



AVX-10K
Flight Line Test Set
Operations Manual



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Preface

Purpose and Scope

The purpose of this AVX-10K Flight Line Operations Manual is to help users successfully use the test set features and capabilities. This Operations Manual includes task-based instructions that describe how to configure and use the AVX-10K test set.

Read this manual carefully before setting up or operating the instrument.

Product Nomenclature

The following terms may be used in this Operations Manual to refer to the AVX-10K Flight Line Test Set.

- AVX-10K
- AVX-10K test set
- Device
- Instrument
- Test Set

Intended Audience

This Operations Manual is intended for personnel who are familiar with avionic systems, associated equipment, and corresponding terminology.

This Operations Manual is intended for novice, intermediate, and experienced users who want to use the AVX-10K test set effectively and efficiently.

Related Information

Viavi maintains a webpage where additional product information is available to customers:

- <https://www.viavisolutions.com/avx-10k>

Use this manual in conjunction with the following information:

- **Getting Started Guide:** provides the basics of setup and use.
- **Maintenance Manual:** provides guidance for approved maintenance and troubleshooting procedures.
- **Product Brochure:** provides ordering information for parts and accessories.
- **Configuration Selection Guide:** provides information on configuration details.
- **Data Sheet:** provides technical specifications.
- **StrataSync™ User Guide:** provides operational information on the StrataSync™ Application

Contact Information

Contact VIAVI Customer Service for technical support or with any questions regarding this or any other VIAVI products.

- Phone: 844-GO-VIAVI
- email: AvComm.Service@viavisolutions.com

For the latest information, go to:

- <https://www.viavisolutions.com/en/services-and-support/support/technical-assistance>

1. Overview AVX-10K

1.1. General Information

The AVX-10K Flight Line Test Set is a portable test instrument that provides a single instrument test solution for performing a variety of flight line testing including Transponder, TCAS, Target Generation, Navigation, Communications (COMMS), and ELT testing.

A test tool application is also provided that allows VSWR and Distance to Fault testing for cable and antenna troubleshooting.



Figure 1: AVX-10K Flight Line Operations Test Set

The AVX-10K is supported with two free applications. VIAVI's Mobile Tech application available from IOS App or Google Play Store, provides remote control via your IOS or Android device as well as technical documentation and training videos.

StrataSync™ (available from <https://www.viavisolutions.com/en-us/products/stratasync>) is a cloud-enabled application supporting asset and test data management.



Figure 2: Mobile Tech Application

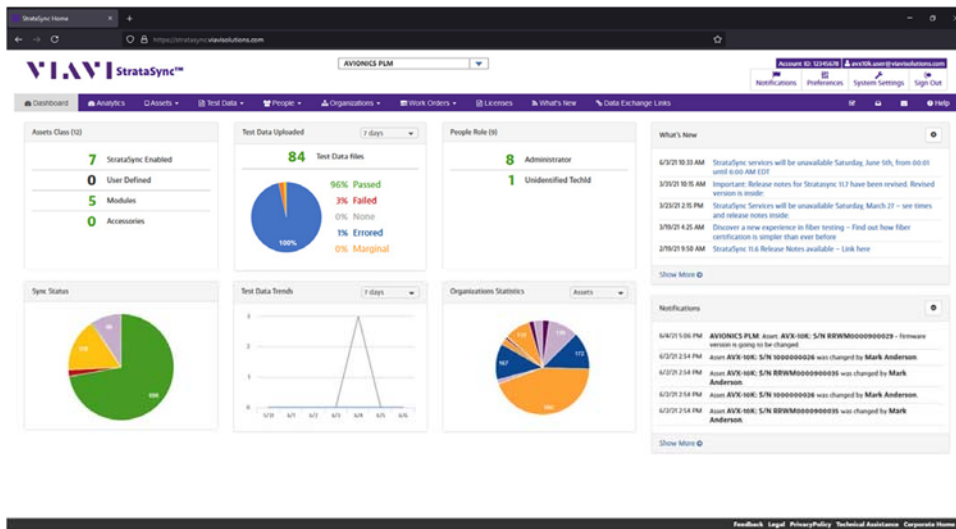


Figure 3: StrataSync™ Dashboard

1.2. Principles of Operation

The AVX-10K consists of the VIAVI OneExpert base platform and the AVX Application Module. The VIAVI OneExpert base platform supports system functionality such as network connectivity, system updates and power management. The AVX Application Module manages the device’s RF test and measurement functions.

Testing with the AVX-10K can be performed in one of three methods:

- Direct with Coupler
- Over-the-air using an antenna that can be mounted on the AVX-10K chassis
- Directly connected to the UUT.

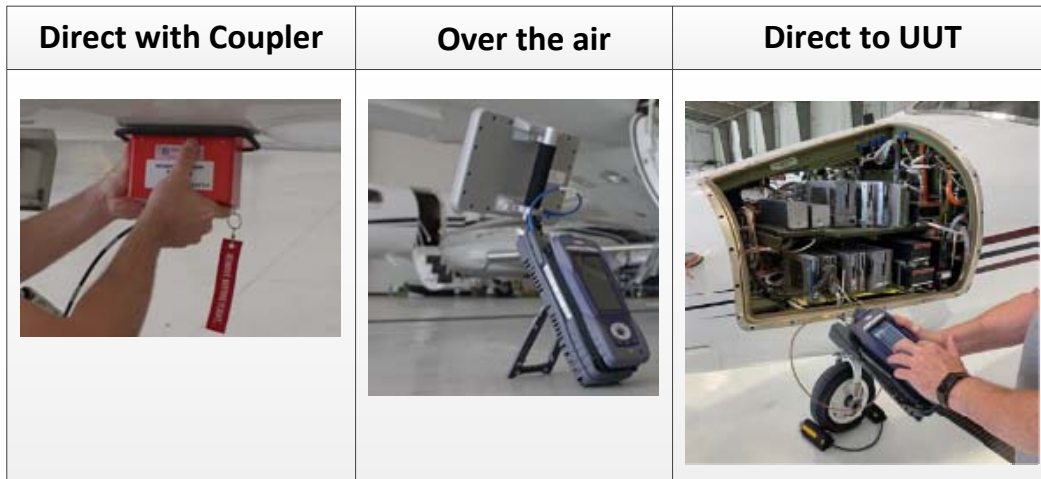


Figure 4: Operational Test Methods

1.3 Platform and System Features

The AVX-10K platform supports the following hardware and system features:

- Small, rugged design suitable for flight line use
- Rechargeable, internal battery supports up to 8 hours of typical use
- A multi-touch user interface that is similar to those provided on smart devices
- Bluetooth® and WiFi connectivity supporting both 2.4 GHz and 5 GHz
- StrataSync™ cloud-based data collection and asset management application
- Field upgradeable software and option installation via USB or StrataSync™
- Dual Ethernet and 2.0 USB ports
- WiFi and GPS receivers
- Smart Access Anywhere - allowing VIAVI tech support to troubleshoot set up and test issues remotely
- Sleep mode (battery power saving mode)

1.4. Features and Capabilities

The AVX-10K supports testing of the following avionics functions:

Communications	Navigation	Surveillance	Other Test Tools
▶ AM (VHF)	▶ ILS	▶ Transponder Modes A, C and S	▶ ELT
▶ FM (UHF)	▶ LOC	▶ ADS-B Out	▶ VSWR
▶ SSB (HF)	▶ GS	▶ ADS-B In (Traffic)	▶ Distance to Fault
▶ SELCAL	▶ MB	▶ 1030 MHz (ADS-B, ADS-R, TIS-B)	
	▶ VOR	▶ UAT (ADS-B, TIS-B, FIS-B)	
	▶ DME	▶ TCAS I/II and TAS testing	
		▶ ADS-B Monitoring	
		▶ GICB Monitoring	
		▶ UAT Monitoring	

1.5. Device Software

AVX-10K ships from the factory with the current version of Software (SW) and Firmware (FW) installed on the Device.

Routine maintenance checks should be performed to ensure the Device has been upgraded to the latest production software release. This information is readily available on your StrataSync™ account.

In the event a software update is needed, AVX-10K software can be upgraded in the field using VIAVI's StrataSync™ application (via WiFi or a direct network connection) or by downloading the latest firmware from StrataSync™ to your USB device.

2. Setup, Control, and Operation

2.1. Control and Operation

The AVX-10K Flight Line Test Set can be operated locally using the touchscreen, keypad or remotely using any mobile device with VIAMI's Mobile Tech application which is available at any online application store. Optionally, remote control of the AVX-10K can be accomplished via a VNC viewing application (such as Tight-VNC) from a laptop or PC.

2.2. Hardware



Figure 5: Front View



AVX-10K Side Detail


- 1. GPS Antenna
- 2. Dual Ethernet Ports
- 3. Dual USB Ports
- 4. Hand Strap Clips

Figure 6: Side View


2.2.1. Controls and Buttons

The front panel controls and buttons are used to operate and control the device, configure device and test settings, view data and navigate the user interface (UI).


- OK Button

	<p>The OK Button is used to accept/confirm a changed setting or to proceed to the next menu.</p>
---	--


- Power Button (5)

	<p>The Power button is used to turn the device on and off. The device is turned on or off by pressing and holding the button for approximately 3 seconds. When needed, a hard reset is accomplished by pressing and holding the Power button for 10 seconds.</p>
---	--


- Back Button (6)


	<p>The Back Button is used to exit a menu or to go back to the previous menu or screen. If a data field is selected for editing, selecting the Back Button exits the data field, canceling an un-confirmed change.</p>
---	--

- Home Button (7)

	<p>Pressing the Home Button returns to the device's main/home screen. The UI Home button performs the same action.</p>
---	--

- Tray Button (8)

	<p>Pressing the Tray Button opens the Utility Tray which contains icons that access base functions that save test reports, turn on/off Bluetooth®, or enable/disable Remote Operation.</p>
---	--

The Utility Tray can also be opened using the  located at the top of the UI.

- Navigation Buttons (9) are used to navigate the UI and to open menus and fields on the UI.
- Function Hard Keys (10) select screen-specific options or to select menus associated with each key. The Function Hard Keys and UI Function Soft Keys perform the same functions.

2.2.2. I/O Connectors

The AVX-10K is equipped with three TNC-type connectors on the AVX Application Module. These connectors support test and measurement functions.

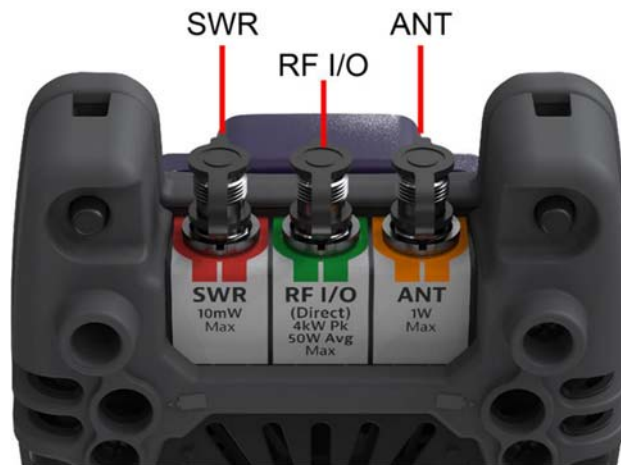


Figure 7: I/O Connectors



Caution: Do not overload input connectors. Refer to the product data sheet for maximum input ratings.

- SWR Connector

The Standing Wave Ratio (SWR) connector is used when performing VSWR and Distance to Fault (DTF) troubleshooting.

- RF I/O Connector

The RF I/O Connector is selectable as the RF Instrument's (Direct) connect high-power input/output connector.

The RF I/O Connector is a combined (Duplex) connector that provides an RF output connection and an RF Receiver input connection.

- ANT Connector

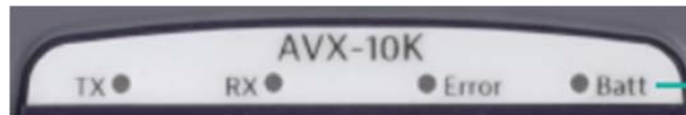
The ANT Connector is selectable as the instrument's antenna input connector.

The ANT connector should be selected to perform over the air testing using an external antenna or when test parameters require maximum input sensitivity. This connector should be used when measuring low level RF signals.

2.2.3. Hand Strap Rings

Four rings are located at the corners of the device and can be used to attach the carry strap.

2.2.4. Status Indicators



- **TX:** Transmit Indicator LED blinks green when transmitting to the device under test.
- **RX:** Receive Indicator LED blinks green when the AVX-10K is receiving input from the device under test.
- **Error:** This LED is solid red indicates error and alarm conditions. The type of error varies depending on the application. Errors are displayed in the Utility Tray.
- **Batt:** multi-color LED that indicates the battery status.
 - Solid green indicates that either the battery charge is higher than 30%, or that an external source is powering the unit.
 - Solid amber indicates that the battery charge is getting low (charge is between 10% and 30%).
 - Flashing red indicates the device is being powered by external AC Power and the battery is not installed in the device.
 - Solid red indicates that the battery charge is critically low, less than 10%. An audible beep occurs 30 seconds before shutdown.
- **Charge Status LED:** located on the bottom, next to the DC Input connector. The Charge Status LED is a multi-colored LED that indicates the charge status of the Battery.

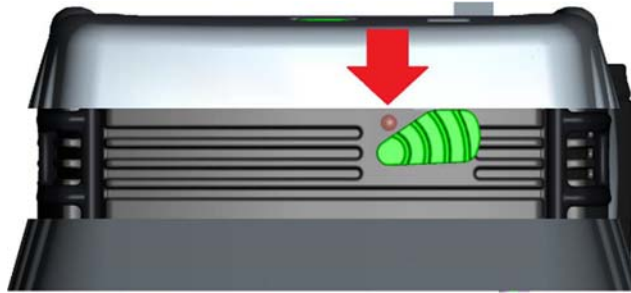


Figure 8: Charge Status LED

- Solid amber indicates that the battery is charging.
- Solid green indicates that charging is complete, and the battery is fully charged.
- Slow flashing red indicates that the battery charge is critically low, less than 10%.
- Fast flashing red indicates that the charging was suspended due to a fault and user intervention is necessary (for example, the wrong charger is attached).
- Solid red indicates that the charging was suspended due to overheating. The unit can continue to run, no user intervention necessary.

2.2.5. Display Screen

The display screen is a Liquid Crystal Display (LCD). The LCD is a capacitive, touchscreen that operates similar to a smart phone or tablet where you press to open/select/activate, press and hold, press and drag, swipe sideways and pinch to zoom.

2.3. Remote Operation

The AVX-10K test set can be operated remotely via the Mobile Tech application or optionally via a VNC connection using a VNC application running on a computer.

Mobile Tech application



VIAVI's Mobile Tech app can be found in any mobile device store and can be run from any mobile device.

This application can connect to the AVX-10K via Bluetooth® or WIFI connection. You must have an active StrataSync™ account to access all benefits of the Mobile Tech application. You may also login to the Mobile Tech application as a guest to remotely control the AVX-10K.

The Mobile Tech application also provides access to training videos as well as file access so that you can view test reports from the connected device.

Multiple devices can be connected to one AVX-10K.

Once the application is installed and you are able login, the Mobile Tech application will search for nearby connectable devices. Locate the ID of the AVX-10K that you want to connect to and press the CONNECT button. Once connected, press the Remote Display button and you will be able to view and control the AVX-10K test set from this device.

2.3.1. VNC Viewer

Establishing a VNC connection with the AVX-10K test set requires the following:

- A VNC viewing application must be installed on the computer
- AVX-10K test set and computer (both devices must be connected to the same network).

Configure the AVX-10K Remote Operation via Systems Settings using your own VNC password. This will be the password that the user of the VNC viewer software will need in order to gain access.

