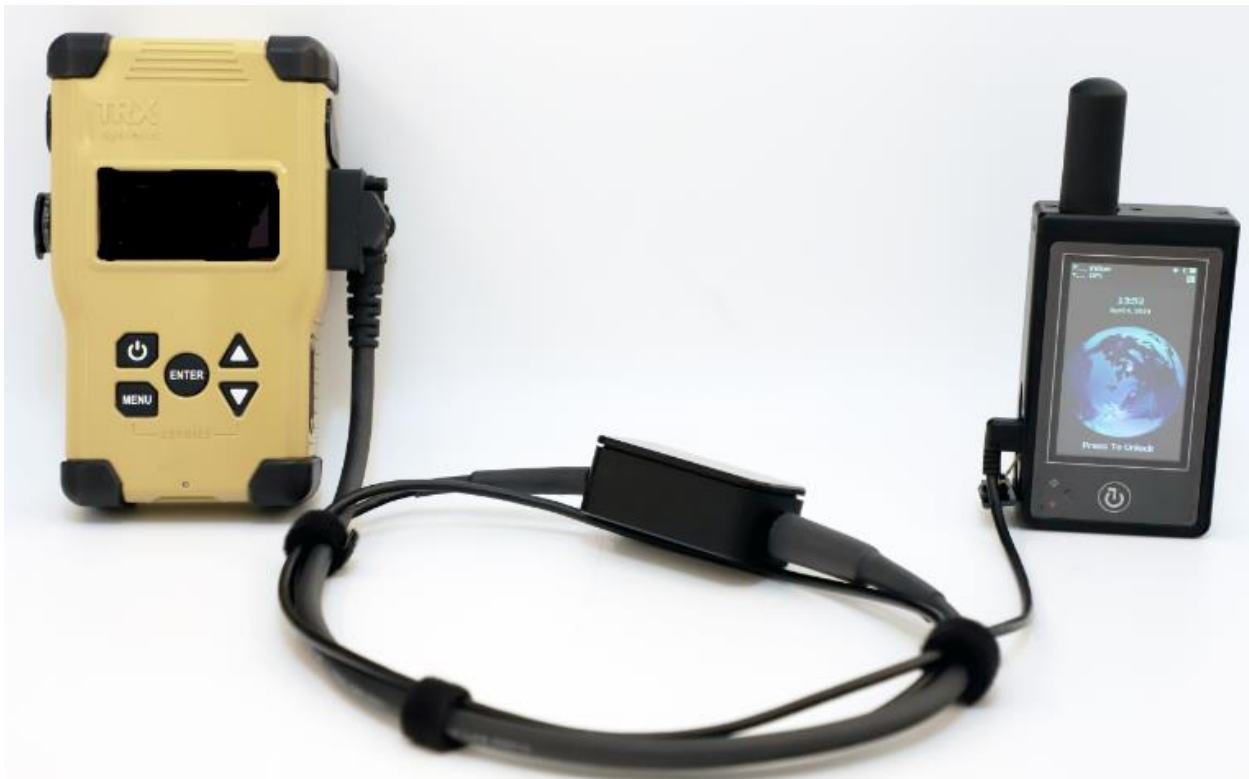


SHOUT mcc Functionality

Appendix M

Version A

May 16, 2023



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REVISION HISTORY

Revision	Date	Description
A	05/16/2023	Formal Release

REFERENCE DOCUMENTS

The latest revisions of the NAL documents are available from the NAL Research website at

<https://www.nalresearch.com/>

Reference	Title	Date
1	SHOUT ts User Guide (rev D)	05/31/2023

TABLE OF CONTENTS

APPENDIX M SHOUT MCC FUNCTIONS	5
Appendix M-1. Introduction.....	5
Appendix M-2. Device Description.....	6
Appendix M-2.1 Micro-B USB Connector.....	6
Appendix M-2.2 M-Code USB Cable	6
Appendix M-2.3 Iridium Antenna	8
Appendix M-2.4 Emergency/911	8
Appendix M-3. Install M-Code Cable Battery and Charge Device	9
Appendix M-3.1 Installing M-Code Cable Battery	9
Appendix M-3.2 Charging Device.....	9
Appendix M-4. Navigate to Home Screen.....	10
Appendix M-5. M-Code PLI Data Input	10
Appendix M-5.1 Receive M-Code PLI Data	11
Appendix M-5.2 Display M-Code Status	12
Appendix M-6. Mechanical Specifications	14

