

GUI Specification

PRELIMINARY



Revision A
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This document was entirely created on the cloud.

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Overview

This document describes the functional behavior of the graphical user interface (GUI) for the device. By extent, it also defines the behavior of the application.

The GUI consists of a LCD with 128 x 64 pixels and six pushbuttons. Appendix A illustrates the display layout and reserved areas and icons. Attachment **6x8_charset.xls** spreadsheet defines the 6 x 8 character set font including alphanumeric, special symbols and icons.

Labels for the soft keys are displayed on the bottom line of the display.

The top line of the display is reserved for system icons including RF activity, battery level, and USB connection status.

Four push buttons are reserved for up, down, right and left navigation, while two are available as soft keys with the definition of function of each dependent upon the state of the GUI and application. Not all application states require both soft keys to be active.

There are two levels of menus: the top level and one optional sub level below each top level menu item. Appendix C lists the top level menu items as well as any submenu, and settings.

Appendix D provides an illustration of menu flow and the navigation to and changing of a setting. A cursor ">" indicates the currently selected menu or submenu item.

Menu navigation keys work as follows:

- Up and down arrows are used to scroll through the main menu and submenus.
- Right and left arrows are used for two purposes:
 - In the main menu, to select the menu item pointed to by the cursor (eg, select Receiver). This immediately displays the submenu for that item.
 - For a setting in submenu, to toggle between values for the setting pointed to by the cursor (eg, On/Off or to scroll through receiver frequencies).

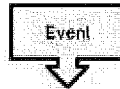
States

The application enters the POWERUP state after hardware and software initialization are complete. During this state, the logo is displayed for TBD seconds, whereupon the application enters the IDLE state. Additional operations could be performed in the POWERUP state (such as RF related tasks).

The IDLE state displays the message “Press START to begin preflight” and enables the A button to start the preflight. The B button is enabled to access the main menu.

The top level states then are IDLE, PREFLIGHT and MENU. States are depicted using event diagrams where only the permissible events are shown. System derived events such as USB, RF and timers are not shown in these diagrams.

The state diagrams function much like a traditional flowchart with one exception. Horizontal lines are wait states, where the application is waiting for an event. The accepted events are shown below the line with the following symbol:



During these wait states, only the application is waiting. All system events are processed in real time. Events not shown are ignored.

IDLE State

Connection to a PC for uploads and downloads is only permitted at the IDLE state. The other two primary states may only be reached from the IDLE state: PREFLIGHT and MENU. Refer to Appendix E for details.

MENU State

The MENU state permits the user to access the settings for the device. Refer to Appendix F for details of the MENU state.

PREFLIGHT State

This state provides all of the steps of the preflight, which is the heart of the device. Refer to Appendix G for details of the various sub states of PREFLIGHT. State diagrams are incomplete as of this writing. A typical step B is attached to illustrate error entry for test failures.

