



## **ELT TEST SET (ETS) OPERATION MANUAL**

**570-1000**

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## Introduction

The ELT Test Set beacon reader module, installed in an Aceeca Meazura MEZ1000 unit, is designed to decode and display the encoded message from a 406 MHz Cospas-Sarsat Emergency Locator Transmitter. The reader can be connected directly to the ELT or monitored "over the air" using the supplied whip antenna. The reader will decode any 406 MHz aviation protocol for ELT's. All instructions contained herein refer to Artex ELT's only.

**Note: The Artex ELT Test Set does not decode PLB's or EPIRB's.**

## Application

The ELT Test Set is a replacement for the Artex Sarsat Beacon Test Set P/N 453-0131 which is no longer available. **For all references to the 453-0131 Test Set (or Sarsat Beacon Test Set) in any existing and/or previous Artex documentation, the Artex ELT Test Set P/N 453-1000 may be used as a direct substitute.** Follow the general directions for testing the 406 MHz signal as directed in the applicable Artex ELT Manual except follow the operational instructions for the ELT Test Set as outlined in this Manual. Screen views depicted for the previous test are significantly different from the 453-1000, refer to the views shown in this Manual and on the test set when using Artex documentation that refers to the 453-0131.

The primary differences between the previous test set and the ELT Test Set are as follows:

- Ease of use
- Rapid signal acquisition and processing
- Display of all ELT 406 MHz message information on one screen
- Position data (when present) displayed in degree's, minutes, seconds
- Use of in-line attenuation not required
- Rechargeable long life battery

***Features***

All 406 MHz aircraft protocols decoded

Reception of 406.025 or 406.028 frequencies

Waterproof to IP67 standards

Ruggedized

Internal database of received messages

Optional printing of current or stored messages via IR or Serial links

Desktop application for database storage and review

Long life rechargeable battery

Built-in RF attenuator



***Figure 1 - Artex ELT Test Set w/ Antenna***

## ELT Testing Instructions

### IMPORTANT NOTE:

PERFORM ALL ELT TESTING IN ACCORDANCE WITH LOCAL OR NATIONAL REGULATIONS. IF REQUIRED, TERMINATE ELT INTO A 50-OHM LOAD OR PERFORM TESTING IN AN RF SHIELDED ENVIRONMENT.

ELT'S WITH 121.5/243 MHZ TRANSMITTERS MUST BE TESTED WITHIN 5 MINUTES AFTER THE HOUR (US/CANADA). LIVE TRANSMISSIONS OF THE 406 MHZ SIGNAL MUST BE LIMITED TO ELT'S WHICH TRANSMIT A "SELF TEST" USING TEST FRAME SYNCHRONIZATION. EXTENDED TESTING OF THE 406 MHZ ELT SIGNAL MUST BE PERFORMED DIRECTLY CONNECTED TO THE READER WITH PROPER SIGNAL ATTENUATION AND/OR RF SHIELDING. SEE "OPTIONAL EQUIPMENT".

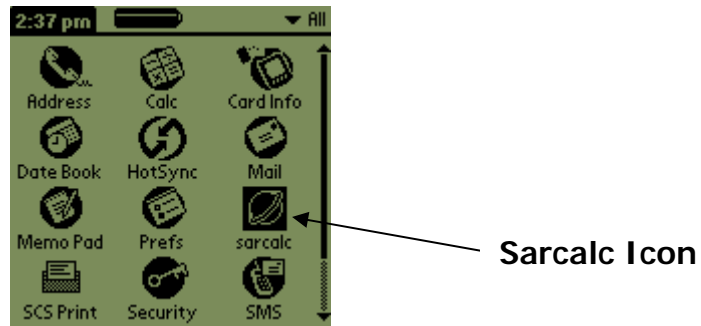
### *Using the Reader*

Prior to use, install battery pack into test set. To close, place the battery pack with the top end in first. Now push down on the bottom end of the battery pack ensuring that it is firmly in place. Now push the clip firmly towards the bottom of the test set until it clicks into place. Charge the ELT Test Set battery using the supplied USB cable connection and wall charger. Charge overnight or for at least 8 hours. Upon power-up, follow on screen directions for initialization and setting the time. The initialization routine is very important to ensure proper function of the stylus on the test set screen.