TABLE OF FIGURES

Figure 1: M-Code USB Cable	6
Figure 2: SHOUT mcc (Front/Back Views).....	7
Figure 3: Battery Case	9
Figure 4: Battery Polarity	9
Figure 5: Inserted Battery	9
Figure 6: SHOUT mcc Home Screen in M-Code Mode.....	10
Figure 7: Source: M-Code	12
Figure 8: Source: Source: GPS	12
Figure 9: Navigate to Check GPS Screen	13
Figure 10: SHOUT mcc Mechanical Drawing	15

TABLE OF TABLES

Table 1: Common Features	5
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Appendix M SHOUT MCC FUNCTIONS

Appendix M-1. Introduction

The SHOUT mcc is a pocket-sized, low-cost, IP67 rated, 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 GPS receiver, two way inbound and outbound status, text messaging, and emergency/alert notifications. The SHOUT mcc measures 4.1” x 2.3” x 0.9” and weighs ~7.2ounces.

The SHOUT mcc comprises a touchscreen, a Power/Back button, an LED Status Display, a guarded Emergency button, and a USB Micro-B port. The touchscreen allows for quick access to menus and ease of text entry via on-screen soft keyboards. In addition, the M-Code PLI data is streamed to the SHOUT mcc device when connected to an Army DAPS A-PNT device with a supplied cable. This Appendix M only addresses unique device features of the SHOUT mcc. For information on the common features with the SHOUT ts, refer to SHOUT ts documentation ([SHOUT ts - NAL Research](#)). The SHOUT mcc retains many of the same configuration methods of the SHOUT ts. **Table 1** below lists the common features.

Table 1: Common Features

Texting Menu 	Tracking Menu 	Utilities Menu 	Settings Menu 
<ul style="list-style-type: none"> • Inbox • Drafts • Outbox • Sent • Compose • Contacts • ChK Mailbox • Mbox Rate • Inc GPS • Memory 	<ul style="list-style-type: none"> • Report Rate • Format • Link • Geofences • Brevity • Man Down • Call Out • Q Rpt • Blk Rpt • Data Log • Stats • Cancel 911 	<ul style="list-style-type: none"> • Chk GPS • Chk Iridium • Test Rpt • Chk-In • Waypts 	<ul style="list-style-type: none"> • Audio • Backlight • Calibrate • Contrast • Favorites • GPS • Language • LED • Reset • Search • Security • Time/Date • Unit Info • User Info

Appendix M-2. Device Description

- The touchscreen provides easy access to the device features.
- LED displays device status during emergencies and tracking.
- The guarded emergency button activates a dedicated emergency message sequence until cancelled by the user.
- The USB Micro-B port is for charging, updating firmware, setting parameters, and receiving M-Code PLI data from DAPS device.

IMPORTANT: The SHOUT mcc must have clear view of the sky during transmission.

Appendix M-2.1 MICRO-B USB CONNECTOR

The SHOUT mcc device Micro-B USB connector port (see **Figure 1**) provides for data interface, power interface, and streaming M-Code PLI data. It is compliant to the USB 2.0 specification. The Micro-B USB connector is located on the side of the SHOUT mcc device as shown in.

Appendix M-2.2 M-CODE USB CABLE

The M-Code USB cable is for receiving streaming M-Code PLI data into the SHOUT mcc from an Army DAPS A-PNT device (see **Figure 1**). The DE-15 connector on the M-Code Data cable connects to the DE-15 connector port on the Army DAPS A-PNT device and the Micro-B USB connector on the other end of the cable connects to the Micro-B USB port on the SHOUT mcc.



Figure 1: M-Code USB Cable



Figure 2: SHOUT mcc (Front/Back Views)


Appendix M-2.3 IRIDIUM ANTENNA

The SHOUT mcc uses the same Iridium antenna as on the SHOUT ts, which threads onto a chassis-mounted SMA female connector (see the [SHOUT ts User Guide](#)) for Iridium antenna specifications.