Appendices

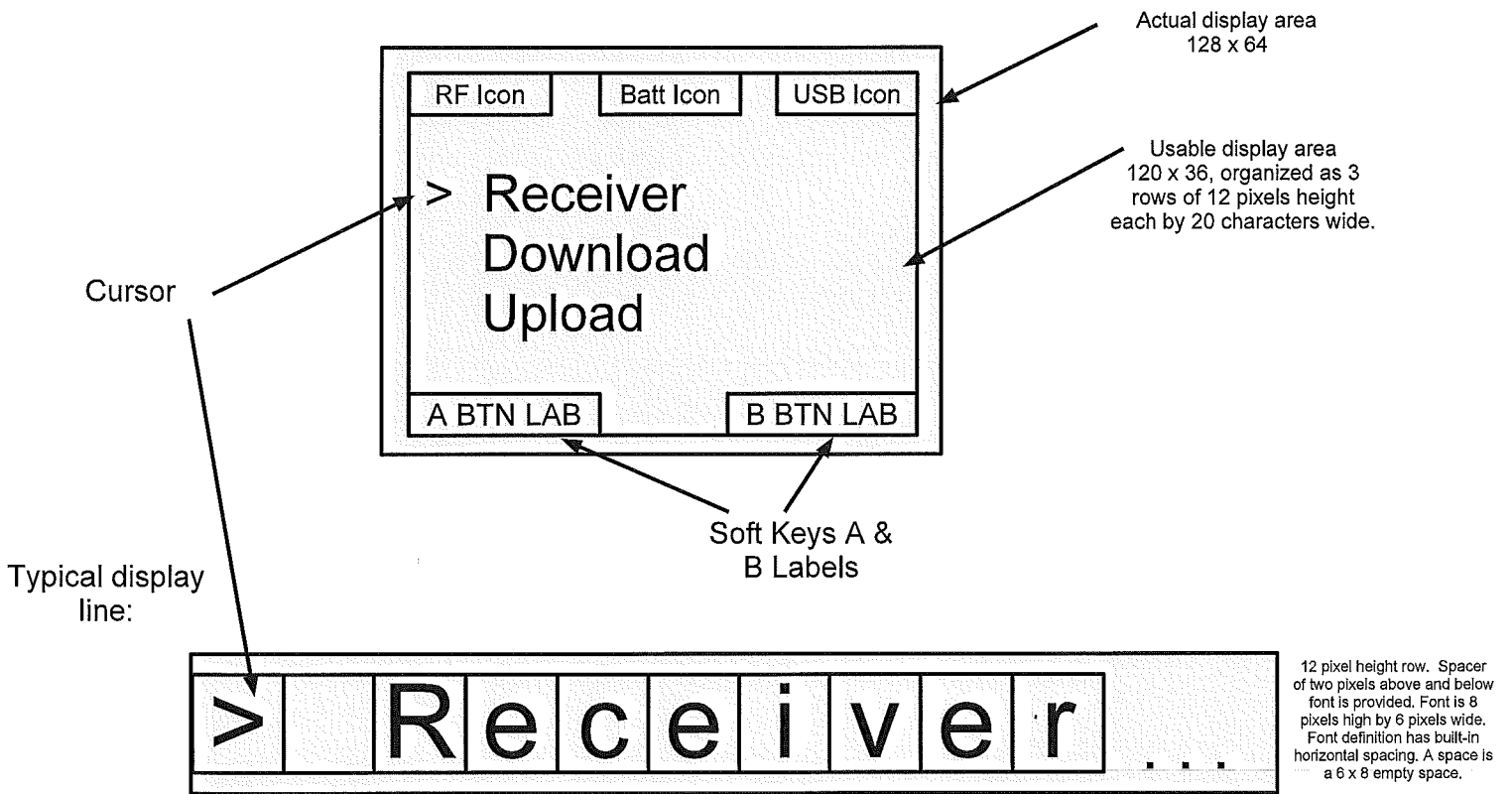
A. Display Layout

- B. EEPROM layout for settings
- C. Menu Tree
- D. Menu flow example
- E. IDLE state diagram
- F. MENU state diagrams (2pp)
- G. PREFLIGHT state diagrams (6pp, incomplete)

Attachments

6x8_charset.xls (file)