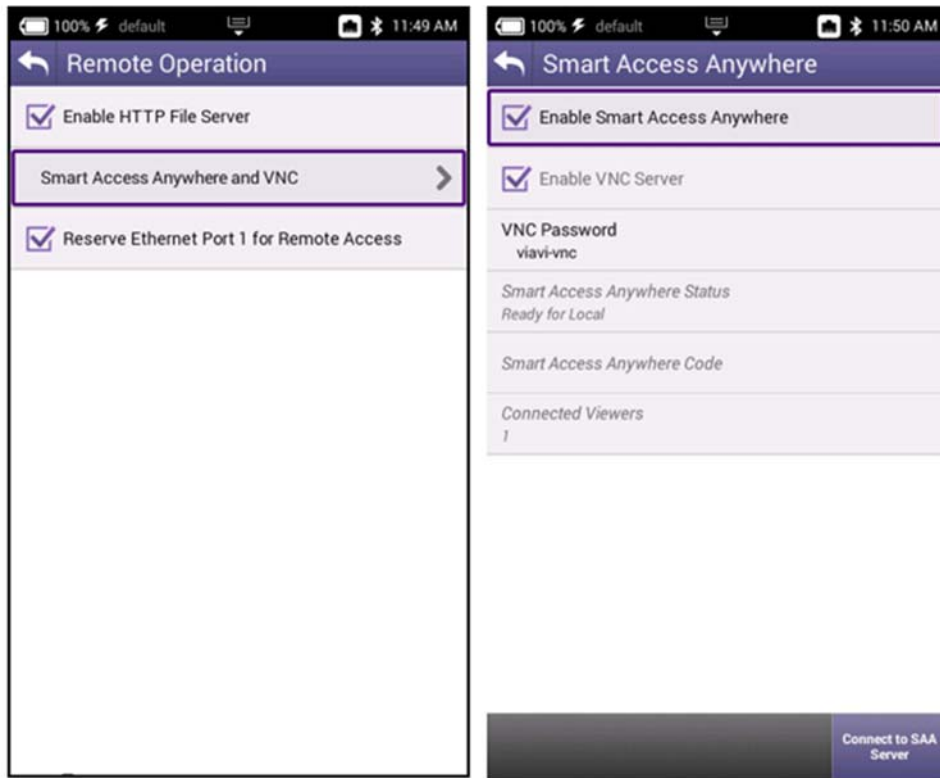


Figure 9: Remote Operation Settings

When you run the VNC viewer software, you will need to know the IP Address of the AVX-10K test set. This can be found by launching the Network application in the System ribbon.

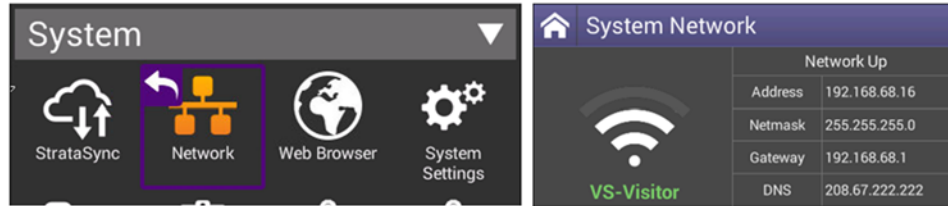


Figure 10: IP Address & Network ID

View the Device UI Remotely

1. Ensure that the AVX-10K is connected to the internet.
2. Enable VNC capability:
 - a. Open the System Settings Menu.
 - b. Select Remote Operation button.
 - c. Select VNC button.
 - d. Select the Enable VNC Server check box.
 - e. Define VNC password (recommended).
 - f. Select **Back Button** to return to previous screen.
3. Launch the VNC viewing application on the computer.
4. Enter the IP address of the test set in the VNC viewer's server address field and select the **OK Button** to continue.
 - A password entry box appears.
5. Enter the VNC password (found on the Remote Operation menu) and press the **OK Button** to submit.
 - The AVX-10K test set user interface appears in the VNC viewer.

2.4. User Interface (UI) Layout

This section describes the UI screen layout and UI components.

2.4.1. General Screen Layout

The device's UI area consists of a Header Bar and Main Display area. The Header Bar is system defined and appears at the top of every screen. The Display Area updates depending on the screen selected (Home Screen vs Application Screen).

2.4.2. Home Screen Layout

The Home Screen contains collapsible menus (or “ribbons”) that expand to provide access to system and test functions. The functions that are available from the Home Screen varies according to the software and hardware options that are enabled on the device.

The Header Bar displays system indicators and the Utility Tray Icon which is used to access standard device tools and functions. The Shortcut panel at the bottom of the screen is used to provide quick access to frequently used functions.

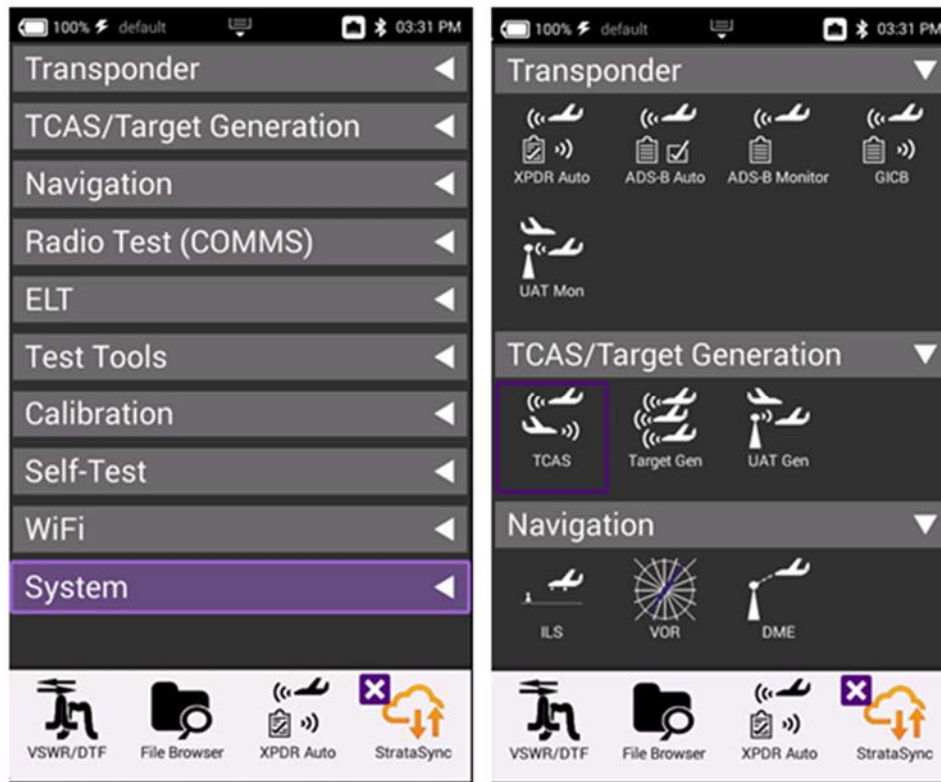


Figure 11: Home Screen Examples

2.4.3. Application Screen Layout

Application screens contain the Header Bar, a main Display Area and a row of Function Soft Keys. Function Soft Keys are selected using the touchscreen or the device’s Function Hard Keys. The content of application screens varies according to the application, but layout is consistent from one application to another.

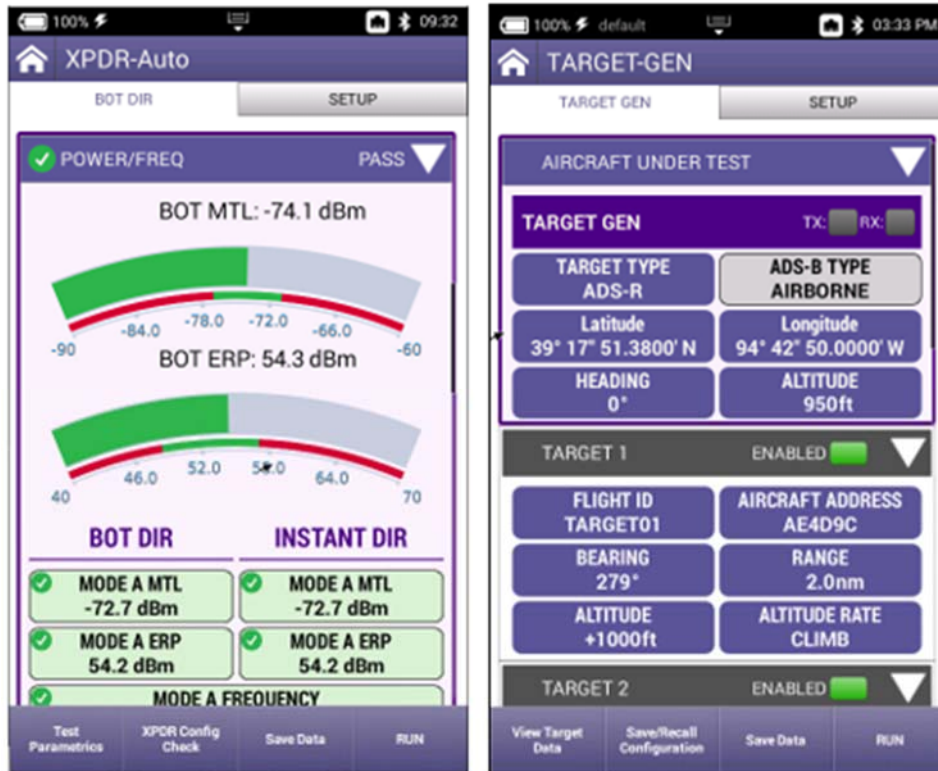


Figure 12: Application Screen Examples

2.5. UI Header Info and Indicators

The UI uses the following indicators to show function and system status:

- **Active Connectivity Icons** are shown at the top of the screen.

When connected to the network via the LAN port, the top indicators will look like this:



When connected to WIFI, the top indicators will look like this:



- **Template Name:** If a template is being used, this area will reflect the name of the selected template. See Template Management in System settings for more information.

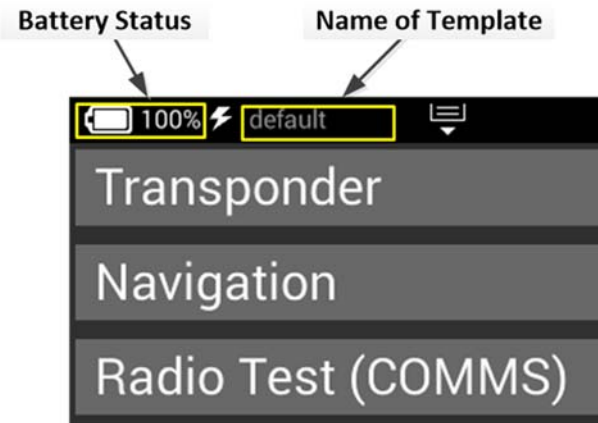


Figure 13: UI Header Info and Indicators

- Battery Status Indicator

	<p>The Battery Status Indicator displays the charge level of the device’s internal battery. The charge level is also displayed as a percent next to the indicator.</p>
--	--


- AC Power Indicator

	<p>The AC Power Indicator is displayed when the device is connected to an AC power supply.</p>
--	--


- Network Connection Indicator

	<p>The Network Connection Indicator is displayed when the device is connected to an active LAN via one of the device’s Ethernet connectors.</p>
--	---

- WiFi Indicator


	<p>The WiFi Indicator is displayed when the device is connected to a network via WiFi.</p>
---	--

- Bluetooth® Indicator

	<p>The Bluetooth® Indicator is displayed when Bluetooth® mode is enabled on the device.</p>
---	---




- System Error Indicator

See “Notifications” for information about the Notifications panel.

	<p>A red “X” is displayed when the device experiences a critical system error. A system generated error message will also be displayed in the Notification panel.</p>
---	---

- Function and Test Application Status


Function and test application icons change color to indicate whether or not the function is current initialized (actively running) on the device.

	<p>Function Off</p> <p>Function icons are displayed with a white background when the function is inactive (turned off).</p>
	<p>Function Initialized</p> <p>When a function or application has been initialized, the icon updates to orange with an “X” displayed to the left of the icon. The “X” is used to close the application.</p>
	<p>Function Running</p> <p>Selecting the Back Arrow will disable or stop the application.</p>

2.6. UI Navigation

UI screens are navigated using the following controls and techniques:

- Expandable trays are opened and closed by selecting the directional arrow on the right side of the title bar.
- Navigation arrows are used to move up/down, left/right on the screen from a remote keyboard or from the device's front panel Navigation Buttons.
- Swipe left/right is used to "flip through" screens on multi-tabbed screens (i.e., VSWR/DTF screen).

	<p>The Back Arrow is used to:</p> <ul style="list-style-type: none"> • Return to the previously viewed screen • Close a running function or application • Close a menu without making a selection • Exit and cancel a change being made to an alpha/numeric data field.
---	---

2.7. Selecting and Entering Parameters

The UI uses menus and editable data fields for making selections and configuring system and test parameters.

Entering Alpha/Numeric Data

Some parameters are defined using text or numeric entry fields (for example, test settings or user information). The process is similar to data entry on a mobile device.

1. Select (or navigate to) the desired parameter to open the data entry field.
 - A data entry box is displayed.
2. Select (or navigate to) the data entry box.
 - A keypad is displayed on the screen.
3. Use the keypad to enter the data.
 - To switch from letters to numbers, use the button in the lower left (123 or ABC).
 - On the alphabetic keypad, the second key, the up arrow, is the shift key.
 - On the numeric keypad, the second key (1/2) switches between multiple numeric screens.
 - The left pointing arrow with the x in it is the backspace key.
4. Select the enter/return key (the fourth system key) on the screen keypad or press the OK key.
 - The data is entered and stored.

NOTE
 If there are stacked data entry screens, pressing the OK button on the bottom most screen will enter the data.

Select Menu Item

- Open the menu and select the menu item. When a menu item is selected using the touchscreen, the selection is activated upon selection and the menu closes.

< or >

- Use the arrow navigation keys to highlight the desired item; press the OK button to confirm. When confirmed, the selection is activated and the menu closes.

2.8. Managing Application Shortcuts



Figure 14: UI Shortcuts Panel

The Home Screen contains an area at the bottom of the screen that can be used to create shortcuts for up to four frequently used applications.

To create a shortcut

Touch and hold the function icon, drag and drop the icon to the Shortcut panel located at the bottom of the screen.

To remove or overwrite a shortcut

To remove, touch and hold the application icon in the shortcut panel, drag and drop away from the shortcut panel, or move an application icon to the Shortcut panel placing it over one of the existing shortcuts.

2.9. Configuring System Settings

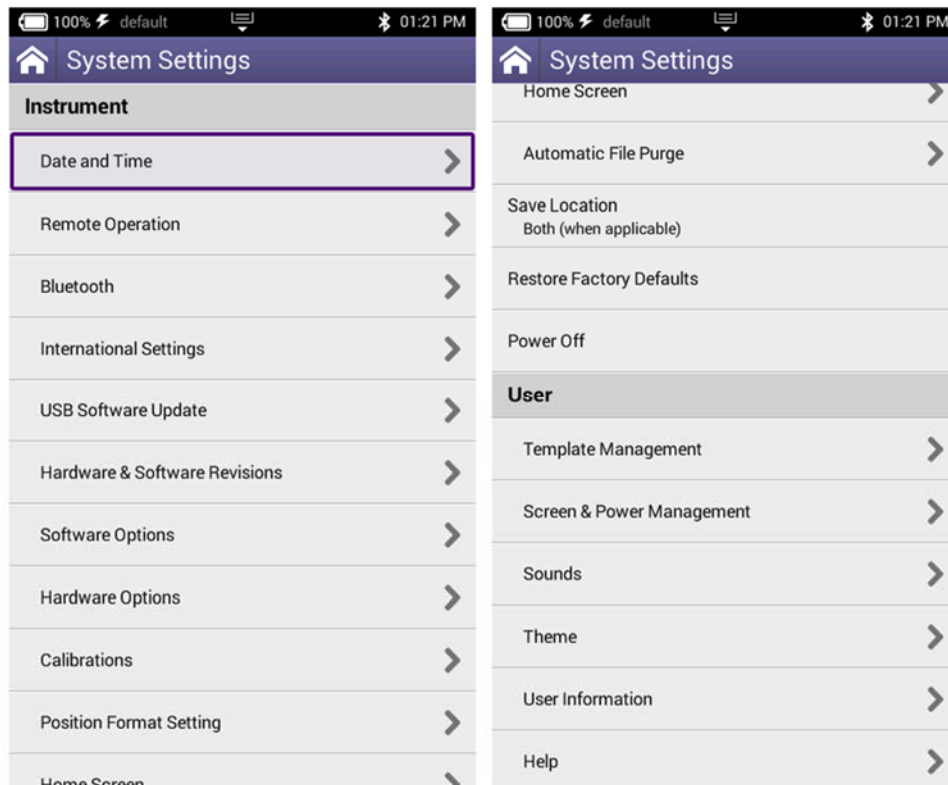


Figure 15: System Settings.

- Date and Time** – Time and Date are driven by having the AVX-10K connected to an NTP (Network Time Protocol) server. Date and Time formats can be adjusted, and Time Zone set for local time. Use of Daylight Savings time can be toggled on or off as well.
- Remote Operation** – These settings are used to support the connection of remote devices as described in section 2.6. Typically, all settings are left enabled. You can enter a password to be used for VNC viewer connectivity.
- Bluetooth®** –Bluetooth® can be toggled on or off which can also be done from the system tray. This screen will show the name of your device which is used to connect in the Mobile Tech app. All paired devices are shown here as well as their connectivity state.
- International Settings** – Country, Language, Keyboard type, Measurement System, Temperature Units and Time Zone are all settable from this page.
- USB Software Update** – If you need to update software via USB stick, this is the right place. There should only be one software update file on the root drive of the USB stick. Insert a USB stick with the provided or downloaded software update file into either of the USB ports on the

side of the AVX-10K. Click the Force Software Update option and then click the Update button in the lower right corner.

