VIAVI

AVX-10K

Flight Line Test Set

Operation Manual

AVX-10K
Flight Line Test Set

Operation Manual

22135254 / Rev. 004

Notice

Every effort was made to ensure that the information in this manual was accurate at the time of release. 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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Patent Information

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Terms and conditions

Specifications, terms, and conditions are subject to change without notice. The provision of hardware, services, and/or software are subject to VIAVI's standard terms and conditions, available at www.viavisolutions.com/en/terms-and-conditions.

Declaration of Conformity

VIAVI recommends keeping a copy of the Declaration of Conformity that shipped with the unit with the test set 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.

Low Voltage Directive Compliance

This product was tested and conforms to the Low Voltage Directive, 73/23/EEC as amended by 93/68/EEC.

Federal Communications Commission (FCC) Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment was tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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

> **ALERT**
> - To comply with FCC RF Exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.
> - This transmitter must not be co-located in conjunction with any other antenna or transmitter.

GITEKI Certification (Japan)

該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している

法により5.2/5.3 GHz帯は屋内使用に限ります

The Giteki certification includes two types namely Technical Standards Conformity Certification and Construction Design (Construction Type) Certification.

Technical Standards Conformity Certification

Certify and test for conformity of an equipment for each unit to which the certification mark "Giteki" and ID number is granted. Applicable to small production and prototype production.

Construction Design/Type Certification

Certify Construction Design of an equipment and test per model to which the "Giteki" mark and ID number is granted. The Certification does not limit the quantity of the equipment as long as the equipment is manufactured by the same design and the manufacturing method is applied as the certified model.

The Specified Radio Equipment connected to telecommunication network requires compliance to technical standards conformity in both Japan Telecommunications Business law and Japan Radio Law.

Industry Canada Requirements

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions: 1) This device may not cause interference; and, 2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: 1) l'appareil ne doit pas produire de brouillage; et, 2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

EU WEEE and Battery Directives

This product, and the battery 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.

Instructions for returning waste equipment and batteries to VIAVI can be found in the WEEE section of [VIAVI's Standards and Policies web page](#).

If you have questions concerning disposal of your equipment or batteries, contact the VIAVI WEEE Program Management team at WEEE.EMEA@VIAVISolutions.com.

EU REACH

Article 33 of EU REACH regulation (EC) No 1907/2006 requires article suppliers to provide information if a listed Substances of Very High Concern (SVHC) is present in an article above a certain threshold.

For information on the presence of REACH SVHCs in VIAVI products, see the Hazardous Substance Control section of [VIAVI's Standards and Policies web page](#).

EU CE Marking Directives (LV, EMC, RoHS, RE)

This product conforms with all applicable CE marking directives. Please see EU Declaration of Conformity for details.

EMC Directive Compliance

This product was tested and conforms to the EMC Directive, 2014/30/EU for electromagnetic compatibility.

UK Declaration of Conformity

This product conforms with all applicable UKCA marking directives. Please request UK Declaration of Conformity for further details.

China RoHS Materials Declaration

The China RoHS Materials Declaration is shipped with the product when required.

California 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.

For the VIAVI position statement on the use of Proposition 65 chemicals in VIAVI products, see the Hazardous Substance Control section of VIAVI's Standards and Policies web page.

Korea Certification

A급 기기 (업무용 방송통신기자재) Class A Equipment (Industrial Broadcasting & Communications Equipment).	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다. This equipment is **Industrial (Class A) electromagnetic wave suitability equipment** and seller or user should take notice of it, and this equipment is to be used in the places except for home.

Ordering information

This manual is a product of the VIAVI Technical Publications Department, issued for use with the AVX-10K Flight Line Test Set. The PDF format of this manual is available on the VIAVI product website.

Go to: https://www.viavisolutions.com/en-us/resources/literature-library

* Type AVX-10K to find the manuals associated with the AVX-10K Flight Line Test Set.
* The part number of the Operation Manual CD is 22141759.

Contact Information

Contact the Technical Assistance Center (TAC) for technical support or with any questions regarding this or other VIAVI products.

* Phone: 1-844-GO-VIAVI
* Email: Techsupport.Avcomm@viavisolutions.com

For the latest TAC information, go to:

https://www.viavisolutions.com/support/technical-product-support

Software Notifications

DFARS Statement

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The AVX-10K Flight Line Test Set includes third party software licensed under the terms of separate open source software licenses. By using this software you agree to comply with the terms and conditions of the applicable open source software licenses. Software originated by VIAVI is not subject to third party licenses. Terms of the VIAVI Software License different from applicable third party licenses are offered by VIAVI alone.
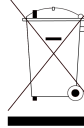
Safety and Compliance Information

Read and follow all warning notices and instructions marked on the product and included in user documentation.

Symbols and Markings

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

Table 1 Symbols and Markings

	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. See Table 2 for more information.
	ESD Sensitive Indicates item is static sensitive. Item should only be handled by Qualified Service Personnel.
	Explosive Hazard This symbol represents a risk of explosion. It may be associated with either a DANGER, WARNING, CAUTION or ALERT message.
	Voltage Symbol This symbol represents hazardous voltages. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message. See Table 2 for more information.
	Toxic Symbol Indicates a toxic hazard. Item should only be handled by Qualified Service Personnel. Dispose of item in accordance with local regulations.
	WEEE Symbol This symbol, located on the equipment or the packaging indicates that the equipment 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).

Safety Definitions

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

Table 2 Safety Definitions

Term	Definition
WARNING	Identifies conditions or activities that, if ignored, can result in personal injury or death.
Avertissement	Identifiez les conditions ou les activités qui, si ignorées, peuvent entraîner des blessures personnelles voire mortelles.
CAUTION	Identifies conditions or activities that, if ignored, can result in equipment or property damage, e.g., Fire.
Mise en Garde	Identifiez les conditions ou les activités qui, si ignorées, peuvent entraîner des dommages à l'équipement ou aux biens, p. ex. un incendie.

Safety Hazards

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.

Avertissement

Certains des composants utilisés dans cet appareil peuvent comprendre des résines et d'autres matériaux qui produisent des émanations toxiques lorsqu'ils sont incinérés. Éliminez adéquatement de tels éléments.

WARNING

A Lithium-Ion battery is used in this equipment. Lithium is a toxic substance.

- Do not crush, incinerate or dispose of in normal waste.
- Do not short circuit or force discharge since this might cause the battery to vent, overheat or explode.

WEEE and Battery Statement

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 local 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 VIAVI's Standards and Policies web page at: VIAVI's Standards and Policies web page.

Beryllia

WARNING

Beryllia (beryllium oxide) is used in the construction of some of the components in this equipment.

This material, when in the form of fine dust or vapor and inhaled into the lungs, can cause a respiratory disease. In its solid form, as used here, it can be handled safely, however, avoid handling conditions which promote dust formation by surface abrasion.

Use care when removing and disposing of these components. Do not put them in the general industrial or domestic waste or dispatch them by post. They should be separately and securely packed and clearly identified to show the nature of the hazard and then disposed of in a safe manner by an authorized toxic waste contractor.

Beryllium Copper

WARNING

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 is involved.

Beryllium copper must NOT be disposed of by incineration. Beryllium copper must be disposed of as "special waste" per local regulations.

Lithium-Ion

WARNING

A Lithium-Ion battery is used in this device. Lithium-Ion is a toxic substance, so the battery should in no circumstances be crushed, incinerated or disposed of in normal waste.

- Do not attempt to recharge this type of battery.
- Do not short circuit or force discharge since this might cause the battery to vent, overheat or explode.

CAUTION

This device contains a Lithium-Ion battery and may require special packaging and external labeling when shipping. Contact VIAVI for packaging and labeling instructions.

Mise en Garde

Cet appareil contient une batterie au lithium-ion et peut nécessiter un emballage spécial et un étiquetage externe lors de l'expédition. Contactez VIAVI pour l'emballage et les instructions étiquetantes.

Electrical Hazards

Grounding the Instrument

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

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.

Avertissement

La mise à la terre inadéquate de l'équipement peut entraîner un choc électrique. Pour s'assurer d'une mise à la terre adéquate, cet appareil doit seulement être branché à une alimentation électrique CA mise à la terre.

Input Overload

Refer to product labeling and product specifications for maximum input ratings.

CAUTION

Do not overload input connectors. Refer to product specifications or the product data sheet for maximum input ratings.

Mise en Garde

Ne surchargez pas les connecteurs d'entrée. Reportez-vous aux spécifications du produit ou à la fiche technique du produit pour connaître les valeurs d'entrée maximales.

AC Power Adapter/Cord

Approved Part: 22146602, AC Power Adapter/Cord.

The base unit with all applications installed can operate supplied by the AC power adapter/cord that is shipped with the unit.

The mains supply cord used with the power adapter must be grounded with a connection to protective earth.

CAUTION

- Only use the AC Power Adapter/Cord supplied with the instrument.
- Do not use the AC Power Adapter/Cord outdoors or in a wet or damp location.
- Only connect the AC Power Adapter/Cord to the correct mains voltage indicated on the ratings label.
- Do not use the AC Power Adapter/Cord if it appears damaged or modified.

Mise en Garde

- Utilisez uniquement l'adaptateur secteur / le cordon d'alimentation fourni avec l'instrument.
- N'utilisez pas l'adaptateur secteur / le cordon d'alimentation à l'extérieur ou dans un endroit mouillé ou humide.
- Connectez uniquement l'adaptateur secteur / cordon d'alimentation à la tension secteur appropriée indiquée sur l'étiquette des caractéristiques nominales.
- N'utilisez pas l'adaptateur / cordon d'alimentation secteur s'il semble endommagé ou s'il a été modifié.

CAUTION

- Do not use the power cord if it is damaged or frayed. Replace damaged power cords with cable of the same ratings.
- Do not position the power cord in a manner that makes it difficult to disconnect from the main voltage.
- Do not allow anything to rest on the power cord.
- Do not locate the product where persons can walk on or trip over the power cord.

Mise en Garde

- N'utilisez pas le cordon d'alimentation s'il est endommagé ou effiloché. Remplacez les cordons d'alimentation endommagés par des câbles de même puissance.
- Ne placez pas le cordon d'alimentation de manière à rendre difficile la déconnexion de la tension secteur.
- Ne laissez rien reposer sur le cordon d'alimentation.
- Ne placez pas le produit à un endroit où des personnes pourraient marcher ou trébucher sur le cordon d'alimentation.

Residual Current

WARNING

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.

Avertissement

Le filtre d'alimentation contient des condensateurs qui peuvent rester chargés une fois l'appareil débranché de l'alimentation électrique. L'énergie résiduelle est dans les limites des exigences de sécurité approuvées. Par contre, un léger choc électrique peut être ressenti si l'on touche les broches de la prise immédiatement après son débranchement.

Battery Safety Information

The battery included with the product should only to be used with VIAVI AVX-10K Flight Line Test Set.

Battery Storage, Handling and Disposal

CAUTION

- To avoid risk of fire and burns, do not tamper with the batteries.
- Do not open, crush, or incinerate the batteries.
- Do not use or store the batteries in temperatures that exceed product specifications.
- Avoid shorting the batteries.
- Never use a battery that appears damaged or abused.
- Only charge the batteries with the charger that shipped with the test set.

Mise en Garde

- Ne pas ouvrir, écraser ni incinérer la batteries.
- N'utilisez pas et ne stockez pas la batteries à des températures dépassant les spécifications du produit.
- Évitez de court-circuiter la batteries.
- N'utilisez jamais une batterie qui semble endommagée ou qui a subi des abus.
- Accusez seulement la batteries du chargeur qui a expédié avec le jeu d'essai.

Battery Replacement

Approved Part Number: 22071316-002, Lithium Ion Battery

CAUTION

The battery supplied with the device should only be replaced with a replacement part that has been approved by VIAVI.

Mise en Garde

La deux battery fournie avec l'appareil ne doit être remplacée que par une pièce de rechange approuvée par VIAVI.

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.
>
> **Avertissement**
>
> Utiliser cet appareil de manière non spécifiée dans la documentation d'accompagnement peut nuire au dispositif de protection de sécurité intégré dans l'appareil.

Electrostatic Discharge (ESD)

> **CAUTION**
>
> Internal components are ESD sensitive and should only be installed, removed and/or serviced by Qualified Service Personnel.
>
> **Mise en Garde**
>
> Les composants internes sont sensibles au DES et ne doivent être installés, retirés ou entretenus que par du personnel de maintenance qualifié.

Case/Cover Removal

Do not operate this device with the case or covers removed. Opening or removing covers may expose you to dangerous high voltage points and other hazards.

> **CAUTION**
>
> This device does not contain user serviceable parts. Servicing should only be performed by Qualified Service Personnel.
>
> **Mise en Garde**
>
> Cet appareil ne contient pas de pièces pouvant être entretenues par l'utilisateur. L'entretien doit seulement être effectué par du personnel de service qualifié.

Ventilation Requirements

The instrument is cooled by internal fans. Failure to provide proper ventilation may result in damage to the instrument. Observe the following precautions when operating the instrument:

CAUTION
- Do not obstruct air flow to the air vents.
- Do not place the instrument on or close to other heat-generating equipment.
- Do not operate device in an enclosure such as the soft-shell travel case.

Mise en Garde
- N'obstruez pas l'écoulement d'air vers les évents.
- Ne placez pas l'instrument sur ou près de tout autre équipement générant de la chaleur.
- N'utilisez pas l'appareil dans un boîtier tel que l'étui de voyage à coque souple.

Electromagnetic Interference (EMI)

This product complies with Part 15 of the FCC Rules for a Class A device. Operation is subject to the following two conditions: (1) this product may not cause harmful interferences, and (2) this product must accept any interferences received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Use properly shielded and grounded cables and connectors in order to meet FCC emission limits.

CAUTION

Signal generators can be a source of Electromagnetic Interference (EMI) to communication receivers. Some transmitted signals can cause disruption and interference to communication services out to a distance of several miles. Users of this equipment should scrutinize any operation that results in radiation of a signal (directly or indirectly) and should take necessary precautions to avoid potential communication interference problems.

Mise en Garde

Les générateurs de signaux peuvent constituer une source d'interférences électromagnétiques (IME) pour les récepteurs radio. Certains signaux émis peuvent provoquer des interférences et des interruptions des communications sur une distance de plusieurs kilometres. Les utilisateurs de cet équipment doivent examiner soigneusement tout fonctionnement provoquant le rayonnement d'un signal (direct ou indirect) et ils doivent prendre les dispositions nécessaires afin d'eviter des problémes potentiels d'interferénces sur les communications.

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Preface

This section explains how to use this manual. Topics discussed include the following:

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 User

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

Visit viavisolutions.com/avx-10k for additional product information.
Click viavisolutions.com/avx-10k-literature to visit the library, and access translated versions of released documents.

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: 1-844-GO-VIAVI

- Email: Techsupport.Avcomm@viavisolutions.com

For the latest information, go to:

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

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Overview AVX-10K

This chapter provides a general overview of the AVX-10K. Topics discussed in this chapter include the following:

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

The AVX-10K is supported with three 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.

VIAVI's Smart Access Anywhere application can be downloaded from the VIAVI website: https://www.viavisolutions.com/en-us/software-download/smart-access-anywhere-saa-software. This software can be used to remotely connect to the AVK-10K when the AVX-10K is connected to the Internet.

Figure 1-2 Mobile Tech Application
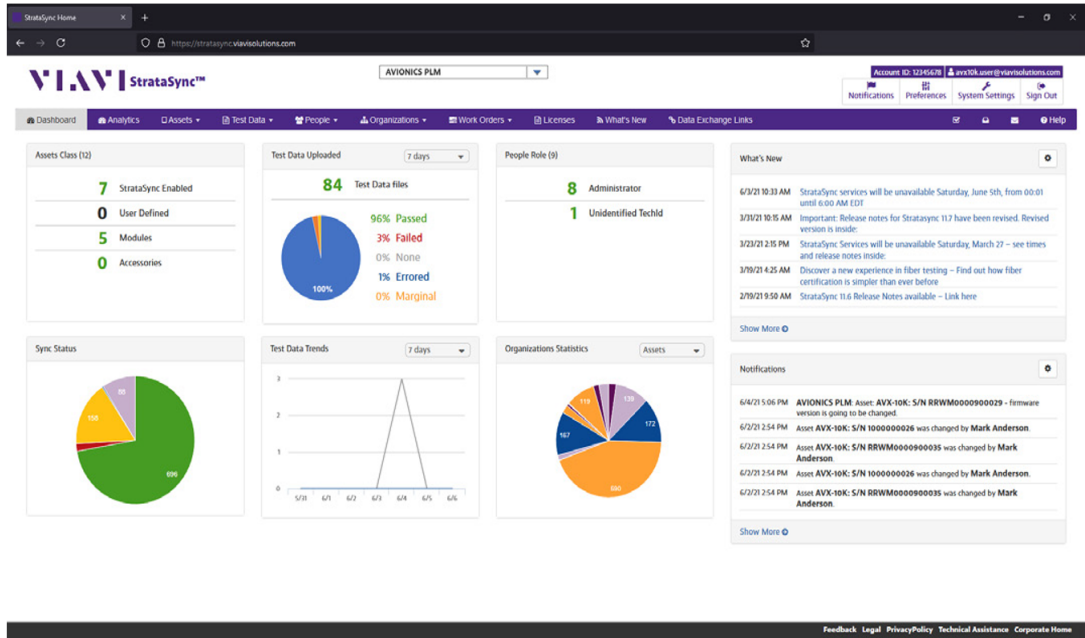
Figure 1-3 StrataSync™ Dashboard

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.

Direct with Coupler	Over the air	Direct to UUT
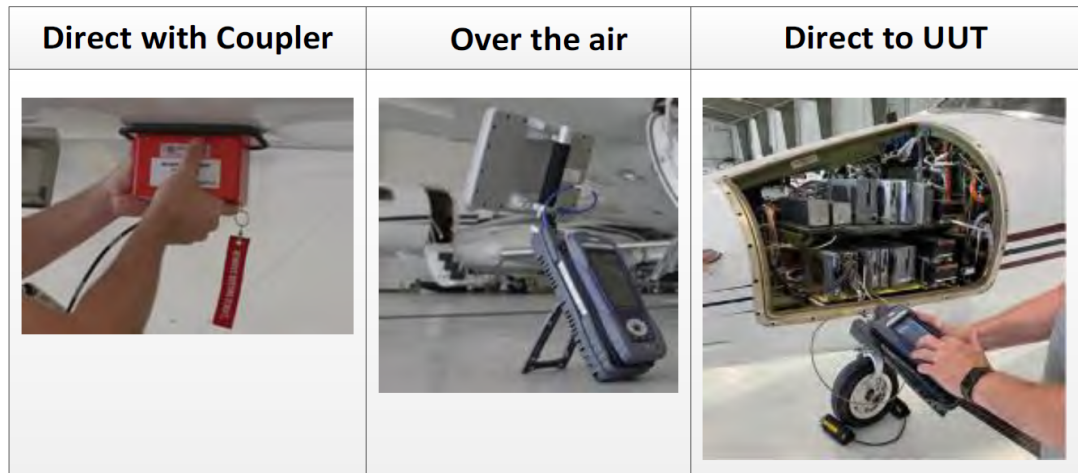
Figure 1-4 Operational Test Methods

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
- Wireless 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[1]
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	
	TACAN	ADS-B Monitoring	
		GICB Monitoring	
		UAT Monitoring	

Figure 1-5 Avionic Functions

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.

1.6   First Time Use and Self-Test

For First Time Use and unboxing instructions, please review the included Getting Started Guide.

Part of the First Time Use procedure is the Self-Test process. This process should be run any time that you believe there are issues with the test set. Please run this procedure before returning the unit to the factory.

Turn the Test Set ON

1. Press and release the Power Button. This is the green button at the bottom front of the test set.

Figure 1-6 Power Button

- An initializing indicator screen is displayed during the boot-up process. Wait while the device completes the boot-up process.
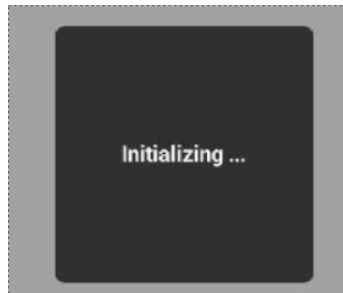
Figure 1-7 Initializing Indicator

- Battery LED indicator is illuminated, and the UI loads the Home screen in the display when the device is ready for use.
- Chime may occur (optional setting).

Run Self-Test

1. Remove the protective film from the touchscreen display before use.

2. Ensure that the Test Set is ON.

3. Verify Test Set Operation

   a. On the Home screen, open the Self-Test ribbon.

   b. Select the Self-Test application.

   c. Press the RUN soft key and follow the prompts as directed. A cable will be needed for External Loopback test. This cable is supplied with each AVX-10K.

   d. When Self-Test has completed running all tests, verify that all portions of the test

have passed. If any portion of Self-Test fails, please contact VIAVI Customer Service.

Turn the Test Set OFF

1. Press and hold the Power button ~1 second; release the Power Button when the Front

Panel displays a white screen with the VIAVI logo.

2. The device performs a series of power-down processes and shuts down.

• Chime (optional setting).

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2

Setup, Control, and Operation

This chapter describes how to Setup and Operate the AVX-10K. The topics discussed in this chapter are as follows:

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 VIAVI's Mobile Tech application which is available at any online application store. Optionally, remote control of the AVX-10Kcan be accomplished via a VNC viewing application (such as Tight-VNC) from a laptop or PC.

2.2   Hardware

AVX-10K Side Detail

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

Figure 2-1 Side View

5. Power Button

6. Speaker

7. Back Button

8. Home Button

9. Quick Tray Button

10. Cursor Control Keys

11. Function Keys

12. Full Color Touch Screen Display

13. Status Indicator Lights

14. Antenna (ANT) Port

15. Direct (RF/IO) Port

16. SWR Port

Figure 2-2 Front View

2.2.1 Controls and Buttons

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

• OK Button

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

- Power Button (5)

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.

- Back Button (7)

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 unconfirmed
change.

- Home Button (8)

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 unconfirmed
change.

- Tray Button (9)

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 unconfirmed
change.

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.
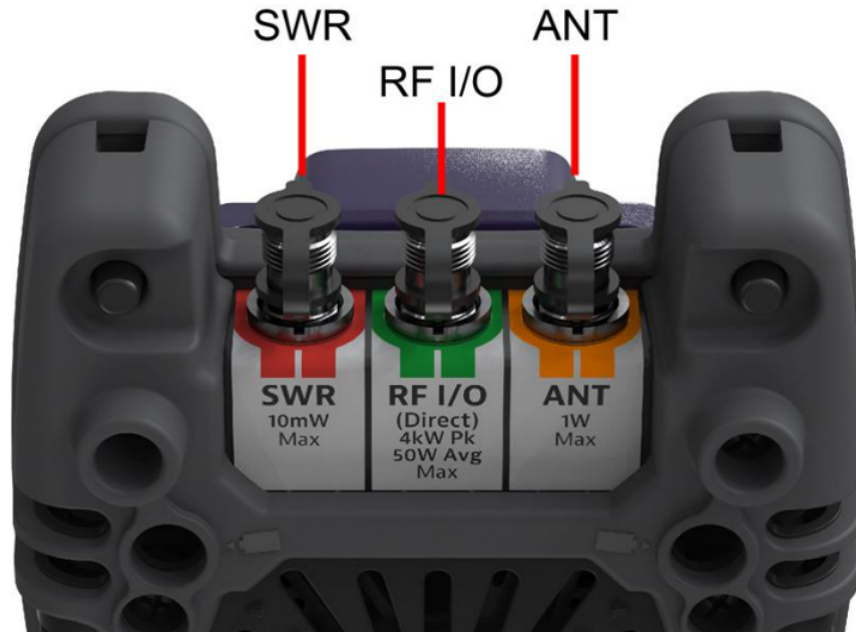
Figure 2-3 I/O Connectors

⚠️ **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

Figure 2-4 Status Indicator

*   **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.
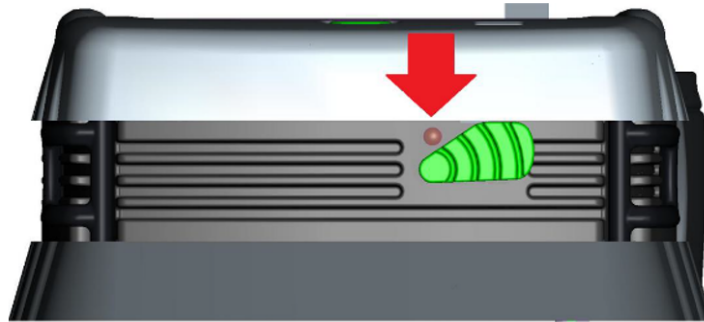
Figure 2-5 Charge Status LED

• 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. It is also possible to connect remotely via the Smart Access Anywhere application provided by VIAVI.

2.3.1   Mobile Tech Application

Figure 2-6 Mobile Tech Application

VIAVI's Mobile Tech app can be found in the Apple App Store or Google Play Store and can be run from any mobile device.

This application can connect to the AVX-10K via Wireless 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.

To connect wirelessly, 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.

To connect a tablet or phone via WIFI, you will need to turn on the Access Point on the AVX-10K. This is available in the WiFi ribbon on the AVX-10K.
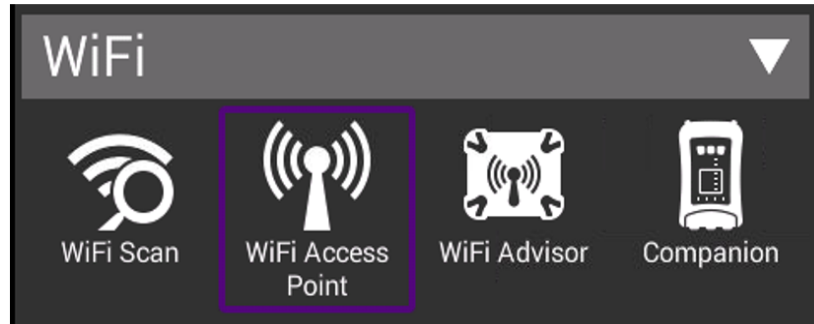
Figure 2-7 WiFi Access Point Option

If that ribbon is not available on your Home Screen, you will need to add it by going to System Settings, Home Screen and enabling the WiFi option.
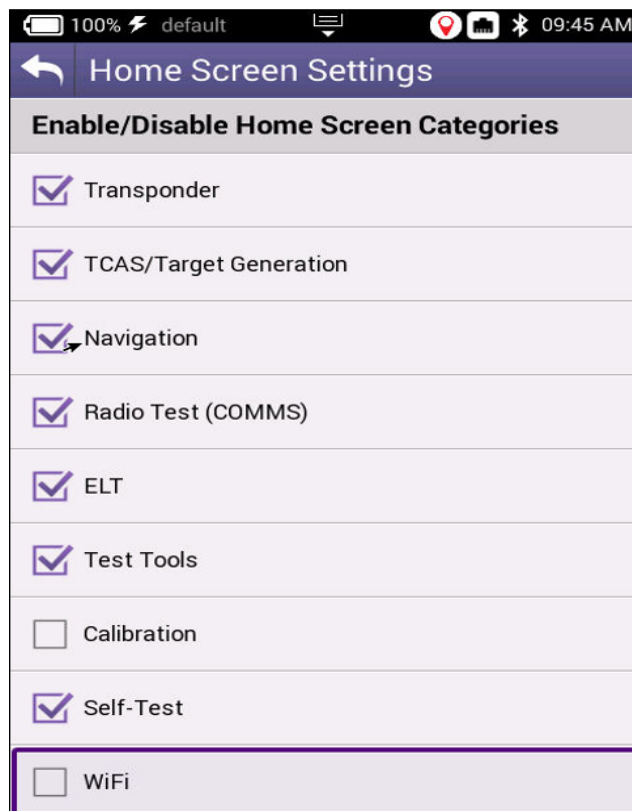
Figure 2-8 Home Screen WiFi Selection

Load the WiFi Access Point application and start the process by clicking the Start button in the lower right corner.

Figure 2-9 WiFi Access Point Start Button

You will then be able to connect your tablet or phone's WiFi to the AVX-10K. Go to your device settings, enable WiFi and look for an SSID that starts with "VIAVI-ONX" and connect. Then in the Mobile Tech application, type in the IP for the AVX-10K at the top of the screen where it says, "Enter an IP for Manual Connection" and press the CONNECT button. The default address for the AVX-10K device is 10.0.0.1. The Mobile Tech application should be connected via WiFi.

2.3.2 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.
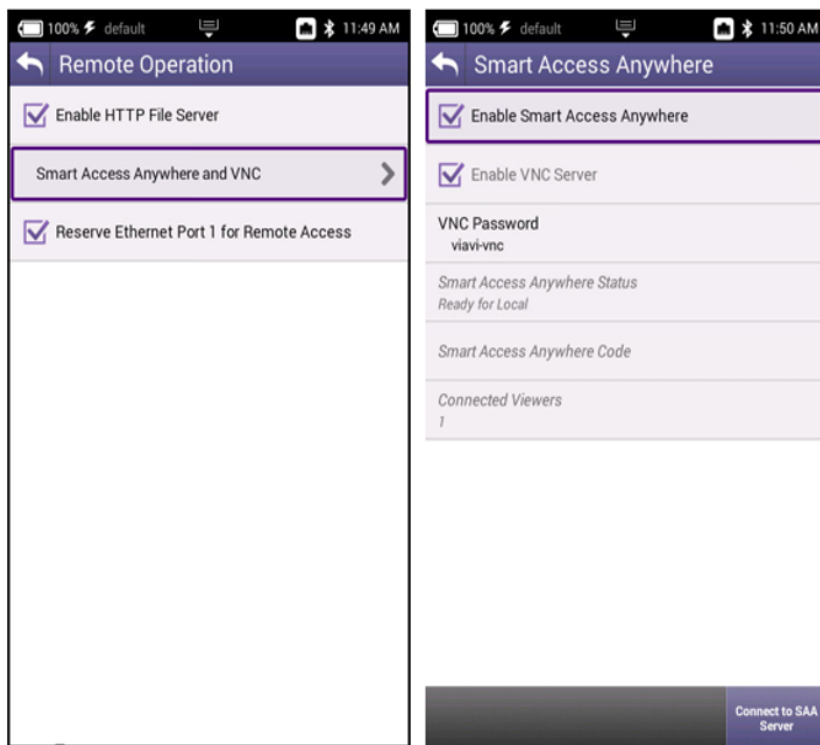
Figure 2-10 Remote Operation Settings

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.
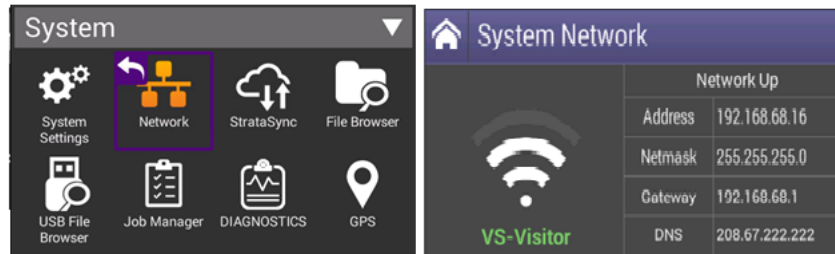
Figure 2-11 IP Address & Network ID

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.

2.3.3   Smart Access Anywhere Application

VIAVI's Smart Access Anywhere (SAA) application allows a remote user to be able to connect with the test set. This could be a lead technician who is currently offsite or the VIAVI Service personnel. Both the AVX and the remote user must have access to the Internet.

SAA can be downloaded from the VIAVI website: https://www.viavisolutions.com/en-us/software-download/smart-access-anywhere-saa-software. Here you can download versions for the PC, Android, or Apple. Once downloaded and installed, this application connects to the AVX-10K using a code that is generated on the AVX and supplied to the remote user.

To enable SAA on the AVX-10K and generate a code, open the System Settings application in the System ribbon, click Remote Operation, then Smart Access Anywhere and VNC. Ensure that top entry (Enable Smart Access Anywhere) is enabled and click the 'Connect to SAA Server' button in the lower right corner.
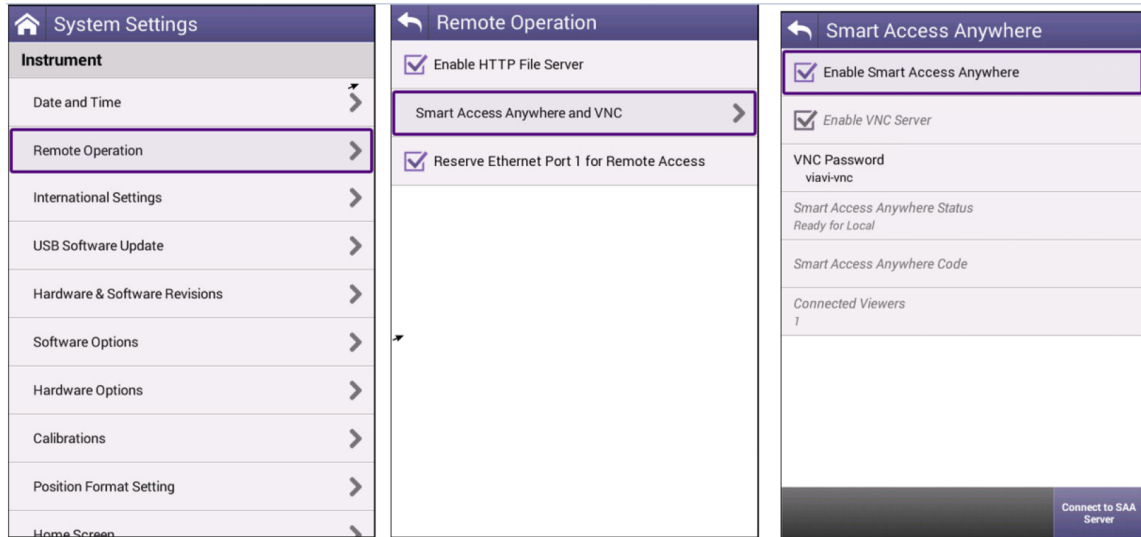
Figure 2-12 Connect to SAA Server Button

Once connected to the server, the application will generate a 10-digit hexadecimal code that will need to be shared with the person trying to connect with the test set. Once the need for remote connectivity is complete, click 'Disconnect' in the lower right corner or reboot the test set to terminate the connected session.