Appendix A. Display Layout

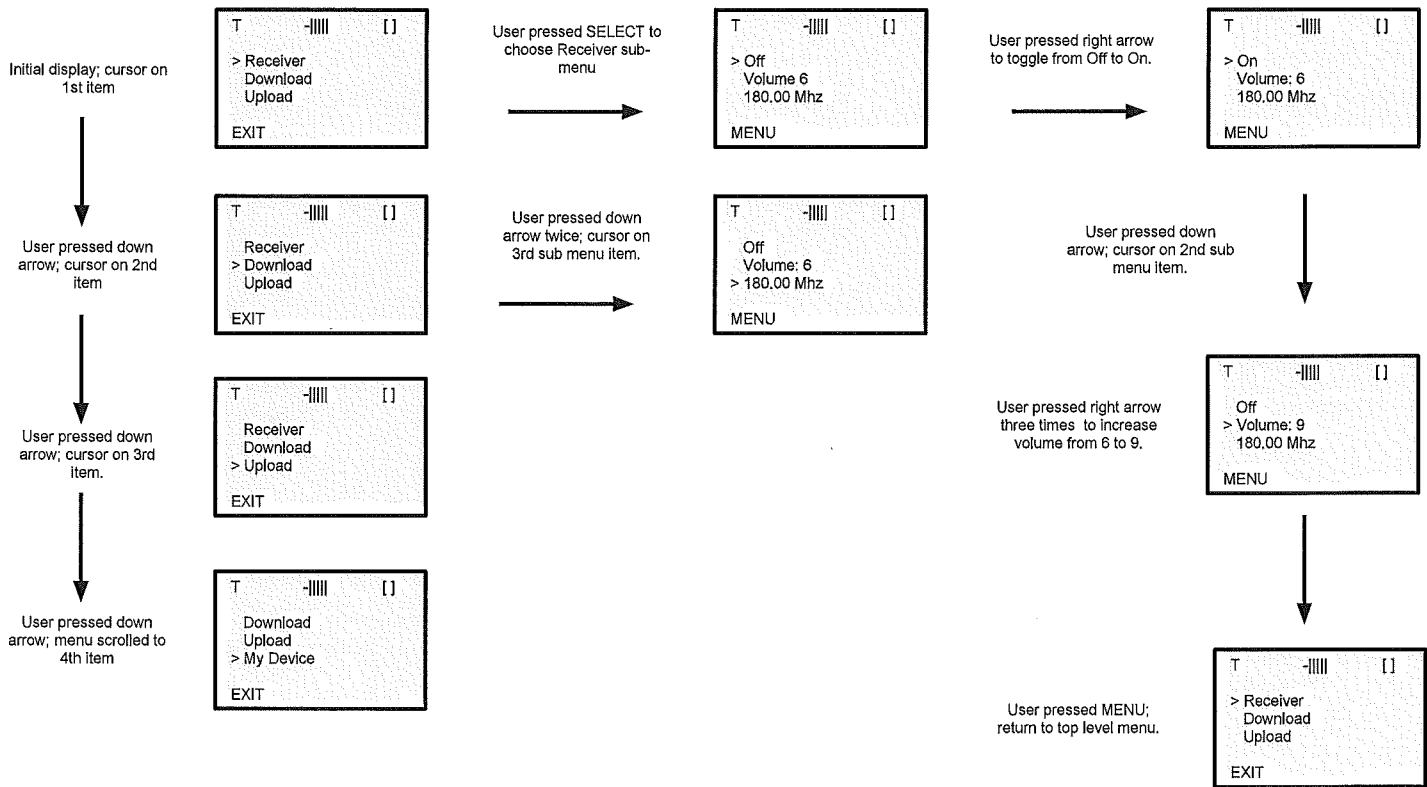


Appendix
~~Attachment B.~~ *EEPROM*

Contents	Size	Storage info
Electronic Serial Number (ESN)	8	in hex, should contain release/version #
Firmware version (xx.yy)	2	BCD
manufacturing date code	12	YYDDHHMMLOC (LOC=location code)
character set: A-a, Z-z, 0-9, 15 special symbols, total 72 chars	462	char [1]
icons (8 @ 15 bytes each)	120	[1]
Run mode display timeout (secs)	1	unsigned char (0-255) 0=never, 60=default
Display timeout, all other modes (secs)	1	unsigned char (0-255) 0=never, 60=default
Run mode sleep timeout (secs)	2	unsigned short int TBD, 120=default
Sleep timeout, all other modes (secs)	2	unsigned short int TBD, 120=default
Configuration bit settings	2	0x01 - 2nd RF bd 0=no, 1=yes
		0x02
		0x04
		0x08
Tail #	6	char
Username (owner)	24	char
Default volume	1	unsigned int, TBD, default=?
Receiver preset 1 freq.	5	999.99 BCD
Receiver preset 2 freq.	5	999.99 BCD
Receiver preset 3 freq.	5	999.99 BCD
Navigation Freq.	5	999.99 BCD, default = 108.1
Comm Freq.	5	999.99 BCD, default = 118.0
		<i>} future</i>
Saved preflight results 1	46	
Saved preflight results 2	46	
Saved preflight results 3	46	
TOTAL USAGE	618	
Space remaining (of 1,024 available)	406	
NOTES		
a. May want to copy the charset and icons into RAM for faster access		

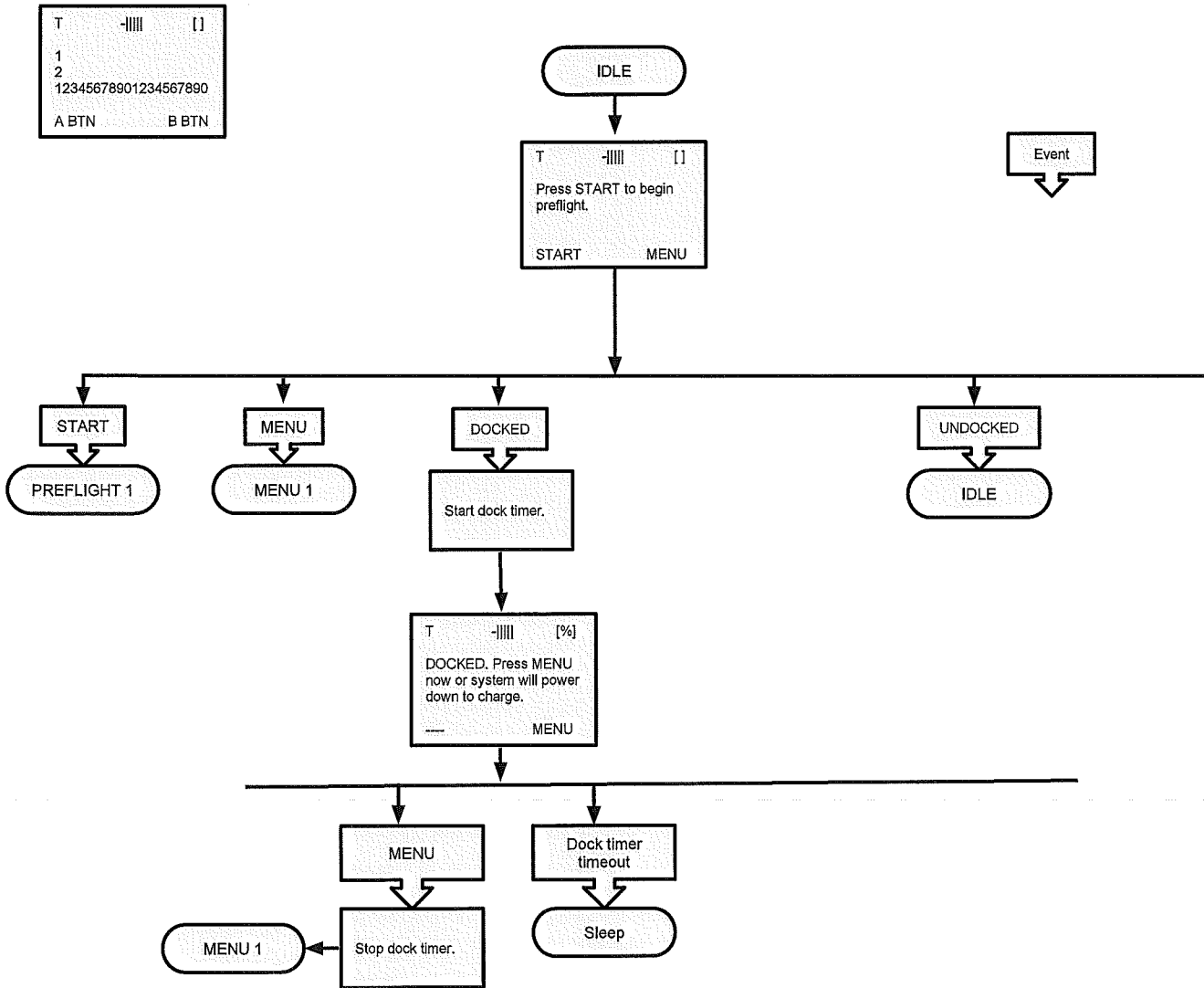
Appendix C. Menu Tree.