- **Hardware and Software Revisions** – This is where you go when someone from VIAVI asks what hardware or software revisions your unit has.
- **Software Options** – This screen provides a listing of all of the VIAVI software options aligned with the AVX-10K (and more). This will also reflect the activation level of the respective option (Enabled or Upgradeable).
- **Hardware Options** – This screen reflects the ID and Serial Number of the installed GPS Module.
- **Calibrations** – Simply shows last calibration date.
- **Position Format Setting** – This is a replicated setting from the ADS-B, GICB, and Traffic (Target Gen) setup screens that allows you to change the Latitude and Longitude format being used. e.g. “DD MM SS.SS”. This setting is globally reflected for all applications.
- **Home Screen** – This setting allows for enabling or disabling the top-level ribbons on the Home Screen. For instance, if you don’t have the ELT software option and you do not need to see it on the Home Screen, toggle ELT to off.
- **Automatic File Purge** – Having this option set to ON will help keep the file folders from filling up. This function works in conjunction with StrataSync™ so that whenever files are sent to your StrataSync™ account, they are removed from the AVX-10K file folder. You can also trigger a manual file purge from here to remove all reports.
- **Save Location** – This setting allows you to select where you want report files to be saved. They can be saved locally to the AVX-10K file folders or to a connected USB drive or to both, where applicable.
- **Restore Factory Defaults** – Resets all System and Application Settings back to factory defaults and allows for you to selectively delete all files in the file folders and clear international settings.
- **Power Off** – If you are tired of pressing the green button to turn the device off, you can come here and do the same thing. This will also allow you to automatically reboot after power off.
- **Template Management** – This allows you to Save (and name) / View / Delete / Load a template for all settings. The named template will appear in the top bar of the Home Screen once loaded.
- **Screen and Power Management** – These settings allow you to set the backlight, the backlight timeout and the power off delay.
- **Sounds** – Toggle Play Chime on Power Up/Down and control the associated volume.
- **Theme** – Changes the color scheme of the test set.
- **User Information** – Sets the user information. Some of this information is reflected in the reports.
- **Help** – Provides phone numbers, website and email contact for VIAVI support staff.

2.10. Establishing Network Connections

You can establish wired network and intranet connections, and wireless WiFi connections to your instrument to update the firmware, transfer files, synchronize to the StrataSync™ server, or control the instrument's user interface remotely.

Enable Network Connectivity

Before you establish a connection to an Ethernet or WiFi network, you must enable network connectivity on your instrument.

1. Go to the Tray menu.
2. Press the Network icon.
 - The icon will be green when connectivity is enabled.
 - Network connectivity is enabled.

2.10.1. Establish Ethernet Connection

You must have an Ethernet LAN cable to establish an Ethernet connection to your instrument.

1. Using an Ethernet cable, connect the instrument to the LAN:
 - Connect one end of the Ethernet cable to the AVX-10K Ethernet connector located on the side panel and connect the other end of the Ethernet cable to the LAN.
2. Verify that network connectivity is enabled.
3. Go to the **System** menu, then press **Network**. The System Network menu appears.
4. Select the **Ethernet** button at the bottom of the menu. Items appear that allow you to specify settings that are required to connect to the LAN.
5. Select **Network Mode** and then specify the network mode: **IPv4**, **IPv6**, or **IPv4/ IPv6 Dual Stack**. Depending on the Network Mode, you have one or more additional settings to specify.
6. Configure the instrument's IP settings to match the LAN settings by doing one of the following:

If you specified IPv4 as your network mode, specify the following settings:

IPv4 Address Mode

DHCP

Use Vendor ID – Enter your Vendor ID if your network requires a Vendor ID.

Use User Class – Enter your User Class if your network requires a User Class

Use Arp Announce – If required, enable Arp Announce to have the instrument do the Arp announce after the DHCP request.

Static

IPv4 Address – Enter the instrument’s IP address.

IPv4 Netmask – Enter the netmask address to indicate whether the packets are to be routed to other networks or sub-networks.

IPv4 Gateway – Enter the address for the gateway that is used to route packets that are not on the same subnet.

IPv4 DNS Server – Enter the address of the DNS server.

Shared – Share the IP from another interface (for the multi-interface mode).

If you specified IPv6 as your network mode, specify the following settings:

IPv6 Address Mode**DHCPv6****DHCPv6 Request Type**

Address – Specify the address.

Prefix – Specify the prefix.

Stateless**IPv6 DNS Address Mode**

DHCPv6 – No additional settings to specify.

Manual – Enter the IPv6 DNS Server address.

Static

IPv6 Global Address – Enter the instrument’s IPv6 address to access the global network.

IPv6 Local Address

Manual – Enter the IPv6 Local Address.

Automatic – The address is populated automatically.

IPv6 Subnet Prefix Length – Enter the subnet prefix length.

IPv6 Gateway – Enter the address for the gateway that is used to route packets that are not on the same subnet.

IPv6 DNS Address Mode

DHCPv6 – No additional settings to specify.

Manual – Enter the IPv6 DNS Server address.

If you specified IPv4/IPv6 Dual Stack as your network mode, specify the following settings:

IPv4/IPv6 Dual Stack Address Modes

Static – See the IPv4 Address Mode in this section.

Stateless – See the IPv6 Address Mode in this section.

7. Display the **Tray** menu, and then press **Network** to establish the connection. The instrument establishes an Ethernet connection to the LAN.

2.10.2. Establishing a WiFi Connection

The WiFi option allows you to establish a WiFi connection to a wireless network to 1) Synchronize your instrument to the StrataSync™ server, 2) Export reports, screenshots (using FTP), or 3) Update the firmware on your instrument.

Adding a WiFi Network Profile

If an access point does not broadcast its Service Set Identifier (SSID), you can manually create a profile for a WiFi network. Your instrument will save the profile, then automatically authenticate and establish a connection to the network if 1) network connectivity is enabled, 2) the network's access point is in range, and 3) the network is determined to provide the best available access point (based on signal strength and/or encryption supported).

The instrument can save up to 32 WiFi network profiles.



Your instrument will automatically save a profile after successfully connecting to a new WiFi network.

1. Verify that network connectivity is enabled.
2. Go to the **System** menu, then press **Network**. The System Network menu appears.
3. Select the **WiFi** button at the bottom of the menu. Your instrument immediately scans for WiFi networks and lists each network as an item.
4. Press Add Network. The Add WiFi Network menu appears.
5. Specify the following settings:
 - SSID** – The SSID (Service Set Identifier) of the WiFi network.
 - Password** – The password required to authenticate to the network. A password is not required if Key Management is set to None.
 - Key Management** – Open, WEP, or WPA/WPA2 Personal.
 - Network Mode** – IPv4, IPv6, or IPv4/IPv6 Dual Stack. Depending on the Network Mode, you have one or more additional settings to specify. For details, see those areas earlier in this section.
6. Return to the System Network menu. The network that you created a profile for is listed on the menu.

Connecting to a WiFi Connection

You can manually connect to any compatible WiFi network that is within range of your instrument, and for which you have authorized access (and a password for authentication).

1. Verify that network connectivity is enabled.
2. Go to System, then press Network. The System Network menu appears.
3. Select the WiFi button at the bottom of the menu. Your instrument immediately scans for WiFi networks and lists each network as an item.
 - A lock indicates that authentication is required to connect to a network.
 - Saved, In Range – A profile for the network has been saved on your instrument, and a connection can be established to the instrument.
 - Saved, Out of Range – A profile for the network has been saved on your instrument, but the network is out of range (and therefore, a connection cannot be established).
 - Incompatible – A connection cannot be established to a network.
 - Connected – The instrument has already established a connection to the network.

The instrument automatically connects to the network determined to provide the best available access point (based on signal strength and/or encryption supported).

4. If you want to connect to a different network, press the SSID of the WiFi network. A screen appears with items that allow you to specify advanced settings (profile settings), forget a saved network, or connect to the network.
5. Press Connect.
 - Messages appear briefly indicating the instrument is performing a four-way handshake, then authenticating to the network.
 - The status of the connection (Network Up), and details concerning the connection (IP address, netmask, gateway, and DNS server) appears at the top right of the menu.

The instrument is connected to the WiFi network.

2.10.3. Establishing a Bluetooth Connection

The Bluetooth® option allows communication with a paired mobile device.

Enable Bluetooth Connectivity

Bluetooth® functionality must be enabled on the device before a Bluetooth® connection can be established.

1. Navigate to the Bluetooth® panel (System Settings > Bluetooth® button).
 - The Bluetooth® panel is displayed.
2. Select the tick box to Enable Bluetooth®.
 - Bluetooth® connectivity is enabled.

Connecting to a Bluetooth Device

You can establish a connection to any Bluetooth® device that is within range of your instrument, and for which you have authorized access.

1. Go to the System Settings menu, then select Bluetooth®. The Bluetooth® Settings menu appears.
2. Press the box next to Enabled. A checkmark appears.
3. Press Scan for devices. The instrument scans for Bluetooth® devices, then lists the devices on the menu.
4. Select the device to connect.
 - If the instrument successfully authenticates to the device, a message appears indicating that pairing was successful.
 - If the instrument does not successfully authenticate to the device, a message appears indicating that pairing failed.

If pairing was successful, you can use the instrument with the paired device.

2.10.4. Synchronizing to the StrataSync™ Server

StrataSync™ is a hosted, cloud-based software application that provides VIAVI instruments with access to asset, configuration, and test-data management functions. StrataSync™ manages inventory, test results and performance data with browser-based ease and improves technician and instrument efficiency.

Features include the following:

- Tracking ownership of the AVX-10K test set
- Pushing configuration settings (templates) to the AVX-10K test set
- Receiving configuration settings from the AVX-10K test set
- Adding and/or removing software options on the AVX-10K test set
- Updating the software on the AVX-10K test set
- Uploading and storing of test reports, screen shots, and configurations

To obtain the latest configuration settings, software options and updates, and ownership registration information, the AVX-10K can synchronize with a VIAVI server via the Internet. The synchronization also stores any user files stored on the unit to the StrataSync™ server.

StrataSync™ synchronization should be performed often, as part of the instrument's operator level maintenance procedures to assure the latest firmware is installed.

To establish a StrataSync™ account refer to the Quick Start Guide for additional information and visit <https://www.viavisolutions.com/en-us/products/stratasync> and click the REQUEST AN ACCOUNT link.

Preliminary Step

Obtain or verify server settings with your company's IT organization.

Sync with StrataSync™

1. Specify the user information on the User Info menu.
 - A valid account ID must be entered in order to synchronize with the StrataSync™ server.
2. Open the System menu and select the StrataSync™ button. The StrataSync™ settings menu appears.
 - Specify the settings:

StrataSync™ Account ID - Enter the account identification number. Only change this if necessary.

StrataSync™ Tech ID/User ID- Enter the technician/user identification number.

Server Address - Enter the DNS address for the server. The default address is:

["https://stratasync.viavisolutions.com"](https://stratasync.viavisolutions.com)

Server Port - Enter the server port number. The default port is: 443

3. Select the Start button. As the process runs, the sync state is displayed on the screen.
 - Upon synchronization with the StrataSync™ server, the device will send the following information to the server:
 - The device's serial number.
 - The device's hardware information - assemblies and their revision levels.
 - The device's MAC address.
 - The device's User settings - name (user/technician) and ID.
 - Software update milestones (includes status and warnings, if applicable)

If the configuration information contained on the server is newer than the information on the unit, the server will be considered to be the most up-to-date.

- The server will then send any files to the unit being synchronized that it determines are newer than those on the unit.
- The device will then send any Reports, Configuration profiles, XML results, screen shots, etc. that have been saved on the unit since the last configuration.
- The server then applies any applicable Options to the device.
- If any upgrades are available, the user will be informed of the update availability and offered the choice to upgrade.
- When synchronization is complete, the Status will indicate "Sync Complete". The device may be disconnected from the server.

2.10.5. Updating Test Set Software

StrataSync™ Update Procedure

1. From the StrataSync™ account, select “Update Firmware” from the Assets Menu and click the rocket ship icon next to the version of the software to install.

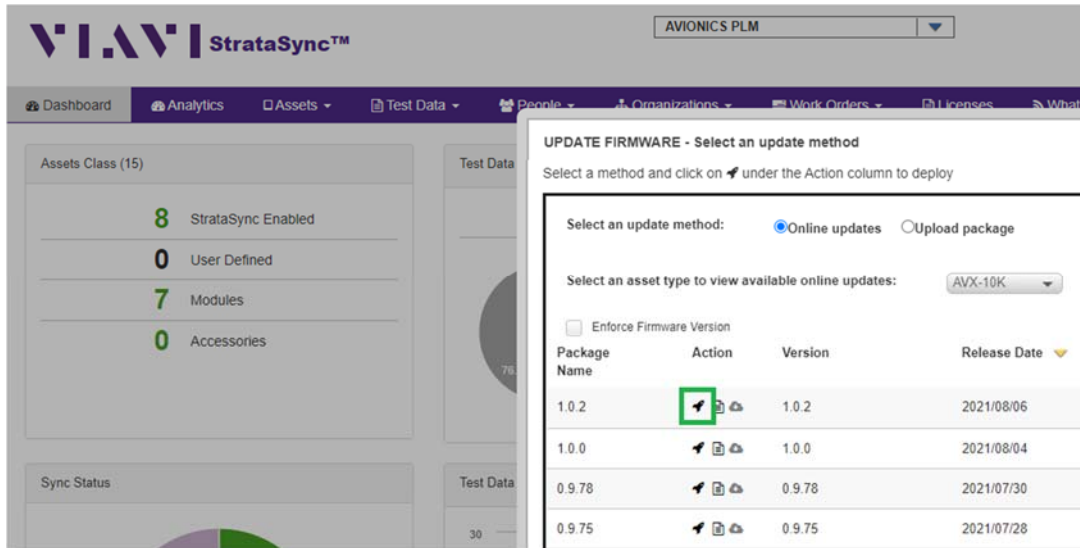


Figure 16: StrataSync™ Update

2. Locate the test set (or test sets) that you would like to update and click the box in the left-most column and “YES” on the next screen to proceed.
3. Then from the AVX-10 test set that has been targeted for update, select the START button from the StrataSync™ page. Follow the prompts to finalize software update. The unit will shutdown after the update is complete.

USB Update Procedure

**NOTE**

Disconnect Ethernet cable connections before proceeding with the software update.

1. Navigate to the AVX-10K product page <https://www.viavisolutions.com/en-us/products/avx-10k-flight-line-test-set#overview> and download software to a USB device.
 - a. Software must be loaded onto a FAT 32 USB Flash Drive.
 - b. Download file to USB device.

**NOTE**

Only one version of software may reside in the root directory of the Flash Memory stick.

2. Connect the AVX-10K test set to the AC charger adapter to ensure an uninterrupted supply of power during the update.
3. Connect the USB device to one of the AVX-10K's test set USB Connectors.
 - The device will auto-detect the USB drive.
4. Navigate to the USB Software Update page (System Settings > USB Software Update).
5. Select the desired firmware file on the USB drive.
6. Press the Update button to start the upgrade. At prompt, press Update again to confirm.

3. Test Application Common Settings / Steps

3.1. Antenna Setups

3.1.1. Direct with Coupler



This is one of the more common test setup methods where the AVX-10K RF I/O port is cabled to a coupler which is then mounted over or clamped to an antenna. When using this setup, the cable loss as well as the coupler loss must be considered. These values can be entered in the Setup tab.

3.1.2. Over the Air



The AVX-10K can also be used to test the onboard equipment using the over-the-air test setup. When using this setup, the antenna gain, the height of the antenna and the distance from the antenna must be considered. These values can also be entered in the Setup tab. The antenna gain values can be found on the label of the antenna.



Caution: Testing over-the-air with ADS-B transponder turned on can cause interference with ATC and nearby aircraft. Utilize antenna couples and proper shielding where applicable and refer to SAFO 17002 and follow proper procedures to avoid.

3.1.3. Direct to UUT

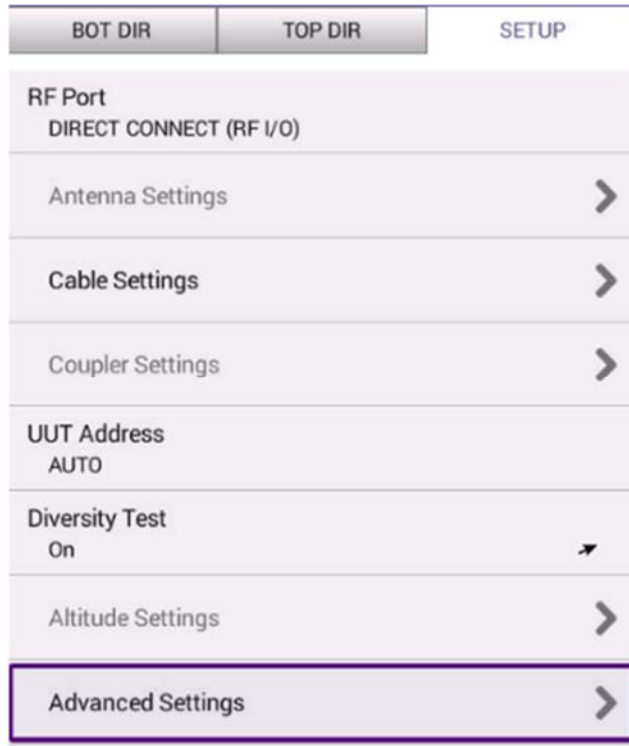


On occasion, the AVX-10K may need to be directly connected to the UUT bypassing the antenna and cabling. When using this setup, only the cable loss will factor into the setup parameters.