To connect to the test set from the Smart Access Anywhere application, enter the supplied 10-digit code at the top of the screen and click "Connect". Connection should occur but the length of time that it takes will depend on internet connection speed. You may need to be patient.
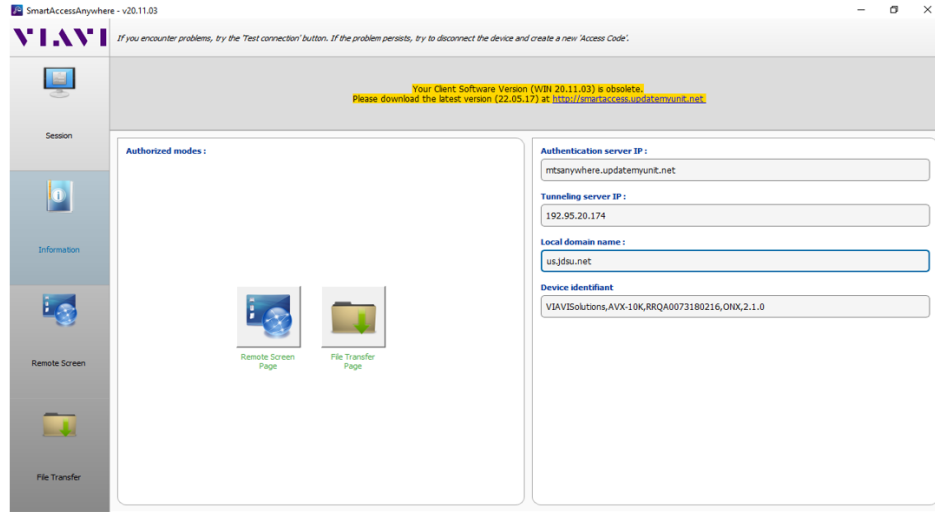
Figure 2-13 Smart Access Anywhere Application

Once connected, click the Remote Screen Page button and the application will allow you to control the test set.
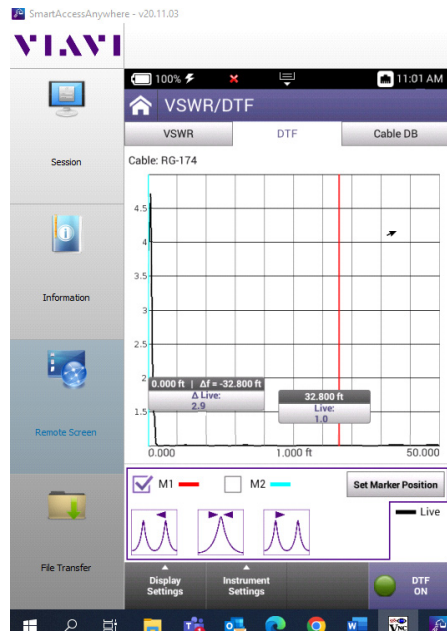
Figure 2-14 Remote Screen Page

Once you have completed the session, click on the Session button and then 'Disconnect".
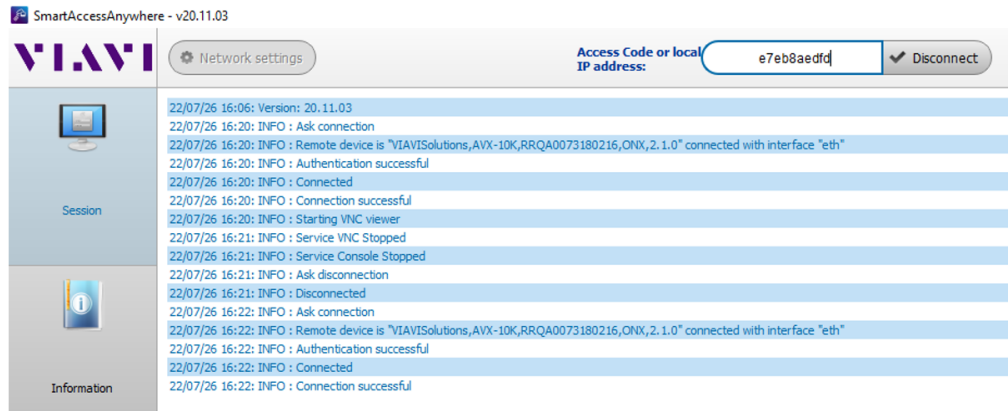
Figure 2-15 Session Button

2.3.4   HTTP File Server

Enabling the HTTP File Server in the Remote Operation System Settings allows a user to transfer files directly from the AVX-10K using a web browser.
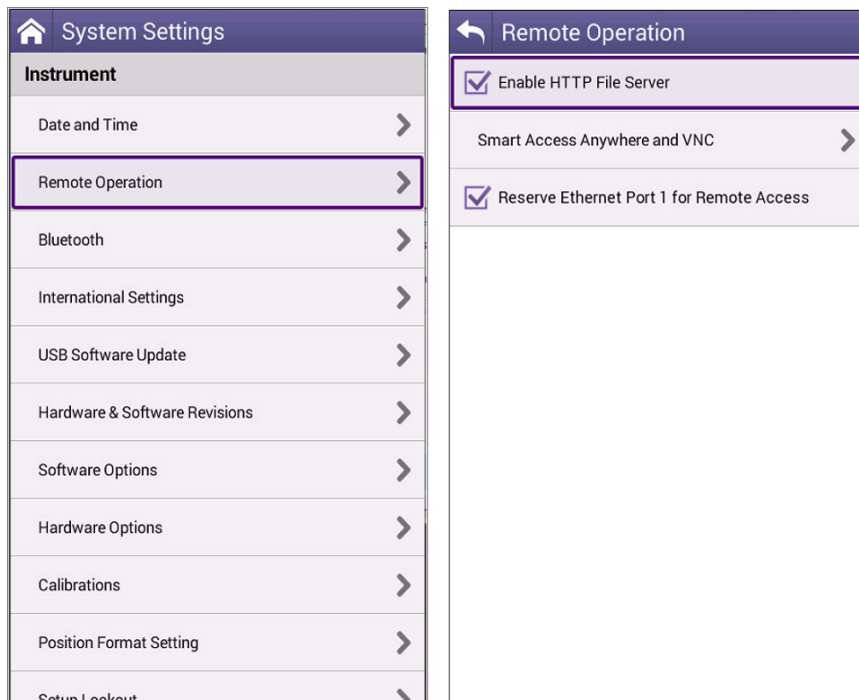
Figure 2-16 Enable HTTP File Server Feature

An example of the web browser interface is shown here in Figure 2-17. To use this feature, simply type in the IPv4 Network address of the AVX-10K in the address bar of the browser – 10.170.170.58 is used here.
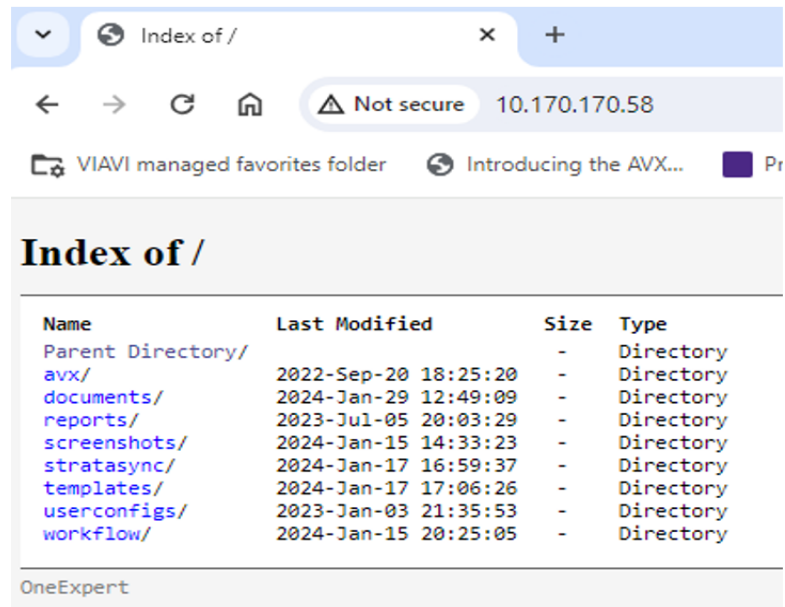
Figure 2-17 Example HTTP File Server Browser

The IPv4 address can be found in the System Network application.
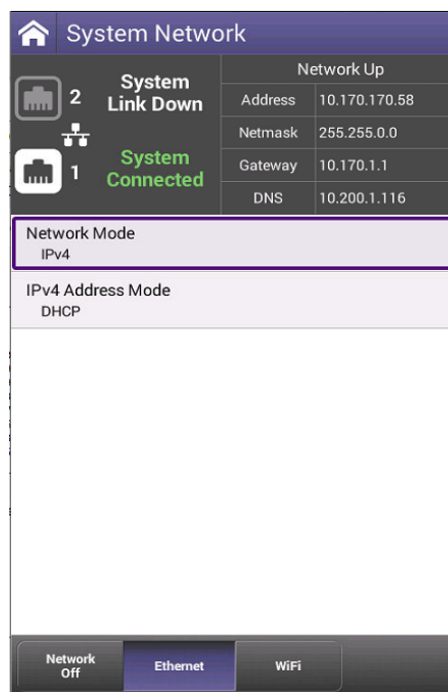
Figure 2-18 AVX-10K Network Address

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.
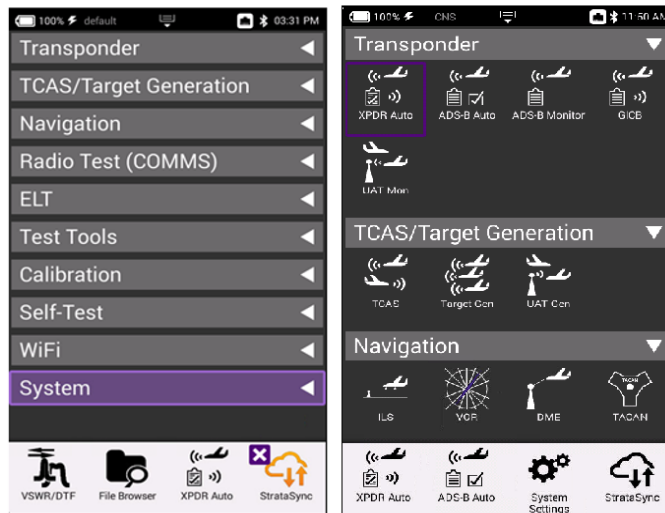
Figure 2-19 Home Screen Examples

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.
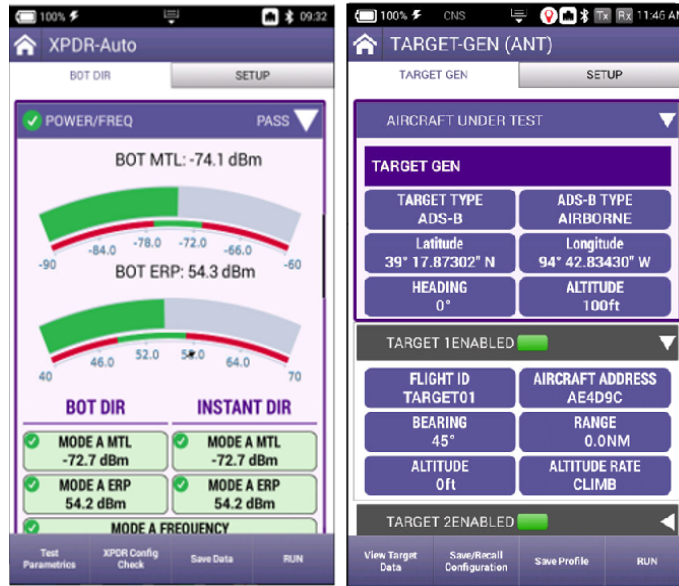
Figure 2-20 Application Screen Examples

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 network connection indicator will look like this:

Figure 2-21 LAN Port Indicator

When connected to WIFI, the network connection indicator will look like this:

Figure 2-22 WIFI Indicator

- **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.
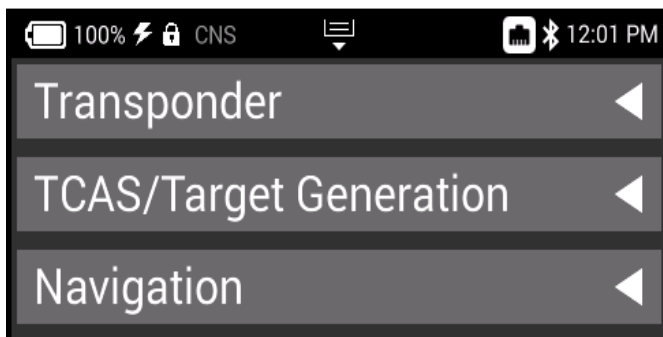
Figure 2-23 UI Header Info and Indicators

- Battery Status Indicator

 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.

- AC Power Indicator

 The AC Power Indicator is displayed when the device is connected to an AC power supply.

- Lock Indicator

 This is an indication that the system settings have been locked by the administrator of your AVX-10K. No setting parameters can be modified while in this state.

• GPS Connection Indicator

This indicates the status of your GPS Connection: Green indicates a 3D Fix; Yellow indicates a 2D Fix, and Red indicates it is in an Acquisition state.

• Network Connection Indicator

The Network Connection Indicator is displayed when the device is connected to an active LAN via one of the device's Ethernet connectors.

• WiFi Indicator

The WiFi Indicator is displayed when the device is connected to a network via WiFi.

• Wireless Indicator

The Wireless Indicator is displayed when Wireless mode is enabled on the device.

• Remote TX and RX Indicators

The Remote TX and RX indicators are displayed in the header. When connected remotely, these indicators will reflect the same settings as the TX and RX LEDs and flash green when ON.

• System Error Indicator

See "Notifications" for information about the Notifications panel.

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.

• 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.

Function Off
Function icons are displayed with a white background when the function is inactive (turned off).

Function Initialized
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.
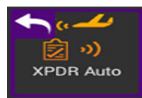
Function Running
Selecting the Back Arrow will disable or stop the application.

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).

The Back Arrow is used to:
- 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
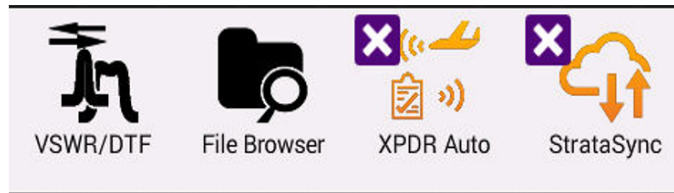
Figure 2-24 UI Shortcuts Panel

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
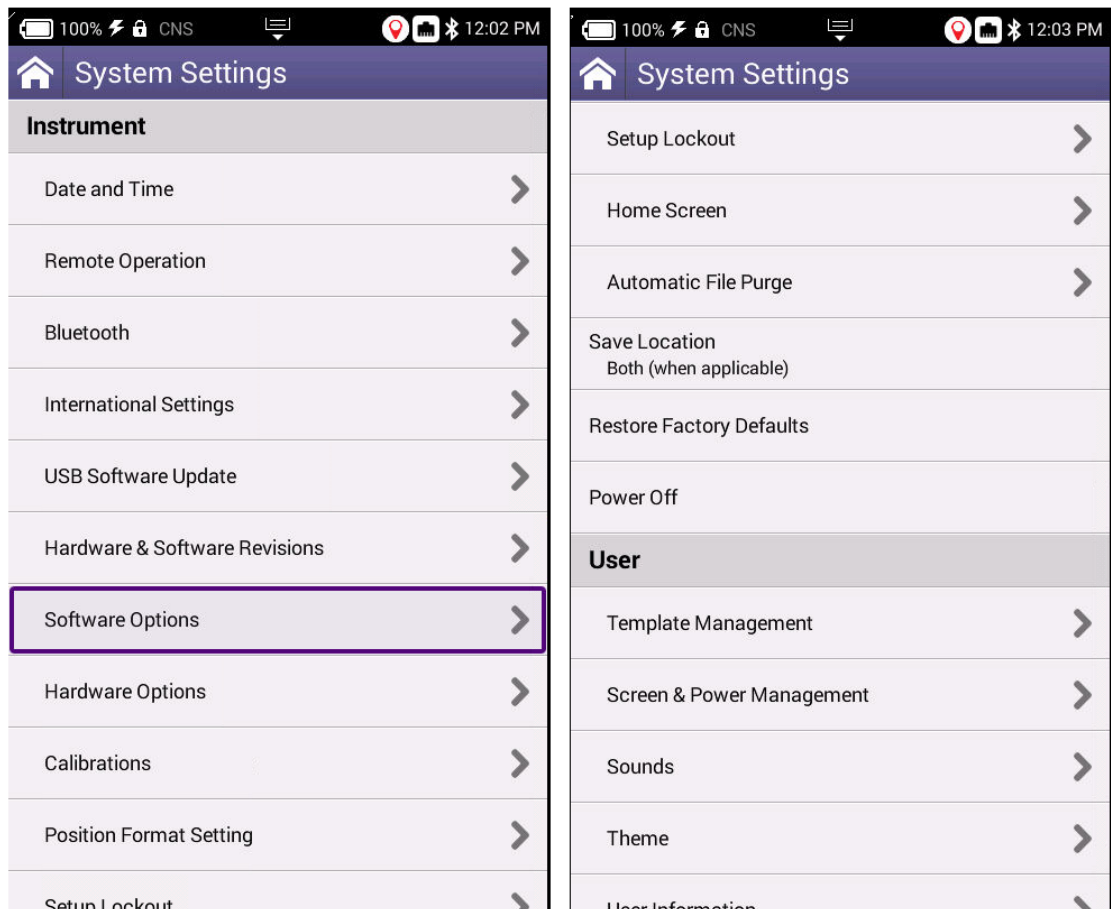
Figure 2-25 System Settings

2.9   Configuring System Settings (cont.)

- **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 2.3. Typically, all settings are left enabled. You can enter a password to be used for VNC viewer connectivity.

- **Wireless** 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 Techapp. 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 drive, this is the right place. There should only be one software update file on the root drive of the USB drive. Insert a USB drive 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.

- **Setup Lockout -** Locks and unlocks access to the Setup tabs for XPDR Auto, ADS-B Auto, TCAS, ILS, VOR, and TACAN applications. Once enabled, the password will also be required to access System Settings. To properly enable or disable this setting, you must exit all the way out of System Settings (icon must be white and not orange). The password is 2891.

- **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. More information on Templates can be found in the StrataSync manual. Templates are a snapshot of all of the system settings and are a way to align configurations across multiple AVX-10Ks. Templates are pushed out to test sets from StrataSync. Once available on the AVX-10K after a sync, the template can be loaded from this screen.

- **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.

NOTE: 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.

NOTE: Hidden SSIDs are not currently supported. To connect, un-hide the SSID, connect the AVX-10K and re-hide the SSID or leave the SSID unhidden.

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 Wireless Connection

The Wireless option allows communication with a paired mobile device.

Enable Wireless Connectivity

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

1. Navigate to the Wireless panel (System Settings > Wireless button).

• The Wireless panel is displayed.

2. Select the tick box to Enable Wireless.

• Wireless connectivity is enabled.

Connecting to a Wireless Device

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

1. Go to the System Settings menu, then select Wireless. The Wireless Settings menu appears.

2. Press the box next to Enabled. A checkmark appears.

3. Press Scan for devices. The instrument scans for Wireless 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.Virtual "UI" Keyboard

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"

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.
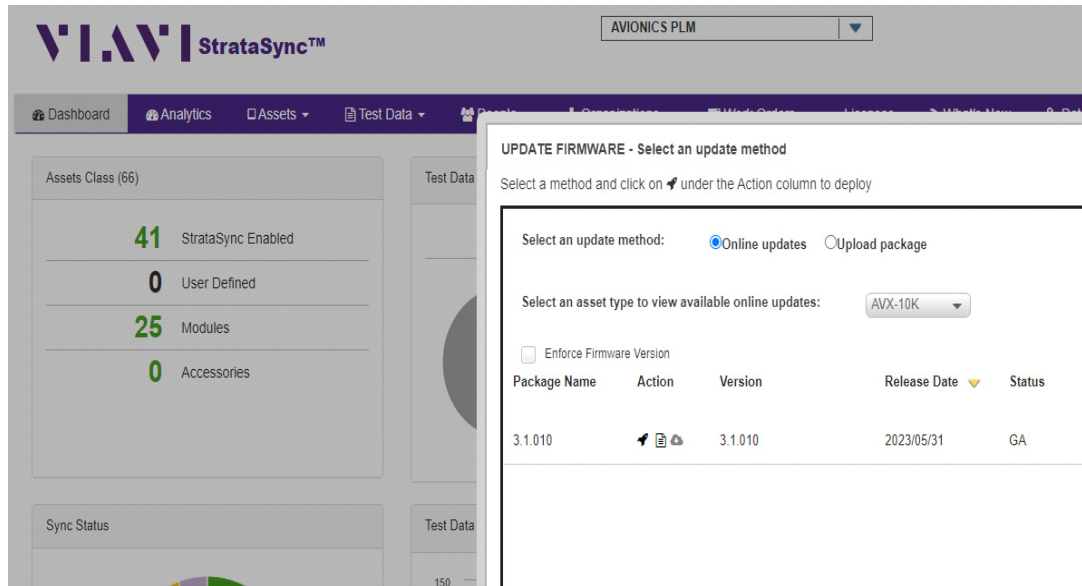
Figure 2-26 StrataSync™ Update

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 Software Download Page:
   • https://www.viavisolutions.com/en-uk/software-download/avx-10k-flight-line-test-set

2. Select the latest/desired software version release.
3. Download the file to your PC.
   a. There are two files – The Software and the Release Notes.
   b. VIAVI Solutions advises reviewing the release notes prior to upgrading.
   c. The Software file is in .oxu format (approx. 200-300MB size) and needs no special file structure or unzipping.
   d. Do not alter the filename.

4. Prepare a USB Drive as FAT32 file format.

a. VIAVI Solutions advise a freshly formatted USB Drive from a reputable manufacturer, preferably with no other files on it.

5. Copy the.oxu file from step 3 to the root directory of the USB Drive.

6. Safely Eject and remove the USB Drive from your PC.

7. Ensure the AVX-10K is connected to a power source.

8. Insert the USB Drive into either of the two USB slots on the right-hand access panel of the AVX-10K.

9. Navigate to "System Settings" from the Menus.

a. Select "USB Software Update".

b. The AVX-10 will automatically prompt you for the file on the root directory of your USB Drive.

c. Accept the pop-up from stage ii.

d. Ensure "Force Software Update" is selected.

e. Press the "Update" button at the bottom right of the display.

f. Review the pop up ensuring that the "Currently installed" and "To Be Installed" are both in line with what you expect.

10. The unit will now switch to a basic VGA-style blue screen to start the process. This process can take up to 15 minutes.

11. Once the process is complete, the unit will shut down itself. Remove the USB Drive at this point and power the unit back on.

12. Once the AVX-10 has booted, navigate back to "System Settings" from the Menus

a. Select "Hardware & Software Revisions".

b. Ensure that "SW Bundle" header and "Solution" panel on the list reflect what you expect/SW installed.

2.10.6 Updating Software Options on AVX-10K

1. From the StrataSync™ account, select "Manage Asset Options" from the Assets Menu at the top of the screen.
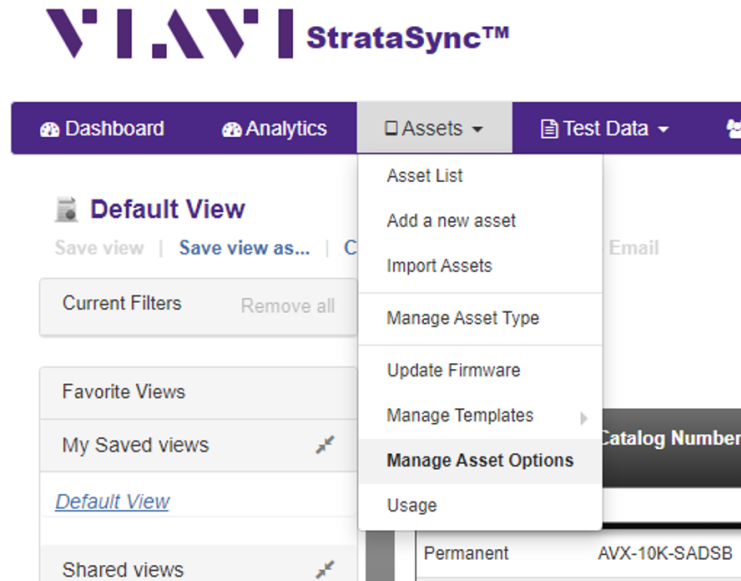
Figure 2-27 Manage Asset Options

2. All available software options will be displayed along with the available quantity for distribution.

License Type	Catalog Number	Description	Organization Name	Full Org Path	Asset Type	Expiration Date	Total Quantity	Available	Assigned	Orders	
Permanent	AVX-10K-SADSB	ADS-B In/Out & GICB	AVIONICS PLM	AVIONICS PLM	AVX-10K			6	6	0	1
Permanent	AVX-10K-STCAS	TCAS	AVIONICS PLM	AVIONICS PLM	AVX-10K			6	1	5	1
Permanent	AVX-10K-SUAT	UAT In/Out	AVIONICS PLM	AVIONICS PLM	AVX-10K			22	10	12	4
Permanent	AVX-10K-SXPDR	Transponder Modes A,C,S	AVIONICS PLM	AVIONICS PLM	AVX-10K			6	6	0	1
Permanent	AVX-10K-SDME	DME	AVIONICS PLM	AVIONICS PLM	AVX-10K			32	5	27	3
Permanent	AVX-10K-SNAV	Navigation (ILS / MB / V...	AVIONICS PLM	AVIONICS PLM	AVX-10K			25	18	7	1

Figure 2-28 Available Software Options

3. Double-click on the option that you wish to deploy and select the AVX-10K that you wish to enable with this software option. Ensure that the serial number of the AVX-10K is the correct device. Click the checkbox to the left of the selected AVX-10K and choose "Deploy" from the Actions pulldown.
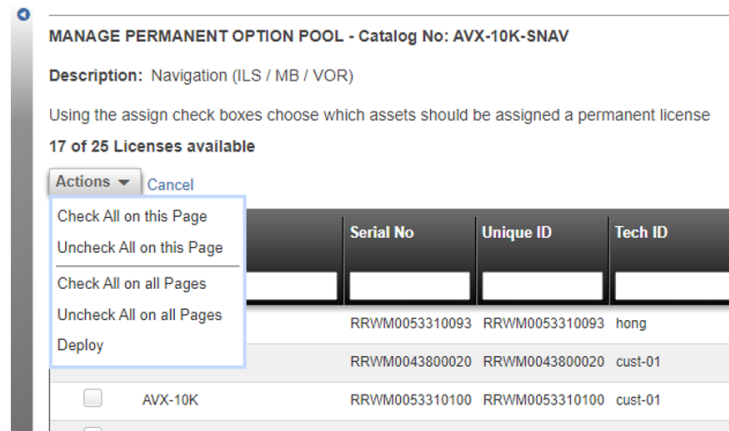
Figure 2-29 Actions Pulldown Selections

4. The DEPLOY OPTION window will appear to **CONFIRM** the option. If you are deploying the option via StrataSync do not select the "Send an email".
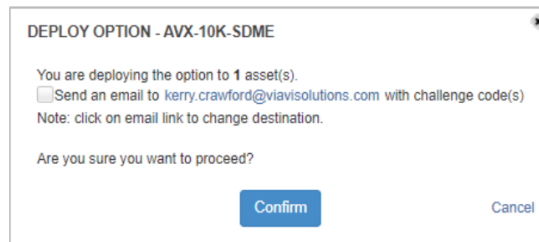
Figure 2-30 Deploy Option Window

NOTE: By selecting "Send an email", this will send an Option Key to the registered email allowing you to download and install via USB.

5. You should receive a response indicating that the software option has been deployed. Go to the StrataSync application on the AVX-10K that the software option has been deployed to and press the Start key in the lower right corner. You will be asked if you want to deploy the selected option.
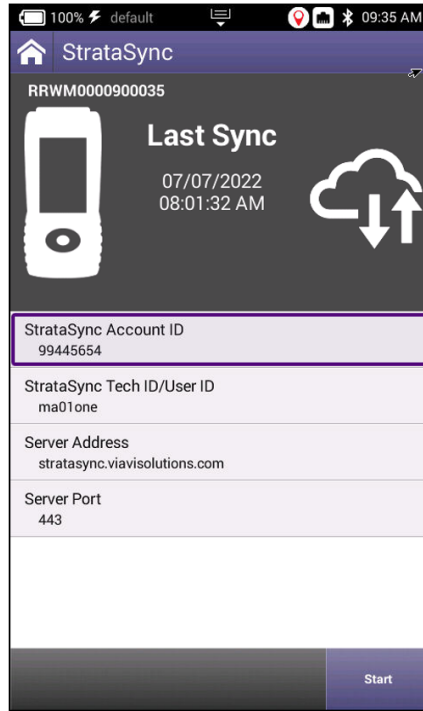
Figure 2-31 StrataSync Application

3

Test Application Common Settings/Steps

This chapter describes the settings that are widely reused in the supplied applications. We also discuss the File Manager and Report File system

3.1　Antenna Setups

3.1.1　Direct with Coupler

Figure 3-1 Coupler Test Setup

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

Figure 3-2 Over-the-Air Test Set-Up

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.

Three antennas are shipped with the AVX-10K-CNS kit. The larger panel antenna (AC10K-ANT-FPANT) is intended for use with all Transponder, TCAS, Target Generation and the DME Applications.

Figure 3-3 Panel Antenna (AC10K-ANT-FPANT)

The other two antennas (AC10K-ANT-ILS and AC10K-ANT-MB) are intended for use for Navigation, COMMs and ELT Testing. The AC10K-ANT-ILS antenna has a rubber base and can be extended. The AC10K-ANT-MB antenna is short, non-extendable and rubber encased (shown below on the right).

Figure 3-4 Antennas (AC10K-ANT-ILS and AC10K-ANT-MB)

The intended usage for these antennas is described here:

Table 3-1 Antenna Usage

Antenna	Usage
AC10K-ANT-ILS	Non-extended Usage: Glide Slope testing; Marker Beacon; ELT 406 MHz Testing Extended Usage: Localizer and ELT 121.5/243 MHz Testing
AC10K-ANT-MB	Specific Marker Beacon Testing (Testing for MTL levels)

> **NOTE: For most cases of ILS Testing (including Marker Beacon), the extendible ILS antenna alone should be sufficient.**

3.1.3   Direct to UUT

Figure 3-5 Direct to UUT Test Setup

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)

Figure 3-6 Example Setup Tab

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.
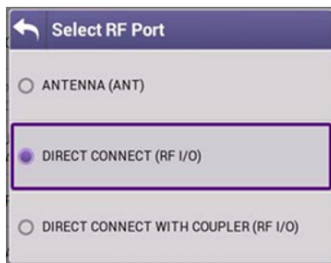
Figure 3-7 Select RF Port

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.

> **NOTE:** 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.
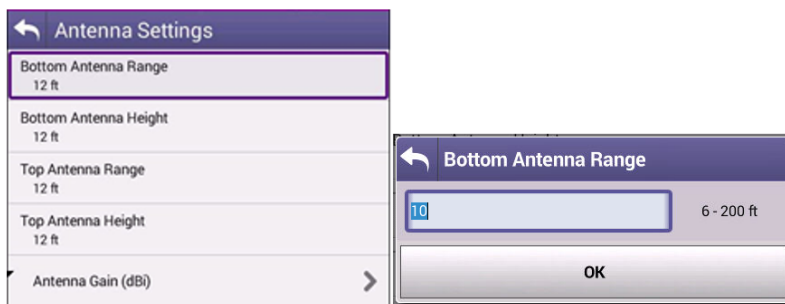
Figure 3-8 Antenna Settings
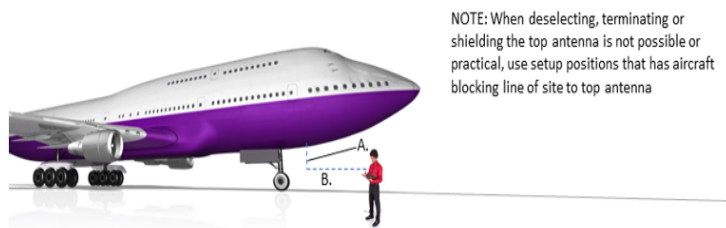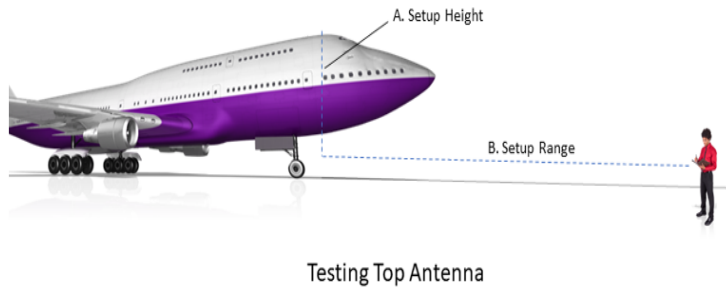
Figure 3-9 Range and Height Value Determination

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

Figure 3-10 Antenna Gain Values

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.
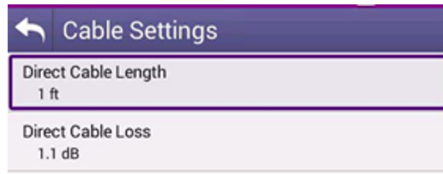
Figure 3-11 Cable Settings

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.
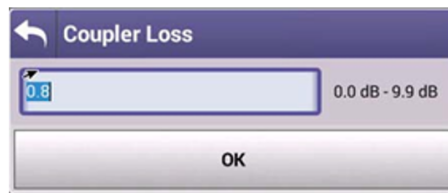
Figure 3-12 Coupler Settings

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.
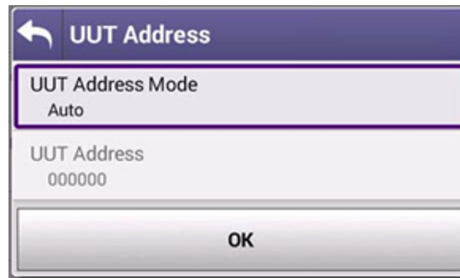
Figure 3-13 UUT Address

3.2.6   Position Settings

This setting allows you to set the position data (LAT/LONG) used for ADS-B Auto, ADS-B Mon, GICB applications, and both the 1090 and UAT Target Gen applications.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.
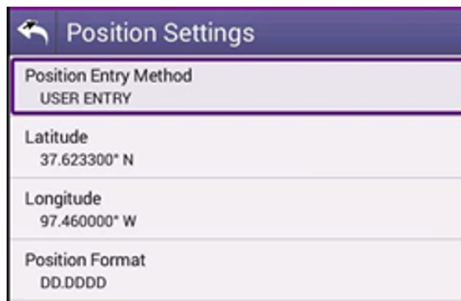
Figure 3-14 Position Settings

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). Most often this should be left as DF17. The DF18 option is used for beacons placed on obstacles around airports or in vehicles that are travelling around aircraft.

• **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.
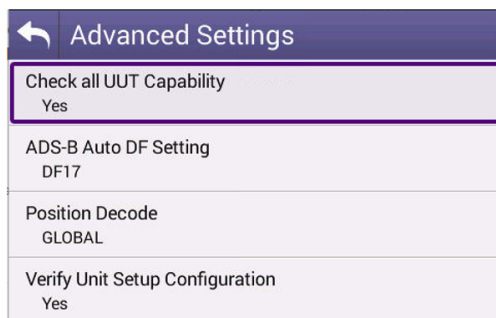
Figure 3-15 Advanced Settings

3.2.8   Recall Data Button
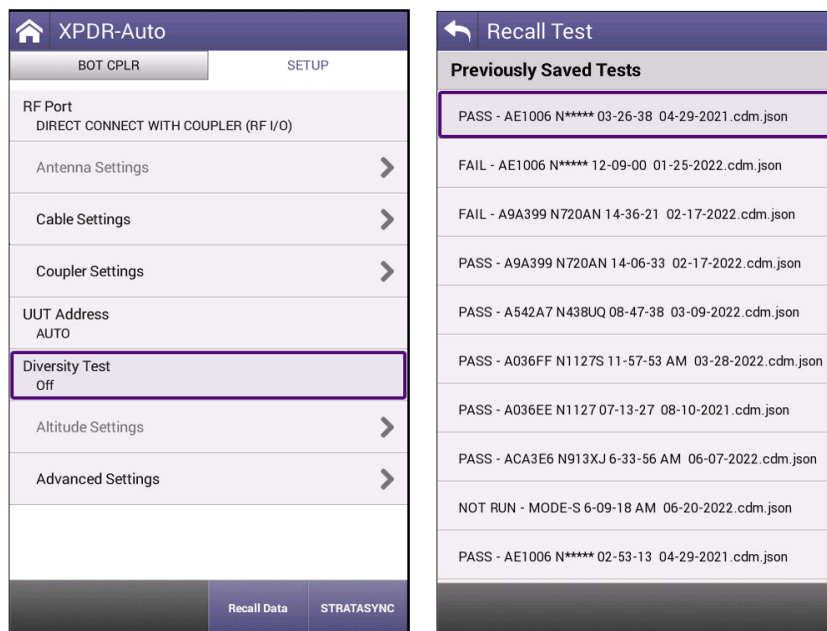
Figure 3-16 Recall Data Button

At the bottom of most SETUP screens is a "Recall Data" button. Pressing this button will bring up a list of Previously Saved Tests. You can select any of these tests and then press the LOAD key and the main screen of the associated instrument will populate the fields and display the data in the state that it was displayed when the SAVE was performed. This is an optional way to view report data.
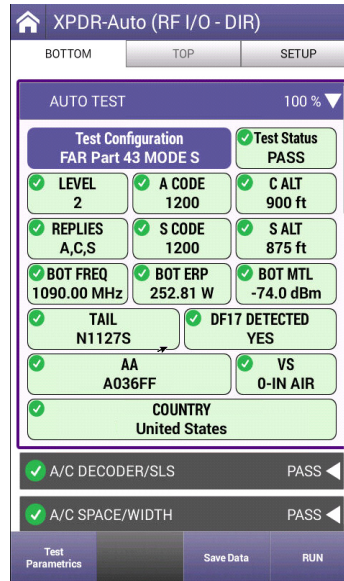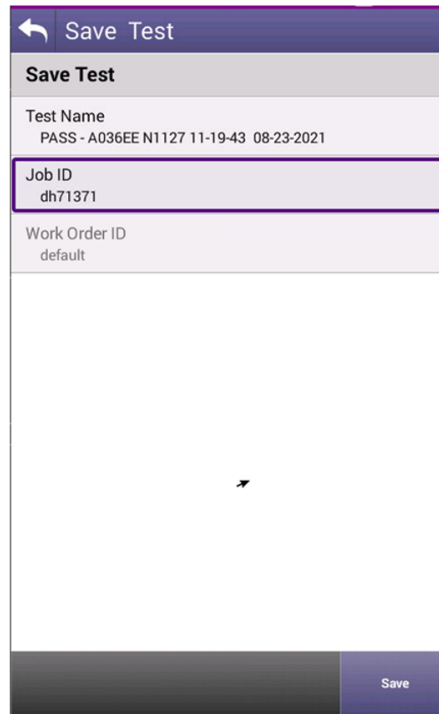
Figure 3-17 Screen Example After Recalling Data

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.

