ATC-5000NG

ATC/DME Test Set

Operation Manual

Export Control Statement:

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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-us/corporate/legal/terms-and-conditions.

Electromagnetic Compatibility

For continued EMC compliance, all external cables must be shielded and three meters or less in length.

Nomenclature Statement

In this manual ATC-5000NG, Test Set or Unit refers to the ATC-5000NG ATC/DME Test Set.

Product Warranty

Refer to https://www.viavisolutions.com/en-us/support/warranty-quality-compliance-policies for the Product Warranty information.

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SAFETY FIRST: TO ALL OPERATIONS PERSONNEL

REFER ALL SERVICING OF UNIT TO QUALIFIED TECHNICAL PERSONNEL. THIS UNIT CONTAINS NO OPERATOR SERVICEABLE PARTS.

WARNING

USING THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE ACCOMPANYING DOCUMENTATION MAY IMPAIR THE SAFETY PROTECTION PROVIDED BY THE EQUIPMENT.

Avertissement

L'UTILISATION DE CET ÉQUIPEMENT D'UNE MANIÈRE NON SPÉCIFIÉE DANS LA DOCUMENTATION ACCOMPAGNANTE PEUT NUIRE AUX PROTECTIONS DE SÉCURITÉ OFFERTES PAR L'ÉQUIPEMENT.

CASE, COVER OR PANEL REMOVAL

WARNING

OPENING THE CASE ASSEMBLY EXPOSES THE OPERATOR TO ELECTRICAL HAZARDS THAT CAN RESULT IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. DO NOT OPERATE THIS TEST SET WITH THE CASE ASSEMBLY OPEN.

Avertissement

L'OUVERTURE DE L'ENCEINTE EXTÉRIEURE DE L'ÉQUIPEMENT EXPOSE L'UTILISATEUR A DES RISQUES ÉLECTRIQUES QUI PEUVENT PROVOQUER UNE ÉLECTROCUTION OU DES DOMMAGES A L'ÉQUIPEMENT. N'UTILISEZ PAS CET EQUIPEMENT SANS SON ENCEINTE EXTÉRIEURE.

SAFETY IDENTIFICATION IN TECHNICAL MANUAL

This manual uses the following terms to draw attention to possible safety hazards, that may exist when operating or servicing this equipment.

CAUTION

THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN EQUIPMENT OR PROPERTY DAMAGE (e.g., FIRE).

WARNING

THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN PERSONAL INJURY OR DEATH.

SAFETY SYMBOLS IN MANUALS AND ON UNITS

CAUTION

Refer to accompanying documents. (This symbol refers to specific CAUTIONS represented on the unit and clarified in the text.)

AC or DC Terminal:

Terminal that may supply or be supplied with AC or DC voltage.

DC Terminal:

Terminal that may supply or be supplied with DC voltage.

AC Terminal:

Terminal that may supply or be supplied with AC or alternating voltage.

WARNING

IMPROPER GROUNDING OF EQUIPMENT CAN RESULT IN ELECTRICAL SHOCK.

Avertissement

UNE MAUVAISE MISE À LA TERRE DE L'ÉQUIPEMENT PEUT ENTRAINER UNE ÉLECTROCTION.

WARNING

TO PREVENT ELECTRICAL SHOCK OR DAMAGE TO EQUIPMENT: VERIFY THAT ALL THE CONNECTIONS BETWEEN THE EQUIPMENT AND A DEVICE UNDER TEST DO NOT EXCEED MAXIMUM PORT RATINGS FOR VOLTAGE, CURRENT AND POWER.

Avertissement

POUR ÉVITER TOUT CHOC ÉLECTRIQUE OU D'ENDOMMAGER L'ÉQUIPEMENT: VÉRIFIEZ QUE TOUTES LES INTERCONNEXIONS ENTRE L'ÉQUIPEMENT ET UN PÉRIPHÉRIQUE TESTÉ NE DÉPASSENT PAS LES VALEURS MAXIMALES POUR LA TENSION, LE COURANT ET LA PUISSANCE DE CHAQUE PORT.

POWER CORDS

Power cords must not be frayed, broken nor expose bare wiring when operating this equipment.

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 DES RÉCEPTEURS RADIO. CERTAINS SIGNAUX ÉMIS PEUVENT PROVOQUER DES INTERFÉRENCES ET DES INTERRUPTIONS DE COMMUNICATIONS SUR UNE DISTANCE DE PLUSIEURS KILOMÈTRES. LES UTILISATEURS DE CET ÉQUIPEMENT DOIVENT EXAMINER SOIGNEUSEMENT TOUT FONCTIONNEMENT PROVOQUANT LE RAYONNEMENT D'UN SIGNAL (DIRECT OU INDIRECT) ET ILS DOIVENT PRENDRE LES DISPOSITIONS NÉCESSAIRES AFIN D'ÉVITER DES PROBLÈMES POTENTIELS D'INTERFÉRENCES AVEC DES COMMUNICATIONS.

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DECLARATION OF CONFORMITY

The Declaration of Conformity Certificate included with the unit should remain with the unit.

VIAVI recommends the operator reproduce a copy of the Declaration of Conformity Certificate to be stored with the Operation Manual for future reference.

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TABLE OF CONTENTS

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INTRODUCTION

This manual contains operating instructions for the ATC-5000NG. VIAVI strongly recommends that personnel be thoroughly familiar with the contents of this manual before attempting to operate the equipment.

Refer all servicing of unit to qualified technical personnel.

ORGANIZATION

This manual is divided into the following Chapters and Sections:

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TABLE OF CONTENTS

Section 3 - Specifications

Section 4 – Shipping

Section 5 – Storage

LIST OF TABLES

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LIST OF FIGURES

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SERVICE UPON RECEIPT OF MATERIAL

Unpacking

Special-design packing material inside the shipping container provides maximum protection for the ATC-5000NG. Avoid damaging the shipping container and packing material during equipment unpacking.

Use the following steps for unpacking the ATC-5000NG.

1 Cut and remove the sealing tape on top of the shipping container and open the shipping container.

2 Remove the top packing mold.

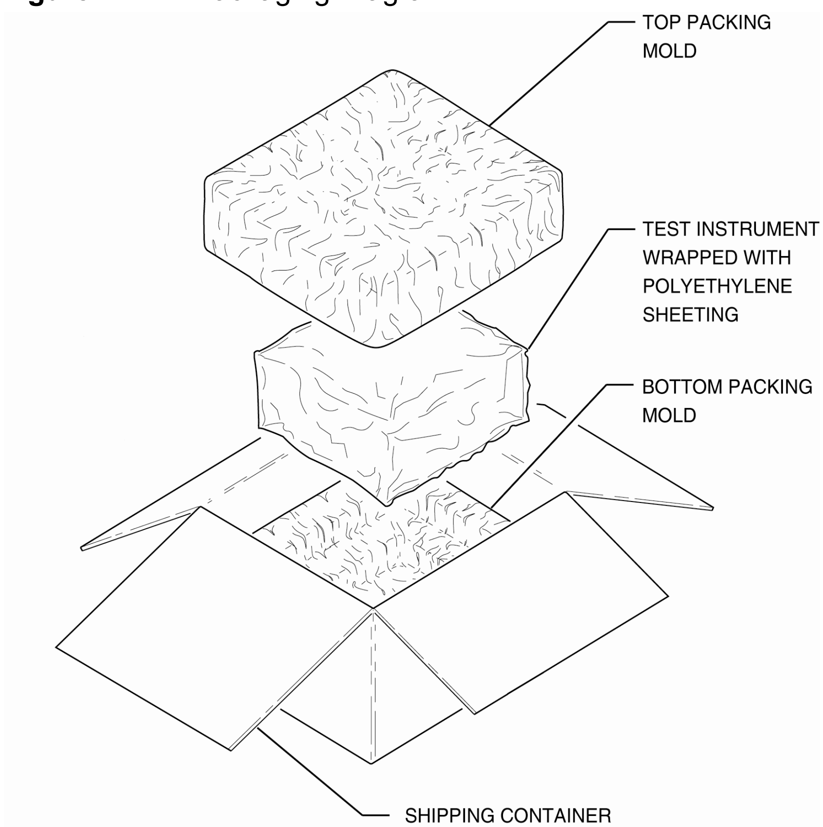
3 Remove ATC-5000NG and packing material from the bottom packing mold.

4 Remove the protective plastic bag from the ATC-5000NG and inspect the contents.

5 Place the protective plastic bag and packing material inside the shipping container.

6 Store the shipping container for future use should the ATC-5000NG need to be returned/shipped.

Figure 1 Packaging Diagram



Checking Unpacked Equipment

Check the equipment for damage incurred during shipment. If the equipment has been damaged or if items seem to be absent from the shipment, report the damage and/or discrepancies to VIAVI Customer Service.

VIAVI Solutions

Customer Service Department

10200 West York Street

Wichita, KS 67215

Telephone: 800-835-2350

Fax: 316-529-5330

email: AvComm.Service@viavisolutions.com

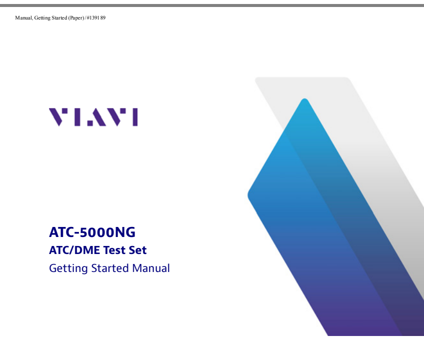
Standard Items

Table 1 List of Standard Items

Description	PART NUMBER	QTY
ATC-5000NG ATC/DME Test Set	138156	1
Manual, Getting Started (Paper)	139189	1
Manual, Operation (CD)	139188	1
Power Cable (AC) (110 Use) (US Only)	62302	1
Power Cables (AC) (220 Use) (Europe)	64020	1
Touchpad	114114	1

Figure 2 Standard Accessories

ATC-5000NG/ #138156



Manual, Operation (CD) \ #139188

Power Cable (AC) (110 Use) (US Only) / #62302

Power Cables (AC) (220 Use) (Eu) / #64020

Touchpad / #114114

OPTIONAL ITEMS

Table 2 List of Optional Items

Description	OPTION NUMBER	PART NUMBER
DME Option	ATCNGOPT01	139311
UAT 978 MHz Option	ATCNGOPT02	138157
Multi-Receiver Option	ATCNGOPT03	138159
SDX Command Set Compatibility Option	ATCNGOPT04	138158
1400/1403 Command Set Compatibility Option	ATCNGOPT05	138223
DO-260B MOPS Test Option	ATCNGOPT06	139310

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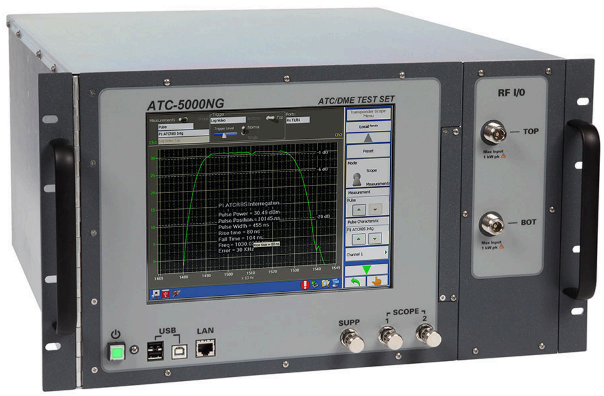
Section 1 – Description

1. GENERAL DESCRIPTION AND CAPABILITIES

1.1 DESCRIPTION

Figure 1.1.1 - 1 ATC-5000NG ATC/DME Test Set



The ATC-5000NG is an RF Signal Generator/Receiver for testing Mode A, C and S Transponders.

1.2 FUNCTIONAL CAPABILITIES

- Generates ATCRBS/Mode S interrogations.
- Software defined architecture supports legacy and NextGen transponders.
- 10.4 inch touch screen LCD display for operator control.
- Can be remotely controlled via GPIB or Ethernet.
- Legacy command sets supported:
  - SDX-2000 (Optional)
  - 1400/1403DL (Optional)
- Support for current standards:
  - ATCRBS/Mode S, DO-181E
  - ADS-B, DO-260, DO-260A, DO-260B
  - UAT, DO-282B (Optional)
- DME (Optional)
- Multi-Receiver test capability (Optional)
- TX/RX data logging capability
- Full diversity testing capability
- Enhanced measurement capabilities
- Supports interrogation tables and block transmissions.

- Enhanced single and double interrogation modes
- Contains six transmitters.
- Capable of performing most MOPS tests for DO-181E, DO-260, DO-260A, DO-260B, DO-282B.
- Equipment tested:
  - Transponders Mode S/ADS-B Out
  - ADS-B In Receivers
  - UAT Transceivers
  - 1090MHz DF18 Emitters (surface vehicles)
  - ADS-B In Ground Station Receivers
  - ADS-R, TIS-B Ground Station Transmitters
  - DMEs

Section 2 – Operation

1. INSTALLATION

1.1 GENERAL

1.1.1 BENCH USE

Refer to 1 - 2 - 2, Figure 1.2.2 - 1 and Figure 1.2.2 - 2 for location of controls, connectors or indicators.

STEP	PROCEDURE
1	Set the ATC-5000NG into operating position.
2	Connect the AC Power Cable to the Power Connector and to an external AC power source (100 to 240 VAC, 50 to 60 Hz).

NOTE

The AC Power Cable is used to fully disconnect the Test Set from AC Power. The Test Set should <u>not</u> be positioned so the disconnection of the AC Power Cable is prevented.

REMARQUE

Le câble d'alimentation c.a. sert à couper complètement l'alimentation c.a. du dispositif de test. Le dispositif de test ne doit pas être placé d'une manière qui empêche le débranchement du câble d'alimentation c.a.

STEP	PROCEDURE
3	Set the Power Switch (on the Test Set Rear Panel) to the ON position (I).
4	Press the Power Switch (on the Test Set Front Panel) to power ON the Test Set.
5	Verify the Power Switch Indicator illuminates.
6	Wait while the Test Set completes the power-up sequence. When the power-up sequence is complete the ATC-5000NG Main Menu is displayed.

1.1.2 RACK MOUNT

Contact VIAVI for information on installing the ATC-5000NG in a rack.

1.2 SAFETY PRECAUTIONS

The following safety precautions must be observed during installation and operation. VIAVI assumes no liability for failure to comply with any safety precaution outlined in this manual.

1.2.1 COMPLYING WITH INSTRUCTIONS

Installation/operating personnel should not attempt to install or operate the ATC-5000NG without reading and complying with instructions contained in this manual. All procedures contained in this manual must be performed in exact sequence and manner described.

1.2.2 GROUNDING POWER CORD

WARNING

DO NOT USE A THREE-PRONG TO TWO-PRONG ADAPTER PLUG. DOING SO CREATES A SHOCK HAZARD BETWEEN THE CHASSIS AND ELECTRICAL GROUND.

Avertissement

N?UTILISEZ PAS D?ADAPTATEUR DE TROIS BROCHES À DEUX BROCHES. UN TEL ADAPTATEUR CRÉE UN DANGER DE CHOC ENTRE LE CHÂSSIS ET LA MASSE.

For AC operation, the AC Line Cable is equipped with standard three-prong plug and must be connected to a properly grounded three-prong receptacle that is easily accessible. It is the customer's responsibility to:

- Have a qualified electrician check receptacle(s) for proper grounding.
- Replace any standard two-prong receptacle(s) with properly grounded three-prong receptacle(s).

1.2.3 VENTILATION

The ATC-5000NG is air-cooled by fans that draw air through vents in the case. Do not obstruct the air vents while the instrument is in use. Avoid standing the instrument on or close to other equipment that is hot.

1.2.4 OPERATING SAFETY

WARNING

DUE TO POTENTIAL FOR ELECTRICAL SHOCK WITHIN THE TEST SET, THE CASE ASSEMBLY MUST BE CLOSED WHEN THE TEST SET IS CONNECTED TO AN EXTERNAL POWER SOURCE.

Avertissement

EN RAISON DU RISQUE DE CHOC ÉLECTRIQUE DANS LE DISPOSITIF DE TEST, SON BOÎTIER DOIT ÊTRE FERMÉ LORSQUE LE DISPOSITIF EST CONNECTÉ À UNE SOURCE D'ALIMENTATION EXTERNE.

1.2.5 CAUTION AND WARNING LABELS

Extreme care should be exercised when performing any operations preceded by a CAUTION or WARNING label. CAUTION labels appear where possibility of damage to equipment exists and WARNING labels denote conditions where bodily injury or death may result.

1.3 AC POWER REQUIREMENTS

The ATC-5000NG power supply operates over a voltage range of 100 to 240 VAC, 50 to 60 Hz.

1.4 EXTERNAL CLEANING

The following procedure contains routine instructions for cleaning the outside of the Test Set.

CAUTION

DISCONNECT POWER FROM TEST SET TO AVOID POSSIBLE DAMAGE TO ELECTRONIC CIRCUITS.

Avertissement

DÉBRANCHEZ L'ALIMENTATION DU DISPOSITIF DE TEST AFIN D'ÉVITER D'ENDOMMAGER LES CIRCUITS ÉLECTRONIQUES.

STEP	PROCEDURE
1	Clean front panel buttons and display face with soft lint-free cloth. If dirt is difficult to remove, dampen cloth with water and a mild liquid detergent.
2	Remove grease, fungus and ground-in dirt from surfaces with soft lint-free cloth dampened (not soaked) with isopropyl alcohol.
3	Remove dust and dirt from connectors with soft-bristled brush.
4	Cover connectors, not in use, with suitable dust cover to prevent tarnishing of connector contacts.
5	Clean cables with soft lint-free cloth.
6	Paint exposed metal surface to avoid corrosion.

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2. CONTROLS, CONNECTORS AND INDICATORS

2.1 FRONT PANEL

Refer to Figure 1.2.2 - 1 and Table 1.2.2 - 1 for location of ATC-5000NG Front Panel controls, connectors or indicators.

Figure 1.2.2 - 1 ATC-5000NG Front Panel

Table 1.2.2 - 1 ATC-5000NG Front Panel Controls

Idx#	Item Name	Description
1	**Color LCD Touch Screen Display**	Used to interact with the Test Set menus.
2	**Power Button**	Used for turning the Test Set ON and OFF. Indicator is lit when the Test Set is ON.
3	**USB Connectors**	Type A Connectors used for interface to external USB devices (keypad, mouse, flash drive, etc.). Type B Connector used for remote control of the Test Set.
4	**LAN Connector**	Used for remote control of the Test Set via TCP/IP.
5	**SUPP Connector**	Used for testing of the UUT (suppressor output).
6	**SCOPE Connectors**	Used for testing of the UUT.
7	**RF I/O Connectors (TOP, BOTTOM)**	Used for testing of the UUT.

2.2 REAR PANEL

Refer to Figure 1.2.2 - 2 and Table 1.2.2 - 2 location of ATC-5000NG Rear Panel controls, connectors or indicators.

Figure 1.2.2 - 2 ATC-5000NG Rear Panel

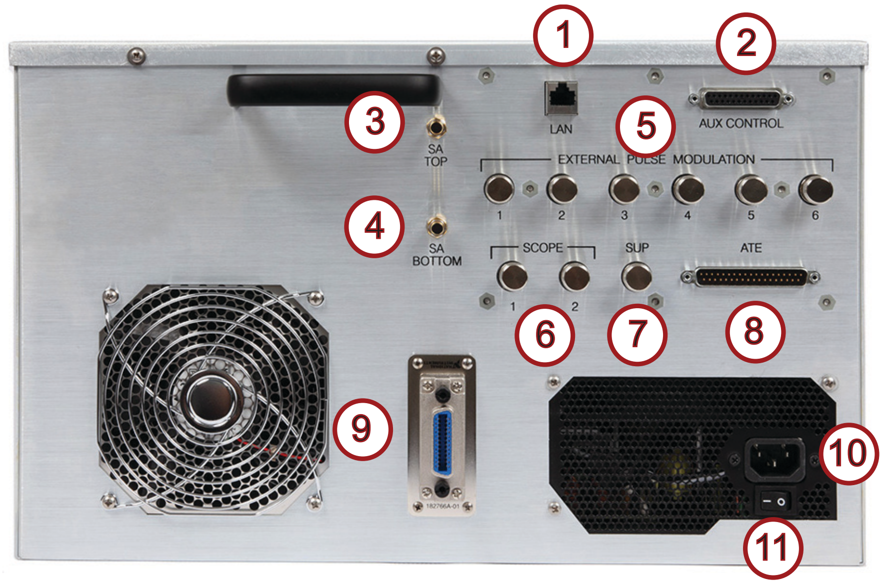

Table 1.2.2 - 2 ATC-5000NG Rear Panel Controls and Connectors

Idx#	Item Name	Description
1	**LAN Connector**	Used for remote control of the Test Set via TCP/IP.
2	**AUX CONTROL Connector**	Reserved for Future Use
3	**SA TOP Connector**	Used for coupled output from the Top Receiver (Spectrum Analyzer).
4	**SA BOTTOM Connector**	Used for coupled output from the Bottom Receiver (Spectrum Analyzer).
5	**EXTERNAL PULSE MODULATION Connectors**	Used for I/O applications with external equipment.
6	**SCOPE Connectors**	Used for testing of the UUT.
7	**SUPP Connector**	Used for testing of the UUT (suppressor output).
8	**ATE Line Connector**	Used for connection to external equipment. The connector contains discrete inputs, discrete outputs and 429 Tx/Rx.

Table 1.2.2 - 2 ATC-5000NG Rear Panel Controls and Connectors

Idx#	Item Name	Description
9	**GPIB Bus Connector**	24-pin female connector conforming to IEEE standard 488-1978 for interface of general purpose programmable instrumentation.
10	**Power Connector**	Standard 3-prong power receptacle for connection to AC power source (100 to 240 VAC, 50 to 60 Hz).
11	**Power Switch**	Connects (I) or disconnects (O) external AC power from the ATC-5000NG.

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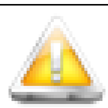
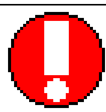
3. MENUS AND SCREENS

NOTE

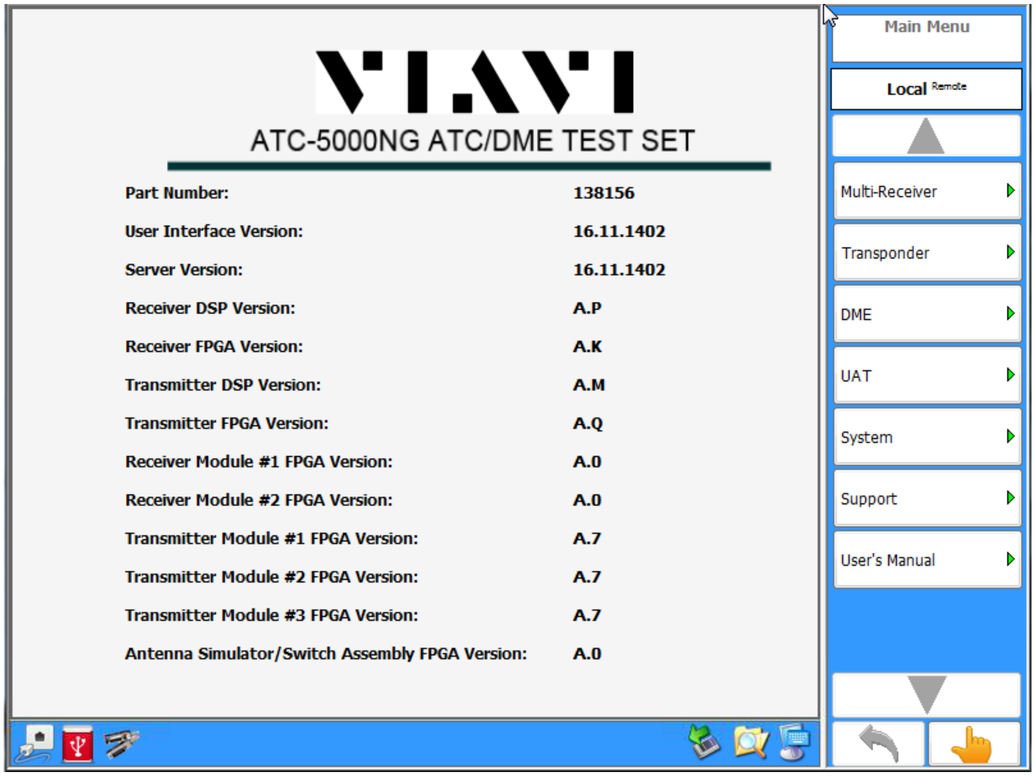
The screen images shown in this section are representations of the screens that users may encounter when using the test set. Some screen images contain Optional Functions which are shown for display purposes only and which may not be enabled on your Test Set.

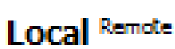
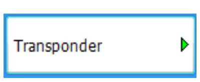
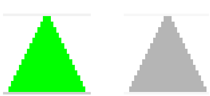
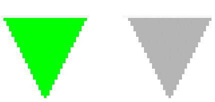
3.1 SCREEN ICONS AND FEATURES

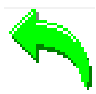
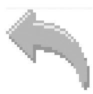
3.1.1 SCREEN ICONS AND INDICATORS

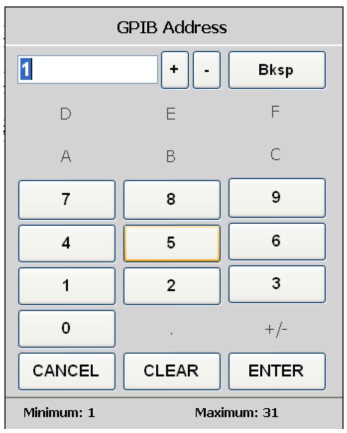
Screen ICON	Description
	External equipment is <u>not</u> connected to the LAN Connector (Front or Rear Panel).
	External equipment is connected to the USB Connector.
	External equipment is <u>not</u> connected to the USB Connector.
	External equipment is connected to the GPIB Connector.
	External equipment is <u>not</u> connected to the GPIB Connector.
	The configuration does not match with the subassemblies present in the system or a DSP or FPGA firmware version is incorrect.
	An error has occurred. Place the mouse cursor over the icon to see a description of the error or double click on the icon to go to the Error Menu to see a list of errors.
	Press this icon to open safely remove hardware dialog.
	Opens the on-screen keyboard for data entry.
	Press this icon to open Windows Explorer.

3.1.2 SCREEN FEATURES



Screen Feature	Description
	Local Mode - All controls on the Touch Screen are enabled.
	Remote Mode - All controls on the Touch Screen are disabled.
	Softkeys are used to display a menu, function screen or access a menu field. A green arrow to the right on the Softkey displays additional Softkeys.
	When green, press the arrow to display additional Softkeys. Inactive when gray.
	When green, press the arrow to display additional Softkeys. Inactive when gray.
	Touch Screen Mode - Press a control to display a numeric keypad, keyboard or listbox for selection or entry of the parameter.

Screen Feature	Description
	Normal Mode - Controls are modified using an external mouse or keypad.
 	When green, the previous menu is displayed. Inactive when gray.



Touch Screen Numeric Control

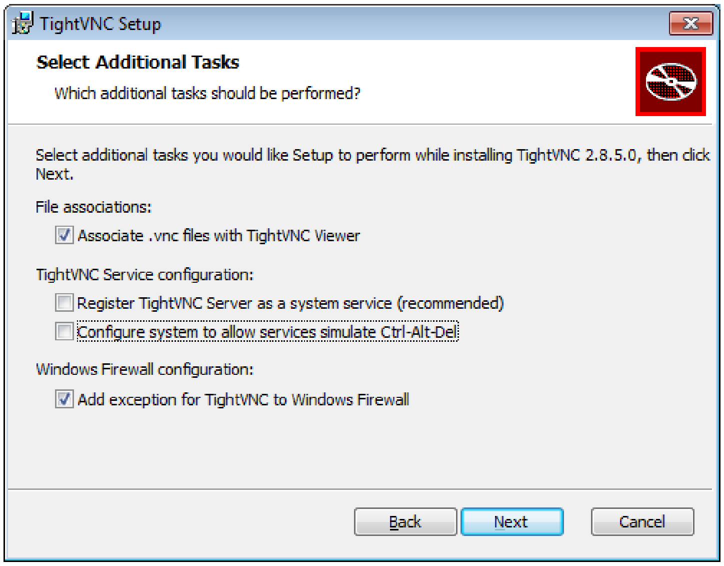
Touch Screen Keyboard Control

3.2 REMOTE (VNC) CONNECTION

To create a Remote (VNC) Connection to the ATC-5000NG, perform the following steps:

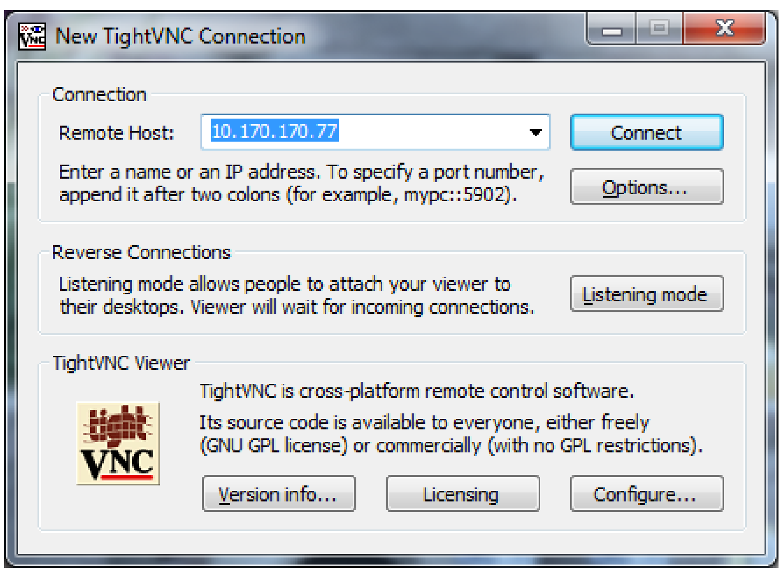
PC

STEP	PROCEDURE
1	Open Internet Browser (Internet Explorer, Mozilla, Safari, etc.) in the Address Field and enter http://www.tightvnc.com. Select the link to “Get your free copy of TightVNC!” Select the proper installer for the PC and install the TightVNC Viewer program. During the installation the TightVNC Setup screen is displayed.



2 Uncheck the boxes under TightVNC Service Configuration and select the “Next” Button.

3 When installation is complete open the TightVNC Program and the New TightVNC Connection is displayed.



STEP	PROCEDURE	(CONT)

4 Plug an Ethernet Cable into the LAN Connector on the Front or Rear Panel of the ATC-5000NG. To determine the proper Ethernet Address see Section 3.8.2 Network Connections Menu in this manual. Enter the Ethernet Address and press the Connect button.

NOTE

THE AC POWER CABLE IS USED TO FULLY DISCONNECT THE TEST SET FROM AC POWER. THE TEST SET SHOULD NOT BE POSITIONED SO THE DISCONNECTION OF THE AC POWER CABLE IS PREVENTED.THE AC POWER CABLE IS USED TO FULLY DISCONNECT THE TEST SET FROM AC POWER. THE TEST SET SHOULD NOT BE POSITIONED SO THE DISCONNECTION OF THE AC POWER CABLE IS PREVENTED.

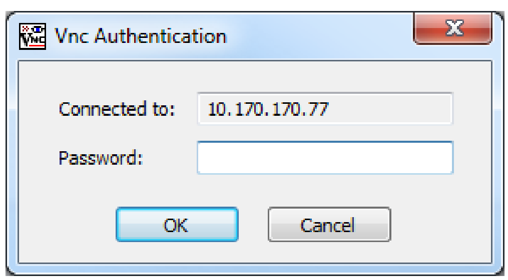
REMARQUE

LE CÂBLE D'ALIMENTATION C.A. SERT À COUPER COMPLÈTEMENT L'ALIMENTATION C.A. DU DISPOSITIF DE TEST. LE DISPOSITIF DE TEST NE DOIT PAS ÊTRE PLACÉ D'UNE MANIÈRE QUI EMPÊCHE LE DÉBRANCHEMENT DU CÂBLE D'ALIMENTATION C.A.

5 With the VNC Authentication screen displayed enter the ???, the password (atc) and select the OK Button.

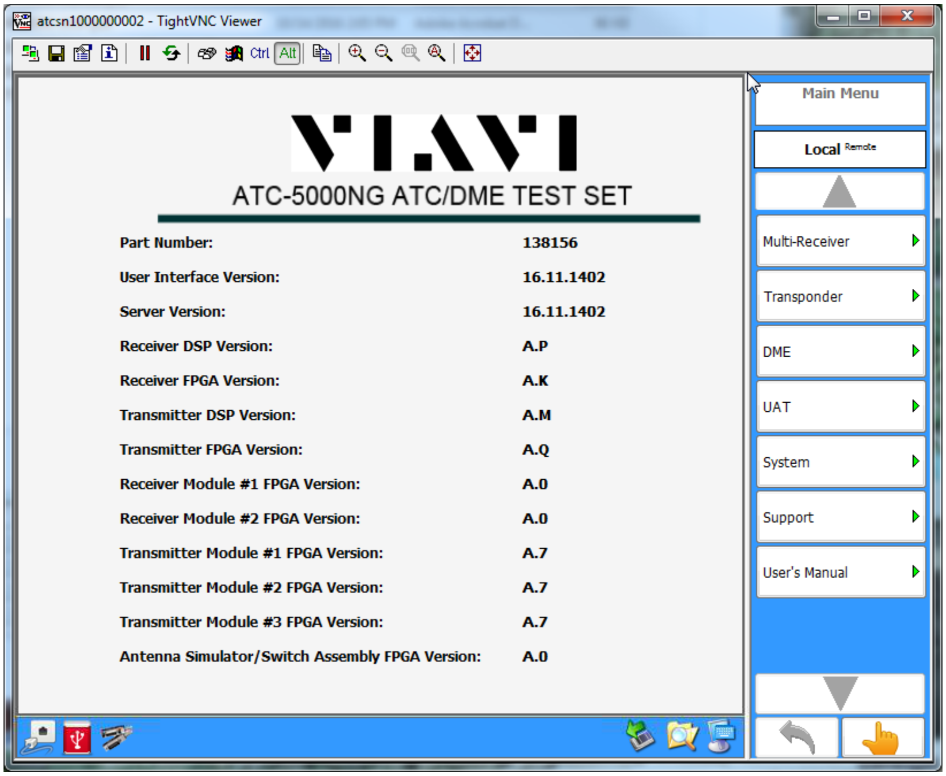
NOTE

THE ATC-5000NG PASSWORD (ATC) IS SET BY DEFAULT AT THE FACTORY. IF THE OPERATOR HAS CHANGED THE PASSWORD OF THE ATC-5000NG, THE NEW PASSWORD SHOULD BE USED.



STEP PROCEDURE (CONT)

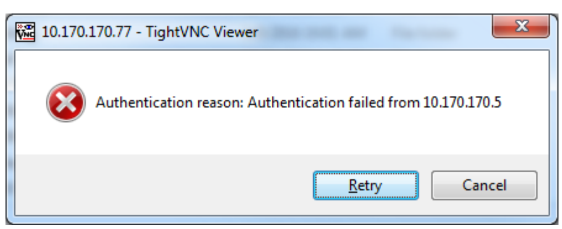
6 Once the password has been authenticated, a VNC Viewer is displayed with the current ATC-5000NG screen. Use the PC's mouse and keyboard to navigate between screens and to modify parameters on the ATC-5000NG. To stop using the VNC Viewer close the VNC Viewer form.



IPad / Smartphone

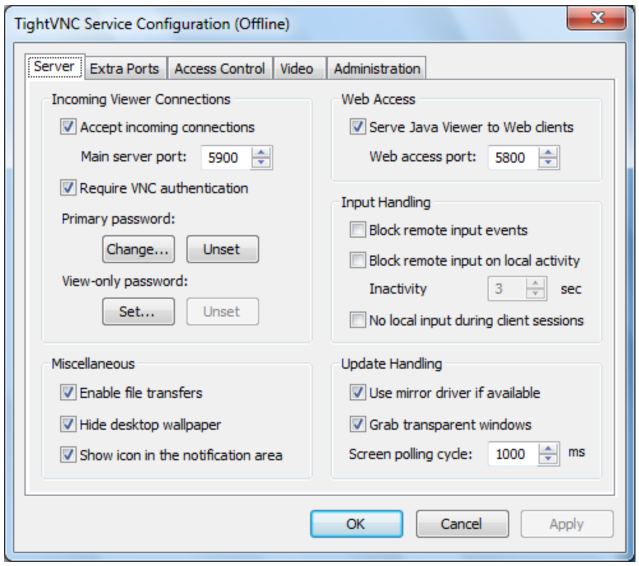
7 To establish a VNC Remote Connection from an IPad or Smartphone, download the VNC App into the device. Enter the IP Address of the ATC-5000NG. Enter the password and the ATC-5000NG screen is displayed on the IPad or Smartphone.

8 If unable to connect to the ATC-5000NG and an error screen is displayed (Authentication Error), an incorrect password may have been typed, the password entered has been changed from the factory default password or the Caps Lock is ON.



If the issue cannot be resolved, perform the following steps to reset the ATC-5000NG password.

- Connect a mouse to the USB (Type A) Connector on the Front Panel of the ATC-5000NG. Verify the mouse works. Press the Power Switch on the Front Panel of the ATC-5000NG and verify the Power Switch Indicator is not illuminated.
- Press the Power Switch on the Front Panel of the ATC-5000NG and verify the Power Switch Indicator is illuminated. Wait for the Windows desktop to be displayed.
- On the Start Menu, Navigate to All Programs\TightVNC\TightVNC Server (Service Mode) and open the TightVNC Service – Offline Configuration program.
- A window similar to Figure 4.6 (TightVNC Configuration) should be displayed. On the Server Tab under Primary Password, press the Set or Change button.



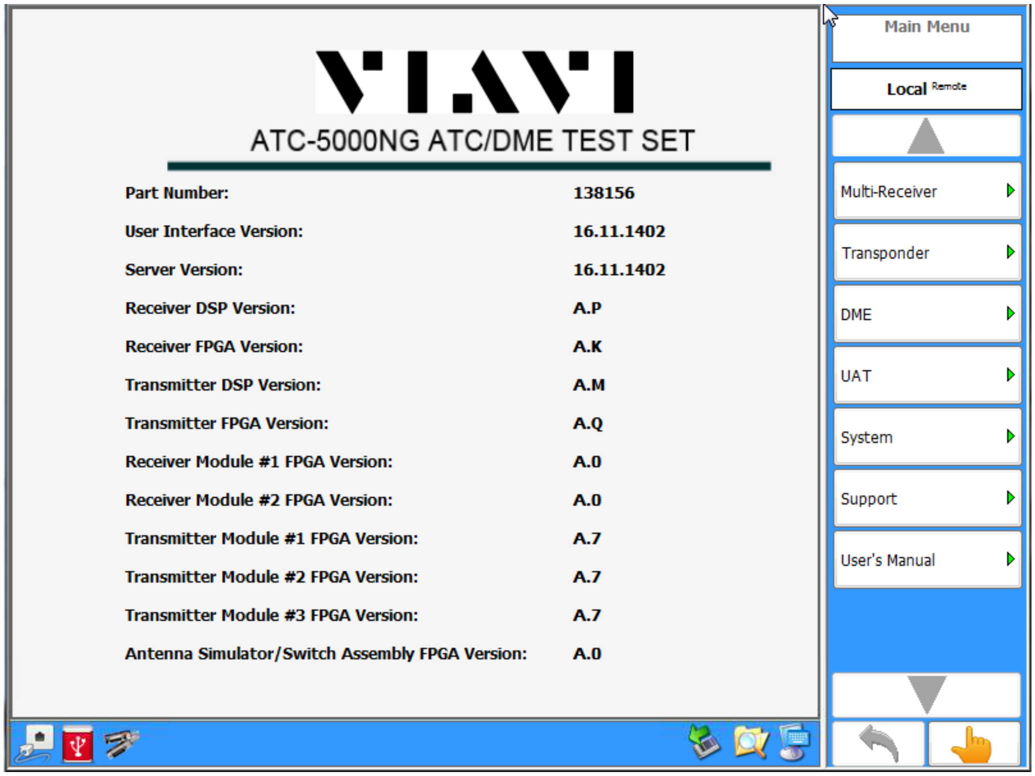
- Enter atc for the password in both fields and press Ok. Press the Apply button followed by the Ok button at the bottom of the window.
- Restart the unit and allow it to boot normally.

3.3 MAIN MENU

The Main Menu displays the status of the Test Set configurations and software versions.

Press ALT + R to refresh the firmware versions.

Figure 1.2.3 - 1 ATC-5000NG Main Screen



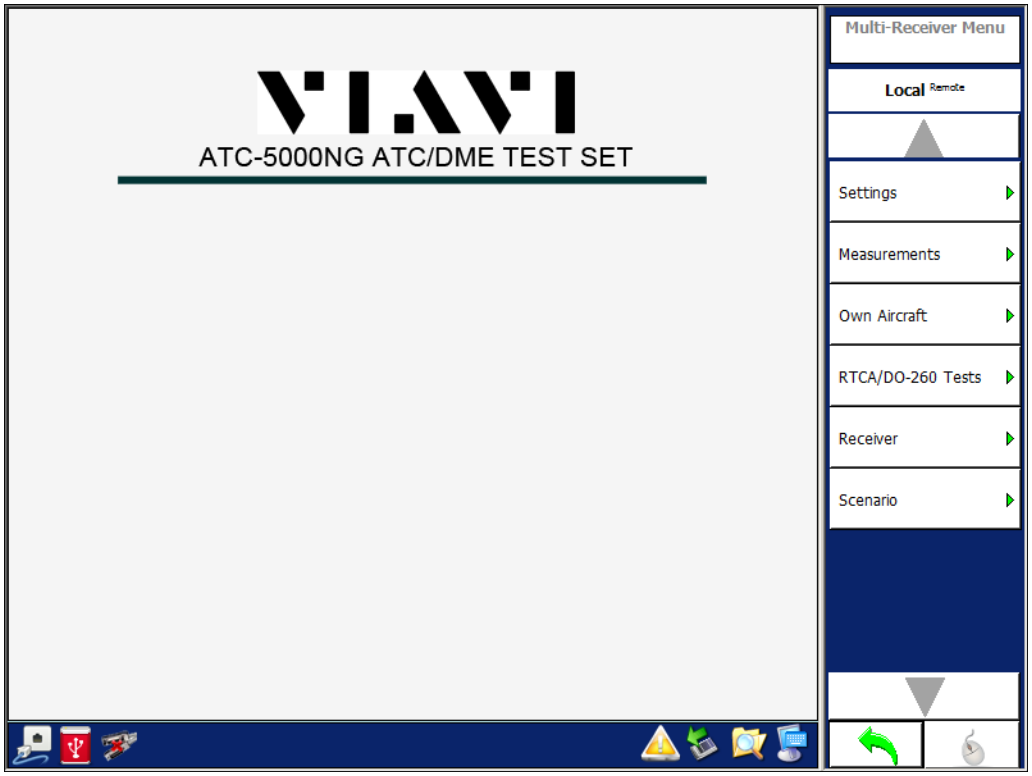
Screen Components	Description
Part Number	Displays the part number of the Test Set.
User Interface Version	Displays the User Interface (Touch Screen) Version.
Server Version	Displays the Server (Kernel) Software Version.
Receiver DSP Version	Displays the Receiver DSP Embedded Software Version.
Receiver FPGA Version	Displays the I/O Controller Receiver FPGA Firmware Version.
Transmitter DSP Version	Displays the Transmitter DSP Embedded Software Version.
Transmitter FPGA Version	Displays the I/O Controller Transmitter FPGA Firmware Version.
Receiver Module #1 FPGA Version	Displays the Receiver Module #1 FPGA Version.
Receiver Module #2 FPGA Version	Displays the Receiver Module #2 FPGA Version.

Screen Components	Description
Transmitter Module #1 FPGA Version	Displays the Transmitter Module #1 FPGA Version.
Transmitter Module #2 FPGA Version	Displays the Transmitter Module #2 FPGA Version.
Transmitter Module #3 FPGA Version	Displays the Transmitter Module #3 FPGA Version.
Antenna Simulator/Switch Assembly FPGA Version	Displays the Antenna Simulator/Switch Assembly FPGA Version.
Multi-Receiver Softkey	Displays the Multi-Receiver Menu.
Transponder Softkey	Displays the Transponder Menu.
DME Softkey	Displays the DME Menu.
UAT Softkey	Displays the UAT Menu.
System Softkey	Displays the System Menu.
Support Softkey	Displays the Support Menu.
User’s Manual Softkey	Displays a PDF copy of the ATC-5000NG Operation Manual.

3.4 MULTI-RECEIVER MENU

The Multi-Receiver Menu allows the user to perform DO-260 tests and also allows the user to set up scenarios that output 1090 messages (ADS-B), 1030 interrogations (Mode S and ATCRBS) and UAT messages (Airborne and Groundlink) simultaneously on an antenna port.