The supplied Sarcalc program version 1.30 or higher (sarcalc.prc) is pre-installed on the Meazura unit in Flash memory. In the event that the program is lost or needs to be re-installed, it may be installed using the Palm Desktop application and the Meazura serial or USB cable. The Sarcalc program software and any future upgrades will be available for download at [www.artex.net](http://www.artex.net).

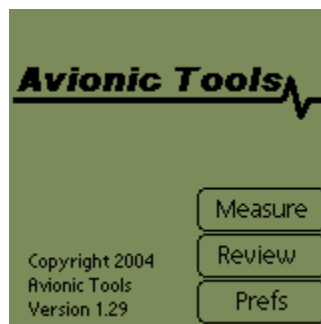
Select the Sarcalc program by tapping the "Sarcalc" icon shown in Figure 2. (**Note:** The exact location of your Sarcalc icon may vary depending on what other programs or applications are loaded on your Test Set). Select "Measure" from the initial screen. Connect the reader to the ELT directly with a coax cable (no attenuator required for test set) or connect the whip antenna.





**Figure 2 – ELT Test Set Main Screen View**

The reader is now ready to receive and decode the message. Select "measure" from "Avionic Tools" screen as shown in Figure 3. The screen will display "Waiting for Data" as shown in Figure 4 until a valid ELT transmission is received. Perform a "Self Test" of the ELT by turning the ELT local or remote switch from "OFF/ARMED" to "ON" for no more than 3 sweeps of the 121.5/243 MHz signal and then switch back to "OFF/ARMED". If the received data is invalid, then "Message Error!" will be displayed. This may indicate excessive distance from the ELT antenna if testing externally. 0-30 feet distance from the ELT antenna is recommended, although distances up to 50 feet are possible (as allowed). The ELT internal 406 MHz oscillator may also need to warm-up. Repeat the ELT test if necessary.

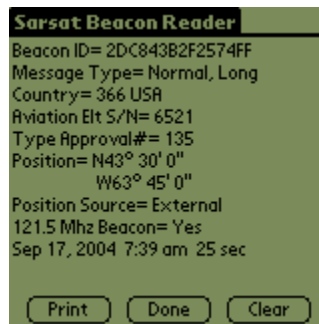


**Figure 3 – Test Software Screen View**



**Figure 4 – “Waiting for Data” Screen View**

Once a valid message is received, all encoded data is displayed on the screen as shown in Figure 5. The first line contains the 15 digit Hex ELT ID. This ID is used to register the ELT with the national authorities (NOAA in USA). The second line indicates the message type: Test or Normal, and Short or Long. The third line displays the country of registry code and the country. The fourth line will contain the ELT identifying data. The ELT identifying data will consist of one of the following: serial number, aircraft 24 bit ICAO address, aircraft registration number. ELT type will be displayed (ELT) and also any auxiliary locating device (121.5 MHz ELT). If the ELT includes a navigation function, the position will be displayed in latitude/longitude. Note: The received 406 MHz frequency is not displayed. The message will be time stamped.

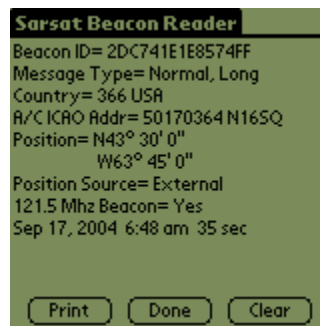


**Figure 5 – Example of Standard Location Data View**

**Note:** A displayed message will remain on-screen until the "Clear" button is selected. Select "Done" to save message and proceed. A new message will not over-write the old message.

