST COMMAND: ^MBXCHK=?

Returns a fixed message indicating the range of acceptable values.

## 5.9    ^RMF – REPORT MESSAGE FORMAT

**EXEC COMMAND: ^RMF=<N>**

Sets the format of reports that will be sent to the recipient.

<n>:

3        NAL Version 5 (Unit may not function properly with this format)

4        PECOS Version 3

5        PECOS Version 4

6        NAL Version 6 (default)

**READ COMMAND: ^RMF?**

Indicates the current value.

**TEST COMMAND: ^RMF=?**

Returns a fixed message indicating the range of acceptable values.

## 5.10   ^TBR – TIME BETWEEN REPORTS

**EXEC COMMAND: ^TBR=<N>**

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 Iridium board. 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 at the fastest possible rate ignoring the TTKT setting (approximately 4 seconds between reports depending on the Iridium and GPS satellites field-of-view with respect to the device antennas). 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.

## 5.11  ^TBRE – TIME BETWEEN REPORTS EMERGENCY

**EXEC COMMAND: ^TBRE=<N>**

Functions the same as ^TBR above, but determines the time between reports for emergency mode instead of the normal tracking mode.

The default value is 2.

**READ COMMAND: ^TBRE?**

Indicates the current value.

**TEST COMMAND: ^TBRE=?**

Returns a fixed message indicating the range of acceptable values.

## 5.12 ^TTKT – TIME TO KEEP TRYING

**EXEC COMMAND: ^TTKT=<N>,<INCREMENTSORMINS>[,<SECS>]**

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 divisible 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 not give up trying to obtain a valid GPS position fix 30 seconds before the end of the time to keep trying time window.
- 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.

## 5.13 ^TTKTE – TIME TO KEEP TRYING EMERGENCY

**EXEC COMMAND: ^TTKTE=<N>,<INCREMENTSORMINS>[,<SECS>]**

Functions the same as ^TTKT above, but determines the time to keep trying for emergency mode instead of the normal tracking mode.

The default value is 120 seconds.

**READ COMMAND: ^TTKTE?**

Indicates the current value in 5 second increments.

**TEST COMMAND: ^TTKTE=?**

Returns a fixed message indicating the range of acceptable values.

## 5.14 ^TRK – ENTER TRACKING MODE

**EXEC COMMAND: ^TRK**

This command causes the SHOUT to leave Command mode and enter Tracking mode.

Must be the last command in an AT command String

## 5.15 ^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 "Track On/Off" menu.

<n>:

   0      Disable periodic tracking in Tracking mode (Default)

   1      Enable periodic tracking in Tracking mode

# 6 REMOTE UPDATE COMMANDS

**NOTE:** Remote updates are not implemented in the current version.

## 6.1 ^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.

# 7 SECURITY COMMANDS

## 7.1 ^ACLPIN – ACCESS CONTROL LIST PIN

**EXEC COMMAND: ^ACLPIN='<OLD>','<NEW>'**

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.

<old>: The old PIN. Use empty quotes if the PIN has not yet been set.

<new>: The new PIN. Use empty quotes to disable the PIN.

**READ COMMAND: ^ACLPIN?**

Indicates if the PIN is set.

**TEST COMMAND: ^ACLPIN=?**

Returns a fixed message indicating the range of acceptable values.

## 7.2 ^ACLSET – SET ACCESS CONTROL LIST

**EXEC COMMAND: ^ACLSET="<ACL>",'<PIN>'**

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:

0  Accuracy

1  Address Book

2  Audio

3  Backlight

4  Brevity Code

5  Cancel 911

6  Check-In

29      Time and Date

30      Tracking

31      Track On/Off

32      Unit Info

33      User Info

34      Utilities

35      Way Points

To format the desired mask, the bits should be set according to the bit positions above.  For example, to enable access to only the Report Rate and Compose menus, you would add the mask for Tracking, Report Rate, Message and Compose: 0x40240400. The Tracking and Message 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': AT^ACLSET="40240400"

### READ COMMAND: ^ACLSET?
Indicates the current value for the bitmask.

### TEST COMMAND: ^ACLSET=?
Returns a fixed message indicating the range of acceptable values.

## 7.3    ^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.

## 7.4 ^CPASS – CONFIGURATION PASSWORD

**EXEC COMMAND: ^CPASS='<OLD>','<NEW>'**

Changes the configuration password. This password is used when modifying the stored configuration with commands &W, &Y, and ^MAME. The password is disabled by default.