Figure 1.2.3 - 2 Multi-Receiver Menu



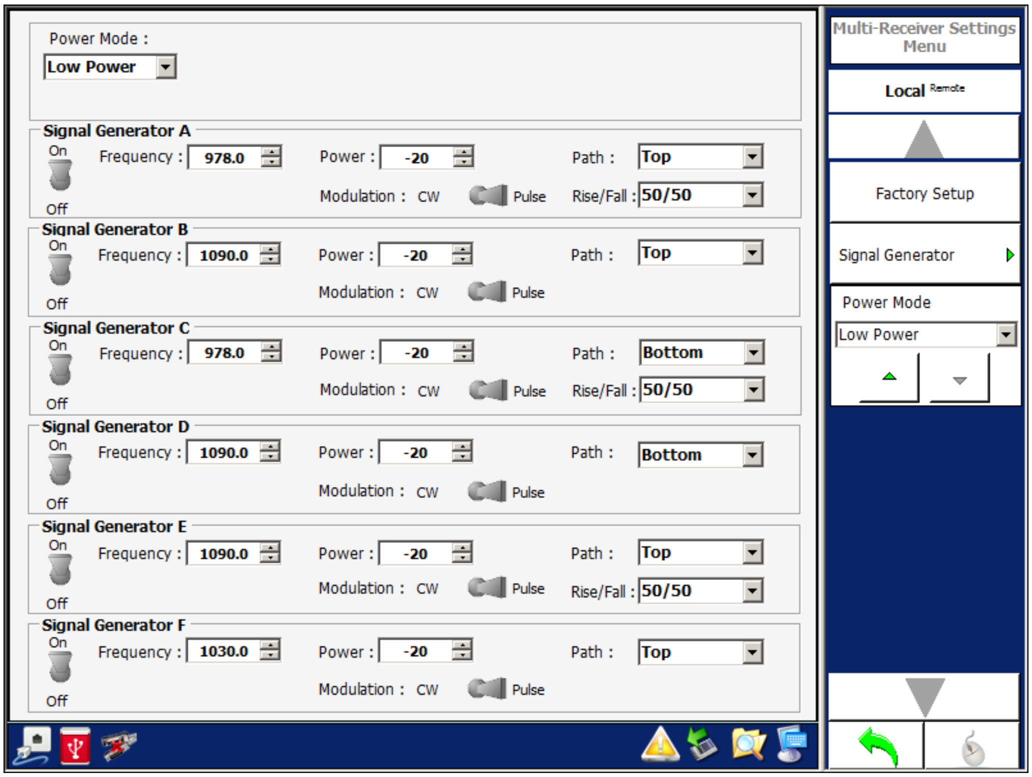
Screen Components	Description
Settings Softkey	Allows the user to set Generator parameters and troubleshoot the Test Set.
Measurements Softkey	Allows the user to view the transmissions of the UUT and to perform pulse characteristic, frequency and phase measurements.
Own Aircraft Softkey	Allows the user to change the Own Aircraft information if set to Manual. If not set to manual entry, the user Own Aircraft information from the selected source is displayed in the TCAS Menu.
RTCA/DO-260 Tests Softkey	Allows the user to perform RTCA/DO-260 Tests.
Receiver Softkey	Allows the user to select messages to capture and log from the UUT or the Test Set.

Screen Components	Description
Transmitter Softkey	Allows the user to perform either DO-260 Tests or Block Transmissions.
Scenario Softkey	Allows the user to design and execute a Scenario Test.

3.4.1 MULTI-RECEIVER SETTINGS MENU

The Multi-Receiver Settings Menu allows the user to configure the Transmitter, Receiver and Antenna Simulator modules within the Test Set for Multi-Receiver tests. The Multi-Receiver Settings Menu is mainly used for testing and troubleshooting of the Test Set.

Figure 1.2.3 - 3 Multi-Receiver Settings Menu



Screen Components	Description
Power Mode	Allows the user to select the Power Mode.
ON/OFF	Allows the user to enable/disable the Transmitter.
Frequency	Allows the user to select the Transmitter frequency.
Power	Allows the user to set the Transmitter power.
Path	Allows the user to select the Transmitter Path (Antenna Port).
Modulation	Allows the user to select the Modulation.

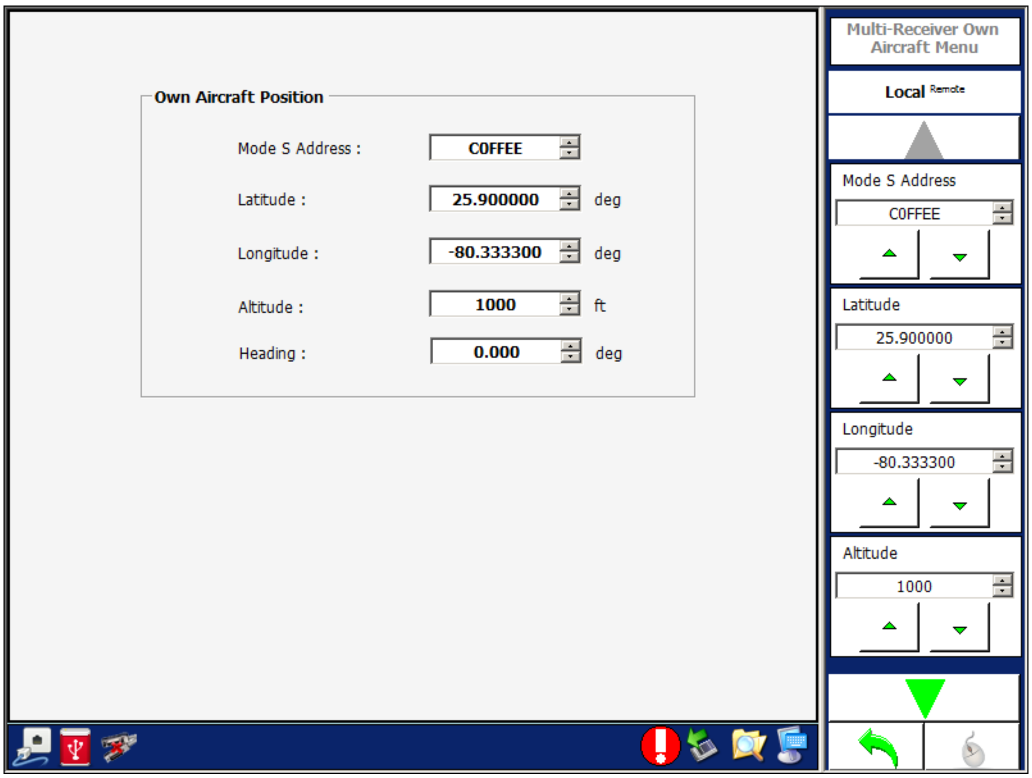
Screen Components	Description
Rise/Fall	Allows the user to select the Rise/Fall. Generator A, C and E only.
Factory Setup	Allows the user to set all hardware to the default settings according to the hardware configuration.

3.4.2 OWN AIRCRAFT MENU

The Own Aircraft Menu allows the user to change the latitude, longitude, altitude, heading and Mode S address of the Own Aircraft.

> **NOTE**
>
> WHEN AN EXTERNAL SOURCE (ETHERNET OR 429) IS USED, THE OWN AIRCRAFT INFORMATION IS UPDATED EVERY 5 SECONDS WHEN A SCENARIO IS NOT RUNNING OR EVERY SECOND IF THE SCENARIO IS RUNNING.

Figure 1.2.3 - 4 Own Aircraft Menu



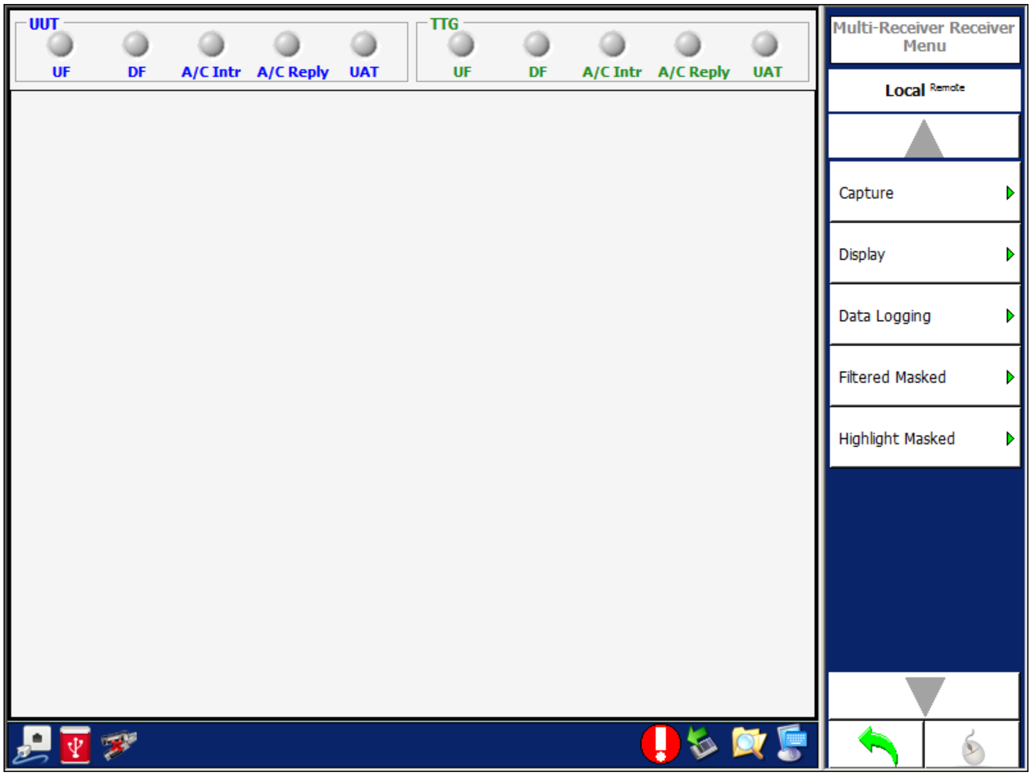
Screen Components	Description
Mode S Address	Allows the user to select the Mode S Address (Hexadecimal).
Latitude	Allows the user to select the Latitude of the Own Aircraft.
Longitude	Allows the user to select the Longitude of the Own Aircraft
Altitude	Allows the user to select the Altitude of the Own Aircraft.
Heading	Allows the user to select the Heading of the Own Aircraft

3.4.3 MULTI-RECEIVER, RECEIVER MENU

The Receiver Menu allows the user to view the transmissions from the UUT and the Test Set.

The last 8 receptions are displayed. Blue LEDs/lines are receptions from the UUT and green LEDs/lines are receptions from the Test Set.

Figure 1.2.3 - 5 Multi-Receiver, Receiver Menu

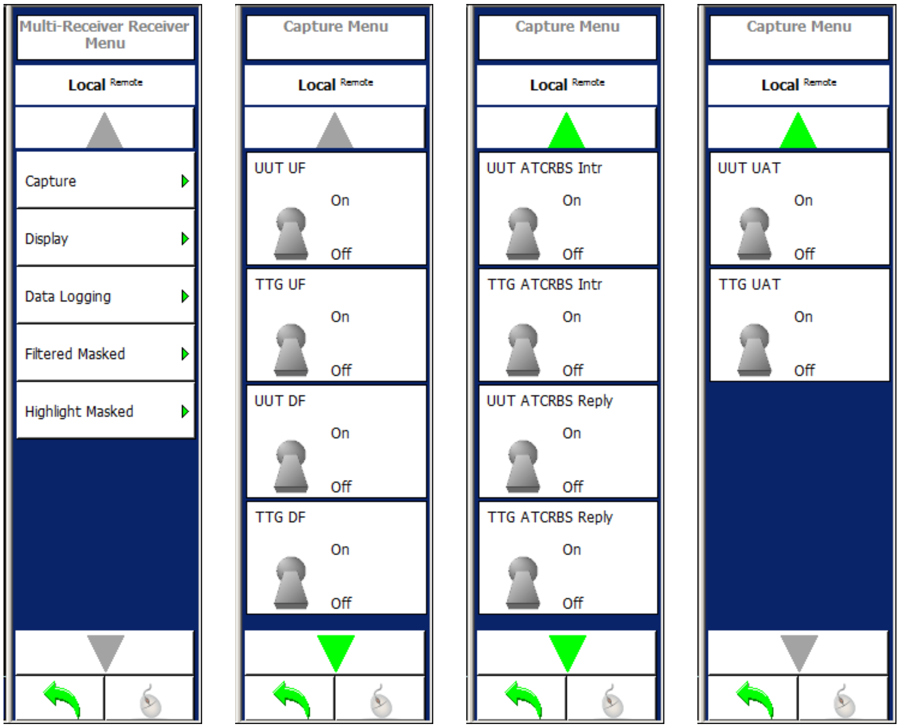


Screen Components	Description		
LEDs	Displays the status of receptions from the UUT (Rx Group) and transmissions from the Test Set (Tx Group).		
	LED	UF	UF Interrogation
		DF	DF Reply
		A/C Intr	ATCRBS Interrogation
		A/C Reply	ATCRBS Reply
		UAT	UAT

3.4.4 MULTI-RECEIVER, RECEIVER CAPTURE MENU

The Capture softkey accessed the following:

Figure 1.2.3 - 6 Multi-Receiver, Receiver Capture Menu

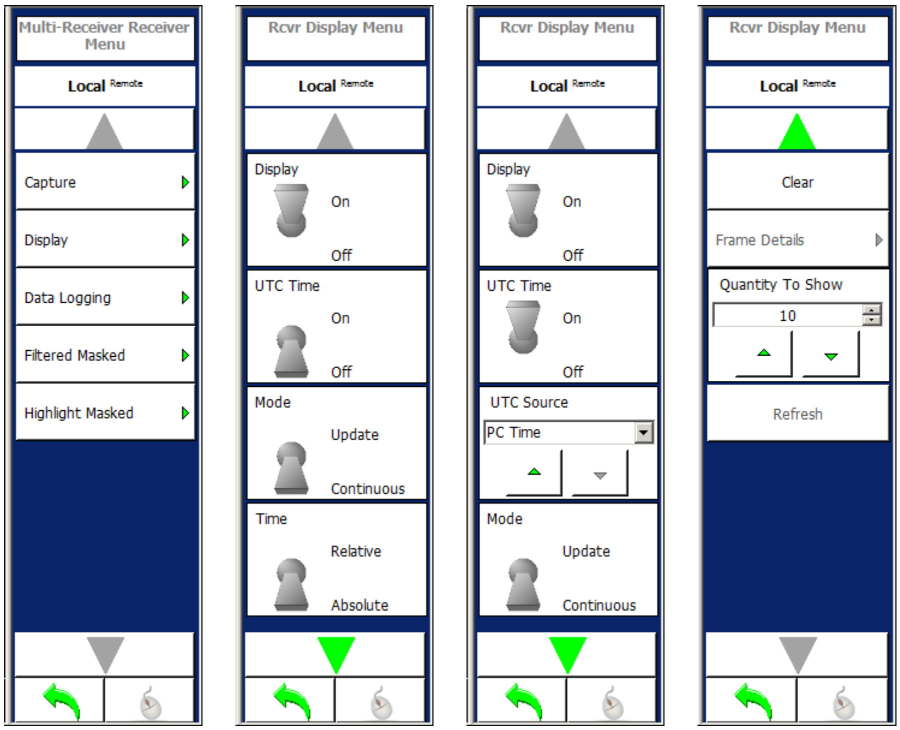


Screen Component	Description
UUT UF	Allows the user to enable/disable capture of TCAS UF messages.
ATC UF	Allows the user to enable/disable capture of Test Set UF messages.
UUT DF	Allows the user to enable/disable capture of Transponder DF messages.
ATC DF	Allows the user to enable/disable capture of Test Set DF messages.
UUT ATCRBS Intr	Allows the user to enable/disable capture of TCAS ATCRBS interrogations.
ATC ATCRBS Intr	Allows the user to enable/disable capture of Test Set ATCRBS interrogations.
UUT ATCRBS Reply	Allows the user to enable/disable capture of Transponder ATCRBS replies.
ATC ATCRBS Reply	Allows the user to enable/disable capture of Test Set ATCRBS replies.

Screen Component	Description
UUT UAT	Allows the user to enable/disable capture of UAT messages.
ATC UAT	Allows the user to enable/disable capture of UAT messages from Test Set.

3.4.5 MULTI-RECEIVER, RECEIVER DISPLAY MENU

The Display softkey accesses the following:



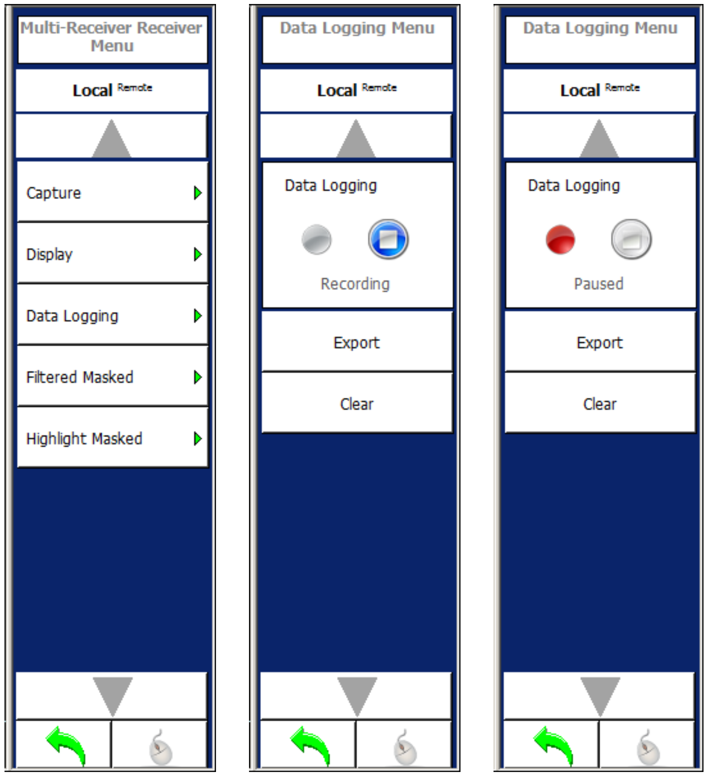
Screen Component	Description
Display Softkey	Allows the user to select the display settings.
Display Toggle	Allows the user to turn ON/OFF displaying new receptions.
UTC Time	Allows the user to enables/disable the UTC time stamp.
UTC Source	Allows the user to select the PC Time.
Mode	
Update	Allows the user to display data received by updating a message style with the latest reception.
Continuous	Allows the user to display all data received in a continuous order by time.
Time	
Relative	Allows the user to display time relative to previous message.
Absolute	Allows the user to display the time received.

Screen Component	Description
Clear	Allows the user to clear all messages in the Receiver Menu.
Frame Details	Allows the user to display the detailed breakdown of a selected reception. The detailed breakdown of the message can also be displayed by turning OFF the Display Softkey and double-clicking on the desired message.
Quantity to Show	Allows the user to enter how many messages to show. (Maximum 1000 messages).
Refresh	Allows the user to refresh the Receiver Menu.

3.4.6 MULTI-RECEIVER, DATA LOGGING MENU

The Data Logging Softkey accesses the following:

Figure 1.2.3 - 7 Multi-Receiver, Receiver Data Logging Menu

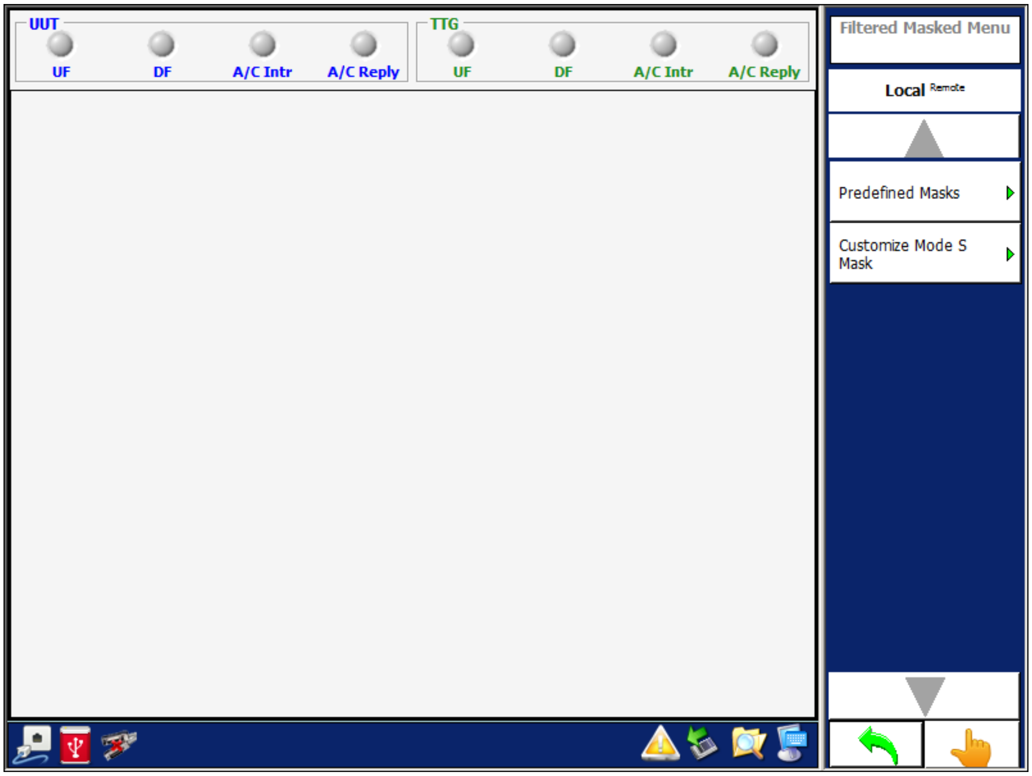


Screen Component	Description
Recording/Paused	Allows the user to record or pause data logging receive messages.
Export	Allows the user to export the received messages to a file.
Clear	Allows the user to clear all recorded messages.

3.4.6.1 Multi-Receiver, Filtered Masked Menu

The Filtered Masked softkey Displays the Filtered Masked Menu which contains controls that allows the user to select the messages to filter and display in the Receiver Menu.

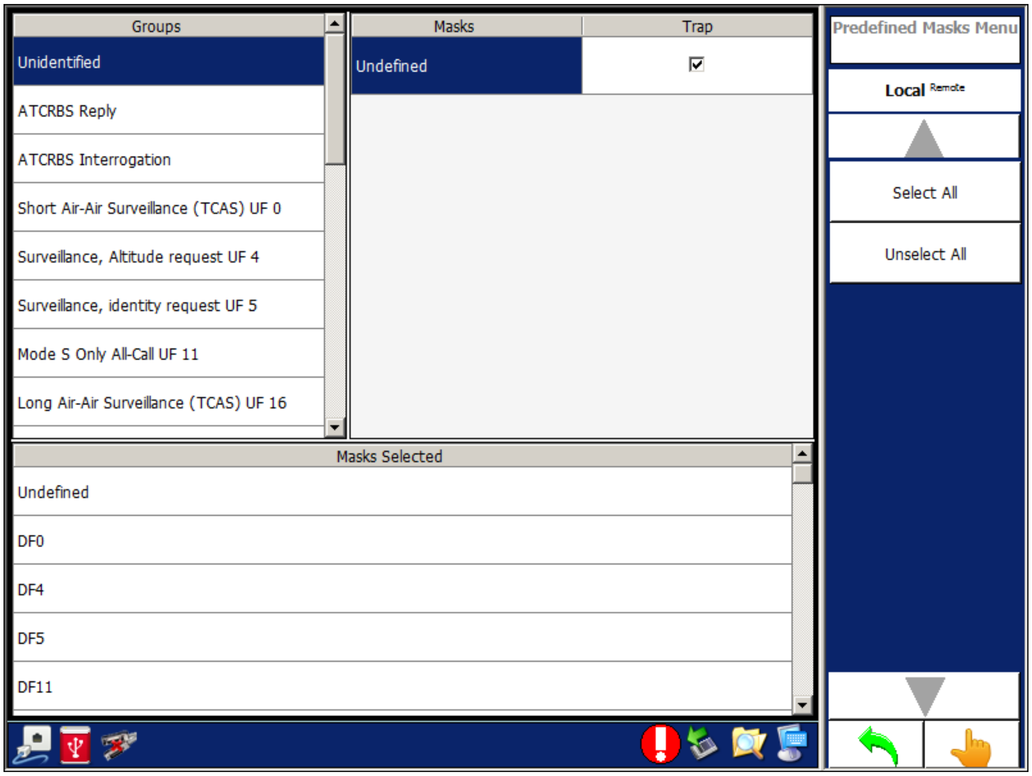
Figure 1.2.3 - 8 Multi-Receiver, Receiver Filtered Masked Menu



Screen Component	Description
Predefined Masks Softkey	Displays the Predefined Masks Menu.
Customize Mode S Mask Softkey	Displays the Customize Mode S Mask Menu.

3.4.6.2 Multi-Receiver, Predefined Masks Menu

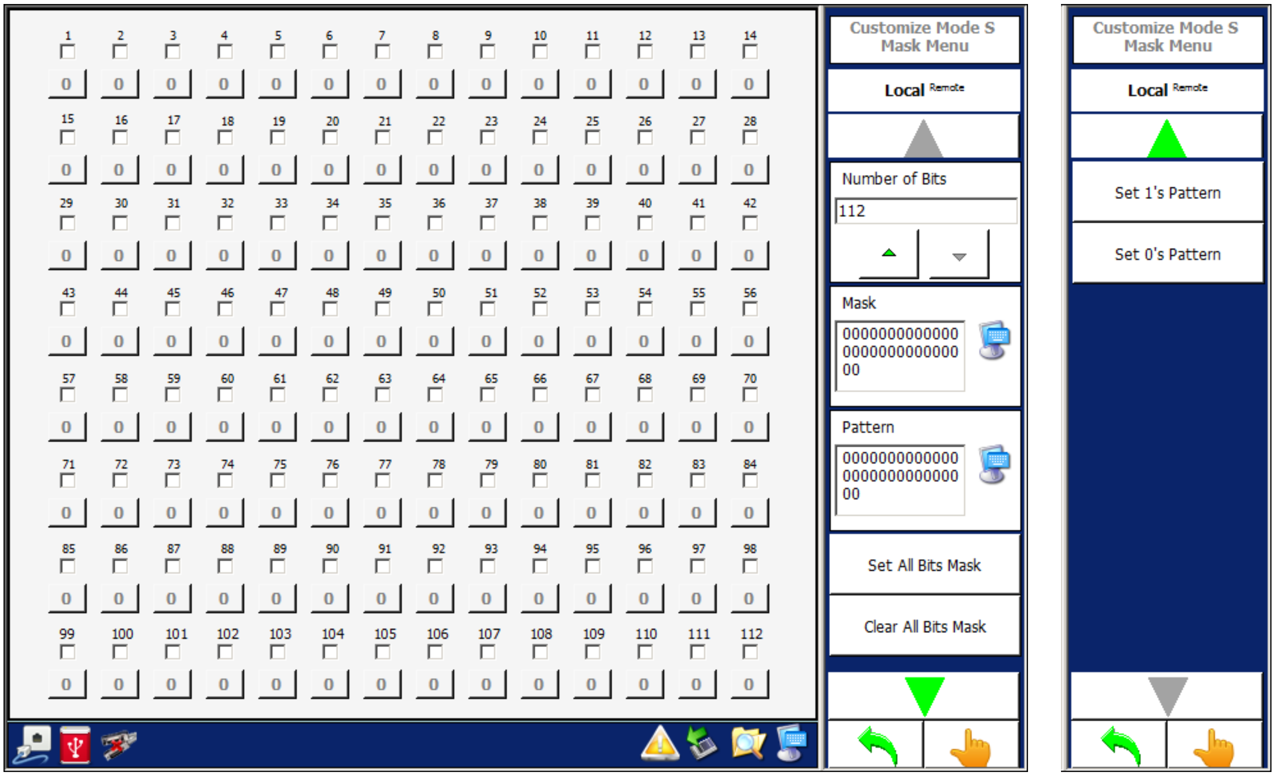
Figure 1.2.3 - 9 Multi-Receiver, Receiver Predefined Masks Menu



Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Trap	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the filter.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.4.6.3 Multi-Receiver, Customize Mode S Mask Menu

Figure 1.2.3 - 10 Multi-Receiver Mode S Mask Menu

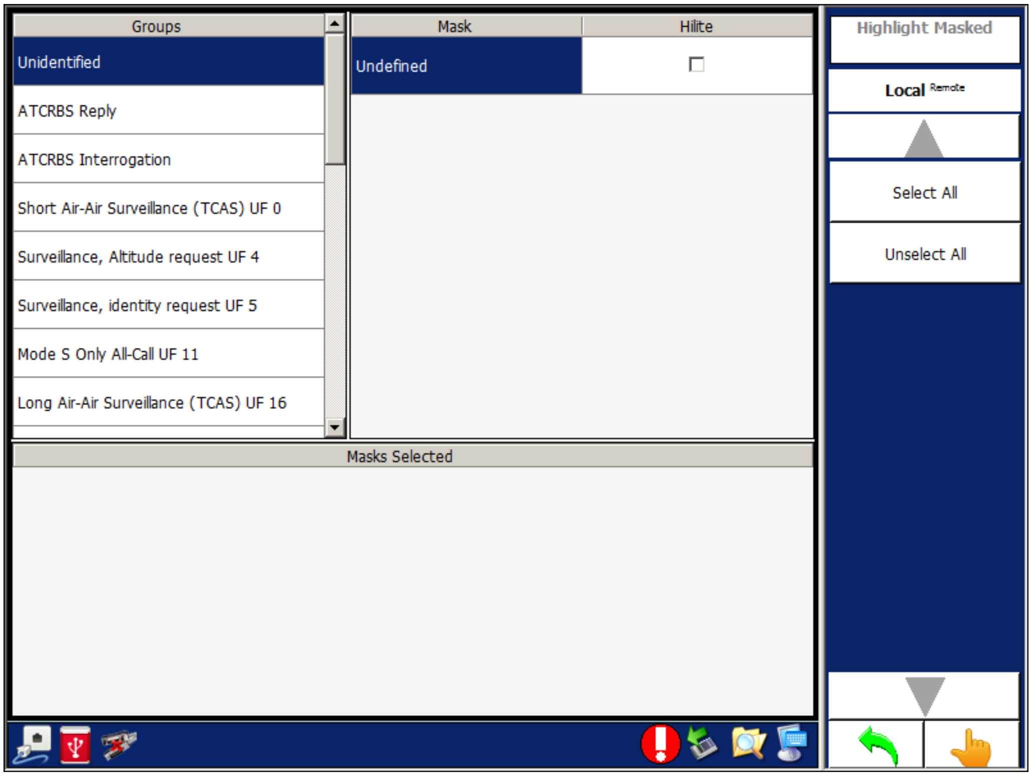


Screen Components	Description
Number	Allows the user to enable/disable the selected pattern bit.
Bit	Allows the user to pattern bit.
Number of Bits Softkey	Allows the user to select the number of bits.
Mask Softkey	Allows the user to Mask.
Pattern Softkey	Allows the user to Pattern.
Set All Bits Mask Softkey	Allows the user to select all bits.
Clear All Bits Mask Softkey	Allows the user to clear all bits.
Set 1’s Pattern Softkey	Allows the user to select “1” for all patterns.
Set 0’s Pattern Softkey	Allows the user to select “0” for all patterns.

3.4.6.4 Multi-Receiver, Highlight Masked Menu

The Highlight Masked softkey Displays the Filtered Masked Menu which contains controls that allow the user to select the messages to highlight during the display of messages in the Transponder Receiver Menu.

Figure 1.2.3 - 11 Multi-Receiver, Highlight Masked Menu



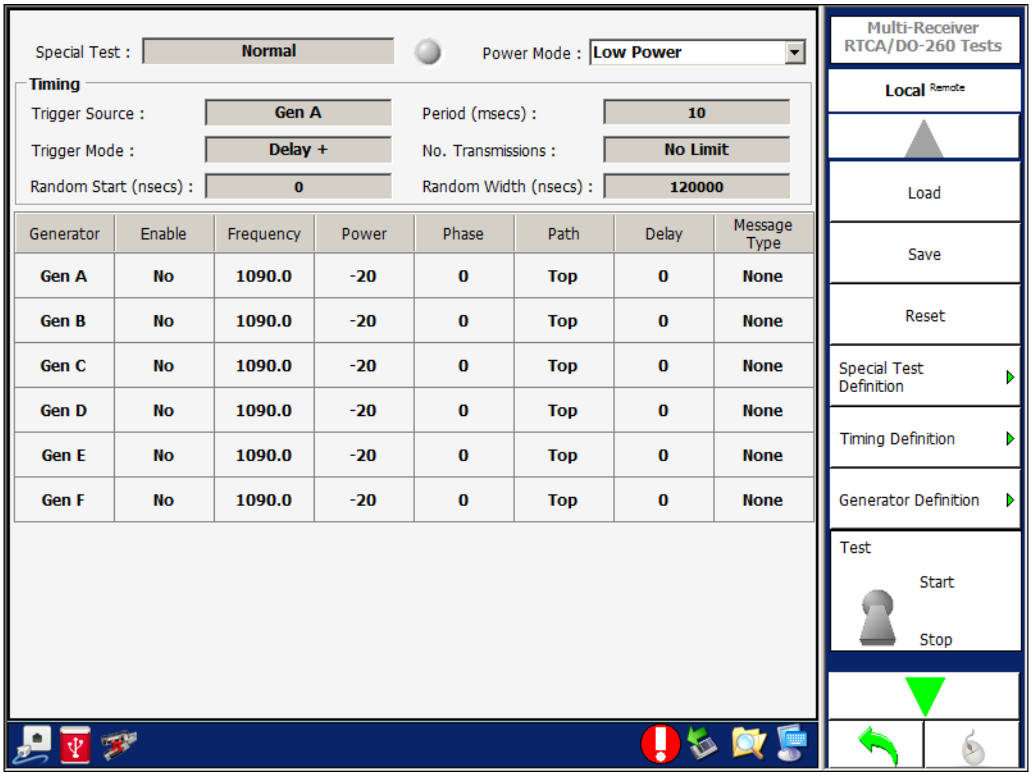
Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Hilite	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the highlight.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.4.7 MULTI-RECEIVER RTCA/DO-260 TESTS

The RTCA/DO-260 Tests Menu allows the user to define tests that set the Test Set Transmitters for RTCA DO-260 Receiver testing.

3.4.7.1 RTCA/DO-260 Tests Menu (Normal)

Figure 1.2.3 - 12 RTCA/DO-260 Tests Menu (Normal)



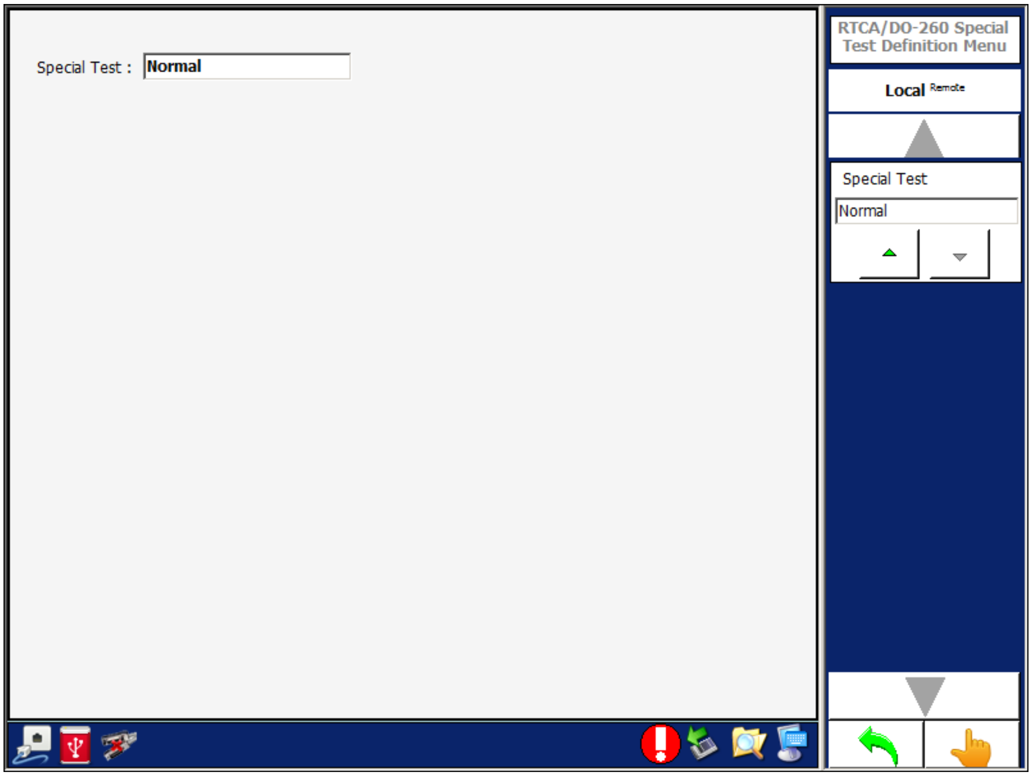
Screen Components	Description
Special Test	Allows the user to select the Special Test.
Power Mode	Allows the user to select the Power Mode.
Trigger Source	Allows the user to select the Trigger Source.
Trigger Mode	Allows the user to select the Trigger Mode. If delay is selected, the delay defined in the Generator setting is used for + or – delay. If random is selected, Random Start and Random Width are added to the screen to select the minimal starting time and width of the random starting time. If Walk is selected, a signal is set at a positive or negative delay and moves the signal by 25 ns delay each transmission.

Screen Components	Description
Random Start	Allows the user to select the Random Start, the minimal starting position compared to the reference Generator.
Period	Allows the user to select the Period of time between Triggers.
No. Transmissions	Allows the user to select the Number of Transmissions.
Random Width	Allows the user to select the Random Width. Only active when Trigger Mode is set to Random.
Generator	Allows the user to select the Generator.
Enable	Allows the user to enable/disable the selected Generator. If the Generator selected is the trigger source, this parameter is disabled and the Generator is enabled.
Frequency	Allows the user to select the Generator output frequency.
Power	Allows the user to set the Generator output power.
Phase	Allows the user to select the output Phase of the Generator.
Path	Allows the user to select the Path of the Generator.
Delay	Allows the user to set the delay from the trigger source. If the Generator that is being set is the trigger source, this parameter is disabled. The delay value is the positive or negative in accordance with the setting in the timing definition of delay+ or delay-
Message Type	Allows the user to select the Message Type.
Load Softkey	Allows the user to select a stored DO-260 test.
Save Softkey	Allows the user to save the current DO-260 test.
Reset Softkey	Allows the user to reset the test settings to the default values.
Special Test Definition Softkey	Allows the user to set up one of the Special Tests.
Timing Definition Softkey	Allows the user to select the timing definitions.
Generator Definition Softkey	Allows the user to select the Generator definitions.
Test Softkey	Allows the user to start or stop the defined DO-260 test.

3.4.7.2 RTCA/DO-260 Special Test Definition Menu (Normal)

When the RTCA/DO-260 Special Test Definition Menu is displayed, the user can alter the parameters.

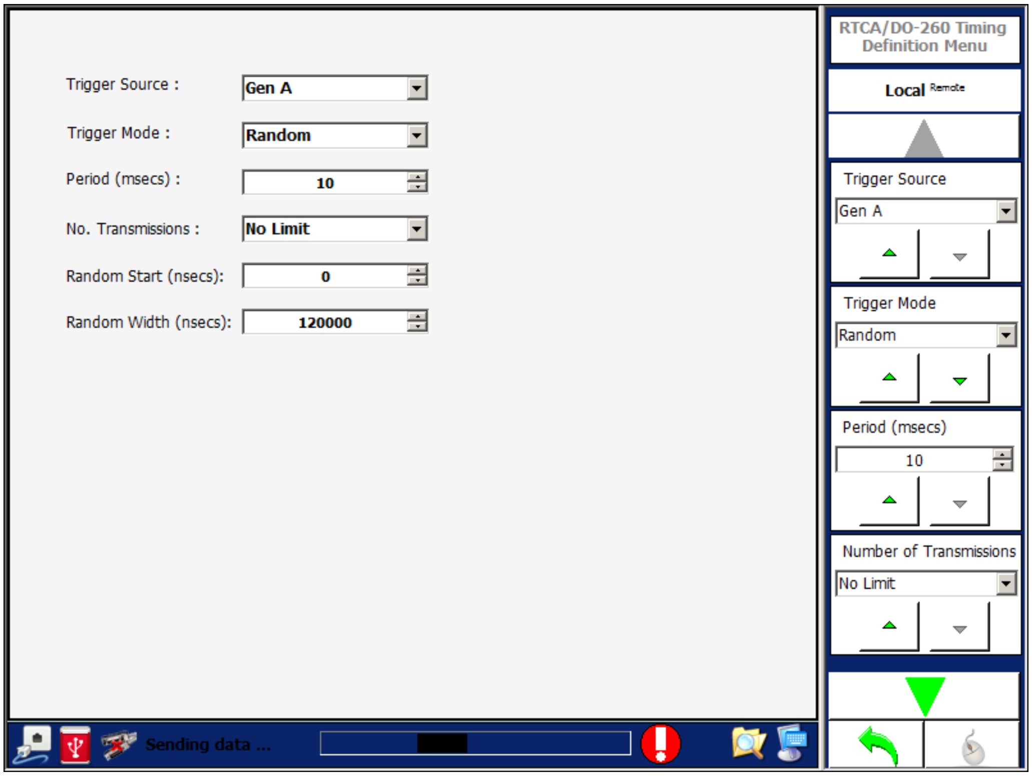
Figure 1.2.3 - 13 RTCA/DO-260 Special Test Definition Menu (Normal)



Screen Components	Description
Special Test	Allows the user to select the Special Test mode.

3.4.7.3 RTCA/DO-260 Timing Definition Menu (Normal)

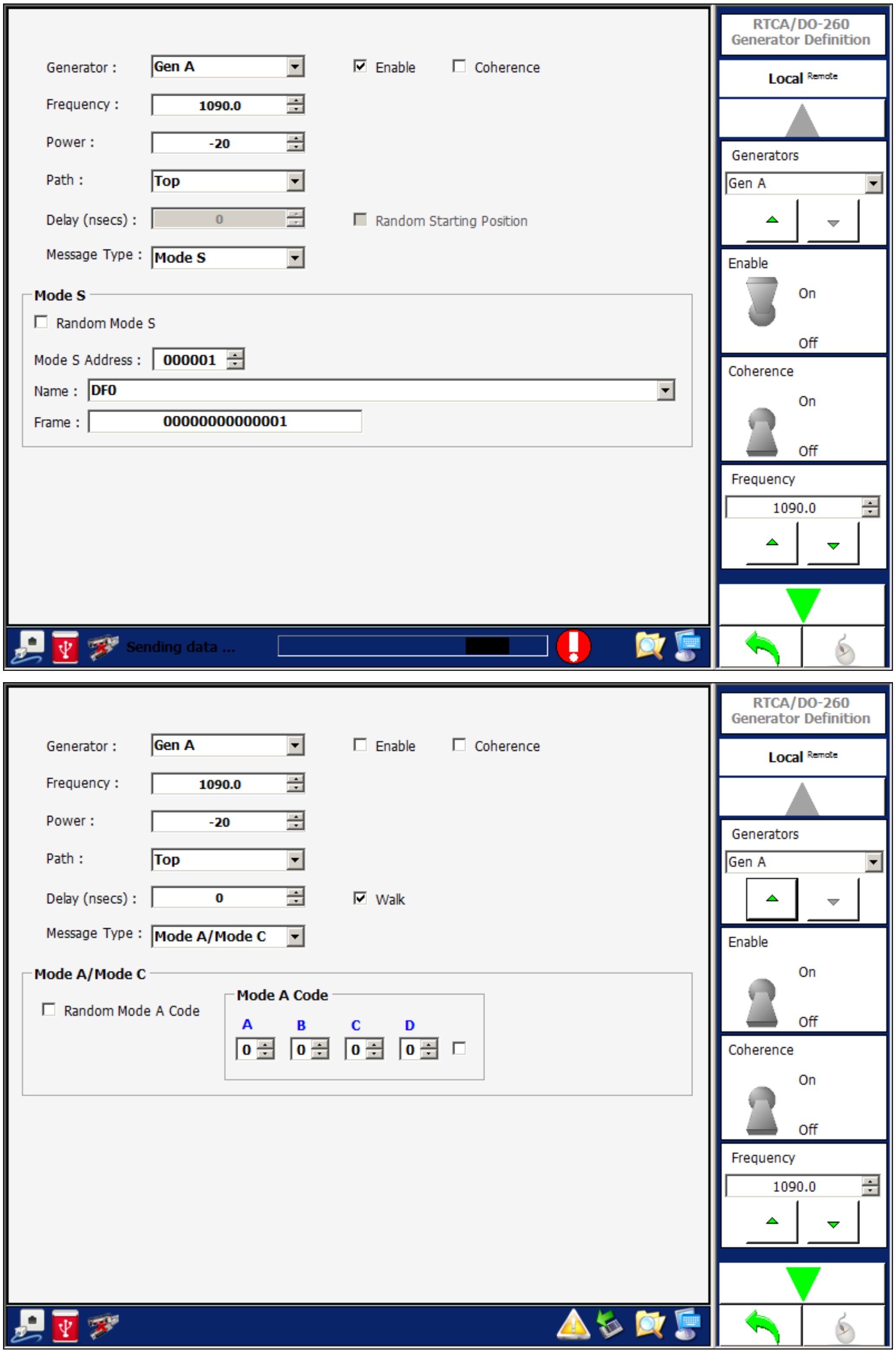
Figure 1.2.3 - 14 RTCA/DO-260 Timing Definition Menu (Normal)



Screen Components	Description
Trigger Source	Allows the user to select the Trigger Source.
Trigger Mode	Allows the user to select the Trigger Mode.
Period	Allows the user to select the Period.
No. Transmissions	Allows the user to select the Number of Transmissions.
Random Start	Allows the user to select the Random Start.
Random Width	Allows the user to select the Random Width.