Figure 3-18 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 drive 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.
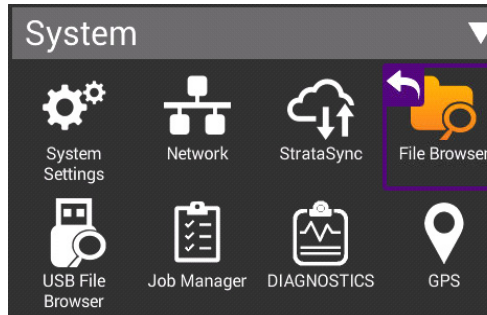
Figure 3-19 System Ribbon

Use the up and down arrow keys to navigate folders or files.
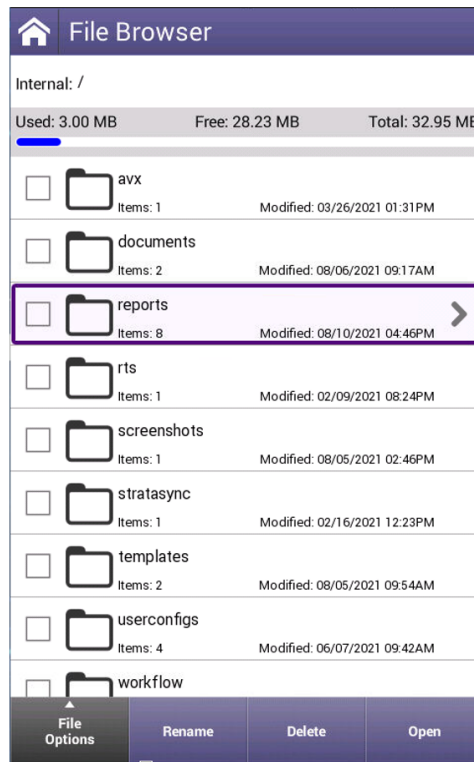
Figure 3-20 File Browser

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
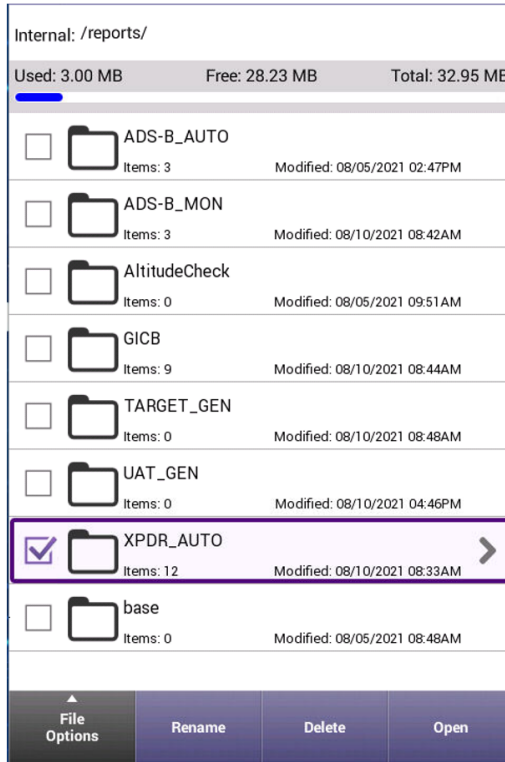
Figure 3-21 File Options

Once opened, a list of test results are shown in TXT, HTML and .json formats.
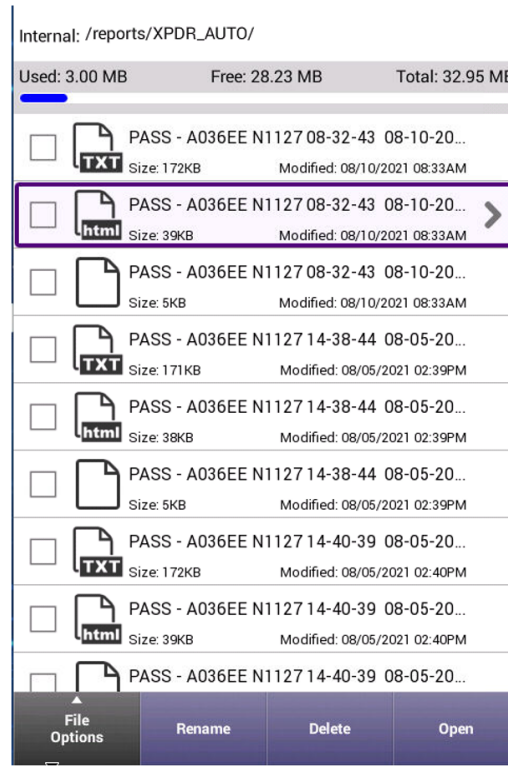
Figure 3-22 Test Reports File List

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. This is the quickest and most concise way of viewing reports
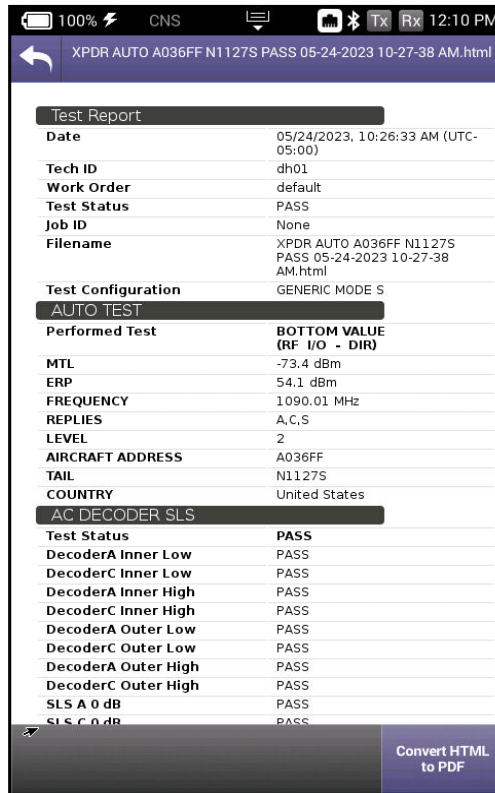
Figure 3-23 Example Test Report

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.

USB File Browser

When a USB drive is inserted into one of the USB ports on the side of the test set, the USB File Browser icon will appear in the system tray. All of the File management steps described above are available for this device.
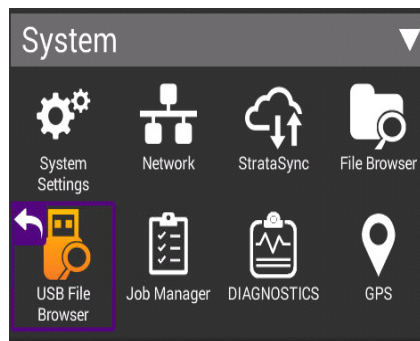
Figure 3-24 USB File Browser Icon

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4

Transponder

This chapter describes each of the Transponder and UAT related applications, setup parameters and how to run tests and save results or profiles. This chapter contains the following sections:
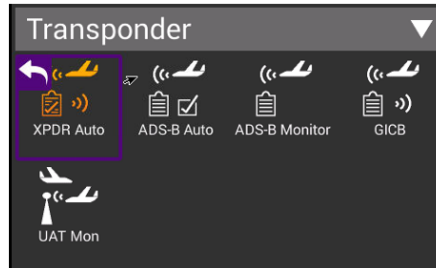
4.1   XPDR Auto

Figure 4-1 Transponder Application

4.1.1   Unique Setup

Refer to Chapter 3 for common setup items.
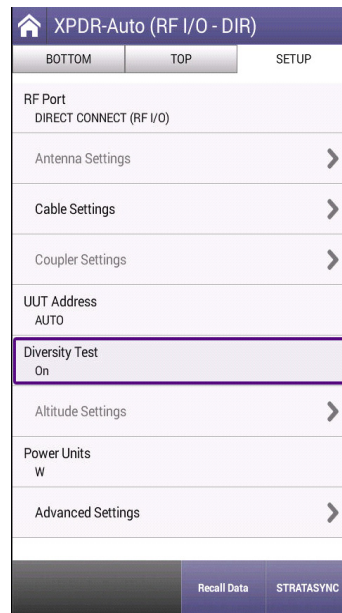
Figure 4-2 XPDR Auto Setup Page

Table 4-1 XPDR Auto Test Unique Settings

Setting	Definition
Diversity (on, off)	Set to 'On' to test both top and bottom antennas for a diversity system and Diversity Isolation Test
Altitude Settings	This item gets enabled when ALTITUDE CHECK is selected as the Test Configuration. Here you can enter various Altitudes that will get stepped through when running the ALTITUDE CHECK test.
Power Units	Allows for measured power to be displayed in Watts or dBm.
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.

> **NOTE:** Transponder class and option identification are found on the transponder's TSO label.
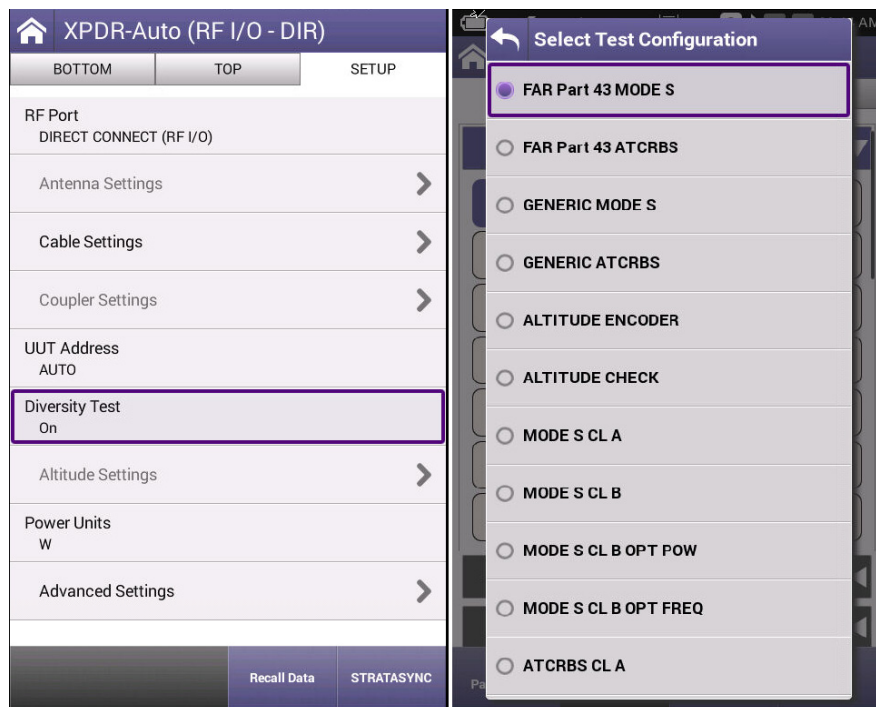
Figure 4-3 Transponder Auto Test

Table 4-2 XPDR Auto Test Configurations

Configuration	Definition
FAR Part 43 MODE S	Runs only the tests associated with FAR Part 43 Appendix F as required by 91-413 test requirements for Mode S Transponders
FAR Part 43 ATCRBS	Runs only the tests associated with FAR Part 43 Appendix F as required by 91-413 test requirements for ATCRBS Only Transponders
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 ENCODER	Provide external Data Stream of Mode C and Mode S altitude to support Air Data system and encoder performance. This configuration also supports data streaming for third-party 91.411 altimeter testing applications.
ALTITUDE CHECK	Allows for altitude testing for up to 25 altitude settings.
MODE S CL A	Tests Mode S Class A transponders.

Table 4-2 XPDR Auto Test Configurations (Continued)

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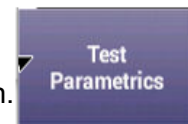
By selecting this you will see the predefined limits applied to ERP, Frequency and MTL measurements for the test configuration selected.

Figure 4-4 Parametrics Measurements

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.
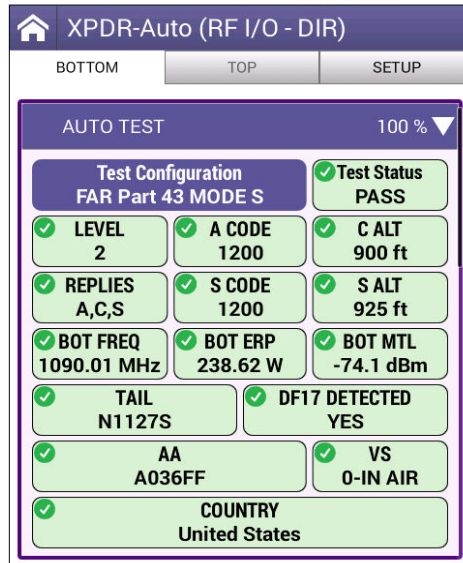
Figure 4-5 XPDR Auto Test Results Summary

If any of the tests fail, you can open the associated ribbon to see the resultant failure.
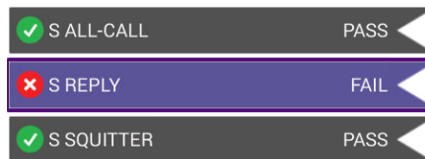
Figure 4-6 Example XPDR Failed Test Ribbon
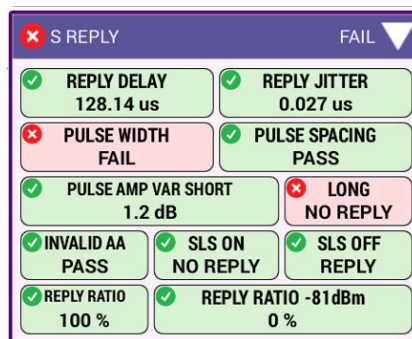
Figure 4-7 Example XPDR Mode S Reply Fail

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.
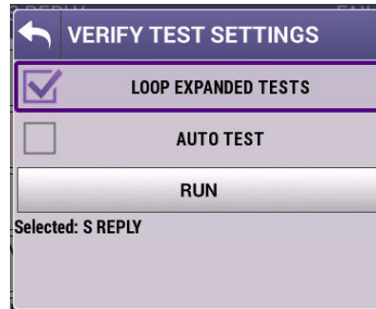
Figure 4-8 Verify Test Settings

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.
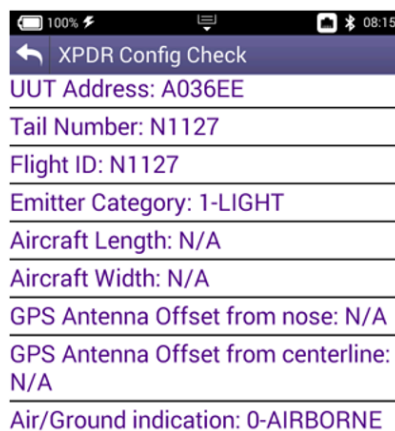
Figure 4-9 XPDR Config Check

> **NOTE:** In the test results, the nomenclature ITM refers to "Intermode". Intermode is when a Mode A or C Interrogation is tested along with a Mode S Interrogation. See Appendix A for more details on XPDR Auto Test Results.

4.1.2.1   Run Encoder Test

To capture altitude results with a faster interrogation rate, expand the A/C Decoder SLS ribbon, press the RUN button and select LOOP EXPANDED TEST. Press the RUN button then at the bottom of the screen ensure that the Encoder Test On softkey is in the ON position. This setting will provide a faster interrogation rate to display the MODE C Altitude.
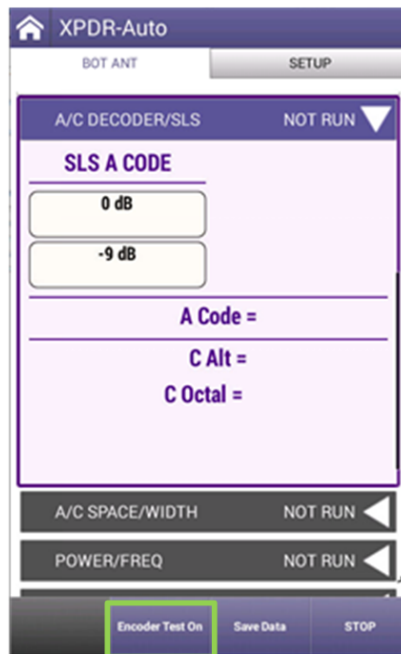
Figure 4-10 Encoder Test in Decoder Ribbon

4.1.2.2 Run Encoder Test as Standalone Test / External Data Stream for CFR 91.411 Test Support

With software versions 4.0 and higher, Altitude Encoder testing can be accomplished as a standalone operation. The captured transponder data can be streamed in JSON format to an external application that can then be integrated into a Pitot/Static (Air Data Test Set) test application for 14 CFR 91.411 test and reporting requirements. The streamed data provided for integration is shown in the following screenshots. To accomplish this integrated closed-loop testing, the AVX-10K is simply a provider of captured transponder data.

To start this process, select Altitude Encoder from the Test Configuration of the XPDR-Auto application.
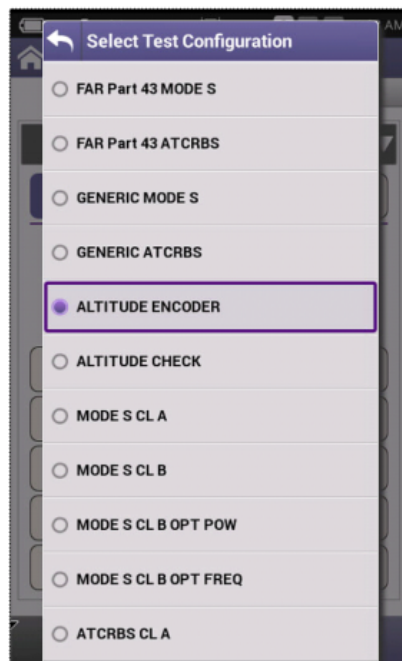
Figure 4-11 Altitude Encoder Configuration

To initiate the test function:

1. Ensure the AVX-10K setup parameters are set correctly.

2. If data out streaming is required - To enable external data streaming via either the USB connectors on the side of the AVX-10K, connect your crossover serial cable from an AVX-10K USB output to your device.

3. Confirm the test aircraft is in the proper configuration.

4. Provide simulated pitot / static air data from the Air Data Test set.

5. Initiate the test by clicking Run on the AVX-10K. The AVX-10k will now display the relevant transponder data.

6. If data streaming is required - Once the test is running and transponder data is available, select the "Enable Altitude Streaming" softkey. The received transponder data will now be streamed out from the AVX-10K via the USB channel.

> **NOTE:** It is good practice to turn off the streaming feature prior to disconnecting the USB serial cable.

> **CAUTION:** Testing over-the-air with ADS-B transponder turned on can cause interference with ATC and nearby aircraft. Utilize antenna couples and prosper shielding where applicable and refer to SAFO 17002 and follow proper procedures to avoid.
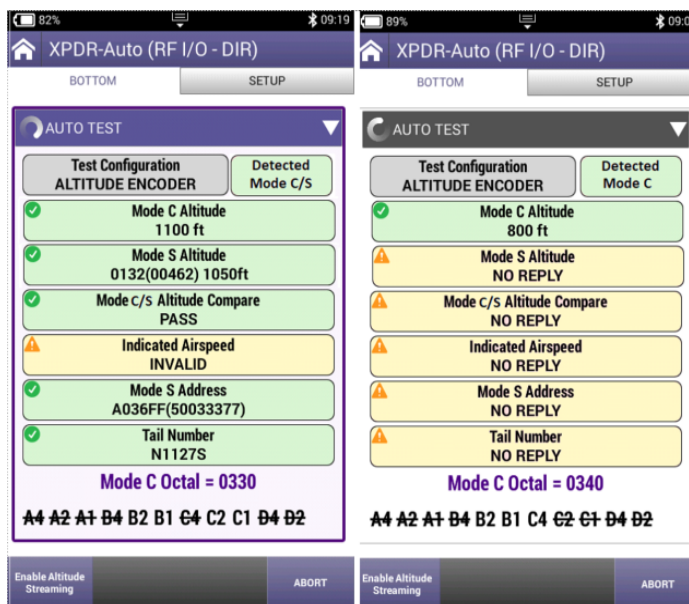
Figure 4-12 Altitude Encoder Sample Screens

This will provide the captured data to be broadcast via the USB port in a JSON format. An example of the captured data is shown here for reference:

```
{
    "Timestamp": "07\/10\/2023 02:01:55,715 pm",
    "Altitude": [
      {
        "ModeC": "2000 ft",
        "ModeS": "01B9(00671) 2025ft"
      }
    ],
    "Airspeed": [
      {
        "Indicated": "INVALID"
      }
    ],
    "ModeS": [
      {
        "Address": "A036FF(50033377)",
        "TailNumber": "N1127S"
      }
    ]
}
```

Figure 4-13 Streamed Data Content Example

NOTE: In the case shown above, pitot static airspeed was not being provided, so the AVX-10K is reporting that data as "INVALID".

4.1.2.3 Run Altitude Check Test

One reason that you may want to run this test is that you would like to generate a report that shows correct response to all altitudes in order to verify an aircraft with a Gillham encoder installed (grey codes).

To perform this test, select ALTITUDE CHECK for the test configuration and set the number of altitude steps necessary and all of the associated altitude settings on the setup page.
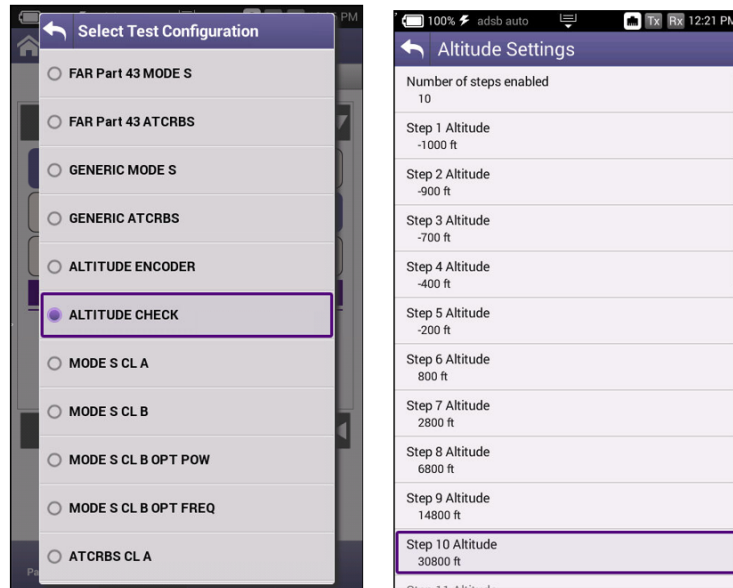
Figure 4-14 Altitude Check Configuration

Once all of your setup parameters are adjusted, click the RUN button to begin capturing transponder data. This test guides you through the steps of testing all of the setup altitudes. You can back up a step in case that you got out of sequence by pressing the "Retest Prev Step" softkey.
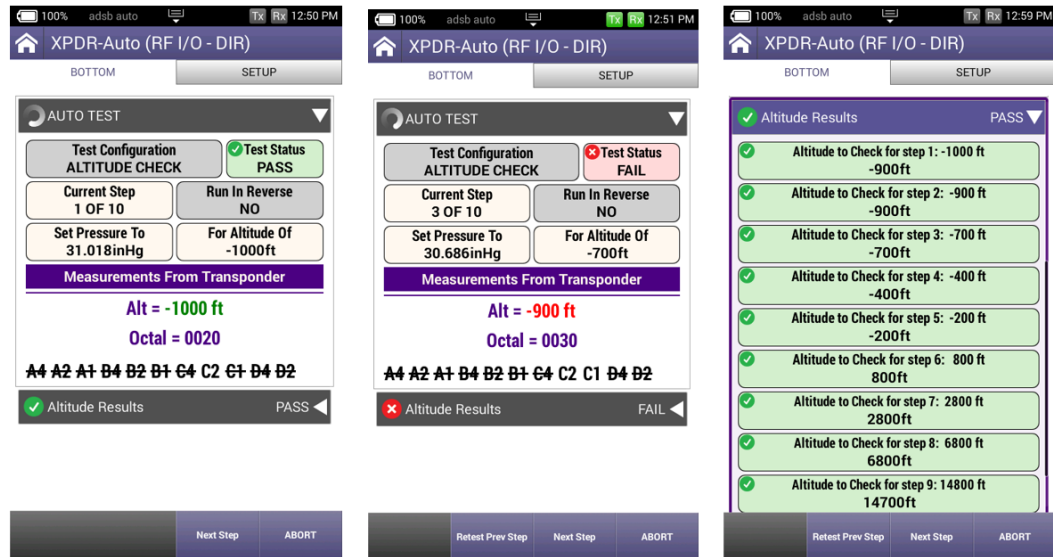
Figure 4-15 Altitude Check Sample Screens

Once all steps have been completed and the last step has been saved, be sure to save all of the data by pressing the "Save Data" softkey and clicking OK on the next screen. This test report can be pushed to your StrataSync account and downloaded or viewed from there.

4.1.3   Common Test Results

Table 4-3 XPDR Auto Test Common Results

Test Status Indication	Definition
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 run, 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 Application
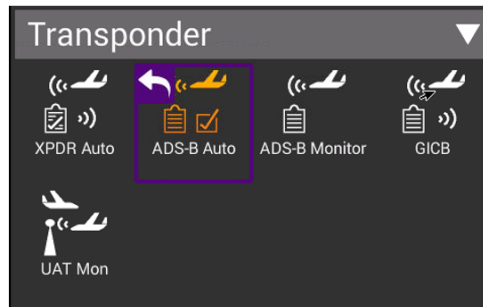
Figure 4-16 ADS-B Auto Application

4.2.1 Unique Setup

Refer to Chapter 3 for common setup items.
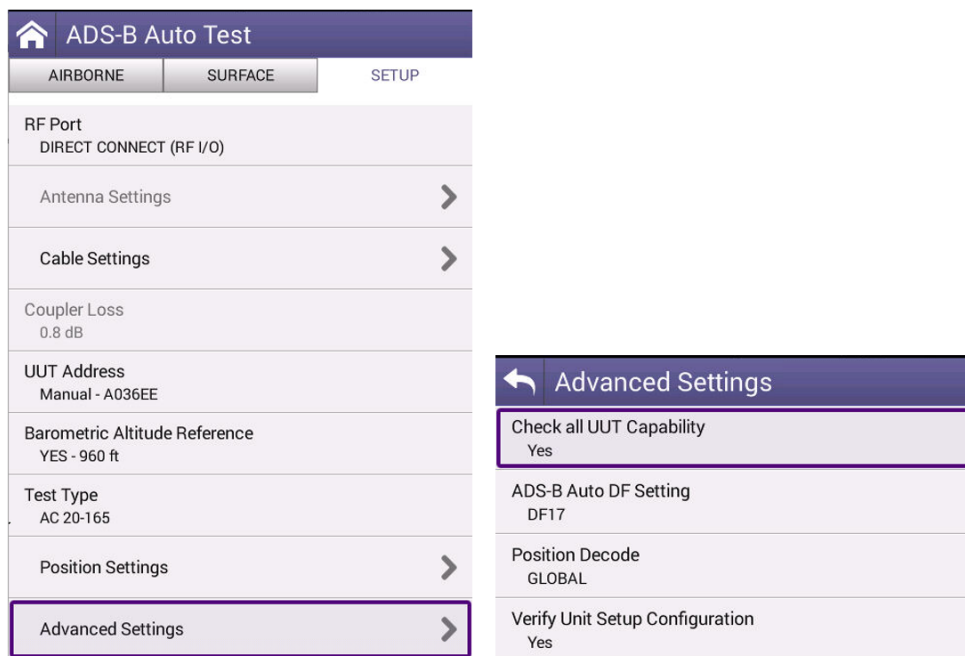
Figure 4-17 ADS-B Test Setup

Table 4-4 ADS-B Auto Test Unique Settings

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 – ADSB Auto DF Setting	Choose DF17 (typical – for Mode S transponders) or DF18 (1090MHz emitters). Most often this should be left as DF17. The DF18 option is used for beacons placed on obstacles around airports or in vehicles that are travelling around aircraft.
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.
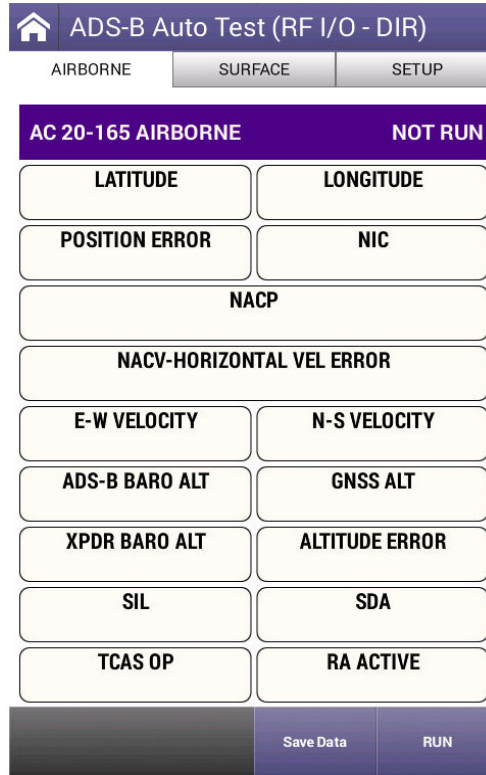
Figure 4-18 ADS-B Auto Test Airborne

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.

Figure 4-19 ADS-B Auto Test Surface

Once the testing completes successfully, the screens will look similar to this:
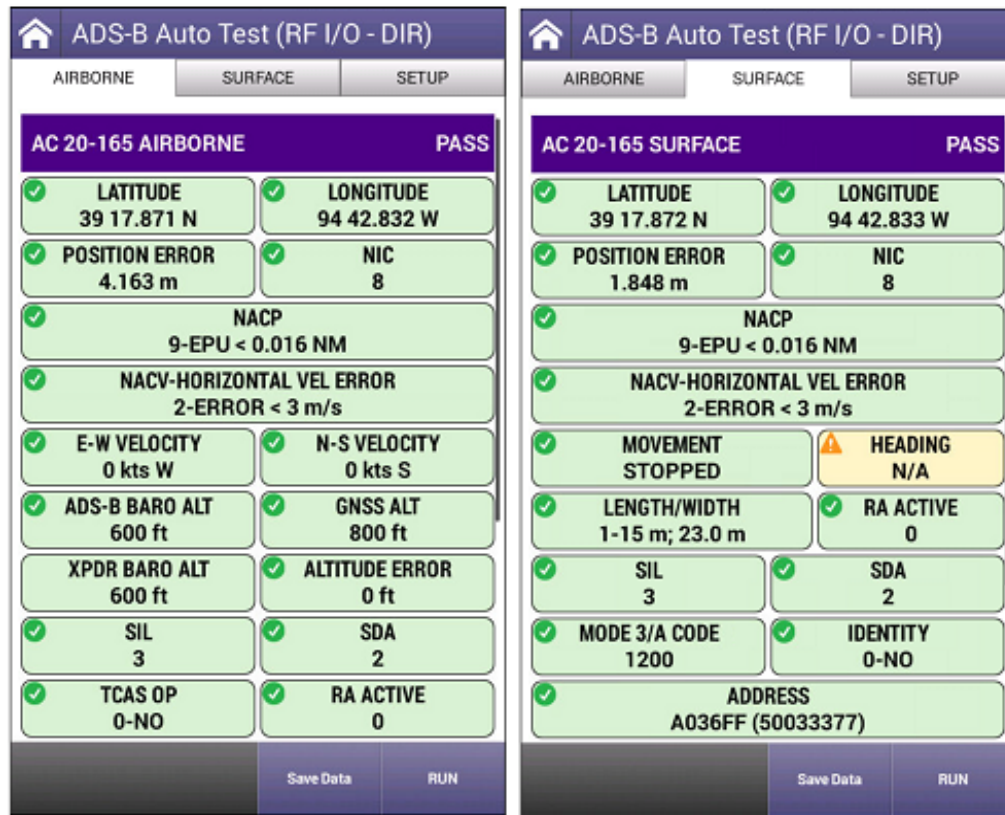
Figure 4-20 Completed ADS-B Auto Test Screens

▷ **NOTE:** If the HEADING field is displayed in yellow (typical), this is because the aircraft is stationary.

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.

Table 4-5 Unique Setup Settings

Setting	Definition
Advance – ADS-B Auto DF Setting	Choose DF17 (typical – for Mode S transponders) or DF18 (1090MHz emitter). Most often this should be left as DF17. The DF18 option is used for beacons placed on obstacles around airports or in vehicles that are travelling around aircraft.
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 ADS-B Monitor

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).
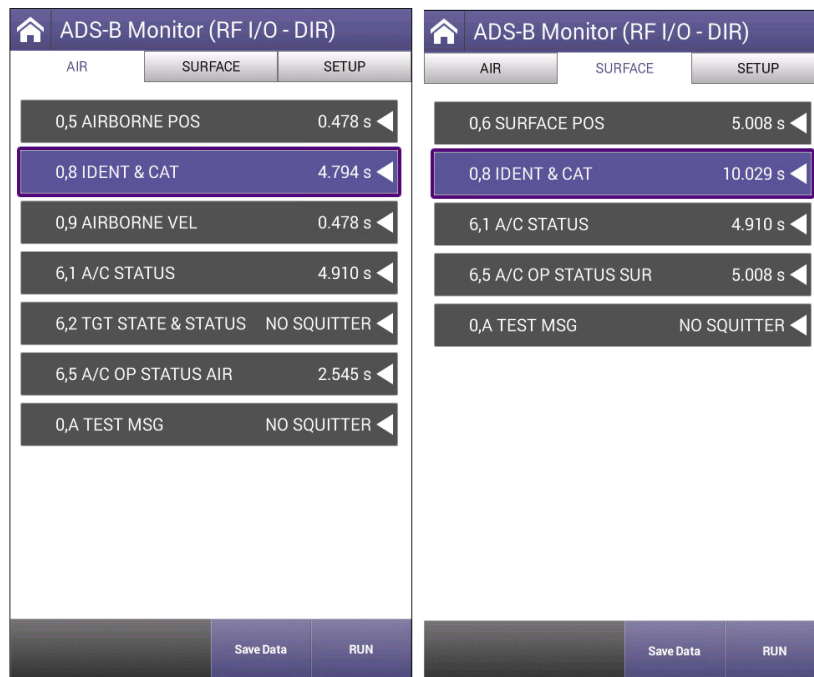
Figure 4-21 ADS-B Monitor Air and Surface

When running this test, the returned values can include:

- INTERVAL TIME (squitter has been captured)

- NO SQUITTER (squitter not captured)

- NO REPLY (no squitter was received)

- NOT RUN (test has not yet been run)

- BAD SETUP – This can happen for a number of reasons:

1. An ADS-B Version Number earlier than DO-260B is being broadcast

2. The RF input was overloaded at the beginning of the test (usually indicates that antenna range/height and/or cable loss values are incorrect).

4.4   GICB

GICB mode fully decodes and displays all Enhanced Surveillance BDS register contents.
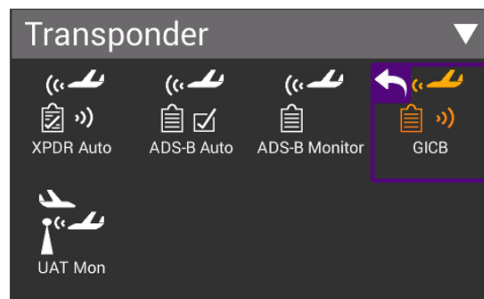
Figure 4-22 Transponder GICB Application

4.4.1 Unique Setup

Refer to Chapter 3 for common setup items.

Table 4-6 GICB Unique Settings

Setting	Definition
Advance – GICB Downlink Format	Choose DF20 or DF21. Typically left as DF20. This option is available for change due to the transponder specification.
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 Transponder GICB Application

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).
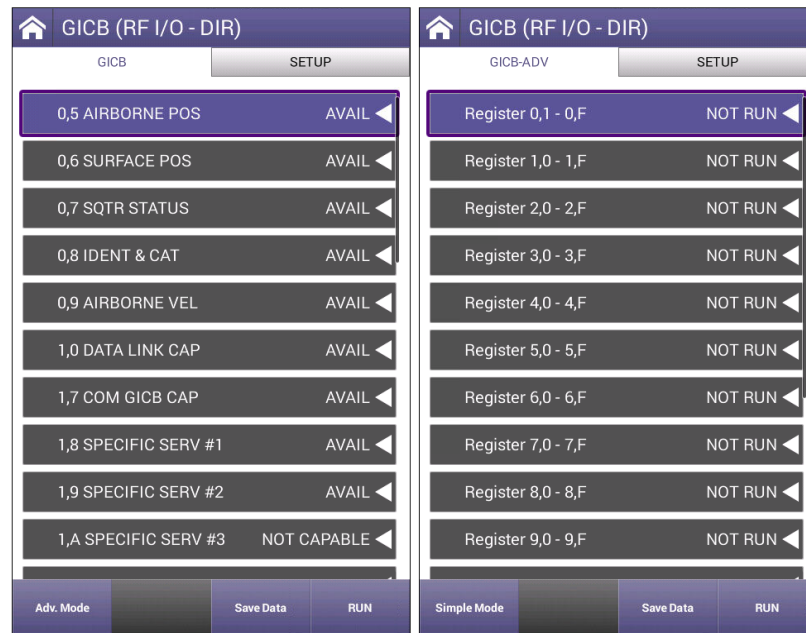
Figure 4-23 GICB Monitor Screens

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

4.5   UAT Monitor
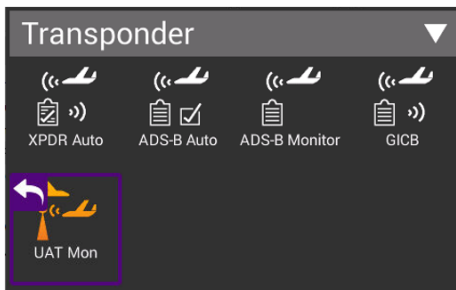
Figure 4-24 Transponder UAT Monitor Application

4.5.1   Unique Setup

Refer to Chapter 3 for common setup items. For the UAT Monitor application, there are no unique settings in the SETUP tab.