Menu Item	Setting(s)	How setting is changed; description.
Receiver	On Off	
	Volume: 6	<- decr -> incr by 1, range 00-15 (0=mute)
	xxx.xxx Mhz	<- decr -> incr by .0.250, default = 108.00
Download	Download Now	Downloads f/w update, etc. - must be docked and connected to PC app
	Enabled on dock Manual	<- and -> toggle enabled/disabled; determines if download of f/w etc is done when unit is docked automatically
Upload	Upload Now	Uploads currently saved preflight results, must be docked and connected to PC app
	Enabled on dock Manual	<- and -> toggle enabled/disabled; determines if upload of saved preflight results is done when unit is docked
	Erase after upload Saved	<- and -> toggle enabled/disabled; determines if saved preflight results are erased after upload is confirmed with PC app
My Device	Firmware Version	Vx.yz
	Hardware Installed	RF, etc.
	Device Serial No.	ESN from EEPROM
	Manuf Date Code	MDC from EEPROM
	Tail #	Display only, set by PC app
	Owner	Display only, set by PC app
Read Only		



Appendix D. Menu Flow Example.

Appendix E



T -||||| []
 1
 2
 12345678901234567890
 A BTN B BTN

IDLE

T -||||| []
 Press START to begin preflight.
 START MENU

Event

START

MENU

DOCKED

UNDOCKED

PREFLIGHT 1

MENU 1

Start dock timer.