3.4.7.4 RTCA/DO-260 Generator Definition Menu (Normal)

Figure 1.2.3 - 15 RTCA/DO-260 Generator Definition Menu (Normal)

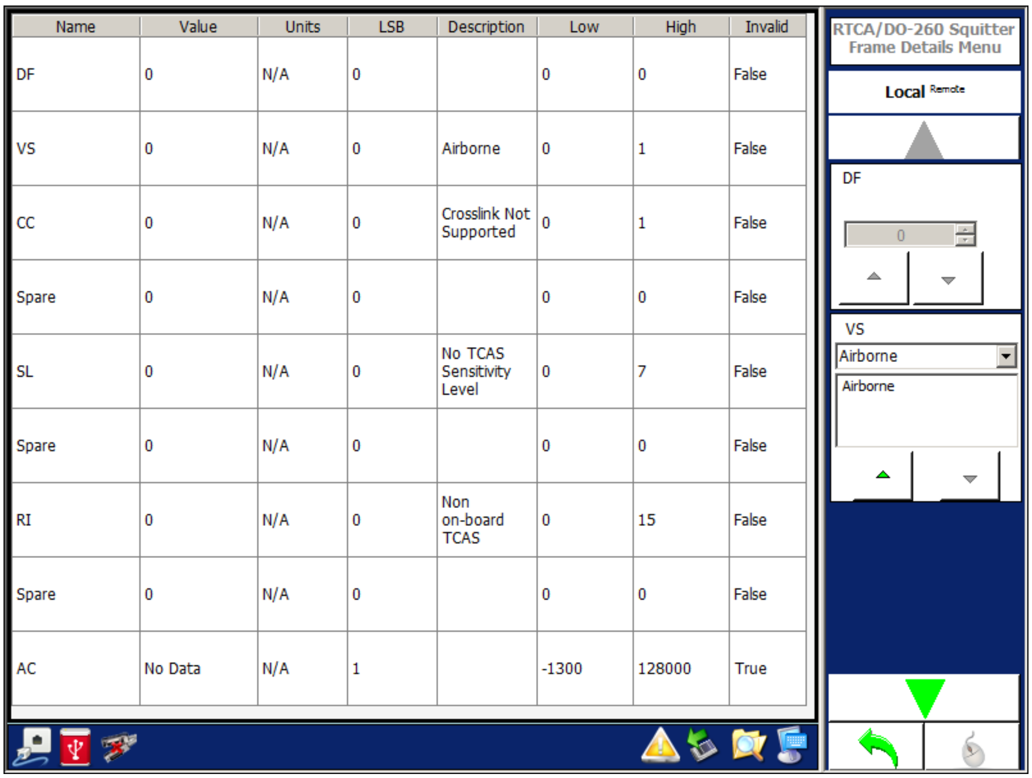


Screen Components	Description
Generator	Allows the user to select the Generator.
Frequency	Allows the user to select the Generator output frequency.
Power	Allows the user to set the Generator output power.
Phase	Allows the user to select the output Phase of the Generator.
Path	Allows the user to select the Path.
Delay	Allows the user to set the delay from the trigger source. If the Generator that is being set is the trigger source, this parameter is disabled. The delay value is the positive or negative in accordance with the setting in the timing definition of delay+ or delay-.
Message Type	Allows the user to select the Message Type.
Enable	Allows the user to enable/disable the Generator for the test. If the Generator selected is the trigger source, this parameter is disabled and the Generator is enabled.
Coherence	Allows the user to select the Coherence. If enabled the two Generators of a transmitter module are in coherence. This is available when defining Gen A, Gen C and Gen E.
Random Starting Position	Allows the user to change the starting position of each message from the delay value.
Random Mode S	Allows the user to set the message. For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses).
Mode S Address	Allows the user to set the message. For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field. For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses).
Name	Allows the user to set the message. For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field. For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses).

Screen Components	Description
Frame	Allows the user to set the message. For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field. For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses).
Random Mode A Code	Allows the user to select the Random Mode A Code.
Mode A Code	Allows the user to select the Mode A Code.

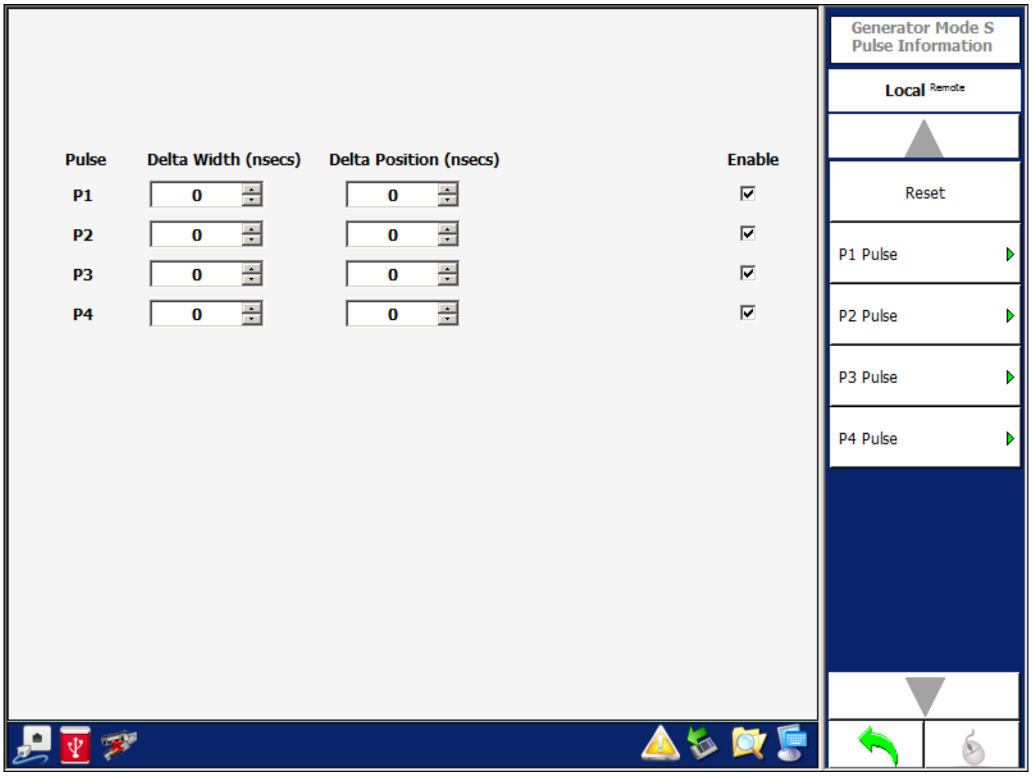
3.4.7.5 RTCA/DO-260 Generator Definition Menu - Frame Details (Normal)

Figure 1.2.3 - 16 RTCA/DO-260 Generator Definition Menu - Frame Details (Normal)



3.4.7.6 RTCA/DO-260 Generator Definition Menu - Mode S Pulse Information (Normal)

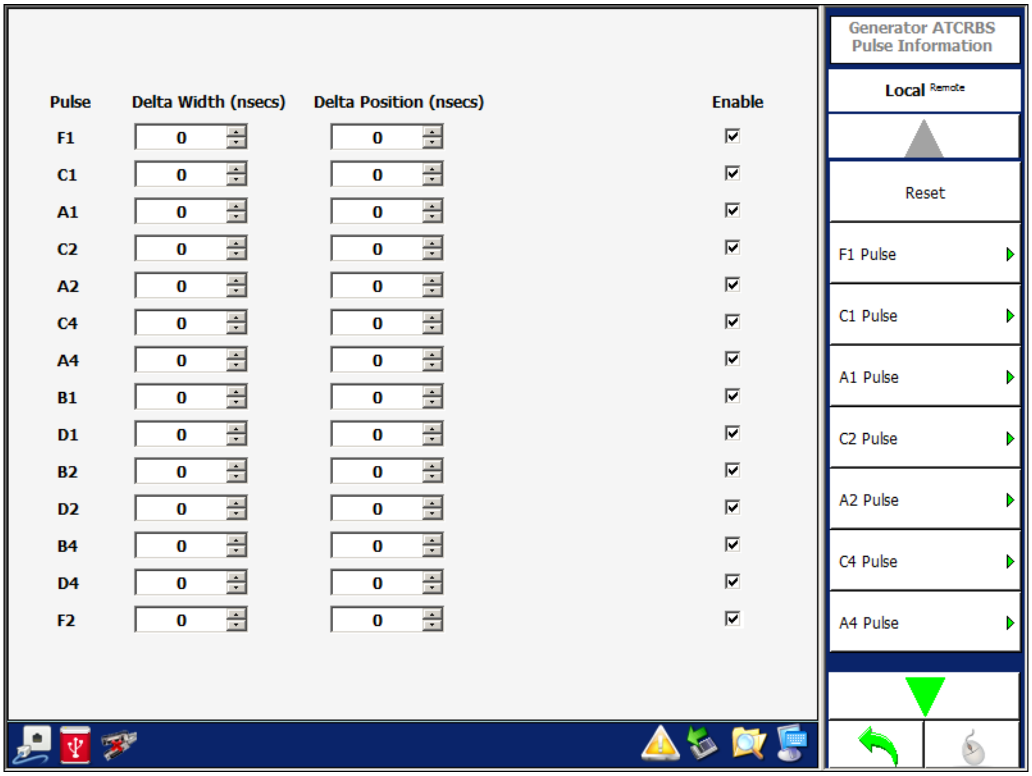
Figure 1.2.3 - 17 RTCA/DO-260 Generator Definition Menu - Mode S Pulse Information (Normal)



Screen Components	Description
Reset Softkey	Allows the user to reset all Mode S pulse settings.

3.4.7.7 RTCA/DO-260 Generator Definition Menu - ATCRBS Pulse Information (Normal)

Figure 1.2.3 - 18 RTCA/DO-260 Generator Definition Menu - ATCRBS Pulse Information (Normal)

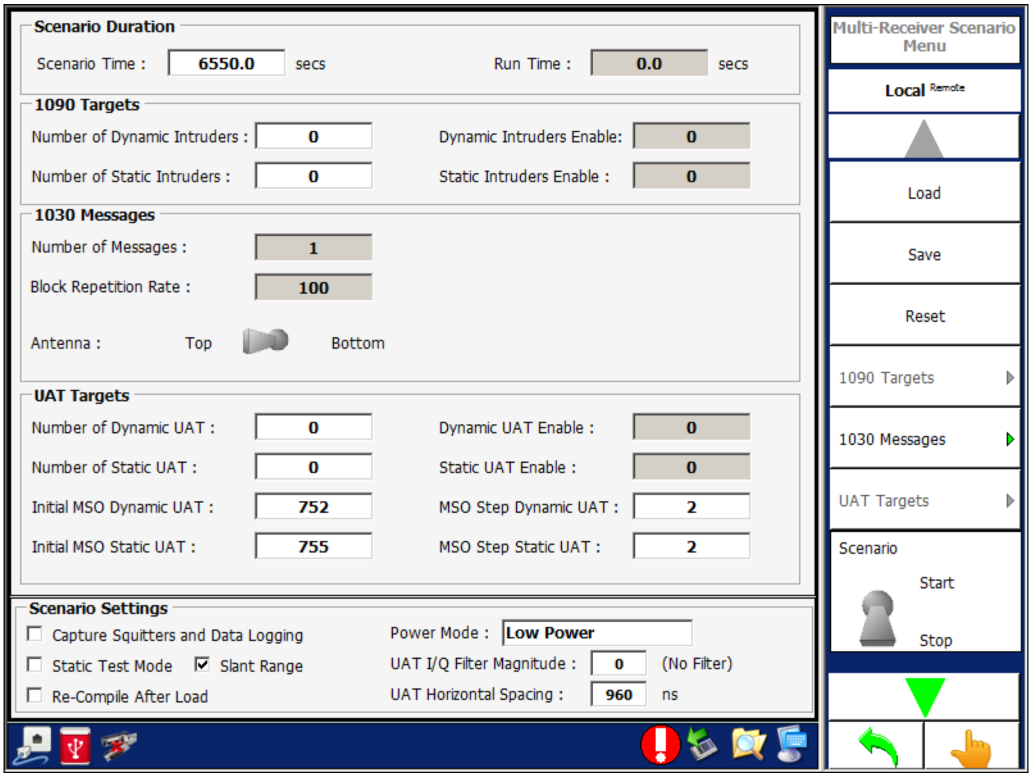


Screen Components	Description
Reset Softkey	Allows the user to reset all ATCRBS pulse settings.

3.4.8 SCENARIO MENU

The Scenario Menu allows the user to define tests that set the Test Set to transmit 1090 ADS-B messages, 1030 Interrogation messages and UAT messages simultaneously.

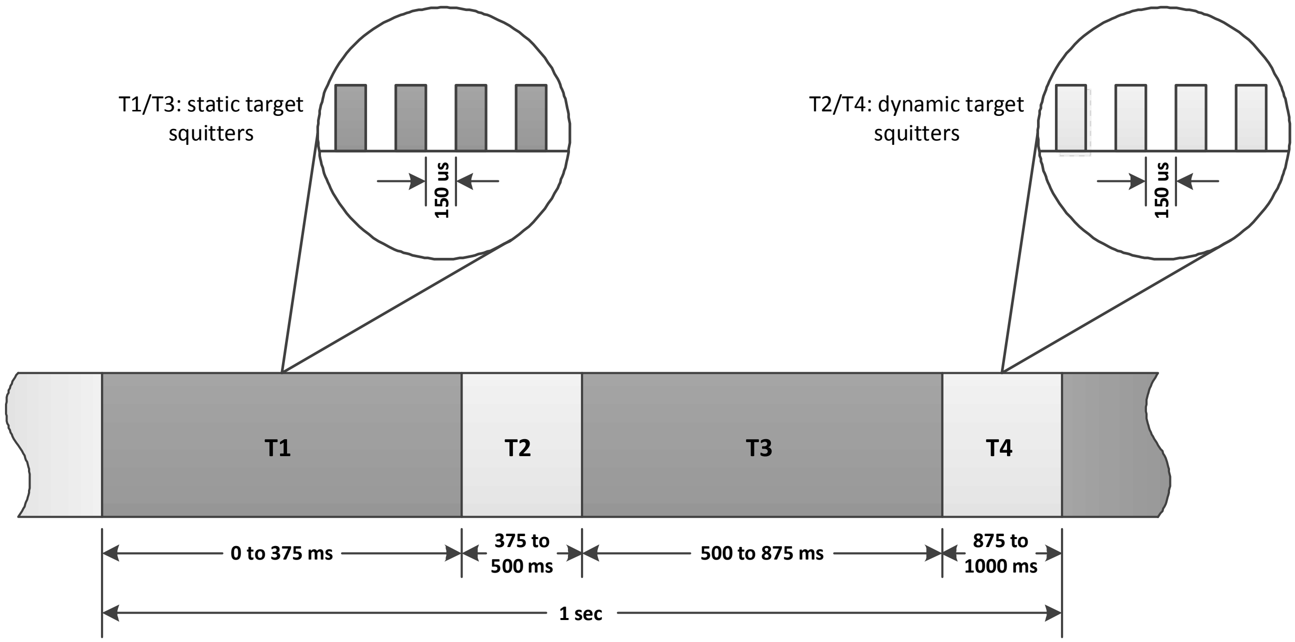
Figure 1.2.3 - 19 Multi-Receiver Scenario Menu



Screen Components	Description
Scenario Time	Allows the user to select the scenario time (duration).
Run Time	Displays the Scenario Current Run Time.
Number of Dynamic Intruders	Allows the user to select the number of 1090 Dynamic Intruders. (See “Multi-Receiver, ADS-B Target, Transmission Sequence Figure)
Number of Static Intruders	Allows the user to select the number of 1090 Static Intruders. (See “Multi-Receiver, ADS-B Target, Transmission Sequence Figure)
Dynamic Intruders Enable	Allows the user to select the number of 1090 Dynamic Intruders enabled.
Static Intruders Enable	Allows the user to select the number of 1090 Static Intruders enabled.
Number of Messages	Allows the user to select the number of 1030 Messages.

Screen Components	Description
Block Repetition Rate	Allows the user to select the 1030 Block Repetition Rate.
Antenna	Allows the user to select the Antenna.
Number of Dynamic UAT	Allows the user to select the Number of UAT Dynamic Targets.
Number of Static UAT	Allows the user to select the Number of UAT Static Targets.
Initial MSO Dynamic UAT	Allows the user to select the Initial MSO for UAT Dynamic Targets.
Initial MSO Static UAT	Allows the user to select the Initial MSO for UAT Static Targets.
Dynamic UAT Enable	Allows the user to select the Dynamic UAT Enable
Static UAT Enable	Allows the user to select the Static UAT Enable
MSO Step Dynamic UAT	Allows the user to select the MSO Steps between Dynamic Targets.
MSO Step Static UAT	Allows the user to select the MSO Step between Static Targets.
Capture Squitters and Data Logging	Allows the user to log all the messages received during the scenario according to the message mask assigned in the Receiver Menu. The data log is reset at the start of the scenario.
Static Test Mode	Not Used
Recompile After Load	Allows the user to select the Recompile After Load that is loaded. If enabled, when a scenario file is loaded, all the Mode S Squitters are recompiled.
Slant Range	Allows the user to select the Slant Range. If enabled, the Test Set calculates the range using the intruder range, intruder altitude and Own Aircraft altitude. If disabled, the range is the horizontal range that is defined in the intruder definition.
Power Mode	Allows the user to select the Power Mode.
UAT I/Q Filter Magnitude	Allows the user to select the UAT I/Q Filter Magnitude.
UAT Horizontal Spacing	Allows the user to select the UAT Horizontal Spacing.
Load Softkey	Allows the user to load a saved scenario configuration.
Save Softkey	Allows the user to store the current scenario configuration to a file.
Reset Softkey	Allows the user to clear all intruders, ground stations and video blocks data.
1090 Targets Softkey	Displays the 1090 Targets Menu.
1030 Messages Softkey	Displays the 1030 Messages Menu
Scenario Softkey	Allows the user to enable/disable the Scenario Test.

3.4.8.1 Multi-Receiver, ADS-B Target, Transmission Sequence



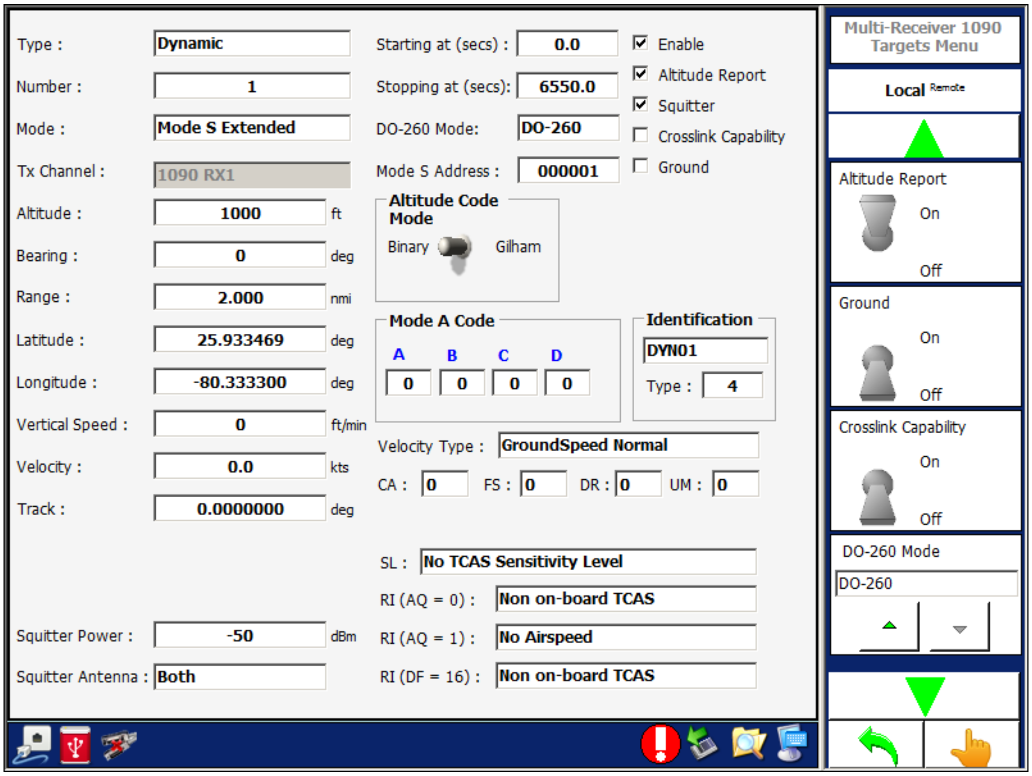
T1 (static targets):
- Even Position Messages (DF17/DF18 Airborne or Surface, TISB and ADSR)
- Velocity Messages (if enabled and airborne)
- Identification Messages (if enabled)
- maximum of 1388 squitters

T3 (static targets):
- Odd Position Messages (DF17DF18 Airborne or Surface, TISB and ADSR)
- Target State Messages (if enabled)
- Velocity Messages (if enabled, airborne and rate is 0.5 s, T1 only if rate is 1.0 s)
- Aircraft Status Emergency Messages (if enabled)
- DF11 Messages (if enabled)
- maximum of 1388 squitters

T2 and T4 (dynamic targets):
- Each of the enabled messages' rates are set by the user. Messages are transmitted in accordance to the settings.
- maximum of 32 dynamic targets with all squitter types enabled

3.4.8.2 Multi-Receiver, 1090 Targets Menu (Dynamic)

Figure 1.2.3 - 20 Multi-Receiver 1090 Targets Menu (Dynamic)

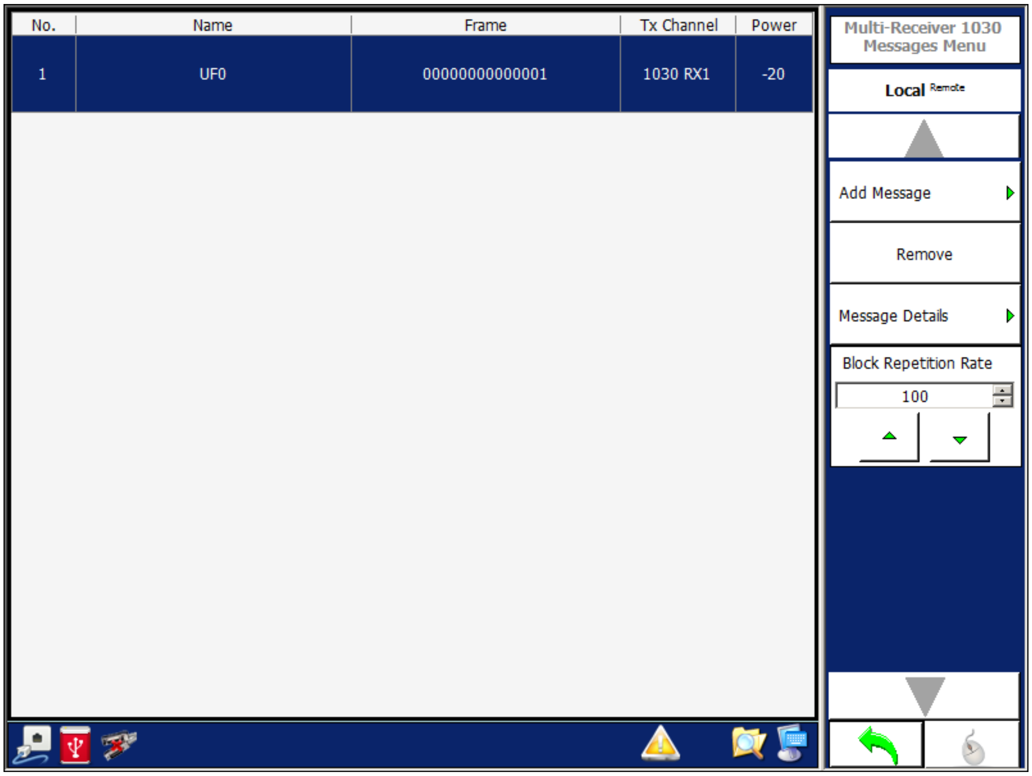


Screen Components	Description
Type	Allows the user to select the Type.
Number	Allows the user to select the Number.
Mode	Allows the user to select the Mode.
Tx Channel	Allows the user to select the Tx Channel.
Altitude	Allows the user to select the Altitude.
Bearing	Allows the user to select the Bearing (Phase).
Range	Allows the user to select the Range.
Latitude	Allows the user to select the Latitude.
Longitude	Allows the user to select the Longitude.
Vertical Speed	Allows the user to select the Vertical Speed.
Velocity	Allows the user to select the Velocity (Squitter).
Track	Allows the user to select the Track Angle.
Squitter Power	Allows the user to select the Squitter Power.

Screen Components	Description
Squitter Antenna	Allows the user to select the Squitter Antenna.
Starting at	Allows the user to select the start time.
Stopping at	Allows the user to select the stop time.
DO-260 Mode	Allows the user to select the DO-260 Mode.
Mode S Address	Allows the user to select the Mode S Address (Hexadecimal).
Enable	Allows the user to enable/disable transmitting the required messages for this intruder.
Altitude Report	Allows the user to enable/disable the Altitude Report. If enabled, the altitude code is present in the DF0 reply. If disabled, the altitude code is set to 0.
Squitter	Allows the user to enable/disable the Squitter.
Crosslink Capability	Allows the user to enable/disable the Crosslink Capability
Ground	Allows the user to enable/disable setting the intruder on the ground.
Altitude Code Mode	Allows the user to select the Altitude Code Mode.
Mode A Code	Allows the user to select the Mode A Code.
Identification	Allows the user to select the Intruder Identification.
Type	Allows the user to select the Intruder Identification Type.
Velocity Type	Allows the user to select the Velocity Type.
CA	Allows the user to select the Transponder Capability.
FS	Allows the user to select the Flight Status.
DR	Allows the user to select the Downlink Request.
UM	Allows the user to select the Utility Message.
Target State Subtype	Allows the user to select the Target State Subtype. DO-260B Mode only.
AS Subtype	Allows the user to select the AS Subtype. DO-260B Mode only.
SL	Allows the user to select the Sensitivity Level.
RI (AQ = 0)	Allows the user to select the Runway Incursion (Acquisition = 0).
RI (AQ = 1)	Allows the user to select the Runway Incursion (Acquisition = 1).
RI (DF = 16)	Allows the user to select the Runway Incursion (Direction Finding = 16).

3.4.8.3 Multi-Receiver, 1030 Messages Menu

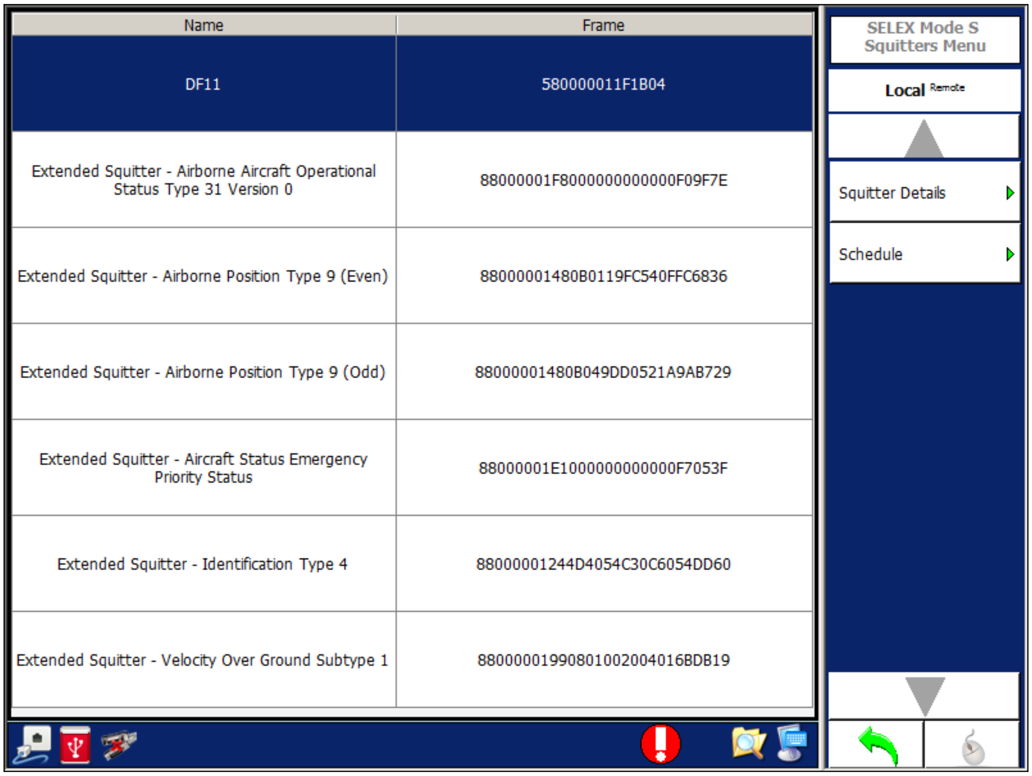
Figure 1.2.3 - 21 Multi-Receiver 1030 Targets Menu



Screen Components	Description
Add Message	Allows the user to add a new 1030 interrogation.
Remove	Allows the user to remove an existing 1030 interrogation.
Message Details	Allows the user to select the Message Details.
Block Repetition Rate	Allows the user to select the Block Repetition Rate.

3.4.8.4 Multi-Receiver, 1090 Target Squitter Definition Menu

Figure 1.2.3 - 22 Multi-Receiver 1090 Target Squitter Definition Menu



Screen Components	Description
Squitter Details Softkey	Displays the Squitter Frame Fields Menu.
Schedule Softkey	Displays the Squitter Schedule Menu.

Figure 1.2.3 - 23 Multi-Receiver Squitter Frame Fields Menu

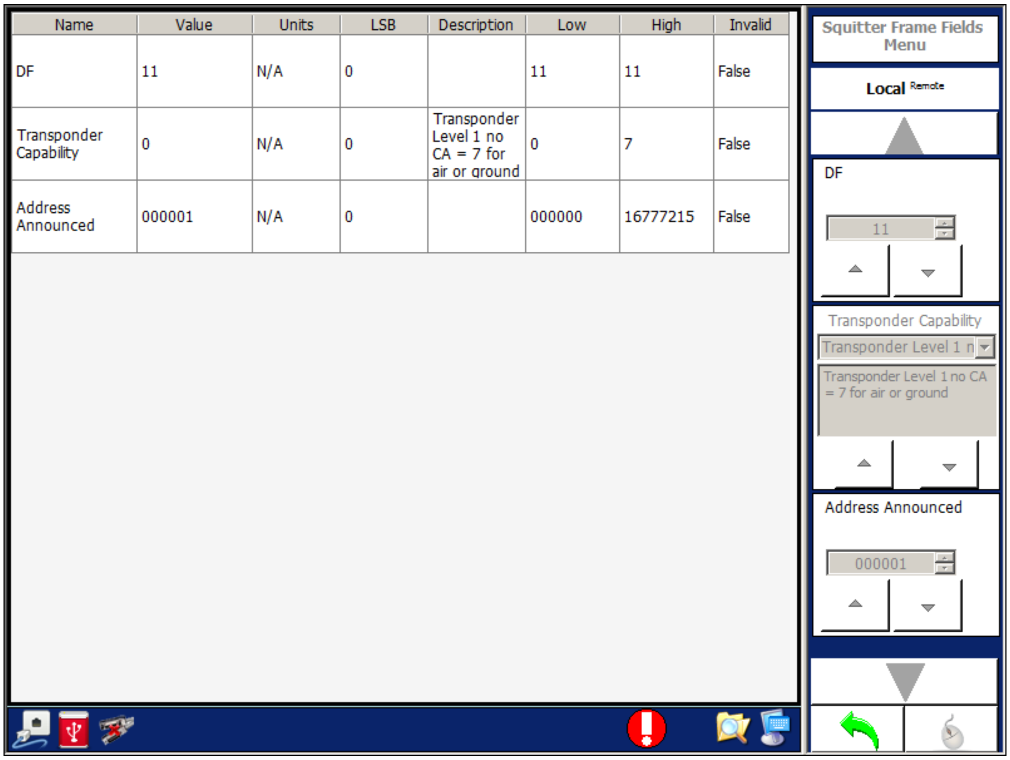
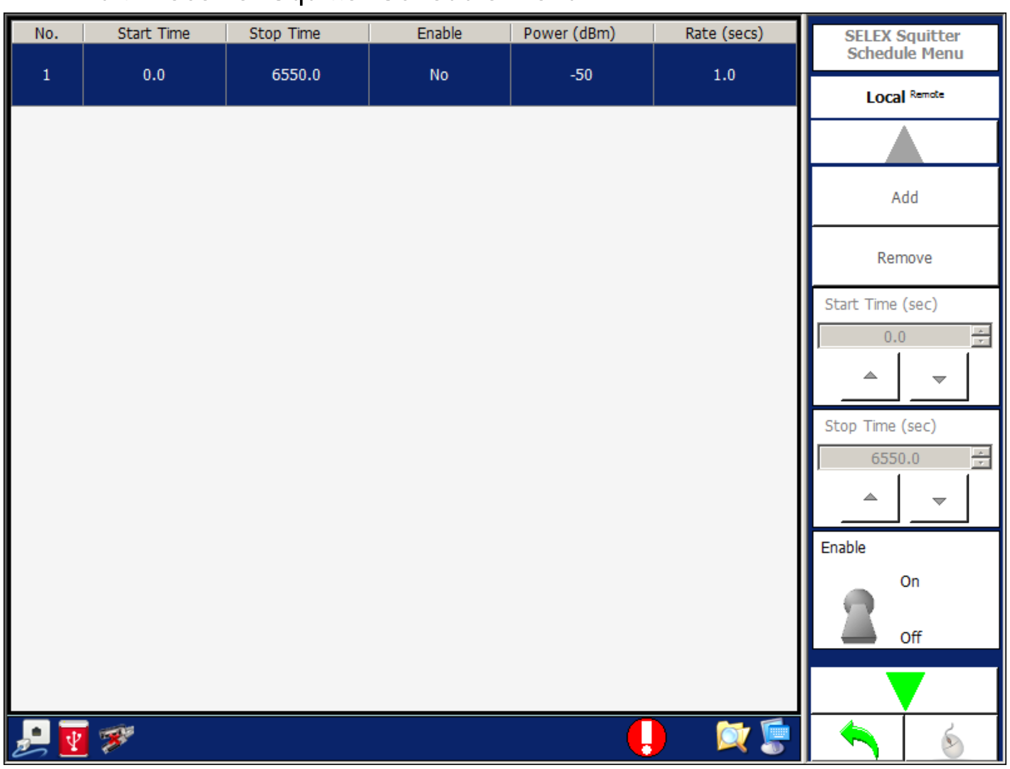
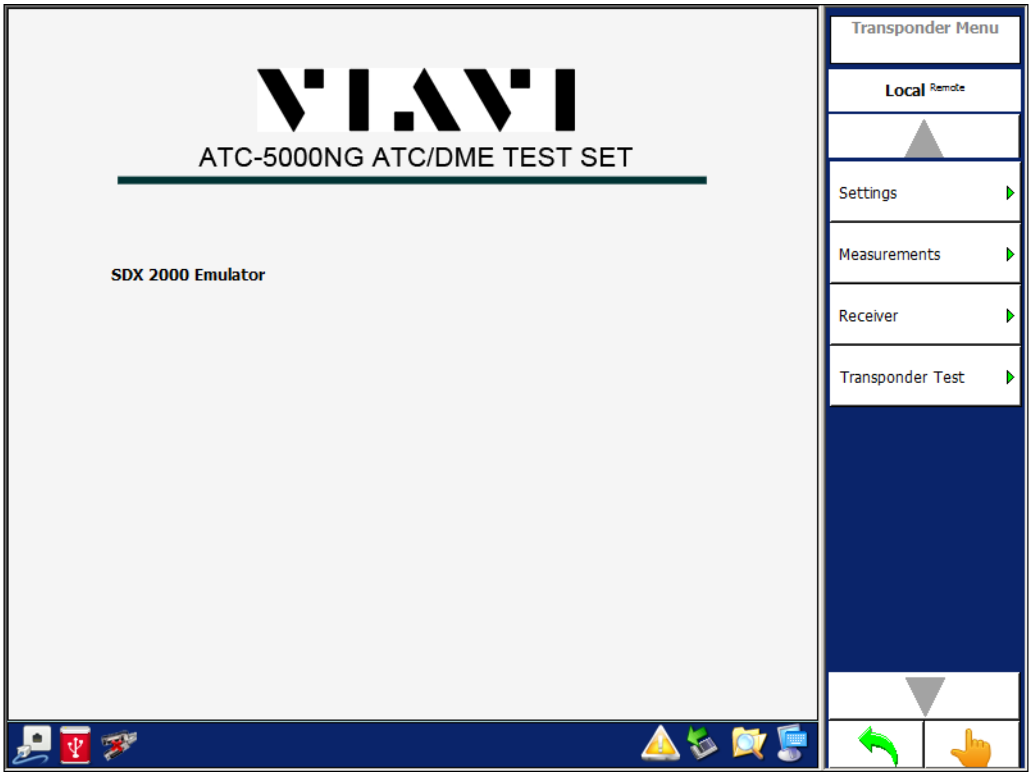


Figure 1.2.3 - 24 Multi-Receiver Squitter Schedule Menu



3.5 TRANSPONDER MENU

Figure 1.2.3 - 25 ATC-5000NG Transponder Menu

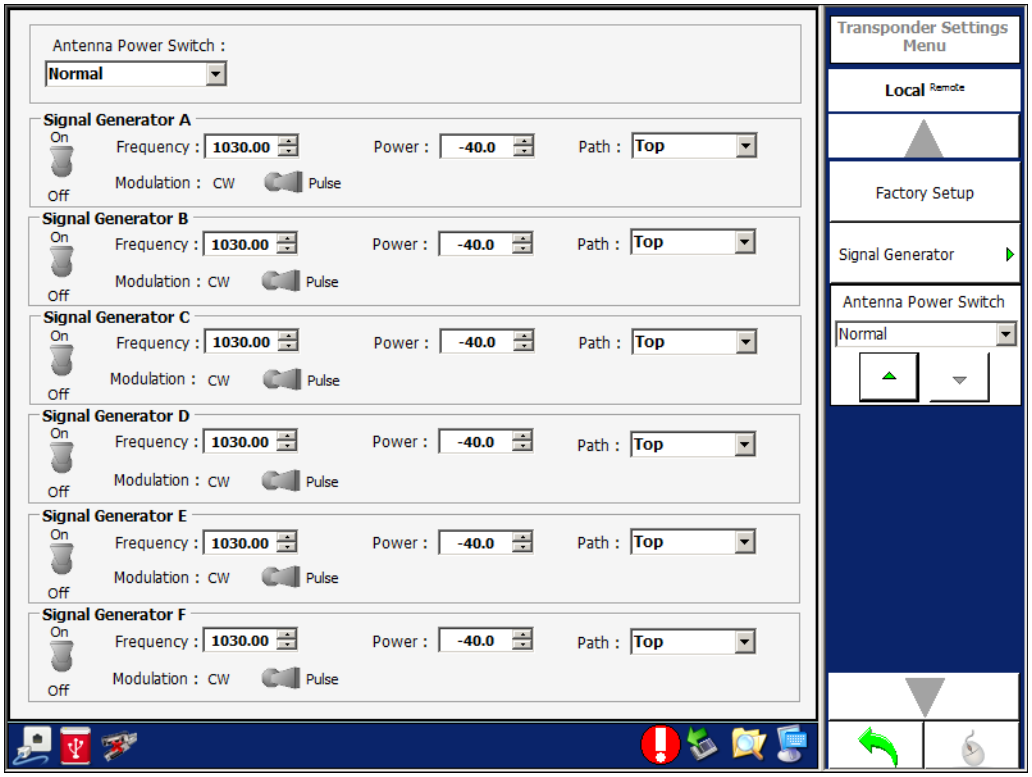


Screen Components	Description
Settings Softkey	Displays the Transponder Settings Menu.
Measurements Softkey	Displays the Transponder Measurements Menu.
Receiver Softkey	Displays the Transponder Receiver Menu.
Transponder Test Softkey	Displays the Transponder Test Menu.

3.5.1 TRANSPONDER SETTINGS MENU

Allows the user to configure the Transmitter, Receiver and Antenna/Switch modules in the Test Set for transponder tests. The Transponder Settings Menu is used for testing and troubleshooting of the Test Set.

Figure 1.2.3 - 26 Transponder Settings Menu



Screen Components	Description
Antenna Power Switch	Allows the user to select the path of the Antenna Power Switch.
Signal (ON/OFF)	Allows the user to enable/disable the Transmitter.
Frequency	Allows the user to select the Transmitter frequency.
Power	Allows the user to set the Transmitter power.
Path	Allows the user to select the Transmitter Path (RF I/O Port).
Modulation	Allows the user to select the Modulation.
Factory Setup Softkey	Allows the user to set all hardware to the default settings according to the hardware configuration.

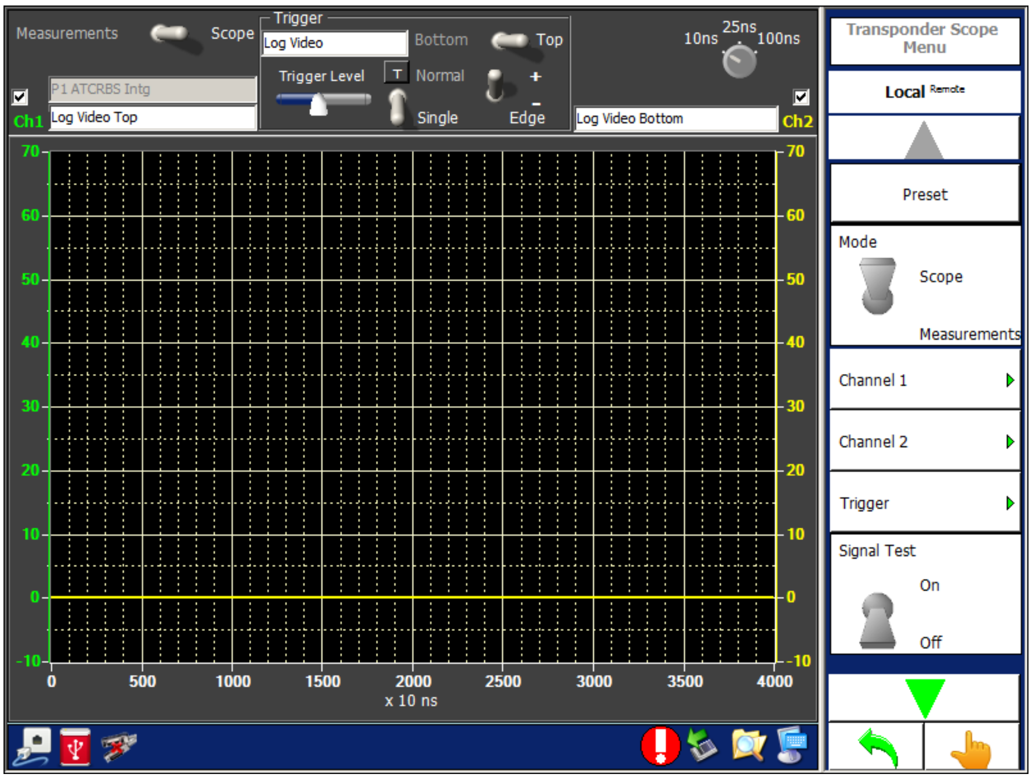
3.5.2 TRANSPONDER MEASUREMENTS MENU

Allows the user to view the pulses from the Transponder or ADS-B Transmitter. The Transponder Measurements Menu allows the user to make measurements for power, pulse width, rise time, fall time, spacing and frequency.

Dragging the mouse or finger on the Touch Screen over the axis and graph can change the horizontal/vertical scales and horizontal/vertical positions.

3.5.2.1 Scope Mode

Figure 1.2.3 - 27 Transponder Scope Mode Screen/Menu

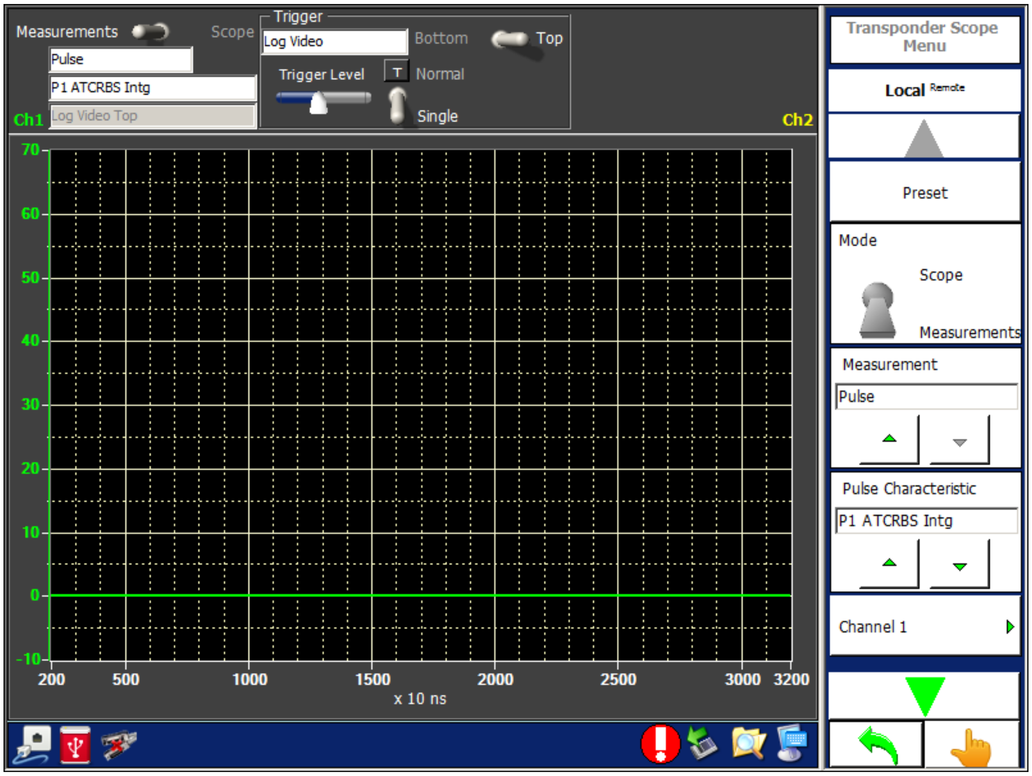


Screen Components	Description
Measurement/Scope	Allows the user to perform a measurement or set the scope to view a received waveform.
Ch1	Allows the user to select the Channel 1 selection.
Ch2	Allows the user to select the Channel 2 selection.
Trigger Source	Allows the user to select the Trigger Source.