4.5.2   Run UAT Monitoring

Press the RUN button to start received and decoding UAT Out information. Each unique payload will be displayed on separate lines under the Aircraft List tab.
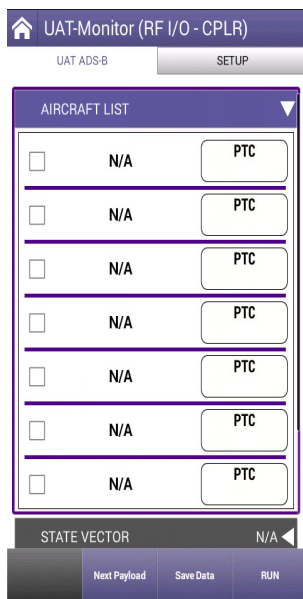
Figure 4-25 UAT Monitor Screen

Press the Next Payload softkey at the bottom of the screen to display details for each.
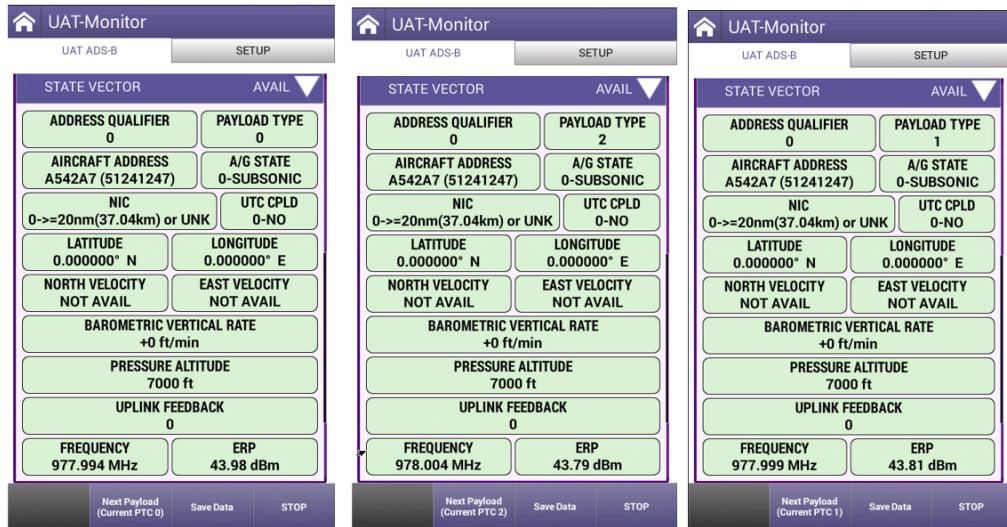
Figure 4-26 UAT Monitor Payload Details

Any decoded information received from the UUT will be displayed in the associated tabs as shown here.
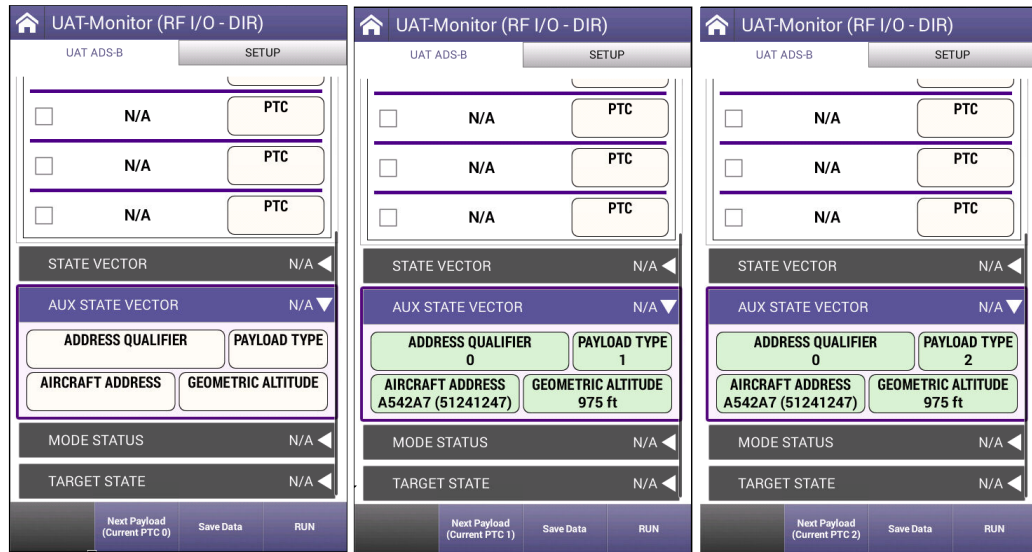
Figure 4-27 UAT Monitor Decoded Information
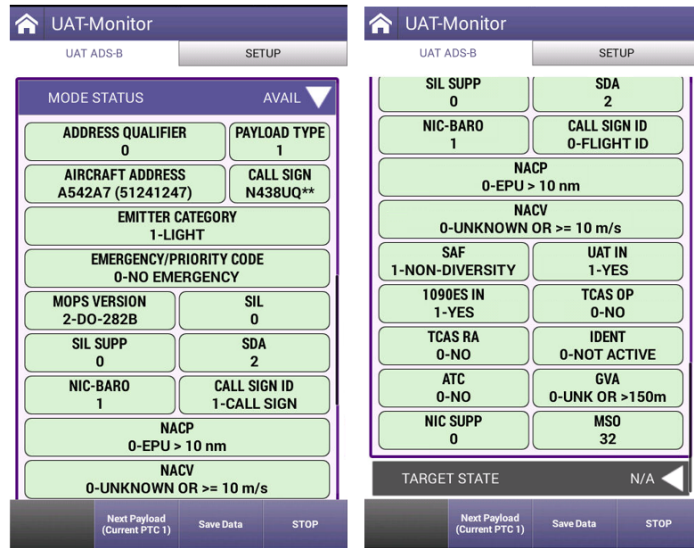
Figure 4-28 UAT Monitor Mode Status Summary

Press the Save Data button to capture and store the received information.

TCAS/Target Generation

This chapter describes the setup and operation of the TCAS Application and Target Gen applications. Content in this chapter is as follows:
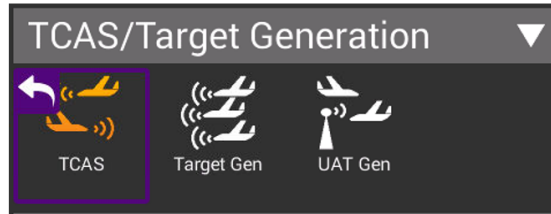
5.1   TCAS

Figure 5-1 TCAS Application

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.
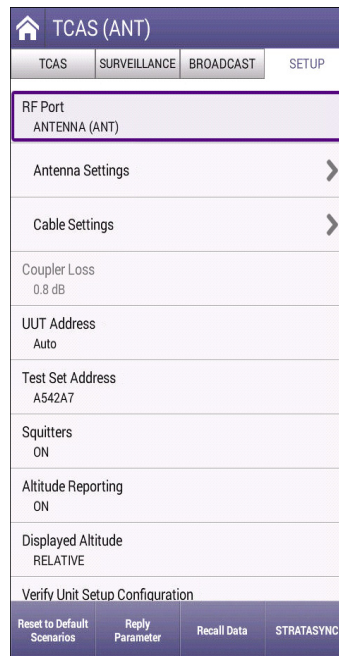
Figure 5-2 TCAS Setup Tab

Table 5-1 TCAS Unique Setup

Setting	Definition
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
ERP Units	Allows for measured power to be displayed in Watts or dBm

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

Table 5-2 TCAS Main Screen Settings

Setting	Definition
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
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. This can be used to bypass the Aircraft Baro Test Altitude entry below which will be disabled when this is set to ON. In that case, the altitude of the unit under test (UUT) is obtained from the squitter information. NOTE: This information will be available when testing overthe-air. When using a TCAS Coupler, the TCAS may not be able to get information from the Transponder. Obviously, this is not the case when testing combined TCAS/Transponder UUTs.
Altitude Rate (fpm)	Enter a value between 0 and 10000 feet per minute

Table 5-2 TCAS Main Screen Settings (Continued)

Setting	Definition
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 and must match in order for targets to be painted.

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.
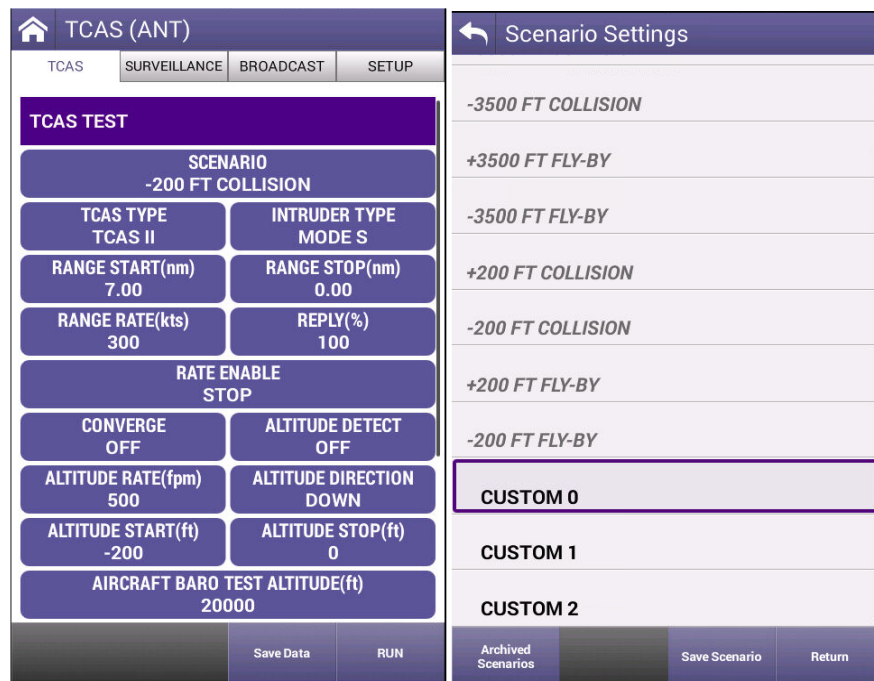
Figure 5-3 TCAS Scenario Settings

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.
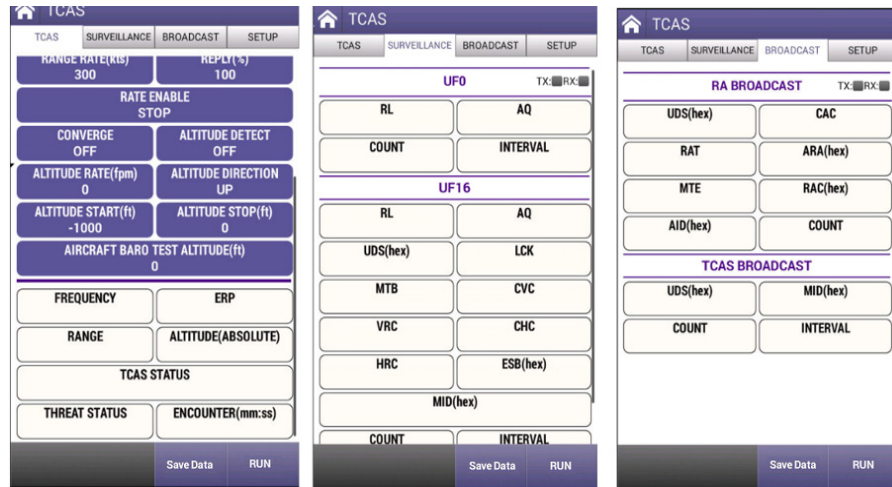
Figure 5-4 TCAS, Surveillance and Broadcast Tabs

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

Figure 5-5 TCAS and Whisper/Shout

If you created a new scenario, you may choose to save it for later use by pressing on the SCENARIO field, selecting one of the custom field names, renaming the scenario, and then pressing the Save Scenario button.
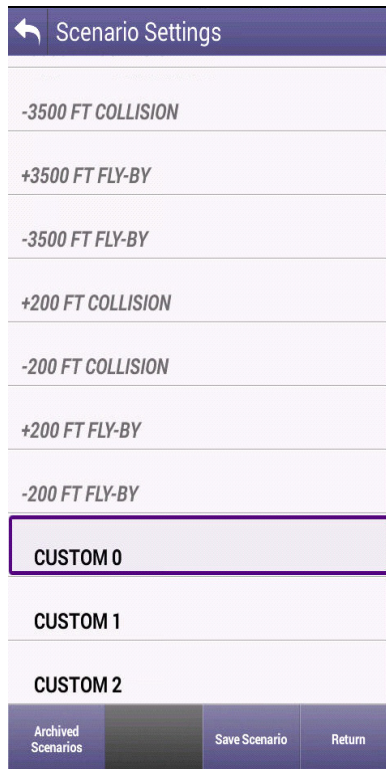
Figure 5-6 TCAS Scenario Settings

5.2   Target Gen
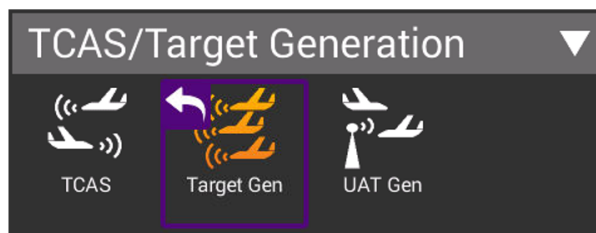
Figure 5-7 Target Generation Application

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.

Table 5-3   Target Gen Unique Settings

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

Table 5-4 Target Generation Target Settings (repeated for five targets)

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.
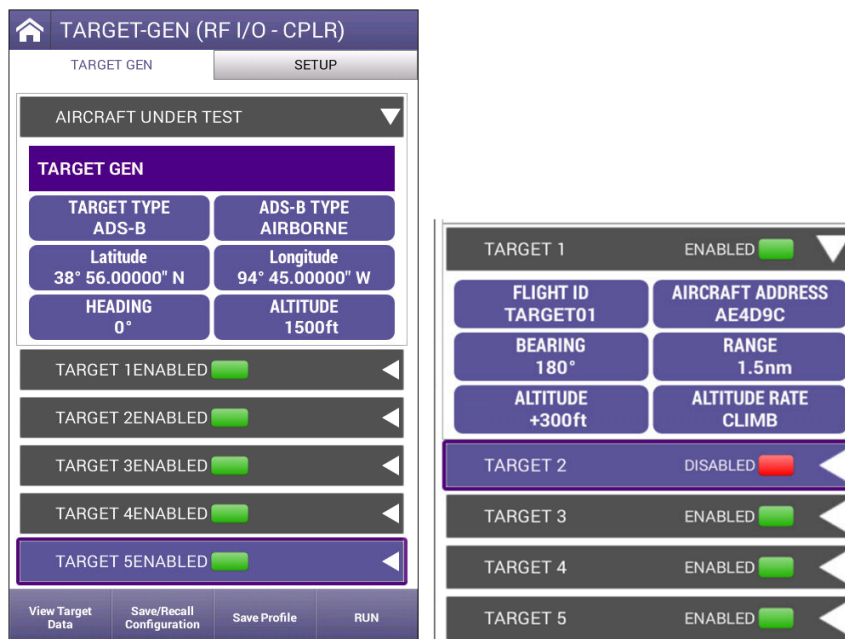
Figure 5-8 Target Gen Sample Screens

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.
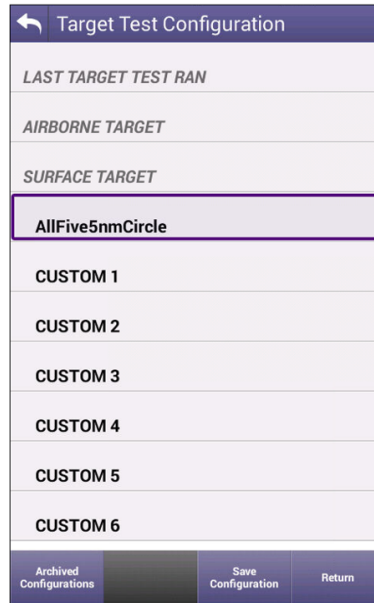
Figure 5-9 Target Gen Test Configuration

5.3   UAT GEN
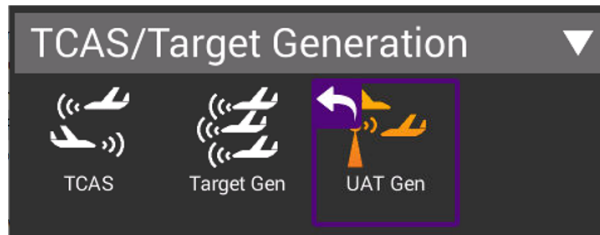
Figure 5-10 UAT Traffic Generation Application

5.3.1   Unique Setup

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

Table 5-5 UAT Traffic Generation Main Screen Settings

Aircraft Under Test Setting	Description
Target Type	Select between ADS-B and TIS-B
AG State	Toggles between AIRBORNE and GROUND
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
Payload Sequence	Select between 1,0,2,0; 3,6,0,6; 1,4,4,4; 1,4,5,4; and 1,0,0,0
Site ID	Enter a value between 0 and 15

Table 5-6 UAT Traffic Generation Target Settings

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.
Heading	Enter a value between 0 and 359 degrees
Altitude	Enter a value between -3500 and 3500 feet to define the vertical distance from the UUT.
Altitude Rate	Select between CLIMB, LEVEL, DESCEND
Range	Enter a value between 0 and 40 nautical miles to define the distance from UUT.

This page also has a View Target Data button that allows you to view the setup data for all five targets. Also, the Save / Recall button can store any custom settings that you have entered or recall any previously saved (or factory defined) settings. To load a particular configuration, just click on the desired item and press the Return button. A screen will popup showing that the configuration is being loaded.
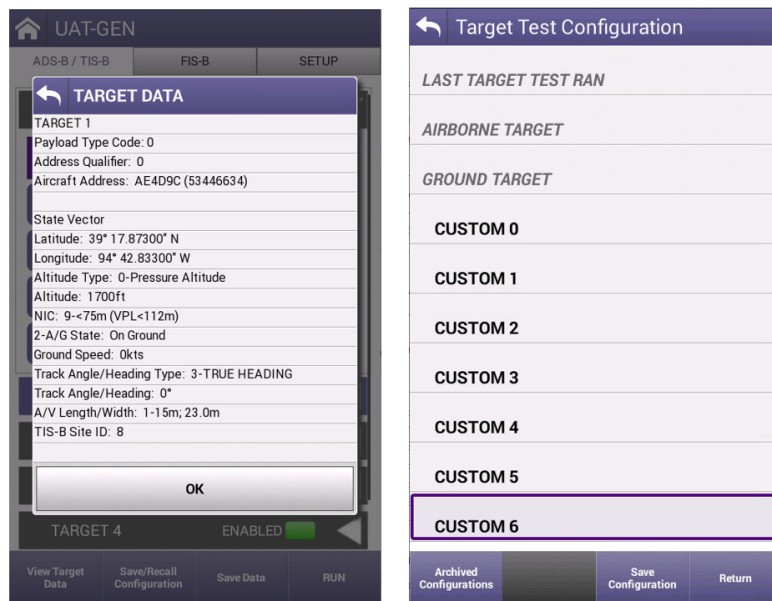
Figure 5-11 UAT Traffic Generation Test Configuration

The configurable settings for the FIS-B data (click on the FIS-B tab to view, setup and run) include:

Table 5-7 UAT Traffic Generation FIS-B Data

FIS-B Weather	Description
Report	Select between METAR and TAF (the predefined settings will be displayed in the Weather Data section at the bottom of the screen).
Day / Time	Allows setting Day to a value between 0 and 31; Hour to a value between 0 and 23; and Minute to a value of 0 to 59
Station	Select between KMCI, KAUS, KFFC, KBNA, and PANC
Slot ID	Select between a value of 0 to 31

5.3.2 Run UAT Gen

This application will allow you to set up to five static intruders for testing of UAT-In Receivers.

The UAT Gen application is dependent on precise timing parameters. Should this screen popup, it is a notification that the unit is likely past the calibration schedule. If that is not the case, press the OK button to continue with testing.
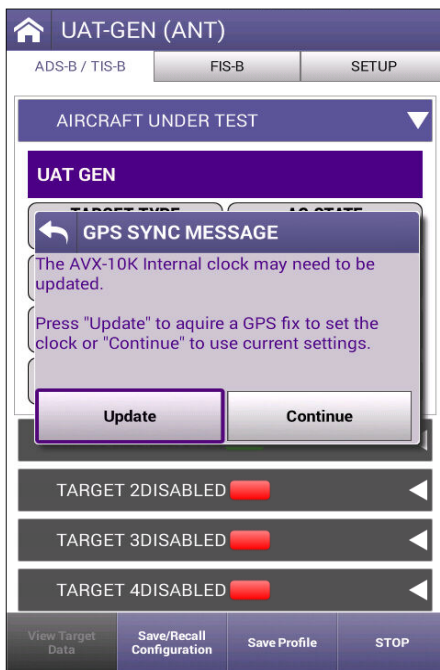
Figure 5-12 UAT Generation Application

On the main page of the UAT Gen application, 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 Enable/Disabled button.
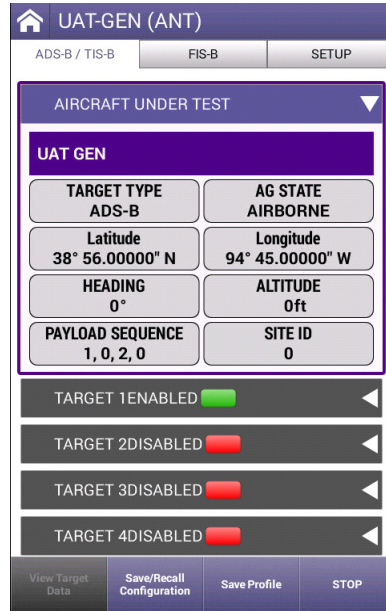
Figure 5-13 UAT Generation Main Screen Settings

FIS-B information can also be sent using this application by selecting the FIS-B tab, setting up the configurable parameters as defined above and then pressing the RUN button.

Figure 5-14 UAT Generation FIS-B Tab

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6

Navigation

This chapter describes the setup and operation of the following applications::

6.1   Instrument Landing System (ILS) Operation
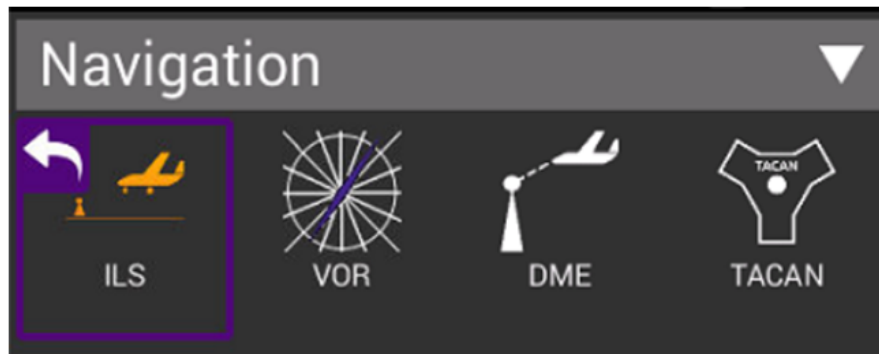
Figure 6-1 ILS Application

6.1.1   Setup

The settings for the ILS application are described in the table below.

Figure 6-2 ILS Setup Screens

Table 6-1 ILS Application Settings

Setting	Definition
RF Port	The ILS Instrument supports either over-the-air antenna testing or direct connection to the LRU.
RF Power Units	Can be set to dBm or V (Volts in 50 ohms)
Frequency Input Type	PRESET, CHANNEL OR VAR: PRESET provides a set of three fixed frequencies; CHANNEL allows the selection of any on-channel frequency; VAR allows selection of frequency in 1kHz steps (may not be available in every instrument setup)
ILS Units	This parameter determines the Localizer and Glideslope deviation units: DDM (Difference in Depth of Modulation) or µA (microamps)
External Attenuation	This parameter allows for compensation (0.0 to 22.0 dB) of an External Attenuator on the RF I/O Connector. This is used for extending the power monitor rating and range. If the External Attenuator is selected, the value is displayed on all Mode Screens in the EXT ATTN Field under the RF LVL Field.
Morse Code	Up to four characters that are used to transmit Morse Code for ILS Localizer
Autopilot Sweep Rate	This parameter allows the Localizer and Glide Slope DDM sweep rate to be set from 5 to 40 seconds in 5 second increments
Frequency / RF Power Input Method	This allows selection between Numeric Step and Numeric Entry. Numeric Step allows the Frequency and RF Power fields on the main screen to be adjusted in step values. Numeric Entry allows for any value in the defined range to be entered.
Localizer Frequency Step	Allows Localizer Frequency step value to be selected between 0.001 MHz, 0.010 MHz, 0.100 MHz, 1.000 MHz

Recall Settings button: The Recall Settings button will recall the setup parameters from a list. These are settings that have been saved by the Save Settings button on the ILS Main page.

The main screen of the ILS application also contains configurable parameters. These configurable fields have a blue background. The available fields will be different based on the Instrument Setup detailed below.

6.1.2   Run ILS Application

Once you enter the ILS Application, the ILS Instrument is running. Changes to the Instrument Setup can be made at any time. The instruments supported by the ILS Application include:

Table 6-2 ILS Instruments

Setting	Definition
ILS Tri Mode	Localizer, Glideslope and Marker Beacon are enabled
ILS Dual Mode	Only Localizer and Glideslope are enabled
ILS Localizer	Only Localizer is enabled
ILS Glideslope	Only Glideslope is enabled
ILS Marker Beacon	Only Marker Beacon is enabled
Off	Nothing is enabled

Below are examples of the screens in each mode:
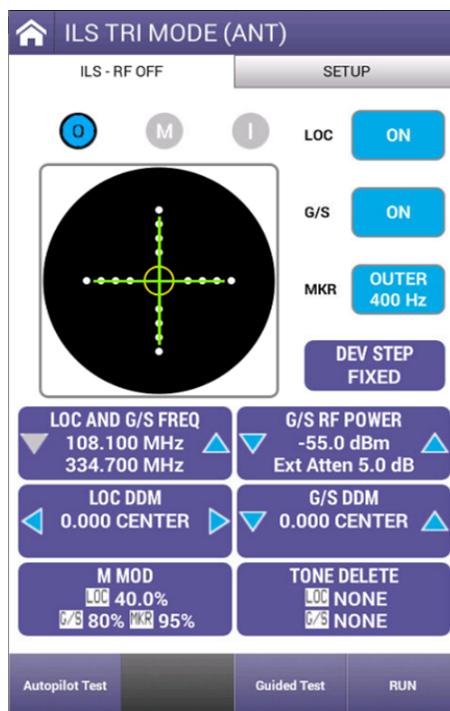
Figure 6-3 ILS TRI-MODE: All Instruments On
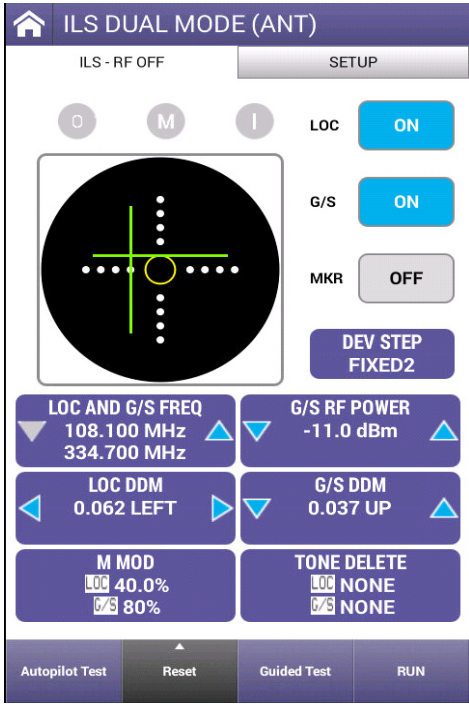
Figure 6-4 ILS Dual Mode: Loc and G/S Only
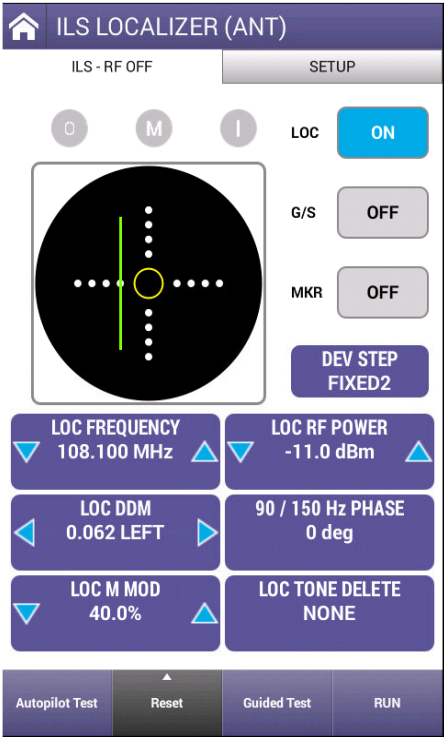
Figure 6-5 ILS Localizer Only
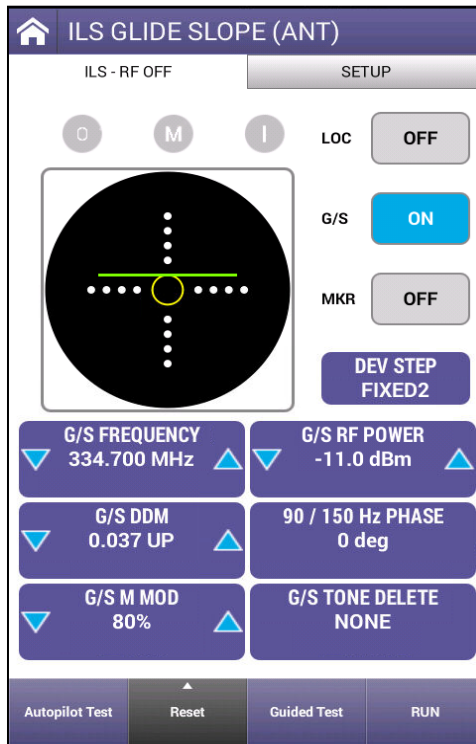
Figure 6-6 ILS Glide Slope Only
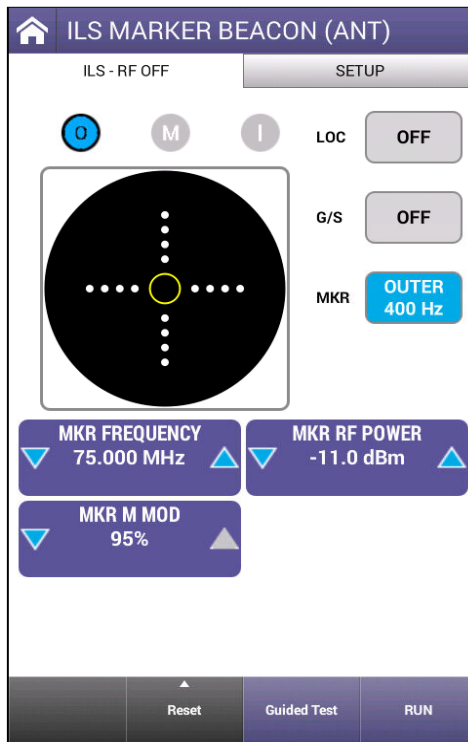
Figure 6-7 ILS Marker Beacon Only
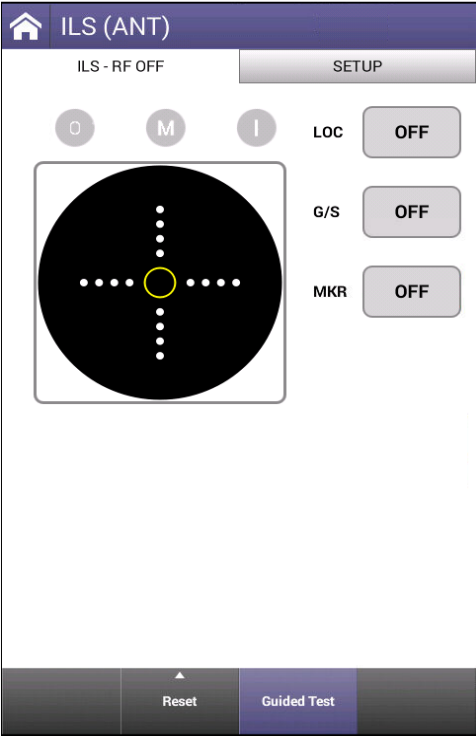
Figure 6-8 ILS All Instruments Off

When turning Localizer, Glideslope, and Marker Beacon functions on and off, a "SELECT VALID MODE" popup might appear that helps to drive you to one of these available modes.
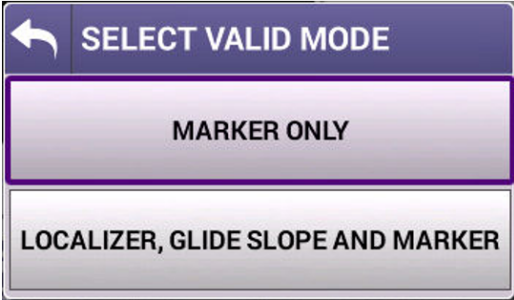
Figure 6-9 ILS Select Valid Mode

To review the configurable fields in the main body of the ILS Application, let's look at the screen with all functionalities enabled (ILS TRI MODE). Each of the subsequent screens, will look similar to this screen or have a subset of the fields displayed.

> **NOTE:** Tri-Mode (where all instruments are enabled) is only available when testing over-the-air.
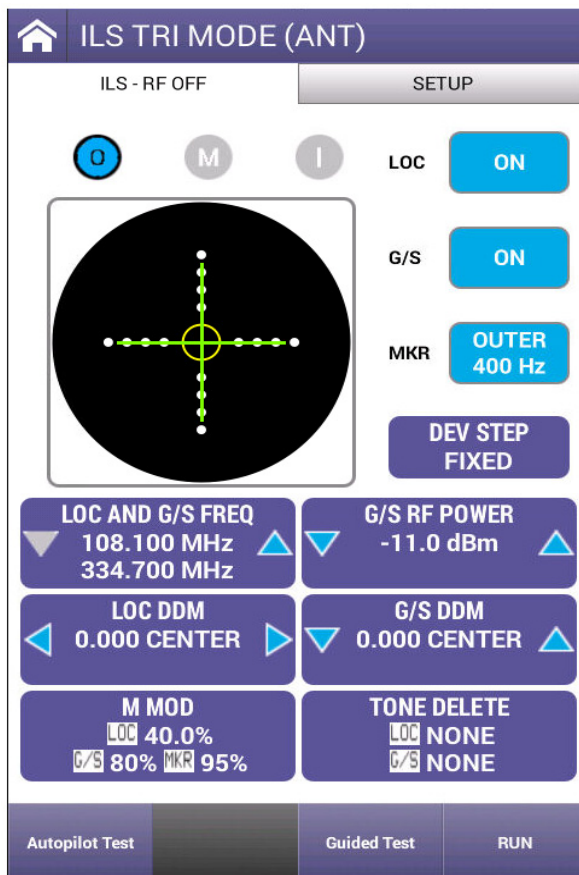
Figure 6-10 ILS TRI Mode

Table 6-3 ILS TRI Mode Settings

Setting	Definition
LOC Button	Settings include OFF, ON, TONE, and MORSE
GS Button	Can be set to ON or OFF
MKR Button	Can be set to OFF, OUTER 400 Hz, MIDDLE 1300 Hz, or INNER 3000 Hz Can also be selected by clicking on the "O", "M" and "I" indicators.

Table 6-3 ILS TRI Mode Settings (Continued)

Setting	Definition
DEV STEP	Operation will depend on the setting of the ILS Units field in Setup. If set to DDM: FIXED provides CENTER, LEFT, and RIGHT deviation values at 0.00, 0.093, 0.155 and 0.200 DDM; VARIABLE provides CENTER, LEFT, and RIGHT deviation values from 0 to 0.4 DDM in 0.001 DDM steps. UNCAL is displayed when the LOC DDM field is a non-zero position value or when the M MOD field is NOT set to CAL and the LOC DDM field is a non-zero position value. If set to µA: FIXED provides CENTER, LEFT, and RIGHT deviation values at 0, 90, 150 and 194 µA; VARIABLE provides CENTER, LEFT, and RIGHT deviation values from 0 to 388 µA in 1 µA steps. UNCAL is displayed when set to VAR and the LOC DDM Field is in a Non-Zero position or when the M MOD Field is not set to CAL and the LOC DDM Field is in a Non-Zero position.
FREQ Control	This control is dependent on the Frequency Input Type setting in Setup. When set to PRESET, the UP/DOWN Arrow keys will cycle through the three preset channels (108.100/334.700, 108.150/334.550,110.150/334.250). You can click in the center of the control to pull up a popup window for selection.When set to CHANNEL, the UP/DOWN Arrow keys will cycle through the list of valid channels. This list can be seen by clicking in the center of the control and the channel can be directly selected in this manner. When set to VAR, the UP/DOWN Arrow keys will change the value by the value of step size in either direction. The step size value can be changed by clicking in the center of the control. **NOTE: VAR is not available for** the TRI MODE Instrument setting and will work the same as **CHANNEL**.
RF Power Control	The UP/DOWN Arrow keys will adjust the RF POWER Value by the step size and the step size can be adjusted by clicking the center of this control.
LOC DEV	The LEFT/RIGHT Arrow keys will cycle through seven DDM/ µA deviation steps: 0.200/194 LEFT; 0.155/150 LEFT; 0.093/90 LEFT; 0/0 CENTER; 0.093/90 RIGHT; 0.155/150 RIGHT; 0.200/194 RIGHT. Once you reach a value at the extreme, the Arrow key will change from blue to gray in color. Also – the Localizer can be modified by selecting the vertical bar on the display and moving it to the desired location. If DEV STEP is set to FIXED, the bar will snap to the nearest value.

Table 6-3 ILS TRI Mode Settings (Continued)

Setting	Definition
G/S DEV	The UP/DOWN Arrow keys will cycle through seven DDM/ µA deviation steps: 0.400/343 DOWN; 0.175/150 DOWN; 0.091/78 DOWN; 0/0 CENTER; 0.091/78 UP; 0.175/150 UP; 0.400/343 UP. Once you reach a value at the extreme, the Arrow key will change from blue to gray in color. Also – the Glide Slope can be modified by selecting the horizontal bar on the display and moving it to the desired location. If DEV STEP is set to FIXED, the bar will snap to the nearest value.
M MOD	Opens a window with slider controls to allow adjustment of the Master Modulation Depth in 2% offsets for related enabled instruments. The Master Modulation control functions as a multiplier of the individual modulation components. The Master Modulation Depth is the sum of the Depths of Modulation (SDM) of the individual tone components.
TONE DELETE	Opens a window to allow the 90 Hz, 150 Hz, or both to be deleted for the related enabled Instruments.
90 / 150 Hz PHAZE	Only for Localizer or Glide Slope instruments. Select between 10, 15, 20, 25, and 30 degrees. This control changes the phase relationship between the 90 and 150 Hz modulation tones to simulate an aircraft in a turn.