IDLE

T -||||| [%]
 DOCKED. Press MENU now or system will power down to charge.
 MENU

MENU

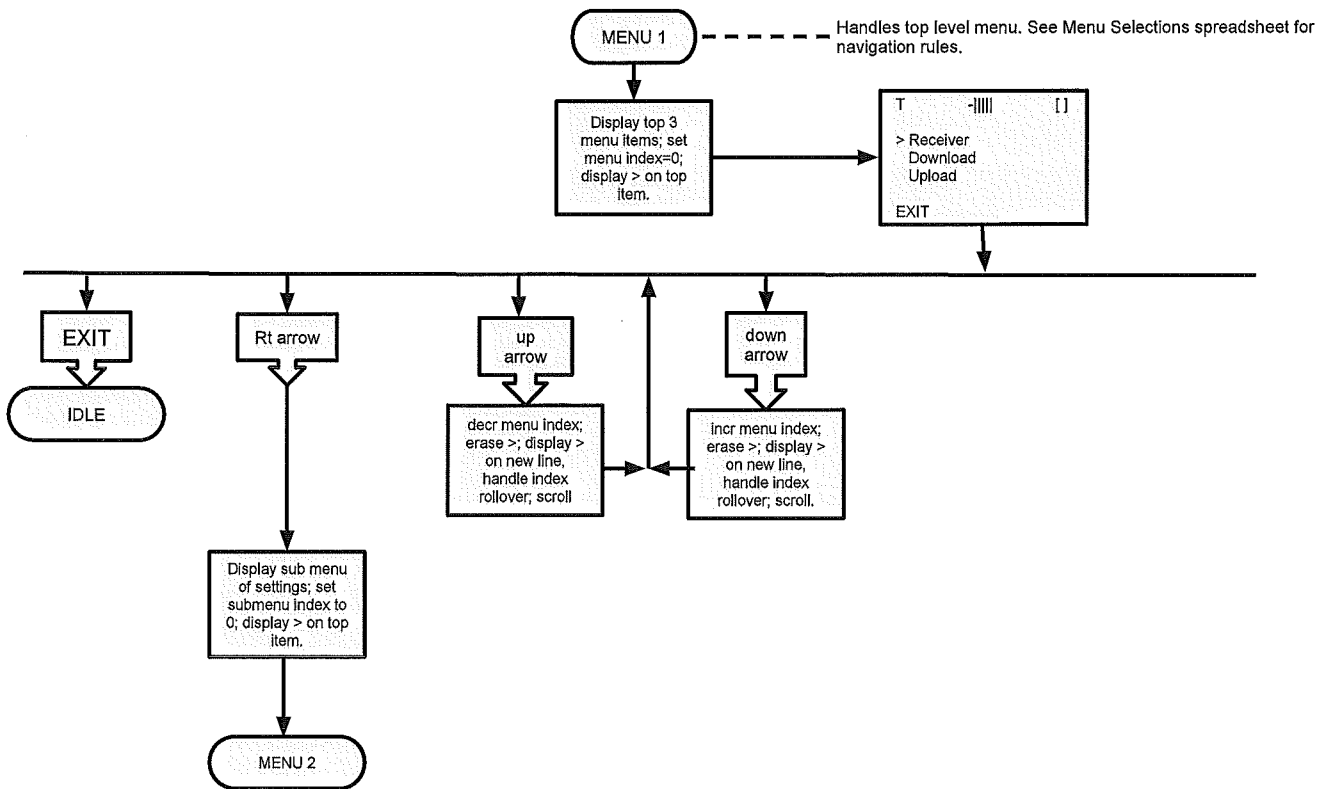
Dock timer timeout

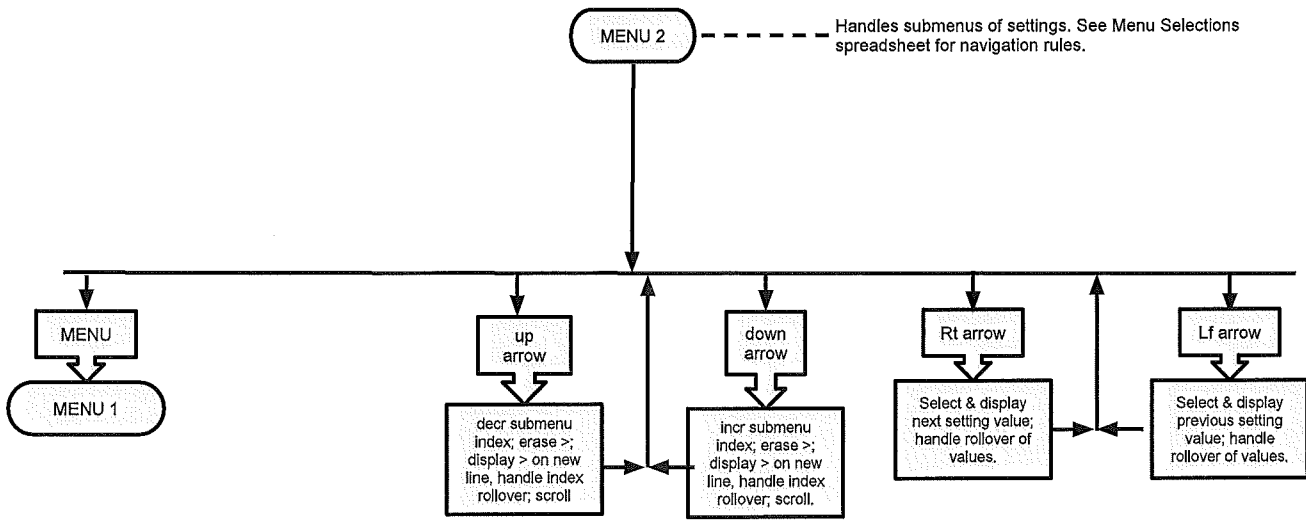
MENU 1

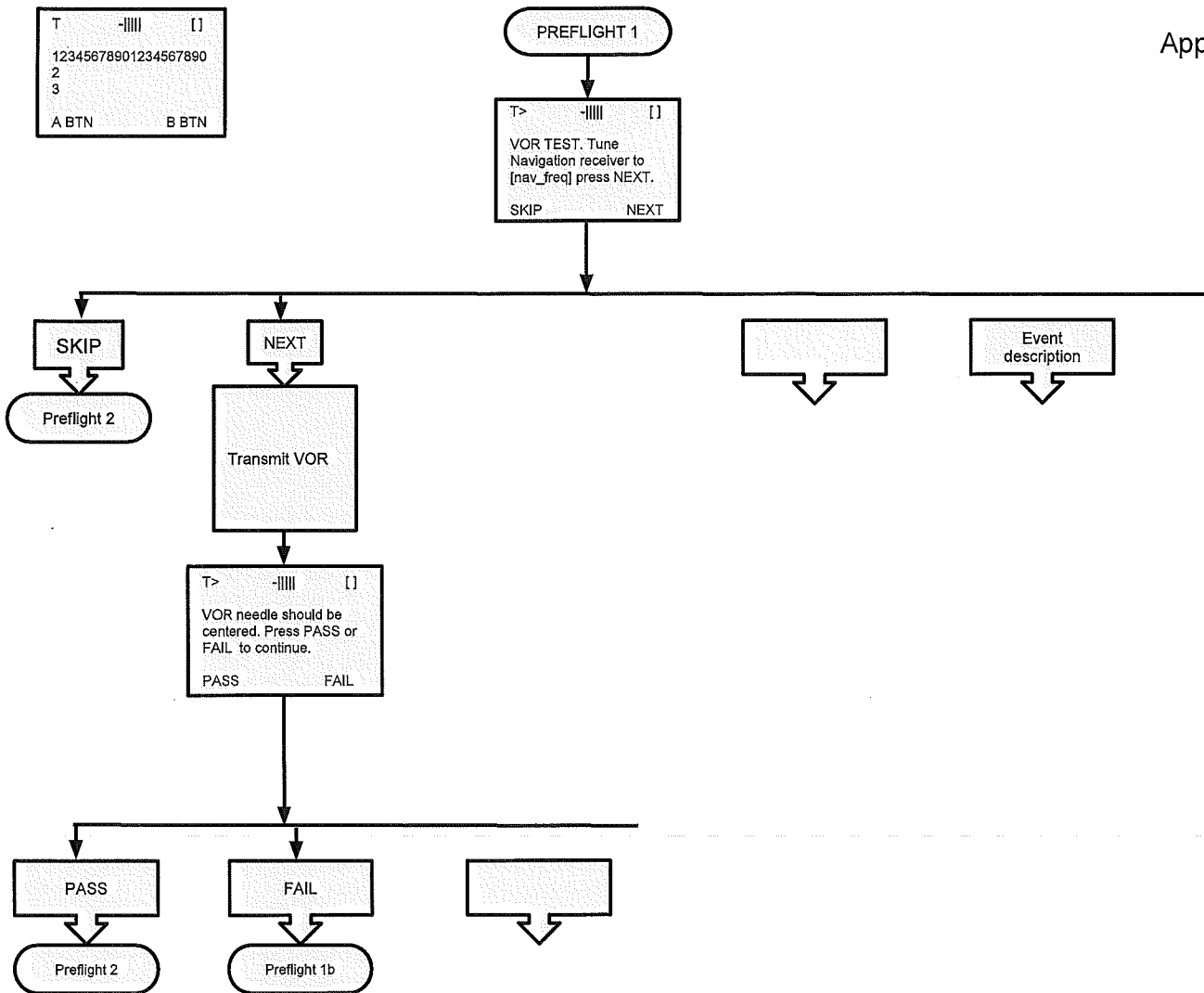
Stop dock timer.

Sleep

Appendix F







T -||||| []
12345678901234567890
2
3
A BTN B BTN

PREFLIGHT 1