Screen Components	Description
Trigger Level	If ATE Line Mode C/Mode A is selected for the Trigger Source, a combobox to select the whisper/shout level is displayed. If Log Video is selected for the Trigger Source, a slider for the power level is displayed.
Trigger Mode	Allows the user to select the Trigger Mode.
Trigger Edge	Allows the user to select the Trigger Edge.
Trigger Antenna	Allows the user to select the Trigger Antenna.
Horizontal Scale	Allows the user to select the Horizontal Scale.
Preset Softkey	Allows the user to set the fields to preset levels and selections.
Channel 1 Softkey	Allows the user to select the Channel 1 selection.
Enable	Allows the user to enable the Channel 1 selection.
Source	Same as Screen Components.
Clear	Allows the user to clear the Channel 1 selection.
Channel 2 Softkey	Allows the user to select the Channel 2 selection.
Enable	Allows the user to enable the Channel 2 selection.
Source	Same as Screen Components.
Clear	Allows the user to clear the Channel 2 selection.

3.5.2.2 Transponder, Scope Measurement Mode

Figure 1.2.3 - 28 Transponder - Scope Measurement Mode



Screen Components	Description
Measurements/Scope	Allows the user to perform a measurement or set the scope to view a received waveform.
Measurement Type	Allows the user to select the Measurement Type.
Pulse Characteristic	Allows the user to select the Pulse.
Ch1	Allows the user to select the Channel 1 selection.
Ch2	Allows the user to select the Channel 2 selection.
Measurement	Allows the user to select the Measurement Type.
Trigger Level	If ATE Line Mode C is selected for the Trigger Source, a combobox to select the whisper/shout level is displayed. If Log Video is selected for the Trigger Source, a slider for power level is displayed.
Trigger Mode	Allows the user to select the Trigger Mode.
Trigger Source	Allows the user to select the Trigger Source.
Trigger Antenna	Allows the user to select the Trigger Antenna.

Screen Components	Description
Preset Softkey	Allows the user to set the fields to preset levels and selections.

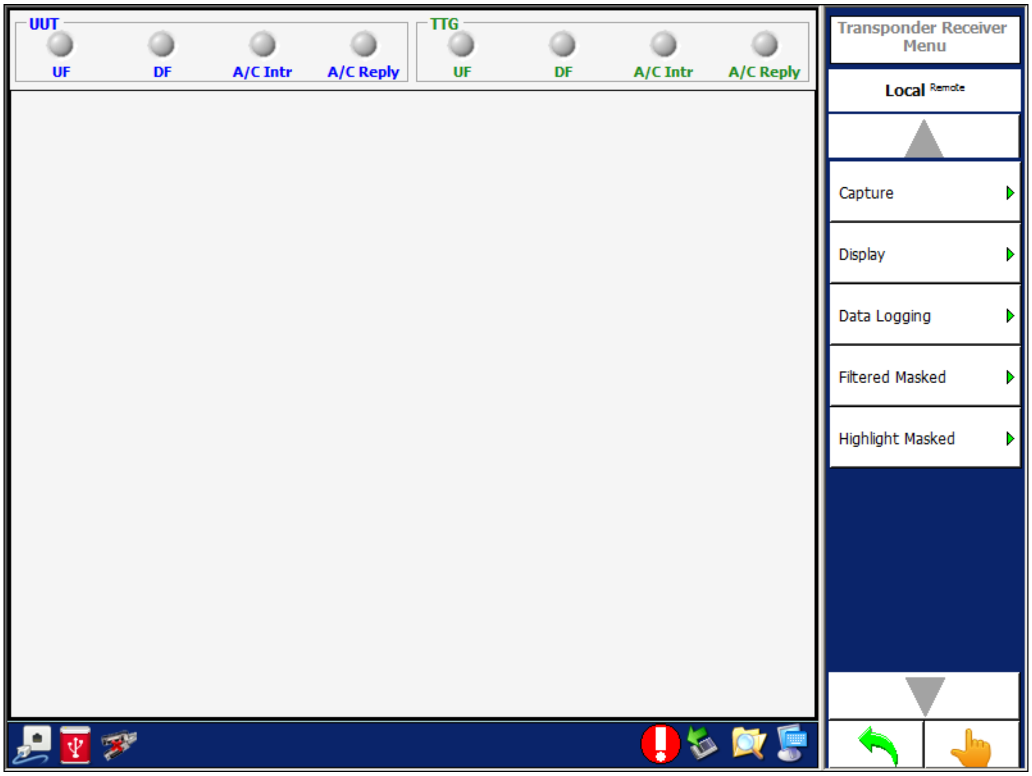
3.5.3 TRANSPONDER RECEIVER MENU

Allows the user to view the transmissions from the UUT and transmissions from the Test Set.

The last 8 receptions are displayed. Blue lines are receptions from the UUT and green lines are receptions from the Test Set.

When performing an export, the Test Set generates a SDF (Compact Database File) and exports the file to the selected file location. All the DF17 position, velocity and identification messages are decoded.

Figure 1.2.3 - 29 Transponder Receiver Menu

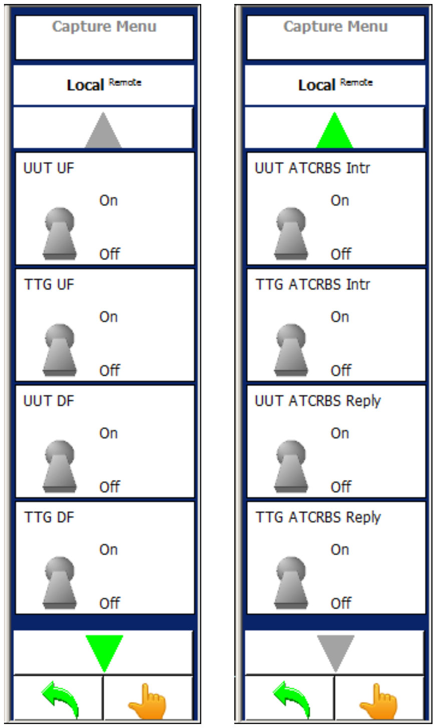


Screen Components	Description		
LEDs	Displays the status of reception from the UUT or Test Set.		
	LED	UF	UF Interrogation
		DF	DF Reply
		A/C Intr	ATCRBS Interrogation
		A/C Reply	ATCRBS Reply

3.5.3.1 Transponder Receiver, Capture Menu

The Capture softkey accesses the following:

Figure 1.2.3 - 30 Transponder Receiver, Capture Menu

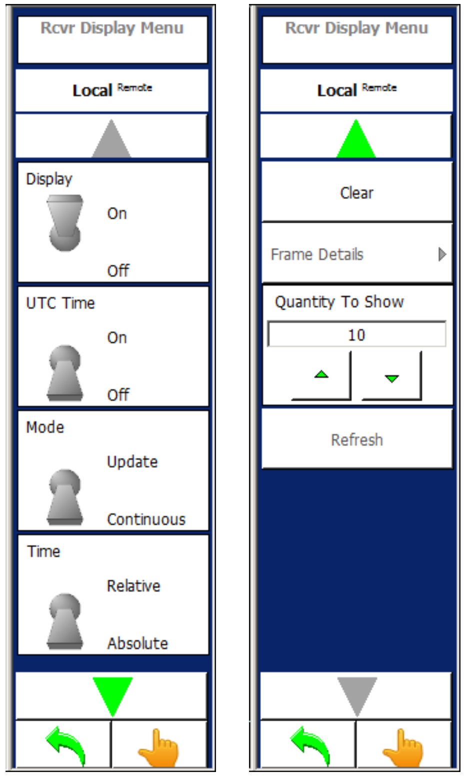


Screen Components	Description
UUT UF	Allows the user to enable/disable capture of TCAS UF messages.
ATC UF	Allows the user to enable/disable capture of Test Set UF messages.
UUT DF	Allows the user to enable/disable capture of Transponder DF messages.
ATC DF	Allows the user to enable/disable capture of Test Set DF messages.
UUT ATCRBS Intr	Allows the user to enable/disable capture of TCAS ATCRBS interrogations.
ATC ATCRBS Intr	Allows the user to enable/disable capture of Test Set ATCRBS interrogations.
UUT ATCRBS Reply	Allows the user to enable/disable capture of Transponder ATCRBS replies.
ATC ATCRBS Reply	Allows the user to enable/disable capture of Test Set ATCRBS replies.

3.5.3.2 Transponder Receiver, Display Menu

The Display softkey accessed controls that allow the user to set the parameters for the status of reception from the UUT or Test Set:

Figure 1.2.3 - 31 Transponder Receiver Display Menu



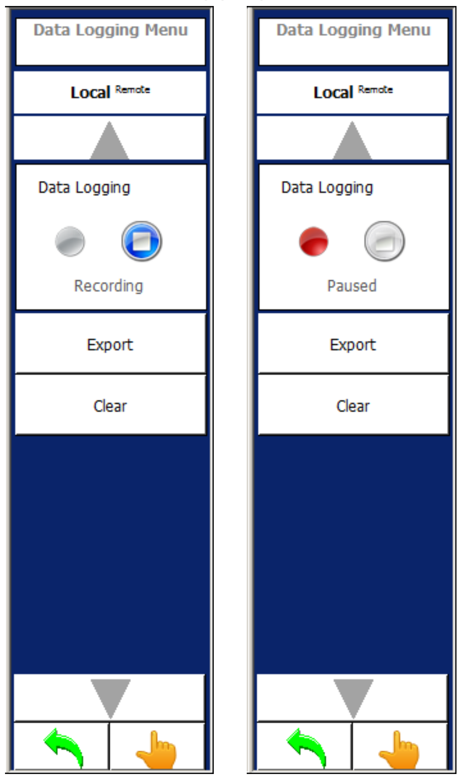
Screen Component	Description
Display	Allows the user to display new receptions (ON or OFF)
UTC Time	Allows the user to display the UTC Time (ON or OFF).
Mode	Allows the user to display the data received by updating a message style with the latest reception (Update) or display all data received in a continuous order (Continuous).
Time	Allows the user to display the time relative to the previous message (Relative) or display the time received (Absolute).
Clear	Allows the user to clear all messages in the Transponder Receiver Menu.
Frame Details	Allows the user to display the digital breakdown of a selected reception.
Quantity to Show	Allows the user to select how many messages to display (100 messages maximum).

Screen Component	Description
Refresh	Allows the user to refresh the Transponder Receiver Menu with the selected quantity of messages.

3.5.3.3 Transponder Receiver, Data Logging Menu

The Data Logging Menu allows the user to set the parameters for the status of reception from the UUT or Test Set:

Figure 1.2.3 - 32 Transponder Receiver Data Logging Menu

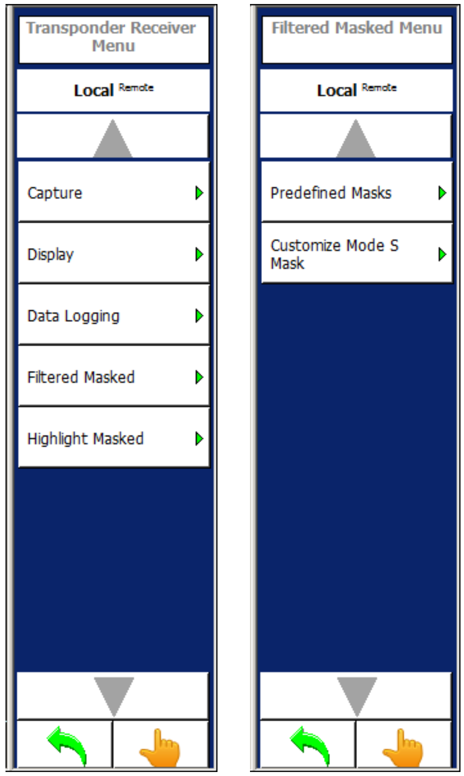


Screen Component	Description
Recording / Paused	Allows the user to start (Recording) or stop (Paused) the data logging of the receive messages.
Export	Allows the user to export the receive messages to a file.
Clear	Allows the user to clear all recorded messages.

3.5.3.4 Transponder Receiver, Filtered Masked Menu

Filtered Masked Softkey accesses additional softkeys which allow the user to select from predefined masks or to create custom Mode S masks. Allows the user to select the messages to filter and display in the Transponder Receiver Menu

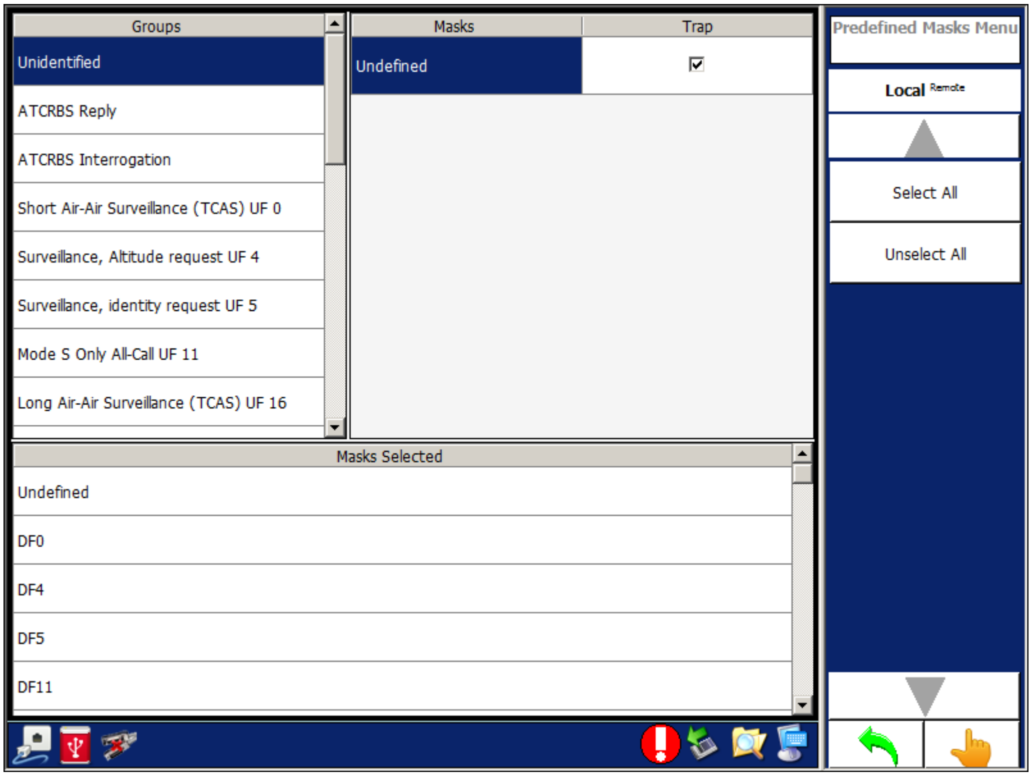
Figure 1.2.3 - 33 Transponder Receiver Filtered Masked Menu



Screen Component	Description
Predefined Masks	Displays the Predefined Masks Menu.
Customize Mode S Mask	Displays the Customize Mode S Mask Menu.

3.5.3.5 Predefined Masks Menu

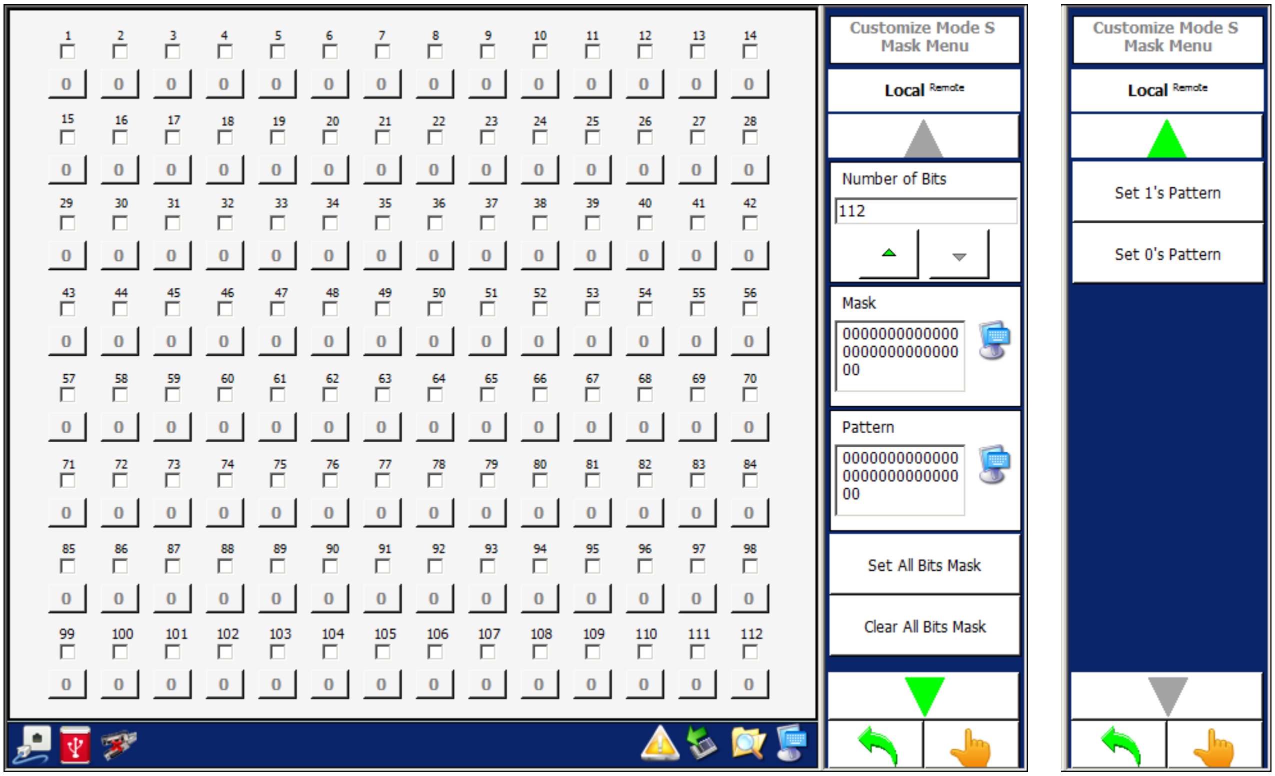
Figure 1.2.3 - 34 Transponder Receiver Predefined Masked Menu



Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Trap	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the filter.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.5.3.6 Customize Mode S Mask Menu

Figure 1.2.3 - 35 Transponder Receiver Customize Mode S Mask Menu

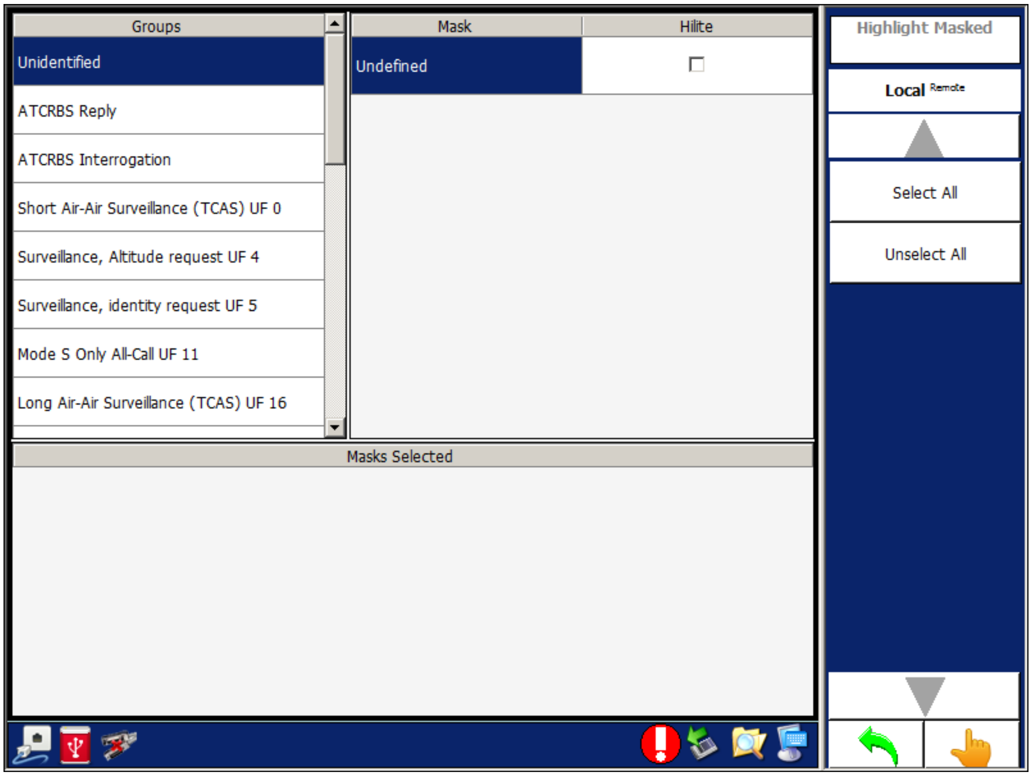


Screen Components	Description
Number	Allows the user to enable/disable the selected pattern bit.
Bit	Allows the user to pattern bit.
Number of Bits Softkey	Allows the user to select the number of bits.
Mask Softkey	Allows the user to Mask.
Pattern Softkey	Allows the user to Pattern.
Set All Bits Mask Softkey	Allows the user to select all bits.
Clear All Bits Mask Softkey	Allows the user to clear all bits.
Set 1's Pattern Softkey	Allows the user to select "1" for all patterns.
Set 0's Pattern Softkey	Allows the user to select "0" for all patterns.

3.5.3.7 Highlight Masked Menu

Allows the user to select the messages to highlight during the display of messages in the Transponder Receiver Menu.

Figure 1.2.3 - 36 Highlight Masked Menu

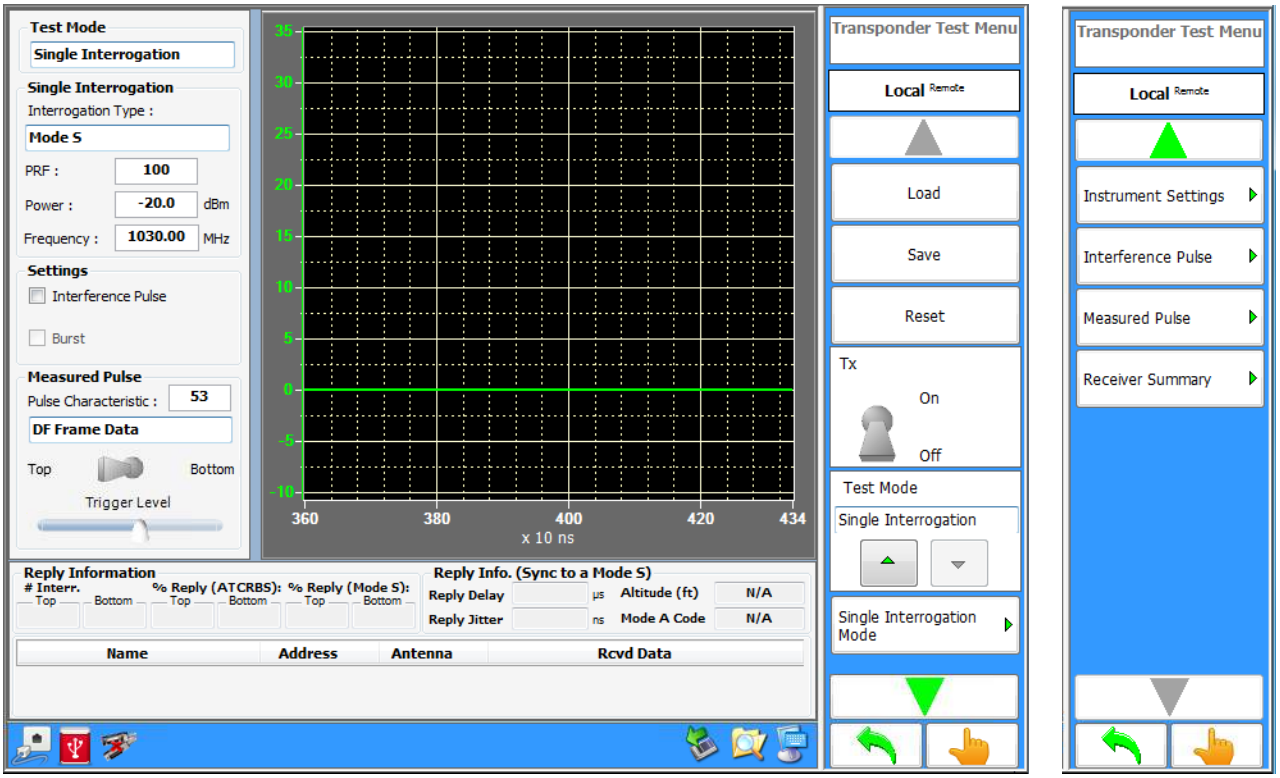


Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Hilite	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the highlight.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.5.4 TRANSPONDER TEST MENU - SINGLE INTERROGATION

The Transponder Test Menu in Single Interrogation Mode allows the user to set up the Test Set to transmit a Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C.

Figure 1.2.3 - 37 Transponder Test Menu - Single Interrogation

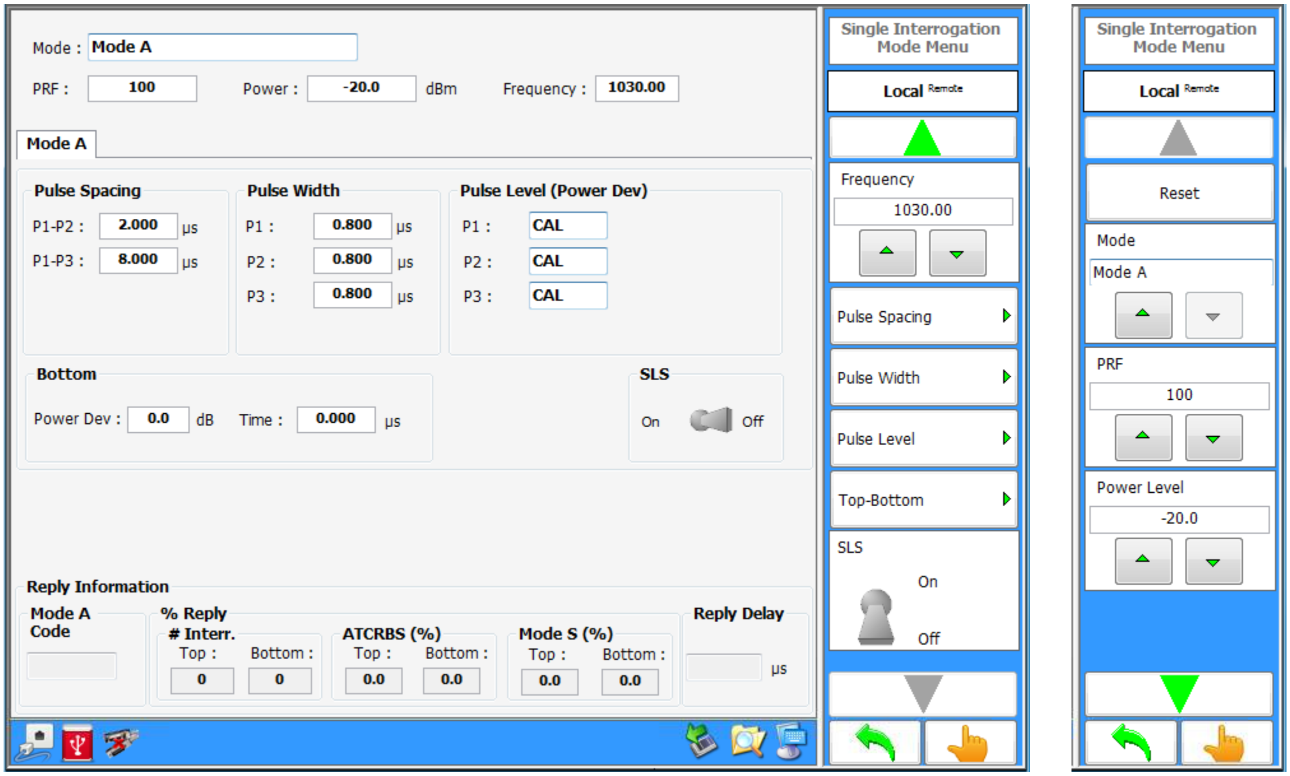


Screen Component	Description
Test Mode	Allows the user to select the Test Mode.
Interrogation Type	Allows the user to select the Interrogation Type.
PRF	Allows the user to enter the PRF (Pulse Repetition Frequency).
Power	Allows the user to enter transmit Power.
Frequency	Allows the user to enter the Transmitter Frequency.
Settings	Allows the users to enable Interference Pulse.
Pulse Characteristic	Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit.
Antenna Selection	Allows the user to select the antenna port from which reply measurements will be derived.
Trigger Level	Allows the user to select the scope trigger level.

Screen Component	Description
Reply Information	Displays ATCRBS and Mode S % reply.
Reply Info.	Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.
Load	Allows the user to load a saved transponder test.
Save	Allows the user to save the current test setup to a file.
Reset	Allows the user to reset the current screen to default values.
Tx Switch	Allows the user to Start (On) or Stop (Off) transmissions.
Test Mode	Allows the user to select the Test Mode.
Single Interrogation Mode	Open Single Mode Interrogation Menu
Instrument Settings	Opens the Instrument Settings Menu (See Instrument Setting Menu.).
Interference Pulse	Opens the Interference Pulse Menu allowing the user to configure interference pulse parameters (See Interference Pulse Menu.).
Measured Pulse	Allows the user to select the reply pulse to measure, antenna source and trigger level.
Receiver Summary	Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.

3.5.4.1 Single Interrogation Mode Menu

Figure 1.2.3 - 38 Single Interrogation Mode Menu

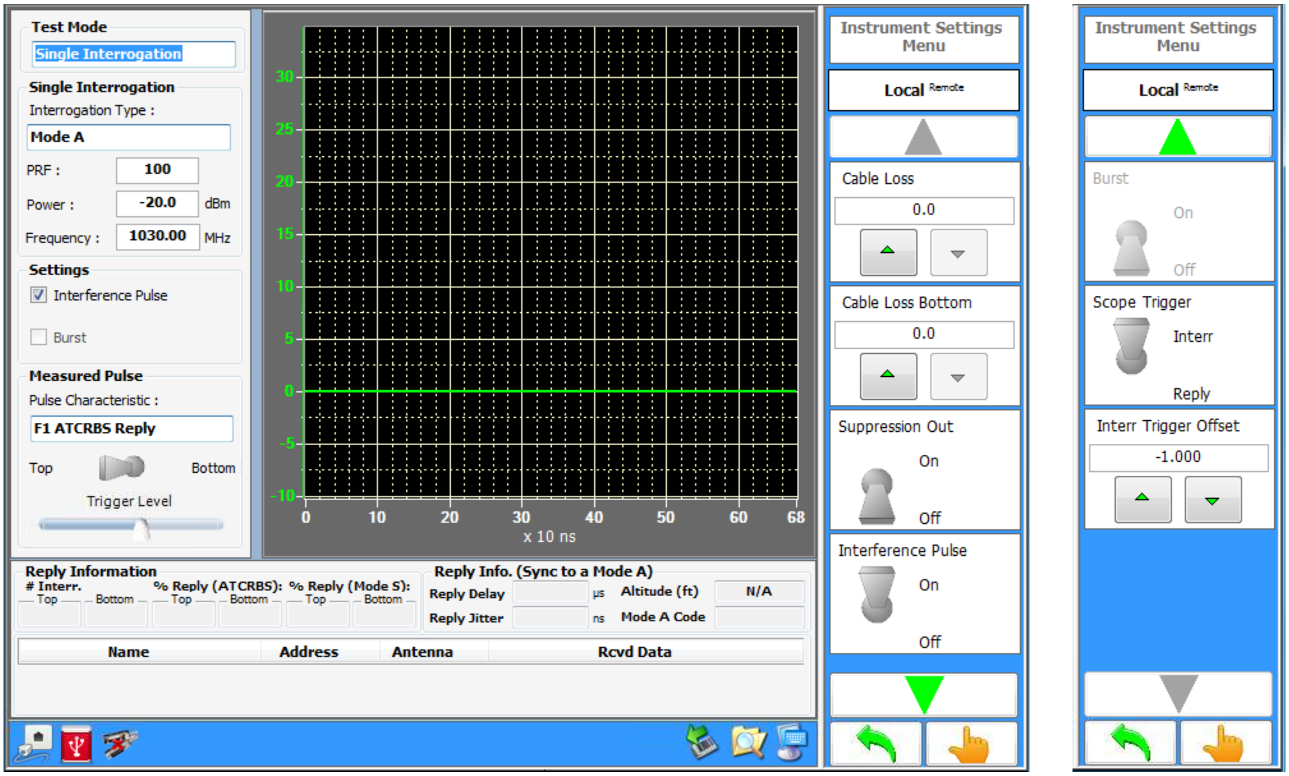


Screen Components	Description
Mode	Allows the user to select the interrogation type.
PRF	Allows the user to enter the PRF (Pulse Repetition Frequency).
Power	Allows the user to enter the transmit Power.
Frequency	Allows the user to enter the transmit Frequency.
Pulse Spacing	Allows the user to enter Pulse Spacing.
Pulse Width	Allows the user to enter Pulse Width.
Pulse Level (Power Dev)	Allows the user to enter Pulse Level (Power Dev) for P1, P2, P3, P4, P5 and P6 (depending on which interrogation is selected).
Bottom	Allows the user to enter the Bottom antenna power and timing deviation relative to the Top antenna transmission.
SLS Switch	Allows the user to turn SLS On or Off.
Reply Information	Displays reply code, % reply and reply delay data.
Reset	Allows the user to reset the current screen to default values.

3.5.4.2 Instrument Settings Menu

Instrument Settings accessed the following:

Figure 1.2.3 - 39 Instrument Settings Menu

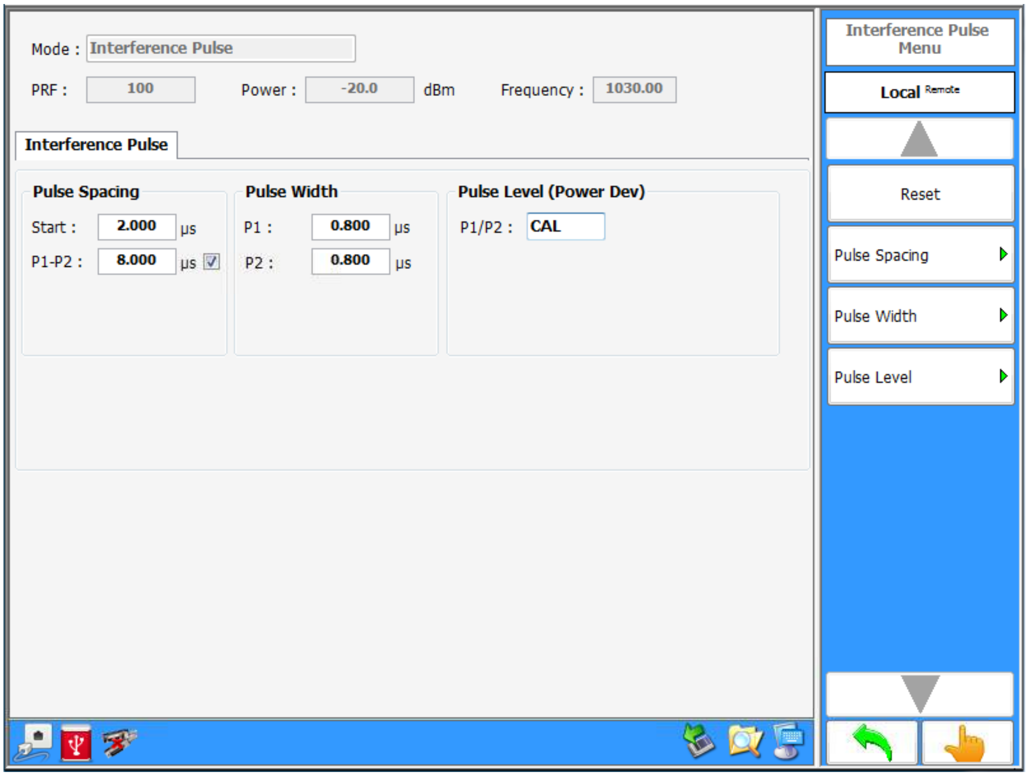


Screen Components	Description
Cable Loss	Allows the user to enter the top antenna cable loss.
Cable Loss Bottom	Allows the user to enter the bottom antenna cable loss.
Suppression Out	Allows the user to turn Suppression Out ON or OFF.
Interference Pulse	Allows the user to turn the Interference Pulse ON or OFF.
Scope Trigger (switch)	Allows the user to select Scope Sync for Interr (Interrogation) or Reply.
Interr Trigger Offset	Allows the user to enter the Scope-Sync, interrogation-trigger, offset time.

3.5.4.3 Interference Pulse Menu

Interference Pulse accesses the following:

Figure 1.2.3 - 40 Interference Pulse Menu

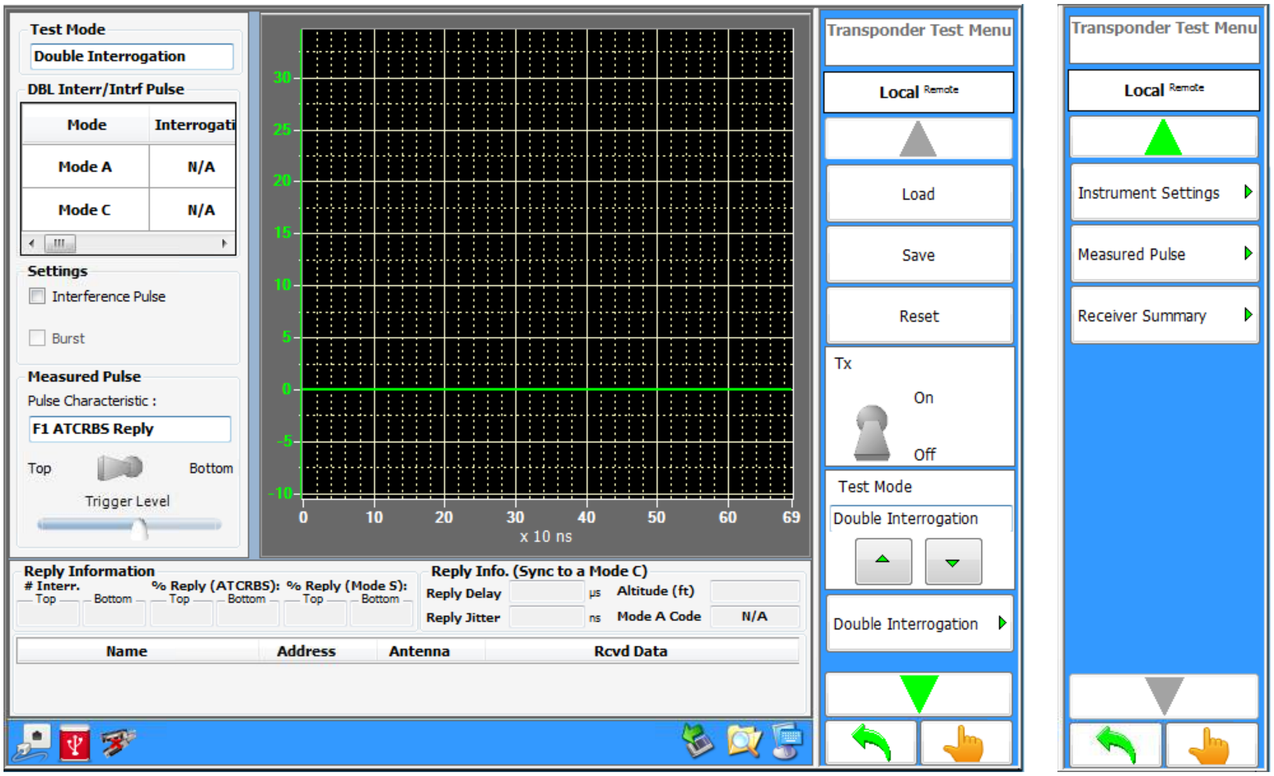


Screen Components	Description
Reset	Reset all Interference Pulse values.
Pulse Spacing	Allows the user to select one (P1) or two (P1-P2) interference pulses and to enter the start and spacing time values.
Pulse Width	Allows the user to enter pulse widths.
Pulse Level (Power Dev)	Allows the user to enter P1 and P2 Pulse Level (Power Dev).

3.5.5 TRANSPONDER TEST MENU - DOUBLE INTERROGATION

The transponder test menu allows the user to set up the Test Set to transmit a double interrogation of Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/ Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C. In double interrogation mode, both messages are transmitted on the Top Antenna only.

Figure 1.2.3 - 41 Transponder Test Menu - Double Interrogation

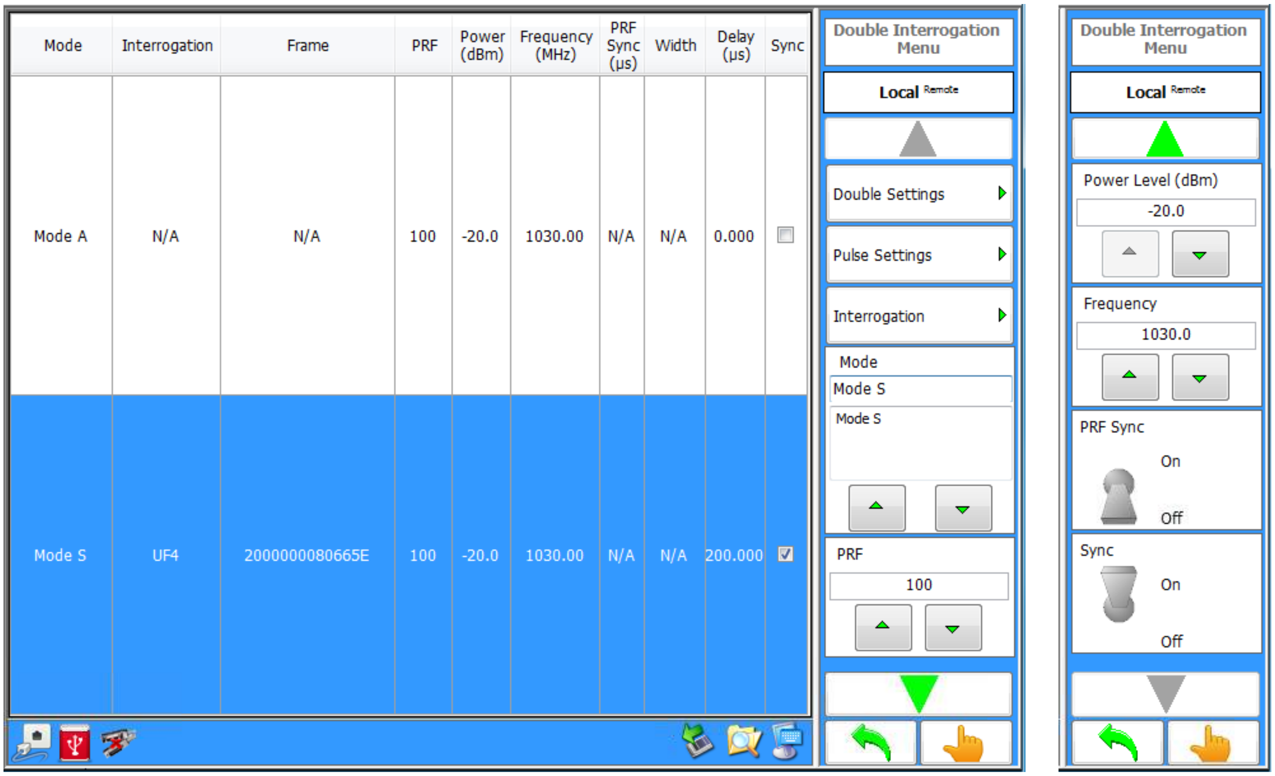


Screen Component	Description
Test Mode	Allows the user to select the Test Mode.
Double Interr/Intrf Pulse	Displays the two interrogations selected for transmission.
Settings	Allows the users to select the Interference Pulse (See Single Interrogation, “Interference Pulse Menu” on page 59).
Pulse Characteristic	Allows the user to select the reply pulse to measure.
Antenna Selection	Allows the user to select the antenna port from which reply measurements will be derived. Note: In Double Interrogation Mode, interrogations are transmitted on the Top Antenna only.
Trigger Level	Allows the user to select the scope trigger level.
Reply Information	Displays % Reply for ATCRBS and Mode S interrogations on Top Antenna only.