Autopilot Test button: This will allow selection between Localizer Only, Glide Slope Only, and Localizer and Glide Slope control and with toggle the Autopilot test feature on or off. The Autopilot feature continuously changes the associated µA (or DDM) in a predefined pattern. When enabled, you can change the LOC and GS AUTOPILOT MAX DEV settings.

Revert To Normal button: If any parameters have been changed and the indicators show "UNCAL", pressing this button will "zero" all parameters back to their normal state.

Center Deviation button: This sets the LOC and G/S offsets to zero.

6.2   VHF Omnidirectional Ranging (VOR) Operation
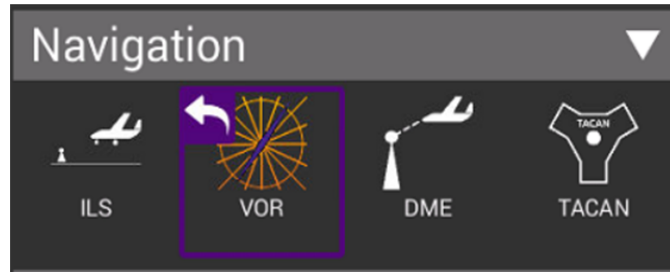
Figure 6-11 VHF Omnidirectional Ranging Application (VOR)

6.2.1   Unique Setup

The settings for the VOR application are described in the table below.
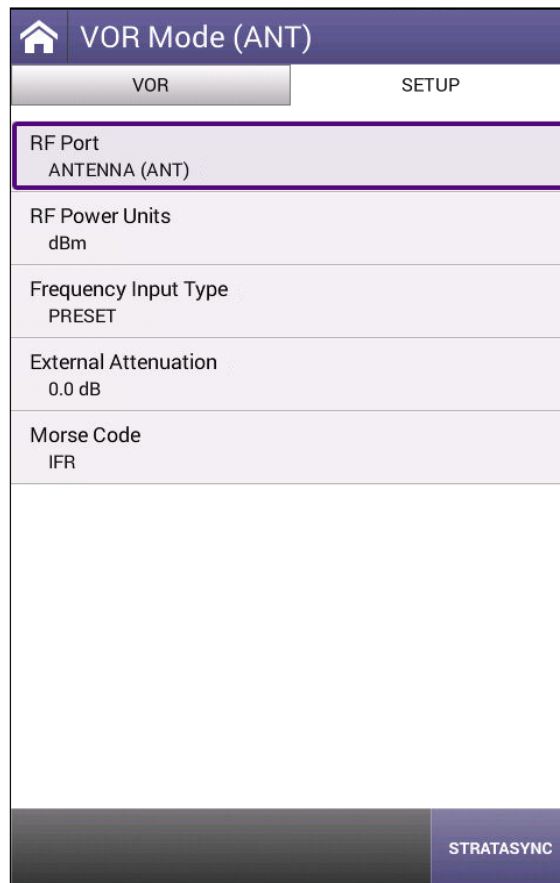
Figure 6-12 VOR Setup Tab

Table 6-4 VOR Setup Parameters

Setting	Definition
RF Port	The VOR Instrument supports either over-the-air antenna testing or direct connection to the LRU.
RF Power Units	Can be set to dBm or V (Volts in 50 ohms)
Frequency Input Type	PRESET, CHANNEL OR VAR: PRESET provides a set of three fixed frequencies; CHANNEL allows the selection of any on-channel frequency; VAR allows selection of frequency in 1kHz steps
External Attenuation	This parameter allows for compensation (0.0 to 22.0 dB) of an External Attenuator on the RF I/O Connector. This is used for extending the power monitor rating and range. If the External Attenuator is selected, the value is displayed on all Mode Screens in the EXT ATTN Field under the RF LVL Field.
Morse Code	Up to four characters that are used to transmit Morse Code for ILS Localizer

The main screen of the VOR application also contains configurable parameters. These configurable fields have a blue background.

6.2.2 Run VOR Application

Once you enter the VOR Application, the VOR Instrument is running. Changes to the Instrument Configuration can be made at any time.

Let's review the configurable fields in the main body of the VOR Application.
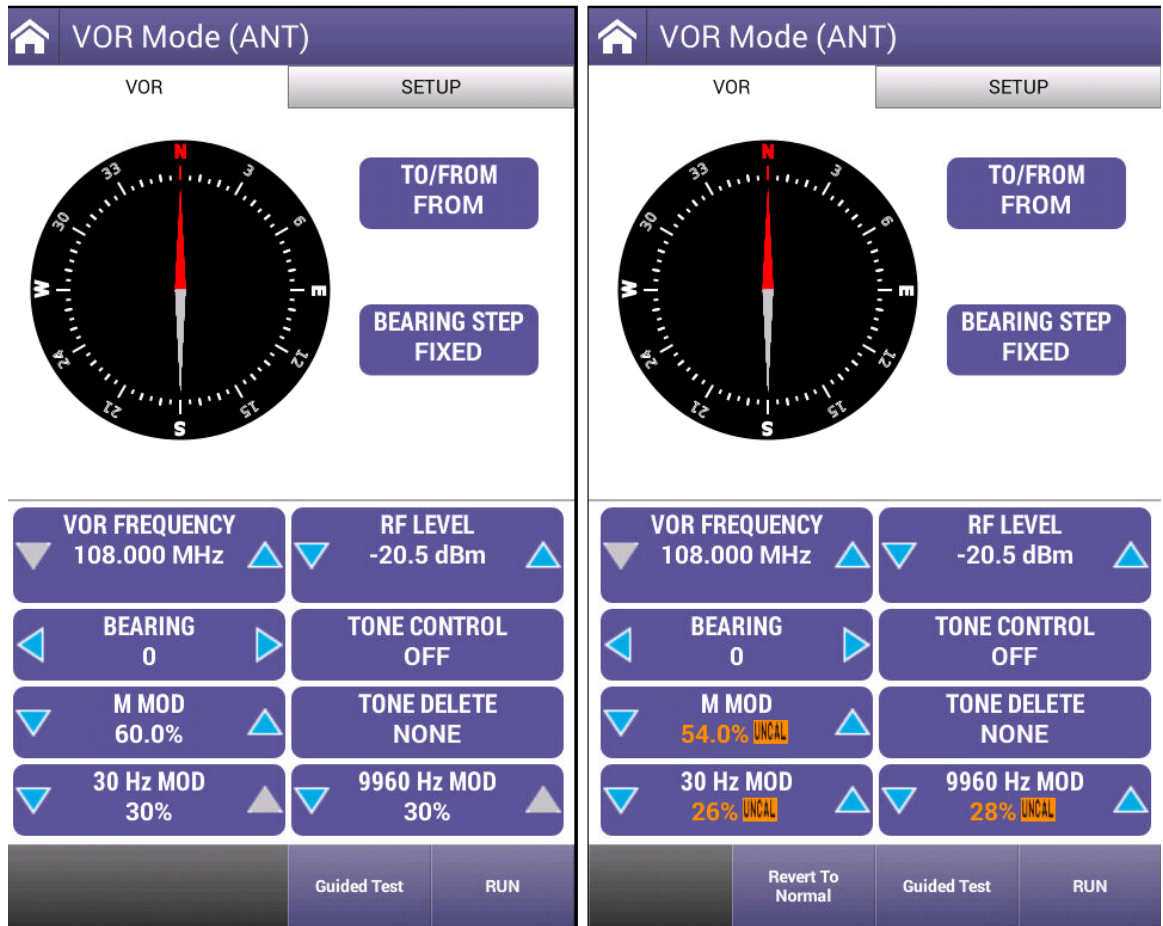
Figure 6-13 VOR Application Screens

Table 6-5 VOR Main Screen Settings

Setting	Definition
TO / FROM	Press to toggle between TO and FROM. TO sets the Bearing towards the VOR Beacon and FROM set the Bearing away from the VOR Beacon.
BEARING STEP	Toggles BEARING control between FIXED and VARIABLE. FIXED allows settings from 0 to 330 in 30-degree steps. VARIABLE allows for resolution changes down to 0.1 degrees.

Table 6-5 VOR Main Screen Settings (Continued)

Setting	Definition
VOR FREQUENCY	This control is dependent on the Frequency Input Type setting in Setup. When set to PRESET, the UP/DOWN Arrow keys will cycle through the three preset channels (108.000, 108.050, 117.950. You can click in the center of the control to pull up a popup window for selection. When set to CHANNEL, the UP/DOWN Arrow keys will increment, or decrement values based on the selected CHAN STEP SIZE. CHAN STEP SIZE is selected by clicking in the center of the control. Selections include .05/.15 MHz and .5/1 MHz. When set to VAR, the UP/DOWN Arrow keys will increment, or decrement values based on FREQ STEP SIZE. FREQ STEP SIZE is selected by clicking in the center of the control. Selections include 0.001 MHz, 0.010 MHz, 0.100 MHz, and 1.000 MHz. Allowable Range is from 107.0 MHz to 118.0 MHz.
RF LEVEL	The UP/DOWN Arrow keys will increment, or decrement values based on POWER STEP SIZE. POWER STEP SIZE is selected by clicking in thecenter of the control. Selections include 0.05 dB, 1.0 dB, and 10.0 dB. Range is from –67.0 to 13.0 dBm.
BEARING	This field depends on the setting of BEARING STEP. If BEARING STEP is FIXED, the UP/DOWN Arrow keys will update the value in 30-degree increments. Clicking in the center of the control will allow direct selection of a Bearing value from 0 to 330 degrees. If BEARING STEP is VARIABLE, the UP/DOWN Arrow keys will update the value in degree increments based on BEARING STEP SIZE. BEARING STEP SIZE is selected by clicking in the center of the control. Values can be 0.1, 1.0, 10.0, and 100.0. Range is from 0.0 to 360.0 degrees.
TONE CONTROL	Allows selection between OFF, TONE, and MORSE.
M MOD	Clicking in the center of this control opens a window with slider controls to allow adjustment of the Master Modulation Depth in 2% offsets from 0 to 110%. The Master Modulation control functions as a multiplier of the individual modulation components. The Master Modulation Depth is the sum of the Depths of Modulation (SDM) of the individual tone components.
TONE DELETE	This field allows the 30 Hz Reference, 30 Hz Variable, or both to be deleted. Press anywhere on this control for the popup selection window.

Table 6-5 VOR Main Screen Settings (Continued)

Setting	Definition
30 Hz MOD	This field controls the value of the 30 Hz Variable Phase modulation depth. Use the UP/Down Arrow keys to adjust the value in 1% steps or click the center of the control to popup a slide to select the value. Range is 0 to 30%.
9960 Hz MOD	This field controls the value of the 9960 Hz Variable Phase modulation depth. Use the UP/Down Arrow keys to adjust the value in 1% steps or click the center of the control to popup a slide to select the value. Range is 0 to 30%.

Revert To Normal button: If any parameters have been changed and the indicators show "UNCAL", this softkey will appear. Pressing this button will "zero" all parameters back to their normal state.

6.3   Distance Measuring Equipment (DME)
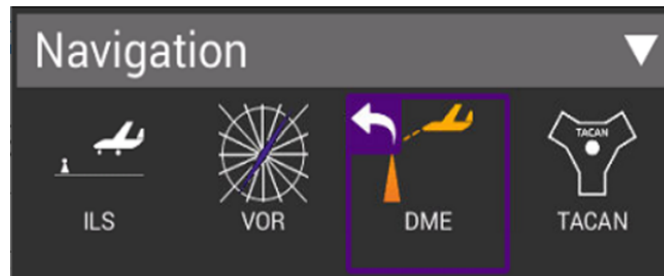
Figure 6-14 Distance Measuring Equipment Application (DME)

6.3.1   Unique Setup

Refer to Chapter 3 for common setup items. The settings unique to the DME application are described in the table below.
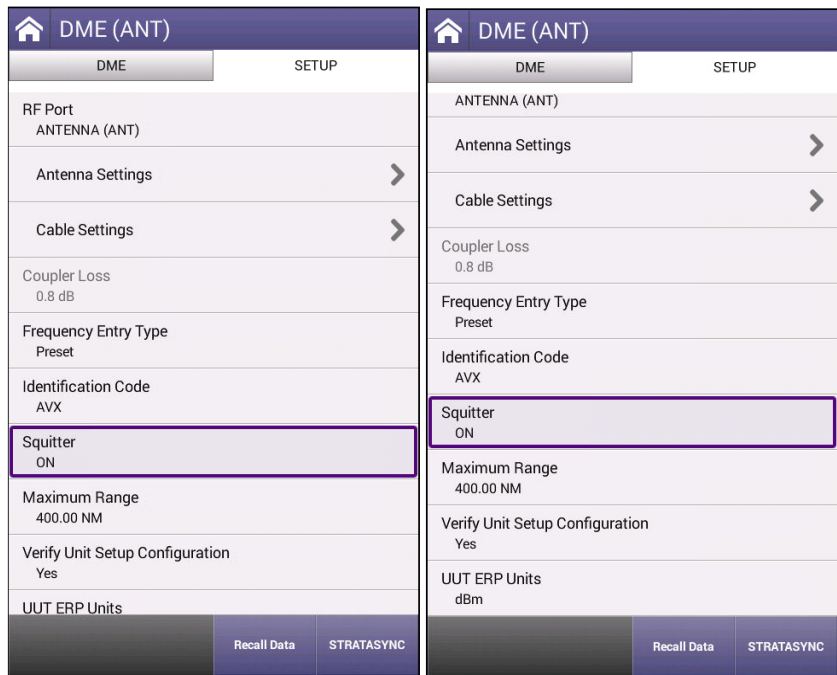
Figure 6-15 DME Unique Setup Parameters

Table 6-6 DME Unique Setup Parameters

Setting	Definition
Frequency Entry Type	Allows selection of either Presets or Manual entry of Frequencies.
Identification Code	Enter the three characters that will be used for Morse code ident. Should be 1-4 characters.
Squitter	Sets squitter output to ON or OFF
Maximum Range	Enter a maximum range value from 0 to 450 nm
UUT ERP Units	Allows for measured power to be displayed in Watts or dBm

The main screen of the DME application also contains configurable parameters. These configurable fields have a blue background. The available fields will be different based on the Frequency Entry Type detailed above.
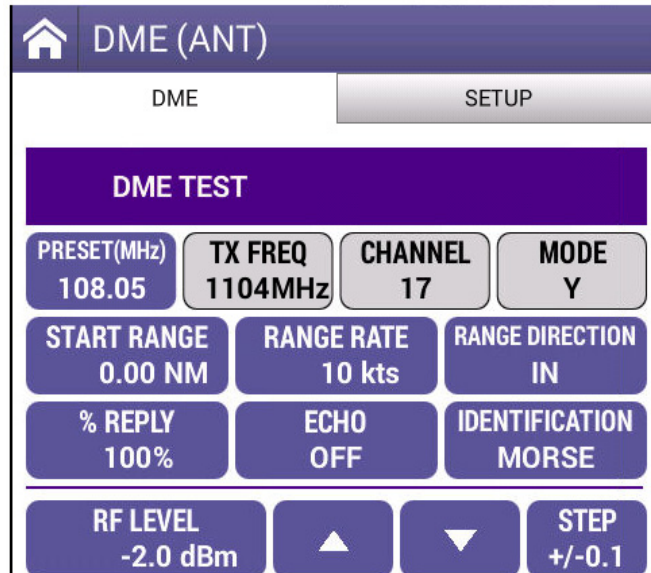
Figure 6-16 DME Preset Frequency Entry
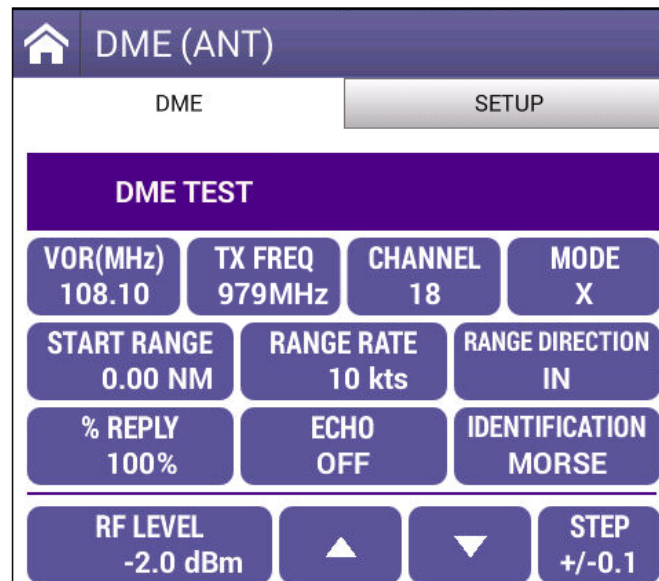
Figure 6-17 DME Manual Frequency Entry

Table 6-7 DME Main Screen Settings

Setting	Definition
Preset (MHz)	Will toggle between 108.05, 117.95 and 108.00. The paired TX Frequency, Channel and Mode values will change accordingly.
VOR (MHz)	When in Manual Frequency Entry mode, allows setting a value between 108.00 and 135.05. The paired TX Frequency, Channel and Mode will change accordingly.
TX FREQ (MHz)	When in Manual Frequency Entry mode, allows setting a value between 962 and 1213 MHz. Paired VOR Frequency and Channel will change accordingly.
Channel	When in Manual Frequency Entry mode, allows setting a value between 1 and 126. Paired VOR Frequency, TX Frequency will change accordingly.
Mode	When in Manual Frequency Entry mode, toggles between X and Y. Paired VOR Frequency and TX Frequency will change accordingly.
Range (nm)	Enter a value between 0 and 450 nautical miles.
Range Rate (kts)	Enter a value between 0 and 6500 knots.
Range Direction	Toggles between IN and OUT.
Reply (%)	Enter a value between 0 and 100 percent reply.
Echo	Toggles between ON and OFF.
Identification	Toggles between OFF, TONE and IDENT.
RF Level (dBm)	Enter a value between -67.0 and -2.0 dBm
Up / Down Arrows	Raises or Lowers the RF Level based on the Step value
Step	Toggles RF Level step values between 0.1, 1.0 and 10.0 increments

6.3.2   Run DME Application

Once your setup and configuration values are entered, press the RUN key. Once the test set starts receiving the DME pulse pairs from the UUT, the values shown in green below will be displayed. Press the Pause Rate softkey to stop simulated travel. Press the Save Profile button if you wish to save the received information.
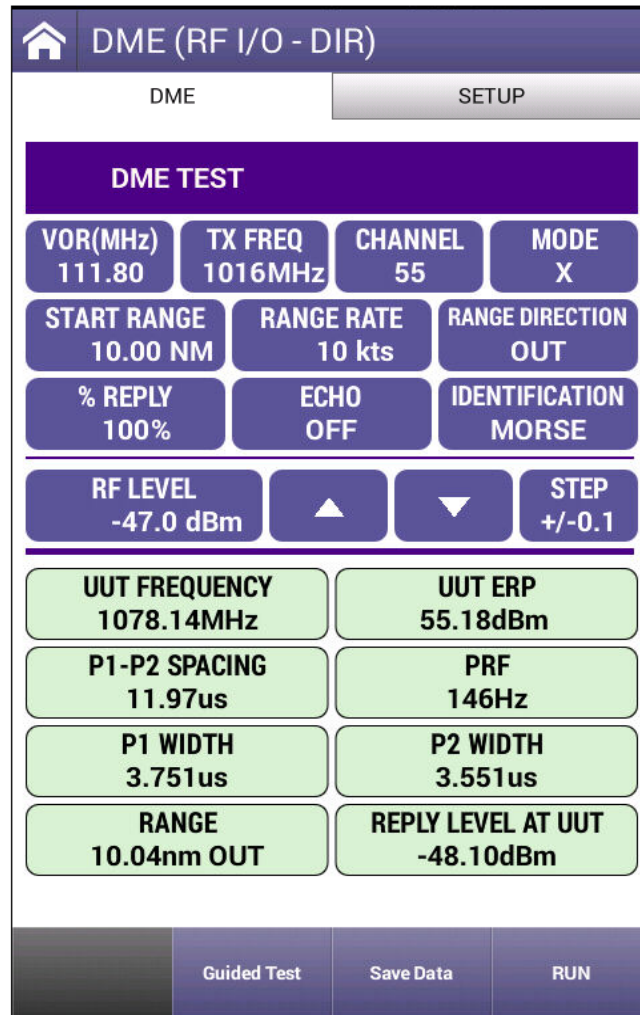
Figure 6-18 Run DME Application

6.4   Tactical Air Navigation (TACAN) Operation
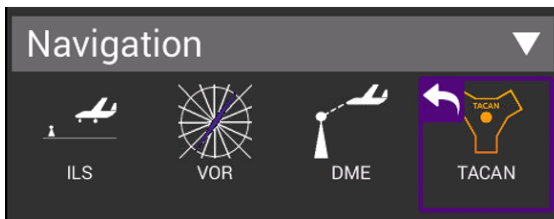
Figure 6-19 TACAN Application

6.4.1   Unique Setup

Refer to Chapter 3 for common setup items. The settings unique to the TACAN application are described in the table below.
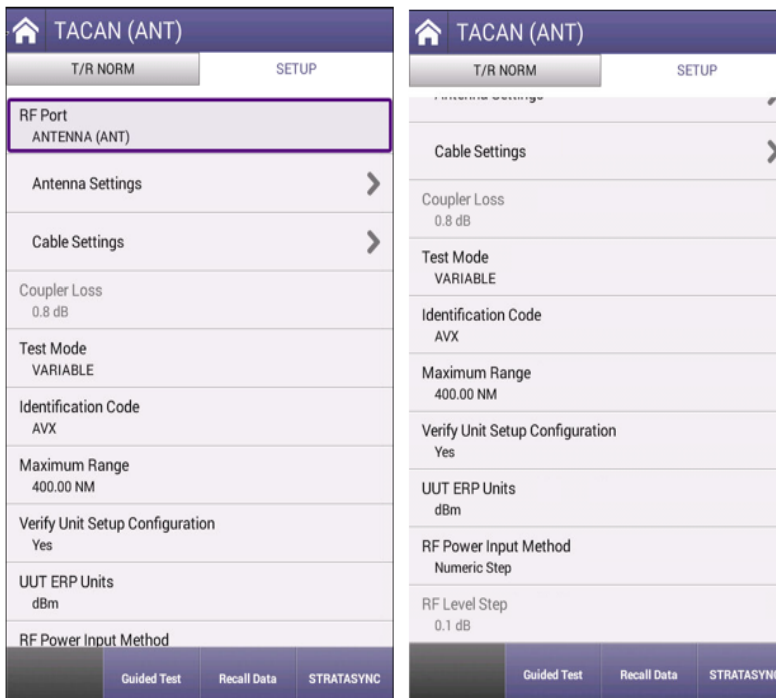
Figure 6-20 TACAN Setup Tab

Table 6-8 TACAN Setup Parameters

Setting	Definition
Test Mode	Select between DoD, AN/ASM-663, AN/ARM-184, 2650/2655 and VARIABLE. Sets the mode for Frequency, Start Range, Range Rate and Start Bearing parameters. When VARIABLE is selected, % REPLY, SQUITTER and ECHO fields are enabled. NOTE: The DoD setting is recommended for most applications. AN/ARM-663, AN/ARM-184 and 2650/2655 emulate the operation of these legacy test sets. Variable is typically used for troubleshooting. DoD: START BEARING values are fixed at 0, 45, 90, 135, 180, 225, 270 and 315 degrees. TX FREQUENCY selection is 17X and 18X when TEST TYPE is T/R NORM, 17X and 17Y when TEST TYPE is an Air-to-Air (A-A) Mode. START RANGE will have fixed values of 0, 3, 10, 30, 100, 200, 300 and 400 nm. RANGE RATE will have fixed values of 0 and 250 knots for T/R modes and 0, 250 and 1000 knots for A-A modes. AN/ASM-663: START BEARING values are fixed at 0, 45, 180, and 225degrees. TX FREQUENCY selection is 5X, 5Y, 47X, 47Y, 89X and 89Y in all modes. START RANGE will have fixed values of 0, 10, 150 and 297 nm. RANGE RATE will be fixed at 0 knots. AN/ARM-184: START BEARING values are fixed at 0, 90, 180, and 337.5 degrees. TX FREQUENCY selection is 1 to 126 X or Y channels (same as VARIABLE) in all modes. START RANGE will have fixed values of 0, 50, 100, 150, 200, 250, 300, 350 and 400 nm. RANGE RATE will have fixed values of 0 and 2400 knots. 2650/2655: START BEARING values are fixed at 90, 230, and 320 degrees. TX Frequency selection is 18X, 18Y, 47X, 47Y, 100X, 100Y, 123X and 123Y for all modes. START RANGE will have fixed values of 0, 5, 125, and 283 nm. RANGE RATE will be fixed at 0 knots. VARIABLE: START BEARING can be set from 0 to 359.9 degrees. TX FREQUENCY selection can be set from 962 to 1213 MHz or via CHANNEL NO (1 to 126) and CHANNEL MODE (X,Y). START RANGE can be set from 0 to 400.00 nm. RANGE RATE can be set from 0 to 6500 knots.
Identification Code	Enter the three or four characters that will be used for Morse code ident. Should be 1-4 characters.

Table 6-8 TACAN Setup Parameters (Continued)

Setting	Definition
Maximum Range	Enter a maximum range value from 0 to 450.00 nm
UUT ERP Units	Allows for measured power to be displayed in Watts or dBm
RF Power Input Method	This allows selection between Numeric Step and Numeric Entry. Numeric Step allows the RF Power field on the main screen to be adjusted in step values. Numeric Entry allows for any value in the defined range to be entered.
RF Level Step	Allows step value to be selected between 0.1 dB, 1.0 dB, and 10.0 dB. This is the value used for the UP/DOWN arrows on the RF LEVEL field when RF Power Input method is set to Numeric Entry.

The main screen of the TACAN application also contains configurable parameters. These configurable fields have a blue background. The available fields will change based on the TACAN TEST TYPE selected (T/R NORM, T/R RNG ONLY, A/A BEACON, and A/A RNG ONLY).
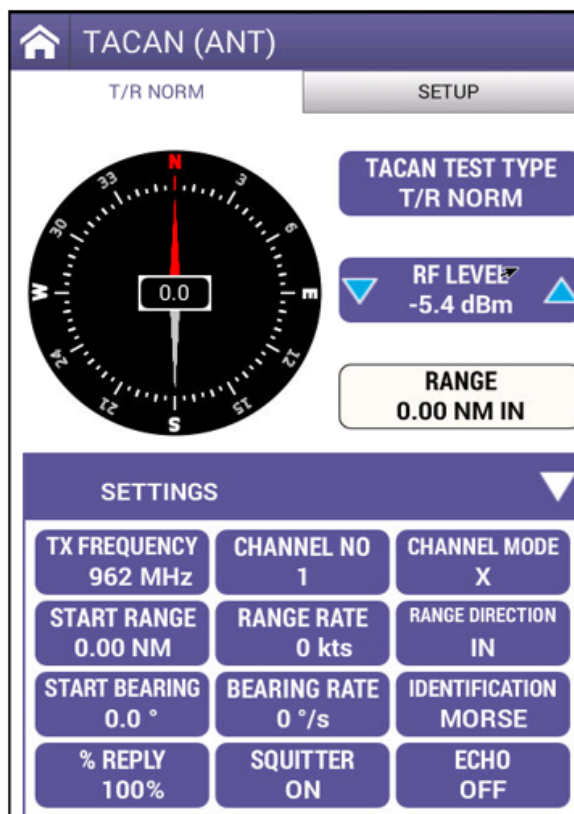
Figure 6-21 TACAN T/R NORM Screen
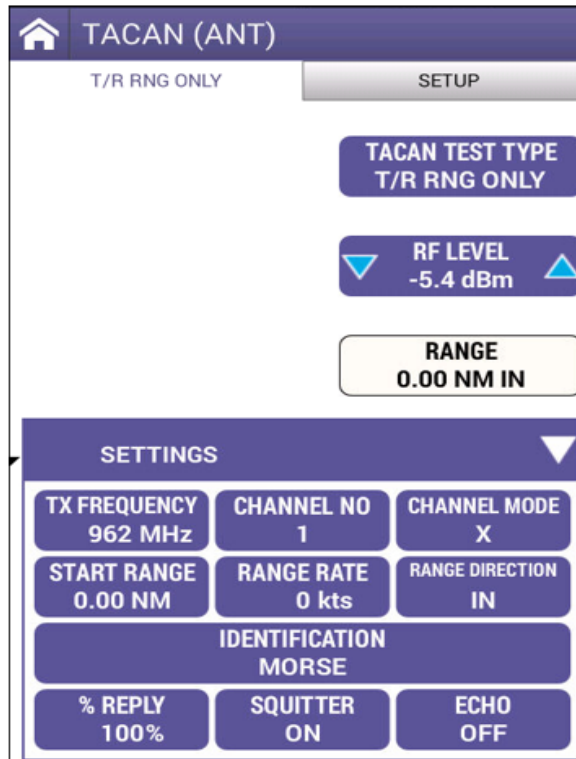
Figure 6-22 TACAN T/R RNG Screen

Table 6-9 TACAN Main Screen Settings

Setting	Definition
TACAN Test Type	Select between:
	T/R NORM: Simulates a TACAN Ground Beacon.
	T/R RNG ONLY: Simulates a DME Ground Transponder.
	A/A BEACON: Simulates an Air-to-Air TACAN Beacon while also providing A/A interrogations and monitoring of single pulse A/A range replies.
	A/A RNG ONLY: Simulates an Air-to-Air TACAN, providing A/A interrogations and monitoring of single pulse A/A range replies.
RF Level (dBm)	Enter a value between -67.0 and -5.0 dBm
Up / Down Arrows	Raises or Lowers the RF Level based on the RF Level Step value
TX FREQUENCY	When Test Mode is set to VARIABLE, allows setting a value between 962 and 1213 MHz. Otherwise, this works as defined in Test Mode setting above.
Channel NO	When Test Mode is set to VARIABLE, allows setting a value between 1 and 126. Paired TX FREQUENCY will change accordingly. Otherwise, this works as defined in Test Mode setting above.

Table 6-9 TACAN Main Screen Settings (Continued)

Setting	Definition
Channel Mode	Toggles between X and Y and all Test Modes and X and Y are valid modes. Paired TX FREQUENCY will change accordingly.
Start Range (nm)	When Test Mode is set to VARIABLE, allows setting a value between 0 and 400.00 nautical miles (or the value of Maximum Range from the setup page). Otherwise, this works as defined in Test Mode setting above.
Range Rate (kts)	When Test Mode is set to VARIABLE, allows setting a value between 0 and 6500 knots. Otherwise, this works as defined in Test Mode setting above.
Range Direction	Toggles between IN and OUT.
Start Bearing	When Test Mode is set to VARIABLE, allows setting a value between 0 and 359.9 degrees. Otherwise, this works as defined in Test Mode setting above.
Bearing Rate	Select between -5, -2, -1, 0, 1, 2, or 5 degrees per second.
Identification	Toggles between OFF, TONE and IDENT.
Reply (%)	Enter a value between 0 and 100 percent reply.
Squitter	Toggles between ON and OFF
Echo	Toggles between ON and OFF.

6.4.2   Run TACAN Application

Once your setup and configuration values are entered, press the RUN key. Once the test set starts receiving signals from the UUT, the values shown in green below will be displayed (scroll down if you cannot see them). The RANGE field (white background) and the bearing compass will update if there are non-zero values for RANGE RATE and BEARING RATE. Press the Pause Rate softkey to stop simulated travel (this will stop both Range Rate and Bearing Rate). Stop the test and press the Save Profile button if you wish to save the received information.

Figure 6-23 TACAN Application Screen Examples

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Radio Test (COMM)

This chapter describes the setup and operation of the following applications::

7.1 Radio Test (COMM)

The COMM application provides access for test AM, FM, Single Side Band (SSB) and Selective Calling (SelCal).

COMM AM mode is used primarily for testing of Aeronautical VHF AM (118.00 to 156.00 MHz) Communication Transceivers and also Military UHF AM (225.00 to 400.00 MHz) Communication Transceivers, either by direct connect to the RF I/O Connector or via the ANT Connector.

COMM FM Mode is used primarily for testing of FM Communication Transceivers (10.00 to 400.00 MHz), either by direct connect to the RF I/O Connector or via the ANT Connector.

COMM SSB Mode is used for of SSB HF Communication Transceivers (10.00 to 30.00 MHz), either by direct connect to the RF I/O Connector or via the ANT Connector.

SELCAL Mode is used for testing of Aeronautical VHF Communication Transceivers with Selective Calling Capability conforming to ARINC 596.
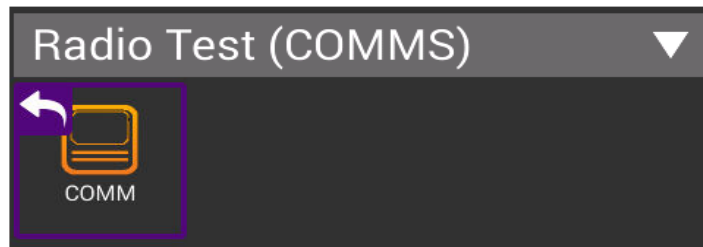
Figure 7-1 Radio Test Application (COMM)

There is a RECEIVE and GENERATE tab for these applications. SELCAL is only available on the GENERATE tab.
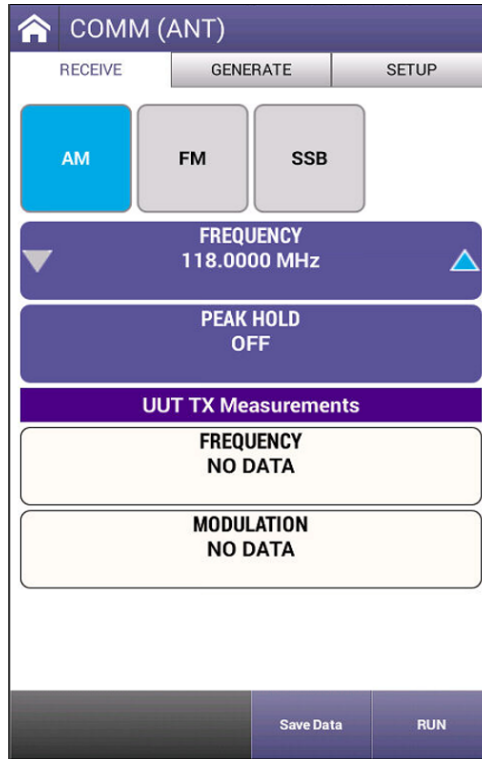
Figure 7-2 COMM Receive Tab
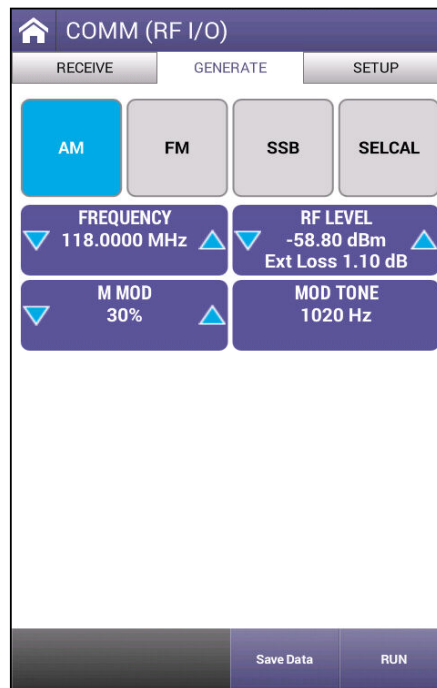
Figure 7-3 COMM Generate Tab

⚠️ | CAUTION: ALWAYS OBSERVE DUTY CYCLE LIMITS:
≤10 W IS CONTINUOUS DUTY CYCLE
>10 W TO ≤20 W IS 3 MIN ON - 2 MIN OFF DUTY CYCLE
>20 W TO ≤30 W IS 1 MIN ON - 2 MIN OFF DUTY CYCLE

▷ | **NOTE:** The Power Monitor range and duration may be extended by adding an External Attenuator to the RF I/O Connector. The value of the External Attenuator should be entered in the EXT ATTN Field of the Setup Menu. The displayed Power Reading takes into account any external attenuation.

7.2   COMM Unique Setup

Refer to Chapter 3 for common setup items. The settings unique to the ELT application are described in the table below.