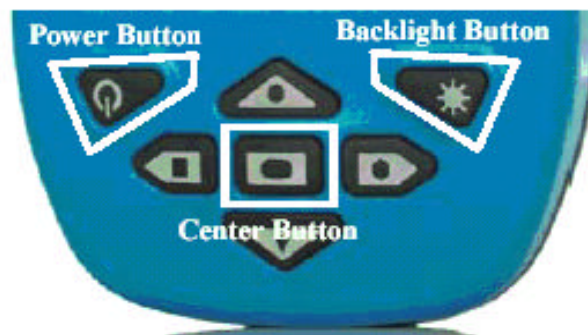
If the ELT is encoded with the 24 bit ICAO address and country of registry is USA, then the ICAO address will also be decoded to an 'N' number registration as shown in Figure 6.

The message will be automatically saved to a database for later review. Press "clear" or right arrow key to clear screen for next message.



**Figure 6 – Example of 24-Bit Address Data View**

### **Additional Controls**



**Figure 7 – View of Controls**

**Database**

All recorded messages are automatically saved to a database (up to 1000 records). Select "Review" from the initial Sarcalc screen. The latest message will be displayed with the date and time the message was recorded. Navigate between older and newer saved messages by selecting "Prev" or "Next". Any displayed message can also be printed (if optional printer software is installed).

The number of records kept can be changed by selecting "Prefs" from the initial Sarcalc screen (see "Preferences"). The database can be erased by deleting the database "SarcalcDB" from the main Meazura screen as shown below in Figure 8. Tap the upper left-hand corner of the main screen to show the "App" pull-down screen, select "Delete" and then select "SarcalcDB" to delete. Individual records cannot be erased.



**Figure 8 – Deleting Database Screen Views**

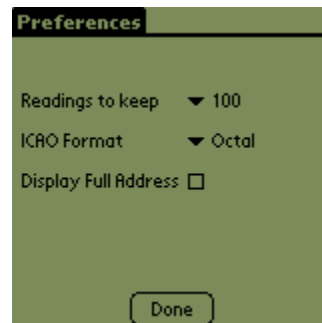
## ***Preferences***

If "Prefs" is selected from the initial Sarcalc screen (see Figure 9 below), the following items may be selected:

Readings to keep – 10, 20, 100, 1000  
Maximum number of readings to store in the database

ICAO Format – Octal, Hex, Decimal  
Format of ICAO Address display

Display Full Address – checked, unchecked  
Check for display of full ELT message, bits 9 –144 (30 Hex digits) or leave unchecked to display only bits 26-85 (15 Hex digits)



**Figure 9 – Preferences Screen View**

## ***Printing***

The message may be printed (via IR or serial connection) by selecting "Print" from the Measure or Review screens. The report will print all the displayed data.

**NOTE: Artex does not provide or support the optional printer software, contact the recommended source below.**

The print function relies on the Stevens Creek Software application PalmPrint or SCSPrint. Either PalmPrint.prc or SCSPrint.prc must be installed on the base Meazura unit for printing to function. PalmPrint or SCSPrint are available from [www.stevenscreek.com](http://www.stevenscreek.com).

Printing preferences are selected from the main Meazura screen by selecting PalmPrint or SCSPrint and then choosing Infrared or serial connections, and choosing an appropriate printer type. Poorly formatted or illegible text may be caused by incorrect serial port speed or printer type selection. See the PalmPrint manual pman.pdf (located on the Aceeca CD provided with the ELT Test Set) for more information or contact the printer software vendor.

## ***Desktop Software***

The Palm Desktop supplied on the Aceeca Meazura software CD must be installed on a Windows 95/NT/98/2000/Me/XP PC to enable database backup and installation of the required sarcalc.prc file and optional SCSPrint.prc or PalmPrint.prc files.

The Sarcalc Desktop application SarCalcDesk may also be installed on a PC (available free for download at [www.artex.net](http://www.artex.net)). Once installed, the entire sarcalc database can be reviewed. **Note:** The Meazura unit must be HotSync'd with the Palm Desktop software to load the database from the Meazura unit to the PC. Once sync'd, the database can be opened on the PC by starting the SarCalcDesk.exe application and opening the database from the file menu. The Palm HotSync will usually store the database file in C:\ProgramFiles\Palm\xxxx\Backup\ (where xxxx is the Meazura username. To find the correct username, select "HotSync" from the Meazura main menu. The username is in the upper right hand corner.) The database will be named SarcalcDB.PDB.