3.2. Common Setup Parameters

There are settings that are duplicated across many applications within the AVX-10K. This section will detail those common settings of applicable test applications from the SETUP tab. These include:

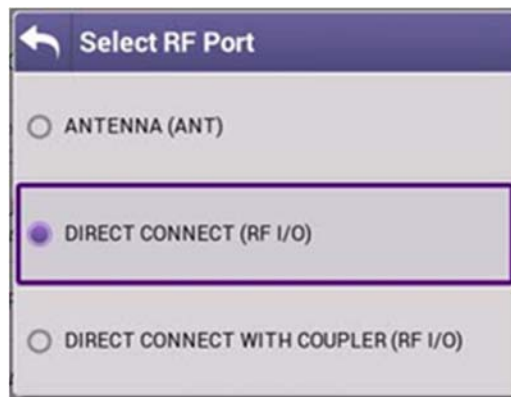
- “RF Port” (Antenna, Direct Connect, Direct Connect with Coupler)
- “Antenna Settings” (Range, Height, Gain [1.03 GHz, 1.09 GHz])
- “Cable Settings” (Cable Length, Cable Loss)
- “Coupler Settings”
- “UUT Address”
- “Position Settings” (Entry Method, Latitude, Longitude, Format)
- “Advanced Settings” (Check All UUT Capability, Verify Unit Setup Configuration)



All application-specific settings will be discussed in the associated application sections below.

3.2.1. RF Port

There are three methods for any typical test setup: Direct Connect with Coupler (RF I/O), Antenna (over-the-air), and Direct Connect. The RF Port setting allows you to select the test method.



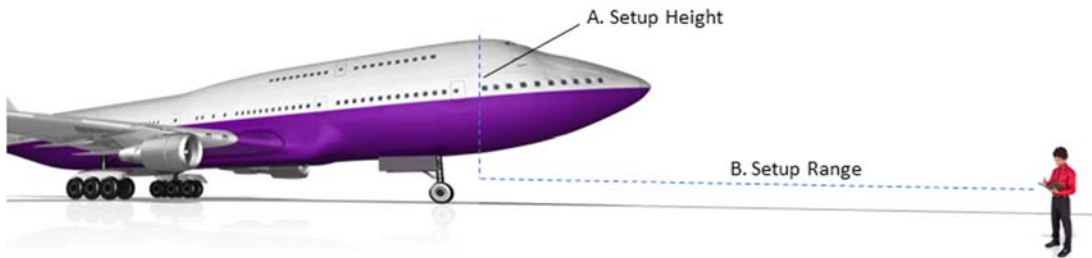
3.2.2. Antenna Settings

When ANTENNA is selected as the RF Port in use, applicable settings will become active. Set Top and Bottom Antenna Range and Height in accordance with the figure below. Values can be selected by scrolling the vertical bar or using the plus and minus keys.

- ▶ Top and Bottom settings are both available only when Diversity Test (an application-specific setting) is ON. Otherwise, only Bottom Antenna settings will be available.



Figure 17: Antenna Settings.



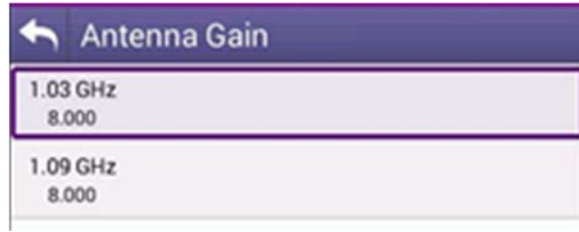
Testing Top Antenna



Testing Bottom Antenna

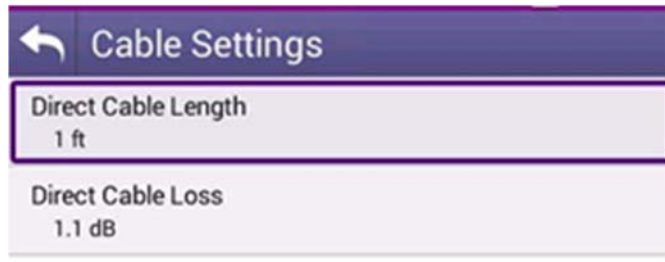
NOTE: When deselecting, terminating or shielding the top antenna is not possible or practical, use setup positions that has aircraft blocking line of site to top antenna

Set Antenna Gain values for 1030 MHz and 1090 MHz located on the back of the RF flat panel antenna. t



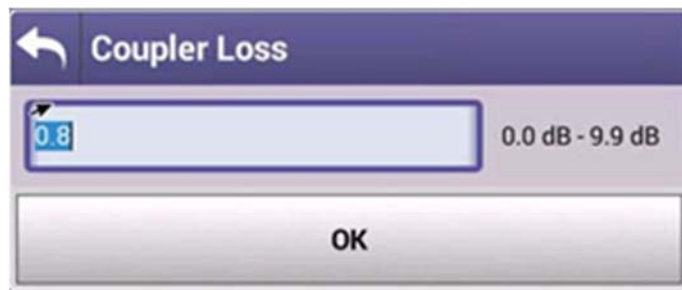
3.2.3. Cable Settings

The Cable Settings will be enabled when Direct Connect or Direct Connect with Coupler are selected as the RF Port setting. Setting the Cable Length will drive an estimated cable loss. If exact cable loss is known, entering the value will override the provided estimate.



3.2.4. Coupler Settings

Coupler Settings will be enabled if Direct Connect with Coupler is selected as the RF Port setting. Enter the loss of the coupler being used. These values should be listed on the coupler label.

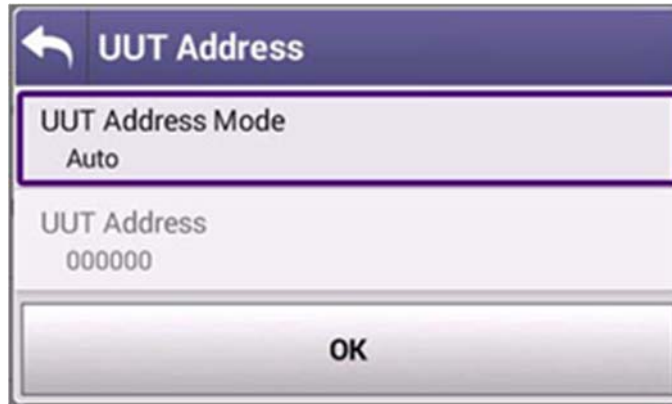


3.2.5. UUT Address

For transponder related tests, the Unit Under Test (UUT) Address can be set to Auto or Manual. If set to Manual, you may enter the 6-character Hexadecimal address of the device being tested. When set to Auto, the test will interrogate the UUT and use the address in the reply as the UUT Address.

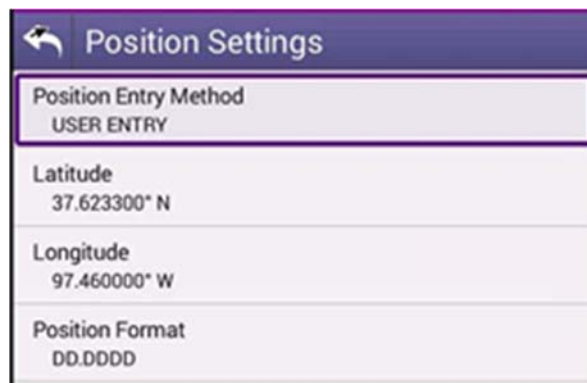
Note – for the UUT to respond to a MODE S all-call, the aircraft must be in the airborne condition.

Manual mode is used to target a specific aircraft under test when the aircraft under test is being tested while on the ground or in a multi-path environment.



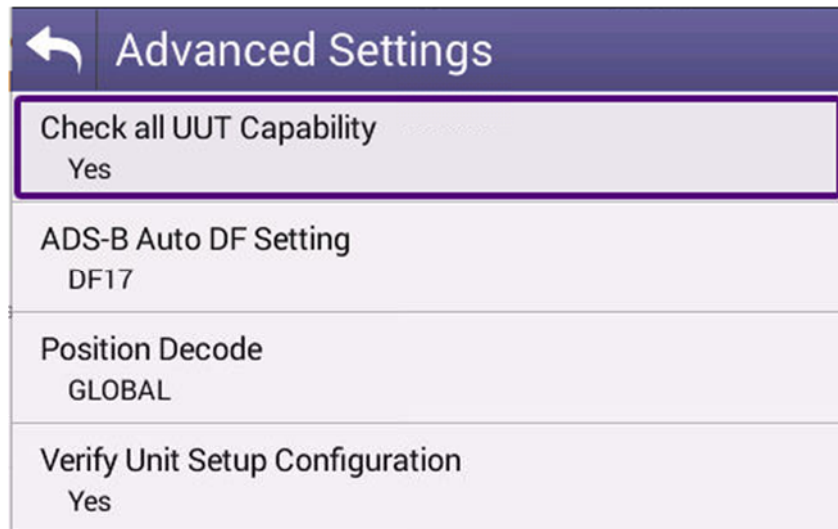
3.2.6. Position Settings

This setting allows you to set the position used for ADS-B and TCAS related testing. You can select USER ENTRY or VIA GPS RX. The GPS Receiver will allow you to use your local position. If needed, you can obtain your position using the GPS RX functionality of the AVX-10K. GPS Position Format can be set to be displayed in Degrees, Degrees Minutes, or Degrees Minutes Seconds.



3.2.7. Advanced Settings

- **Check All UUT Capability** – for Transponder and ADS-B applications, all test parameters the UUT is capable of will be tested. This is typically always set to Yes.
- **ADS-B Auto DF Setting** – Choose DF17 (typical – for Mode S transponders) or DF18 (1090MHz emitters)
- **Position Decode** – Choose Global (most common, decodes two consecutive squitters to determine position) or Local (uses one squitter and entered GPS LAT/LON position to determine position)
- **Verify Unit Setup Configuration** – when set to YES, this will cause a pop-up screen to appear after the RUN button is selected, allowing the user to verify the AVX-10K is set up correctly prior to running the test. Setting this to NO will disable this popup screen.



3.3. Managing Files / Reports via USB and StrataSync™

3.3.1. Saving Reports

After running a test or collecting monitored information, press SAVE to access the Save Test screen.

The Test Name can be overwritten or used as provided and Saved locally by selecting the Save button. The Job ID field is an open comments field that can be used for report filtering and within the StrataSync™ application. Work Order ID is not used for this application.

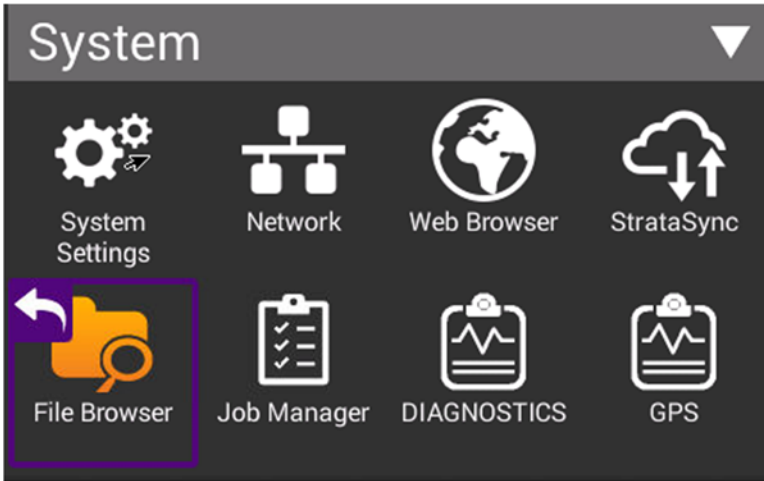
Reports can then be saved onto a USB stick or sync'd with the StrataSync™ application.

3.3.2. File Management

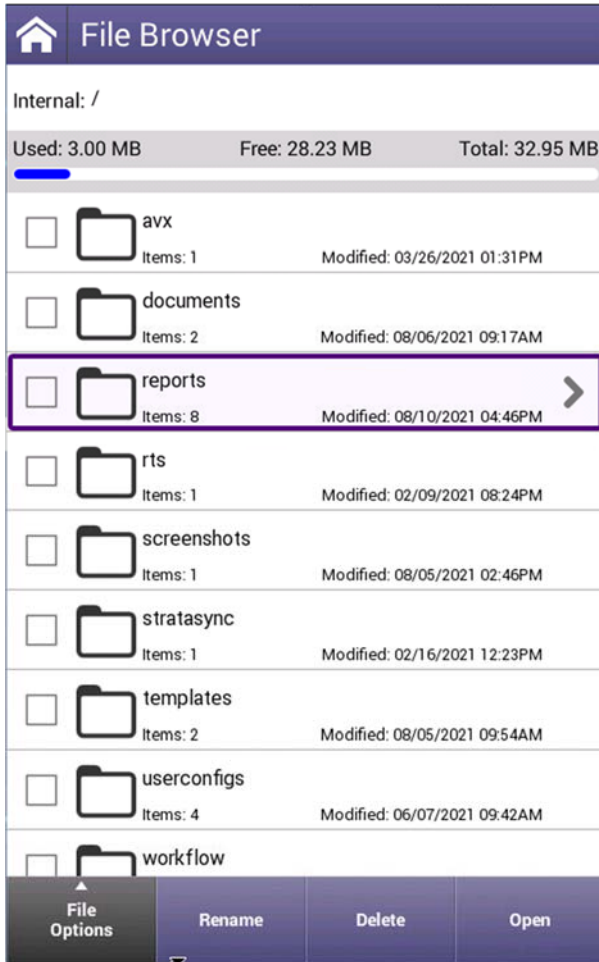
The AVX-10K file browser is used to open, rename, copy, or delete saved test result files, screen shots, or other files stored on the device.

Open the File Browser

Expand the System ribbon and select the File Browser icon.



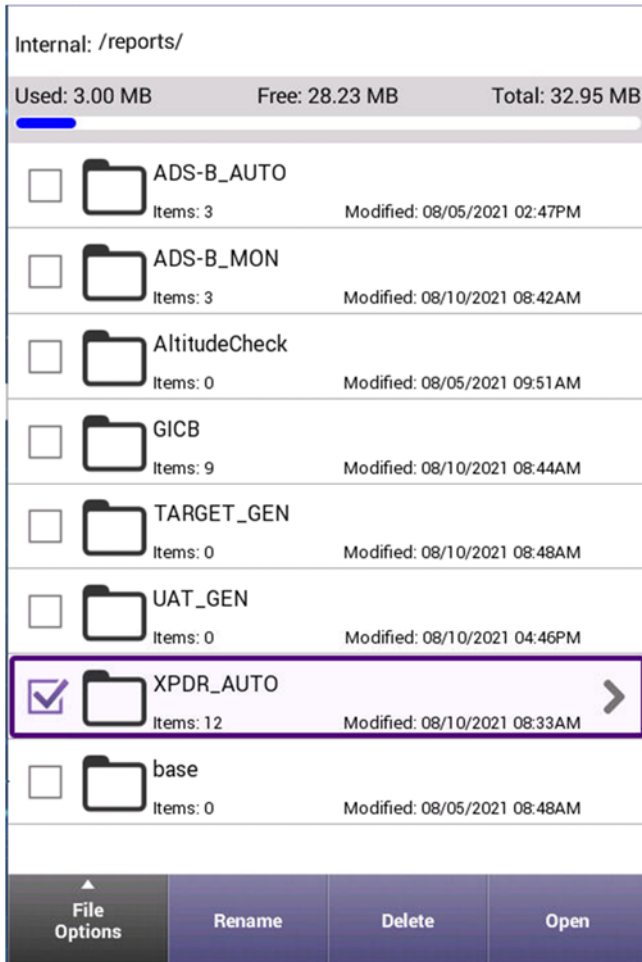
Use the up and down arrow keys to navigate folders or files.