Appendix M-2.4 EMERGENCY/911

The SHOUT mcc has an emergency/911 mode that immediately sends a location report with the Emergency bit set, and thereafter sends location reports at a rate configured in the Emergency Report Rate parameter, until the emergency/911 mode is canceled. All text messages sent when the emergency/911 mode is active also have the Emergency flag set.

Activate: Slide the Emergency Switch Cover to expose the Emergency/911 button (see **Figure 2**), and quickly press and release the Emergency button to trigger emergency tracking. When emergency tracking is active, the Emergency LED illuminates (see **Figure 2**).

Deactivate: Press the **Cancel**  **911** option on the Tracking menu to take the SHOUT mcc out of emergency tracking.

Appendix M-3. Install M-Code Cable Battery and Charge Device

Appendix M-3.1 INSTALLING M-CODE CABLE BATTERY

The M-Code USB cable contains a battery case. The battery must be installed in the battery case, before for the M-Code USB cable can operate correctly. The battery is a CR123 size (non-rechargeable) battery, and ships in a separate container. The life expectancy of the CR123 battery is approximately 80 hours of continuous usage.

1. Remove the battery cover by unscrewing the thumbscrew on the bottom side of the battery case (see **Figure 3**).

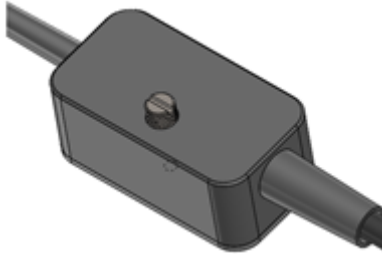


Figure 3: Battery Case



Figure 4: Battery Polarity



Figure 5: Inserted Battery

2. Insert the CR123 battery into the battery case ensuring the polarity (+/-) is correct (see **Figure 4** and **Figure 5**).
3. Re-install the cover using the thumbscrew on the bottom side of the cable battery case.

Appendix M-3.2 CHARGING DEVICE

1. Fully charge the SHOUT mcc before use.
The SHOUT mcc must be kept in environments between 0°C (32°F) and 45°C (113°F) when charging.
2. Connect the SHOUT mcc device to an AC wall adapter or connect the SHOUT mcc to a standard USB device.

NOTE: the battery symbol turns red when the remaining power is less than 20%.

A warning message appears when the remaining power is less than 10%.

WARNING!

All batteries can cause property damage, injury, or burns if a conductive material, such as jewelry or keys, touches exposed terminals. The material may complete an electrical circuit and become extremely hot. To protect against such unwanted current drain, exercise care in handling any charged battery, particularly when placing it inside your pocket, purse, or other container with metal objects.

Do not disassemble the SHOUT mcc for battery replacement. Return it to NAL Research for services. Risk of explosion if battery is replaced with an incorrect type. Dispose of the batteries according to local, state, and federal regulations or laws.

Appendix M-4. Navigate to Home Screen

1. Press the **Power** button to power up the device (see **Figure 1**).
2. Press **Press To Unlock** (see **Figure 6**).

NOTE: There is a delay in displaying time and date. This is normal as the device checks its internal clock against the GPS receiver.

3. If the device is setup with password protection, enter a correct Personal Identification Number (PIN).

NAL Research normally ships the SHOUT mcc without password protection. However, if the PIN is factory-set, it should be 1111.

The *Home* screen displays (see **Figure 6**). Device status symbols display along the top three (3) lines of the *Home* screen. Some symbols will not appear until an event initiates their appearance such as sending or receiving a message.