Screen Component	Description
Reply Info.	Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.
Load	Allows the user to load a saved transponder test.
Save	Allows the user to save the current test setup to a file.
Reset	Allows the user to reset the current screen to default values.
Tx (switch)	Allows the user to Start (On) or Stop (Off) transmissions.
Double Interrogation	Opens the Double Interrogation Menu which allows the user to modify the interrogation types and their associated interrogation parameters i.e., pulse spacing, pulse width, etc (See the Double Interrogation Menu section.).
Instrument Settings	Opens the Instrument Settings Menu (See menu description in Single Interrogation, Instrument Settings Menu).
Interference Pulse	Opens the Interference Pulse Menu allowing the user to configure interference pulse parameters (See Single Interrogation, Interference Pulse Menu.).
Measured Pulse	Allows the user to select the reply pulse to measure, antenna source and trigger level.
Receiver Summary	Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.

3.5.5.1 Double Interrogation Menu

Figure 1.2.3 - 42 Transponder Double Interrogation Menu



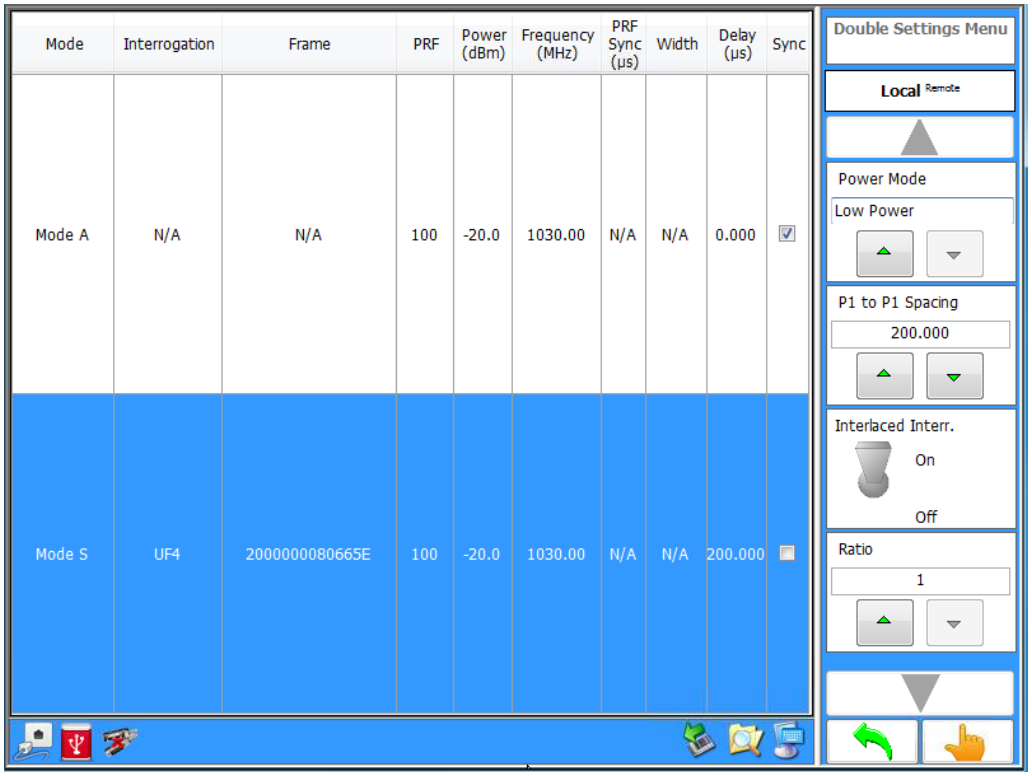
Screen Component	Description
Double Settings	Allows the user to select the Power Mode (Low Power, High Power, or Very Low Power), P1 to P1 Spacing, Interlace Interrogation ON/OFF, and Interlace Ratio.
Pulse Settings	Opens the Pulse Settings Menu. Allows the user to enter pulse width and spacing parameters for the selected transmission.
Interrogation (Is displayed Only when Mode S Interrogation is selected)	Allows the user to select Interrogation Name, Interrogation Type, Interrogation Identifier, Transponder Address and Frame Details for the select Mode S Interrogation.
Mode	Allows the user to select the Interrogation Mode.
PRF	Allows the user to enter the PRF (Pulse Repetition Frequency).
Power Level	Allows the user to select the Power Level.
Frequency	Allows the user to select the Transmitter frequency.
PRF Sync (switch)	Allows the user to sync or unsync the PRF of the first transmission with the second. Only available for P1-P2, Pulse or DME interrogations.

Sync (switch)	Allows the user to select the specific interrogation whose reply measurement values will be derived from.

3.5.5.2 Double Settings Menu

Doubles Settings accessed the following:

Figure 1.2.3 - 43 Transponder - Double Interrogation, Double Settings Menu



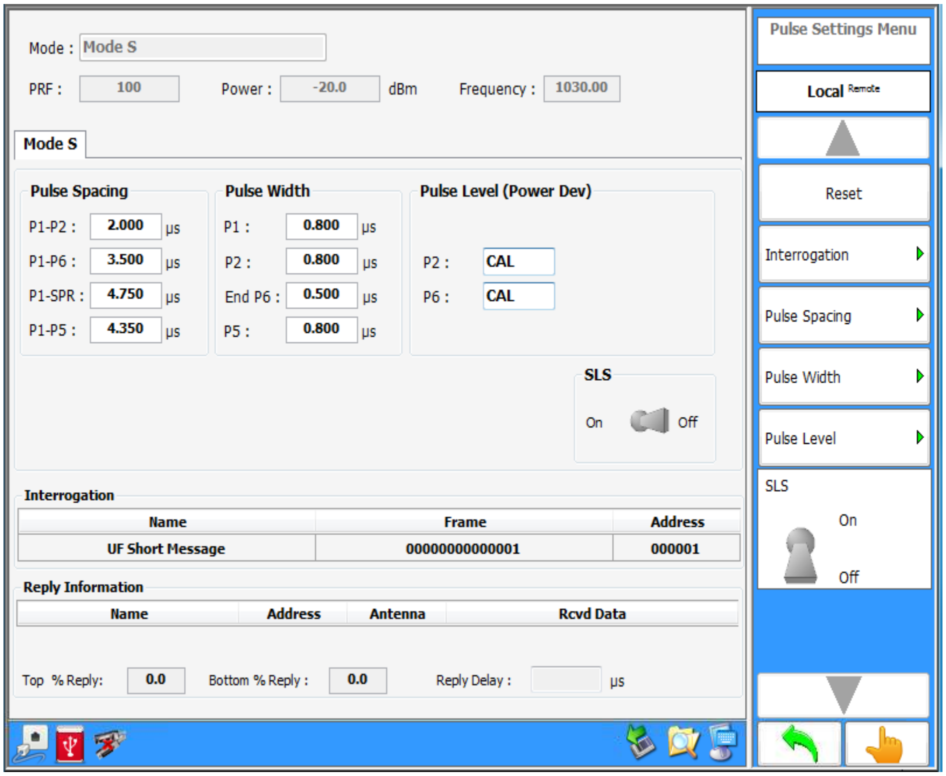
Screen Components	Description
Power Mode	Allows the use to select the power mode ranges of Low Power, High Power or Very Low Power.
P1 to P1 Spacing	Allows the user to enter P1 to P1 Spacing (Refer to “Minimum P1 to P1 Spacing for Second Reply Measurement” chart.).
Interlace Interr.	Allows the user to switch Interlace Interrogation Mode On or Off.
Ratio	Allows the user to enter the Interlace Ratio.

Minimum P1 to P1 Spacing for Second Reply Measurement, Double Interrogation Test Mode

"Double Interrogation Pairing First Interrogation / Second Interrogation"	100% Reply Spacing (us)
Mode A SPI Off/ All Interrogations	38
Mode A SPI On / All Interrogations	57
Mode C / All Interrogations	52
Mode A All-Call Short / All Interrogations	39
Mode C All-Call Short / All Interrogations	52
Mode A All-Call Long / All Interrogations	205
Mode C All-Call Long / All Interrogations	218
Mode S Short / All Interrogations	199
Mode S Long / All Interrogations	255
P1 / All Interrogations	3
P1-P2 / All Interrogations	5
Alternate Mode A-Mode C / All Interrogations	52
DME 12 us / All Interrogations	16
DME 30 us / All Interrogations	34

3.5.5.3 Interrogation Pulse Setting Menu

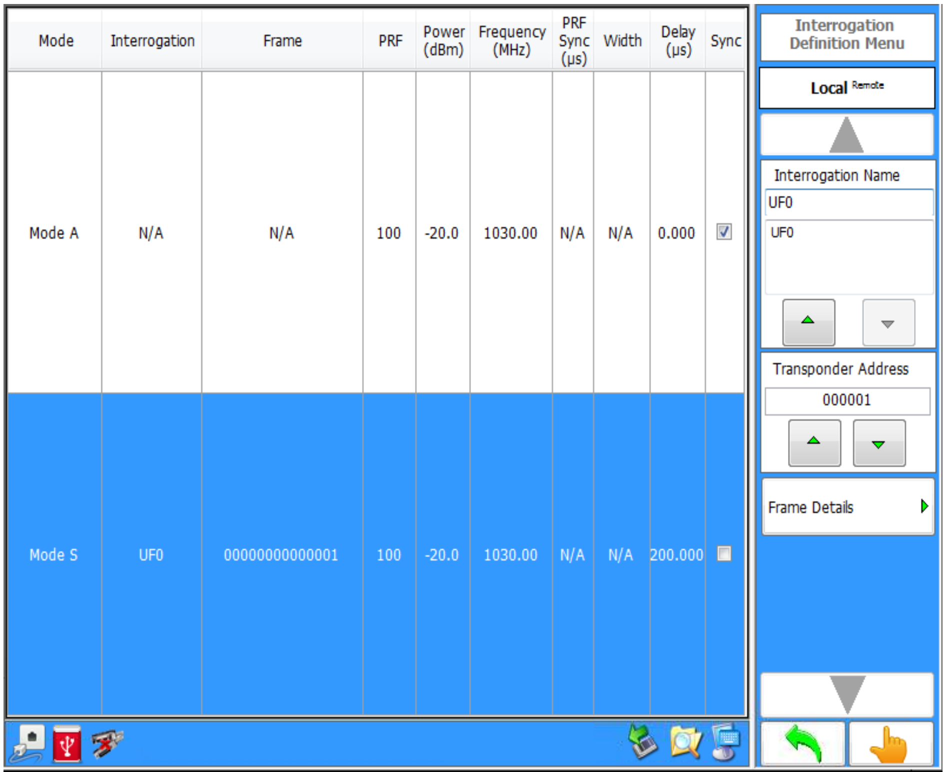
Figure 1.2.3 - 44 Interrogation Pulse Setting Menu



Screen Components	Description
Reset	Allows the user to reset to the default interference pulse parameters.
Interrogation (Is displayed Only when Mode S Interrogation is selected)	Allows the user to select Interrogation Name, Transponder Address and Frame Details
Pulse Spacing	Allows the user to enter the Pulse Spacing.
Pulse Width	Allows the user to enter the Pulse Width.
Pulse Level (Power Dev)	Allows the user to select the Pulse Level (Power Dev) for P1, P2, P3, P4, P5 and P6 (depending on which interrogation is selected).
SLS (switch)	Allows the user to turn SLS On or Off.

3.5.5.4 Interrogation Definition Menu

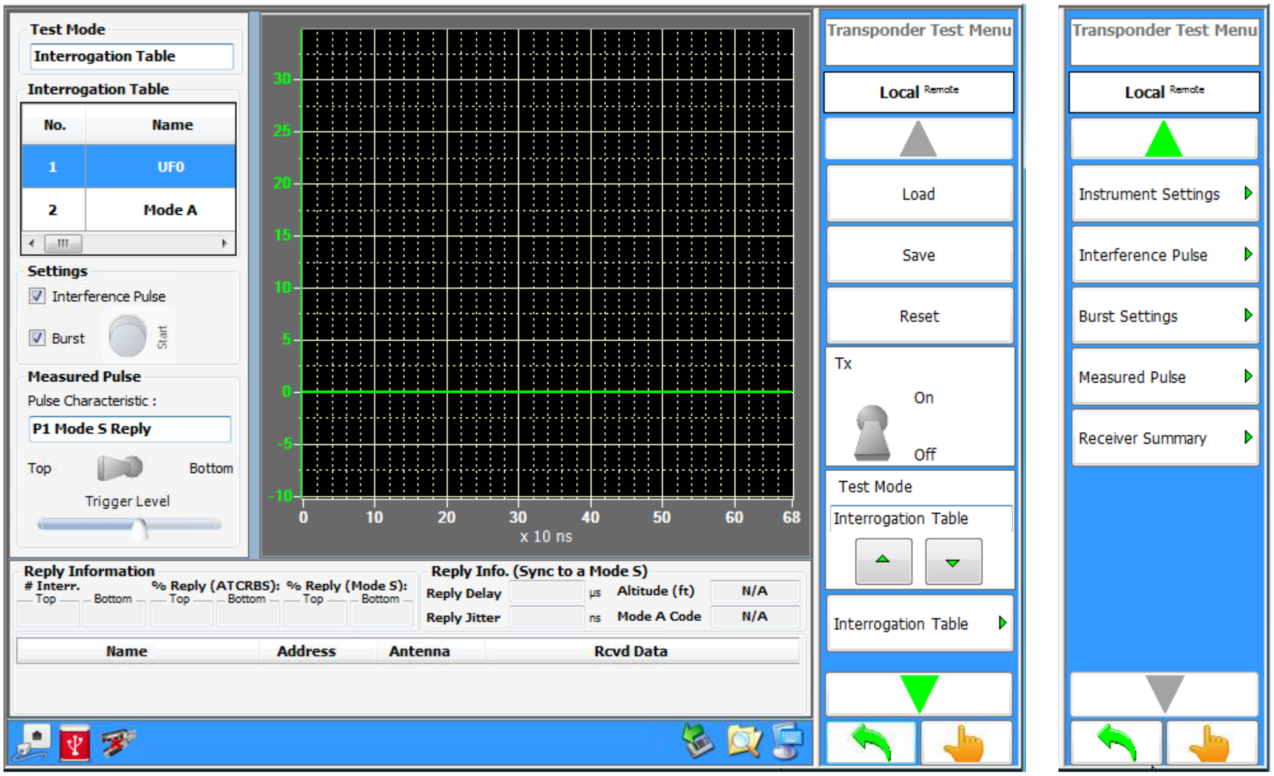
Figure 1.2.3 - 45 Interrogation Definition Menu



Screen Components	Description
Interrogation Name	Allows the user to select the Interrogation name.
Transponder Address	Allow the use to enter the Transponder Mode S Address.
Frame Details	Allows the user to select the Mode S parameters to be modified.

3.5.6 TRANSPONDER TEST MENU - INTERROGATION TABLE

The Transponder Test Menu allow the user to set the Test Set to transmit interrogation in continuous or burst mode.

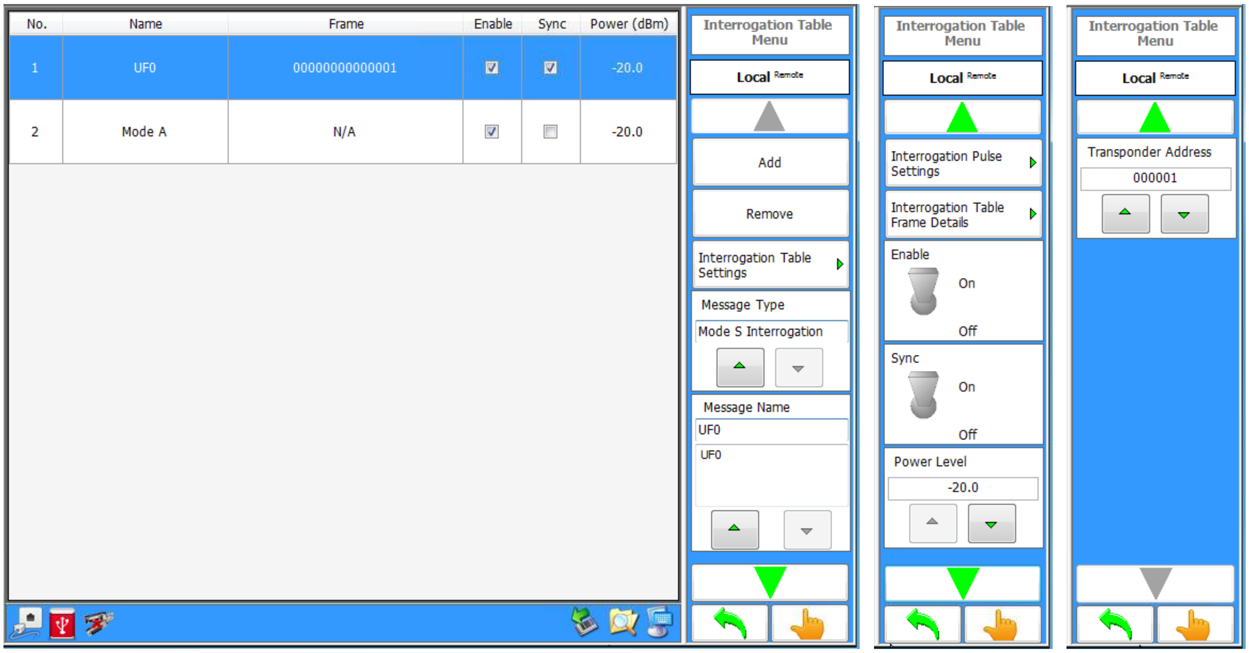


Screen Components	Description
Test Mode	Allows the user to select the Test Mode.
Interrogation Table	Displays the Interrogation Table.
Settings	Allows the users to select Burst and Interference Pulse.
Pulse Characteristics	Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit.
Antenna Selection	Allows the user to select the Antenna.
Trigger Level	Allows the user to select the scope trigger level.

Reply Information	Displays percent reply. In single burst mode, percent reply is calculated using all interrogation/reply pairs of the burst. Sample size for calculation of percent reply is dependent on PRF for non-single burst modes: PRF>200, samples taken over 1 sec window PRF<200, 200 samples maximum sample window = 10 sec If any interrogation type is a non-standard All-Call format, Percent Reply measurements may be invalid.
Reply Info.	Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.
Load	Allows the user to load a saved transponder test.
Save	Allows the user to save the current test setup to a file.
Reset	Allows the user to reset the current screen to default values.
Tx (switch)	Allows the user to Start (On) or Stop (Off) transmissions.
Interrogation Table	Opens the Interrogation Table Menu which allows the user to modify, add or remove interrogation types from table and their associated interrogation parameters (i.e., pulse spacing, pulse width, etc.).
Instrument Settings	Opens the Instrument Settings Menu (See Single Interrogation, Instrument Settings Menu).
Interference Pulse	Allows the user to select reset, P1 or P1-P2, pulse spacing, pulse width, and pulse level (Power Dev) (See Single Interrogation Interference Pulse Menu).
Burst Settings	Opens the Burst Settings Menu (See description in Burst Settings Men section.).
Measured Pulse	Allows the user to select the reply pulse to measure, antenna source and trigger level.
Receiver Summary	Displays squitter rates and data for common Transponder squitters.

3.5.6.1 Transponder Test Menu - Interrogation Table Menu

Figure 1.2.3 - 46 Transponder Test Menu - Interrogation Table Menu

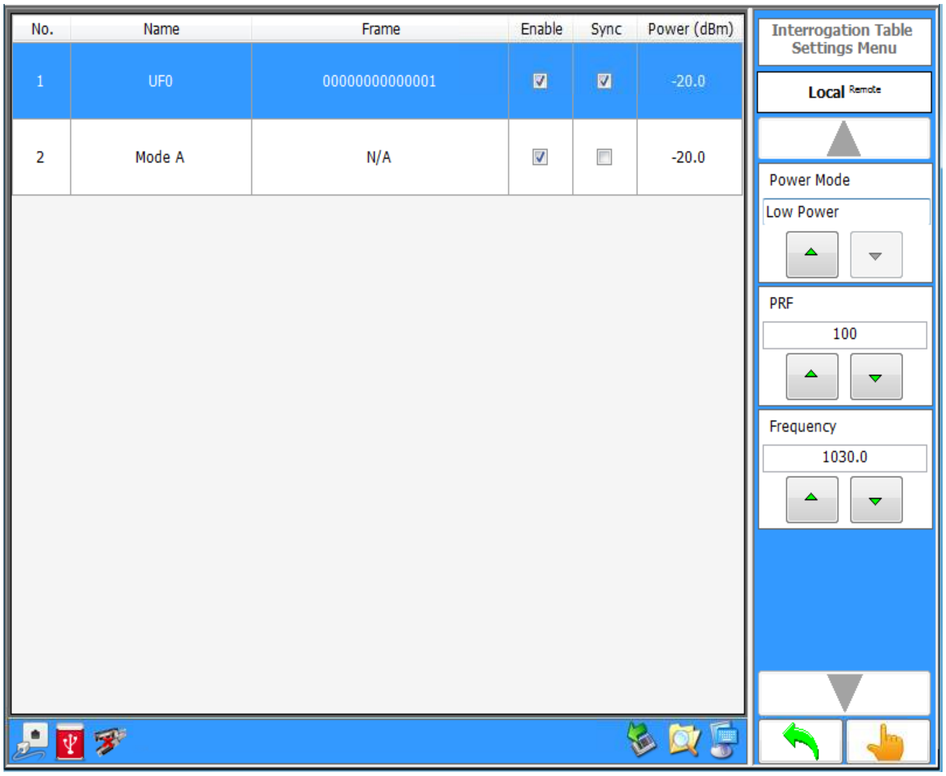


Screen Components	Description
Add	Allows the user to add an interrogation to the table.
Remove	Allows the user to delete an interrogation from the table.
Interrogation Table Settings	Allows the user to enter the Power Mode (Low Power, High Power, or Very Low Power), PRF rate and Transmitter Frequency.
Message Type	Allows the user to select either an ATCRBS or Mode S Interrogation type.
Message Name	Allows the user to select the Interrogation Type.
Interrogation Pulse Settings	Displays the selected Interrogation which allows the user to modify the interrogation parameters (i.e. pulse spacing, pulse width, pulse level, bottom power dev., and bottom time).
Interrogation Table Frame Detail	This parameter is only displayed when Mode S Interrogation is selected. Allows the user to select the Mode S parameters to be modified.
Enable (switch)	Allows the user to Enable (On) or Disable (Off) the selected interrogation.
Sync (switch)	Allows the user to select the specific interrogation whose reply measurement values will be derived from.

Screen Components	Description
Power Level	Allows the user to enter the Power Level on the selected interrogation.
Transponder Address	This parameter is only displayed when Mode S Interrogation is selected. Allows the user to enter the Transponder Mode S address.

3.5.6.2 Interrogation Table Settings

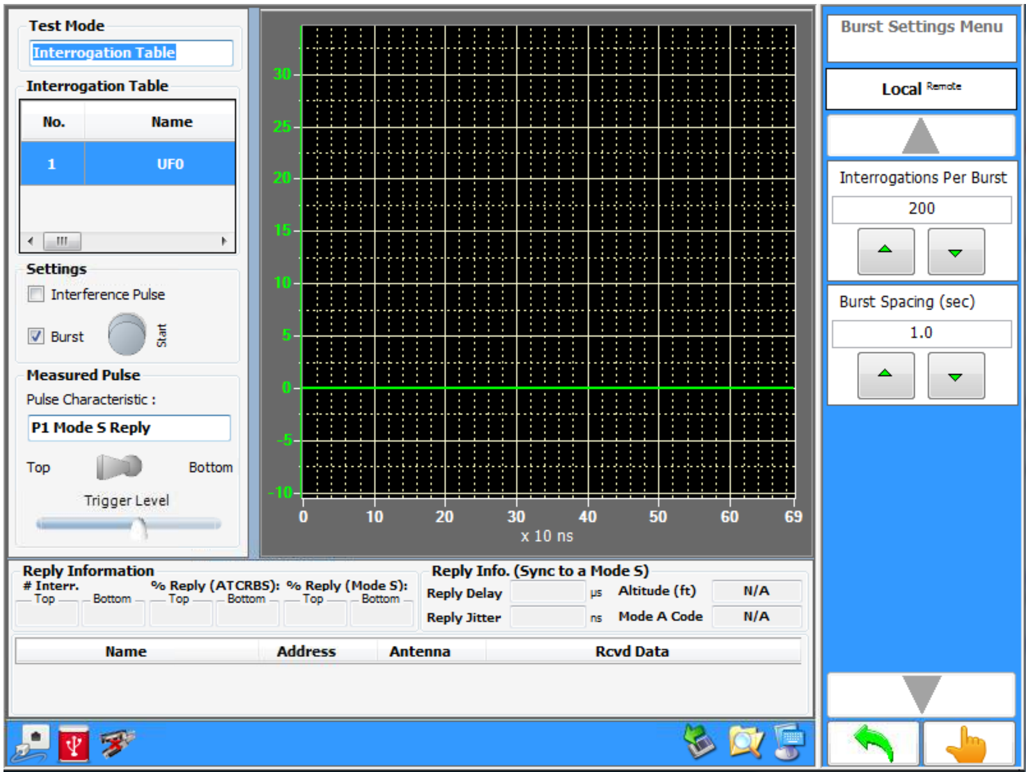
Figure 1.2.3 - 47 Interrogation Table Settings



Screen Components	Description
Power Mode	Allows the use to select the power mode ranges of Low Power, High Power, or Very Low Power.
PRF	Allows the user to enter the PRF (Pulse Repetition Frequency).
Frequency	Allows the user to enter the Transmitter frequency.

3.5.6.3 Burst Settings Menu

Figure 1.2.3 - 48 Burst Settings Menu

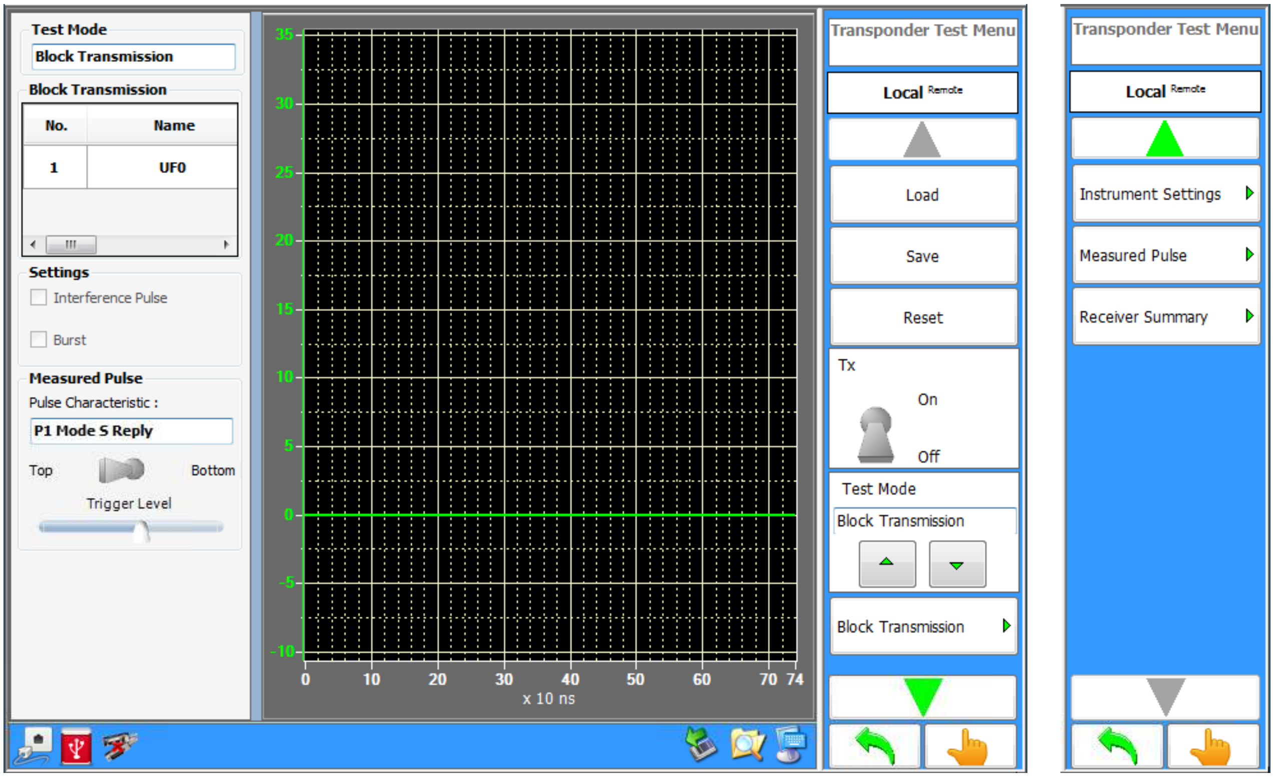


Screen Components	Description
Interrogations Per Burst	Allows the user to enter the number of interrogations per burst cycle.
Burst Spacing	Allows the user to set the time between bursts. Entering a value of 0 configures the test set for single burst mode.
Start (button)	Starts the burst interrogation cycle. Tx must be ON before pressing Burst Start button

3.5.7 TRANSPONDER TEST MENU - BLOCK TRANSMISSION

The Transponder Block Transmission Menu allows the user to set up the ATC-5000NG to transmit a block of 1030 interrogations.

Figure 1.2.3 - 49 Transponder Test Menu - Block Transmission

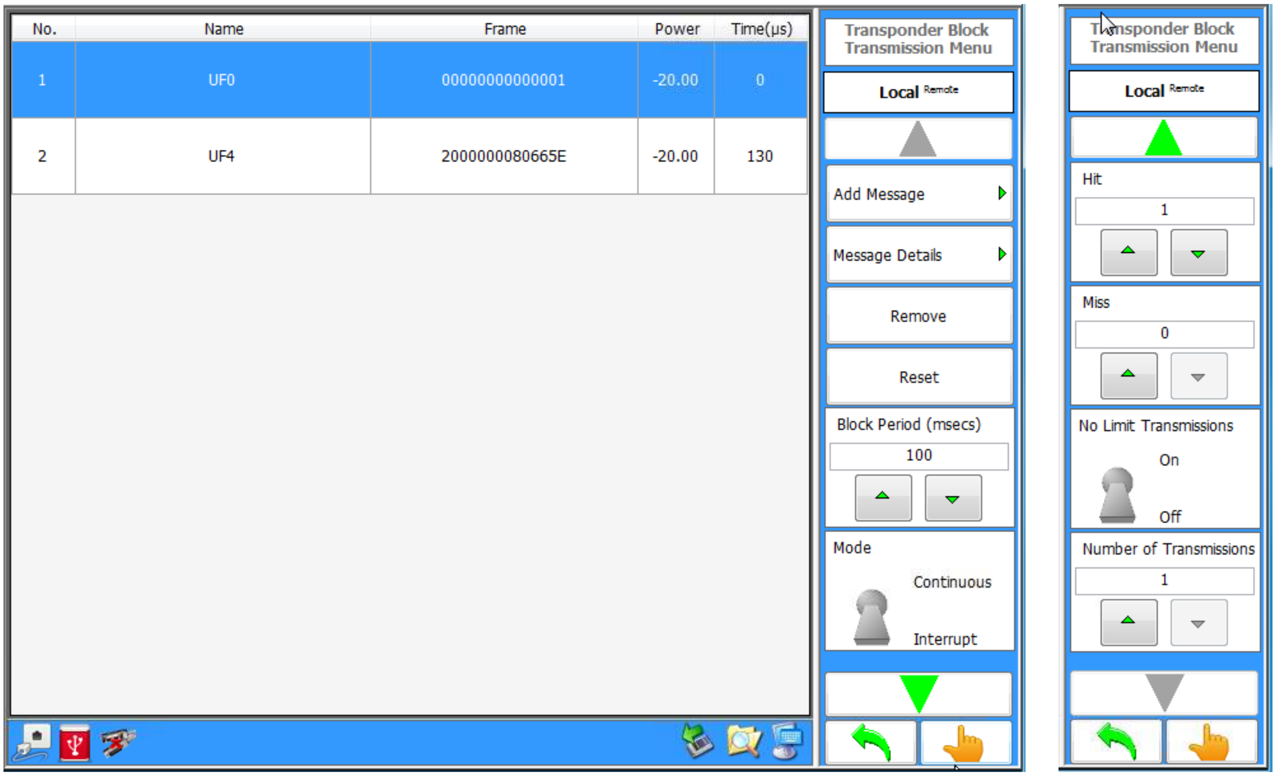


Screen Components	Description
Test Mode	Allows the user to select the Test Mode.
Interrogation Type	Displays transmissions listed in the Block Transmission Menu (see Block Transmission Menu).
Pulse Characteristic	Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit.
Antenna Selection	Allows the user to select the antenna port from which reply measurements will be derived.
Trigger Level	Allows the user to select the scope trigger level.
Load	Allows the user to load a saved transponder test.
Save	Allows the user to save the current test setup to a file.
Reset	Allows the user to reset the current screen to default values.
Tx (switch)	Allows the user to Start (On) or Stop (Off) transmissions.

Screen Components	Description
Block Transmission	Opens the Transponder Block Transmission Menu allowing the user to define the block transmissions.
Instrument Settings	Opens the Instrument Settings Menu (See Single Interrogation, Instrument Settings Menu).
Measured Pulse	Allows the user to select the reply pulse to measure, antenna source and trigger level.
Receiver Summary	Displays squitter rates and data for common Transponder squitters.

3.5.7.1 Transponder Block Transmission Menu

Figure 1.2.3 - 50 Transponder Block Transmission Menu

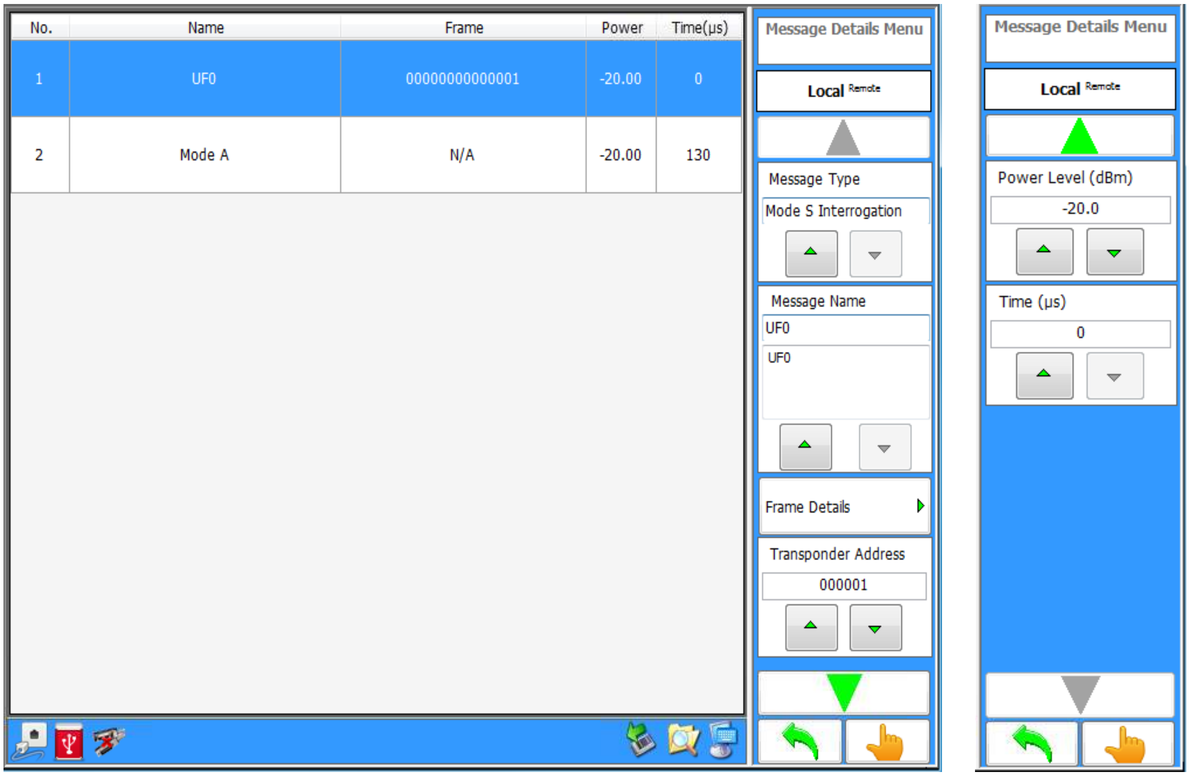


Screen Components	Description
Add Message	Opens the Add Message Menu where transmissions can be defined and added to the transmission table.
Message Details	Allows the user to edit transmissions listed in the transmission table.
Remove	Allows the user to delete a transmission from the transmission table.
Reset	Allows the user to clear the entire transmission table.
Block Period (msec)	Allows the user to enter the time between the first transmissions of each block.
Mode (switch)	Allows the user to select Continuous transmission of block or interrupt block transmission.
Hit	Only displayed when Mode is set to Interrupt. Allows the use to set the number of blocks that will be sent.
Miss	Only displayed when Mode is set to Interrupt. Allows the use to set the number of blocks that will be skipped.

Screen Components	Description
No Limit Transmissions (switch)	Allows the user to Enable (On) or Disable (Off) the number of transmissions to be sent.
Number of Transmissions	Only displayed when No Limit Transmissions is set to Off) Allows the use to set the number of blocks that will be sent.

3.5.7.2 Message Details Menu

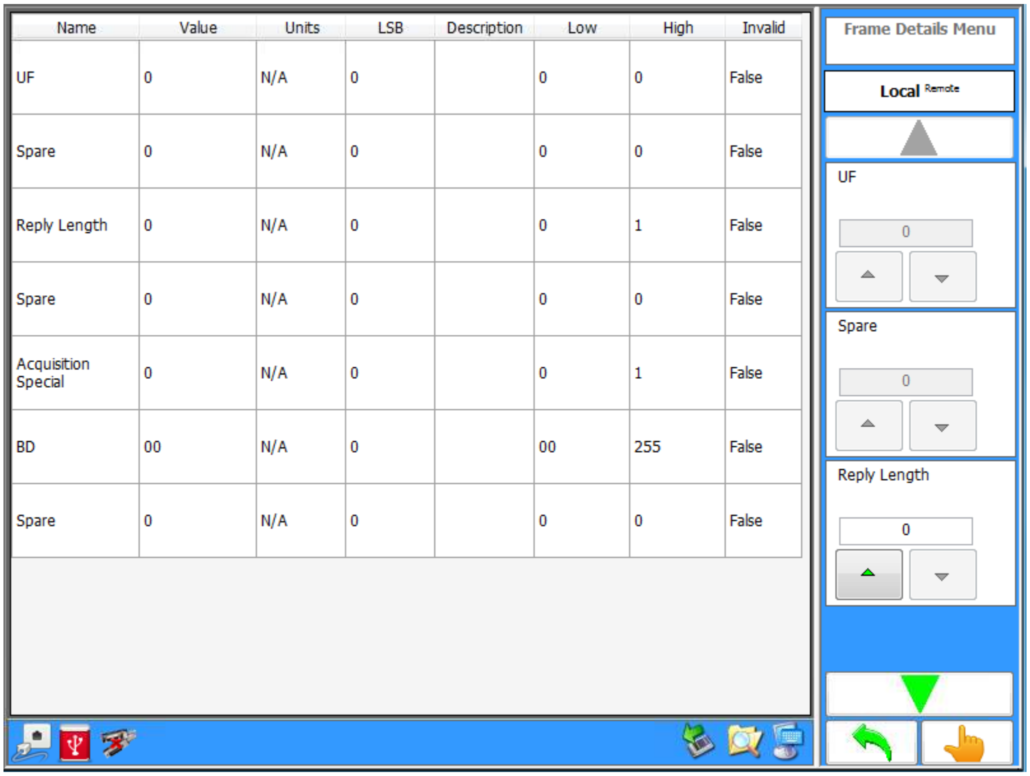
Figure 1.2.3 - 51 Message Details Menu



Screen Components	Description
Message Type	Allows the use to select ATCRBS, Mode S or P1-P2 message types.
Message Name	Only displayed when ATCRBS or Mode S Interrogation is selected. Allows the user to select the Interrogation Type.
Frame Details	Only displayed when Mode S Interrogation is selected. Allows the user to select the Mode S parameters to be modified.
Transponder Address	Only displayed when Mode S Interrogation is selected. Allows the user to enter the Transponder Mode S address.
Power Level (dBm)	Allows the user to enter the Power Level on the selected interrogation.
Time (µs)	Allows the user to set the time interval between messages.

3.5.7.3 Frame Details Menu

Figure 1.2.3 - 52 Frame Details Menu

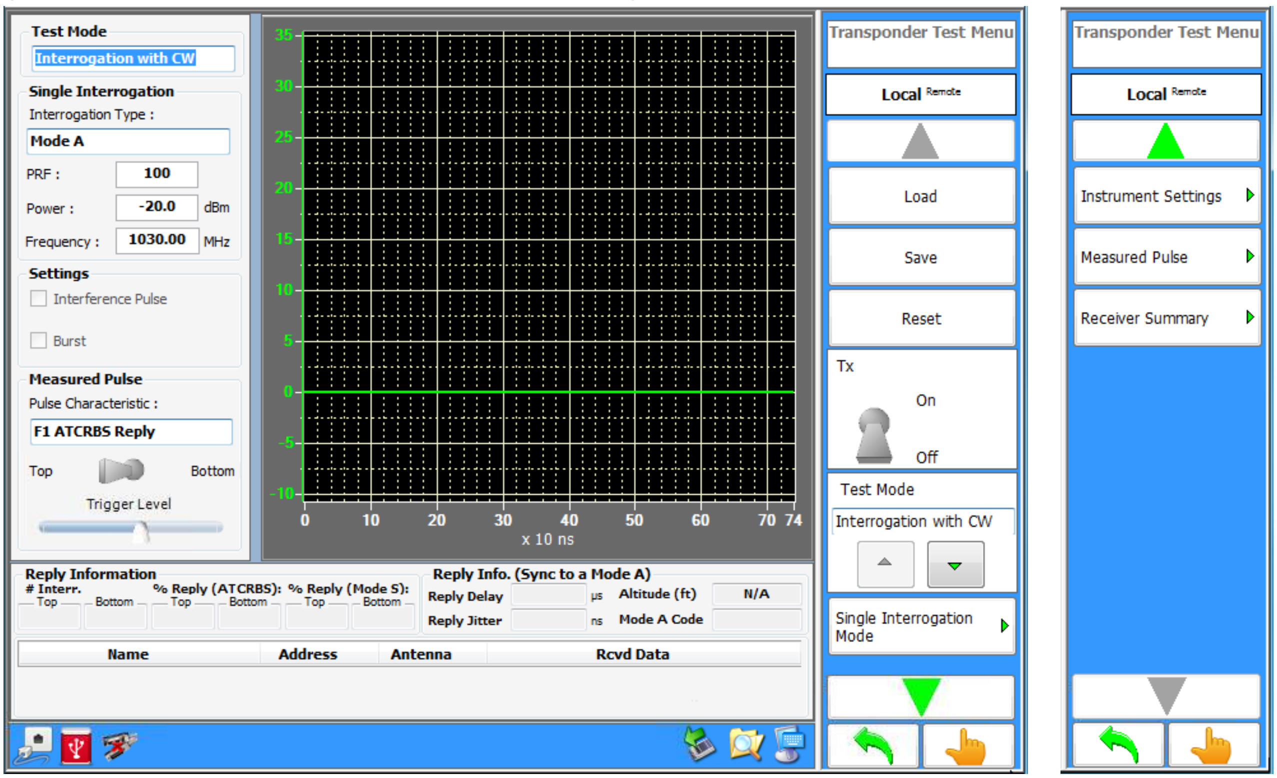


3.5.8 TRANSPONDER TEST MENU - INTERROGATION WITH CW

The Transponder Test Menu in Single Interrogation Mode allows the user to set up the Test Set to transmit a Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C with a CW component added to the Interrogation.

The Interrogation with CW mode allows the user to add a CW component to the interrogation transmission signal. The CW signal amplitude tracks that of the interrogation power level. Test set generator E or F can be configured to provide the CW signal. From the "Settings Menu", either of these two generators can be set to CW mode and the desired TX frequency entered.

Figure 1.2.3 - 53 Transponder Test Menu - Interrogation with CW



> **NOTE**
> The Tx switch on the "Transponder Test Menu" must be in the Off position prior to configuring the CW generator in the "Settings Menu". If controlling the test set via RCI commands, the settings commands must be sent prior to the START of transmission command.

Screen Component	Description
Test Mode	Allows the user to select the Test Mode.
Interrogation Type	Allows the user to select the Interrogation Type.