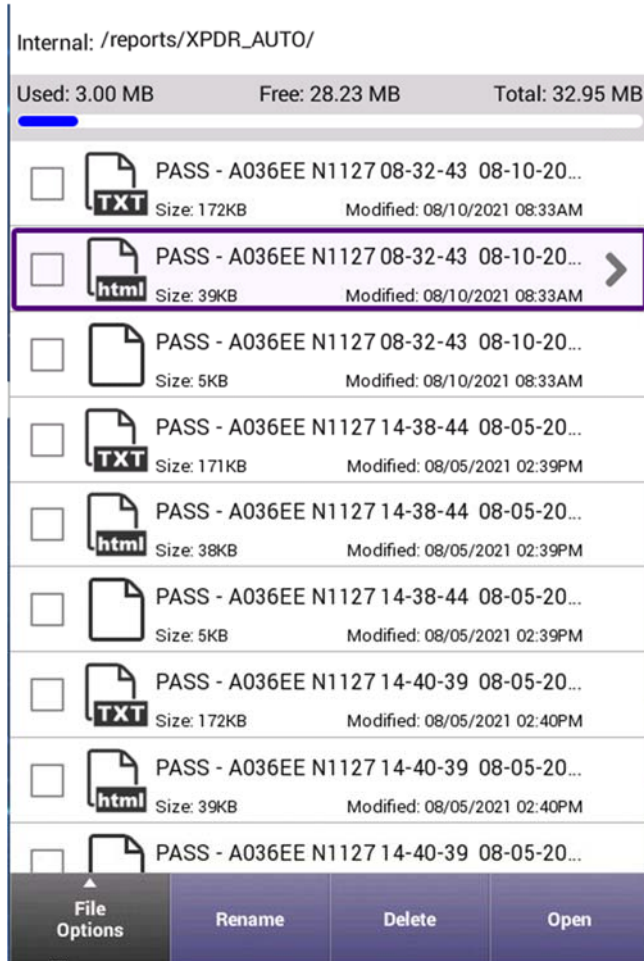
Opening a File or Folder

You can open a folder using any of the following:


- Check the box next to the folder and select Open at the bottom of the page
- Tap anywhere on the folder field you wish to open
- Using the up/down arrow keys and the OK button



Once opened a list of test results are shown in TXT, html and .json formats.



TXT and .json formats can be exported and formatted by users for report generation in supporting programs. html format is readable on the device as shown below and as a downloaded file / test report. Note – in the tray there is a View Reports icon where all html reports can also easily be viewed on the device.


 PASS - A036EE N1127 08-32-43 08-10-2021.html

Test Report

Date	8/10/2021, 1:30:03 PM (UTC-05:00)
Tech ID	kc01
Work Order	default
Test Status	PASS
Address	A036EE
Tail	N1127
Job ID	dhsquitterfix

AC DECODER SLS

Result	Bot Value	Top Value
DecoderA Inner Low	PASS	N/A
DecoderC Inner Low	PASS	N/A
DecoderA Inner High	PASS	N/A
DecoderC	PASS	N/A

Copy Files or Folders

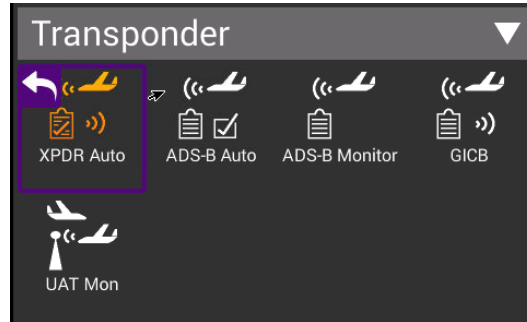
1. Open the File Browser.
2. Select a file or folders. Multiple folders can be selected for download by checking the box next to the folder (for example, to copy multiple files to USB, or upload multiple files using FTP/HTTP).
3. Press the **File Options** system key, and then perform one of the following:
 - Select **Copy**, navigate to another folder or drive, press the **File Options** system key, and then select **Paste**.
 - Select either **Copy to USB** if you are using File Browser or **Copy to Internal** if you are using the USB File Browser.
4. The file is copied and the File Browser menu appears.

Upload Files

1. Open the File Browser.
2. Select a file or folder.
3. Press the **File Options** system key, and then select **Upload FTP/HTTP**.
 - The Upload settings appear.
4. Specify the Upload URL, Username, and Password.
5. Select and press the Apply button to start the upload.
 - When the upload finishes, a message appears stating that the selected files were uploaded.
6. Press OK to close the dialog window.

4. Transponder

4.1. XPDR Auto



4.1.1. Unique Setup

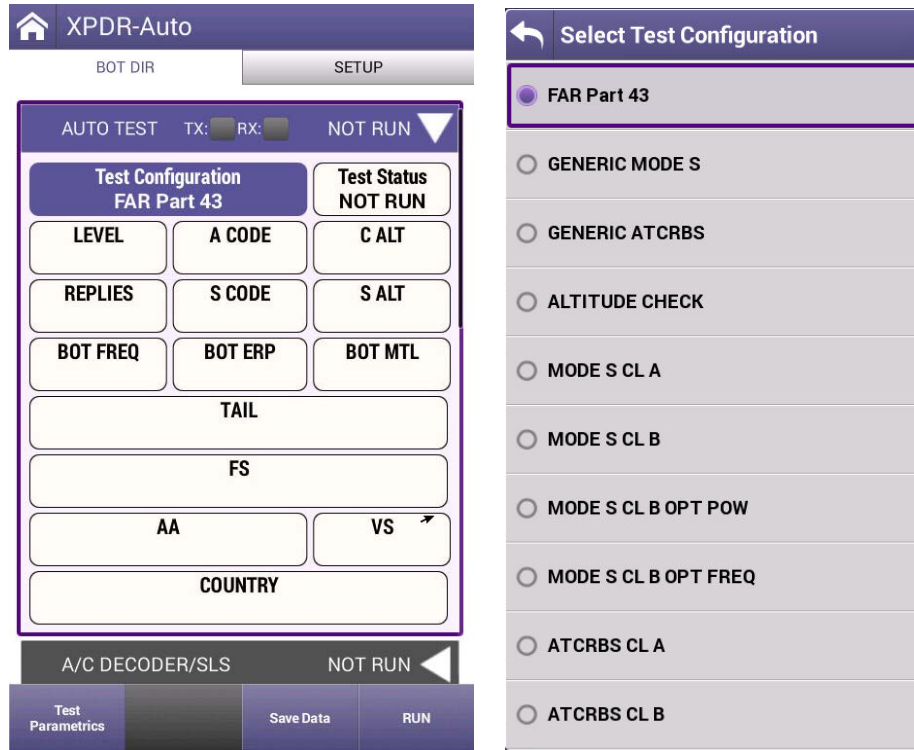
Refer to Chapter 3 for common setup items.

Setting	Definition
Diversity (on, off)	Set to 'On' to test both top and bottom antennas for a diversity system and Diversity Isolation Test
Advanced – RAD47	An Australian directive for civil aviation where the reply pulse width is between 0.35 to 0.55 us and amplitude variation (droop) is not greater than 1dB. Set to ON if applicable.

4.1.2. Run Transponder Auto Test

With the Transponder AUTO TEST ribbon expanded, you will see that the Test Configuration Box is shaded identifying it as an active field. By selecting this, it will show all available test configurations. Select desired test from the provided list.

▶ Transponder class and option identification are found on the transponder’s TSO label.



Configuration	Description
FAR Part 43	Runs only the tests associated with FAR Part 43 Appendix F as required by 91-413 test requirements
GENERIC MODE S	Tests Mode S transponders, specifically when the class of the transponder is unknown plus this test includes test requirements like EHS/ELS in addition to the FAR Part 43 Appendix F test.
GENERIC ATCRBS	Tests ATCRBS transponders, specifically when the class of the transponder is unknown.
ALTITUDE CHECK	Allows for altitude testing for up to 25 altitude settings.
MODE S CL A	Tests Mode S Class A transponders.
MODE S CL B	Tests Mode S Class B transponders.
MODE S CL B OPT POW	Tests Mode S Class B transponders equipped with Class A power option.

Configuration	Description
MODE S CL B OPT FREQ	Tests Mode S Class B transponders equipped with Class A frequency tolerance option.
ATCRBS CL A	Tests ATCRBS Class A transponders.
ATCRBS CL B	Tests ATCRBS Class B transponders.



At the bottom of the page you will see the Test Parametrics button.

By selecting this you will see the predefined limits applied to ERP, Frequency and MTL measurements for the test configuration selected.

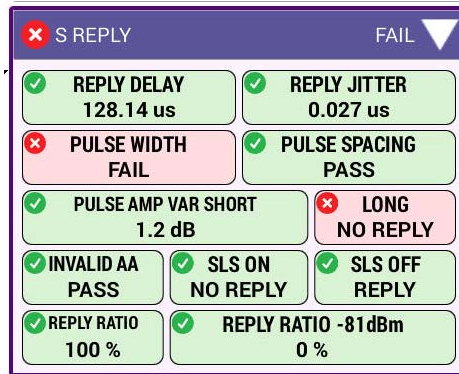
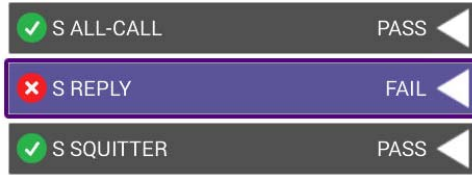
PARAMETRICS	
Config: FAR Part 43	
Level: ?	
TRANSMIT POWER	48.5 - 57.0 dBm
RECEIVER MTL	-74 +/- 3 dBm
TX FREQ	1090 +/- 3.0 MHz

To run a complete test, select the Run button.

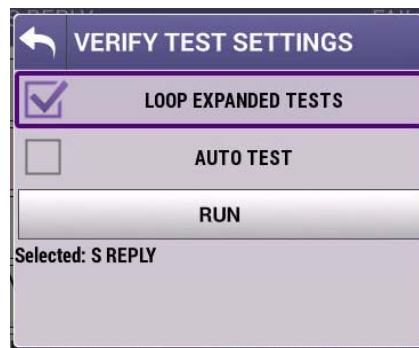
Once the test completes, the contents of the top summary ribbon will display pass/fail results.

AUTO TEST TX: RX: 100 %	
CONFIG FAR Part 43	
✓ Test Status PASS	
✓ LEVEL 1	✓ A CODE 1200
✓ REPLIES A,C,S	✓ S CODE 1200
✓ BOT FREQ 1090.19 MHz	✓ BOT ERP 53.7 dBm
✓ C ALT 30500 ft	✓ S ALT 30500 ft
✓ BOT MTL -73.8 dBm	
✓ TAIL N*****	
✓ FS 0-NO ALERT, NO SPI, IN AIR	
✓ AA AE1006	✓ VS 0-IN AIR
✓ COUNTRY United States	

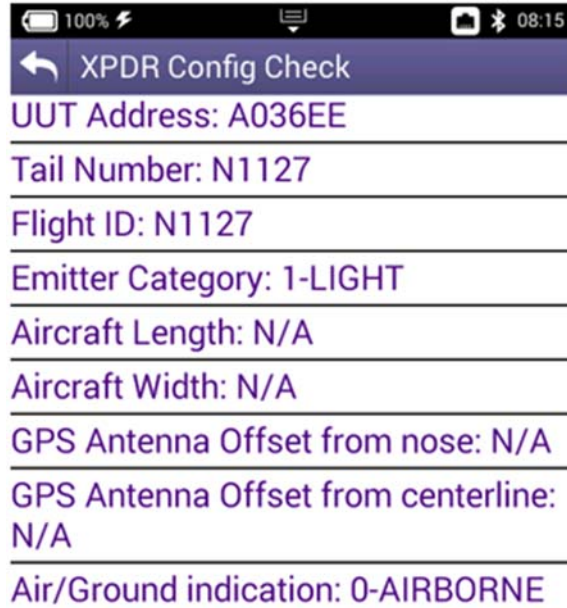
If any of the tests fail, you can open the associated ribbon to see the resultant failure.



If any of the individual test ribbons are expanded and the Run button is selected, you will be asked if you want to loop on that specific expanded ribbon test, which will also include all expanded ribbons, or run a complete test. The expanded test options are listed below the RUN button.



After test completion, you can select the XPDR Config Check button to display specific decoded transponder configuration settings to ensure proper setup of the transponder under test. This is a beneficial tool for user verification of transponder configuration. For transponder configured fields, the AVX-10K only displays the decoded data and cannot determine PASS/FAIL criteria for these fields.

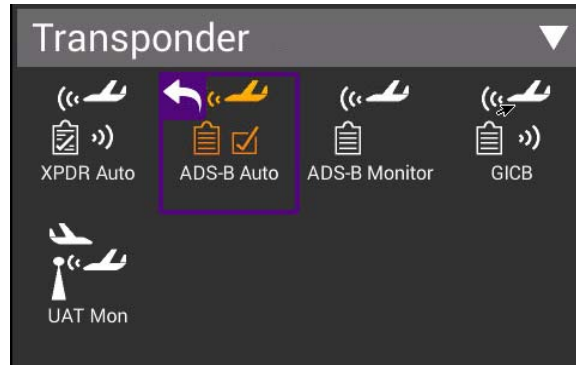


4.1.3. Common Test Results

Test Status Indication	Description
NOT RUN	RUN button has not yet been pressed
NO REPLY	UUT has not yet provided the information. UUT may be in ground state and will not reply to Mode S All Call. Transponders only replies to discrete interrogations when in ground state.
NOT CAPABLE	Test will not be ran as the UUT is not able to provide this information
PASS	Test concluded. PASSED.
FAIL	Test concluded. FAILED.

If you choose to save your test results, please refer to Chapter 3 for managing reports.

4.2. ADS-B Auto



4.2.1. Unique Setup

Refer to Chapter 3 for common setup items.

The screenshot displays the 'ADS-B Auto Test' configuration screen. It features tabs for 'AIRBORNE', 'SURFACE', and 'SETUP'. The 'SETUP' tab is active, showing various configuration options. A purple box highlights the 'Advanced Settings' option at the bottom of the list. An inset window titled 'Advanced Settings' is also shown, containing the following items:

- Check all UUT Capability: Yes
- ADS-B Auto DF Setting: DF17
- Position Decode: GLOBAL
- Verify Unit Setup Configuration: Yes

Setting	Definition
Barometric Altitude Reference	Set to 'YES' and enter test altitude for comparison to transponder reported barometric altitude
Test Type	Allows selection between AC20-165 FAA Advisory Circular for testing ADS-B installed systems and CS-ACNS applicable EASA requirements
Test Type > Aircraft Separation	If CS-ACNS test type is selected, select either 3 NM or 5 NM separation value.
Advanced – ADS-B Auto DF Setting	Choose DF17 (typical – for Mode S transponders) or DF18 (1090MHz emitters)
Advanced – Position Decode	Choose Global (most common, decodes two consecutive squitters to determine position) or Local (uses one squitter and entered GPS LAT/LON position to determine position)

4.2.2. Run ADS-B Auto Test

The ADS-B Auto test is a combination of Airborne and Surface testing. Once the test setup parameters have been entered, and with the Aircraft under test in the airborne state, move to the Airborne screen, and select the RUN key.

The screenshot shows the 'ADS-B Auto Test' application interface. At the top, there are three tabs: 'AIRBORNE' (selected), 'SURFACE', and 'SETUP'. Below the tabs, the status bar reads 'AC 20-165 AIRBORNE TX: [] RX: [] NOT RUN'. The main area contains several buttons for test parameters: LATITUDE, LONGITUDE, POSITION ERROR, NIC, NACP, NACV-HORIZONTAL VEL ERROR, E-W VELOCITY, N-S VELOCITY, ADS-B BARO ALT, GNSS ALT, XPDR BARO ALT, ALTITUDE ERROR, SIL, SDA, TCAS OP, and RA ACTIVE. At the bottom, there are two buttons: 'Save Data' and 'RUN'.