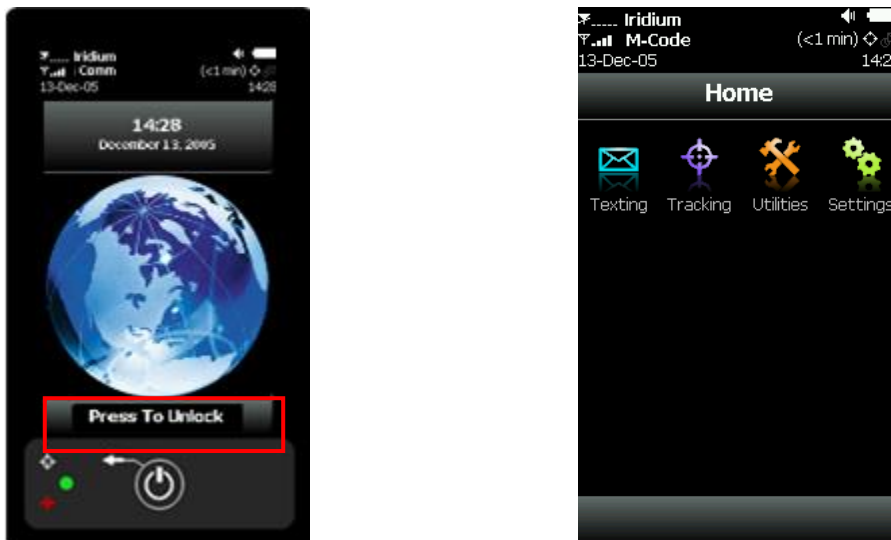


Figure 6: SHOUT mcc Home Screen in M-Code Mode

Appendix M-5. M-Code PLI Data Input

The M-Code signal provides better jamming resistance than the Y code signal by enabling transmission at a much higher power as well as reducing the interference with C/A code and Y code receivers. M-Code is designed to be autonomous, as the military receiver can determine

its position with the M-code alone while with the P(Y) code, the receiver has to acquire the C/A code first. The M-Code signal is encrypted, as is the Y code but it uses a different Modernized Navstar Security Algorithm (MNSA), to ensure the system is secure. The M-Code shares the same bands with existing GPS signals that use the P(Y) code and the C/A code, without interference due to its nature the M Binary Offset Carrier (BOC) modulation.

Appendix M-5.1 RECEIVE M-CODE PLI DATA

You should check the status of the M-Code keys to see if they have been loaded and are current (less than 30 days old). Your SHOUT mcc device will lose its M-Code PLI data input when the device power is lost, or when the cable disconnects between the SHOUT mcc and the Army DAPS A-PNT device. The following steps detail how to receive streamed M-Code PLI data into your SHOUT mcc device from an Army DAPS A-PNT device with a supplied cable.

1. Power on your SHOUT mcc device (if not already powered on).
2. Power on the Army's DAPS A-PNT device.

IMPORTANT: Devices must be powered on, prior to connecting the serial cable to devices. If not, battery life is shortened.

3. Connect the DE-15 connector on the M-Code Data cable to the DE-15 connector port on the Army DAPS A-PNT device, and connect the Micro-B USB connector on the M-Code Data cable to the Micro-B USB connector port on the SHOUT mcc device (see **Figure 1** and **Figure 2**).

“**M-Code**” displays on the *Home* screen status bar, and all subsequent screens (see **Figure 7**). At this point, the M-code PLI data is streamed into the SHOUT mcc from the Army DAPS A-PNT device. The “Key Loaded:” status on the *MIL Status* screen will display **Yes**, if the streamed M-Code PLI data from the Army DAPS A-PNT device to the SHOUT mcc was successful.