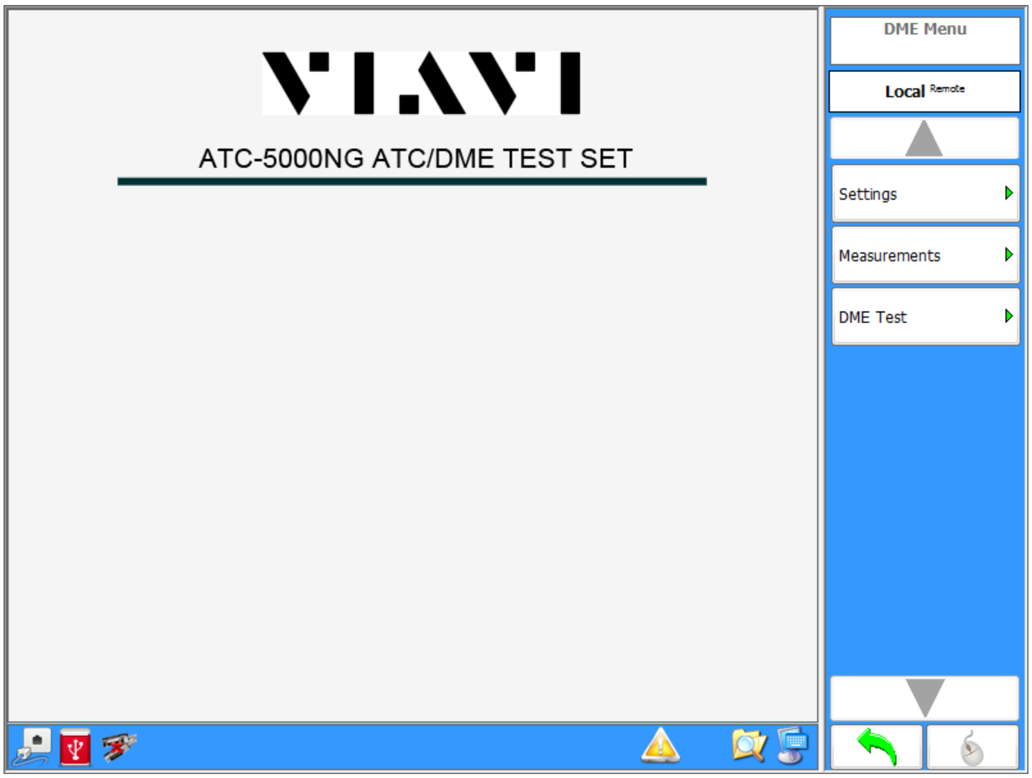
Screen Component	Description
PRF	Allows the user to enter the PRF (Pulse Repetition Frequency).
Power	Allows the user to enter transmit Power.
Frequency	Allows the user to enter the Transmitter Frequency.
Pulse Characteristic	Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit.
Antenna Selection	Allows the user to select the antenna port from which reply measurements will be derived.
Trigger Level	Allows the user to select the scope trigger level.
Reply Information	Displays ATCRBS and Mode S% reply.
Reply Info.	Displays Reply Delay and Jitter. If Sync’d to Mode A, will display Mode A code. If sync’d to Mode C, will display altitude.
Load	Allows the user to load a saved transponder test.
Save	Allows the user to save the current test setup to a file.
Reset	Allows the user to reset the current screen to default values.
Tx (switch)	Allows the user to Start (On) or Stop (Off) transmissions.
Test Mode	Allows the user to select the Test Mode.
Single Interrogation Mode	Open Single Mode Interrogation Menu (See Single Interrogation Instrument Settings Menu)
Instrument Settings	Opens the Instrument Settings Menu (See Instrument Setting Menu).
Measured Pulse	Allows the user to select the reply pulse to measure, antenna source and trigger level.
Receiver Summary	Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.

3.6 DME MENU

The DME Menu allows the user to select between the Settings, Measurements or DME Test Menu for DME testing.

> **NOTE**
> The DME Menu is an Optional Function in the ATC-5000NG.

Figure 1.2.3 - 54 ATC-5000NG Transponder Menu

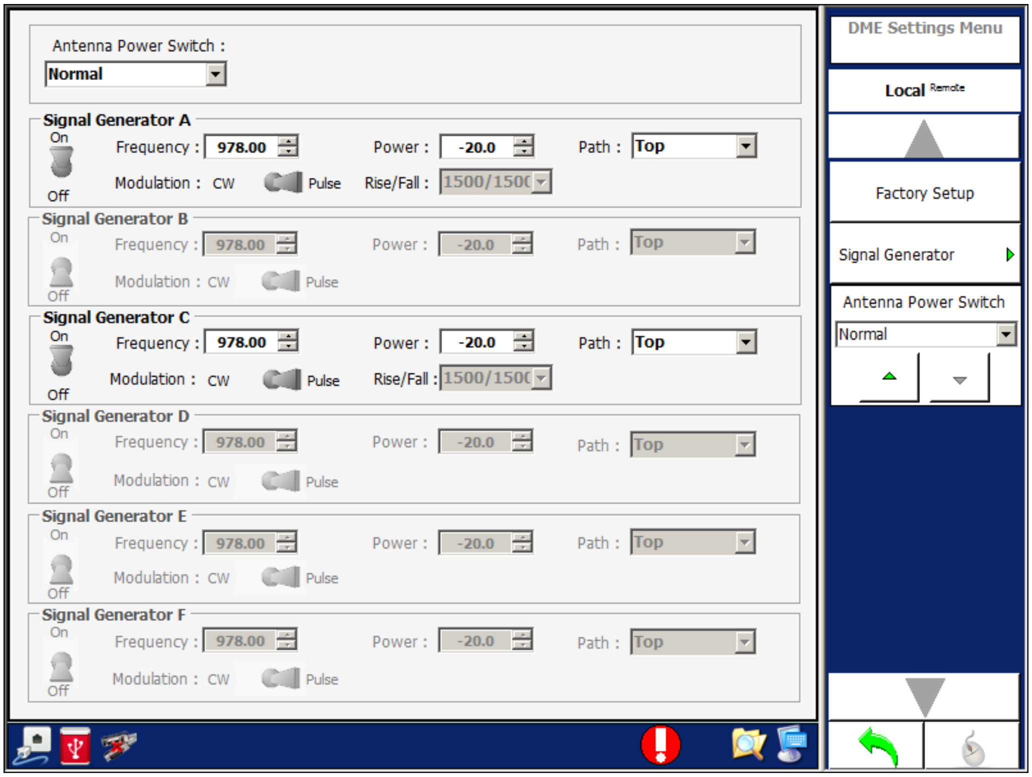


Screen Component	Description
Setting Softkey	Displays the DME Settings Menu.
Measurements Softkey	Displays the DME Measurements Menu.
DME Test Softkey	Displays the DME Test Menu.

3.6.1 DME SETTINGS MENU

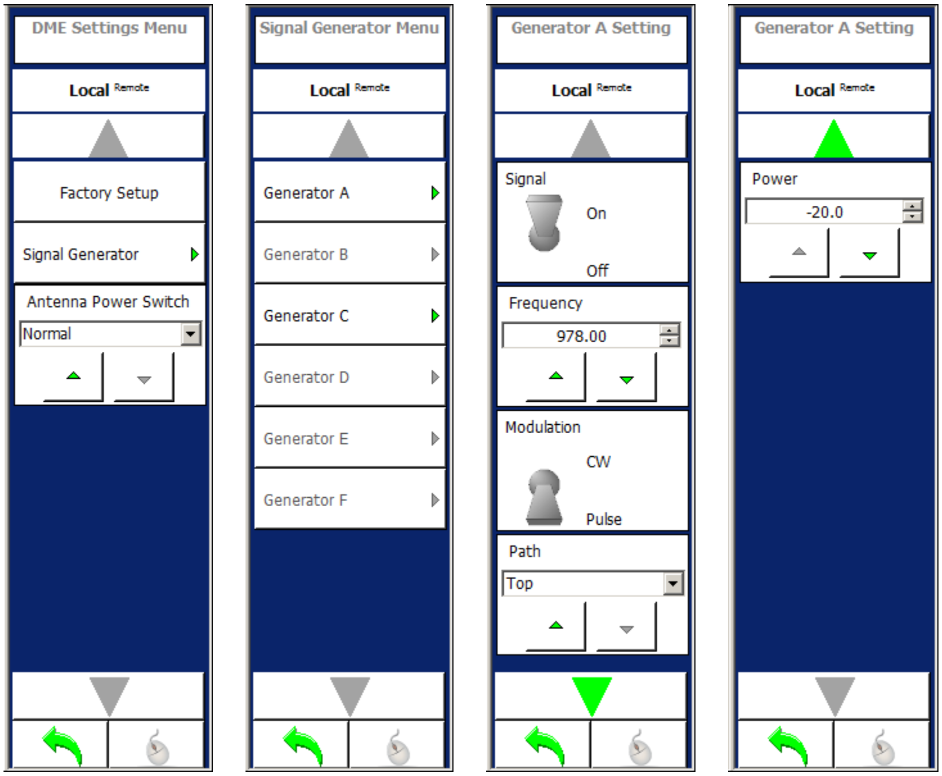
Allows the user to configure modules in the Test Set for DME tests. The DME Settings Menu is used for testing and troubleshooting of the Test Set.

Figure 1.2.3 - 55 DME Settings Menu



Screen Components	Description
Antenna Power Switch	Allows the user to select one of three transmit power ranges (Normal, 20 dB Amplifier or 20 dB Attenuator).
ON/OFF	Allows the user to enable/disable the Signal Generator.
Frequency	Allows the user to select the Transmitter frequency.
Power	Allows the user to set the Transmitter power.
Path	Allows the user to select the Transmit Path (Top or Bottom Antenna port).
Modulation	Allows the user to select CW or Pulse Modulation.

Figure 1.2.3 - 56 DME Settings, Signal Generator Menu



Screen Component	Description
Factory Setup Softkey	Allows the user to set all hardware to the Factory default settings.
Signal Generator Softkey	Allows the user to select Signal Generator A or C Setting Menu.

3.6.2 DME MEASUREMENTS MENU

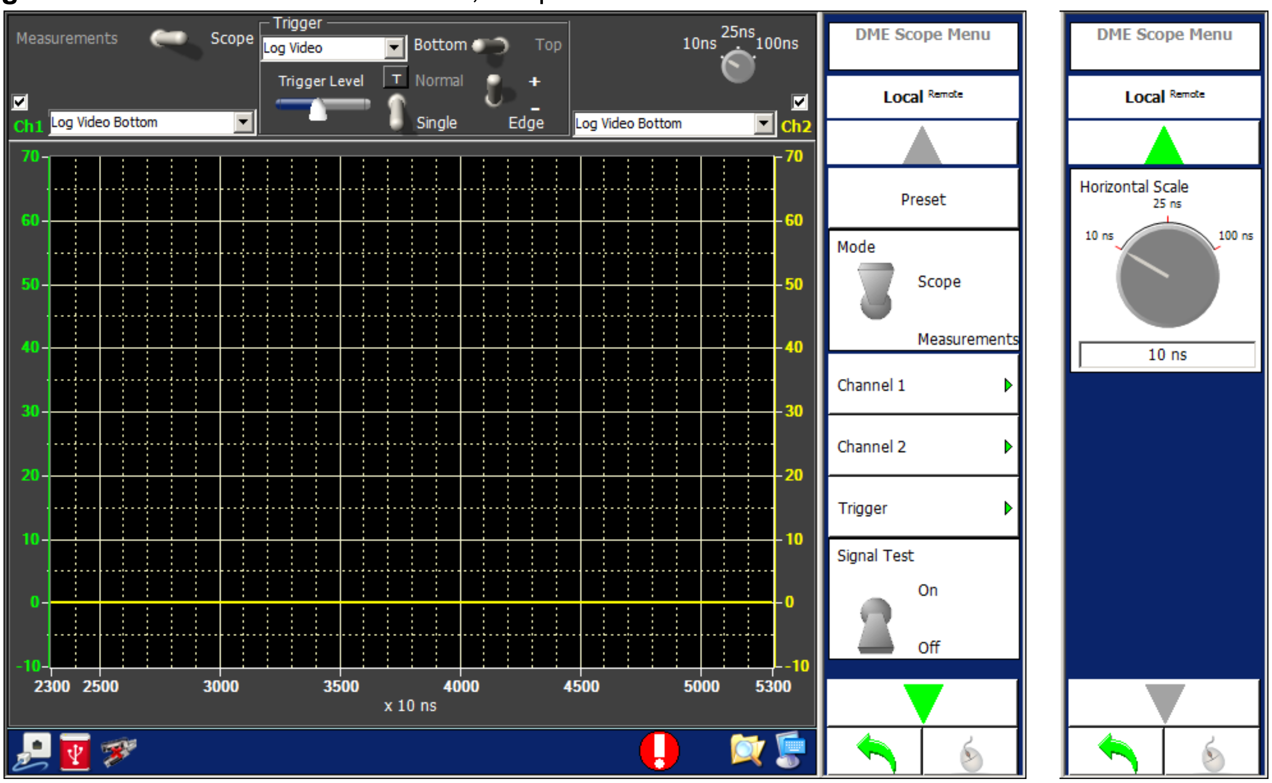
Allows the user to view the pulses from the DME. The DME Measurements Menu allows the user to make measurements for power, pulse width, rise time, fall time, spacing and frequency.

Dragging the mouse or finger on the Touch Screen over the axis and graph can change the horizontal/vertical scales and horizontal/vertical positions.

For pulse timing and power measurement the minimum acquisition time is 250 ms for interrogation rates between 10 and 25 Hz. For interrogation rates above 25 Hz the minimum acquisition time is 150 ms. Frequency measurement requires significantly more time for the test set to achieve reliable results and will vary based on factors such as interrogation rate and frequency.

3.6.2.1 Scope Mode

Figure 1.2.3 - 57 DME Measurements, Scope Mode Menu

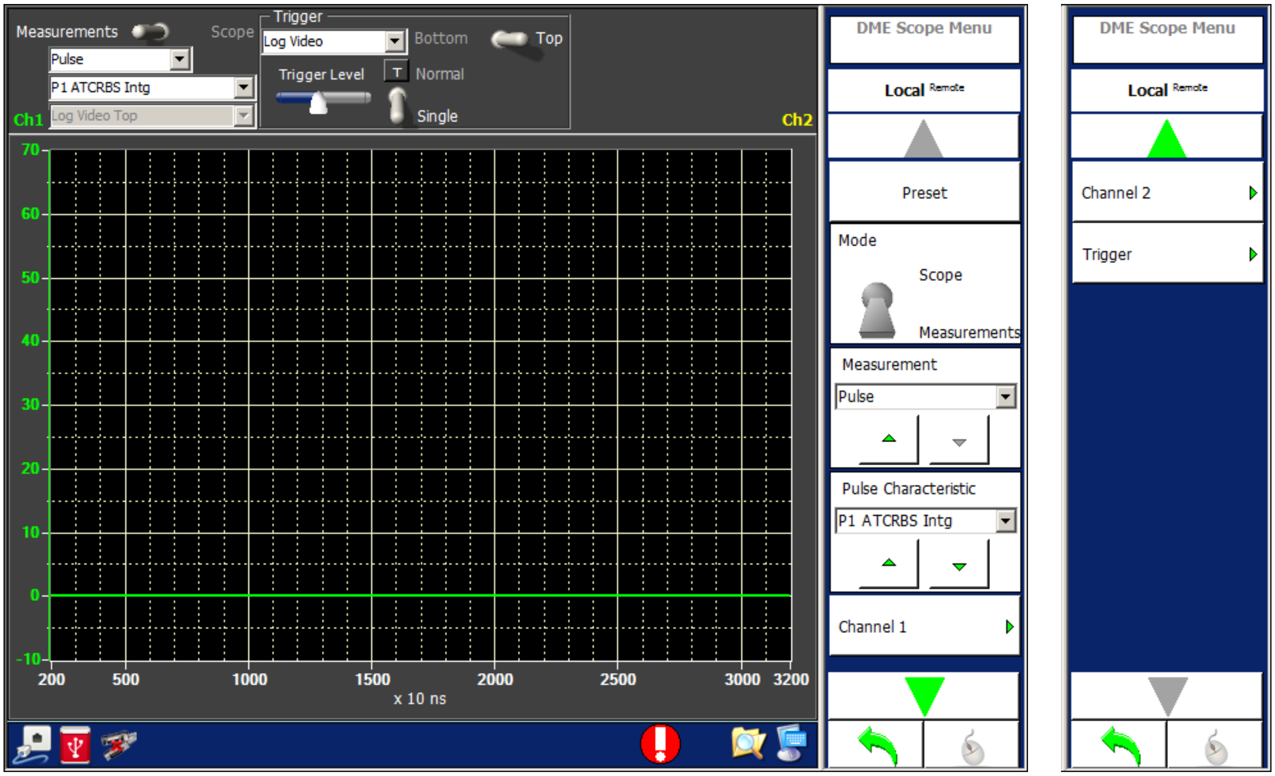


Screen Components	Description
Measurement/Scope	Allows the user to perform a measurement or set the scope to view a received waveform.
Ch1	Allows the user to select the Channel 1 selection.
Ch2	Allows the user to select the Channel 2 selection.

Screen Components	Description
Trigger Source	Allows the user to select the Trigger Source.
Trigger Level	If Log Video is selected for the Trigger Source, a slider for the power level is displayed.
Trigger Mode	Allows the user to select the Trigger Mode.
Trigger Edge	Allows the user to select the Trigger Edge.
Trigger Antenna	Allows the user to select the Trigger Antenna.
Horizontal Scale	Allows the user to select the Horizontal Scale.
Preset Softkey	Allows the user to set the fields to preset levels and selections.
Channel 1 Softkey	Allows the user to select the Channel 1 selection.
Enable	Allows the user to enable the Channel 1 selection.
Source	Same as Screen Components.
Clear	Allows the user to clear the Channel 1 selection.
Channel 2 Softkey	Allows the user to select the Channel 2 selection.
Enable	Allows the user to enable the Channel 2 selection.
Source	Same as Screen Components.
Clear	Allows the user to clear the Channel 2 selection.
Signal Test Softkey	Allows the user to enable/disable the Signal Test.

3.6.2.2 Measurement Mode

Figure 1.2.3 - 58 DME Measurements, Scope Measurement Mode



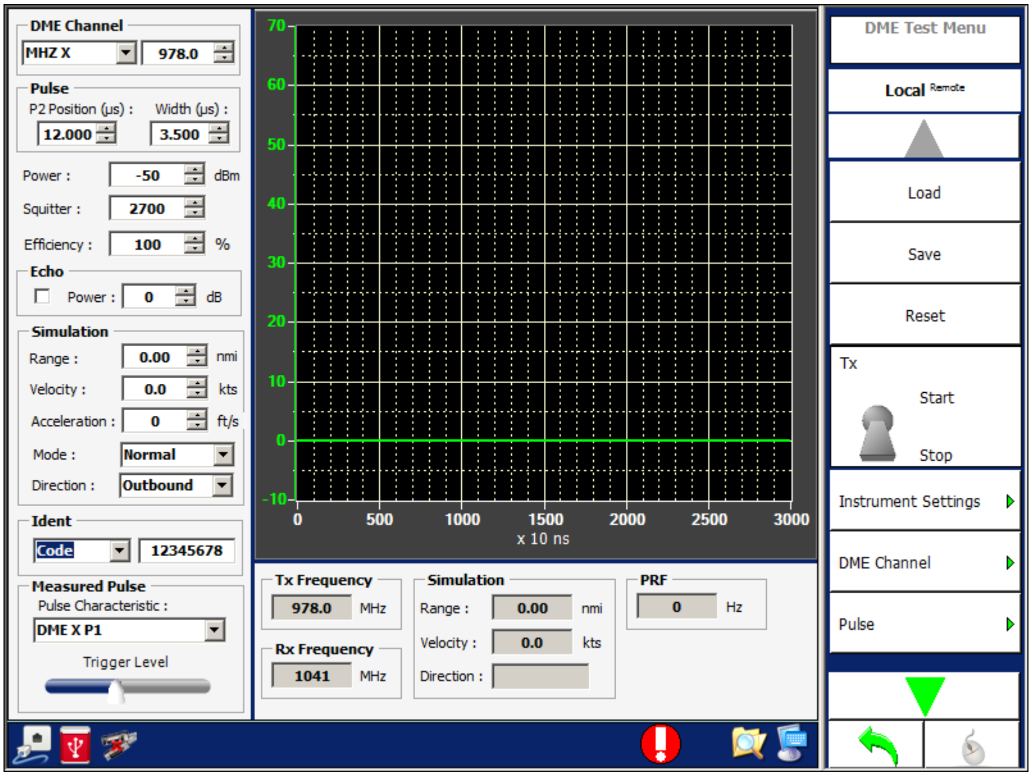
Screen Components	Description
Measurements/Scope	Allows the user to perform a measurement or set the scope to view a received waveform.
Measurement Type	Allows the user to select the Measurement Type. Pulse Measurement is the only Measurement Type supported.
Pulse Characteristic	Allows the user to select the Pulse to be measured.
Ch1	Allows the user to select the Channel 1 selection.
Trigger Source	Allows the user to select the Trigger Source. Log Video is the only Trigger Source available in the DME instrument.
Trigger Level	A slider bar allows the user to select the Log Video Trigger level.
Trigger Mode	Allows the user to set the Trigger Mode to Normal or Single Trigger.
Trigger Antenna	Allows the user to select the Trigger Antenna.
Preset Softkey	Allows the user to set the fields to preset levels and selections.

Screen Components	Description
Channel 1 Softkey	Allows the user to select the Channel 1 selection.
Enable	Allows the user to enable the Channel 1 selection.
Source	Same as Screen Components.
Clear	Allows the user to clear the Channel 1 selection.

3.6.3 DME TEST MENU

The DME Test Menu allows the user to define the DME Test scenario.

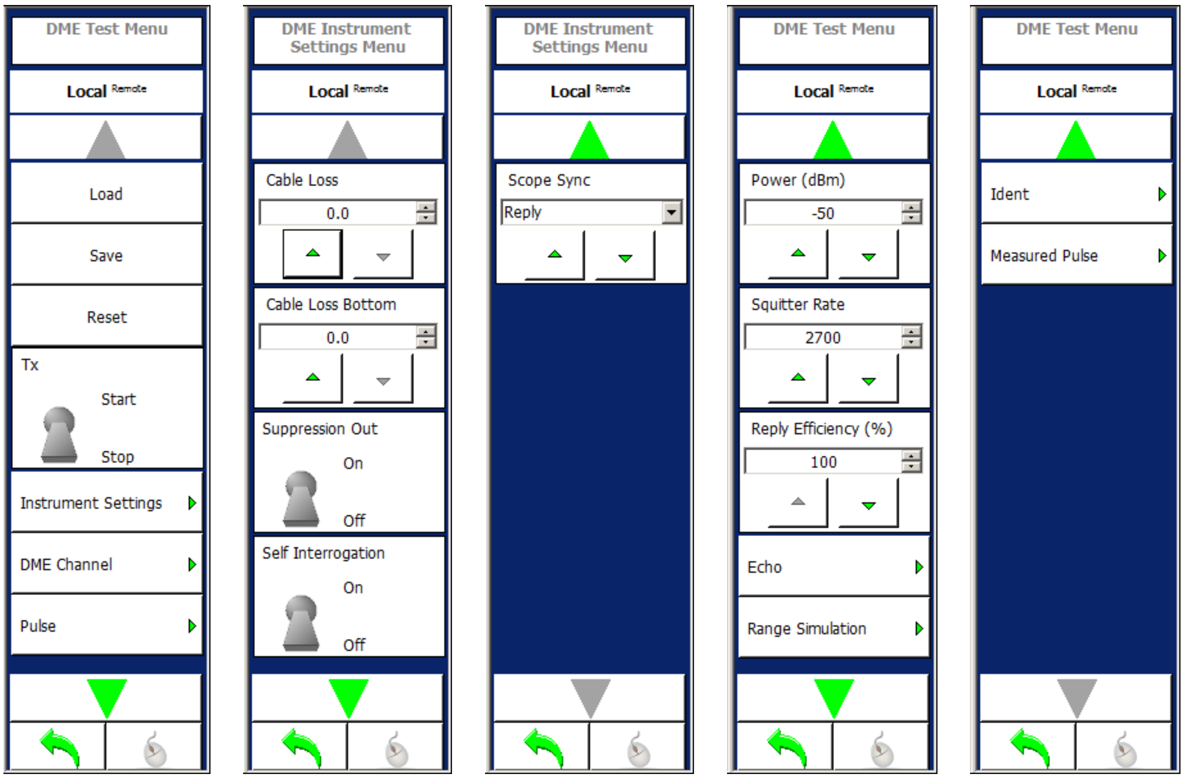
Figure 1.2.3 - 59 DME Test Menu



Screen Components	Description
DME Channel	Allows the user to select the DME Channel.
Pulse - P2 Position	Allows the user to select the Pulse P2 Position.
Pulse - Width	Allows the user to select the Pulse Width.
Power	Allows the user to select the Power.
Squitter (Rate)	Allows the user to select the Squitter rate.
Efficiency (Reply)	Allows the user to select the Reply Efficiency.
Echo	Allows the user to enable/disable the Echo.
Echo - Power	Allows the user to select the Echo Power.
Simulation - Range	Allows the user to select the Simulation Range.
Simulation - Velocity	Allows the user to select the Simulation Velocity.
Simulation - Acceleration	Allows the user to select the Simulation Acceleration.
Simulation - Mode	Allows the user to select the Simulation Mode.

Screen Components	Description
Simulation - Direction	Allows the user to select the Simulation Direction.
Ident	Allows the user to enable/disable the Ident and, when Code is selected, select the Code settings.
Measured Pulse - Pulse Characteristic	Allows the user to select the Interrogation Pulse to be measured.
Measured Pulse - Trigger Level	Allows the user to select the Measured Pulse Trigger Level.

Figure 1.2.3 - 60 DME Test, Instrument Settings Menu



Screen Component	Description
Load Softkey	Allows the user to select a stored DME Test.
Save Softkey	Allows the user to save the current DME Test.
Reset Softkey	Allows the user to reset the test settings to the default values.
TX Softkey	Allows the user to enable/disable the Transmitter.
Instrument Settings Softkey	
Cable Loss	Allows the user to set the Cable Loss for the Top Antenna.
Cable Loss Bottom	Allows the user to set the Cable Loss for the Bottom Antenna.

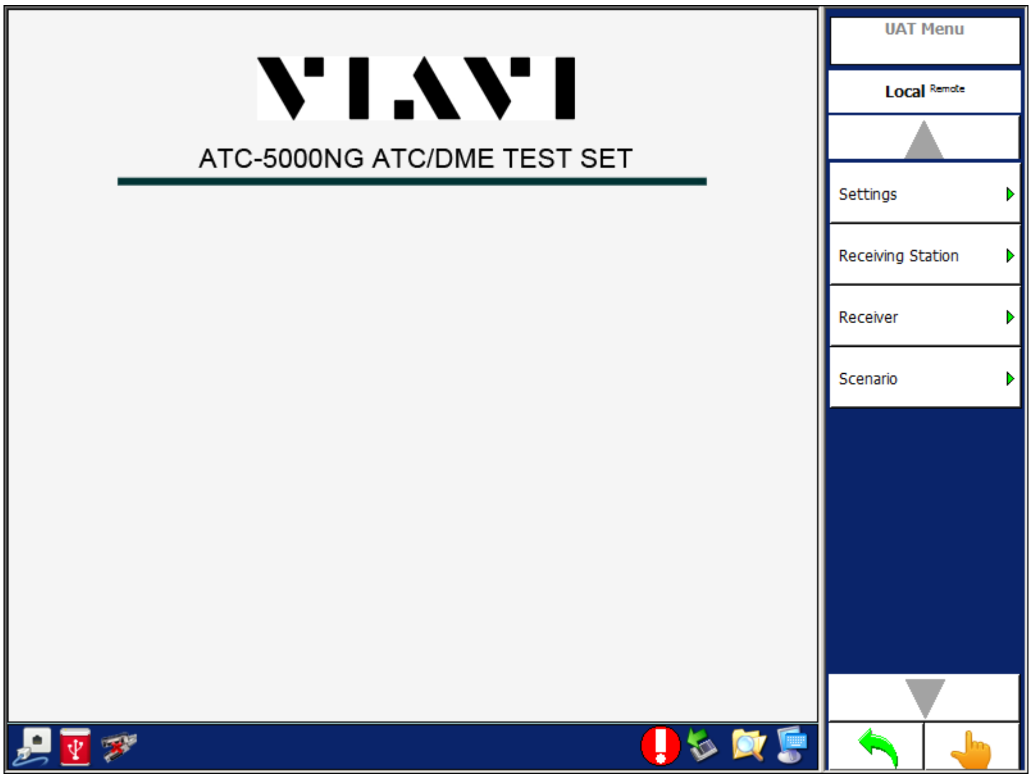
Screen Component	Description
Suppression Out	Allows the user to enable/disable the Suppression and to set the Suppression %.
Self Interrogation	Allows the user to enable/disable the Self Interrogation Mode.
Scope Sync	Allows the user to set the Scope Sync.
DME Channel Softkey	Allows the user to select the DME Channel settings.
Pulse Softkey	Allows the user to select the Pulse settings.
Power Softkey	Allows the user to select the Power.
Squitter (Rate) Softkey	Allows the user to select the Squitter rate.
Efficiency (Reply) Softkey	Allows the user to select the Reply Efficiency.
Echo Softkey	Allows the user to select the Echo settings.
Range Simulation Softkey	Allows the user to select the Range Simulation settings.
Ident Softkey	Allows the user to select the Ident settings.
Measured Pulse Softkey	Allows the user to select the Measured Pulse settings.

3.7 UAT MENU

The UAT Menu allows the user to select between the Settings, Receiving Station, Receiver or Scenario Menu for UAT testing.

NOTE
The UAT Menu is an Optional Function in the ATC-5000NG.

Figure 1.2.3 - 61 UAT Menu

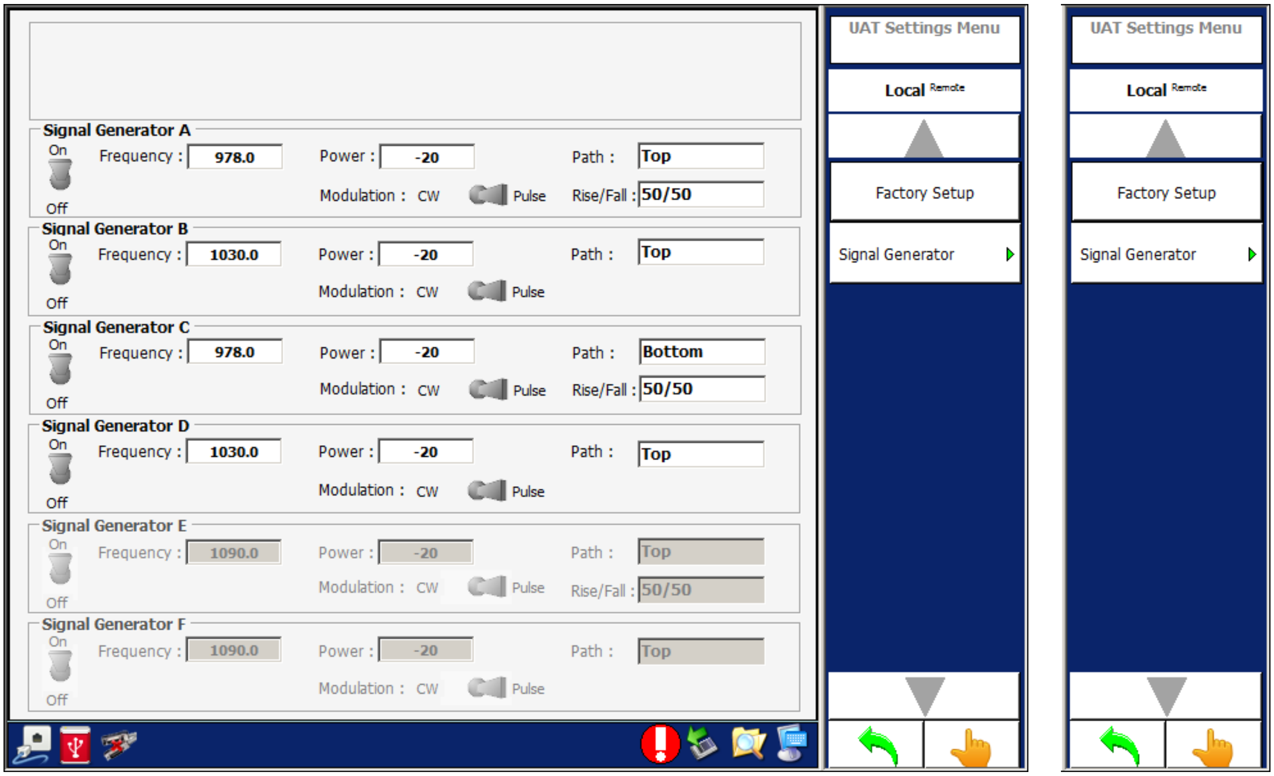


Screen Component	Description
Setting Softkey	Displays the UAT Settings Menu.
Receiving Station Softkey	Displays the Receiving Station Menu.
Receiver Softkey	Displays the UAT Receiver Menu.
Scenario Softkey	Displays the UAT Scenario Menu.

3.7.1 UAT SETTINGS MENU

Allows the user to configure the Transmitter, Receiver and Antenna Simulator modules in the Test Set for UAT tests. The UAT Settings Menu is used for testing and troubleshooting of the Test Set. For UAT Unit testing, the UAT Settings Menu should only be used to set the individual RF Generator frequencies.

Figure 1.2.3 - 62 UAT Settings Menu

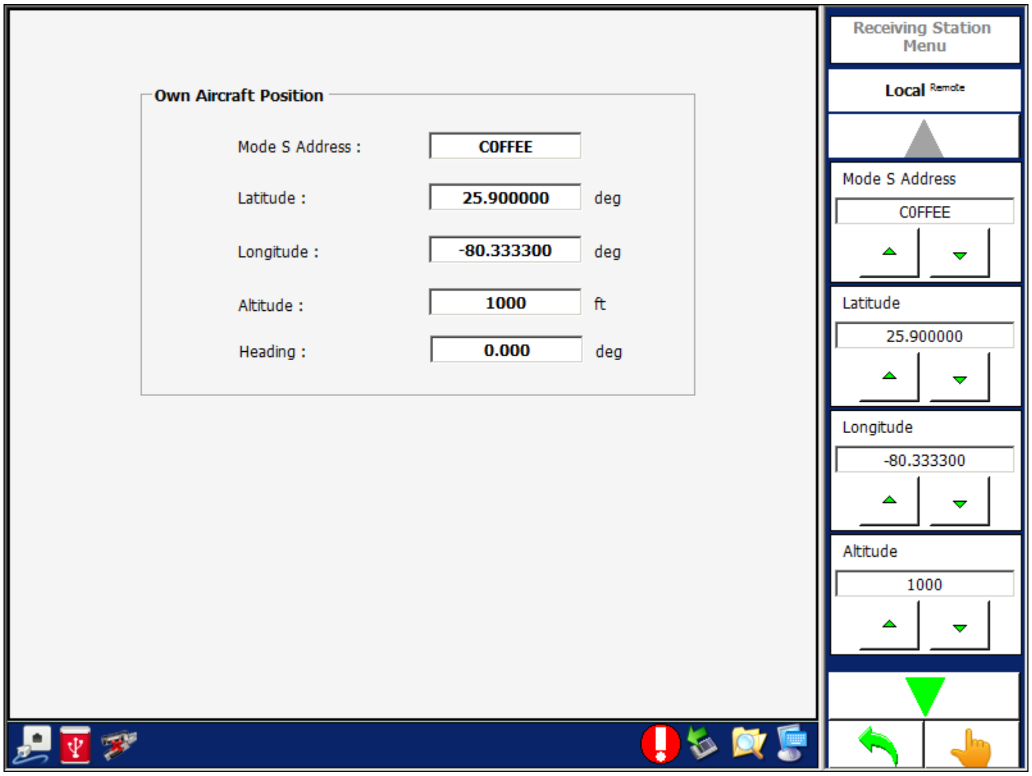


Screen Components	Description
ON/OFF	Allows the user to enable/disable the Generator.
Frequency	Allows the user to select the Transmitter frequency.
Power	Allows the user to set the Transmitter power.
Path	Allows the user to select the Transmitter Path (Antenna Port).
Modulation	Allows the user to select the Modulation.
Rise/Fall	Allows the user to select the Rise/Fall. Generator A and C only.
Factory Setup Softkey	Allows the user to set all hardware to the Factory default settings.

3.7.2 UAT RECEIVING STATION MENU

The UAT Receiving Station allows the user to select the Receiving Station position information.

Figure 1.2.3 - 63 UAT Receiving Station Menu



Screen Components	Description
Mode S Address	Allows the user to select the Mode S Address (Hexadecimal).
Latitude	Allows the user to select the Latitude.
Longitude	Allows the user to select the Longitude.
Altitude	Allows the user to select the Altitude.
Heading	Allows the user to select the Heading.

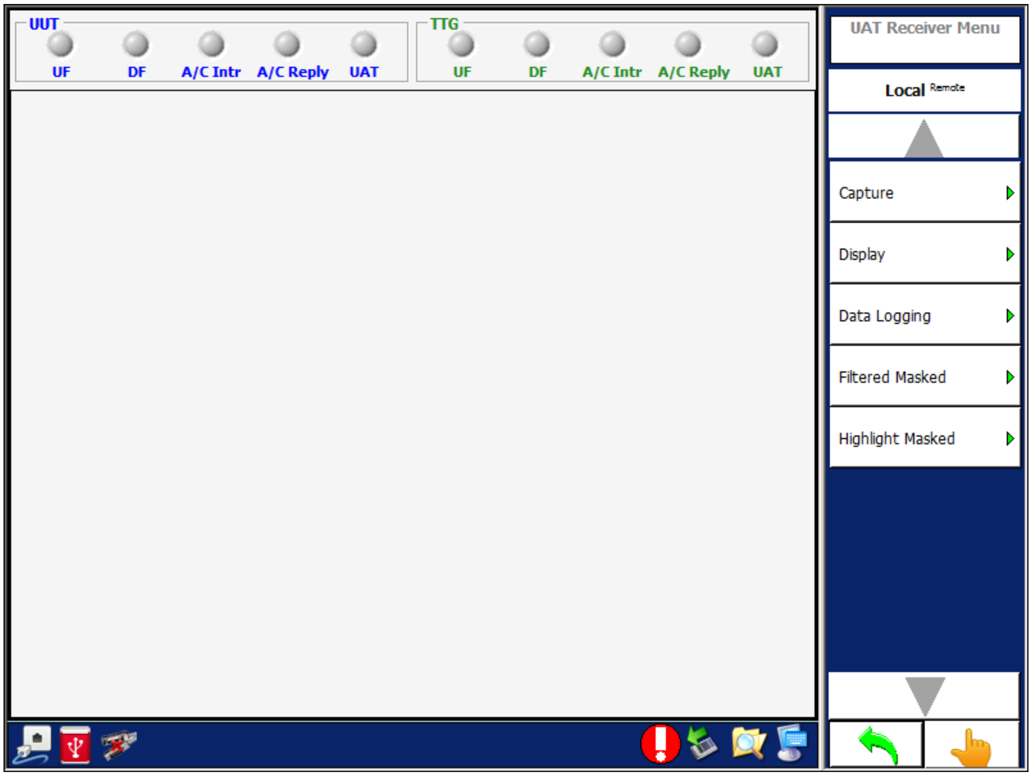
3.7.3 UAT RECEIVER MENU

Allows the user to view the transmissions from the UUT and transmissions from the Test Set.

The last 8 receptions are displayed. Blue lines are receptions from the UUT and green lines are receptions from the Test Set.

When performing an export, the Test Set generates a SDF (Compact Database File) and exports the file to the selected file location. All the DF17 position, velocity and identification messages are decoded.

Figure 1.2.3 - 64 UAT Receiver Menu

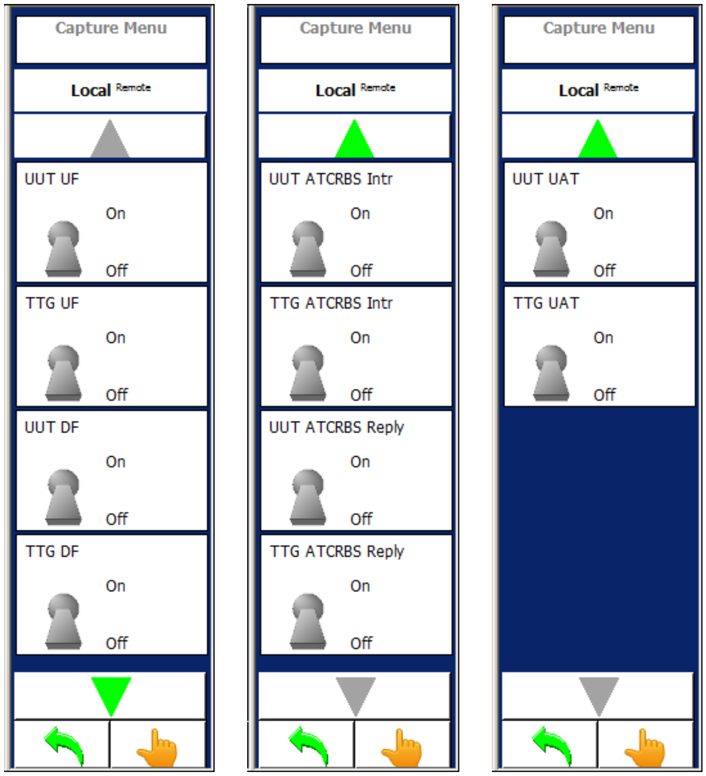


Screen Components	Description
LEDs	Displays the status of reception from the UUT or Test Set. LED UF — UF Interrogation DF — DF Reply A/C Intr — ATCRBS Interrogation A/C Reply — ATCRBS Reply UAT — UAT

3.7.3.1 UAT Receiver Capture Menu

The Capture Softkey accesses additional softkeys which are used to select which interrogation messages are captured.

Figure 1.2.3 - 65 UAT Receiver, Capture Menu

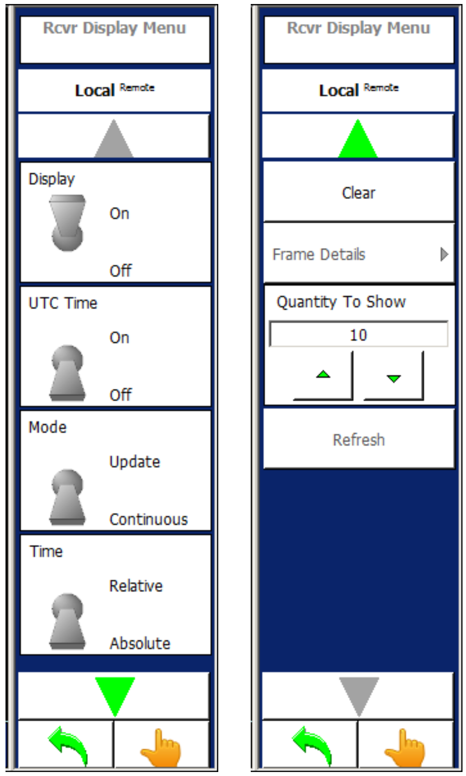


Screen Components	Description
UUT UF	Allows the user to enable/disable capture of TCAS UF messages.
ATC UF	Allows the user to enable/disable capture of Test Set UF messages.
UUT DF	Allows the user to enable/disable capture of Transponder DF messages.
ATC DF	Allows the user to enable/disable capture of Test Set DF messages.
UUT ATCRBS Intr	Allows the user to enable/disable capture of TCAS ATCRBS interrogations.
ATC ATCRBS Intr	Allows the user to enable/disable capture of Test Set ATCRBS interrogations.
UUT ATCRBS Reply	Allows the user to enable/disable capture of Transponder ATCRBS replies.
ATC ATCRBS Reply	Allows the user to enable/disable capture of Test Set ATCRBS replies.
UUT UAT	Allows the user to enable/disable capture of UAT messages.

Screen Components	Description
ATC UAT	Allows the user to enable/disable capture of UAT messages from Test Set

3.7.3.2 UAT Receiver Display Menu

Figure 1.2.3 - 66 UAT Receiver, Display Menu

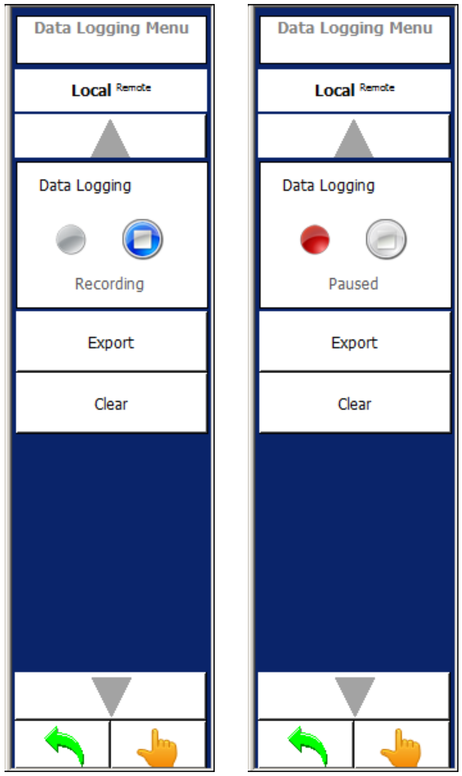


Screen Components	Description
Display Softkey	Allows the user to set the parameters for the status of reception from the UUT or Test Set:
Display	Allows the user to display new receptions (ON or OFF)
UTC Time	Allows the user to display the UTC Time (ON or OFF).
Mode	Allows the user to display the data received by updating a message style with the latest reception (Update) or display all data received in a continuous order (Continuous)
Time	Allows the user to display the time relative to the previous message (Relative) or display the time received (Absolute).
Clear	Allows the user to clear all messages in the UAT Receiver Menu.
Frame Details	Allows the user to display the digital breakdown of a selected reception.
Quantity to Show	Allows the user to select how many messages to display (100 messages maximum).
Refresh	Allows the user to refresh the UAT Receiver Menu with the selected quantity of messages.

3.7.3.3 UAT Receiver Data Logging Menu

The Data Logging Softkey Menu allows the user to set the parameters for the status of reception from the UUT or Test Set.