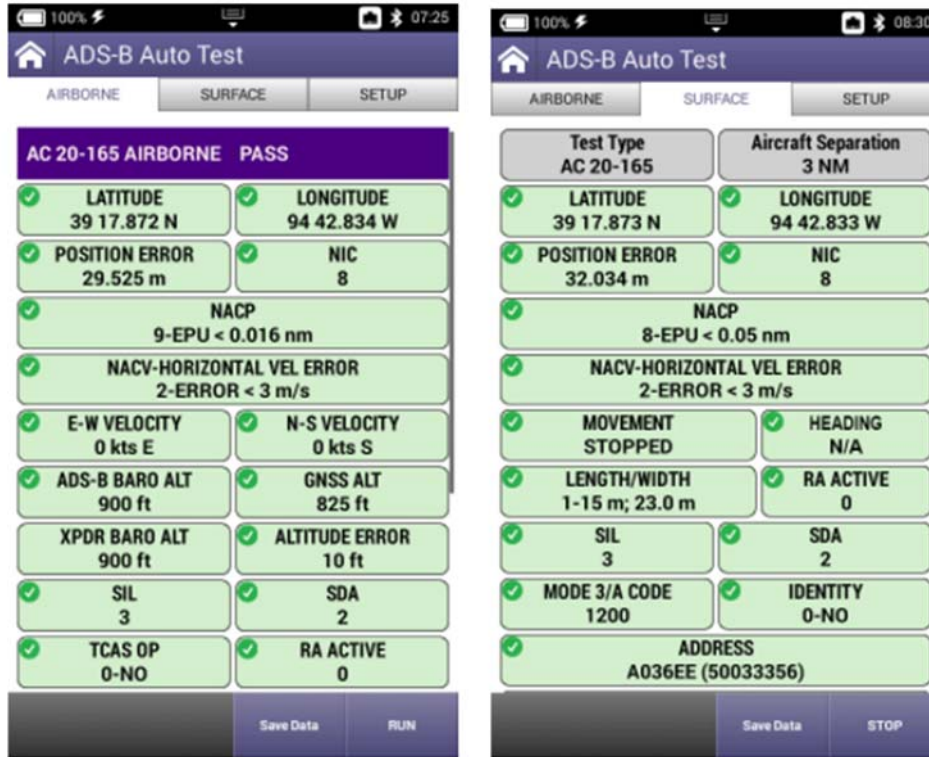
Once the Airborne tests have completed, move to the Surface screen, set the aircraft under test in the surface mode (weight on wheels) and select the Run button.

The screenshot displays the 'ADS-B Auto Test' application interface. At the top, there is a navigation bar with three tabs: 'AIRBORNE', 'SURFACE', and 'SETUP'. The 'SURFACE' tab is currently selected. Below the navigation bar, a status bar shows 'AC 20-165 SURFACE TX: [off] RX: [off] NOT RUN'. The main area contains several input fields for test parameters:

- LATITUDE
- LONGITUDE
- POSITION ERROR
- NIC
- NACP
- NACV-HORIZONTAL VEL ERROR
- MOVEMENT
- HEADING
- LENGTH/WIDTH
- RA ACTIVE
- SIL
- SDA
- MODE 3/A CODE
- IDENTITY
- ADDRESS

At the bottom of the screen, there are two buttons: 'Save Data' and 'RUN'.

Once the testing completes successfully, the screens will look similar to this:



If you choose to save your test results, please refer to Chapter 3 for managing reports.

4.3. ADS-B Monitor

The AVX-10K provides flight line test capability for receiving (ADS-B Monitor mode), decoding and displaying full ADS-B DO-260/A/B DF17/DF18 extended squitter transmissions from Mode S transponders or DF18 extended squitters from 1090 MHz emitters.

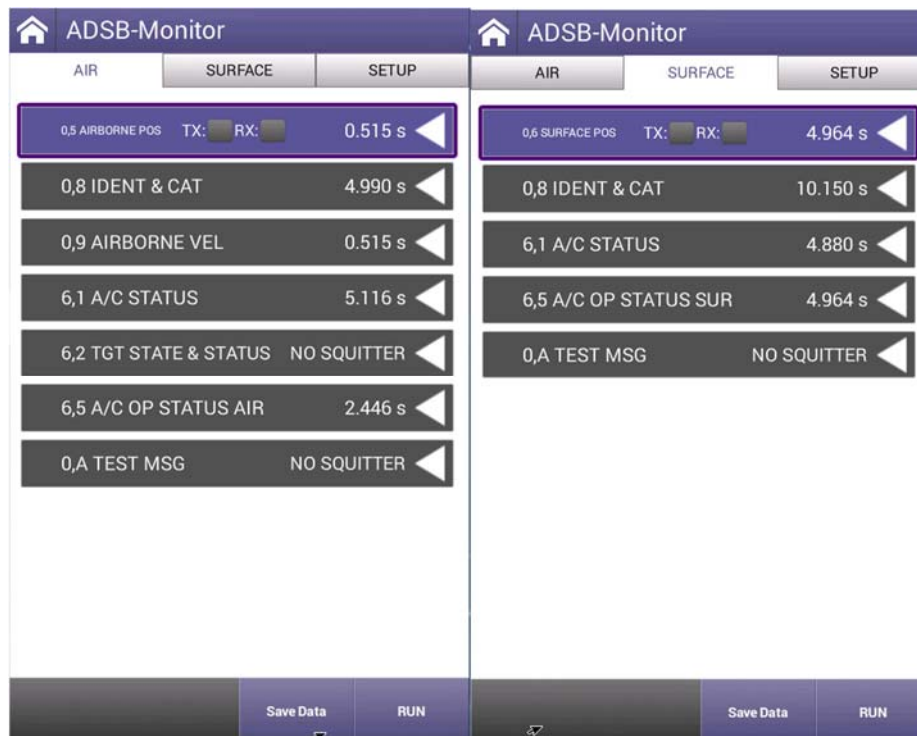
4.3.1. Unique Setup

Refer to Chapter 3 for common setup items.

Setting	Definition
Advance – ADS-B Auto DF Setting	Choose DF17 (typical – for Mode S transponders) or DF18 (1090MHz emitter)
Advance – Position Decode	Choose Global (most common, decodes two consecutive squitters to determine position) or Local (uses one squitter and entered GPS position to determine position)

4.3.2. Run Monitoring

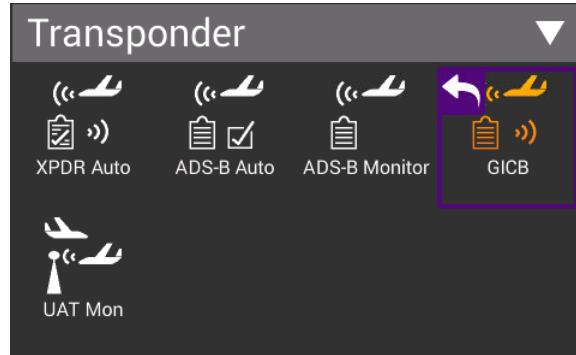
To monitor airborne or surface ADS-B messaging, press the associated tab and press the RUN key. For surface message monitoring, ensure that the test aircraft is in surface mode (weight-on-wheels is set to on).



If you choose to save your results, please refer to Chapter 3 for managing reports.

4.4. GICB

GICB mode fully decodes and displays all Enhanced Surveillance BDS register contents.



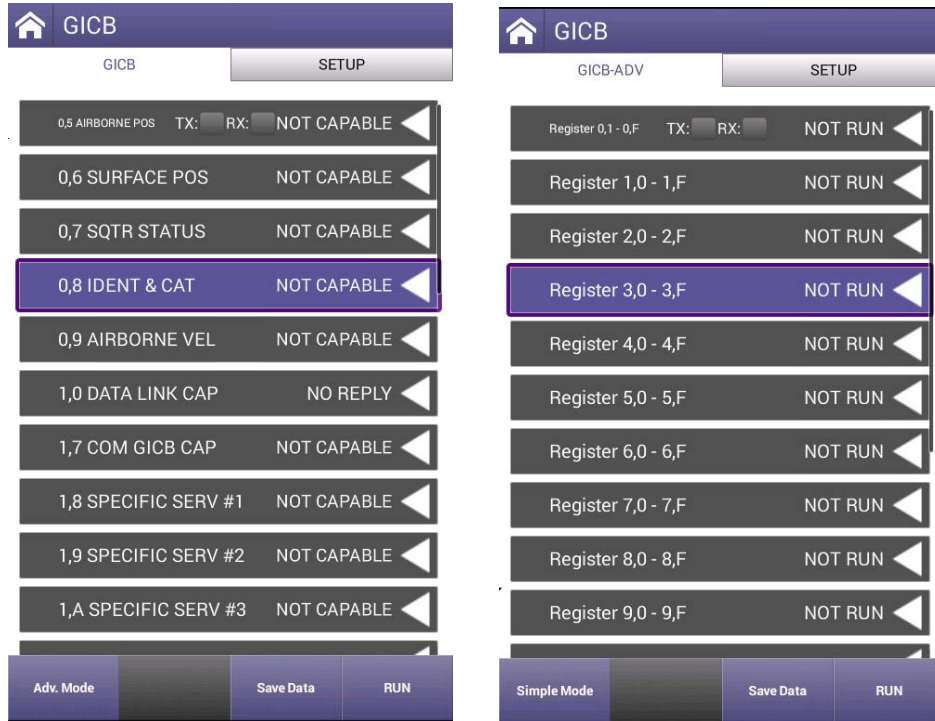
4.4.1. Unique Setup

Refer to Chapter 3 for common setup items.

Setting	Definition
Advance – GICB Downlink Format	Choose DF20 or DF21
Advance – Position Decode	Choose Global (most common, decodes two consecutive squitters' to determine position) or Local (uses one squitter and entered GPS position to determine position)

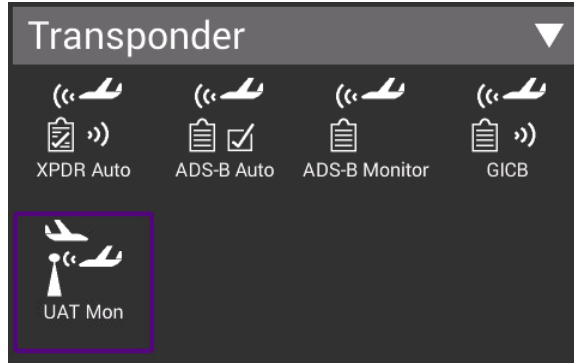
4.4.2. GICB Monitoring

The default mode (Simple Mode) will query for common GICB register values. Toggle the mode by pressing the Simple Mode key and the test set will query for all GICB registers (Adv. Mode).



If you choose to save your results, please refer to Chapter 3 for managing and viewing reports.

4.5. UAT Monitoring



4.5.1. Unique Setup

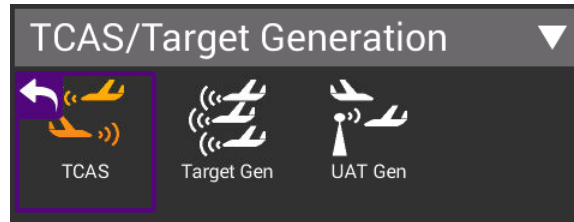
Reserved for future use.

4.5.2. Run UAT Monitoring

Reserved for future use.

5. TCAS / Target Generation

5.1. TCAS



5.1.1. Unique Setup

Refer to Chapter 3 for common setup items. The following unique setup parameters are found on the SETUP tab for the TCAS application.

Setting	Description
Test Set Address	Enter a 6-digit Hexadecimal address other than the address of the unit under test.
Squitters	Toggles between ON and OFF
Altitude Reporting	Toggles between ON and OFF
Display Altitude	Toggles between RELATIVE and ABSOLUTE

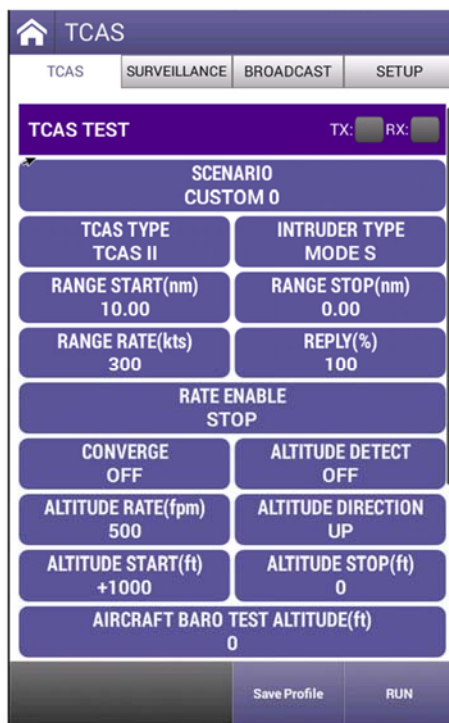
The main screen of the TCAS application also has a number of configurable parameters. These configurable fields have a blue background.

Setting	Description
Scenario	Allows for selection of predefined scenarios and a provision for saving custom scenarios. When one of the predefined scenarios are selected, all the following parameters will be loaded with values.
TCAS Type	Select between TAS, TCAS I or TCAS II to emulate
Intruder Type	Toggles between ATCRBS and MODE S type of transponder to emulate
Range Start (nm)	Enter a value between 0 and 260 nautical miles
Range Stop (nm)	Enter a value between 0 and 260 nautical miles

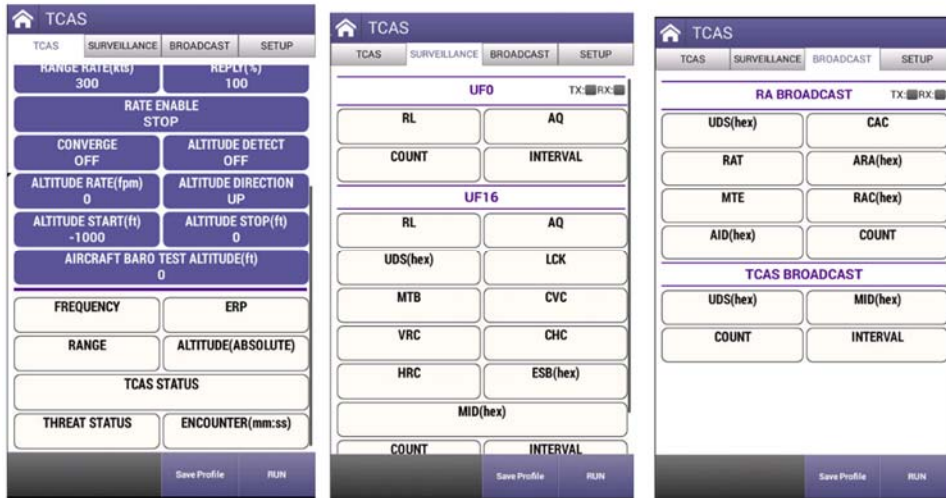
Setting	Description
Range Rate (kts)	Enter a value between 0 and 1200 knots (closure rate)
Reply (%)	Enter a value between 0 and 100% for reply rate
Rate Enable	Toggles between STOP and RESUME
Converge	Toggles between OFF and ON.
Altitude Detect	Toggles between OFF and ON.
Altitude Rate (fpm)	Enter a value between 0 and 10000 feet per minute
Altitude Direction	Toggles between UP and DOWN
Altitude Start	Enter a value between -1000 and 126700 feet
Altitude Stop	Enter a value between -1000 and 126700 feet
Aircraft Baro Test Altitude	Enter a value between -1000 and 126700 feet. This is the altitude of the UUT.

5.1.2. Run TCAS Scenario

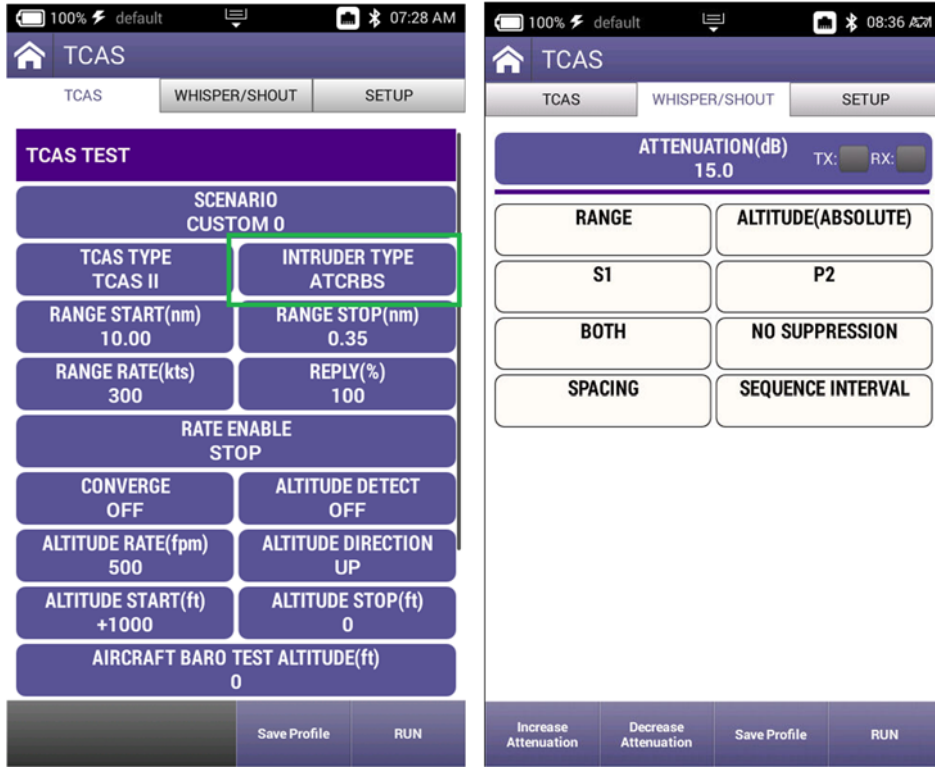
This application will allow you to set up one dynamic intruder for TCAS testing. You can select from one of the provided scenarios listed or create one of your own and save it as a custom scenario for later recall. Any of the fields with a blue background are editable.