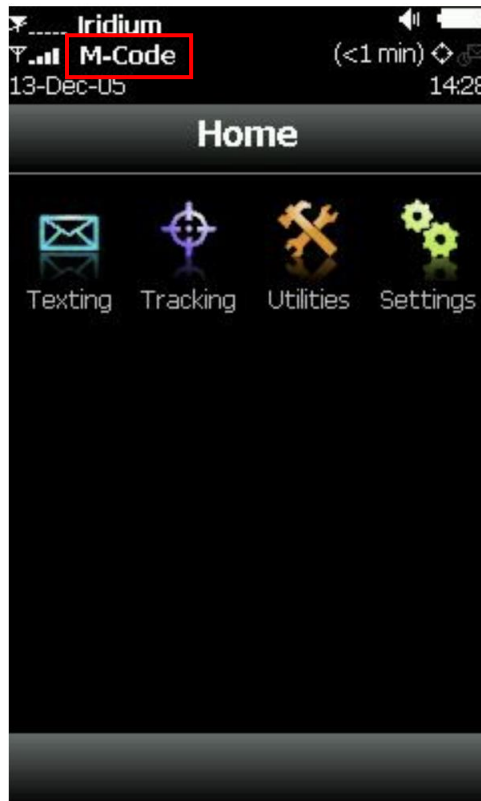


Figure 7: Source: M-Code

IMPORTANT: If the M-Code Data cable disconnects from either the SHOUT mcc device or the Army DAPS A-PNT device, the Army DAPS A-PNT device will stop streaming M-Code PLI data to the SHOUT mcc device, and will revert to the commercial GPS for PLI data (see **Figure 8**).

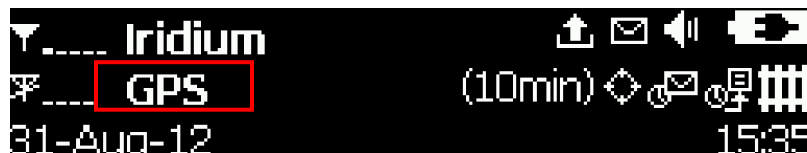


Figure 8: Source: Source: GPS

Appendix M-5.2 DISPLAY M-CODE STATUS

1. Power on your SHOUT mcc device (if not already powered on).
4. Press **Utilities** on the *Home* screen (see **Figure 9**).

The *Utilities* screen displays (see **Figure 9**).

5. Press **Chk GPS**.

The *Check GPS* screen displays (see **Figure 9**).

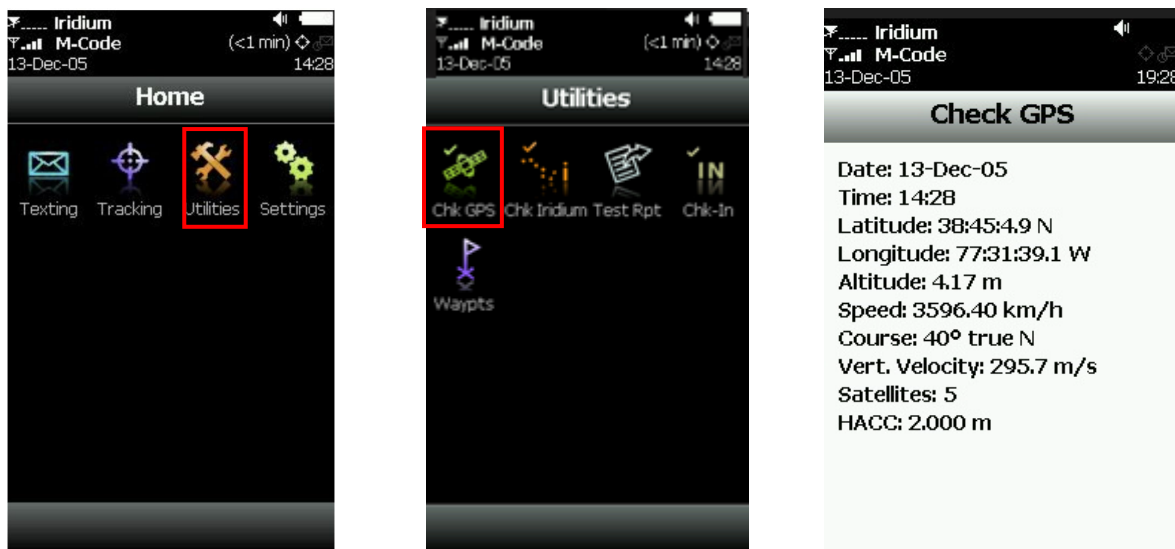


Figure 9: Navigate to Check GPS Screen

Appendix M-6. Mechanical Specifications

Dimensions:	108.5mm X 64.9mm X 22.4mm (4.27" X 2.55" X .88") without antennas 150.8mm (5.94") H w/antennas
Weight:	Wt. 9.96oz (282g)
Enclosure:.....	Hard anodized aluminum housing/EMI shielding
Connectors:	USB Micro
Antennas:	Iridium and Embedded GPS
Key:.....	One button power button
Emergency:	Guarded button
LEDs:.....	Three status LEDs
Screen:	3.0" TFT 400 x 240 pixels