T> -||||| []
VOR TEST. Tune
Navigation receiver to
[nav_freq] press NEXT.
SKIP NEXT

SKIP

NEXT

[]

Event
description

Preflight 2

Transmit VOR

T> -||||| []
VOR needle should be
centered. Press PASS or
FAIL to continue.
PASS FAIL

PASS

FAIL

[]

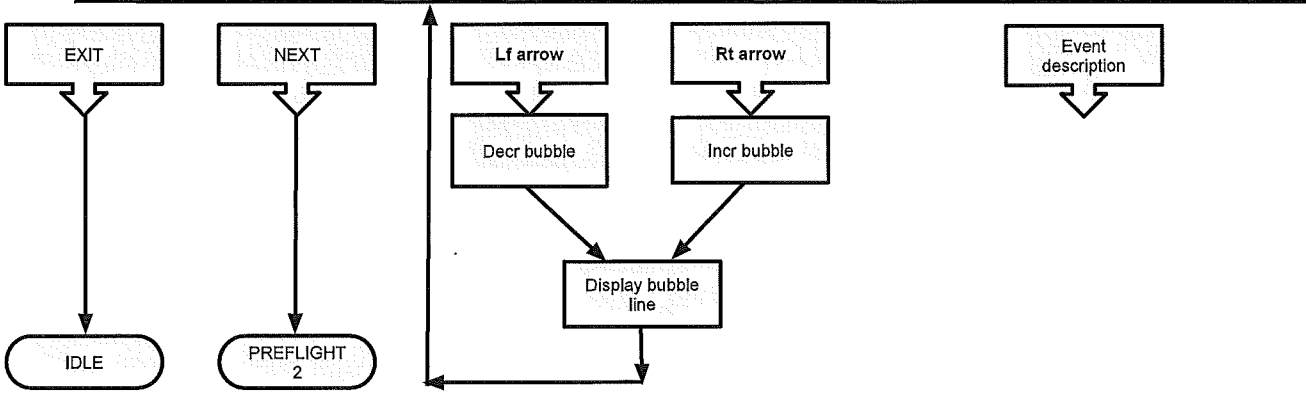
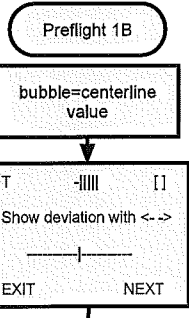
Preflight 2