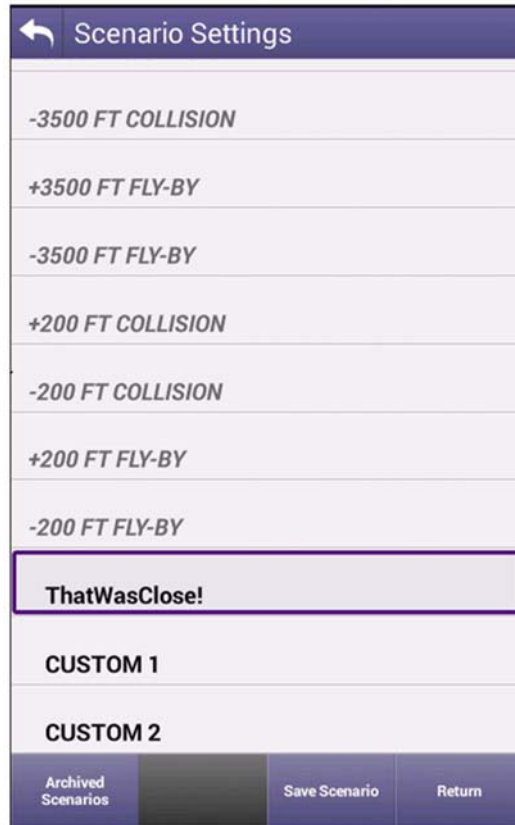
Press the RUN button to start generating the scenario. While running the fields with the white background shown here will be updating and will turn to a green background. You can click on the tabs or swipe right to view the additional data.



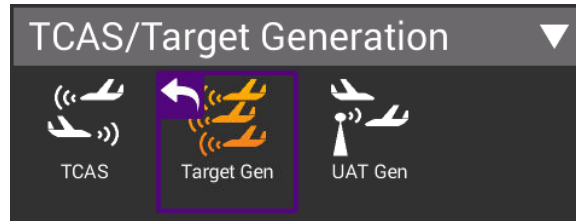
When the intruder type is toggled to ATCRBS as shown below, the SURVEILLANCE and BROADCAST tabs are replaced by the WHISPER/SHOOT tab where you can increase or decrease attenuation by pressing the associated buttons.



If you created a new profile, you may choose to save for later use by pressing the Save Profile button, selecting one of the custom fields and then pressing the Save Scenario button.



5.2. Target Gen



5.2.1. Unique Setup

Refer to Chapter 3 for common setup items. For the Target Generation application, there are no unique settings in the SETUP tab, however, the main screen of the TARGET GEN application has a number of configurable parameters. These configurable fields have a blue background.

Aircraft Under Test Setting	Description
Target Type	Select between ADS-B, ADS-R and TIS-B
ADS-B Type	Toggles between AIRBORNE and SURFACE and only available when Target Type is set to ADS-B
Latitude	Set to Latitude of UUT
Longitude	Set to Longitude of UUT
Heading	Enter a value between 0 and 359 degrees
Altitude	Enter a value between -1000 and 126700 feet

Target Settings (repeated for five targets)	Description
Flight ID	Enter up to eight characters
Aircraft Address	Enter up to 6 hexadecimal characters
Bearing	Enter a value between 0 and 359 degrees to define the bearing in relation to the UUT.
Range	Enter a value between 0 and 40 nautical miles to define the distance from UUT.

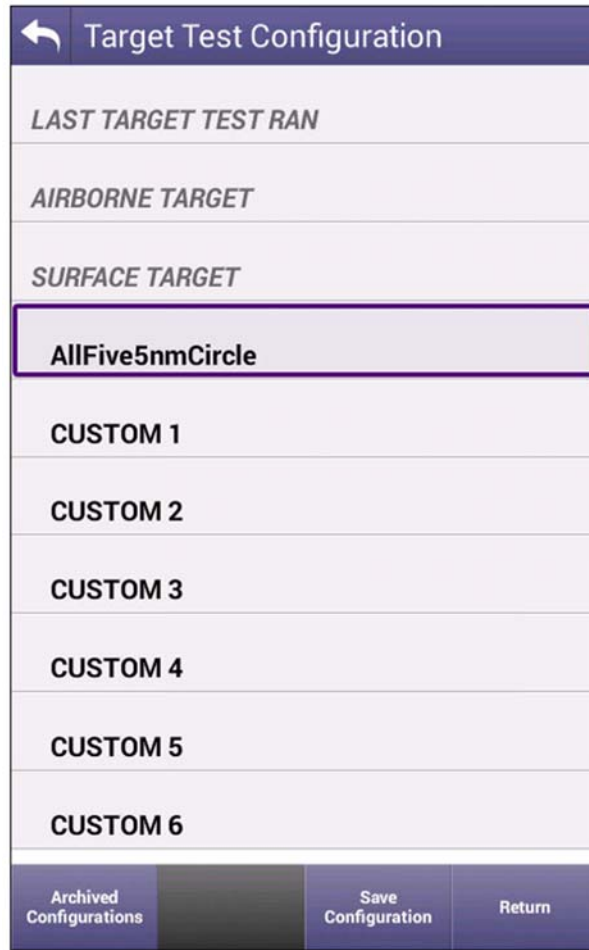
Altitude	Enter a value between -3500 and 3500 feet to define the vertical distance from the UUT.
Altitude Rate	Select between CLIMB, LEVEL, DESCEND

5.2.2. Run Target Gen

This application will allow you to set up to five static intruders for testing of ADS-B In Receivers. Any of the fields with a blue background are editable. The data in the Target settings are referenced from the Aircraft Under Test. Each Target can be disabled or enabled by toggling the button.



You may choose to save for later use by pressing the Save/Recall Configuration button, selecting one of the custom fields and then pressing the Save Configuration button.



5.3. UAT GEN (reserved)

6. Navigation

6.1. Integrated Landing System (ILS) Operation (Reserved)

6.2. VHF Omnidirectional Ranging (VOR) Operation (Reserved)

6.3. Distance Measuring Equipment (DME) (Reserved)

7. Radio Test (COMMS)

7.1. VHF COM Amplitude Modulation (AM) (Reserved)

7.2. VHF COM Frequency Modulation (FM) (Reserved)

7.3. COM High Frequency (HF) Single Side Band (SSB) (Reserved)

7.4. COM SelCal (Reserved)

8. ELT

8.1. ELT 121.5 (Reserved)

8.2. ELT 243 (Reserved)

8.3. ELT 406 (Reserved)

9. Test Tools

9.1. VSWR

9.1.1. VSWR Test Function

The VSWR test function provides users with the ability to troubleshoot potential cabling and / or antenna issues.

- **Voltage Standing Wave Ratio (VSWR)** is a measurement that represents how well an antenna's impedance is matched to the radio or transmission line to which it is connected.

The smaller the VSWR measurement, the better the antenna and transmission line match, and therefore less loss and better signal strength on the transmission line. The minimum VSWR is 1.0, which means no power is being reflected

- **Return loss (RL)** is the ratio of the reflected signal to the transmitted signal. A low return loss indicates less signal reflection and better signal strength. A high return loss indicates more signal reflection and less signal strength, indicating an issue along the transmission line.

When Return Loss is selected, measurements are displayed in dB.

9.1.2. Scope of VSWR Test

This test is used to evaluate how well an antenna's impedance matches the impedance of the radio or transmission line to which it is connected.

9.1.3. UUT Parameters/Characteristics

The example in this section assumes the following UUT (Unit Under Test) characteristics and settings. You will need to adjust settings according to the operational capabilities of the device you are testing. In this case, we will be showing a test of a Transponder antenna.

Frequency Range Settings: 900 to 1250 MHz

9.1.4. Equipment Needed for VSWR Test

The following equipment is required to perform the procedures defined in this section:

- Cable or antenna to be tested
- Calibration Kit (short cable with short and load – included with the AVX-10K)



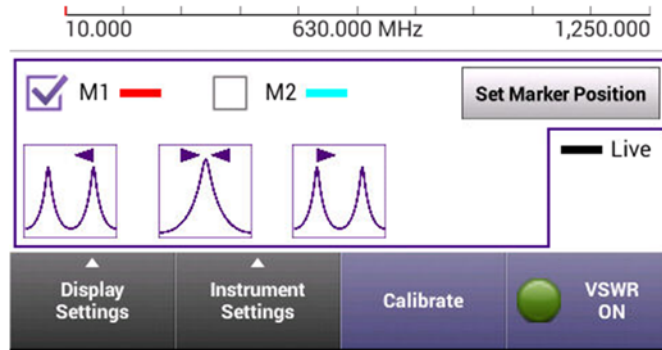
Run VSWR Calibration

1. It is recommended that the VSWR calibration be performed prior to testing any antenna or cable.
2. Connect the short TNC to TNC cable to the AVX-10K as shown.

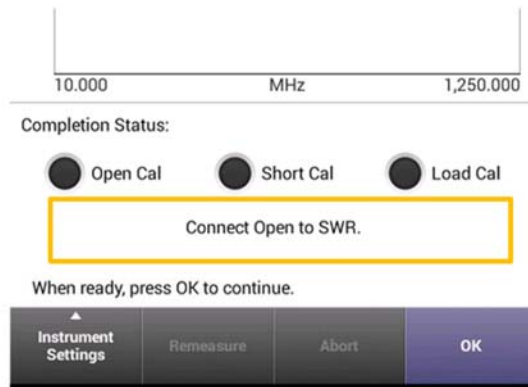


Figure 18: VSWR Calibration Setup Diagram

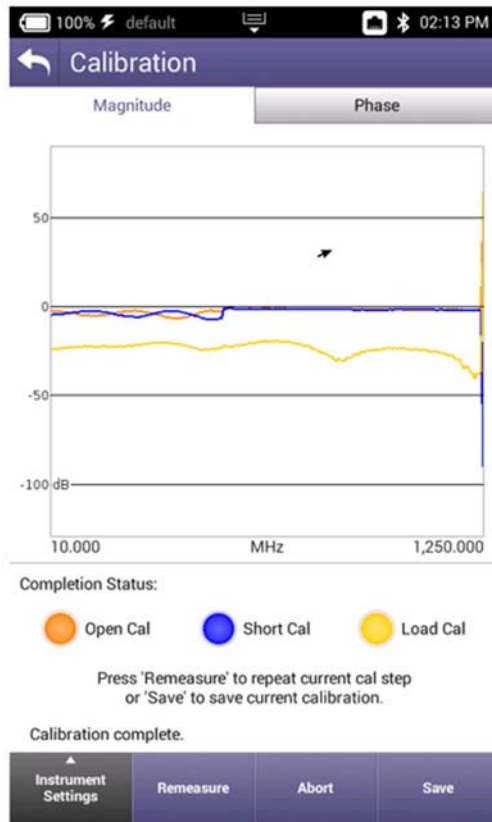
3. Power on the AVX-10K.
4. Select the Test Tools ribbon on the Home screen.
5. Select the VSWR/DTF application.
6. Select the VSWR tab.
7. Press the Calibrate soft-key.



8. Select External Standards. Select OK button to confirm.
9. Follow the instructions at the bottom of each screen to perform Open / Short / Load calibration. The “short” is the smaller of the two terminators. Press SAVE button to complete.



10. When external calibration has been completed, the calibration plot should resemble the following figure.



Perform VSWR Test

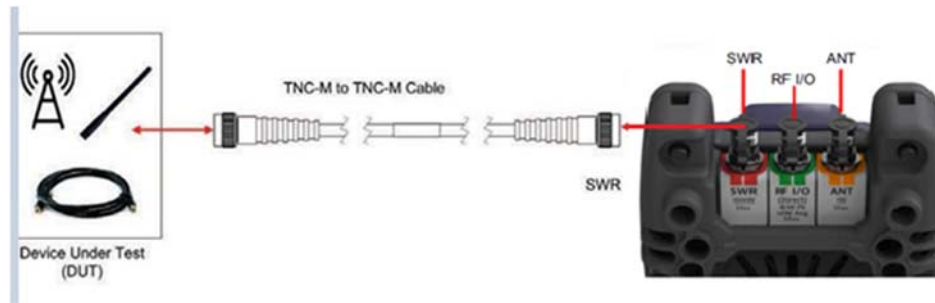


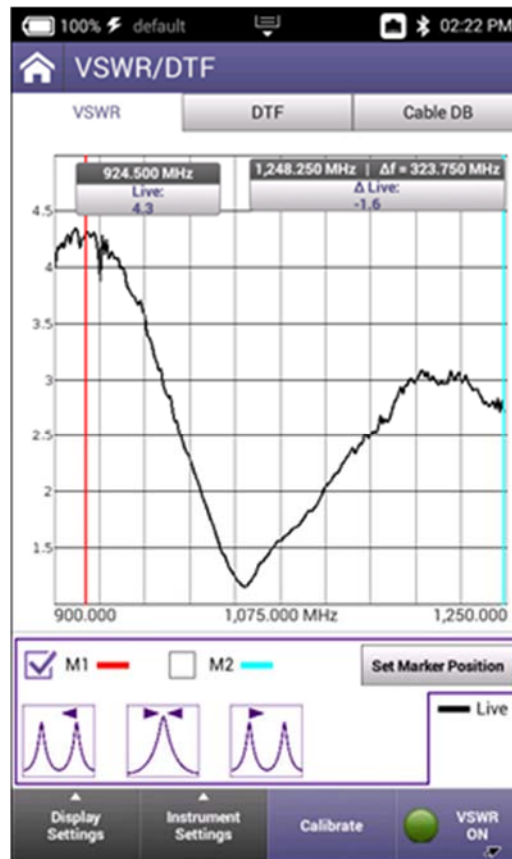
Figure 19: VSWR Test Setup Diagram

Configure the AVX-10K for VSWR Test

1. Power on the AVX-10K.
2. Select the Test Tools ribbon on the Home screen.
3. Select the VSWR/DTF application.
4. Select the VSWR tab.
5. Open the Instrument Settings menu.
6. Set the Start Frequency to 900 MHz.
7. Set the Stop Frequency to 1250 MHz.
8. Open Instrument Settings, set Measurement Mode to VSWR and press the OK button.
9. Ensure the VSWR soft key is set to VSWR On.

Review Test Data

1. Observe the VSWR trace.
2. This example shows an antenna that appears to be tuned well for 1030 MHz and 1090 MHz which indicates a good antenna. A poor antenna would have high VSWR values in this band.



9.2. Distance To Fault

9.2.1. DTF Test Function

Distance to Fault (DTF) is an analysis that is used to identify signal path degradation in cables and transmission lines that may be a result of conditions such as poor connections, damaged cables, or faulty antennas.

9.2.2. Scope of DTF Test

Distance to Fault (DTF) measurements, provides the capability to analyze, troubleshoot and identify signal path degradation in cables and transmission lines. Faults are a result of conditions such as poor connections, damaged cables, or faulty antennas.

This test is used to evaluate the following performance issues:

- The distance to fault of a coaxial cable.