<old>: The old password. Use empty quotes if the password has not yet been set.

<new>: The new password. Use empty quotes to disable the password.

**READ COMMAND: ^CPASS?**

Indicates if the password is set.

**TEST COMMAND: ^CPASS=?**

Returns a fixed message indicating the range of acceptable values.

## 7.5 ^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.

## 7.6 ^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.

## 7.7 ^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.

## 7.8 ^LOCKPIN – MENU LOCK PIN

**EXEC COMMAND: ^LOCKPIN='\<OLD>','\<NEW>'**

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

    \<old>: The old PIN. Use empty quotes if the PIN has not yet been set.

    \<new>: The new PIN. Use empty quotes to disable the PIN.

**READ COMMAND: ^LOCKPIN?**

Indicates if the PIN is set.

TEST COMMAND: ^LOCKPIN=?

Returns a fixed message indicating the range of acceptable values.

## 7.9    ^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"

# 8 UNIT SETTINGS COMMANDS

## 8.1 ^AUDM – Audio – Incomming Message

**Exec Command: ^AUDM=\<mute>,\<tone>,\<frequency>**

Sets the date format for the user interface.

\<mute>:

| | |
|---|---|
| 0 | Off (default) |
| 1 | On |

\<tone>:

| | |
|---|---|
| 0 | One beep (default) |
| 1 | Two beeps |
| 2 | Three beeps |
| 3 | One long beep |
| 4 | Two long beeps |
| 5 | Three long beeps |

\<frequency>:

| | |
|---|---|
| 0 | Low |
| 1 | Medium (default) |
| 2 | High |

**Read Command: ^AUDM?**

Indicates the current value.

**Test Command: ^AUDM=?**

Returns a fixed message indicating the range of acceptable values.

## 8.2  ^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.

## 8.3  ^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.

## 8.4  ^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.

## 8.5 ^IGPS – INCLUDE GPS IN MESSAGES

**EXEC COMMAND: ^IGPS[<N>]**

Sets whether GPS information will have 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.

## 8.6 ^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.

# 8.7  ^LCC – LCD CONTRAST

**EXEC COMMAND: ^LCC=<N>**

Sets the contrast for the LCD screen.

<n>: Can be 0 – 10.  The default value is 6.

**READ COMMAND: ^LCC?**

Indicates the current value.

**TEST COMMAND: ^LCC=?**

Returns a fixed message indicating the range of acceptable values.

# 8.8  ^LEDS – LEDS

**EXEC COMMAND: ^LEDS=<S>,<A>,<M>**

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 awake

    0      Off

    1      On (default)

<m>: Blink message LED when a new message arrives

    0      Off

    1      On (default)

**READ COMMAND: ^LEDS?**

Indicates the current value.

**T**EST **C**OMMAND: **^LEDS=?**

Returns a fixed message indicating the range of acceptable values.

# 8.9    ^MUTE – MUTE ALL AUDIO

**E**XEC **C**OMMAND: **^MUTE=<N>**

Mutes all audio sources.  When turned on, this setting overrides the ^AUDM mute setting.

<n>:

   0       Off (default)

   1       On

**R**EAD **C**OMMAND: **^MUTE?**

Indicates the current value.

**T**EST **C**OMMAND: **^MUTE=?**

Returns a fixed message indicating the range of acceptable values.

# 8.10   ^SFTKY – SOFT KEYS

**E**XEC **C**OMMAND: **^SFTKY=<L**SOFT**>,<R**SOFT**>**

Enables or disables the left and right soft keys while the unit is in sleep mode.

<lSoft>: Whether to enable or disable the left soft key.

   0       Disable

   1       Enable (default)

<rSoft>: Whether to enable or disable the right soft key.

   0       Disable

   1       Enable (default)

**R**EAD **C**OMMAND: **^SFTKY?**

Returns the current values.

### TEST COMMAND: ^SFTKY=?

Returns a fixed message indicating the range of acceptable values.

# 9   USER SETTINGS MEMORY COMMANDS

## 9.1   ^MUSNM – MEMORY USER SETTING 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.

## 9.2   ^MUSPN – MEMORY USER SETTING 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.

## 9.3   ^MUSAST – MEMORY USER SETTING ADDRESS STREET

**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.

## 9.4   ^MUSACI – MEMORY USER SETTING ADDRESS 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.

## 9.5 ^MUSASA – MEMORY USER SETTING ADDRESS 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.

## 9.6 ^MUSAZP – MEMORY USER SETTING ADDRESS 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.

## 9.7 ^MUSACO – MEMORY USER SETTING ADDRESS 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.

## 9.8 ^MUSE – MEMORY USER SETTINGS ERASE

**EXEC COMMAND: ^MUSE**

Erases all of the user settings.