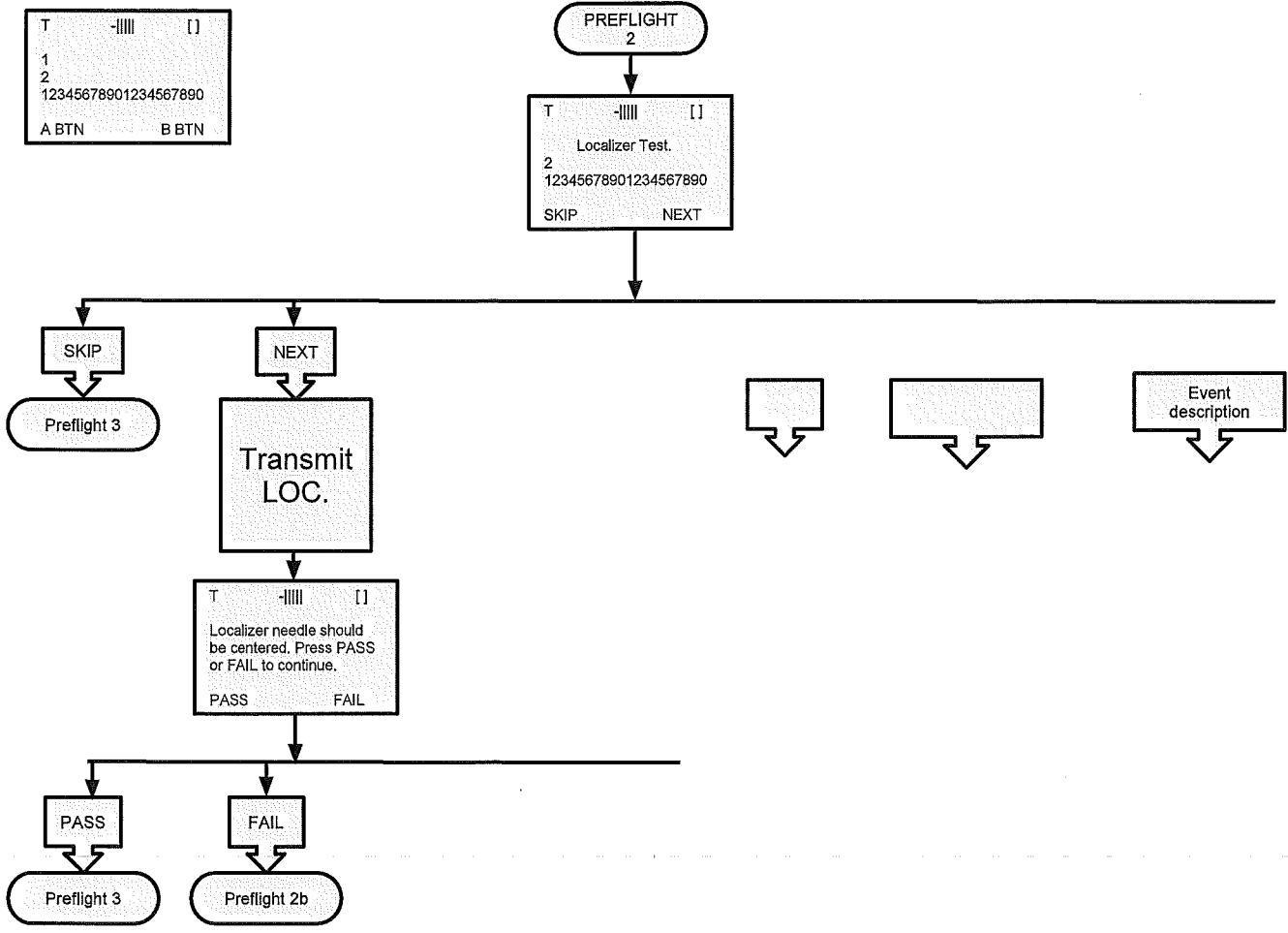
Preflight 1b

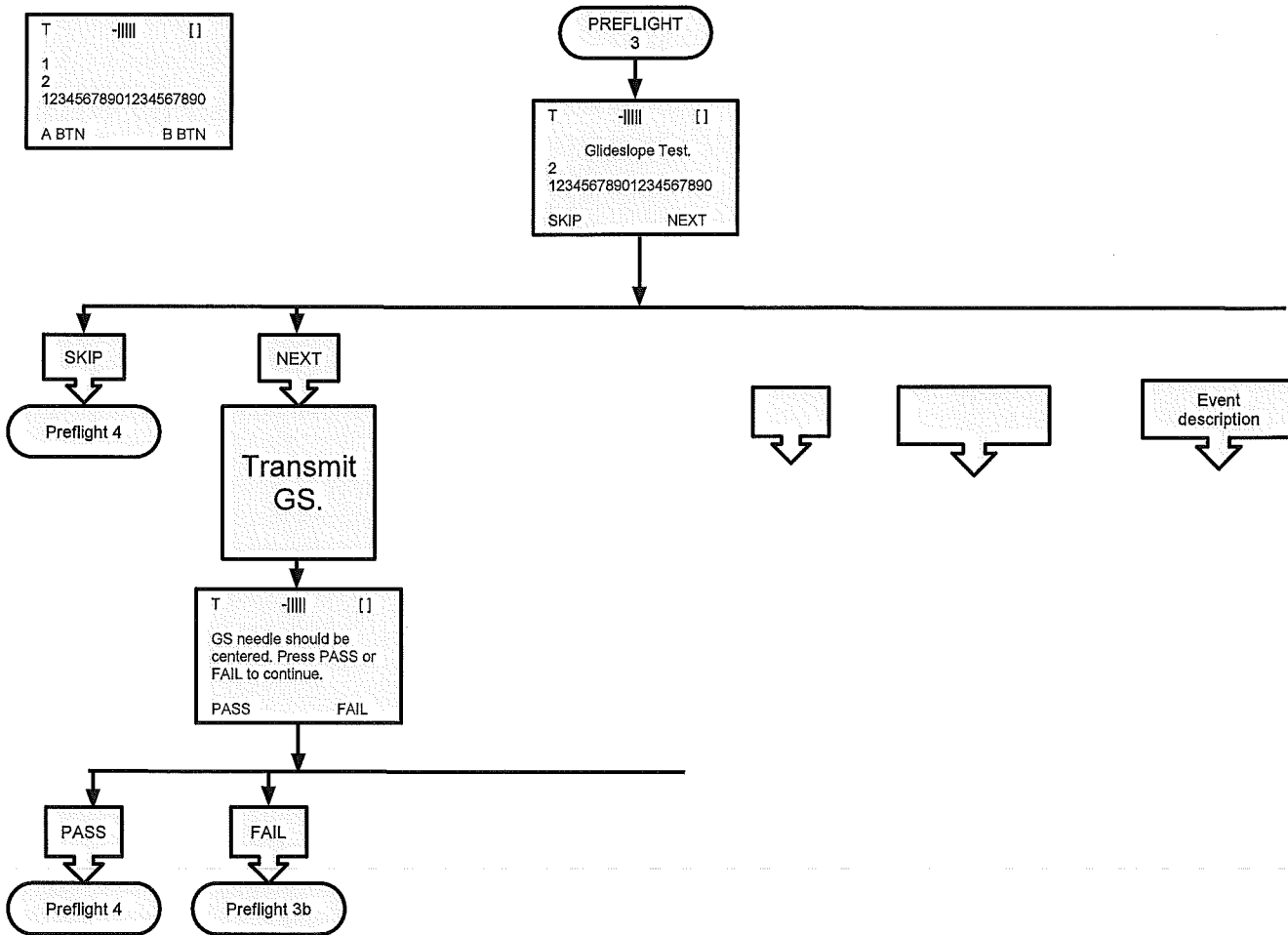
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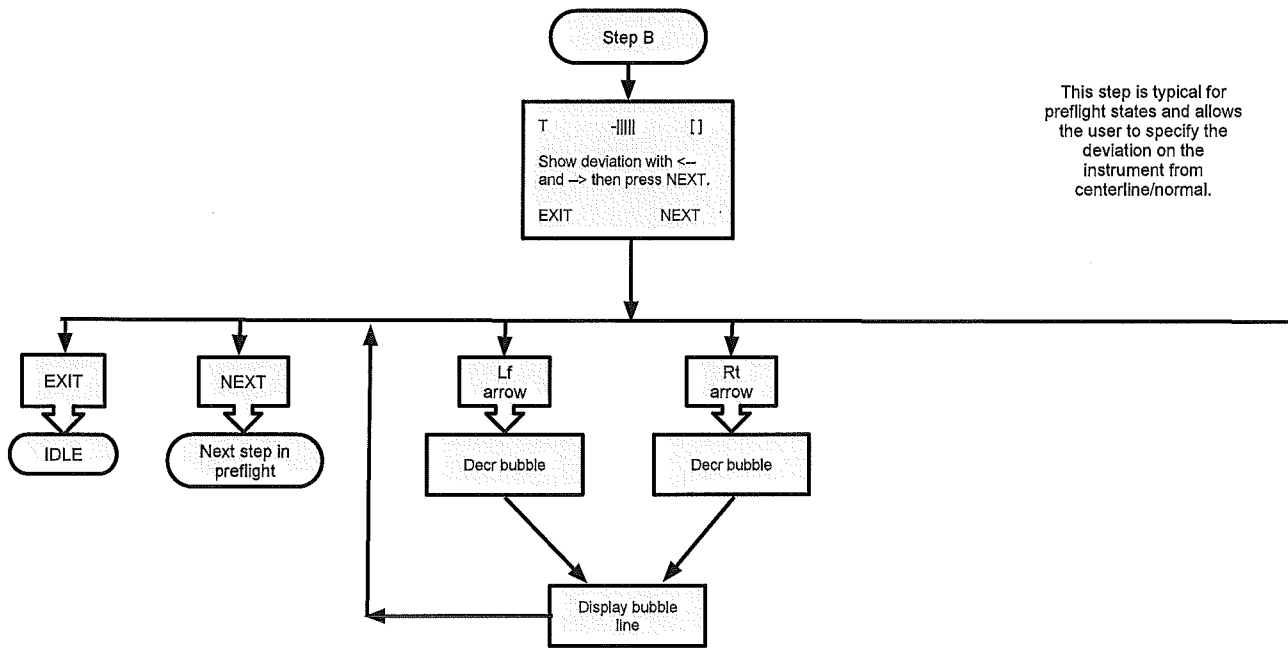
T      -||||  []
1
2
12345678901234567890
A BTN      B BTN

```









This step is typical for preflight states and allows the user to specify the deviation on the instrument from centerline/normal.