## ELT Test Set Unit

The base unit is an Aceeca Meazura MEZ1000 manufactured by Aceeca Ltd of Christchurch, NZ. The Meazura unit is ruggedized and waterproof to IP67 standards, is based on the Palm OS version 4.1.2, and features a long life battery. The ELT Test Set module plugs into the internal Aceeca MZIO slot and is secured with 2 screws – **DO NOT REMOVE – DOING SO WILL VOID THE ARTEX WARRANTY.**

If the battery is ever depleted or removed for more than one minute, any added applications such as the Sarcalc program and Meazura library may need to be reinstalled via the HotSync cable (serial or USB) using the Palm HotSync PC application. If the Meazura unit includes the "Flash Disk" feature, then any installed programs may be copied to the flash disk, which will not be erased if the battery is removed or depleted.

Additional operating information can be found in the Aceeca documents MEZ1000 Quick Reference User Guide and MEZ1000 HotSync Configuration Guide located on the CD-ROM disc provided as Artex P/N 510-1200.

Meazura units are shipped with the Meazura Flash Tool. Flash Tool V501 includes Meazura Library 3.0 and the Flash Disk feature.

Required files: sarcalc.prc  
(and MeazuraLib\_V200b.prc if existing library is version 1.0)

Optional files: PalmPrint.prc -or- SCSPrint.prc (see "Printing" above)

**Meazura MEZ1000 Specifications:**

Operating System:	Palm OS 4.1.2
Memory:	16MB SDRAM, 4MB Flash
Display:	160x160 pixel grayscale, backlit
Communications:	USB (cable provided) Serial (1.2-115Kbs) IrDa Infrared (1.2-115.2Kbs)
Battery	3.6V Li-Ion 1900mAh
Sealing	IP67 – submersible to 1 meter (30 min)
Current Consumption	21 mA (backlight off) unit ON (excluding module) 2 mA Sleep mode

Contact Aceeca at [www.aceeca.com](http://www.aceeca.com) for more information on the base Aceeca Meazura unit.

**ELT Test Set Module Specifications:**

406.025 receiver range:	-60dBm to +36dBm (5W)
Power source:	Meazura internal battery
Decoding:	per COSPASSARSAT C/S T.001 Issue 3 Rev. 5
Current Consumption	10mA unit ON <100nA Sleep mode

**Calibration**

The ELT Test Set is factory calibrated and does not require periodic re-calibration.



## System Component Part Numbers

The Artex ELT Test Set is being offered as a complete kit (455-9100) with the following parts:

1 ea.	453-1000	ELT Test Set (ETS) Main Assembly
1 ea.	110-418	Antenna, ¼ Wave Flexible Whip 418 MHz
1 ea.	452-0100	Holster, Padded ELT Test Set
1 ea.	452-0101	Stylus, ELT Test Set
1 ea.	452-0102	Battery, ELT Test Set
1 ea.	452-0103	USB Cable, ELT Test Set
1 ea.	452-0104	Charger, ELT Test Set
1 ea.	510-1200	Desktop Software for ELT Test Set (CD-ROM)
1 ea.	570-1000	Manual, ELT Test Set Operation

Any of the above part numbers may be ordered as a replacement or as a separate line item. Contact the Artex Sales department at 1-800-547-8901 for details.

## Optional Equipment

If national or local regulations require that the ELT be attenuated and/or directly connected to the ELT Test Set, the following parts may be used:

500-3000	Attenuator, 30 dB
500-3200	Attenuator, 20 dB
611-9010	Cable, Coax 6 ft. TPS to BNC (For Dual Output ELT)
611-6013	Cable, Coax BNC to BNC (For Single Output ELT)

Commercial equivalents of any of these parts may also be used.

## **Warranty Information**

The ELT Test Set is covered by the Artex Limited Avionics Warranty for 24 months. See Artex document # 560-0102 included with the ELT Test Set Kit or contact Artex for more details.