Figure 7-4 COMM Setup

Table 7-1 COMM Setup Parameters

Setting	Definition
External Attenuation	This parameter allows for compensation (0.0 to 22.0 dB) of an External Attenuator on the RF I/O Connector. This is used for extending the power monitor rating and range. Any value for External Attenuator is added to any other loss value (cable loss) and that value is displayed on all Mode Screens in the Ext Loss Field under the RF LEVEL Field.
Frequency Input Type	PRESET, CHANNEL OR VAR: PRESET provides a set of fixed frequencies; CHANNEL allows the selection of any on-channel frequency; VAR allows selection of frequency in 10kHz steps.
Frequency / RF Power Input Method	This allows selection between Numeric Step and Numeric Entry. Numeric Step allows the Frequency and RF Power fields on the main screen to be adjusted in step values. Numeric Entry allows for any value in the defined range to be entered.
RF Power Step	Allows step value to be selected between 0.5 dB, 1.0 dB, 10.0 dB

7.3　VHF COMM Amplitude Modulation (AM)

7.3.1　Run VHF COMM Amplitude Modulation (AM) Receive

The main screen of the COMM AM Receive application also contains configurable parameters. These configurable fields have a blue background.
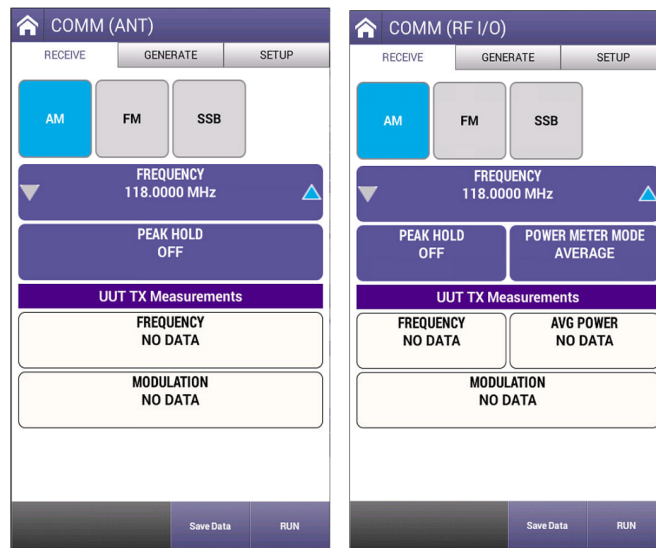
Figure 7-5 VHF COMM Amplitude Modulation (AM) Receive

Table 7-2 VHF COMM Amplitude Modulation (AM) Receive Settings

Setting	Definition
Frequency	When Frequency Input Type is set to PRESET, allows selection between 118, 137, 156 MHZ (VHF) and 225, 312, 400 MHz (UHF)
	When Frequency Input Type is set to CHANNEL, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.025 MHz) available by selecting the middle of the button.
	When Frequency Input Type is set to VAR, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.010 MHz) available by selecting the middle of the button.
Peak Hold	Toggles between ON and OFF
Power Meter Mode	Toggles between PEAK and AVERAGE

Press the RUN button and the AVX-10K will measure the incoming signal and display Frequency, Modulation, and Peak or Average Power values when directly connected to the UUT. When running, the Measurement Hold softkey will be displayed. Press the Measurement Hold softkey to lock in the reading. Press the Save Settings button to save the measured values.

7.3.2   Run VHF COMM Amplitude Modulation (AM) Generate

The main screen of the COMM AM Generate application also contains configurable parameters. These configurable fields have a blue background.
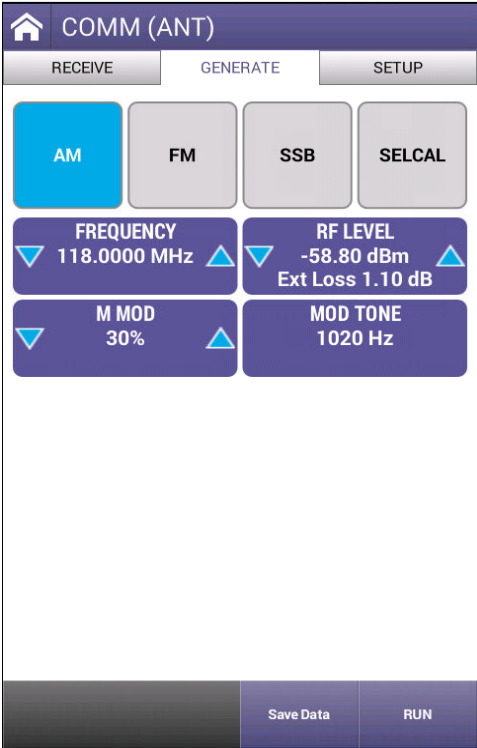
Figure 7-6 VHF COMM Amplitude Modulation (AM) Generate

Table 7-3 VHF COMM Amplitude Modulation (AM) Generate Settings

Setting	Definition
Frequency	When Frequency Input Type is set to PRESET, allows selection between 118, 137, 156 MHZ (VHF) and 225, 312, 400 MHz (UHF)
	When Frequency Input Type is set to CHANNEL, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.025 MHz) available by selecting the middle of the button.
	When Frequency Input Type is set to VAR, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.010 MHz) available by selecting the middle of the button.
RF Level	Allows selection of values between -68 and -11db. Will be offset by the value of External Attenuation and Cable Loss in setup parameters.

Table 7-3 VHF COMM Amplitude Modulation (AM) Generate Settings (Continued)

Setting	Definition
M Mod	Enter a value from 0 to 95% for Master Modulation
Mod Tone	Toggles the Modulation Tone between OFF and 1020 Hz.
Minimum Channel Spacing	When Frequency Input Type is set to Channel, this field will be displayed and the value will toggle between 25 kHz and 8.33 kHz

Press the RUN button to trigger the AVX-10K to generate the defined signal. Press STOP to turn the signal off. Press the Save Settings button to capture the setup parameters.

7.4   VHF COMM Frequency Modulation (FM)

7.4.1   Run VHF COMM Frequency Modulation (FM) Receive

The main screen of the COMM FM Receive application also contains configurable parameters. These configurable fields have a blue background.

Figure 7-7 VHF COMM Frequency Modulation (FM) Receive

Table 7-4 Run VHF COMM Frequency Modulation (FM) Receive Settings

Setting	Definition
Frequency	When Frequency Input Type is set to PRESET, allows selection between 118, 137, 156 MHZ (VHF) and 225, 312, 400 MHz (UHF)
	When Frequency Input Type is set to CHANNEL, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.025 MHz) available by selecting the middle of the button.
	When Frequency Input Type is set to VAR, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.010 MHz) available by selecting the middle of the button.
Minimum Channel Spacing	Toggles between 25 kHz and 12.5 kHz
Peak Hold	Toggles between ON and OFF
Power Meter Mode	Toggles between PEAK and AVERAGE

Press the RUN button and the AVX-10K will measure the incoming signal and display Frequency, Modulation, and Peak or Average Power values when directly connected to the UUT. When running, the Measurement Hold softkey will be displayed. Press the Measurement Hold softkey to lock in the reading. Press the Save Settings button to save the measured values.

7.4.2   Run VHF COMM Frequency Modulation (FM) Generate

The main screen of the COMM FM Generate application also contains configurable parameters. These configurable fields have a blue background.

Figure 7-8 VHF COMM Frequency Modulation (FM) Generate

Table 7-5 VHF COMM Frequency Modulation (FM) Generate Settings

Setting	Definition
Frequency	When Frequency Input Type is set to PRESET, allows selection between 118, 137, 156 MHZ (VHF) and 225, 312, 400 MHz (UHF)
	When Frequency Input Type is set to CHANNEL, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.025 MHz) available by selecting the middle of the button.
	When Frequency Input Type is set to VAR, allows selection between 10 MHz and 400 MHz in steps defined by the Channel Frequency Step (minimum 0.010 MHz) available by selecting the middle of the button.
RF Level	Allows selection of values between -68 and -11.9db. Will be offset by the value of External Attenuation and Cable Loss in setup parameters.

Table 7-5 VHF COMM Frequency Modulation (FM) Generate Settings (Continued)

Setting	Definition
M Dev	Enter a value from 1 to 80 KHz for Master Deviation
Mod Tone	Toggles the Modulation Tone between OFF and 1000 Hz.
Minimum Channel Spacing	When Frequency Input Type is set to Channel, this field will be displayed and the value will toggle between 25 kHz and 12.5 kHz

Press the RUN button to trigger the AVX-10K to generate the defined signal. Press STOP to turn the signal off. Press the Save Settings button to capture the setup parameters.

7.5   COMM High Frequency (HF) Single Side Band (SSB)

7.5.1   Run COMM High Frequency (HF) Single Side Band (SSB) Receive

The main screen of the COMM SSB Receive application also contains configurable parameters. These configurable fields have a blue background.


Figure 7-9 COMM High Frequency (HF) Single Side Band (SSB) Receive

Table 7-6 COMM High Frequency (HF) Single Side Band (SSB) Receive Settings

Setting	Definition
Frequency	Allows selection between 10 MHz and 30 MHz in steps defined by the SSB Frequency Step (minimum 0.0001 MHz) available in setup.
Peak Hold	Toggles between ON and OFF
Power Meter Mode	Toggles between PEAK and AVERAGE

Press the RUN button and the AVX-10K will measure the incoming signal and display Frequency, Modulation, and Peak or Average Power values when directly connected to the UUT. When running, the Measurement Hold softkey will be displayed. Press the Measurement Hold softkey to lock in the reading. Press the Save Settings button to save the measured values.

7.5.2   Run COMM High Frequency (HF) Single Side Band (SSB) Generate

The main screen of the COMM SSB Generate application also contains configurable parameters. These configurable fields have a blue background.
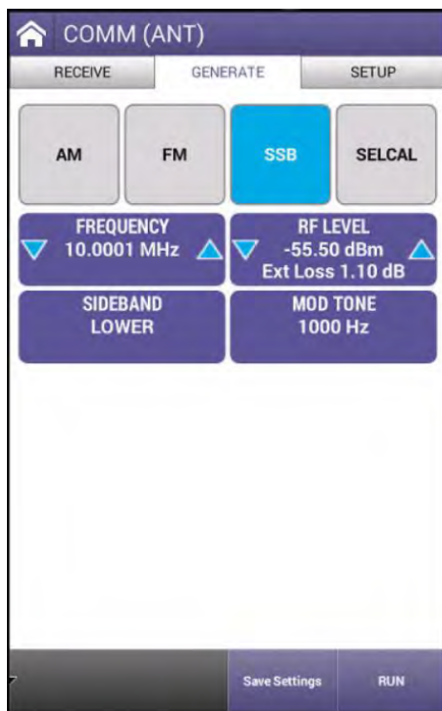
Figure 7-10 COMM High Frequency (HF) Single Side Band (SSB) Generate

Table 7-7 COMM High Frequency (HF) Single Side Band (SSB) Generate Settings

Setting	Definition
Frequency	Allows selection between 10 MHz and 30 MHz in steps defined by the SSB Frequency Step (minimum 0.0001 MHz) available in setup.
RF Level	Allows selection of values between -68 and -11db. Will be offset by the value of External Attenuation and Cable Loss in setup parameters.
Sideband	Toggles between Upper and Lower
Mod Tone	Toggles the Modulation Tone between OFF and 1000 Hz.

Press the RUN button to trigger the AVX-10K to generate the defined signal. Press STOP to turn the signal off. Press the Save Settings button to capture the setup parameters.

7.6   COMM SELCAL

The main screen of the COMM SELCAL Generate application also contains configurable parameters. These configurable fields have a blue background.


Figure 7-11 COMM SELCAL Application

Table 7-8 COMM SELCAL Setup Parameters

Setting	Definition
Frequency	When Frequency Input Type is set to PRESET, allows selection between 118, 137 and 156 MHZ when Frequency Band is set to VHF and between 10.0450, 21 and 30 MHz when Frequency Band is set to HF. When Frequency Input Type is set to CHANNEL, allows selection between 118 MHz to 157 MHz (VHF) and 10 to 30 MHz (HF) in steps defined by the Channel Frequency Step (minimum 0.025 MHz) available in setup. When Frequency Input Type is set to VAR, allows selection between 118 MHz to 157 MHz (VHF) and 10 to 30 MHz (HF) in steps defined by the Variable Frequency Step (minimum 0.001 MHz) available in setup.
RF Level	Allows selection of values between -68 and -11db. Will be offset by the value of External Attenuation and Cable Los in setup parameters.
Frequency Band	Toggles between VHF and HF
SELCAL Tone	Enter four characters of the selected SELCAL Tone.
M Mod	Enter a value from 0 to 95% for Master Modulation
Minimum Channel Spacing	Is displayed when Frequency Input Type is set to Channel and toggles between 25 kHz and 8.33 kHz.

Press the RUN button to enable the "Start Single Tones" and "Start Continuous Tone" buttons. Select one of those buttons to generate. The grey indicator will turn red and display "Transmitting Tones" when generating. Press the same button to turn off the generated signal or Press the STOP softkey. Press the Save Settings button to capture the setup parameters.

8

ELT (Emergency Location Transmitter)

This chapter describes the setup and operation of the following applications:

8.1   ELT (Emergency Location Transmitter)

The ELT application provides monitoring for 121.5/243 MHz swept tone short range beacons and also for 406 MHz COPAS/SARSET Emergency Location Transmitters, Emergency Position Indicating Radio Beacons (EPIRB) and Personal Location Beacons (PLB). The AVX will measure frequency, power (when directly connected) and start / stop tone frequencies. Data fields are decoded and displayed automatically.

Figure 8-1 ELT (Emergency Location Transmitter) Application

8.2   ELT Unique Setup

Refer to Chapter 3 for common setup items. The settings unique to the ELT application are described in the table below.
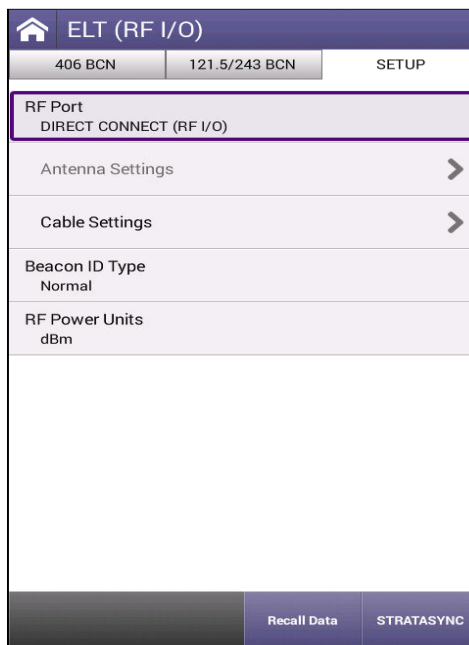
Figure 8-2 ELT (Emergency Location Transmitter) Unique Setup

Table 8-1 ELT Setup Parameters

Setting	Definition
RF Power Units	Allows for measured power to be displayed in Watts or dBm. Only enabled for Direct connection measurements.

8.3   Run ELT Application

Once your setup values are entered, select the appropriate tab for your testing – either 406 or 121.5/243.

8.3.1   ELT 406 Beacon Description

The 406 MHz Beacon transmission contains unique digital coded messages, 0.5 sec in duration, which can be received by polar orbiting satellites that are part of the COSPAS/SARSAT System. The Beacon, once activated, transmits every 50 sec. In emergency situations these satellites, that are part of the COSPAS/SARSAT System, receive and retransmit the coded message. The retransmitted data is received and processed by a ground station. The ground station then alerts the closest Search and Rescue forces to respond to the emergency.

The 406 MHz Beacons conform primarily to COSPAS/SARSAT Specification C/S T.001 and Aeronautical Beacons (ELT's) also conform to the specification defined in RTCA/DO-204 and EUROCAE ED62.

There are three types of 406 MHz Beacons:
- **ELT (Emergency Locator Transmitters) -** For aviation use
- **EPIRB (Emergency Position Indicating Radio Beacons) -** For maritime use
- **PLB (Personal Locator Beacons) -** For personal use

Each message sent by a 406 MHz Beacon includes the unique identification of the Beacon. The complete Beacon identification code includes the protocol flag, protocol code and country code together with identification data which is encoded in the first protected data field (PDF-1) of the 406 MHz message. Identification data can be provided in various alphanumeric formats, depending on the coding protocol required by the responsible administration. Identification data is encoded together with the country code and other information in the Beacon message in binary format.

8.3.2   Run ELT 406 Beacon

Once you are connected to the ELT or ready to test over-the-air, select the RUN key in the lower right corner. All measured and decoded fields will be displayed. Click Save Profile key to capture the information for review.

NOTE: The screen below is for reference purposes only. The ELT 406 screens will display the fields that are decoded. The full list of available fields is shown in the table below.
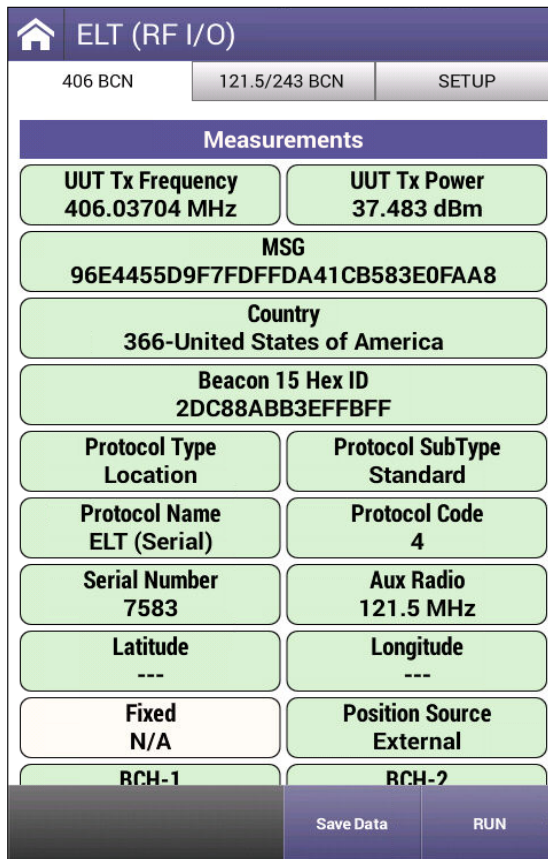
Figure 8-3 ELT 406 Beacon

Table 8-2 ELT 406 Beacon Settings

Setting	Definition
UUT Tx Frequency	This Field displays the transmitter frequency received over the RF I/O Connector or via the ANT Connector.
UUT Tx Power	This Field displays the transmitter power received (0.10 to 30 W) over the RF I/O Connector. The TX PWR Field is not displayed if the ANT Connector is selected (Setup Menu).

CAUTION: OBSERVE DUTY CYCLE LIMITS:

Table 8-2 ELT 406 Beacon Settings (Continued)

Setting	Definition
⚠	**WARNING:** ≤10 W IS CONTINUOUS DUTY CYCLE
⚠	**WARNING:** >10 W TO ≤20 W IS 3 MIN ON - 2 MIN OFF DUTY CYCLE
⚠	**WARNING:** >20 W TO ≤30 W IS 1 MIN ON - 2 MIN OFF DUTY CYCLE
Protocol Type	Can be either "USER" or "LOCATION"
Protocol Subtype	Can be "STANDARD", "NATIONAL" or "LOCATION"
Protocol Name	Standard Location Structure of Encoded Data – values include: "Orbitography", "ELT Aviation" "EPIRB Maritime" "Serial" "National" "EPIRB Radio Call Sign" "Test" "MMSI & Beacon Number" "Aircraft Address" "MMSI" "Aircraft Operator" "Certificate Number" "ELT" "EPIRB" "PLB" "RLS" "ELT(DS)"
Protocol Code	A number that defines the associated code
Serial Number	Beacon Serial Number
Aux Radio	Values can include: "None" "121.5 MHz" "9 GHz SART" "Other" "Unknown"
Latitude	Latitude Data
Longitude	Longitude Data

Table 8-2 ELT 406 Beacon Settings (Continued)

Setting	Definition
Fixed	Set Binary Bits – 3 to 5 binary bits
Position Source	Position Data Source – internal or external
BCH-1	BCH Error- Correcting Code (First Protected Data Field)
BCH-2	BCH Error- Correcting Code (Second Protected Data Field)
Aircraft Registration	Tail number of aircraft
Specific ELT Number	Index if more than one ELT is carried in an aircraft
Beacon Type	Values can include: "Aviation" "Aircraft" "Maritime" "EPIRB" "First EPIRB" "Second EPIRB" "Personal Locator Beacon (PLB)" "ELT" "Location Test" "Invalid Value"
Float Free	Flag used for Maritime ELTs
Beacon ID	Beacon ID
Activation Type	Values can include: "Automatic & Manual" "Manual Only" "Manual by User" "Automatic by Beacon" "Automatic by External Means" "Unknown"
Aircraft Address	Address of Aircraft
Aircraft Operator	Operator of Aircraft
Certificate Number	Associated Certificate Number
Radio Call Sign	Call sign of onboard radio
MMSI	Maritime Mobile Service Identity
Specific Beacon	Baudot Code
RLS Tac Num	Return Link Service Type Approval Certificate Number
C/S Encoded	C/S Certificate encoded flag
Emergency Code Flag	Code flag for the nature of distress

Table 8-2 ELT 406 Beacon Settings (Continued)

Setting	Definition
Nature of Distress	Values can include: "Unspecified" "Fire/Explosion" "Flooding" "Collision" "Grounding" "Listing" "Sinking" "Disabled and Adrift" "Abandoning Ship" "Unknown"
Fire	Flag for fire involved
Medical Help Required	Flag for medical help required
Disabled	Flag for disabled involved
Spare 112	Flag of spare bit 112
Spare	For fixed field values
RLM Type 1 Capable	Flag for type 1 capable
RLM Type 1 Acknowledged	Flag for type 1 acknowledgement
RLM Type 2 Capable	Flag for type 2 capable
RLM Type 2 Acknowledged	Flag for type 1 acknowledgement
RLS Provider	Values can include: "GALILEO" "GLONASS" "Undefined"
Altitude Raw Value	Associated altitude values
Altitude Minimum	Associated altitude values
Altitude Maximum	Associated altitude values
Altitude Not Available	Flag for non-available altitude
Location Freshness	Values can include: "More than 60 seconds" "More than 2 seconds" "Less than 2 seconds"
Rotating Field	Values can include: "Aircraft Operator 3LD" "Spare"

Table 8-2 ELT 406 Beacon Settings (Continued)

Setting	Definition
Aircraft Operator 3LD	Three letter ICAO designator
National Raw	Raw number for USA
Manufacturer Model	ELT Model
Manufacturer Production	ELT production information
Spare Bits	Spare bits
Organization ID	Organization related information
Organization Use 1	Organization related information
Organization Use 2	Organization related information
Sequence Number	Organization related information
NPDF	Non-protected data field

NOTE: Always refer to the Beacon Manufacturer's Test Documentation for specific tests. VIAVI does not recommend Beacon radiated testing, unless testing is conducted in an RF shielded room.

CAUTION: IF TESTING THE 406 MHz BEACON RADIATED SIGNAL IN FREE SPACE VIA THE ANT CONNECTOR, ALWAYS ENSURE THE BEACON ONLY TRANSMITS THE TEST MESSAGE.

CAUTION: THE 406 MHz BEACON TEST MESSAGE MAY BE ACTIVATED BY DIFFERENT MEANS FOR EACH BEACON TYPE.

CAUTION: THE BEACON TRANSMITS A 406 MHz SIGNAL ≈45 SEC AFTER THE BEACON IS ACTIVATED. THE SATELLITE SYSTEM CONSIDERS THIS TRANSMISSION TO BE A VALID DISTRESS SIGNAL.

NOTE: Refer to the following website for more information regarding Beacon testing.

https://www.sarsat.noaa.gov/faqs/

8.3.3   Run ELT 121.5 / 243 Beacon

Once you are connected to the ELT or ready to test over-the-air, select either or both "Enabled 121.5" and "Enabled 243" and then select the RUN key in the lower right corner. All measured and decoded fields will be displayed. Click Save Profile key to capture the information for review.
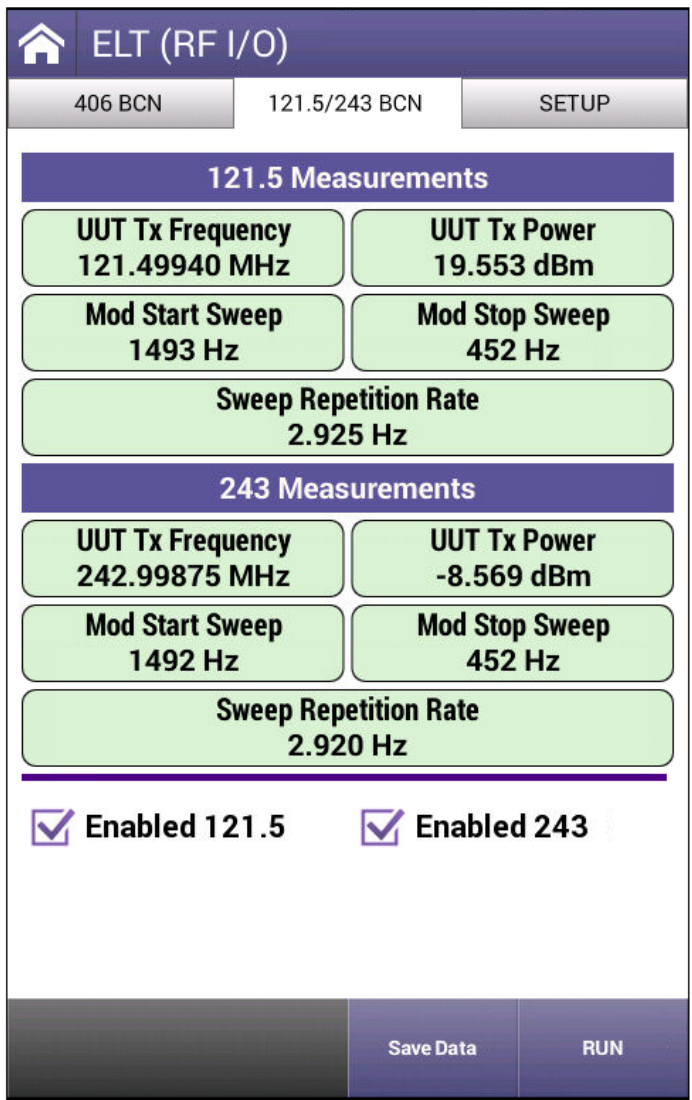
Figure 8-4 ELT 1212.5 / 243 Beacon

Table 8-3 ELT 1212.5 / 243 Beacon Settings

Setting	Definition
UUT TX Frequency	This field displays the transmitter frequency received over the RF I/O Connector or via the ANT Connector.
UUT Tx Power	This field displays the transmitter power received (0.10 to 30 W) over the RF I/O Connector. The TX PWR Field is not displayed if the ANT Connector is selected (Setup Menu).
⚠️	**CAUTION:** OBSERVE DUTY CYCLE LIMITS:
⚠️	**WARNING:** • ≤10 W IS CONTINUOUS DUTY CYCLE • >10 W TO ≤20 W IS 3 MIN ON - 2 MIN OFF DUTY CYCLE • >20 W TO ≤30 W IS 1 MIN ON - 2 MIN OFF DUTY CYCLE
Mod Start Sweep	This field displays the swept modulation start frequency.
Mod Stop Sweep	This field displays the swept modulation stop frequency.

NOTE: Always refer to the Beacon Manufacturer's Test Documentation for specific tests. VIAVI does not recommend Beacon radiated testing unless testing is conducted in an RF shielded room.

⚠️ **CAUTION:**

• ENSURE THE BEACON IS DIRECTLY CONNECTED TO THE RF I/O CONNECTOR BEFORE ACTIVATING.

• IF TESTING THE 121.5/243 MHz BEACON RADIATED SIGNAL IN FREE SPACE VIA THE ANT CONNECTOR, ALWAYS PERFORM THE TESTS WITHIN THE FIRST 5 MINUTES OF THE HOUR (UTC).

• ENSURE NO MORE THAN THREE SWEEPS ARE TRANSMITTED OR CONDUCT THE TESTING IN AN RF SHIELDED ROOM.

• IF PERFORMING A RADIATED TEST WITH A BEACON THAT HAS 406 MHz CAPABILITY, DO NOT ALLOW THE TEST DURATION TO EXCEED 5 SEC.

• THE BEACON TRANSMITS A 406 MHz SIGNAL ≈45 SEC AFTER THE BEACON IS ACTIVATED. THE SATELLITE SYSTEM CONSIDERS THIS TRANSMISSION TO BE A VALID DISTRESS SIGNAL.

9

Guided Test Overview

This chapter covers the operation of the Guided Test feature of the AVX-10K.

9.1   Guided Test Overview

The AVX-10K provides a guided test function, which allows instrument settings to be stored as a sequence and stepped through either by keypress or a delay between steps. Each sequence can be stored as a unique filename and once created, can be run at any time. For sequences that use a keypress to sequence between steps, the steps can be run forwards or backwards. The individual steps and sequence of a saved guided test may be edited as needed.
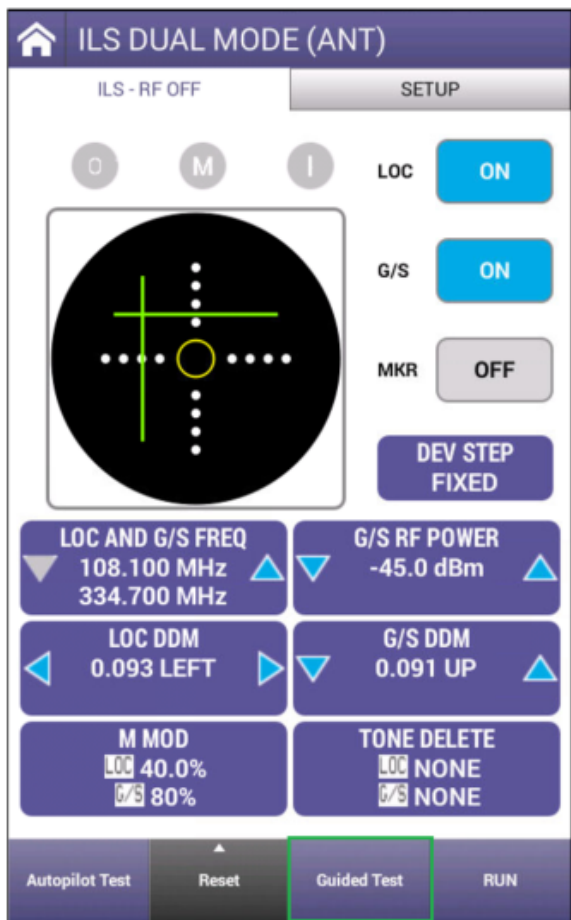
Figure 9-1 Guided Test Button in ILS Application

Start in the opening screen of the application and press the Guided Test button to access the guide options page. From here, you can create, remove, edit, or run an existing guided test. The auto-test entry is factory provided and cannot be edited or removed.

Figure 9-2 Guided Test Page

The ILS, VOR, DME, and TACAN applications all have the Guided Test Feature. This section uses the ILS application to walk through the Guided Test feature, however, this information applies to all the Navigation applications.

9.2   Creating a Guided Test

To create a new Guided Test, from the Guide test page, press the Create Guided Test button and a password dialog box will pop up. Enter the password and press OK.
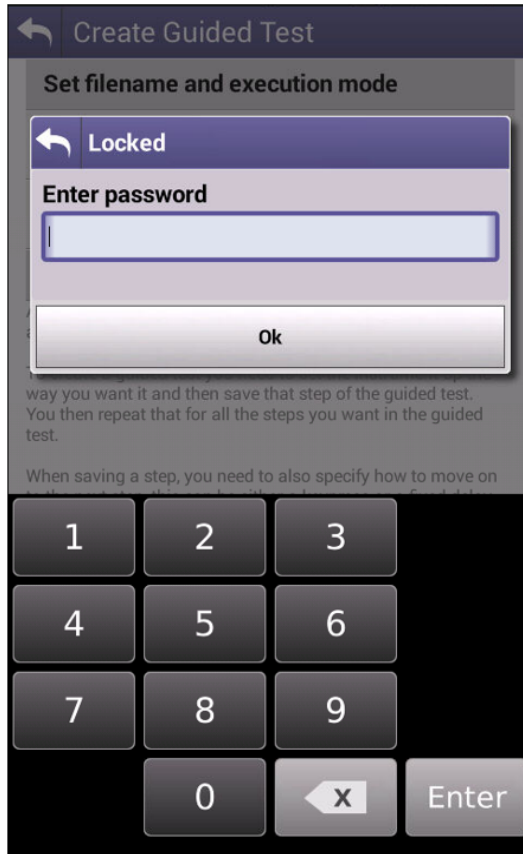
Figure 9-3 Guided Test Password Dialog Box

The password is 2154 and is unchangeable.

The instructions for creating a new guided test are listed on the Create Guided Test page. Select the New Guided Test File Name button, enter the name for the guided test to be created and then press OK. The Create button should not be pressed yet.
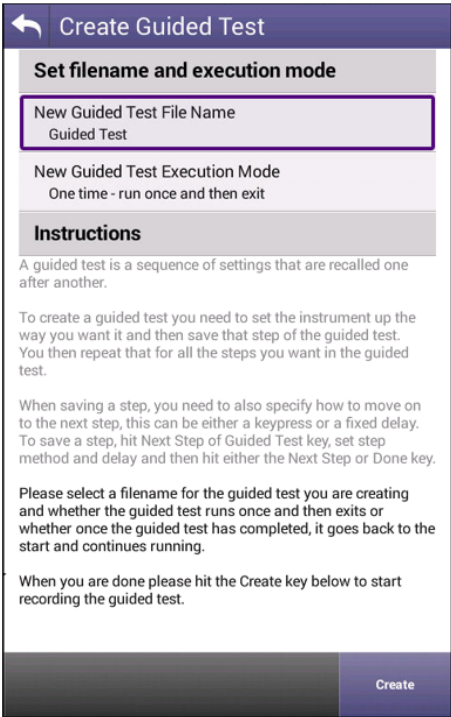
Figure 9-4 Guided Test File Name
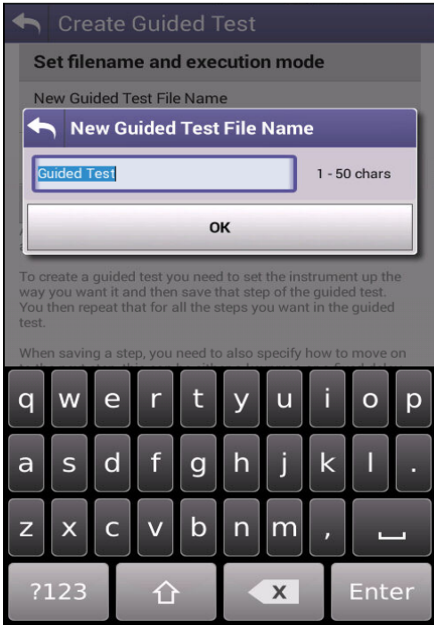
Figure 9-5 Guided Test File Name Dialog Box

After the Guided Test name has been entered, select the New Guided Test Execution Mode to choose the Guided Test Execution Mode. Guided Test Execution Mode options are One-time (the guided test will loop until halted by the user) or Continuous (the guided test will loop until halted by the user). Press the "Create" button to start the process and advance to the Create Guided Test Step 1 page.
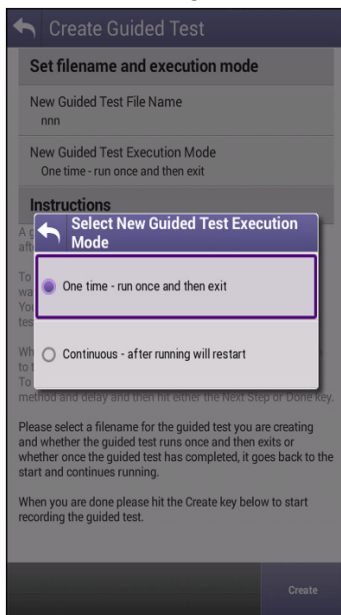
Figure 9-6 Guided Test Execution Selection

This will take you to the main page of the instrument and the tab will reflect which step you are currently on.
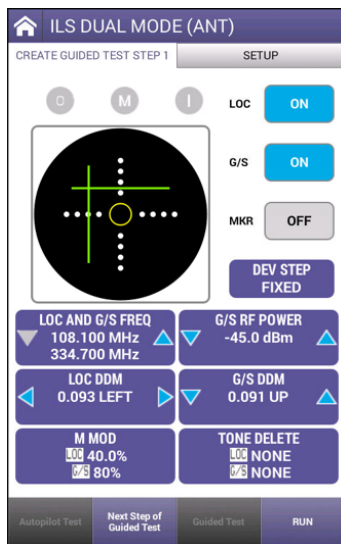
Figure 9-7 Creating a Guided Test Step

Edit all setup parameters and then set the parameters for the first step of the test you are working on. When finished, press the Next Step of Guided Test Button.
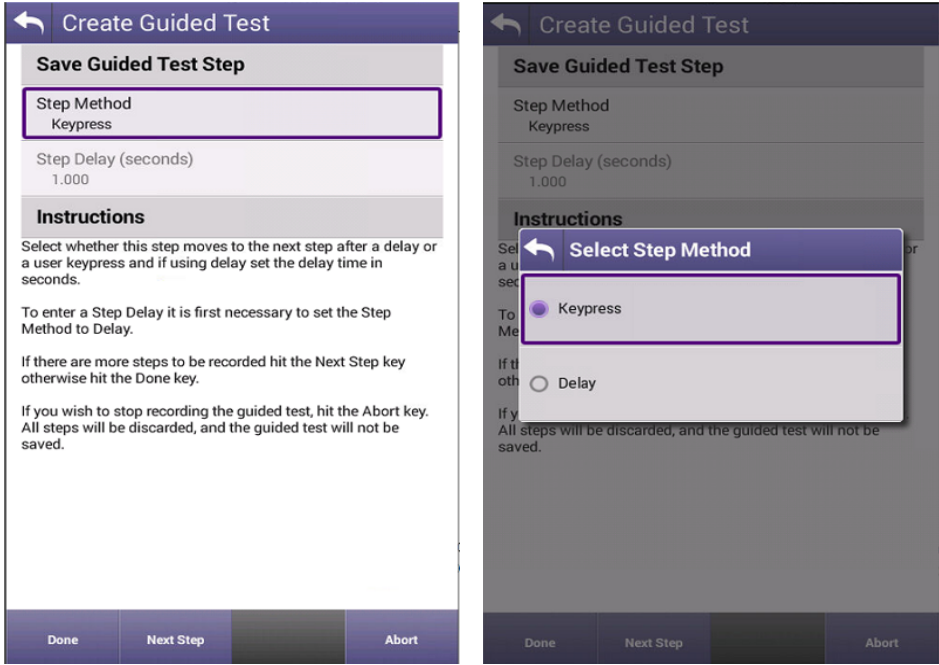
Figure 9-8 Guided Test Save Step and Step Method

Select the method of advancement for each step by setting Step Method to either Keypress or Delay.