9.2.3. Equipment Needed for DTF Test

The following equipment is required to perform the procedures defined in this section:

- Cable to be tested
- TNC adapter if applicable to interface with the AVX-10K SWR port

Perform DTF Test

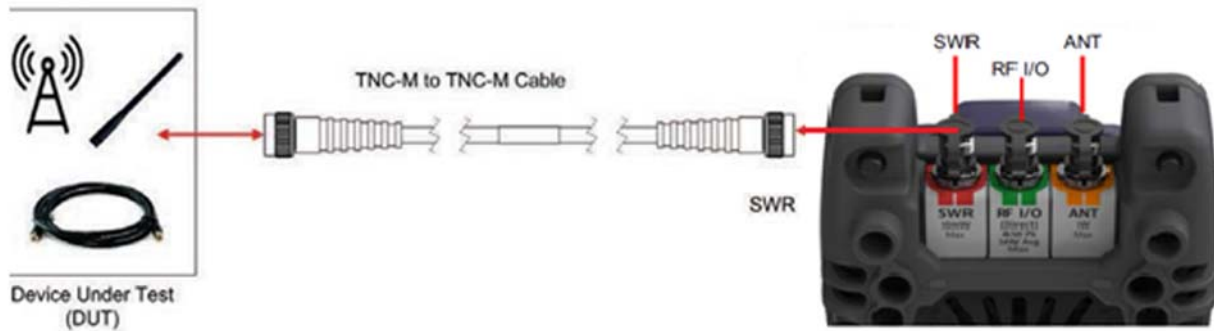
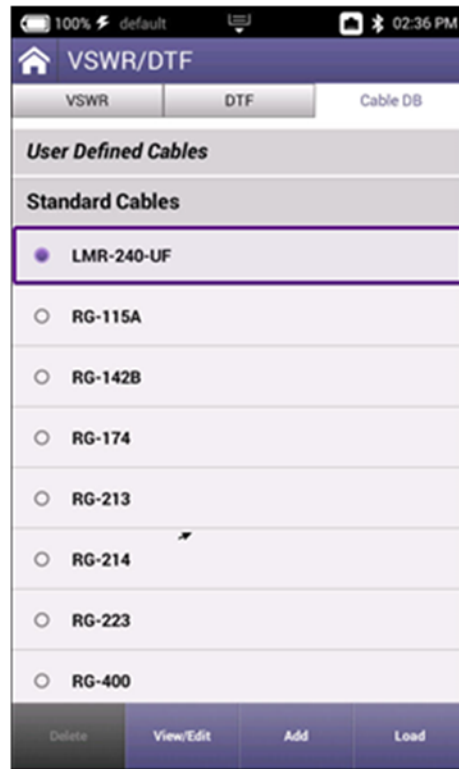


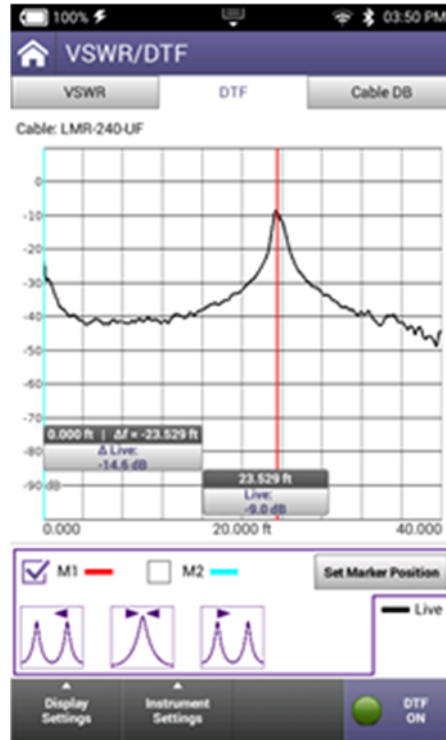
Figure 20: DTF Test Setup Diagram

Configure the AVX-10K for DTF Test

1. Power on the AVX-10K.
2. Select the Test Tools ribbon on the Home screen.
3. Select the VSWR/DTF application.
4. Select the Cable DB tab and select the appropriate cable type (or nearest proximity) for the cable being tested.



5. Select the DTF tab.
6. Open the instrument settings menu.
7. Set measurement mode to Return Loss.
8. Open the instrument settings menu and set the stop distance to a distance longer than the cable under test.
9. Close the instrument settings tab and ensure the DTF enable soft key displays DTF on.
10. The AVX-10K will display the DTF trace.



11. Set the marker to the peak which reflects a fault indication to determine the distance to fault. The markers can be moved manually or using the peak buttons at the bottom of the screen. The middle button is peak find and the adjacent buttons are next peak left or right (if additional peaks exist).

10. System and Utility Functions

10.1. Introduction

System and utility functions configure device parameters such as date and time, network, WiFi and Bluetooth® access. The Test Set contains built-in signal generators and modulators for XPDR frequencies.

System and utility functions also support file management, user setup information and updating the device’s software and firmware.

10.2. System Functions

System functions are accessed from the System Menu on the device’s Home Screen. System Settings are discussed in Section 2.12.

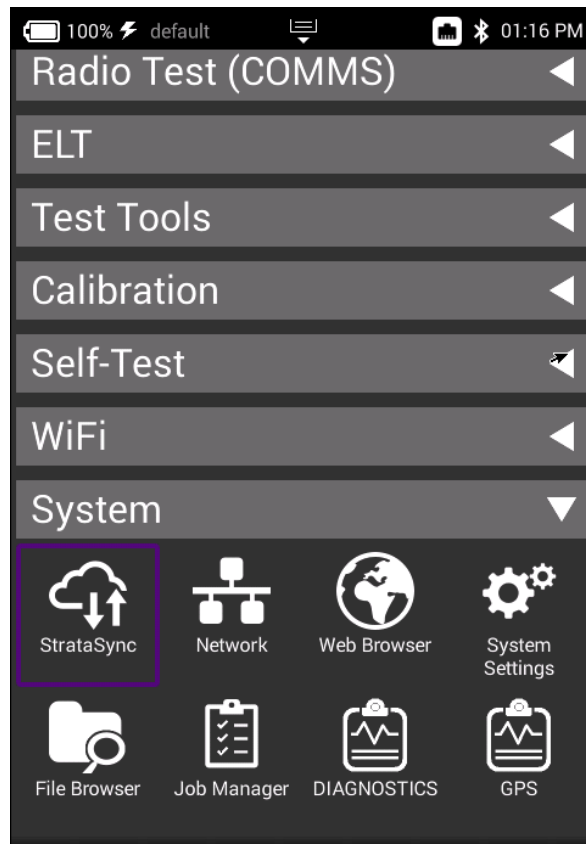
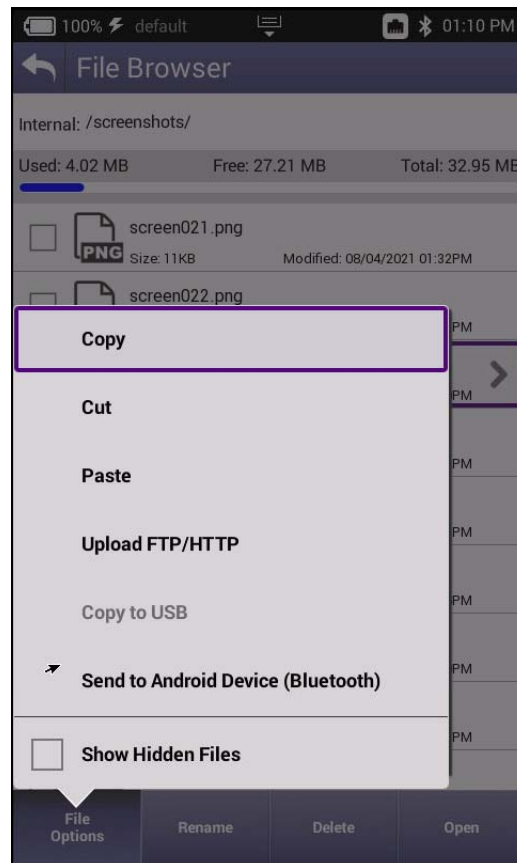


Figure 21: System Main Screen - System Menu

- **StrataSync™** – This application allows for reports to be pushed to the StrataSync™ server. It is recommended that synchronization be performed often to check for firmware updates.
- **Network** – You can select between WIFI or hard-wired connectivity and set all of the associated IP Address settings here. Toggling on and off can be accomplished here as well as from the system tray.
- **Web Browser** – This is a web browser.
- **File Browser** – Similar to a file browser on a computer. Additionally, you can select files to be copied to an FTP server that you specify. Once a file or group of files is selected, press the File Options button and enter the FTP server URL and associated username and password and click Apply. If a valid FTP connection is made, the files will be transferred.



- **Job Manager** – Not used.
- **Diagnostics** – Allows a number of diagnostics messaging to be performed. This area is intentionally not fully documented as it is used mainly for troubleshooting purposes.
- **GPS**– Allows for User Entry or GPS Module Position Settings. These settings are used globally for associated applications.

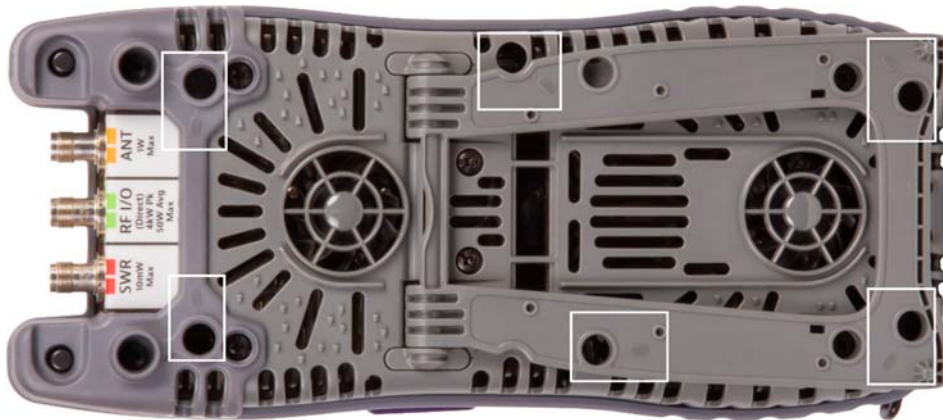
11. Battery Replacement



Caution: Remove device from AC power supply.

To Remove the Battery.

1. Place the test set on a suitable work bench with the display facing down.
2. Loosen but do not fully remove the six flat blade, captive screws that secure the module to the base unit. The screws are identified with the battery symbol. There is no need to remove the eight phillips head screws as the back shell can stay mounted to the module.





Caution: Remove cover carefully to avoid damaging the PCB assembly and water seal. If module sticks to the base unit, insert a screwdriver where pry slots are provided and gently pry until module releases.

3. Disconnect the module from the base unit while carefully avoiding damage to the PCB assembly. If module sticks to the base unit, insert a screwdriver where pry slots are provided and gently pry until module releases.





4. Loosen the screw that secures the battery cover and remove the cover to expose the battery.



5. Push tab on battery cable connector clip to release and pull cable away from connector.

6. Remove battery from the device. Dispose of the old battery according to local regulations.



New Battery Installation Procedure



WARNING: The battery that came with the device is a Lithium Ion battery. If the battery is not installed correctly it may explode. Use care when installing the battery to ensure the battery is properly inserted in the device.

1. Insert the new battery in the battery compartment.



Caution: When installing the new battery, use care to ensure wires are inside the compartment. Damage may occur if wires are pinched by the cover.

2. Align and connect the module to the base unit. Verify the module is flush on the base unit before proceeding.
3. Screw in the six screws to secure the Module Cover to the base unit.
4. Dispose of the old battery according to local regulations.

Appendix A.

Caveats and Statements

Every effort was made to ensure that the information in this manual was accurate at the time of printing. However, information is subject to change without notice, and VIAVI reserves the right to provide an addendum to this manual with information not available at the time that this manual was created.

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- **Declaration of Conformity**

VIAVI recommends keeping a copy of the Declaration of Conformity that shipped with the unit with the device at all times.

- **Warranty Information**

Warranty information for this product is available on the VIAVI website at <https://www.viavisolutions.com/en-us/warranty-information>.

- **Terms and conditions**

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The authority to operate this product is conditioned by the requirements that no modifications be made to the equipment unless the changes or modifications are expressly approved by VIAVI.

- **Industry Canada Requirements**

Marketing to determine if this should be included. The IC requirements should always be in both English and French This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

For hardware products only. Consult product manager to verify whether this should be included and compliance engineer to verify content and wording. Delete section for software guides This product was tested and conforms to the EMC Directive, 89/336/EEC as amended by 92/31/EEC and 93/68/EEC for electromagnetic compatibility. A copy of the Declaration of Conformity is provided with this manual.

- **Low Voltage Directive Compliance**

For hardware products only. Consult product manager to verify whether this should be included and compliance engineer to verify content and wording. Delete section for software guides This product was tested and conforms to the Low Voltage Directive, 73/23/EEC as amended by 93/68/EEC. Conformity with this directive is based upon compliance with the harmonized safety standard, EN60950.

- **WEEE and Battery Directive Compliance**

This product, and the batteries used to power the product, should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations.

VIAVI has established a take-back processes in compliance with the EU Waste Electrical and Electronic Equipment (WEEE) Directive, 2012/19/EU, and the EU Battery Directive, 2006/66/EC.

Information and instructions for returning waste equipment and batteries to VIAVI can be found on the VIAV website in the WEEE section of the VIAVI Standards and Policies web page at: <https://www.viavisolutions.com/en-us/corporate/legal/policies-standards#sustain>.

For hardware products only. Consult product manager to verify whether this should be included and compliance engineer to verify content and wording. Delete section for software guides

- **CA Proposition 65**

California Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted in November 1986 with the aim of protecting individuals in the state of California and the state's drinking water and environment from excessive exposure to chemicals known to the state to cause cancer, birth defects or other reproductive harm.

VIAVI's position statement on the use of Proposition 65 chemicals in VIAVI products can be found in the Hazardous Substance Control section of the VIAVI Standards and Policies web page at: <https://www.viavisolutions.com/en-us/corporate/legal/policies-standards#sustain>.

- **Ordering Information**

Add/delete ordering information as necessary. If customer ordering is not available, delete this section; if customers can order only one way, for example only E-manuals, include only E-manual ordering information; if customer can order both, include both.

This publication is a product of the VIAVI Technical Publications Department, issued as part of the AVX-10K Flight Line Test Set.

The material number associated with this manual is 22135254. This manual is available on the VIAVI website in PDF format.

The part number for a published guide in CD format is: 22141759.

Safety and Compliance Information

Symbols and Markings

The following symbols and markings are found on the instrument and in product documentation:

This symbol indicates a note that includes important supplemental information or tips related to the main text.



Attention Symbol

This symbol represents a general hazard. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message.



ESD Sensitive

Indicates item is static sensitive. Item should only be handled by Qualified Service Personnel.



Voltage Symbol

This symbol represents hazardous voltages. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message.



Hot Surface Symbol

This symbol represents a risk of a hot surface. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message.



WEEE Symbol

This symbol, located on the equipment, battery, or the packaging indicates that the equipment or battery must not be disposed of in a land-fill site or as municipal waste, and should be disposed of according to your national regulations.



CE Compliant

CE Label indicates item meets the requirements of the applicable European Directives.



Fuse Symbol

Indicates a fuse location (AC or DC).



Toxic Symbol

Indicates a toxic hazard. Item should only be handled by Qualified Service Personnel. Dispose of item in accordance with local regulations.



Explosion Symbol

Indicates an explosion hazard. Item should only be handled by Qualified Service Personnel. Dispose of item in accordance with local regulations.

Safety Definitions

This Type of Manual uses the following terms to indicate conditions or activities which are potential safety hazards:

Term	Definition
WARNING	Identifies conditions or activities that, if ignored, can result in personal injury or death.
Caution	Identifies conditions or activities that, if ignored, can result in equipment or property damage, e.g., Fire.

Safety Hazards

- Equipment Usage

This device is designed and tested to comply with the requirements of 'IEC/EN 61010-1, 3rd Edition Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' for Class I portable equipment and is for use in a pollution degree 2 environment.



WARNING: Operating this device in a manner not specified in accompanying documentation may impair the safety protection built into the device.

Operating this device in a manner not specified in accompanying documentation may impair the safety protection built into the device.

Toxic Hazards



WARNING: Some of the components used in this device may include resins and other materials which give off toxic fumes if incinerated. Dispose of such items appropriately.



Caution: Beryllium Copper

- Some mechanical components within this instrument are manufactured from beryllium copper. Beryllium copper represents no risk in normal use. The material should not be machined, welded or subjected to any process where heat or dust is involved.
- Beryllium copper must NOT be disposed of by incineration. Beryllium copper must be disposed of as "special waste" per local regulations.

**Caution:** Lithium

- A Lithium-Ion battery is used in this device. Lithium is a toxic substance so the battery should in no circumstances be crushed, incinerated or disposed of in normal waste.
- This device contains a Lithium-Ion Battery and may require special packaging and external labeling when shipping. Contact VIAVI for packaging and labeling instructions.
- Do not short circuit or force discharge since this might cause the battery to vent, overheat or explode.

Electrical Hazards



WARNING: Improper grounding of equipment can result in electrical shock. To ensure proper grounding, this device should only be connected to a grounded AC Power Supply.

The instrument is provided with a protective grounding lead that conforms with IEC Safety Class I. The supply lead must always be connected to the power supply via a grounded contact in order to maintain the grounding protection. The instrument must be properly grounded to prevent damage to the device from electrostatic discharge (ESD).



WARNING: Residual Current.

The supply filter contains capacitors that may remain charged after the instrument is disconnected from the power supply. The residual energy is within the approved safety requirements; however, a slight shock may be felt if the plug pins are touched immediately after removal.

**Caution:** Input Overload.

Do not overload input connectors. Refer to product Safety and Compliance Specifications or the product data sheet for maximum input ratings. Refer to product labeling and safety documentation for maximum input ratings.

**Caution:** ESD-Sensitive Components

- THIS EQUIPMENT CONTAINS PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD)
- Internal components are ****ESD**** sensitive and should only be installed, removed and/or serviced by Qualified Service Personnel.
- THE POWER SUPPLY ASSY, MULTI-FUNCTION PCB ASSY, RF ASSY AND PROCESSOR PCB ASSY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING TROUBLESHOOTING PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ****ESD**** CERTIFIED.



Caution: UPON COMPLETION OF ANY MAINTENANCE ACTION; ALL assemblies, cables, connectors, plastic fasteners, gaskets, fingerstock, and miscellaneous hardware must be configured as installed at the factory in order to satisfy the safety and EMC compliance standards.