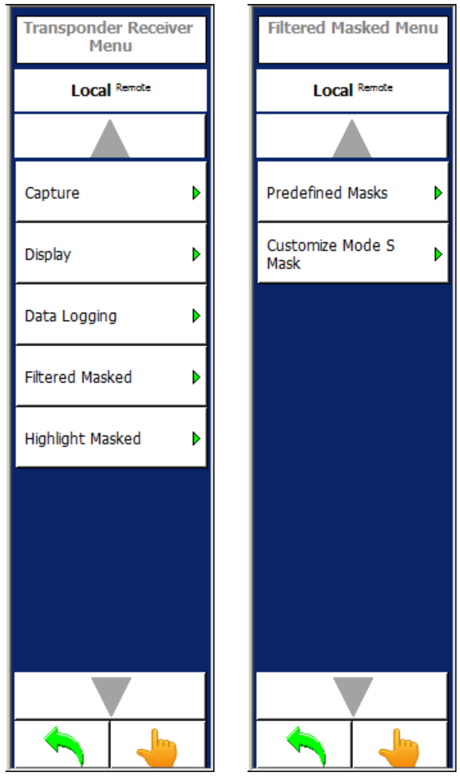
Figure 1.2.3 - 67 UAT Receiver, Display Menu



Screen Components	Description
Recording / Paused	Allows the user to start (Recording) or stop (Paused) the data logging of the receive messages.
Export	Allows the user to export the receive messages to a file.
Clear	Allows the user to clear all recorded messages.

3.7.3.4 UAT Receiver Filtered Masked Menu

Figure 1.2.3 - 68 UAT Receiver Filtered Masked Menu

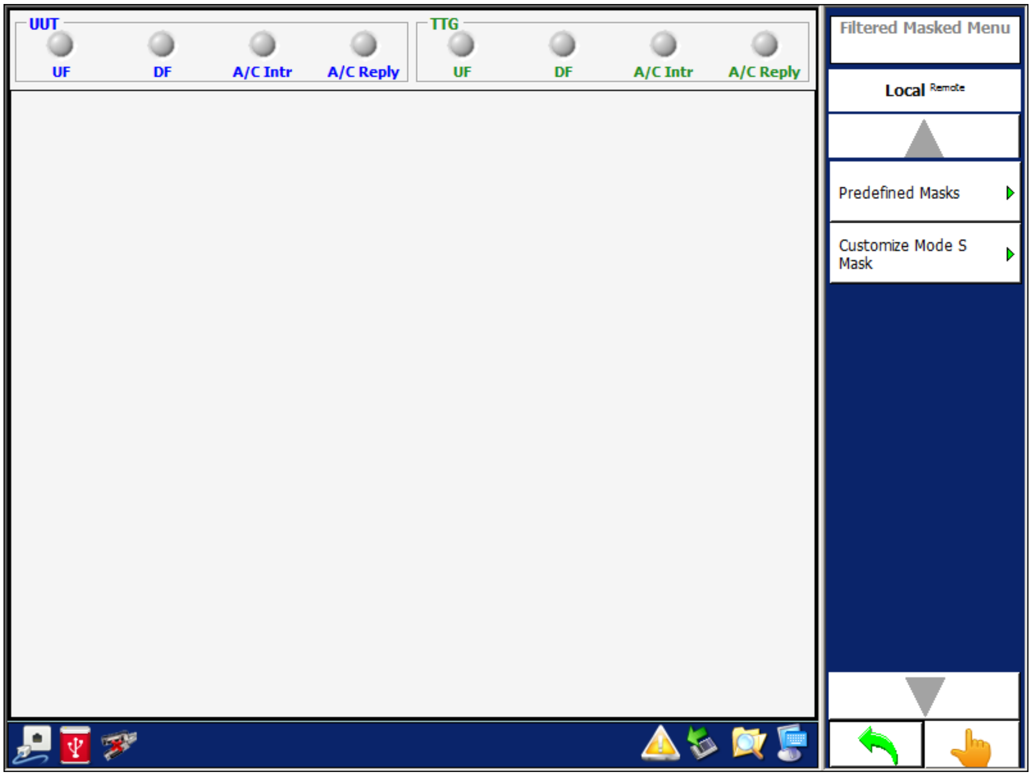


Screen Components	Description
Filtered Masked Softkey	Accessed the following: Displays the Predefined Masks Menu. Displays the Customize Mode S Mask Menu.
Highlight Masked	Displays the Highlight Masked Menu.

3.7.3.5 Filtered Masked Menu

Allows the user to select the messages to filter and display in the Transponder Receiver Menu.

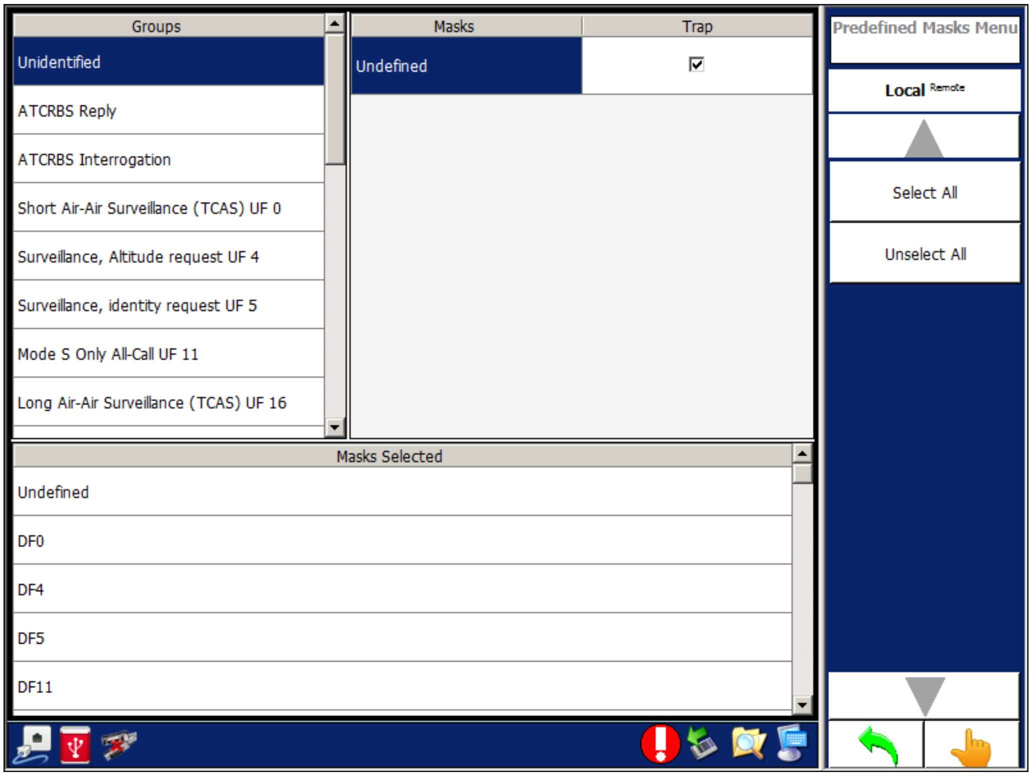
Figure 1.2.3 - 69 UAT Receiver, Filtered Masked Menu



Screen Components	Description
Predefined Masks Softkey	Displays the Predefined Masks Menu.
Customize Mode S Mask Softkey	Displays the Customize Mode S Mask Menu.

3.7.3.6 Predefined Masks Menu

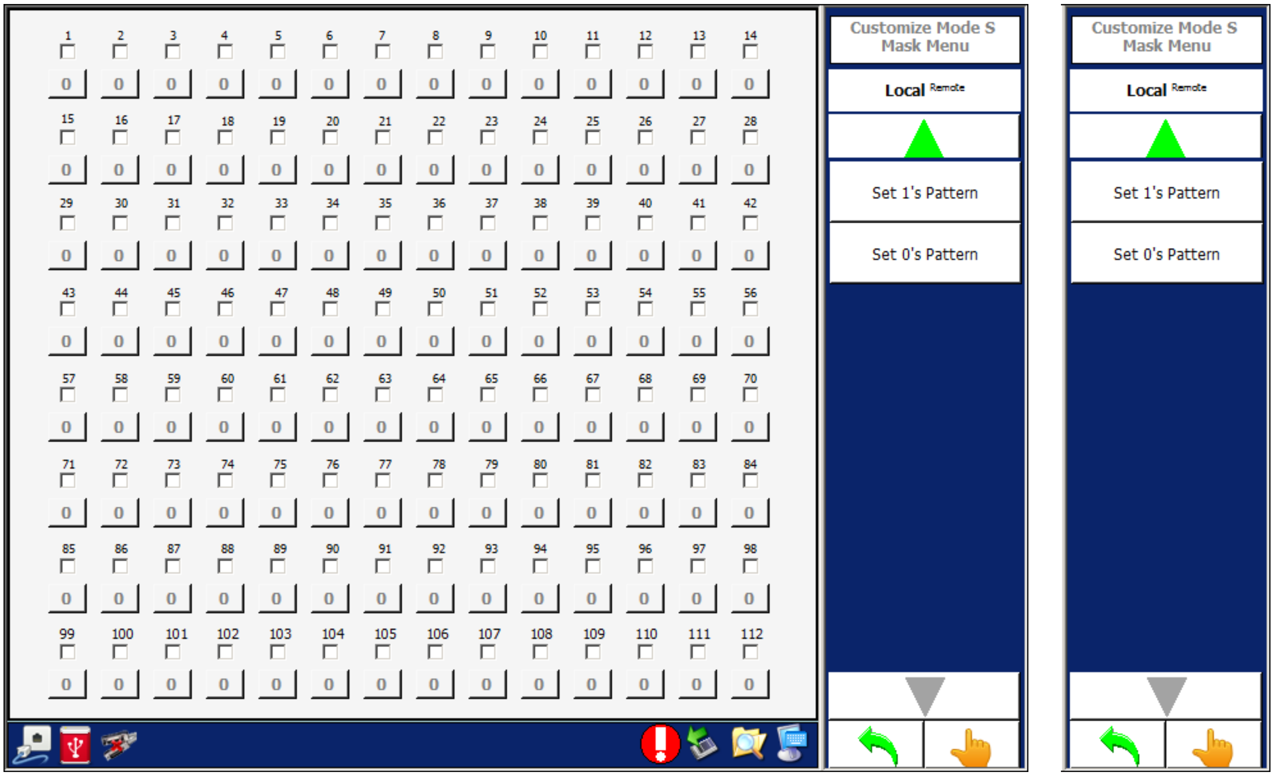
Figure 1.2.3 - 70 UAT Receiver, Predefined Masks Menu



Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Trap	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the filter.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.7.3.7 Customize Mode S Mask Menu

Figure 1.2.3 - 71 UAT Receiver, Customize Mode S Mask Menu

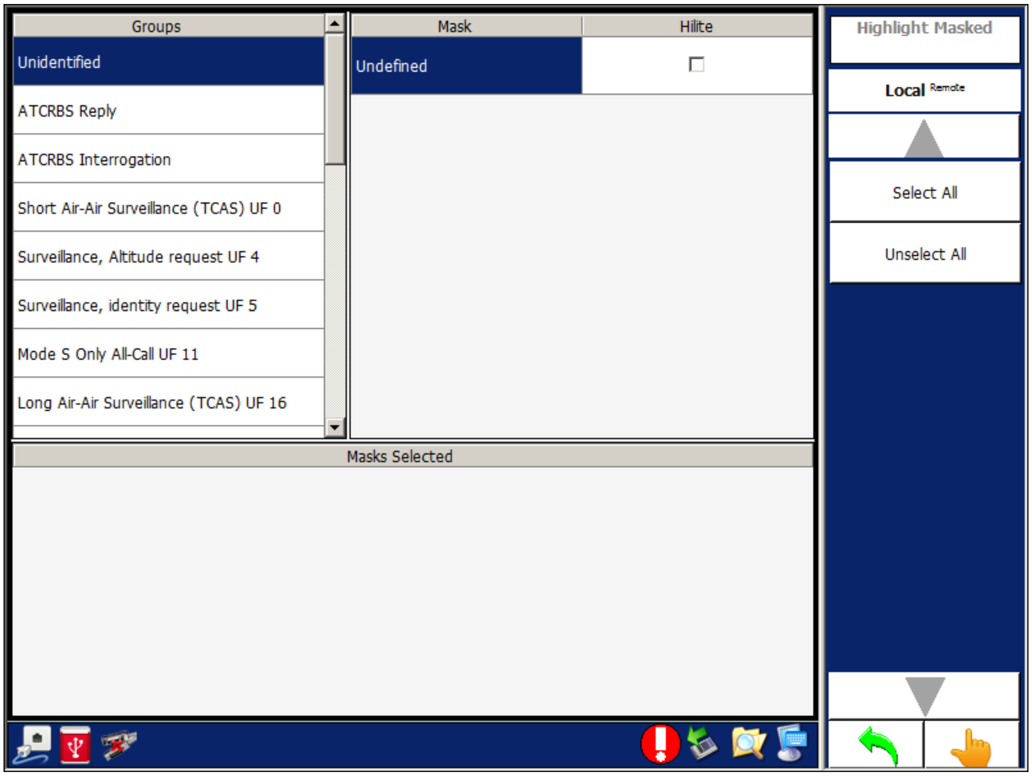


Screen Components	Description
Number	Allows the user to enable/disable the selected pattern bit.
Bit	Allows the user to pattern bit.
Number of Bits Softkey	Allows the user to select the number of bits.
Mask Softkey	Allows the user to Mask.
Pattern Softkey	Allows the user to Pattern.
Set All Bits Mask Softkey	Allows the user to select all bits.
Clear All Bits Mask Softkey	Allows the user to clear all bits.
Set 1's Pattern Softkey	Allows the user to select "1" for all patterns.
Set 0's Pattern Softkey	Allows the user to select "0" for all patterns.

3.7.3.8 Highlight Masked Menu

Allows the user to select the messages to highlight during the display of messages in the Receiver Menu.

Figure 1.2.3 - 72 UA Receiver, Highlight Masked Menu



Screen Components	Description
Groups	Allows the user to select groups of UF and DF messages.
Masks	Displays the sub-messages of the selected group.
Hilite	Allows the user to enable/disable the sub-messages.
Masks Selected	Displays the messages selected to perform the highlight.
Select All Softkey	Allows the user to select all messages to be displayed. No filter is applied.
Unselect All Softkey	Allows the user to de-select all messages. No messages are displayed.

3.7.4 UAT SCENARIO MENU - NORMAL MODE

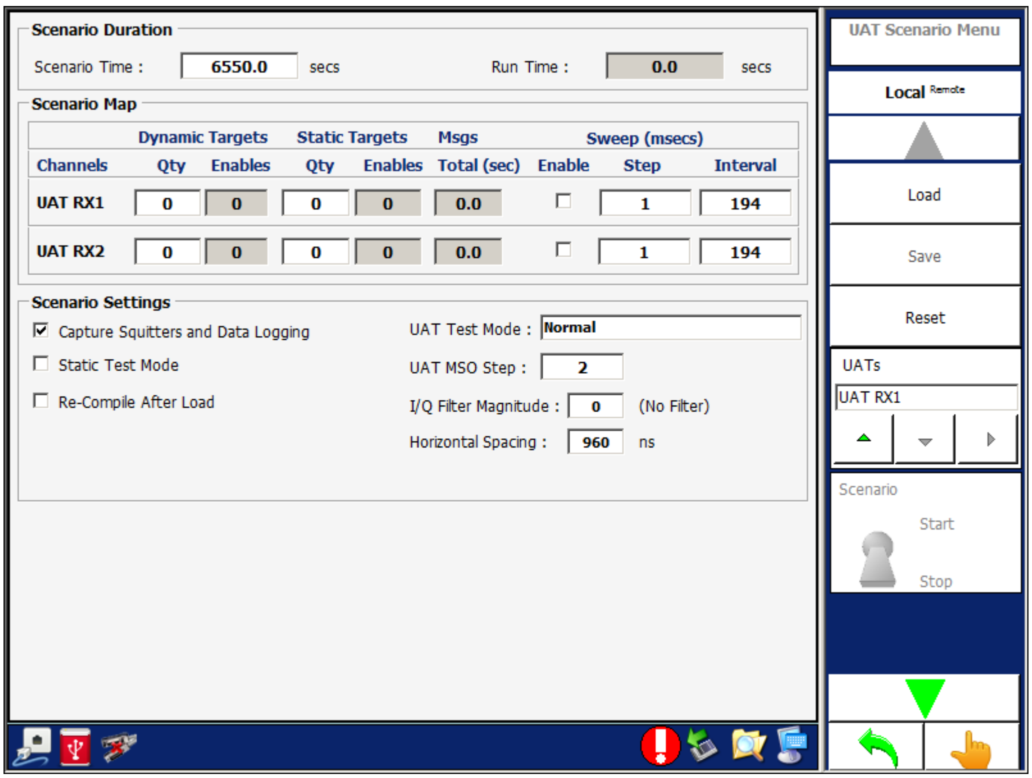
The UAT Scenario allows the user to define UAT scenario with static and dynamic targets.

NOTE

When defining targets automatically the Touch Screen software starts at MSO 752 and spaces the targets at the specified MSO steps.

In order to transmit UAT messages and the runtime to function after a start of scenario, the Test Set needs the PPS signal from the GPS on external I/O #1 or a 1 Hz signal on external I/O #1 to function.

Figure 1.2.3 - 73 UAT Scenario Menu - Normal Mode



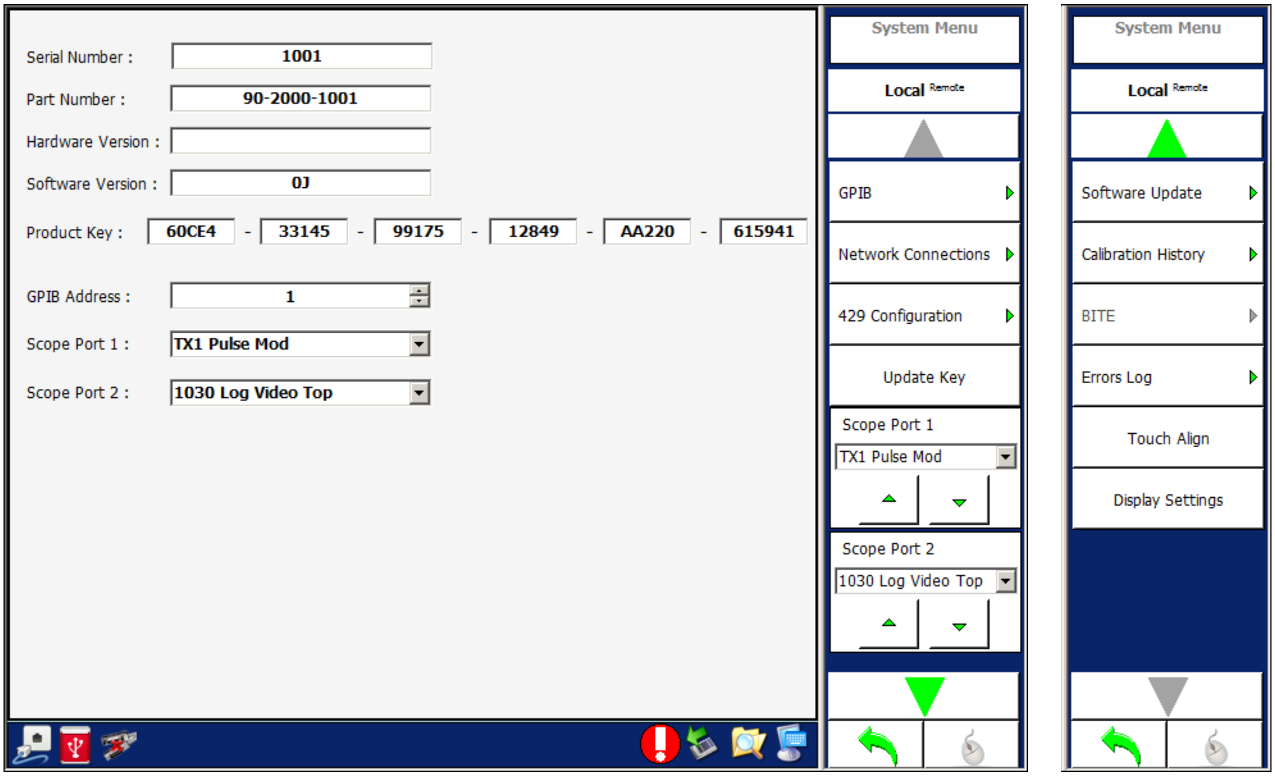
Screen Components	Description
Scenario Time	Allows the user to select the Scenario Time.
Run Time	Allows the user to select the Run Time.

Screen Components	Description
Dynamic Targets	Allows the user to select the following parameters for the Dynamic Targets for UAT#1 and UAT#2: Quantity Enables Total Messages (sec) Enable Step (Sweep) Interval (Sweep)
Static Targets	Allows the user to select the following parameters for the Dynamic Targets for UAT#1 and UAT#2: Quantity (Static Targets) Enables (Static Targets) Total Messages (sec) Enable Step (Sweep) Interval (Sweep)
Capture Squitters and Data Logging	Allows the user to enable/disable the Capture Squitters and Data Logging. If enabled, the log file is cleared when the scenario starts and the log file starts capturing new messages.
Static Test Mode	Allows the user to enable/disable the Static Test Mode. Targets are active at the end of the scenario time at the target's last position.
Re-Compile After Load	Allows the user to enable/disable the Re-Compile After Load. If enabled, compiles all messages for the different targets after loading a saved file.
UAT Test Mode	Allows the user to select the UAT Test Mode.
UAT MSO Step	Allows the user to select the UAT MSO Step, the separation between UAT messages.
I/Q Filter Magnitude	Allows the user to select the I/Q Filter Magnitude.
Horizontal Spacing	Allows the user to select the Horizontal Spacing.
Load Softkey	Allows the user to select a stored UAT Test.
Save Softkey	Allows the user to save the current UAT Test.
Reset Softkey	Allows the user to reset the test settings to the default values.
Scenario Softkey	Allows the user to enable/disable the Scenario.

3.8 SYSTEM MENU

The System Menu allows the user to set different system parameters (i.e., GPIB address, Product Key, Scope Port Outputs, etc.).

Figure 1.2.3 - 74 ATC-5000NG System Menu



Screen Components	Description
Serial Number	Allows the user to select the Unit Serial Number.
Part Number	Allows the user to select the Unit Part Number.
Hardware Version	Allows the user to select the Unit Hardware Version.
Software Version	Allows the user to select the Unit Software Version.
Product Key	Allows the user to select the Product Key. The Product Key enables/disables Options in the Test Set. VIAVI provides the Product Key for the Test Set.
GPIB Address	Allows the user to select the GPIB Address. Once the GPIB address is set, the GPIB address on all future power-up cycles is the same. If a software update is performed, the GPIB address may need reset.

Screen Components	Description
Scope Port 1	Allows the user to select the Scope Port 1 signal from multiple Test Set signal lines (i.e., Log Video, DPSK Modulation, Transmitter Modulation, etc.). The user selection is saved and the same selection is used on future power-up cycles.
Scope Port 2	Allows the user to select the Scope Port 2 signal from multiple Test Set signal lines (i.e., Log Video, DPSK Modulation, Transmitter Modulation, etc.). The user selection is saved and the same selection is used on future power-up cycles.
GPIB Softkey	Allows the user to select the GPIB address.
GPIB Address	Same as Screen Components.
Reset	Allows the user to reset the GPIB interface.
Network Connections Softkey	Displays the Network Connections Menu.
429 Connections Softkey	Displays the 429 Connections Menu.
Update Key Softkey	Allows the user to validate the Product Key entered.
Software Update Softkey	Displays the Software Update Menu.
Calibration History Softkey	Displays the Calibration Menu.
Errors Log Softkey	Displays the Errors Log Menu.
Touch Align Softkey	Executes the Touch Screen Alignment Program.
Display Settings Softkey	Opens the Windows Display Settings.

3.8.1 SOFTWARE UPDATE MENU

Allows the user to update the DSP software or the FPGA firmware.

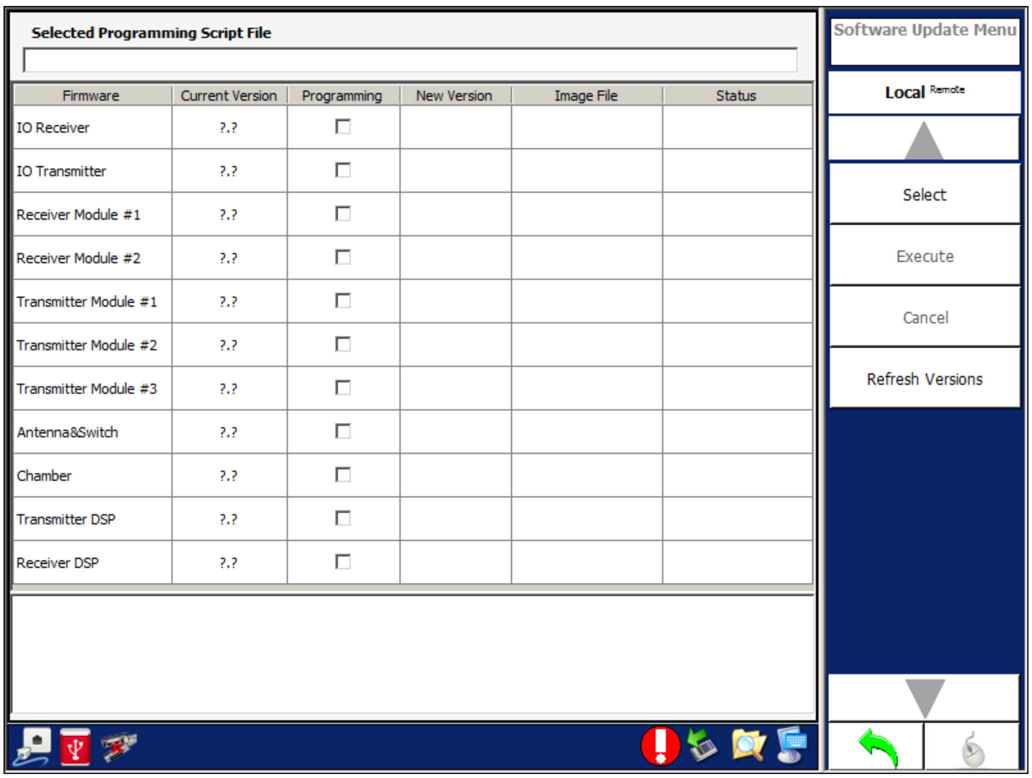
Software Update Process:

Kernel and Touch Screen software are updated.

Kernel and Touch Screen software are executed.

Touch Screen software automatically starts in the Software Update Menu and programs all necessary DSP software and FPGA firmware for the updated software. If update fails because of an update failure, place the cursor in the Selected Programming Script File textbox on the top of the screen and press Alt S. The Touch Screen software reads the last valid configuration file and displays all the valid FPGA and DSP versions.

Figure 1.2.3 - 75 System Menu, Software Update Menu



Screen Components	Description
Firmware	Displays the Firmware Device Name.
Current Version	Displays the Current Version Number.
Programming	Allows the user to enable/disable the programming of a specific DSP or FPGA device.
New Version	Displays the New Version Number.

Screen Components	Description
Image File	Displays the Image File Name.
Status	Displays the Status of the device.
Select Softkey	Opens a file dialog to select the programming configuration file.
Execute Softkey	Programs all the FPGAs and DSPs that have the programming enabled.
Cancel Softkey	Cancels the programming sequence.
Refresh Versions Softkey	Refreshes the software and firmware versions.

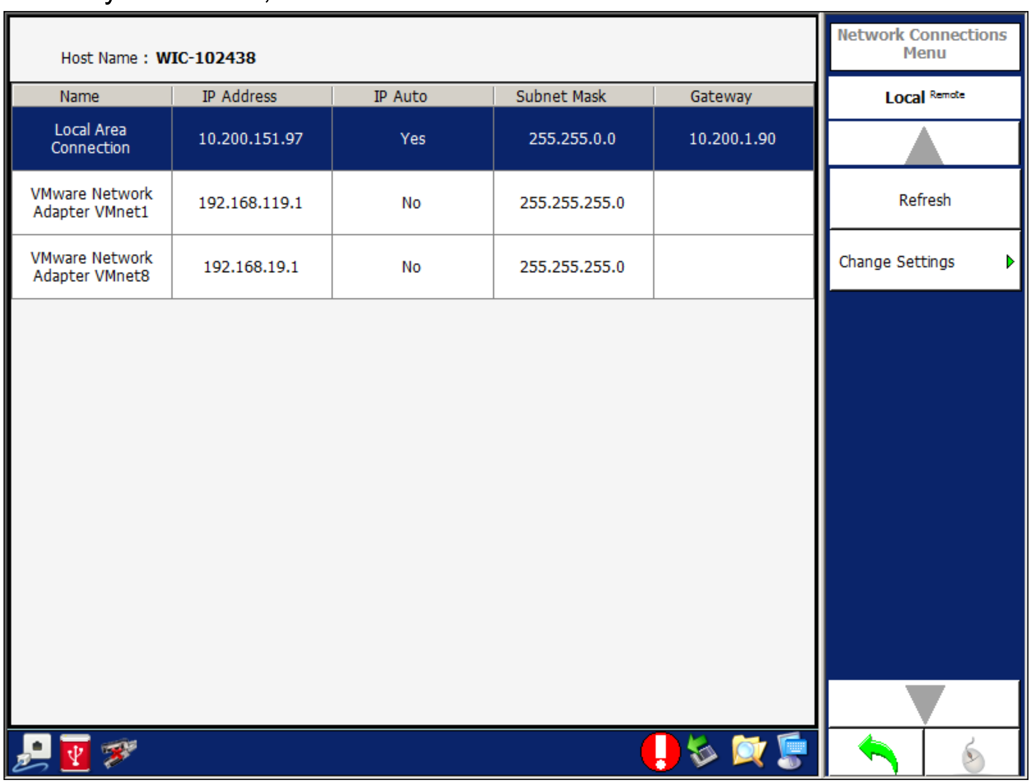
3.8.2 NETWORK CONNECTIONS MENU

The Network Connections Menu displays the current network settings and allows changing the network settings. There should be three connections: 1) Front LAN; 2) Rear LAN; 3) DSP Connection. (Names could be different.)

The screen displays the current settings, whether the IP is static or dynamic and if connected what is the current IP address. The internal connection is at IP Address 192.168.0.1 (Factory Setting). The IP Address should not be changed unless required to use this address for the external connections. All Ethernet communications to the ATC-5000NG are on port 2001.

> **Example**
> Select the Rear LAN line on the grid of the current menu and press the Change Settings Softkey to change the IP of the Rear LAN from dynamic to static.

Figure 1.2.3 - 76 System Menu, Network Connections Menu



Screen Components	Description
Name	Displays the Name of the Ethernet Adapter.
IP Address	Displays the IP Address of the Ethernet Adapter.
IP Auto	Displays the IP Auto of the Ethernet Adapter.
Subnet Mask	Displays the Subnet Mask of the Ethernet Adapter.

Screen Components	Description
Gateway	Displays the Gateway of the Ethernet Adapter.
Refresh Softkey	Refreshes the Network Connections Menu with the network settings of all the Ethernet adapters.
Change Settings Softkey	Displays the Network Connection Change Settings Menu.

The internal DSP IP address can be changed from the factory default of 192.168.0.1. The internal DSP IP address should only be changed if the IP address is needed by the external LAN connections. On the Network Connections Menu select the DSP connection row on the grid and press the Change Settings Softkey.

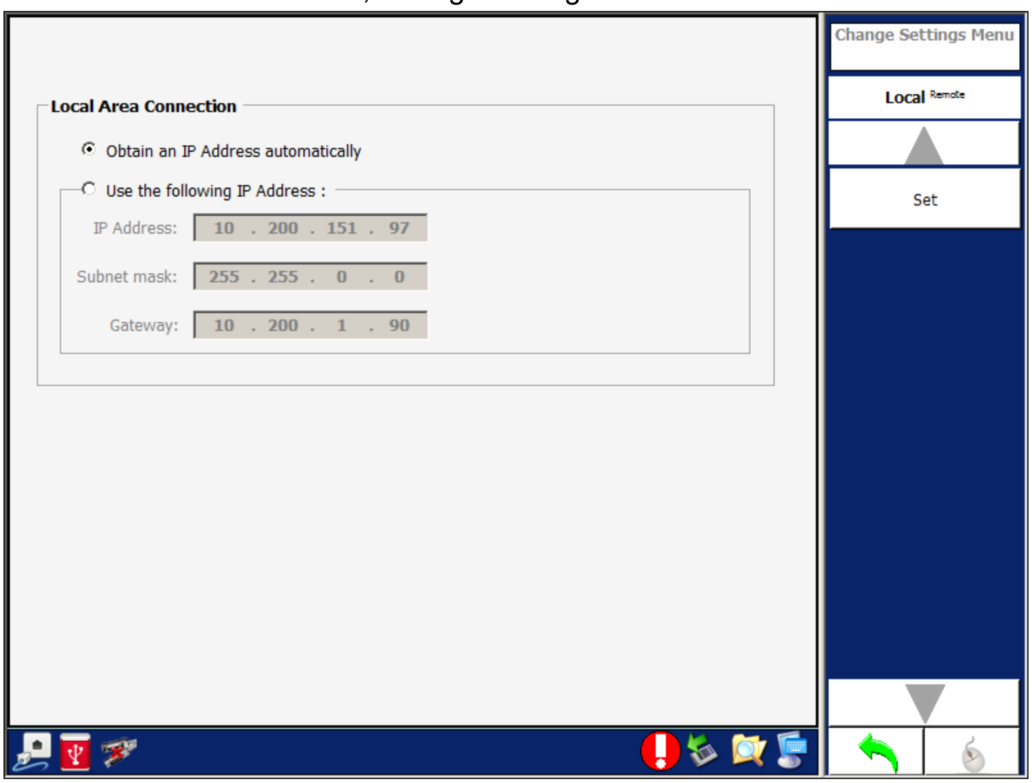
To change the IP address to a dynamic IP:

1 Select the Obtain an IP Address automatically group box.

2 Press the Set Softkey.

3.8.2.1 Change Settings Menu - Obtain an IP Address Automatically

Figure 1.2.3 - 77 Network Connections, Change Settings Menu - Auto IP Address



To change the IP address to a static IP:

1 Select the Use the following IP Address group box.

2 Enter the IP address desired for the internal DSP connection.

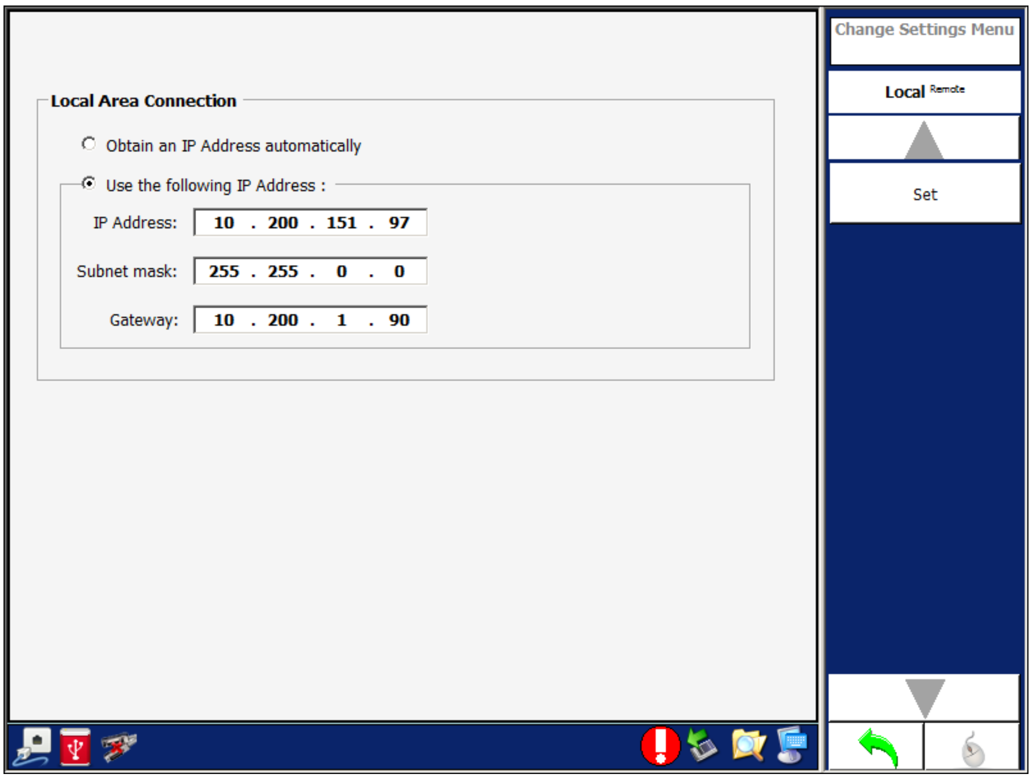
The ATC-5000NG sets the gateway address to the same IP Address and internally, sets the DSP IP address and communicates the address to the DSP module when the user presses the Set Softkey. The application software communicates the new address to the DSP, resets the connection and reboots the DSP. This process takes a few minutes. At the end of the process the application software re-establishes communications with the DSP using the new IP Address. On all future reboots the current IP address is used.

Restore Factory Setup

To return to the factory setup, enter the same screen and press the Factory Setup Softkey. The application software starts the change process again with the IP address set to 192.168.0.1.

3.8.2.2 Change Settings Menu - Use the Following IP Address

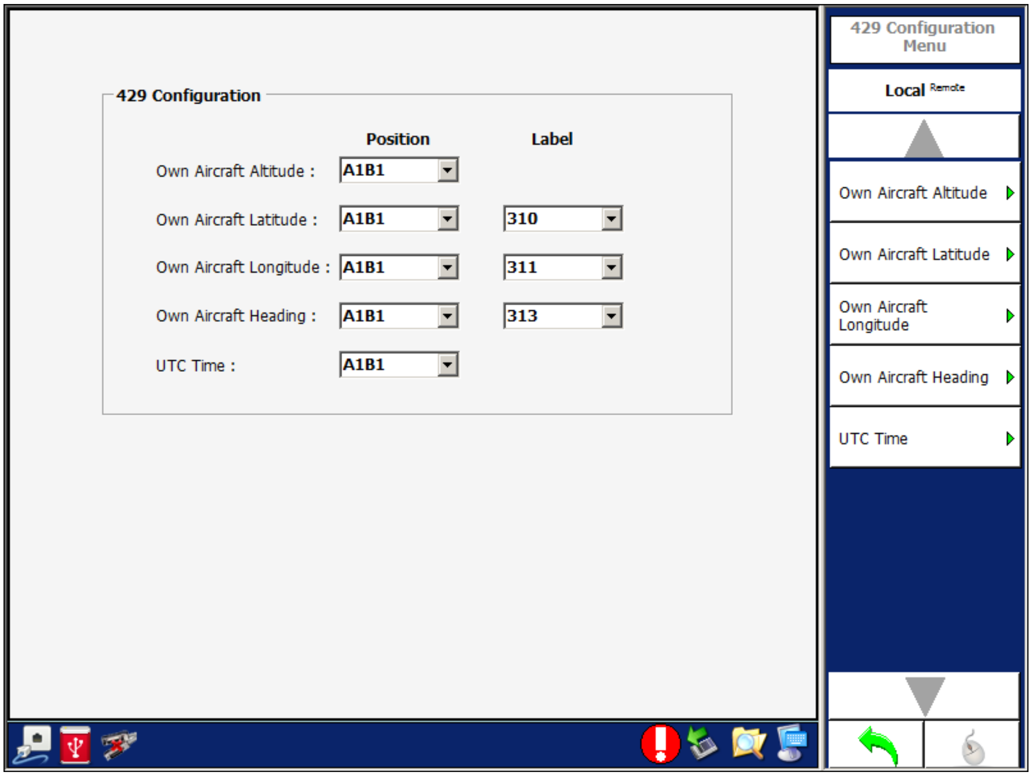
Figure 1.2.3 - 78 Network Connections, Change Settings Menu - Manual IP Address



3.8.3 CONFIGURATION MENU

Allows the user to select the 429 input channel position and label.

Figure 1.2.3 - 79 System, Configuration Menu

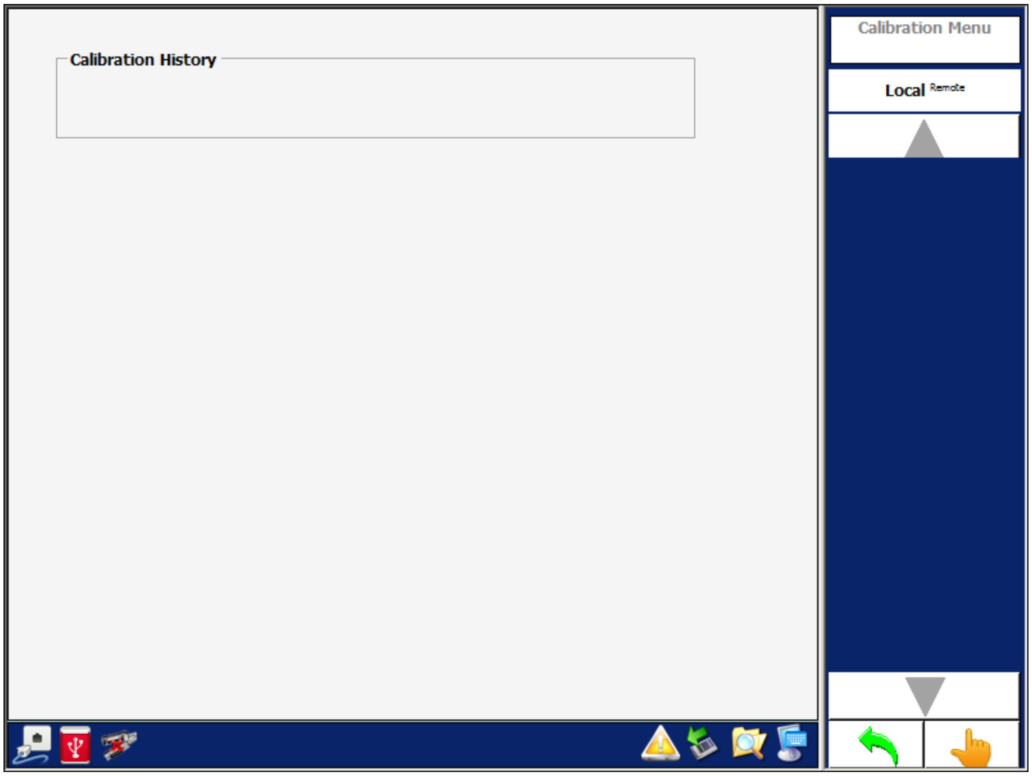


Screen Components	Description
Position Softkey	Allows the user to select the position of the: Own Aircraft Altitude Own Aircraft Latitude Own Aircraft Longitude Own Aircraft Heading UTC Time.
Label Softkey	Allows the user to select the 429 label of the: Own Aircraft Latitude Own Aircraft Longitude Own Aircraft Heading

3.8.4 CALIBRATION MENU

Allows the user to view the last calibration date and result.

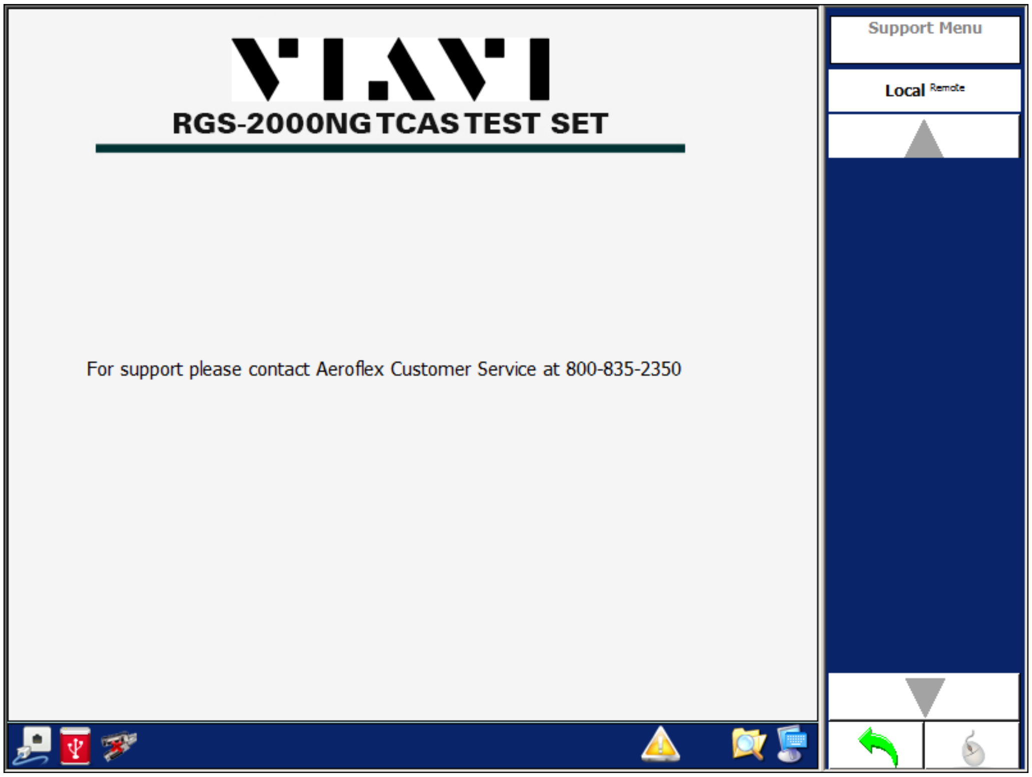
Figure 1.2.3 - 80 System, Calibration Menu



3.9 SUPPORT MENU

The Support Menu displays the VIAVI Customer Service contact information.