Step Method: Keypress - The test set will advance to the next step of the Guided Test after the operator presses any key.

Step Method: Delay - the test set will advance to the next step of the guided test after a set time delay.
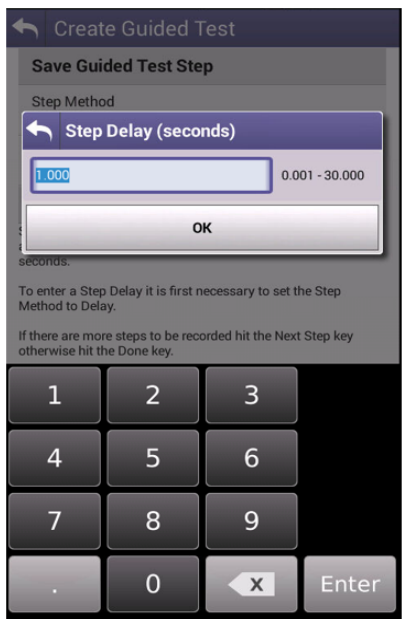
Figure 9-9 Guided Test Step Method - Delay

Press the Next Step button to create the second step in your Guided Test.
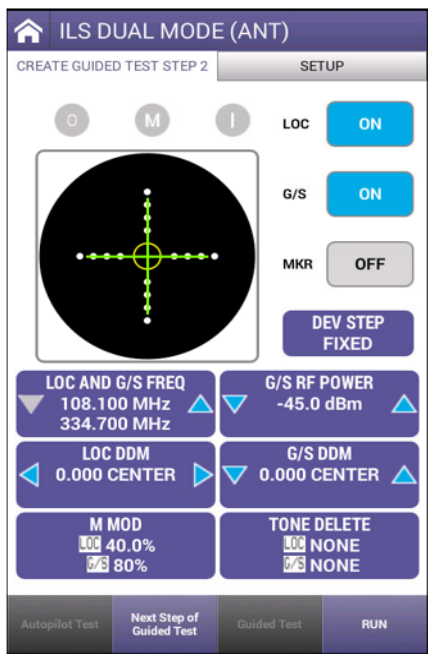
Figure 9-10 Guided Test Step 2

Set up the parameters for the second step in the Guided Test. Press the Next Step Guided Test button when complete.
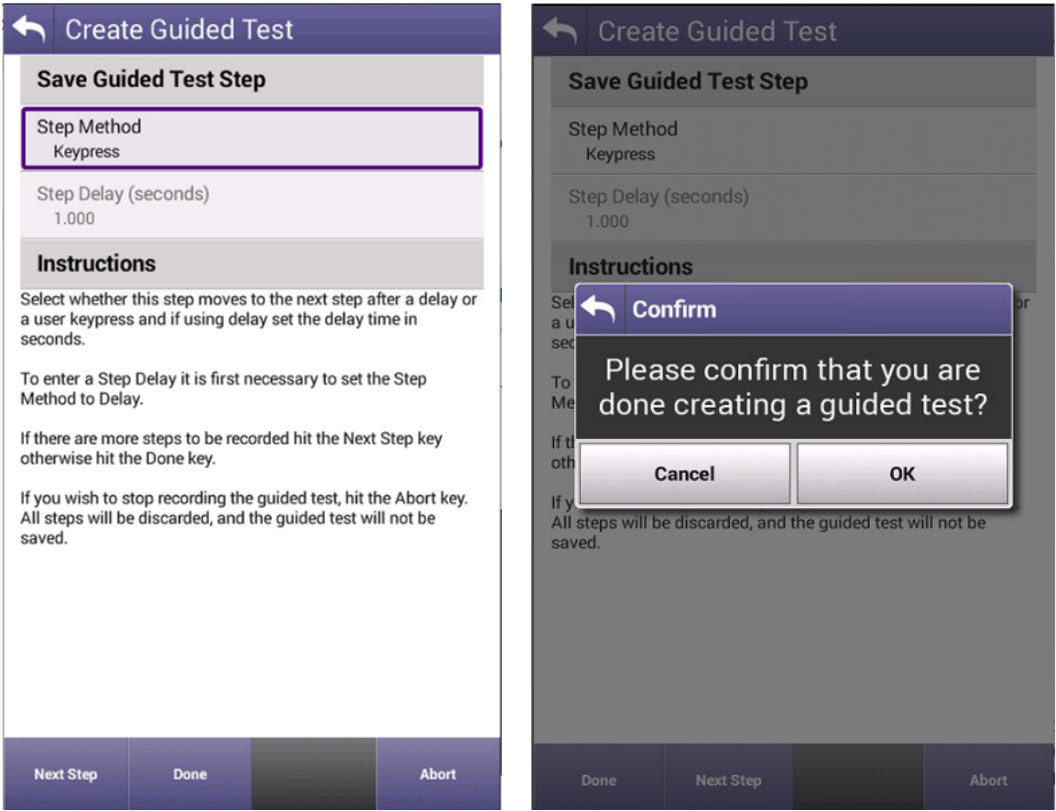
Figure 9-11 Save Guided Test Selection - Step 2

Choose the step method (if different than the previous step) and press the Next Step button if more steps are required. Otherwise, press the Done button to complete and save the guided test.

9.3   Running a Guided Test
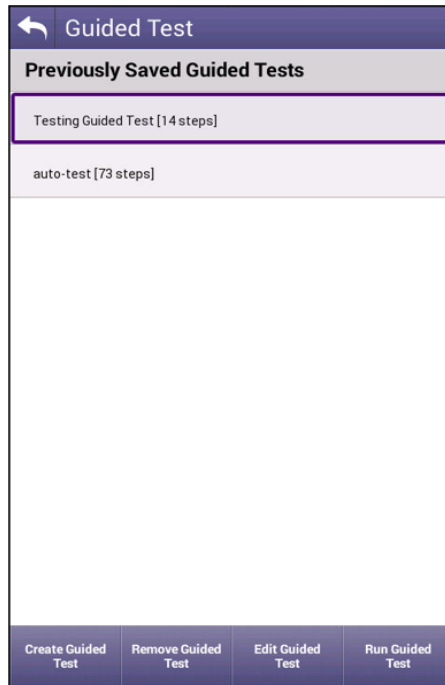
Figure 9-12 Running a Guided Test

Select the desired Guided Test from the list of available tests and press the Run Guided Test button. The AVX-10K will proceed to step number 1 of the saved Guided Test. Depending on the guided test advancement method previously chosen, the AVX-10K will advance to step number 2, either by keypress or by the previously entered wait time. After step 1, you will be able to advance to the next step or return to the previous step.

9.4   Removing a Guided Test
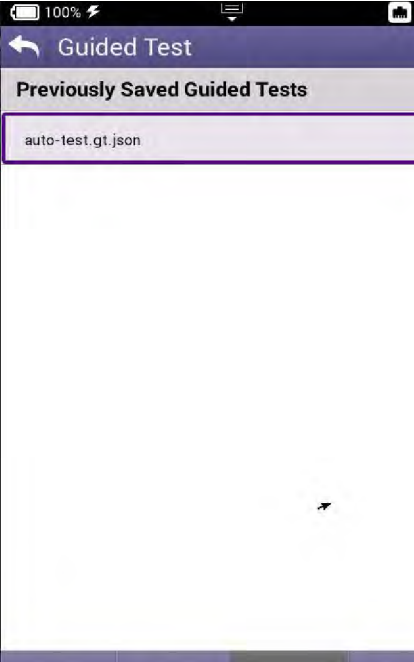
Figure 9-13 Removing a Guided Test
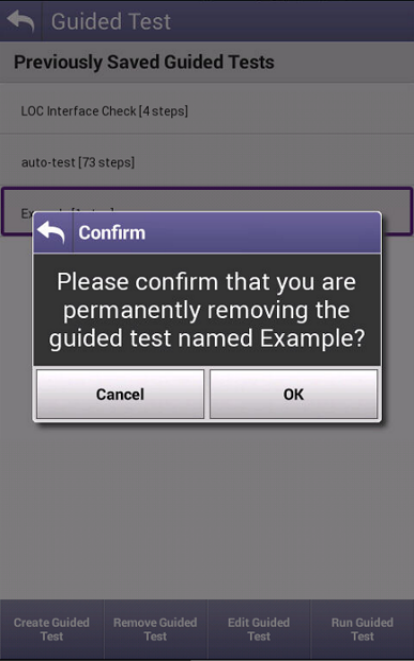
Figure 9-14 Guided Test Removal Confirmation

Highlight the guided test you wish to remove. Press the Remove Guided Test button to pop up the password entry box.
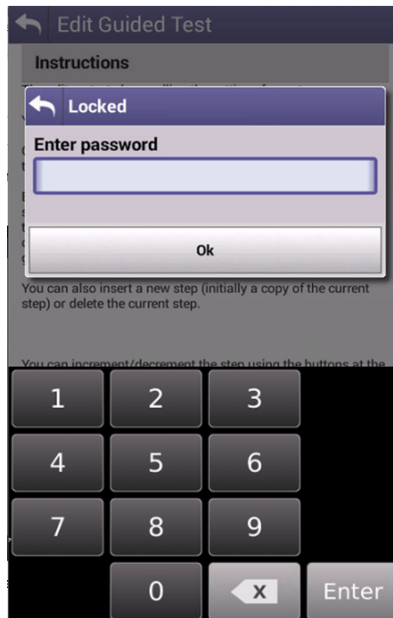
Figure 9-15 Guided Test Password Dialog Box

Enter the password "2154" to remove the chosen guided test.

9.5 Editing a Guided Test

Highlight the guided test you wish to edit. Press the Edit Guided Test button to pop up the password entry box. Enter the password "2154" to start the Edit process.

Figure 9-16 Edit Guided Test

Please read and fully understand these instructions. Press the Edit button when ready.
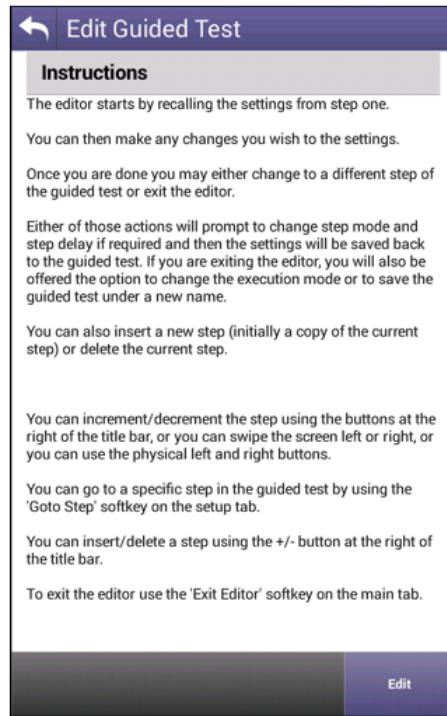
Figure 9-17 Edit Guided Test Instructions

Use the arrow keys on the screen header or on the AVX-10K to advance to the step to change. There is also a Goto Step button on the setup page to jump to a particular step.Additional steps can be added or steps can be removed using the +/- button.
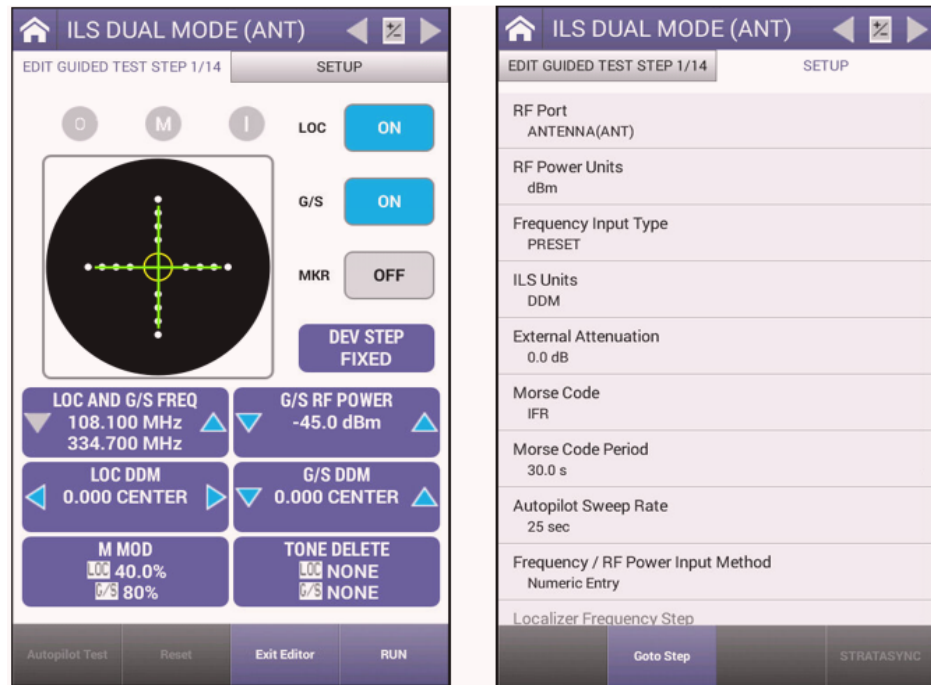
Figure 9-18 Guided Test Step to Change

After changes are made, click the arrow buttons to advance to next step and enter the Step Method or hit the OK button to leave it as is.
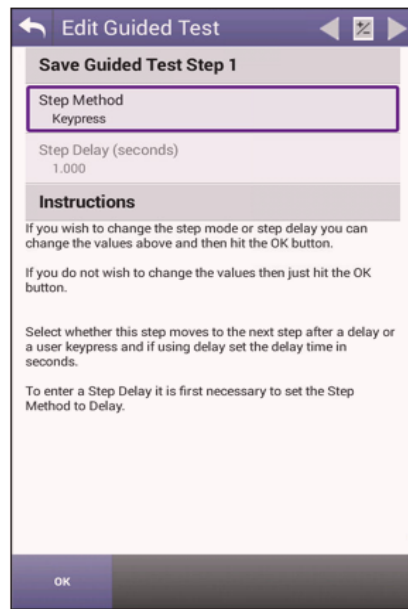
Figure 9-19 Guided Test Edit Step Method

The display will show "Changing Step" and then move to the next step. Repeat these steps as needed to make all test modifications and then press the Exit Editor button. The next time that this guided test is Run, it will run with all modifications.
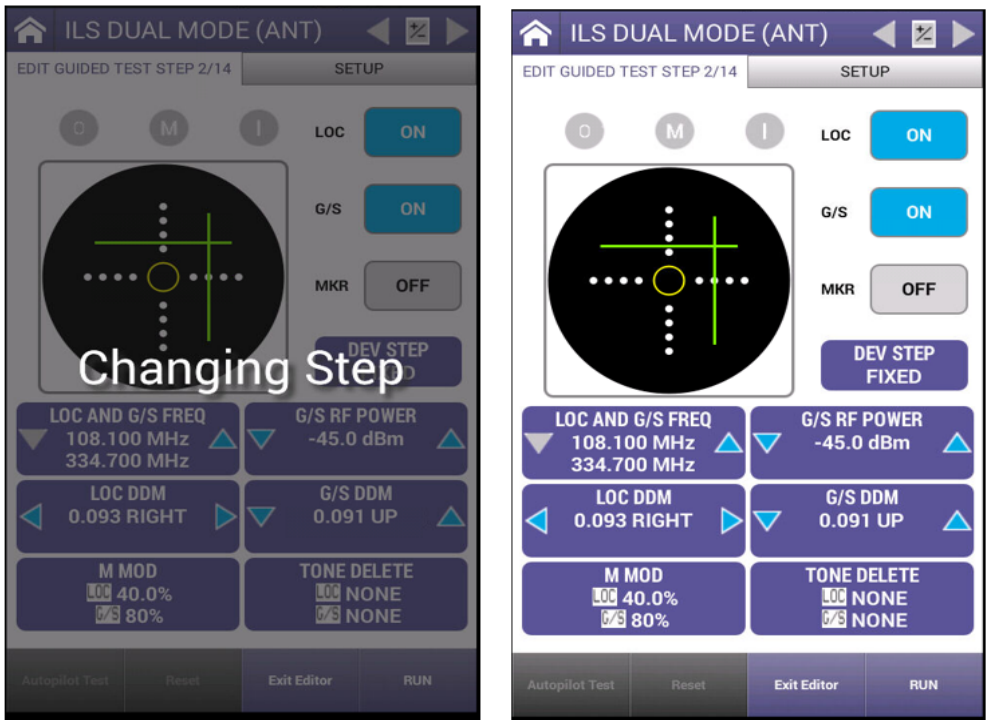
Figure 9-20 Guided Test Exit Editor

9.6   Porting a Guided Test to another AVX-10K

For those that own multiple AVX-10K's and would like to distribute a guided test to other units, this can be accomplished using a USB thumb drive. With the thumb drive inserted into one of the USB slots on the side of the AVX-10K, open File Browser from the System Tray.
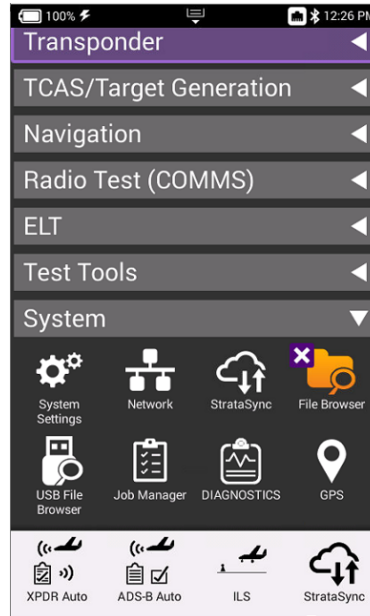
Figure 9-21 File Browser Application

Navigate to the application where you would like to copy from by entering the reports folder by clicking on the arrow to the right of "reports" (arrow will appear after selection) and then move to either the ILS, VOR, DME or TACAN folders in a similar manner.
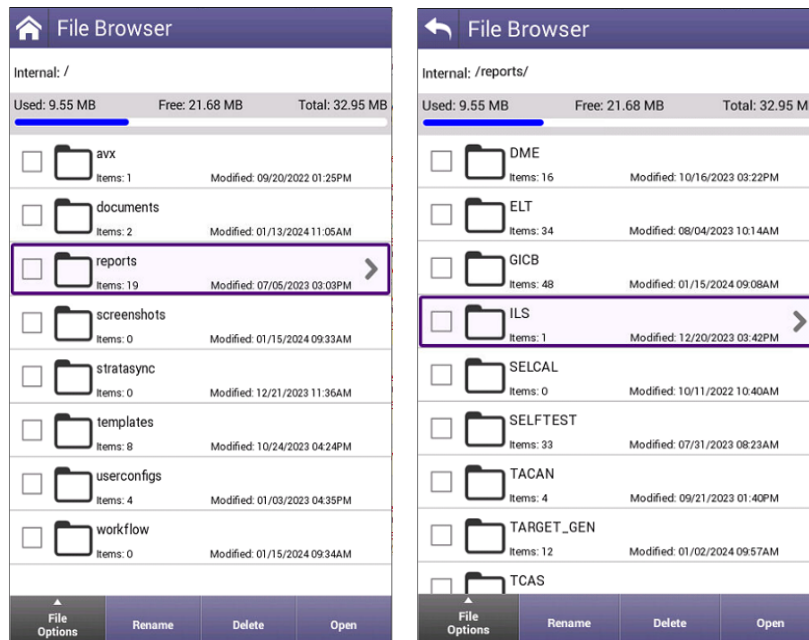
Figure 9-22 Navigating to Guided Test Folder

Enter the "GT" folder and then select both the file and the folder of the Guided Test that you wish to copy (by clicking in the box to the left of the file/folder) and then click File Options and Copy to USB. This will copy the guided test from this AVX-10K to the USB Thumb Drive.
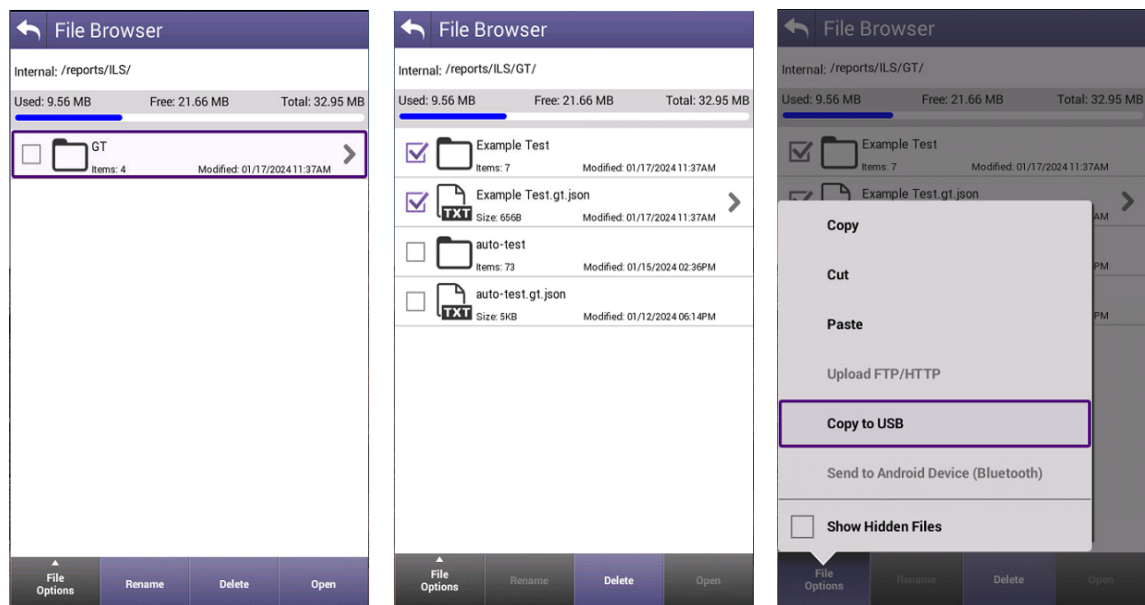
Figure 9-23 Guided Test Copy to USB

Insert that thumb drive into the USB slot of the AVX-10K that you would like to port these files to and on that AVX-10K open the USB File Browser application under the System ribbon.
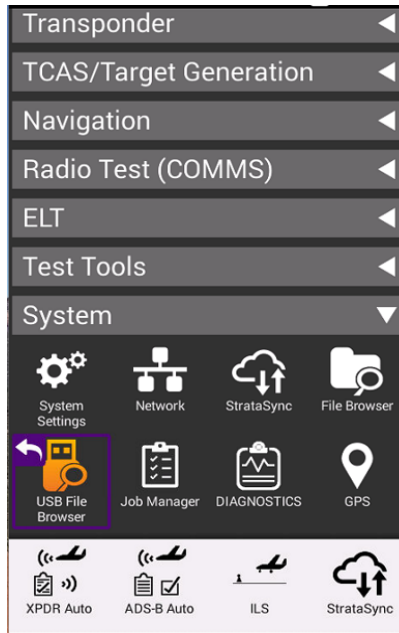
Figure 9-24 Guided Test USB File Browser

Select both the File and the Folder that you just copied (by clicking in the box to the left of the folder) and then click File Options and Copy to Internal.
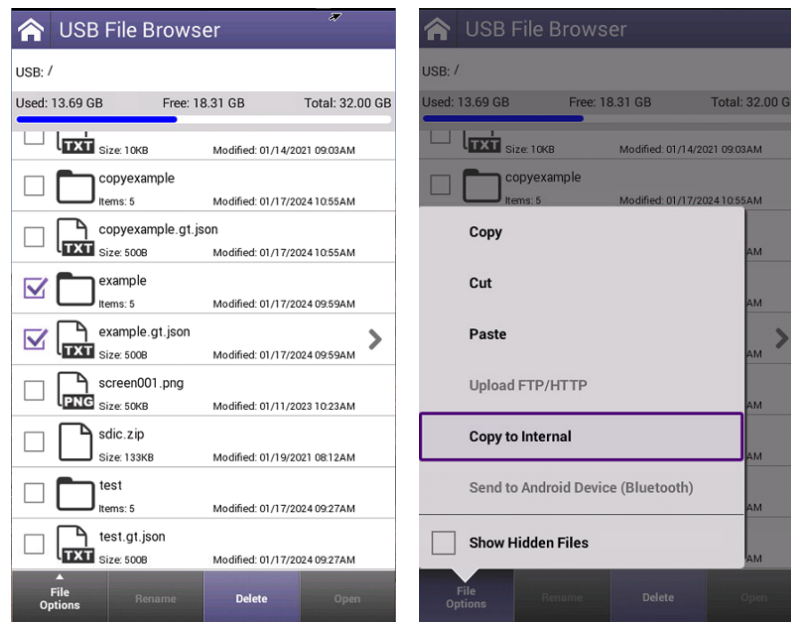
Figure 9-25 Guided Test Copy to Internal

Exit the USB File Browser using the back button or by clicking on the home key or icon and run the File Browser application. Select both the File and Folder (by clicking in the box to the left of the folder) and click File Options and Cut.
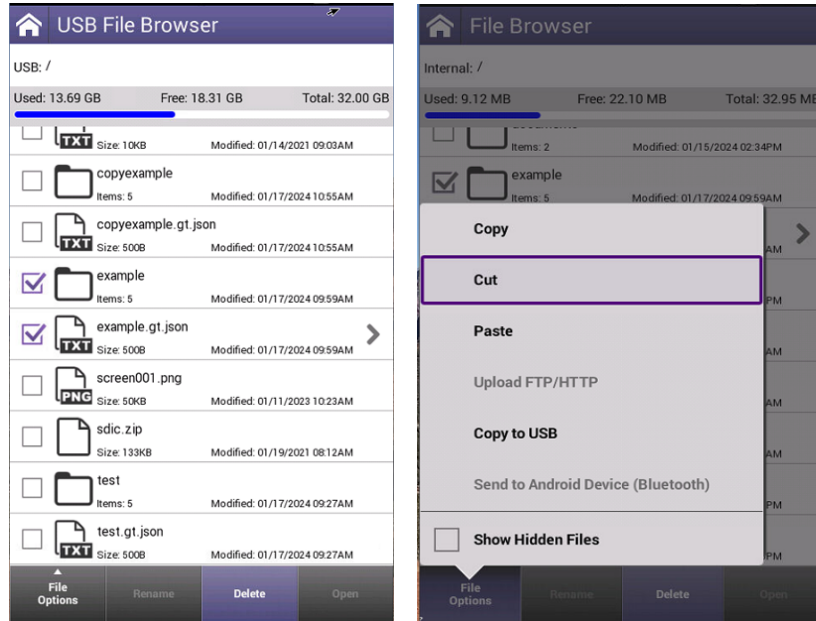
Figure 9-26 Guided Test Moving Files

Enter the "reports" folder and then navigate to the same application folder from which these Guided Test Files were removed (either ILS, VOR, DME, or TACAN) and then enter the "GT" folder of that application.
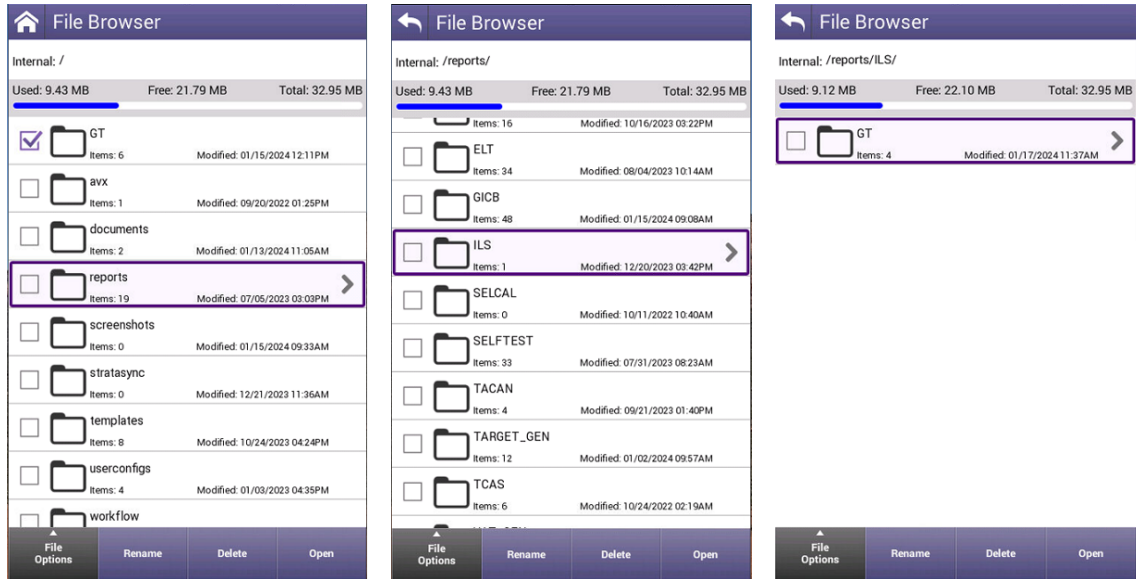
Figure 9-27 Navigate to Application Guided Test Repository

Click on the File Options button and then Paste. If you overwriting older files, you may need to select the OK button to confirm.
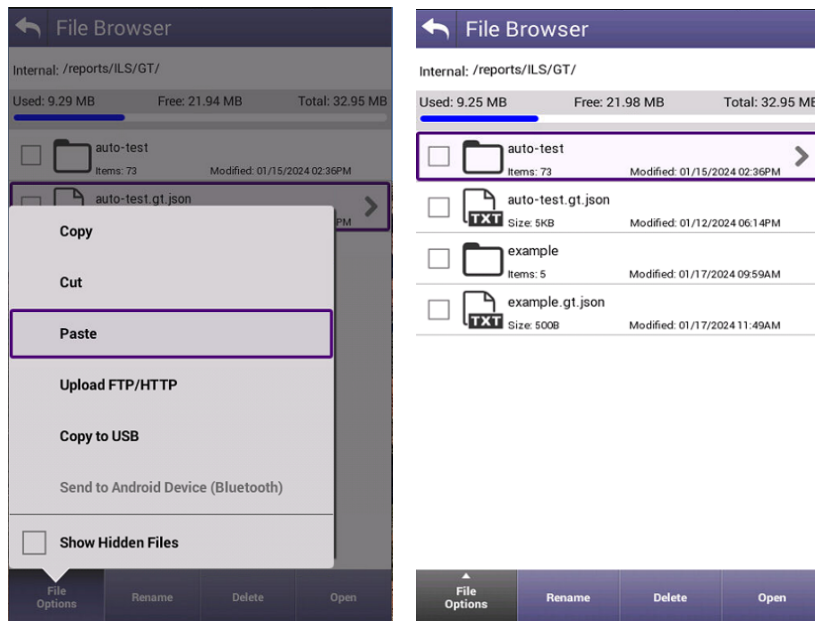
Figure 9-28 Guided Test Paste Files

The new Guided Test(s) will now be available from the list of that applications Guided Tests.

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Test Tools

In this chapter we review the VSWR and Distance To Fault (DTF) applications and the associated cable database feature.

10.1 VSWR

10.1.1 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.

10.1.2 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.

10.1.3 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

10.1.4 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)

Figure 10-1 VSWR Calibration Kit

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 10-2 VSWR Calibration RF Port Setup

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.
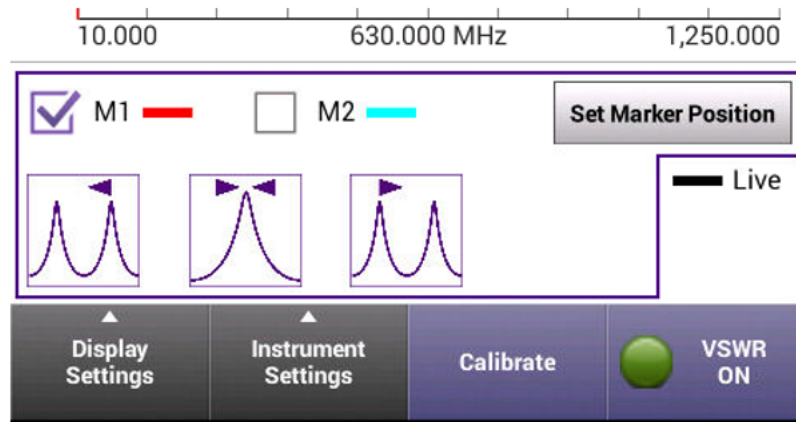
Figure 10-3 VSWR Calibration Button

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.
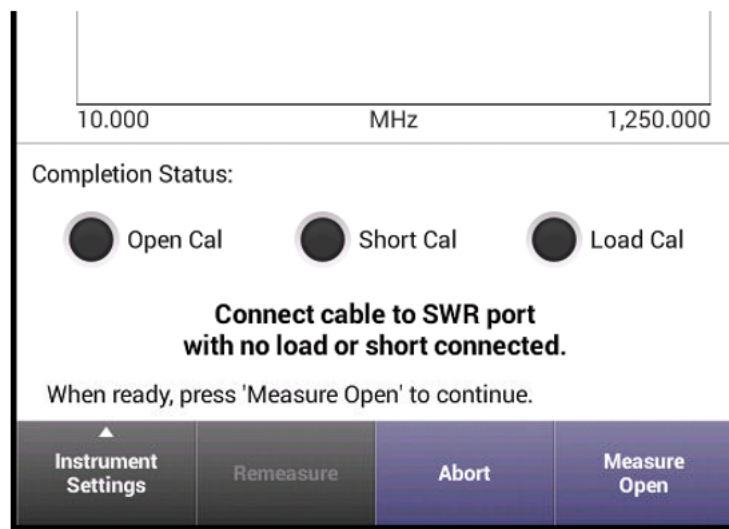
Figure 10-4 VSWR Calibration Instructions

10. When external calibration has been completed, the calibration plot should resemble the following figure.
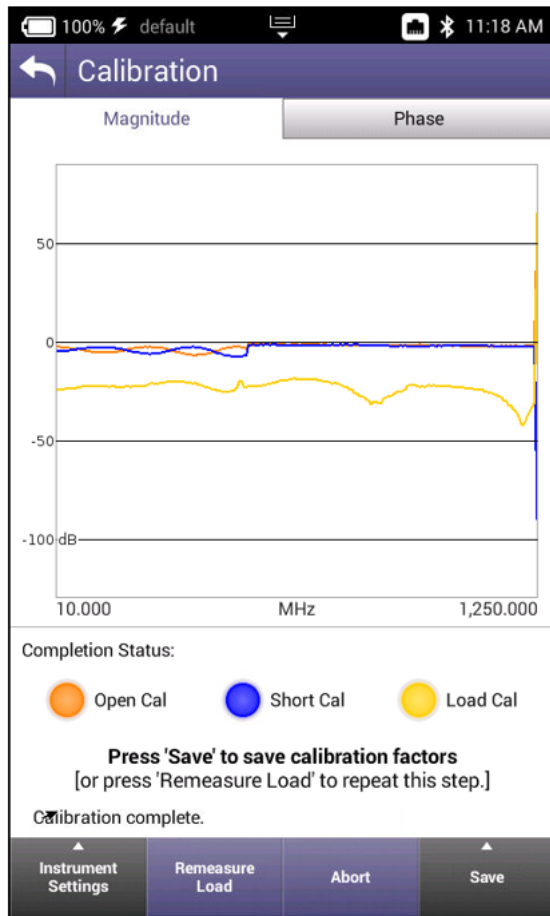
Figure 10-5 VSWR Calibration Results Plot

Perform VSWR Test
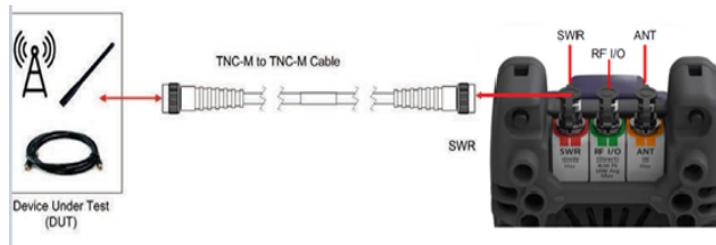
Figure 10-6 Perform VSWR Test Setup

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.
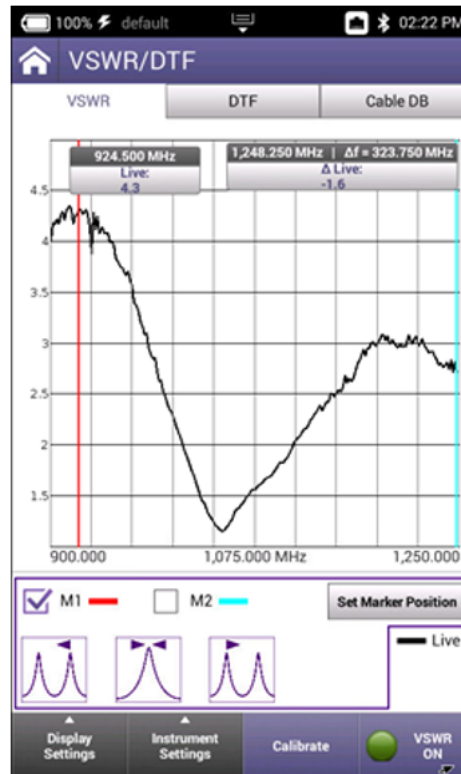
Figure 10-7 VSWR Trace Example

10.2 Distance to Fault

10.2.1 DTF Test Function

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

10.2.2 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 coaxial cables and determine the distance to a potential fault in the cable, either a short or an open.