# 10 MESSAGING MEMORY COMMANDS

## 10.1 ^MABD – MEMORY ADDRESS BOOK DELETE

**EXEC COMMAND: ^MABD=<CODE>**

Deletes an address book entry by code.

**TEST COMMAND:**

Returns a fixed message indicating the range of acceptable values.

## 10.2 ^MABE – MEMORY ADDRESS BOOK ERASE

**EXEC COMMAND: ^MABE**

Erases all of the address book entries.

## 10.3 ^MABM – MEMORY 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 0-65535.  Codes outside the range 0-255 will transmit as zero when report format v6 is used.

<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:**

Returns a fixed message indicating the range of acceptable values.

## 10.4  ^MABR – MEMORY 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:**

Returns a fixed message indicating the range of acceptable values.

## 10.5  ^MCMD – MEMORY CANNED MESSAGE DELETE

**EXEC COMMAND: ^MCMD=<CODE>**

Deletes a canned message entry by code.

**TEST COMMAND:**

Returns a fixed message indicating the range of acceptable values.

## 10.6   ^MCME – MEMORY CANNED MESSAGE ERASE

EXEC COMMAND: ^MCME

Erases all of the canned message entries.

## 10.7   ^MCMM – MEMORY 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.

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

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

TEST COMMAND:

Returns a fixed message indicating the range of acceptable values.

### *^MCMR – Memory 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.

Returns the number of canned message entries.

**TEST COMMAND:**

Returns a fixed message indicating the range of acceptable values.

## 10.8   ^MSDE – MEMORY SBD DRAFTS ERASE

**EXEC COMMAND: ^MSDE**

Erases all of the draft messages.

## 10.9   ^MSDR – MEMORY SBD 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.

## 10.10 ^MSIE – MEMORY SBD INBOX ERASE

**EXEC COMMAND: ^MSIE**

Erases all of the inbox messages.

## 10.11 ^MSIR – MEMORY SBD INBOX READ

**EXEC COMMAND: ^MSIR**

Displays all of the inbox messages.

**EXEC RESPONSE:**

Each matched entry will be returned in the following format.

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

<date>: Date received formatted as yyyy-mm-dd. If the date is invalid, "????-??-??" will be used.

<time>: Time received formatted as hh:mm:ss. If the time is invalid, "??:??:??" will be used.

<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.

## 10.12 ^MSOE – MEMORY SBD OUTBOX ERASE

**EXEC COMMAND: ^MSOE**

Erases all of the outbox messages.

## 10.13 ^MSOR – MEMORY SBD 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.

## 10.14 ^MSSE – MEMORY SBD SENT BOX ERASE

**EXEC COMMAND: ^MSSE**

Erases all of the sent box messages.

## 10.15 ^MSSR – MEMORY SBD 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:<date> <time>,<abCode>,"<emails>",<cmCode>,"<text>"

<date>: Date sent formatted as yyyy-mm-dd. If the date is invalid, "????-??-??" will be used.

<time>: Time sent formatted as hh:mm:ss. If the time is invalid, "??:??:??" will be used.

<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.

# 11 OTHER MEMORY COMMANDS

## 11.1 ^DLE – DATA LOG ERASE

**EXEC COMMAND: ^DLE**

Erase all reports from the data log.

## 11.2 ^DLR – DATA LOG READ

**EXEC COMMAND: ^DLR[=<MAXTODISPLAY>]**

Displays reports from the data log.

<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?

Returns the number of logged reports.

### TEST COMMAND:

Returns a fixed message indicating the range of acceptable values.

## 11.3 ^WPR – WAYPOINTS READ

### 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]

## 11.4 ^MAME – MEMORY ALL MEMORY ERASE

**EXEC COMMAND: ^MAME=[<PASSWORD>]**

Erases all of the memory on the device. This includes all messages, waypoints, the address book, canned messages, user settings, data logging, etc. If a password has been set by ^CPASS, the <password> parameter is required.

# 12 TECHNICAL SUPPORT

For technical support, please contact us at:

Phone: 571-833-2169

Email:  support@nalresearch.com

Technical documents are also available to download on NAL Research's website

www.nalresearch.com.