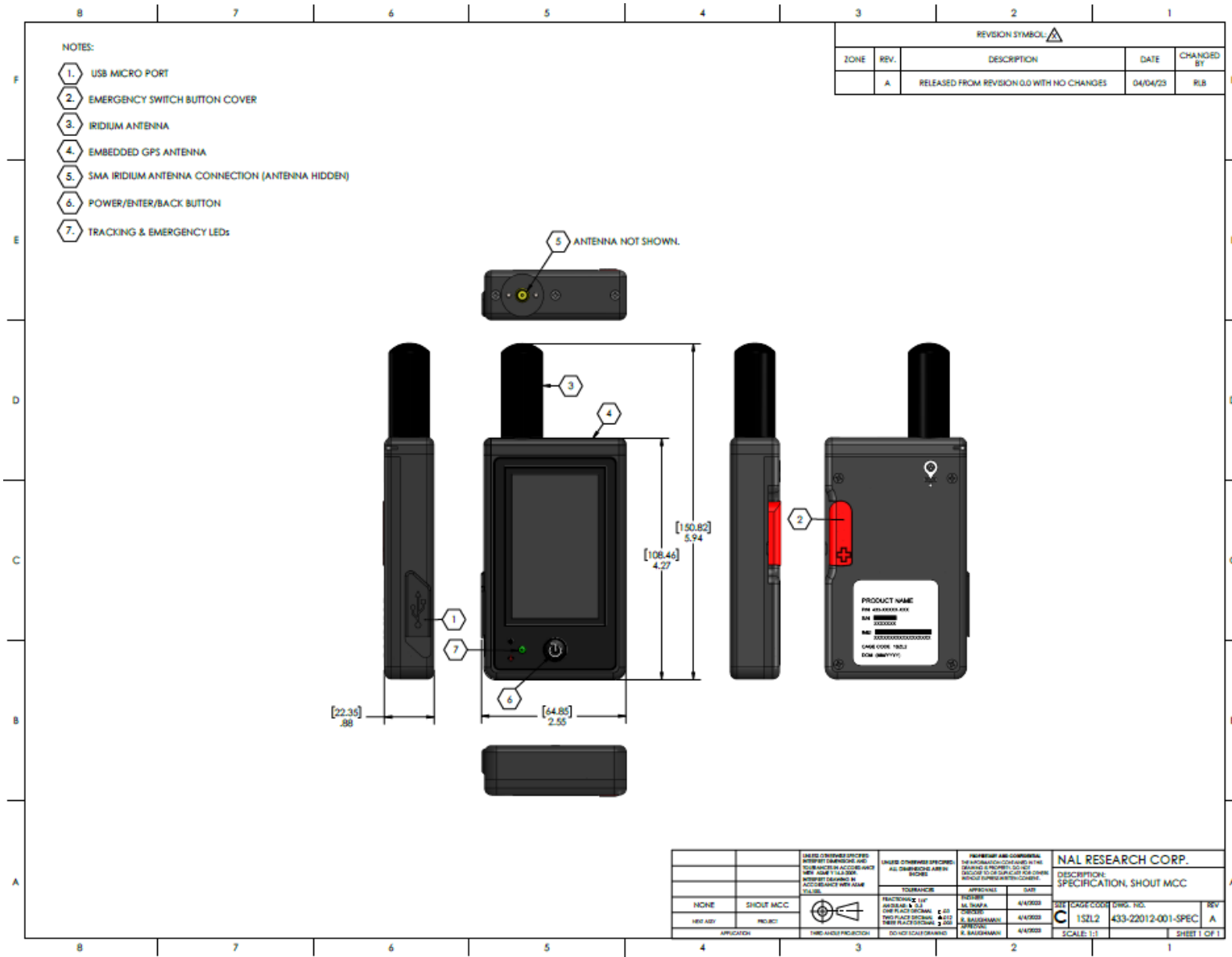


Figure 10: SHOUT mcc Mechanical Drawing