10.2.3 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
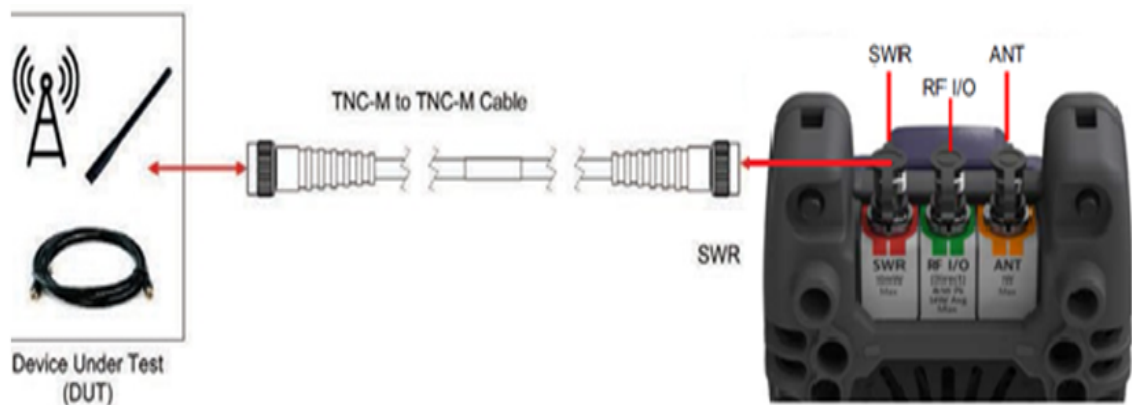
Figure 10-8   DTF Test Setup

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.
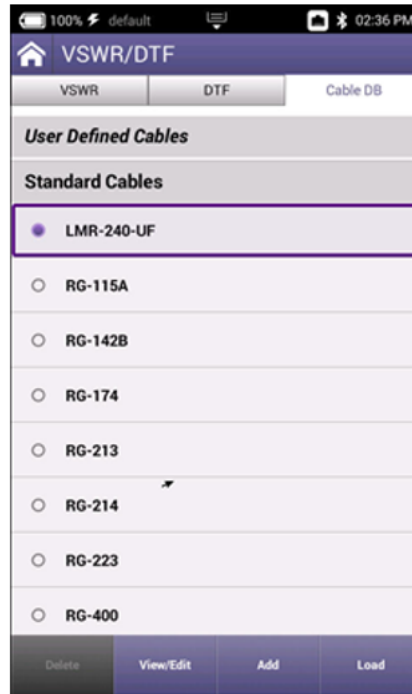
Figure 10-9 Cable Database Tab

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.
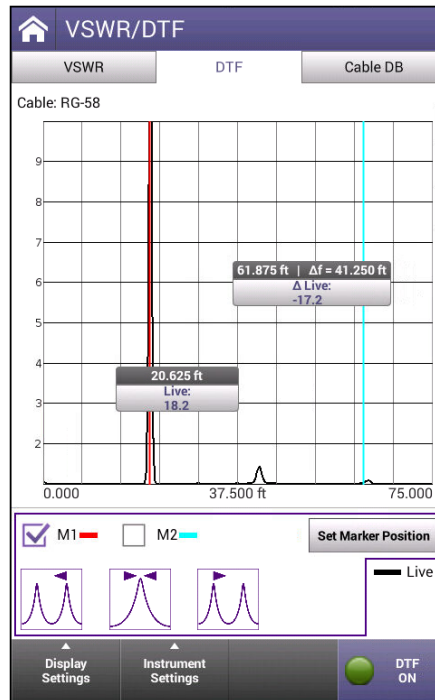
Figure 10-10 DTF Trace

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).

10.3 Cable Database

The AVX-10K comes preloaded with a large set of cables. The values for these cables are shown here for reference. If needed, you can create your own User Defined cable or use one whose values are similar.

Table 10-1 VSWR Application Cable Types

Cable Type	Cable Velocity	Cable Loss
LMR-240-UF	0.84	10.8
RG-115A	0.7	5.16
RG-142B	0.7	8.86
RG-174	0.66	19.11

Table 10-1 VSWR Application Cable Types (Continued)

Cable Type	Cable Velocity	Cable Loss
RG-213	0.66	4.89
RG-223	0.66	9.22
RG-400	0.66	10.13
RG-55	0.66	9.22
RG-55A	0.66	9.22
RG-55B	0.66	9.22
RG-58	0.66	10.56
RG-58A	0.66	10.56
RG-58B	0.66	10.56
RG-58C	0.66	10.56
RG-58foam	0.79	10.56
RG-8	0.66	4.89
RG-8A	0.66	4.89
RG-8foam	0.66	4.89
RG-8x	0.75	8.71

To view cables values, press the View/Edit button. To add a user defined cable, press the Add button. You will be prompted to enter a unique cable name, cable velocity, and cable loss values. The velocity and loss values are typically provided by the cable manufacturer.
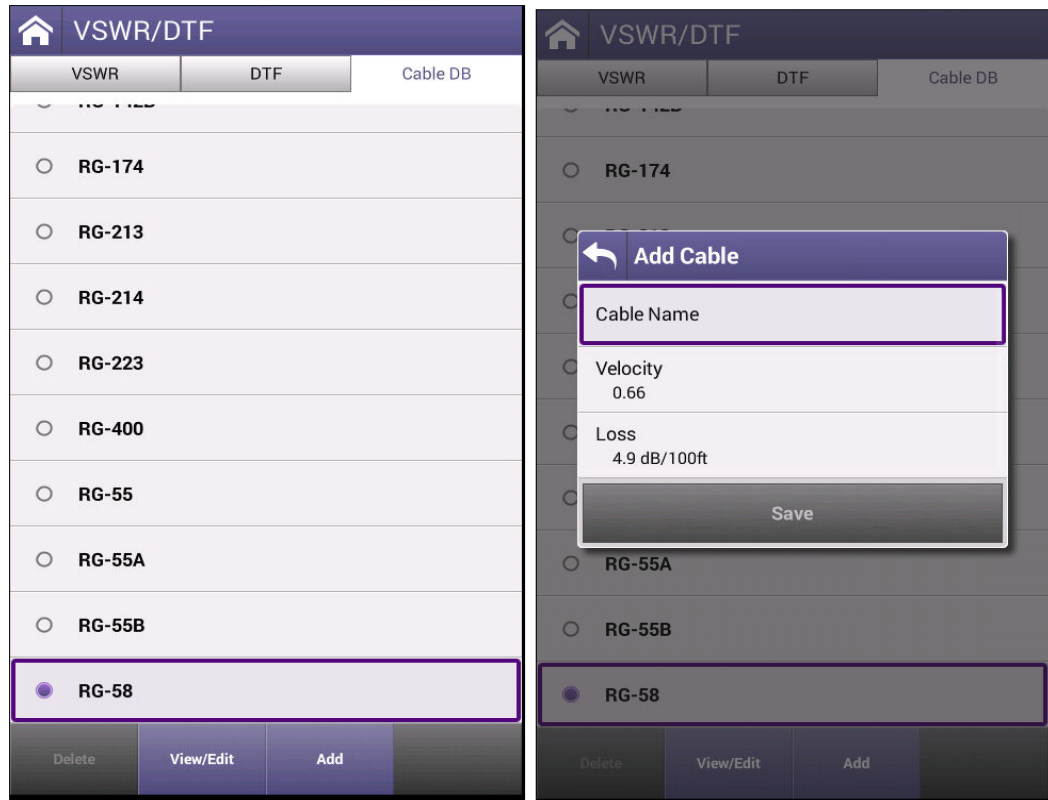
Figure 10-11 VSWR Adding a Cable

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11

System Functions

This chapter reviews the applications in the Systems ribbon of the AVX-10K.

11.1 Introduction

The system applications include access to StrataSync, network settings, File Browser, and GPS Receiver among others. These applications will typically stay installed (orange icon) while other instrument related applications are running.

11.2 System Functions

System functions are accessed from the System Menu on the device's Home Screen. System Settings are discussed in Section 2.12.
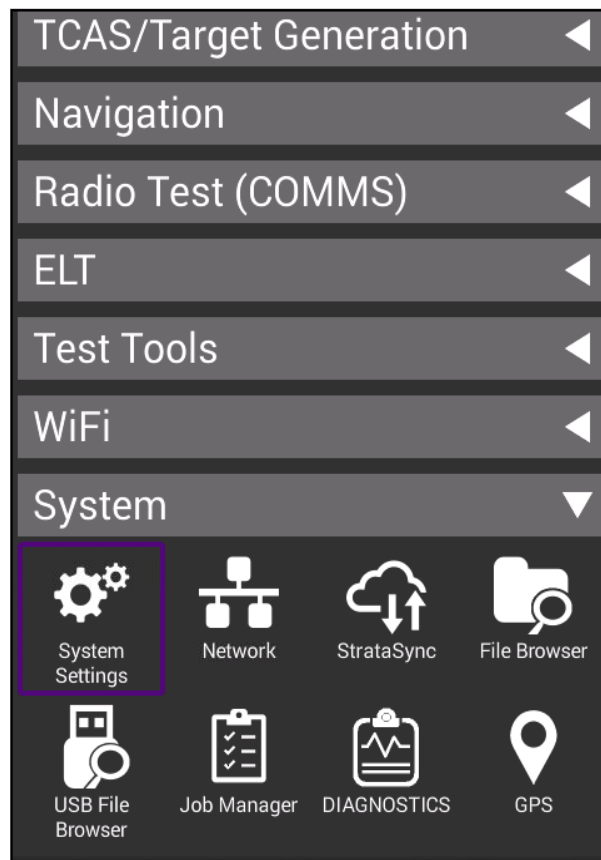
Figure 11-1 System Ribbon Applications

- **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.

- **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.

- **USB File Browser** – similar to the File Browser but associated with the connected USB drive. Icon will only appear when a USB drive is connected. This supports only one USB Drive at a time.
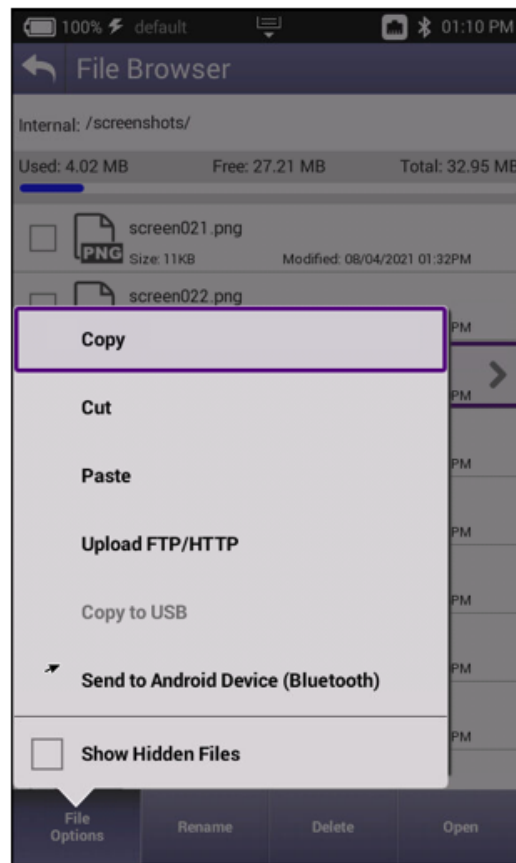
Figure 11-2 File Browser

- **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.

12

Battery Replacement

This chapter covers the steps necessary to replace the AVX-10K battery.

12.1 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.
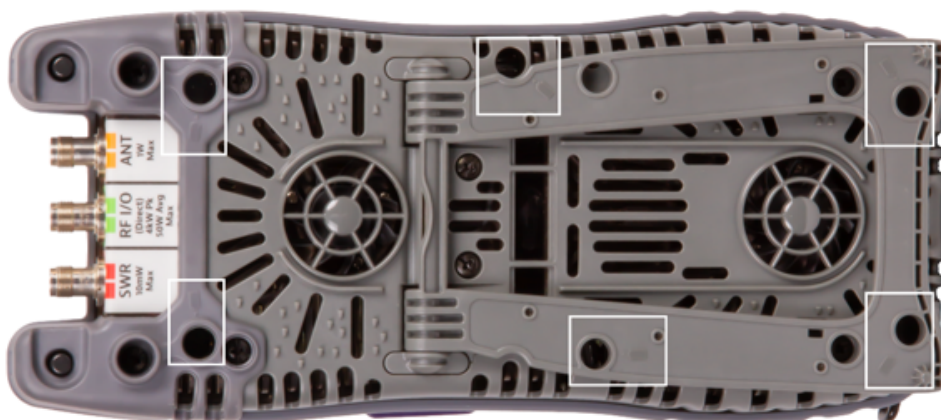
Figure 12-1 Rear View

⚠️ **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.

Figure 12-2 Module Unit Side View

Figure 12-3 Battery Cover Removal

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

Figure 12-4 Battery Cover Screw Removal

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.

Figure 12-5 Battery Removal

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.

A

AVX-10K Result Test Limits

Appendix A contains AVX-10K Result Test Limits for standard AVX-10K. Refer to the AVX-10K product data sheet for the full performance specifications.

A.1   AVX-10K Result Test Limits

List of explanations for all tests.

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
AUTOTEST SUMMARY RIBBON	
LEVEL	Level of the transponder being reported by the transponder being tested No FAR reference
A CODE	Mode A code being reported FAR 43 Appendix F paragraph (g)
C CODE	Mode c code being reported FAR 43 Appendix F paragraph (g)
C ALT	Actual altitude being reported FAR 43 Appendix F paragraph (g)
REPLIES A,C,S	Are Mode A,C and S replies being received FAR 43 Appendix F paragraph (g)
S CODE	Mode A code being reported in the Mode S reply FAR 43 Appendix F paragraph (g)
A ALT	Mode S altitude being reported in the Mode S reply FAR 43 Appendix F paragraph (g)
BOT FREQUENCY	Frequency of the bottom port replies For class A transponders: 1090.00 MHz +/- 1 For class B transponders: 1090.00 MHz +/- 3 FAR 43 Appendix F paragraph (a)
BOT ERP	For class A transponders: >+51dBm For class B transponders: >48dBm Transponders must not exceed +57dBm FAR 43 Appendix F paragraph (d)
BOT MTL	ATRCRBS: -73 dBm +/- 4 Mode S: -74 dBm +/- 3 FAR 43 Appendix F paragraph (c)

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
TAIL	Tail number of the aircraft being tested No FAR reference
AA	Announced address of the transponder being tested FAR 43 Appendix F paragraph (h)
COUNTRY	Origin country reported by the transponder No FAR reference
A/C DECODER/SLS RIBBON	
SLS A CODE 0DB	Replies <1% when P2 is equal in amplitude to P1. FAR 43 Appendix F paragraph (b)
SLS A CODE 9DB	Replies >90% when P2 is -9dB down from P1 FAR 43 Appendix F paragraph (b)
A CODE	Display of Mode A code and pulses present FAR 43 Appendix F paragraph (g)
C ALT	Display of Mode C altitude and pulses present FAR 43 Appendix F paragraph (g)
A/C SPACE AND WIDTH RIBBON	
MODE A ATCRBS ALL-CALL	No reply to Mode A ALL-CALL FAR 43 Appendix F paragraph (h)
MODE C ATCRBS ALL-CALL	No reply to Mode C ALL-CALL FAR 43 Appendix F paragraph (h)
POWER AND FREQUENCY RIBBON	
MODE A MTL	-73 dBm +/- 4 FAR 43 Appendix F paragraph €
MODE A ERP	For class A transponders >+51dBm For class B transponders >48dBm Transponders must not exceed +57dBm. FAR 43 Appendix F paragraph (d)

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
MODE A FREQUENCY	Frequency of the bottom port replies test criteria- For class A transponders: 1090.00 MHz +/- 1 For class B transponders: 1090.00 MHz +/- 3 FAR 43 Appendix F paragraph (a)
A-C MTL DIFF	Difference between Mode A and Mode C MTL FAR 43 Appendix F paragraph (c)
MODE C ERP	For class A transponders: >+51dBm For class B transponders: >48dBm Transponders must not exceed +57dBm FAR 43 Appendix F paragraph (d)
MODE C FREQUENCY	Frequency of the bottom port replies test criteria- For class A transponders: 1090.00 MHz +/- 1 For class B transponders: 1090.00 MHz +/- 3 FAR 43 Appendix F paragraph (a)
MODE S MTL	-74 +/- 3 FAR 43 Appendix F paragraph (c)
MODE S ERP	For class A transponders: >+51dBm For class B transponders: >48dBm Transponders must not exceed +57dBm FAR 43 Appendix F paragraph (d)
MODE S FREQUENCY	Frequency of the bottom port replies test criteria- For class A transponders: 1090.00 MHz +/- 1 For class B transponders: 1090.00 MHz +/- 3 FAR 43 Appendix F paragraph (a)
S ALL-CALL	

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
MODE A ITM REPLY CAP	Intermode Reply Capability- Verify that the mode S transponder only replies to a mode S ALL-CALL FAR 43 Appendix F paragraph (i)
MODE C ITM REPLY CAP	Intermode Reply Capability- Verify that the Mode S transponder only replies to a Mode S ALL-CALL FAR 43 Appendix F paragraph (i)
MODE A ITM REPLY ADDR	Intermode Reply address for Mode A FAR 43 Appendix F paragraph (g)
MODE C ITM REPLY ADDR	Intermode Reply address for Mode C FAR 43 Appendix F paragraph (g)
MODE S ALL-CALL CAPABILITY	Displays the capability of the transponder from the DF11 reply FAR 43 Appendix F paragraph (h)
MODE S ALL-CALL ADDRESS	Displays the address in the ALL-CALL reply FAR 43 Appendix F paragraph (h)
MODE S ALL-CALL REPLY STATUS	Indication if the transponder replied to the Mode S ALL-CALL FAR 43 Appendix F paragraph (h)
S REPLY RIBBON	
INVALID AA	Indicates if the transponder replied to an interrogation with an incorrect Announced Address. FAR 43 Appendix F paragraph (f)
S SQUITTER RIBBON	
DF11 PERIOD	Time period between DF11 acquisition squitters FAR 43 Appendix F paragraph (j)
DF17 DETECTED	Checking for an ADS-B extended Squitter message NO FAR Reference

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
DIVERSITY ISOLATION	If turned on the AVX-10K will determine if the Isolation between the top and bottom channels is within tolerance. Disabled by the operator if not a diversity transponder. FAR 43 Appendix F paragraph (e)
UF0 RIBBON	
DF4	Was the reply to this interrogation a DF0 FAR 43 Appendix F paragraph (g)
AC	Displays the Altitude Code in the DF0 FAR 43 Appendix F paragraph (g)
MODE C ALT COMPARE	Compares the Mode C altitude to the Mode C altitude contained in the DF0 reply FAR 43 Appendix F paragraph (g)
AA	Announced Address in the DF0 reply FAR 43 Appendix F paragraph (g)
DF11 ADDRESS COMPARE	Compares the Announced Address in the DF0 with the Address in the DF11 squitter. FAR 43 Appendix F paragraph (h)
UF4 RIBBON	
DF4	Was the reply to this interrogation a DF4 FAR 43 Appendix F paragraph (g)
AC	Displays the Altitude Code in the DF4 FAR 43 Appendix F paragraph (g)
MODE C ALT COMPARE	Compares the Mode C altitude to the Mode C altitude contained in the DF4 reply FAR 43 Appendix F paragraph (g)
AA	Announced Address in the DF4 reply FAR 43 Appendix F paragraph (g)
DF11 ADDRESS COMPARE	Compares the Announced Address in the DF4 with the Address in the DF11 squitter. FAR 43 Appendix F paragraph (h)
UF5 RIBBON	

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
DF5	Was the reply to this interrogation a DF5
	FAR 43 Appendix F paragraph (g)
AC	Displays the Mode 3 Code in the DF5
	FAR 43 Appendix F paragraph (g)
MODE C ALT COMPARE	Compares the Mode 3 Code to the Mode 3 code contained in the DF5 reply
	FAR 43 Appendix F paragraph (g)
AA	Announced Address in the DF5 reply
	FAR 43 Appendix F paragraph (g)
DF11 ADDRESS COMPARE	Compares the Announced Address in the DF5 with the Address in the DF11 squitter.
	FAR 43 Appendix F paragraph (h)
UF11 RIBBON	
DF11	Was the reply to the UF11 a DF11
	FAR 43 Appendix F paragraph (h)
AA	Displays the Announced Address in the DF11
	FAR 43 Appendix F paragraph (h)
UF20 RIBBON *	
DF	Displays the DF reply to the UF20
	FAR 43 Appendix F paragraph (g)
MODE C ALT COMPARE	Compares the altitude from the Mode C reply to the altitude in the reply from the UF20
	FAR 43 Appendix F paragraph (h)
DF11 ADDRESS COMPARE	Compares the address from the DF11 squitter to the address in the DF20 reply
	FAR 43 Appendix F paragraph (h)
UF21 RIBBON *	
DF	Displays the DF reply to the UF21
	FAR 43 Appendix F paragraph (h)

Table A-1 AVX-10K Test Limit Results

Field name	Test performed
MODE A ID COMPARE	Compares the Mode 3 ID from the Mode 3 reply to the ID in the reply from the UF21 FAR 43 Appendix F paragraph (h)
DF11 ADDRESS COMPARE	Compares the address from the DF11 squitter to the address in the DF20 reply FAR 43 Appendix F paragraph (h)

NOTE: These tests are dependent on the transponder's ability to respond to a UF20 and UF21. May result in a "NO REPLY"

B

Frequently Asked Questions

Appendix B contains Frequently asked questions.

B.1 Frequently Asked Questions

Table B-1 Frequently Asked Questions

Question	Response
In the XPDR Auto application, why are many of the fields failing?	When testing transponders, the unit under test must be made to think that it is in the air as Mode A, Mode C and Mode S Squitters will not respond when the aircraft is on the ground.
In the ADS-B Auto application, when setting the **ADS-B Auto DF Setting** to DF 18, I am consistently getting a "BAD SETUP" message when trying to RUN.	When using this setting, you must use Manual Addressing and not AUTO.
In the ADS-B Auto application, why am I getting a Position Error?	When testing ADS-B, the NIC value of your GPS position fix impacts the tolerances related to position error. You may need to wait until your GPS Position fix is better (a NIC value >= 8) or tighten up your entered position values.
In the ADS-B Monitor application with Position Decode set to GLOBAL, my longitude values are not accurate.	This is a known issue, that is being worked on. For now, the workaround is to use LOCAL for the Position Decode value.
When testing transponders, I am seeing "BAD SETUP" in the DF11 Squitter information.	This is an indication that the aircraft setup is in a non-testable state. The aircraft must be made to appear to be "in the air" either by bypassing the aircraft's weight on wheels sensors or by setting the transponder into a ground-test mode. Some older versions of transponder software may not support this and you may need to upgrade the transponder software.

Abbreviations

Appendix C contains AVX-10K Abbreviations

C.1   Appendix C. Abbreviations

Table C-1 Appendix C Abbreviations

Term	Description
AC	Alternating Current
ADS-B	Automatic Dependent Surveillance Broadcast
ANT	Antenna
ARB	Arbitrary Waveform Generator
BOM	Bill of Materials
Cal	Calibration
dB	deci-Bel (decibel)
DC	Direct Current
DME	Distance Measuring Equipment
DTF	Distance-to-Fault
DWG	Drawing
ELT	Emergency Locater Transmitter
EMI	Electromagnetic Interference
ERP	Effective Radiated Power
ESD	Electro Static Discharge
FOD	Foreign Objects & Debris
FPGA	Field Programmable Gate Array
GEN	Generator
GHz	Giga-Hertz
GICB	Ground-Initiated Comm B
GLS	GNSS Landing System
GPS	Global Positioning System
Hz	Hertz
I/O	Input/Output
ILS	Integrated Landing System
KHz	Kilo-Hertz (kHz)
LAT	Latitude
LONG	Longitude

Table C-1 Appendix C Abbreviations

Term	Description
MHz	Mega-Hertz
MTL	Mean Trigger Level
P/N	Part Number
RF	Radio Frequency
RF/IO	Radio Frequency I/O
SELCAL	Airborne Selective Calling
TACAN	Tactical Air Navigation
TCAS	Traffic Collision Avoidance System
UAT	Universal Access Transceiver
UI	User Interface
USB	Universal Service Bus
Ver	Verification
VGA	Video Graphics Adapter
VHF	Very High Frequency
VOR	VHF Omni-Directional Ranging
VNC	Virtual Network Computing

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D

Appendix D. Terminology

This section contains AVX-10K terminology

D.1   Appendix D. Terminology

Table D-1 Appendix D. Terminology

Term	Description
Actual Simulated Altitude (ASA)	Displays the current altitude simulated by the test set for manual or profile operation. During an altitude simulation, the ASA is the altitude used to determine the accuracy of the altitude displayed by the Radio Altimeter System.
Altitude Rate	The rate of climb or descent. Also known as Vertical Speed
Altitude Trip	Usually relating to ARINC 552 radio altimeters, a relay switched output to control/signal connected systems such as auto-land, that a specific altitude has been reached.
Approach	The landing phase of a flight
ARINC	Aeronautical Radio Incorporated. A U.S. based aeronautical standards organization, originally owned collectively by several airlines. ARINC standards mainly address the system interface, whereas RTCA standards address system design.
ARINC 552	An earlier ARINC standard defining the interface of analog radio altimeters. Typically used in air transport installations.
ARINC 707	A later ARINC standard defining the interface of digital radio altimeters. Typically used in air transport applications
Audio Frequency Altitude	An Audio Frequency that is proportional to altitude.
CDF FMCW	Constant Difference Frequency - Frequency Modulated Continuous Wave A Thales proprietary technique that alters the sweep rate in proportion to altitude maintaining a constant difference or beat frequency in a narrow bandwidth receiver
DC Altitude	A DC voltage that is proportional to altitude, defined by ARINC-552. Used to drive analog altitude indicators and other sub systems.
Decision Height	An altitude, at which the pilot is alerted by the radio altimeter. Typically used to make landing decisions

Table D-1 Appendix D. Terminology

Term	Description
Desired Simulated Altitude (DSA)	Numeric Pad. During an altitude simulation, this field will be the same as the Start Altitude until the Altitude Pause button is pressed, and a new DSA is entered. The DSA is the altitude that the user would like to achieve. **NOTE:** Due to the available path lengths in the ALT-9000, the exact DSA may not be achievable, so the closest achievable altitude will be used and displayed as the ASA. This field is only active during Altitude Pause.
De-rotation	The point after touch down when the pilot lowers the nose of the aircraft so the front wheels touch down.
DH Bug	The decision height setting pointer on dial type analog altitude indicators. Also known as the DH index on analog tape indicators and EFIS
DH Set	The knob on an analog altitude indicator that the pilot uses to set the DH bug. Also known as DH adjust.
EFIS	Electronic Flight Instrument System
Feeder Cable	The RF Coax Cable linking either the transmitter port to the TX antenna or the receiver port to the RX antenna
Flag	A red mechanical bar or a graphical bar that obscures part of the altitude display to indicate that altitude information is not available or unreliable.
FMCW	Frequency Modulated Continuous Wave Triangular wave frequency modulated technique that produces a difference or beat frequency in a wide bandwidth receiver, that is proportional to altitude
FM Deviation	The limits of deviation of the 4.3 GHz (center carrier) signal, during frequency modulation, expressed in MHz.
Go- Around	A missed approach procedure
Installation Rack	The mounting tray for the LRU that accommodates a mating connector for all discrete and RF signals. The aircraft wiring connects to the installation rack, which typically provides screw down retention for the LRU that allows easy removal.
Integrity Monitor	The Built In Test Equipment that monitors correct operation of an LRU and advises module failure either by dedicated indicators on the LRU front panel or via a BITE word from the test port.
Label 164	ARINC 429 binary data word for radio height. An altitude data output format for ARINC -707 radio altimeters. May also be output on ARINC-707 radio altimeter test ports.

Table D-1 Appendix D. Terminology

Term	Description
Label 165	ARINC 429 BCD data word for radio height. An altitude data output format for ARINC -707 radio altimeters. May also be output on ARINC-707 radio altimeter test ports.
Leg	A linear altitude ramp, either climbing, level altitude or descending.
	1. If climbing or descending the ramp is defined by start altitude, stop altitude and altitude rate.
	2. If level (start altitude= stop altitude), the ramp is defined by duration.
Loop Gain Margin	The reflected signal amplitude seen at the radio altimeter receiver that is X dB's above the receiver MDS
LRRA	Low Range Radio Altimeter. Range typically up to 8,000 ft
LRU	Line Replaceable Unit. Would normally refer to the radio altimeter transmitter/receiver unit however, an indicator is also an LRU.
MDS	Minimum Discernible Signal Level. A term used to express radar receiver sensitivity in -dBms
Profile	A sequence of legs forming a simulated flight path i.e. approach
Pulse Radio Altimeter	The altimeter measures the time delay between a transmitted RF pulse and the reply from the ground.
Sweep Rate	The rate of the triangular frequency modulation of an FMCW radio altimeter expressed in Hz. This is usually constant for a given system. CDF FMCW systems will have a saw tooth frequency modulation, where the sweep rate is proportional to altitude.
Test Port	A port provisioned on some radio altimeters, that may provide the following.
	1. BITE data output
	2. Radio Height in the form of DC altitude, Audio Frequency Altitude or Digital Altitude.
	3. Analog trips
	4. System flags
UUT	Unit Under Test

E

XPDR Auto Test Configuration Limits

Appendix E contains AVX-10K Configuration Limits

E.1 Appendix E. XPDR Auto Test Configuration Limits

Table E-1 XPDR Auto Test Configuration Antenna Limits

ANTENNA	TX POWER (dBm)	RX MTL (dBm)	TX Freq (MHz)
FAR PART 43 MODE S	≥ 48.5	≤ -71	1090 (±3)
FAR PART 43 ATCRBS	≥ 48.5	≤ -69	1090 (±3)
GENERIC MODE S	≥ 48.5	≤ -71	1090 (±3)
GENERIC ATCRBS	≥ 48.5	≤ -69	1090 (±3)
MODE S CLASS A	≥ 51.0	≤ -71	1090 (±1)
MODE S CLASS B	≥ 48.5	≤ -71	1090 (±3)
MODE S CL B OPT POW	≥ 51.0	≤ -71	1090 (±3)
MODE S CL B OPT FRQ	≥ 48.5	≤ -71	1090 (±1)
ATCRBS CLASS A	≥ 51.0	≤ -69	1090 (±3)
ATCRBS CLASS B	≥ 48.5	≤ -69	1090 (±3)

Table E-2 XPDR Auto Test Configuration Direct Connect with Coupler Configuration Limits

DIRECT CONNECT WITH COUPLER CONFIGURATION	TX POWER (dBm)	RX MTL (dBm)	TX Freq (MHz)
FAR PART 43 MODE S	48.5 to 57.0	-68 to -77 dBm	1090 (±3)
FAR PART 43 ATCRBS	48.5 to 57.0	-66 to -77 dBm	1090 (±3)
GENERIC MODE S	48.5 to 57.0	-68 to -77 dBm	1090 (±3)
GENERIC ATCRBS	48.5 to 57.0	-66 to -77 dBm	1090 (±3)
MODE S CLASS A	51.0 to 57.0	-68 to -77 dBm	1090 (±1)
MODE S CLASS B	48.5 to 57.0	-68 to -77 dBm	1090 (±3)
MODE S CL B OPT POW	48.5 to 57.0	-68 to -77 dBm	1090 (±3)
MODE S CL B OPT FRQ	48.5 to 57.0	-68 to -77 dBm	1090 (±1)
ATCRBS CLASS A	51.0 to 57.0	-66 to -77 dBm	1090 (±3)
ATCRBS CLASS B	48.5 to 57.0	-66 to -77 dBm	1090 (±3)

Table E-3 XPDR Auto Test Configuration Antenna and Direct Configurations Limits

ANTENNA and DIRECT CONFIGURATIONS	TX POWER (dBm)	RX MTL (dBm)	TX Freq (MHz)
FAR PART 43 MODE S	48.5 to 57.0	-74 (±3)	1090 (±3)
FAR PART 43 ATCRBS	48.5 to 57.0	-73 (±4)	1090 (±3)
GENERIC MODE S	48.5 to 57.0	-74 (±3)	1090 (±3)

Table E-3 XPDR Auto Test Configuration Antenna and Direct Configurations Limits (Continued)

GENERIC ATCRBS	48.5 to 57.0	-73 (±4)	1090 (±3)
MODE S CLASS A	51.0 to 57.0	-74 (±3)	1090 (±1)
MODE S CLASS B	48.5 to 57.0	-74 (±3)	1090 (±3)
MODE S CL B OPT POW	48.5 to 57.0	-74 (±3)	1090 (±3)
MODE S CL B OPT FRQ	48.5 to 57.0	-74 (±3)	1090 (±1)
ATCRBS CLASS A	51.0 to 57.0	-73 (±4)	1090 (±3)
ATCRBS CLASS B	48.5 to 57.0	-73 (±4)	1090 (±3)

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F

Standard Accessories and Procedures

Appendix F contains AVX-10K Accessories and Procedures.

F.1 Appendix F. Standard Accessories and Procedures

Standard Accessories

Table F-1 Standard Accessories

VIAVI Part Number	Description
AC10K-PWRADPTR	AC/DC Power Adapter for powering and charging the test set.
AC10K-HANDSTRAP	Hand Strap for ease of carrying. Can be connected to top or sides of test set.
AC10K-TRANSITCASE	Transit Case for transporting the AVX-10K and accessories
AC10K-ADPTRKIT	Calibration Kit - VSWR/DTF – includes a short and a 50-ohm load for the calibration process in VSWR application.
AC10K-ANT-ILS	ILS / COMMs / ELT Antenna - Extendible antenna for testing Glideslope, Localizer as well as COMMs and ELT. Compress the antenna for testing higher frequencies and extend for lower frequencies.

Figure F-1 AVX-10K Accessories with Softside Case

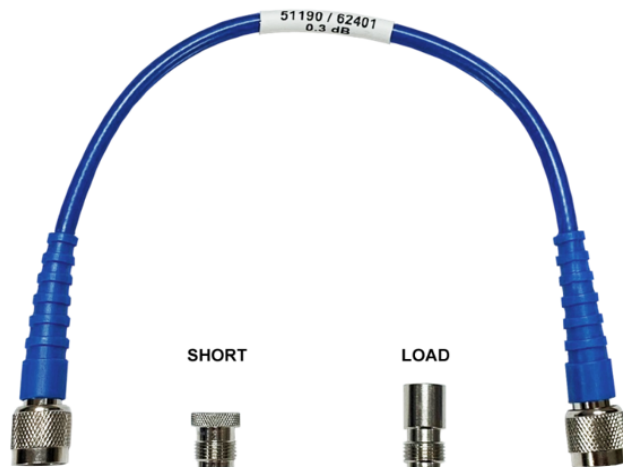**Figure F-2 AVX-10K Accessories with Transit Case**

Figure F-3 VSWR Calibration Kit – Short and 50-ohm Load

Figure F-4 Replacement Battery / Location

Flat Panel Connect / Disconnect Procedure

The Flat Panel bracket is inserted into the quick disconnect holes at the top of the AVX-10K. The antenna can be oriented in either direction, whichever direction works best for the user. Connect the antenna to the AVX-10K with the 1' coaxial cable.

Figure F-5 Antenna

To disconnect, press both release buttons just behind the connectors and pull up on the antenna bracket.

Figure F-6 Release Buttons

Antenna Coupler Usage for Transponder Diversity Testing

NOTE: This procedure describes typical diversity transponder testing. Actual steps to be followed might be outlined in the aircraft maintenance manual. If that is the case, the maintenance manual should be followed.

For transponder diversity testing, two UC-584 couplers will be needed along with a short coaxial cable and a 50-ohm load. The AVX-10K-CNS kit comes with two couplers – a UC-584 and a UC-584S. The UC-584 coupler is typically used on bottom mounted antennas as it has a clamping mechanism to hold it in place. The UC-584S is typically used on top mounted antennas as it has a hooking mechanism that a pole can be attached to the coupler in order to lower it onto a top antenna.

Figure F-7 Antenna Couplers

To connect the UC-584 coupler to the aircraft antenna:

1) Please coupler over the antenna, guiding the antenna into the slot of the coupler.

2) Push the coupler firmly against the aircraft until the gasket material on the rim of the coupler is completely depressed tightly against the aircraft.

3) Lock the coupler into place by pushing the lever on the side of the coupler into the locked position.

NOTE: Coupler must be tightly pressed and locked in place for the AVX-10K test set to function properly. If not, the measurement functions may not be accurate.

When testing a diversity transponder with the AVX-10K, the antenna that is not being tested needs to be shielded. This can be accomplished by connecting a 50-ohm load to the coupler that is placed over the antenna not under test. Use the 1' coaxial cable to connect the load to the coupler.

NOTE: The UC-584S coupler simply rests on top of the aircraft over the antenna. No clamping is necessary.

Connect the AVX-10K RF I/O port to the other coupled antenna, run the XPDR AUTO application and set the test set RF Port to Direct with Coupler on the setup page. Set Diversity Test to ON and complete the setup with Cable Settings and Coupler Settings.Select either the TOP or BOTTOM tab and continue with the test.

Once testing on one antenna is complete, swap the AVX-10K and the load to the opposite couplers, and complete the other test (TOP or BOTTOM).

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AVX-10K Operation Manual
22135254 / Rev. 004
Part of CD: 22141759
January 2024
English