Figure 1.2.3 - 81 ATC-5000NG Support Menu



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4. OPERATING PROCEDURES AND TEST CONFIGURATIONS

4.1 OPERATING PROCEDURES

4.1.1 HOW TO CHANGE THE GPIB ADDRESS

1 Go to the Main Menu.

2 Press the *System Menu* Softkey to display the System Menu.

3 Change the GPIB address using the *GPIB Address* combobox or select the *GPIB Menu* Softkey. Select the *GPIB Address* Softkey. Once the address is changed, the new address is stored and is used until changed again.

4.1.2 HOW TO CHANGE THE TRANSMITTER FREQUENCY

1 Go to the Main Menu

2 Press the *TCAS* Softkey to display the TCAS Main Menu.

3 Press the *Settings* Softkey to display the TCAS Settings Menu.

4 Change the frequency of the appropriate transmitter generator using the *Frequency* combobox or select the *Signal Generator* Softkey, appropriate transmitter generator Softkey and use the *Frequency* Softkey.

4.1.3 HOW TO SET A SCOPE OUTPUT

1 Go to the Main Menu

2 Select the *System Menu* Softkey to display the System Menu.

3 Change the output by using the *Scope 1 or Scope 2* combobox or using *Scope 1 or Scope 2* Softkey. The test set contains six RF generators (A-F). The tables below identify the generator assignments for many test conditions.

Table 1.2.4 - 1 Transponder Generator Assignments - Single Test Mode[1]

Default Antenna Port	Top	Top	Bottom	Bottom	Top	Top
Interrogation Type	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
All SIF Modes (Cal & Var)	P1 and P3	P2 and P4	P1 and P3	P2 and P4	-	-
P1 - P2	P1	P2	-	-	-	-
P1	P1	-	-	-	-	-
Alternate Mode A & Mode C	P1 and P3	P2	P1 and P3	P2		
DME	P1	P2	-	-	-	-
Mode S (All Pulses Cal & No P5)	-	P1, P2 and P6	-	P1, P2 and P6	-	-
Mode S (P2 Var Only)	P2 (Var)	P1 and P6 (Cal)	P2 (Var)	P1 and P6 (Cal)	-	-
Mode S (P6 Var Only)	P1 and P2 (Cal)	P6 (Var)	P1 and P2 (Cal)	P6 (Var)	-	-
Mode S (P5 Cal & Var)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	-	-
Interference Pulses (Cal & Var)	-	-	-	-	P1, P2	-

1 For Mode S Interrogations only P2 or P6 can be selected for variable pulse amplitude, not both. If P2 or P6 is selected as variable P5 is disabled.

Table 1.2.4 - 2 Transponder Generator Assignments - Double Test Mode

Default Antenna Port	Top	Top	Top	Top	Top	Top
Interrogation Type	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
All SIF Modes (Cal & Var)	P1 and P3	P2 and P4	P1 and P3	P2 and P4	-	-
P1 - P2	P1	P2	-	-	-	-
P1	P1	-	-	-	-	-
Alternate Mode A & Mode C	P1 and P3	P2	P1 and P3	P2		
DME	P1	P2	-	-	-	-
Mode S (All Pulses Cal & No P5)	-	P1, P2 and P6	-	P1, P2 and P6	-	-
Mode S (P2 Var Only)	P2 (Var)	P1 and P6 (Cal)	P2 (Var)	P1 and P6 (Cal)	-	-
Mode S (P6 Var Only)	P1 and P2 (Cal)	P6 (Var)	P1 and P2 (Cal)	P6 (Var)	-	-
Mode S (P5 Cal & Var)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	-	-
Interference Pulses (Cal & Var)	-	-	-	-	P1, P2	-

Table 1.2.4 - 3 Transponder Generator Assignments - Interrogation Table Test Mode

Default Antenna Port	Top	Top	Bottom	Bottom	Top	Top
Interrogation Type	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
All SIF Modes (Cal & Var)	P1 and P3	P2 and P4	P1 and P3	P2 and P4	-	-
Mode S (All Pulses Cal & No P5)	-	P1, P2 and P6	-	P1, P2 and P6	-	-
Mode S (P2 Var Only)	P2 (Var)	P1 and P6 (Cal)	P2 (Var)	P1 and P6 (Cal)	-	-
Mode S (P6 Var Only)	P1 and P2 (Cal)	P6 (Var)	P1 and P2 (Cal)	P6 (Var)	-	-
Mode S (P5 Cal & Var)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	-	-
Interference Pulses (Cal & Var)	-	-	-	-	P1, P2	-

Table 1.2.4 - 4 Transponder Generator Assignments - Block Test Mode

Block Test Mode					
Top	Top	Top	Top	Top	Top
Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
-	P1, P3 and P4	-	-	-	-
-	P1, P2 and P6	-	-	-	-

Table 1.2.4 - 5 Transponder Generator Assignments - Interrogation with CW

Default Antenna Port	Top	Top	Bottom	Bottom	Top	Top
Interrogation Type	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
All SIF Modes (Cal & Var)	P1 and P3	P2 and P4	P1 and P3	P2 and P4	-	-
P1 - P2	P1	P2	-	-	-	-
P1	P1	-	-	-	-	-
Alternate Mode A & Mode C	P1 and P3	P2	P1 and P3	P2		
DME	P1	P2	-	-	-	-
Mode S (All Pulses Cal & No P5)	-	P1, P2 and P6	-	P1, P2 and P6	-	-
Mode S (P2 Var Only)	P2 (Var)	P1 and P6 (Cal)	P2 (Var)	P1 and P6 (Cal)	-	-
Mode S (P6 Var Only)	P1 and P2 (Cal)	P6 (Var)	P1 and P2 (Cal)	P6 (Var)	-	-
Mode S (P5 Cal & Var)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	P5 (Cal & Var)	P1, P2 and P6 (Cal)	-	-
Interference Pulses (Cal & Var)	-	-	-	-	P1, P2	-

Table 1.2.4 - 6 Transponder Generator Assignments - UAT Generator Assignments for ADS_B, TIS-B and FIS-B Payload

Default Antenna Port	Top	Top	Bottom	Bottom	OFF	OFF
UAT	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
UAT RX 1	978 MHz	-	-	-	-	-
UAT RX 2	-	-	978 MHz	-	-	-

Table 1.2.4 - 7 DME Generator Assignments

Default Antenna Port	Top	OFF	Top	OFF	OFF	OFF
Mode Selection	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
Mode X	P1, P2	-	-	-	-	-
Mode Y	P1, P2	-	-	-	-	-
Tone	P1, P2	-	-	-	-	-
Code	P1, P2	-	-	-	-	-
P2 Position	P2	-	-	-	-	-
Width	P2	-	-	-	-	-
Squitter	P1, P2	-	-	-	-	-
Echo	-	-	P1, P2	-	-	-

Table 1.2.4 - 8 Multi-Receiver Generator Assignments - Scenario Test Mode

Default Antenna Port	Top	Top	Bottom	Bottom	Top or Bottom	Top or Bottom
Gen Setup Configuration	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
UAT	978 MHz	-	978 MHz	-	-	-
1090 Targets	-	1090 MHz	-	1090 MHz	-	-
1030 Messages	-	-	-	-	-	1030 MHz

Table 1.2.4 - 9 Multi-Receiver Generator Assignments - Block Test Mode

Default Antenna Port	Top	Top	Bottom	Bottom	Top or Bottom	Top or Bottom
Default Antenna Port	Top	Top	Bottom	Bottom	Top	Top
Gen Setup Configuration	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
SIF Modes Reply	1090 MHz	-	1090 MHz	-	-	-
Mode S Reply	1090 MHz	-	1090 MHz	-	-	-

Table 1.2.4 - 10 Multi-Receiver Generator Assignments - DO-260 Test Mode

Default Antenna Port	Top or Bottom	Top or Bottom	Top or Bottom	Top or Bottom	Top or Bottom	Top or Bottom
Gen Setup Configuration	Generator A	Generator B	Generator C	Generator D	Generator E	Generator F
Normal (User Defined)	1090 MHz	1090 MHz	1090 MHz	1090 MHz	1090 MHz	1090 MHz
Altered Preamble	1090 MHz	-	1090 MHz	-	-	-
Bit Failures	1090 MHz	-	1090 MHz	-	-	-
Overlapping Pulses	1090 MHz	-	1090 MHz	-	-	-
Preamble Validation	1090 MHz	-	1090 MHz	-	-	-
Confidence Test	1090 MHz	-	1090 MHz	-	-	-

4.1.4 HOW TO PROGRAM THE DSP SOFTWARE OR FPGA FIRMWARE

1 Go to the Main Menu

2 Press the *System Menu* Softkey to display the System Menu.

3 Press the *Software Update* Softkey to display the Software Update Menu.

4 Press the *Select* Softkey to display the file dialog to select the configuration file that is used for programming.

5 If all devices enabled in the configuration file are to be programmed, press the *Execute* Softkey to start programming. If some devices do not require reprogramming, deselect the device under the Programming column and press the *Execute* Softkey to start programming.

6 During the programming sequence the device being programmed is highlighted in the table and a progress bar is displayed in the lower section of the menu.

7 After programming is completed, restart the system. To restart the system, press the Power Switch (Front Panel) and allow power to turn OFF. Press the Power Switch (Front Panel) again to power up the Test Set.

4.1.5 HOW TO ENTER THE OWN AIRCRAFT INFORMATION

1 Go to the Main Menu

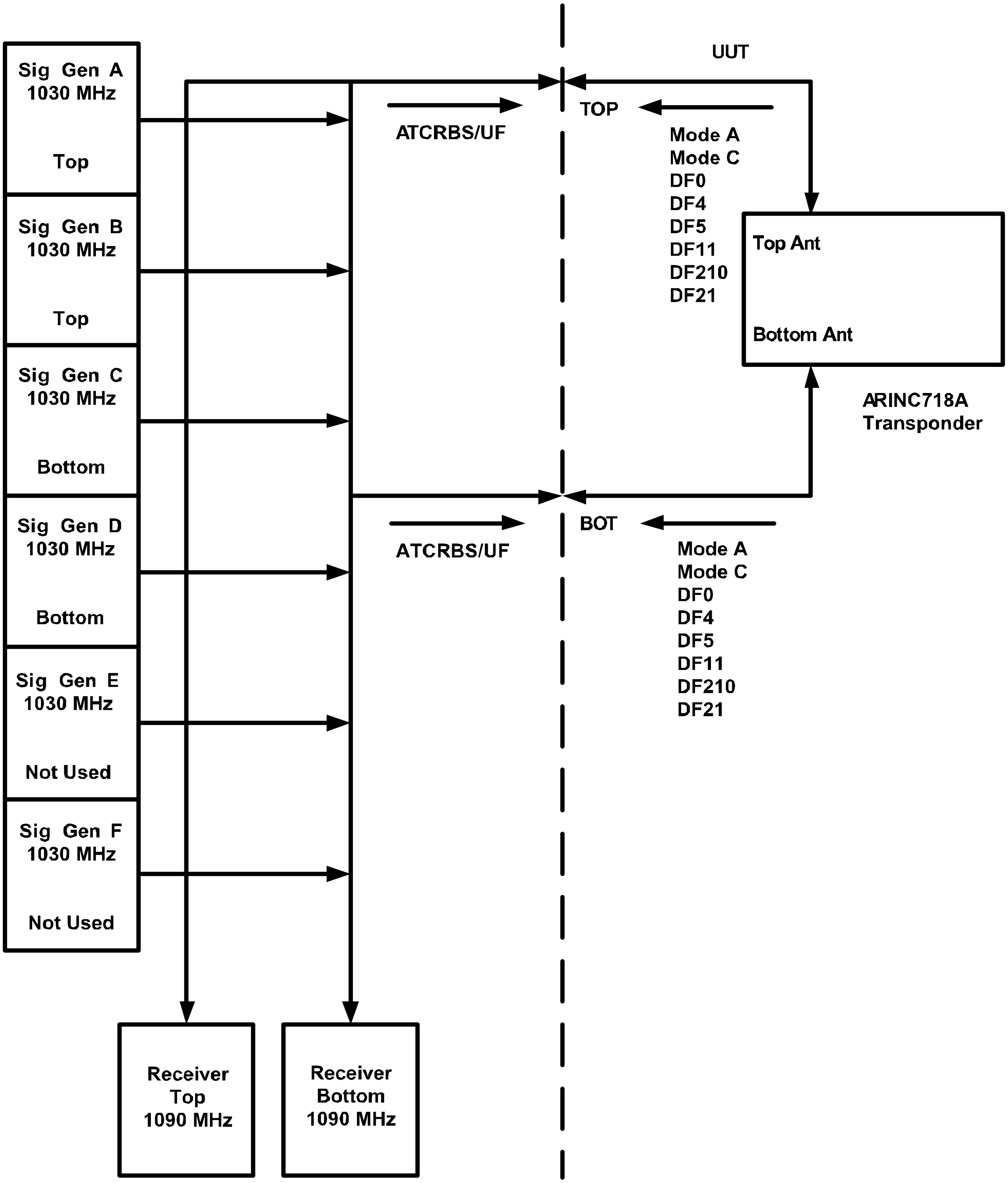
2 Press the *UAT* Softkey to display the UAT Main Menu.

3 Press the *Own Aircraft* Softkey to display the UAT Receiving Station Menu.

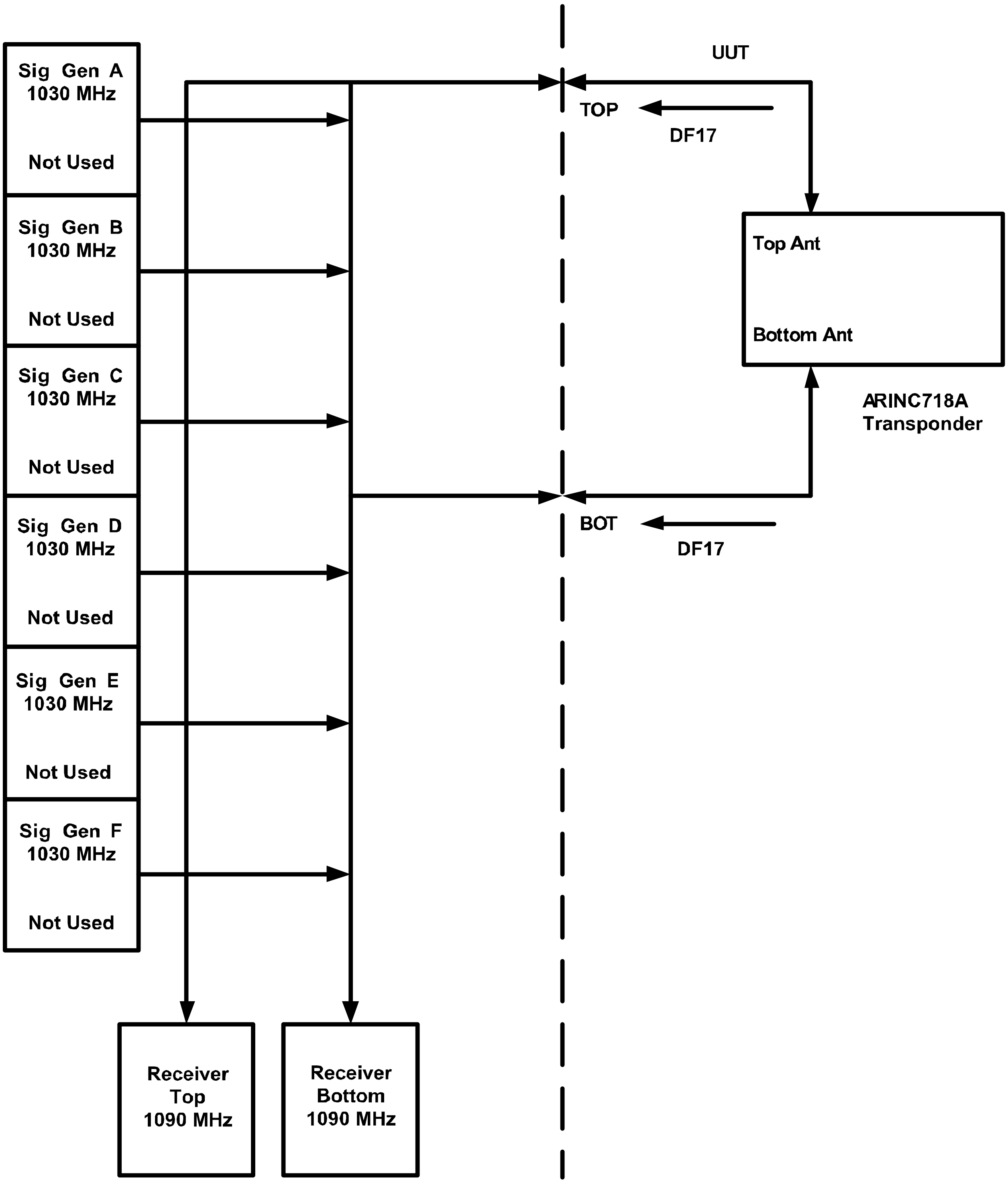
4 Use the comboboxes or Softkeys on the UUT Receiving Station Menu to enter the appropriate information.

4.2 TEST CONFIGURATIONS

4.2.1 TRANSPONDER ATC/MODE S/ELS/EHS TEST CONFIGURATION



4.2.2 TRANSPONDER ADS-B OUT (1090ES) TEST CONFIGURATION



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5. REMOTE OPERATION

5.1 OVERVIEW

Functional capabilities within the Unit for specific customers are provided by means of customer specific product keys (for instance UAT functionality although commands are defined, is only enabled for customers that have hardware and software UAT capability).

Command Language Nomenclature (not case sensitive):

:	The "colon" is used to separate the different command categories.
;	The "semicolon" is used as a sub-command separator within a command category.
SP	The "space" is used to separate the sub-commands from the actual sub-command values.
CR(\r)	The Carriage Return, "\r", is used to terminate a command line.
Keywords	Keywords are the names of the specific commands or sub-commands (either pre-defined abbreviations or complete command keywords can be used).
Values	Values are the alphanumeric values associated with the specific sub-commands.
//	The "//" is used to add a comment line within the command structure.

Return values:

#	The "#" is used to indicate a measurement value was unavailable.
?	The "?" is used to indicate the command did not complete correctly. The command will explicitly state if it will return a question mark.
*	The "*" is used to indicate the command completed normally. The command will explicitly state if it will return an asterisk.
!	The "!" is placed in the output buffer when a command syntax error occurs. When using the GPIB you can query the status byte to see if the D4 bit is set notifying you that something is waiting in the unit's output buffer. See next paragraph.

When configuring the GPIB using NI-VISA you can set attributes to flush the output buffer before each write. This should clear any remaining data such as the "!" from the output buffer.

For proper GPIB operation enable EOI at the end of each write.

The Unit can be serial polled via GPIB to receive status of operation. The status byte received from a serial poll has the following representation. The value is returned in hex format. A 20 hex (32 decimal) has bit D5 set indicating “Command Complete/Unit Ready”.

D0	Last Command Syntax Error
D1	Execution Error (Detectable Unit Function Failure), Bit reset by GPIB command *CLS
D2	Not Used
D3	Not Used
D4	Transmitter Queue Not Empty (Data available for GPIB read)
D5	Command Complete/Unit Ready
D6	Not Used
D7	Not Used

:ATC:STATUS? Command was added after version 17.03.3101 to check this status over Ethernet. This may be checked after each write to see if the previous command succeeded and the unit is ready for further commands.

Communication may be performed using different methods. For example, to set the own aircraft altitude, longitude and latitude, the following two methods could be used to send to commands to the Test Set (both are equivalent).

Method 1

```
:ATC5000NG:OWN:ALTITUDE 10000
:ATC5000NG:OWN:LATITUDE 25.8333
:ATC5000NG:OWN:LONGITUDE -80.33333
```

Method 2 (Example shown uses complete and abbreviated commands.)

```
:ATC5000NG:OWN:ALTITUDE 10000;:LATITUDE 25.8333;:LONGITUDE -80.33333
:ATC:OWN:ALT 10000;:LAT 25.8333;LONG -80.33333
:ATC5000NG:OWN:ALTITUDE 10000;:LAT 25.8333; :LONGITUDE -80.33333
```

The Unit also accepts commands from different subcommand categories by using the “;” and adding the subcommand structure for the other command. For example, using the previous example, we can also add a factory setting at the end of the command string.

```
:ATC5000NG:OWN:ALTITUDE 10000;:LATITUDE 25.8333;:LONGITUDE -80.33333
```

5.2 PROGRAMMING SUGGESTIONS

After sending the first command that changes the unit to a new instrument mode it is recommended to allow 3 to 5 seconds for the unit to apply the initial settings before sending any further commands. A 30 millisecond delay between commands is recommended.

It is also wise to send the factory reset command (:ATC:SET:FACT UAT, MULTI or XPDR) before sending other commands to setup the instrument. This will ensure the generators are configured properly for that mode of operation. Example: Send ":ATC:SCE:TYPE XPDR\r" to set the unit for transponder scenario, then send ":ATC:SET:FACT XPDR\r" to reset the generator to the default for that mode of operation.

The ATC-5000NG accepts the following GPIB commands:

5.2.1 *IDN?

This command returns manufacturer, model name and material number in a data string.

Example: VIAVI;ATC-5000NG RF Test Set;138156

5.2.2 *CLS

This command resets the status byte and the Touchscreen error log.

5.2.3 *ESR?

This command returns a decimal value from 0 to 255, in accordance with the following table.

Bit	Bit Weight	Bit Name	Condition
7	128	PON	Always 0
6	64	Not Used	Always 0
5	32	CME (Command Error)	0 = No Error; 1 = Error
4	16	EXE (Execution Error)	0 = No Error; 1 = Error
3	8	DDE	Always 0
2	4	QYE	Always 0
1	2	RQC	Always 0
0	1	OPC (Operation Complete)	0 = Not Ready; 1 = Complete (Ready)

5.2.4 SYSTEM:ERROR?

This command returns one line from the error log in the Touchscreen. Every time that the command is transmitted the next available error will be returned. If there is no more errors to return the following message will be returned: "Error Message Que Empty"

5.3 MEASUREMENT COMMANDS

This set of commands allows the user to query the ATC-5000NG to perform measurements on the received signal from the UUT. The ATC-5000NG can perform frequency, power and pulse characteristic measurements on both 1030 and 1090 MHz signals.

5.3.1 DATA FORMAT

Command Syntax:	{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:DFORMAT}SP<numeric>CR	
Description:	This command sets the replies numeric format.	
Numeric:	0 to 2 (decimal ASCII)	
	Value	Format
	0	Hexadecimal
	1	Decimal (no fractional part)
	2	Float (fractional part)
Example:	:ATC:MEA:DFORMAT 2\r	
Default:	1	
Query:	:ATC:MEA:DFORMAT?\r	
Return:	0	

5.3.2 DF DATA FRAME BIT

Command Syntax:	{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:DFBIT}SP<numeric>CR
Description:	This command sets the measurement routine to sample the selected bit.
Numeric:	1 to 112 (decimal ASCII)
Example:	:ATC:MEA:SET:DFBIT 7\r
Default:	1
Query:	:ATC:MEA:SET:DFBIT?\r
Return:	7

5.3.3 MODE

Command Syntax:	{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:MOD |:MODE}SP<numeric>CR	
Description:	This command sets the measurement mode. This command is ignored when the scenario type selected is XPDR.	
Numeric:	0 (decimal ASCII)	
	Value	Measurement Mode
	0	Pulse
Example:	:ATC:MEA:SET:MOD 0\r	
Default:	Pulse	
Query:	:ATC:MEA:SET:MOD?\r	
Return:	0	

5.3.4 PULSE

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:PUL |:PULSE}SP<value>CR

Description: This command sets the measurement routine to sample the selected pulse. Pulse selected to sample interrogation is ignored when the scenario type selected is XPDR.

Value	Pulse
0|F1	F1 ATCRBS Reply
1|C1	C1 ATCRBS Reply
2|A1	A1 ATCRBS Reply
3|C2	C2 ATCRBS Reply
4|A2	A2 ATCRBS Reply
5|C4	C4 ATCRBS Reply
6|A4	A4 ATCRBS Reply
7|B1	B1 ATCRBS Reply
8|D1	D1 ATCRBS Reply
9|B2	B2 ATCRBS Reply
10|D2	D2 ATCRBS Reply
11|B4	B4 ATCRBS Reply
12|D4	D4 ATCRBS Reply
13|F2	F2 ATCRBS Reply
14|P1MSR	P1 Mode S Reply
15|P2MSR	P2 Mode S Reply
16|P3MSR	P3 Mode S Reply
17|P4MSR	P4 Mode S Reply
18|S1MCI	S1 ATCRBS Interrogation
19|P1MCI	P1 ATCRBS Interrogation
20|P2MCI	P2 ATCRBS Interrogation
21|P3MCI	P3 ATCRBS Interrogation
22|P4MCI	P4 ATCRBS Interrogation
23|P1MSI	P1 Mode S Interrogation
24|P2MSI	P2 Mode S Interrogation
25|P6MSIR	P6 Start Interrogation
26|P6MSIF	P6 End Interrogation
27|P6MSI	P6 Mode S Interrogation
28|P6SPR	P6 SPR
29|MCSPI	SPI ATCRBS Reply
30|DFDATA	DF Frame Data
31|DMEXP1	DME X P1
32|DMEXP2	DME X P2
33|DMEYP1	DME Y P1
34|DMEYP2	DME Y P2
35|MCXBIT	X ATCRBS Reply

Example: :ATC:MEA:SET:PUL 18\r

Default: Scenario Type

XPDR	MULTI (Multi-Receiver)
0|F1	19|P1MCI

Query: :ATC:MEA:SET:PUL?\r

Return: 18

5.3.5 PULSE REQUEST

5.3.5.1 FREQUENCY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:FREQ? |:FREQUENCY?} CR

Description: This command returns the frequency of the incoming signal.

Example: :ATC:MEA:FREQ?\r

Return: Value is in ASCII data format specified in MHz. In case of the Float data format, the Value is returned with three decimal points.
If no measurement Value is available, the Unit replies with not ready “#”.

5.3.5.2 PULSE FALLTIME REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:FALL?} CR

Description: This command returns the fall time of the selected pulse.

Example: :ATC:MEA:PUL:FALL?\r

Return: Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.
If no measurement Value is available, the Unit replies with not ready “#”.

5.3.5.3 PULSE RISETIME REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:RISE?} CR

Description: This command returns the rise time of the selected pulse.

Example: :ATC:MEA:PUL:RISE?\r

Return: Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.
If no measurement Value is available, the Unit replies with not ready “#”.

5.3.5.4 PULSE POSITION REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:POS?|:POSITION?} CR

Description: This command returns the position of the selected pulse.

Example: :ATC:MEA:PUL:POS?\r

Return: Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.
If no measurement Value is available, the Unit replies with not ready “#”.

5.3.5.5 PULSE POWER REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:POWER?} CR

Description: This command returns the power of the selected pulse.

Example: :ATC:MEA:PUL:POWER?\r

Return: Value is in ASCII data format specified in dBm. In case of the Float data format, the Value is returned with two decimal points.
If no measurement Value is available, the Unit replies with not ready “#”.

5.3.5.6 PULSE WIDTH REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:WID? |:WIDTH?} CR

Description: This command returns the pulse width of the selected pulse.

Example: :ATC:MEA:PUL:WID?\r

Return: Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.

If no measurement Value is available, the Unit replies with <u>not</u> ready “#”.

5.3.6 SPR

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:SPR}SP<numeric>CR

Description: This command sets the measurement routine to sample the selected SPR.

Numeric: 0 to 112 (decimal ASCII)

0 is the Sync Phase Reversal of the P6 pulse. 1 is the first bit of the interrogation.

Example: :ATC:MEA:SET:SPR 27\r

Default: 0

Query: :ATC:MEA:SET:SPR?\r

Return: 27

Measured pulse must be set to “P6 SPR” or the query will return “?”.

5.3.7 TRIGGER PARAMETERS

5.3.7.1 ANTENNA

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:ANT |:ANTENNA}SP{TOP |BOTTOM}CR

Description: This command sets the measurement routine to sample the Top or Bottom antenna.

Example: :ATC:MEA:SET:TRIG:ANT TOP\r

Default: Top

Query: :ATC:MEA:SET:TRIG:ANT?\r

Return: TOP

5.3.7.2 DBM LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:LDBM}SP<numeric>CR

Description: This command sets the trigger level in dBm if trigger source is set to log video.

Numeric: 15 to 60 dBm (decimal ASCII)

Example: :ATC:MEA:SET:TRIG:LDBM 20\r

Query: :ATC:MEA:SET:TRIG:LDBM?\r

Return: 20

5.3.7.3 EDGE

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:EDGE}SP{+ | -}CR

Description: This command sets the trigger edge to + or -. This command is ignored when the scenario type selected is XPDR.

Example: :ATC:MEA:SET:TRIG:EDGE -\r

Default: +

Query: :ATC:MEA:SET:TRIG:EDGE?\r

Return: -

5.3.7.4 LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:LEV |:LEVEL}SP<numeric>CR

Description: This command sets the trigger level in analog to digital converter counts if trigger source is set to log video.

Numeric: 0 to 1023 (decimal ASCII)

Example: :ATC:MEA:SET:TRIG:LEV 400\r

Query: :ATC:MEA:SET:TRIG:LEV?\r

Return: 400

5.3.7.5 MODE

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:MODE}SP{NORMAL | SINGLE}CR

Description: This command sets the trigger mode to normal or single. This command is ignored when the scenario type selected is XPDR.

Example: :ATC:MEA:SET:TRIG:MODE NORMAL\r

Default: Single

Query: :ATC:MEA:SET:TRIG:MODE?\r

Return: NORMAL

5.3.7.6 SOURCE

Command Syntax: {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:SOU |:SOURCE}SP<numeric>CR

Description: This command sets the trigger source. This command is ignored when the scenario type selected is XPDR.

Numeric: 0 (decimal ASCII)

Value	Trigger Source
0	Log Video

Example: :ATC:MEA:SET:TRIG:SOU 0\r

Default: 0

Query: :ATC:MEA:SET:TRIG:SOU?\r

Return: 0

5.4 OWN AIRCRAFT COMMANDS

This set of commands allow the user to set the own aircraft information remotely.

5.4.1 ALTITUDE

Command Syntax: {:ATC |:ATC5000NG}{:OWN}{:ALT |:ALTITUDE}SP<numeric>CR

Description: This command sets the own aircraft (TCAS under test) altitude value. This command is valid only when the source of the own aircraft parameters is defined as “MANUAL..

Numeric: -1000 to 126700 feet (decimal ASCII)

Example: :ATC:OWN:ALT 2000\r

Default: Last altitude before power down.

Query: :ATC:OWN:ALT?\r

Return: 2000

5.4.2 HEADING

Command Syntax: {:ATC |:ATC5000NG}{:OWN}{:HEAD |:HEADING}SP<numeric>CR

Description: This command sets the own aircraft (TCAS under test) heading value. This command is valid only when the source of the own aircraft parameters is defined as “MANUAL.”

Numeric: -180 to 180 degrees (decimal ASCII)
Or
0 to 360 degrees (decimal ASCII)

Example: :ATC:OWN:HEAD 90. 1\r

Default: Last heading before power down.

Query: :ATC:OWN:HEAD?\r

Return: 90. 1

5.4.3 LATITUDE

Command Syntax: {:ATC |:ATC5000NG}{:OWN}{:LAT |:LATITUDE}SP<numeric>CR

Description: This command sets the own aircraft (TCAS under test) latitude value. This command is valid only when the source of the own aircraft parameters is defined as “MANUAL.”

Numeric: -90 to 90 degrees (Double ASCII)

Example: :ATC:OWN:LAT 25.8333\r

Default: Last latitude before power down.

Query: :ATC:OWN:LAT?\r

Return: 25.833300

5.4.4 LONGITUDE

Command Syntax: {:ATC |:ATC5000NG}{:OWN}{:LONG |:LONGITUDE}SP<numeric>CR

Description: This command sets the own aircraft (TCAS under test) longitude value. This command is valid only when the source of the own aircraft parameters is defined as “MANUAL.”

Numeric: -180 to 180 degrees (double ASCII)

Example: :ATC:OWN:LONG -80.333331\r

Default: Last longitude before power down.

Query: :ATC:OWN:LONG?\r

Return: -80.333331

5.4.5 MODE S ADDRESS

Command Syntax: {:ATC |:ATC5000NG}{:OWN}{:MSADDR}SP<numeric>CR

Description: This command sets the own aircraft Mode S address. This command is valid for any source of the own aircraft parameters defined.

Numeric: 0 to FFFFFF (hexadecimal ASCII)

Example: :ATC:OWN:MSADDR 000004\r

Default: Last Mode S Address before power down.

Query: :ATC:OWN:MSADDR?\r

Return: 000004

5.5 RECEIVER COMMANDS

This set of commands allows the user to set the ATC-5000NG to perform various receiver functions (select received messages, enable/disable data logging, read logged data, etc.).

5.5.1 LOG PARAMETERS

5.5.1.1 CLEAR

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:LOG}{:CLE |:CLEAR} CR

Description: This command clears the log buffer of received messages.

Example: :ATC:RCV:LOG:CLE\r

5.5.1.2 COUNT REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:CO |:COUNT}?CR

Description: This command returns the count of messages available to read from the ATC-5000NG receiver log.

Example: :ATC:RCV:CO?\r

Return Value: Decimal Value in ASCII

5.5.1.3 MESSAGE TYPE COUNT REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:MTCO |:MTCOUNT}?CR

Description: This command returns the amount per type of messages available to read from the ATC-5000NG receiver log.

Example: :ATC:RCV:MTCO?\r

Return Value: Decimal Value in ASCII separated by comma in the following order:
UUT DF messages count, UUT ATCRBS Reply messages count, UUT UF messages count, UUT ATCRBS Interrogation messages count, UUT UAT messages count, ATC DF messages count, ATC ATCRBS Reply messages count, ATC UF messages count, ATC ATCRBS Interrogation count and ATC UAT messages count.

Example: :ATC:RCV:MTCO?\r

Return: 0,1439,0,0,0,0,0,0,2878,0

If the Unit is not ready to return an answer, “#” is returned, separated by a comma.

5.5.1.4 READ

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:LOG:DL?}CR

Description: If the ATC-5000NG Receiver Log is empty, the response is EMPTY (ASCII). If data is available, the ATC-5000NG responds with 25 bytes in hexadecimal format (50 ASCII bytes). The following is the description of each byte:

Byte 1: Type of Message

Message	Code
Mode S Reply	1
ATCRBS Reply	2
Mode S Interrogation	3
ATCRBS Interrogation	4
ATC Mode S Reply	5
ATC ATCRBS Reply	6
ATC Mode S Interrogation	7
ATC ATCRBS Interrogation	8

Byte2 to 15: Data

Mode S Short Replies (DF0 to DF15):

Byte 2 to 8: All 0s

Byte 9 to 15: Data (Byte 9, Bit 7 (MSB); hexadecimal)

Mode S Long Replies (DF16 to DF24):

Byte 2 to 15: Data (Byte2, Bit 7 (MSB); hexadecimal)

Mode S Short Interrogations(UF0 to UF15):

Byte 2 to 8: All 0s

Byte 9 to 15: Data (Byte 9, Bit 7 (MSB); hexadecimal)

Mode S Long Interrogations (UF16 to UF24):

Byte 2 to 15: Data (Byte2, Bit 7 (MSB); hexadecimal)

ATCRBS Replies:

SW VER. 17.08.1701 AND BELOW:

BYTE 2: HIGH NIBBLE BIT7-4 (ZERO); LOW NIBBLE BIT 3-0 (C1 A1 C2 A2)

BYTE 3: (C4 A4 B1 D1 B2 D2 B4 D4)

BYTE 4 TO 15: ALL 0’S

SW VER. 17.10.0601 AND ABOVE:

Byte 2: High Nibble: Reserved; Low Nibble (Zero)

Byte 3: High Nibble bit 7-6 (Zero); SPI bit 5; X bit 4; Low Nibble bit 3-0 (C1 A1 C2 A2)

Byte 4: (C4 A4 B1 D1 B2 D2 B4 D4)

Byte 5 – 15: All 0’s

Byte2 to 15: Data

ATCRBS Interrogations:
Byte 2: High Nibble Bit 7-4 (Reserved); Low Nibble Bit 3-0 (Mode)
Mode:

Interrogation Type	Mode Code
Mode C	1
Mode C Only All Call	2
Mode C/Mode S All Call	3
Mode C with S1	4
Mode C Only All Call with S1	5
Mode C/Mode S All Call with S1	6
Mode A	7
Mode A Only All Call	8
Mode A/Mode S All Call	9
Mode A with S1	A
Mode A Only All Call with S1	B
Mode A/Mode S All Call with S1	C

Byte 3: Reserved
Byte 4: Reserved
Byte 5 to 15: All 0s
Byte 16: Location Status
Mode S Replies/Interrogations:
Bit 7 (MSB): UUT: Top Receiver = 1, Bottom Receiver = 0; ATC: Always 0
Bit 6-4: UUT: Always 0; ATC: Transmitter

Transmitter	Code
Generator A	0
Generator B	1
Generator C	2
Generator D	3
Generator E	4
Generator F	5

Bit 3-0: Reserved
ATCRBS Replies/ Interrogations:
Bit 7 (MSB): UUT: Top Receiver = 1, Bottom Receiver = 0; ATC: Always 0
Bit 6-4: UUT: Always 0; ATC: Transmitter

Transmitter	Code
Generator A	0
Generator B	1
Generator C	2
Generator D	3
Generator E	4
Generator F	5

Bit 3-0: Reserved
Byte 17 to 19: Address
Mode S Replies/Interrogations:
Mode S Address (Byte 17, Bit 7-MSB)
ATCRBS Replies/Interrogations:
Reserved
Byte 20 to 25: Time Stamp

6 bytes represent time from start of scenario. Bit resolution is equivalent to 25 ns.

Example: :ATC:RCV:LOG:DL?\r

Reply: 02800E090000000000000000000080800E090016D1FEA6AF

5.5.1.5 RECORD

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:REC |:RECORD}SP{ON | OFF}CR

Description: This command enables or disables the ATC-5000NG from recording (logging) the messages being received by the receivers that are enabled to capture.

Example: :ATC:RCV:REC ON\r

Default: Off

Query: :ATC:RCV:REC?\r

Retrun: ON

5.5.2 MASK

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:MA |:MASK}SP<numeric>CR

Description: This command enables/disables the capture of messages. A “1” for the receiver associated bit means that the receiver is enabled.

Numeric: FFF(hexadecimal ASCII Byte)

Bit	Receiver
0x01	UUT DF Messages
0x02	UUT ATCRBS Replies
0x04	UUT UF Messages
0x08	UUT ATCRBS Interrogations
0x300	UUT UAT Messages (Requires ATC-5000NG UAT Hardware)
0x10	ATC-5000NG DF Messages
0x20	ATC-5000NG ATCRBS Replies
0x40	ATC-5000NG UF Messages
0x80	ATC-5000NG ATCRBS Interrogations
0xC00	ATC-5000NG UAT Messages (Requires ATC-5000NG UAT Hardware)

Example: :ATC:RCV:MA 10\r Note: 0x is not sent. Hex value is assumed.

Default: No mask (All receivers off)

Query: :ATC:RCV:MA?\r

Retrun: 010

5.5.3 STATUS REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:ST |:STATUS}?CR

Description: This command returns a byte with the status of all eight receivers within the ATC-5000NG (receivers in this context means any of the 8 defined functional “receivers” below - not physical RF Hardware receivers). A “1” for the receiver associated bit means that the receiver is receiving messages.

Example: :ATC:RCV:ST?\r

Return Value: FF (hexadecimal ASCII Byte)

Bit	Receiver
0x01	UUT DF Messages
0x02	UUT ATCRBS Replies
0x04	UUT UF Messages
0x08	UUT ATCRBS Interrogations
0x10	ATC-5000NG DF Messages
0x20	ATC-5000NG ATCRBS Replies
0x40	ATC-5000NG UF Messages
0x80	ATC-5000NG ATCRBS Interrogations

5.5.4 UTC TIME

Command Syntax: {:ATC |:ATC5000NG}{:RCV |:RCVR}{:UTC }SP{ON[,{PC|GPS|429}] | OFF}CR

Description: This command enables or disables the UTC time format for the received messages timestamp. When the UTC time is enabled, the UTC source definition is optional. By default, the UTC source is from the PC time. The GPS source is hardware dependent.

Example: :ATC:RCV:UTC ON,PC\r

Default: Off

Query: :ATC:RCV:UTC?\r

Return: ON,PC

5.6 RTCA/DO-260 TEST COMMANDS

These commands allow the definition of different RTCA/DO-260 tests. The ATC-5000NG has implemented the following test types: Normal Test, Bit Failures Special Test, Altered Preamble Special Test, Overlapping Pulse Special Test, Confidence Test and Preamble Validation Test.

The Normal Test is a test that allows the definition of one type of message (Mode S, Mode A/Mode C or none) for each generator available for the test. The generator available for the test depends on the power mode (Low Power or High Power). In Low Power Mode, all generators are available. In High Power Mode, only generators GENA, GENC and GENE are available.

For the special tests (Bit Failures, Altered Preamble, Overlapping Pulse, Confidence Test and Preamble Validation) only two generators are available (GENA and GENC). The generator GENA is used to define the reference (Mode S message) and generator GENC is used to define the special test.

5.6.1 GENERATOR PARAMETERS

5.6.1.1 ANTENNA

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:PATH |:PA}SP{TOP | BOTTOM}CR {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA}{:GENS}{:GENA |:GENC }{:PATH |:PA}SP{TOP | BOTTOM}CR
Description:	This command sets the selected generator path to the Top or Bottom antenna.
Example:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:PA TOP\r
Example:	:ATC:DO260:TYPE:BITF:GENS:GENA:PATH BOTTOM\r
Default:	Top
Query:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:PA?\r
Return:	TOP

5.6.1.2 ATCRBS DATA

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL} {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:MODEC} {:DATA}SP<numeric>CR
Description:	This command defines the Mode A /Mode C Code to transmit using the selected generator. This command is valid only for the NORMAL test type.
Numeric:	0 to 7777 (octal ASCII)
Example:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:DATA 1234\r
Default:	0000
Query:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:DATA?\r
Return:	1234

5.6.1.3 ATCRBS DATA RANDOM ON/OFF

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL} {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:MODEC}{:RANDOM}SP{ON | OFF}CR
Description:	This command enables or disables the random generation of Mode C Pulse to transmit using the selected generator. This command is valid only for the NORMAL test type.
Example:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:RANDOM ON\r
Default:	Off
Query:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:RANDOM?\r
Return:	ON

5.6.1.4 ATCRBS PULSE PARAMETERS

5.6.1.4.1 DELTA PULSE POSITION

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:DPOS}SP<numeric>CR

Description: This command sets the delta position of the selected ATCRBS pulse on the selected generator.

Numeric: -1000 to 1000 ns in 25 ns steps (decimal ASCII). Except for F1, the range is from 0 to 100.

Example: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PF2:DPOS 100\r

Default: 0

Query: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PF2:DPOS?\r

Return: 100

5.6.1.4.2 DELTA PULSEWIDTH

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:DWIDTH}SP<numeric>CR

Description: This command sets the delta width of the selected ATCRBS pulse on the selected generator.

Numeric: -400 to 400 ns in 25 ns steps (decimal ASCII)

Example: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PC1:DWIDTH -200\r

Default: 0

Query: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PC1:DWIDTH?\r

Return: -200

5.6.1.4.3 PULSE ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables (<u>not</u> visible) the selected ATCRBS pulse.

Example: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:4:PD2:ENABLE OFF\r

Default: On

Query: :ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:4:PD2:ENABLE?\r

Return: OFF

5.6.1.5 COHERENCE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENC |:GENE }{:COH}SP{ON | OFF}CR
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP | :ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA | :CONFIDENCE |:CONF} {:GENS}{:GENA |:GENC }{:COH}SP{ON | OFF}CR

Description: This command sets pair Gen A/GenB, Gen C/ Gen D and Gen E/Gen F to use a single phase lock loop in the transmitter module. By default, the coherence is turned off.

Example: :ATC:DO260:TYPE:BITFAILURES:GENS:GENA:COH ON\r

Default: OFF

Query: :ATC:DO260:TYPE:BITFAILURES:GENS:GENA:COH?\r

Return: ON

5.6.1.6 DELAY

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:DELAY }SP<numeric>CR
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:DELAY }SP<numeric>CR

Description: This command sets the selected generator to relative delay in ns.

Numeric: 0 to 120000 ns (DECIMAL ASCII)
Or -120000 to 120000 ns only valid for type “NORMAL” and the trigger mode selected “WALK”.

Example: :ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 125\r

Example: :ATC:DO260:TYPE:OVERLAP:GENS:GENC:DELAY 50\r

Default: 0

Query: :ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY?\r

Return: 125

5.6.1.7 ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:SIGNAL |:SIG}SP{ON | OFF}CR

Description: This command enables or disables the selected generator.

Example: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON\r

Default: Off

Query: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL?\r

Return: ON

5.6.1.8 FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:FREQUENCY |:FREQ}SP<numeric>CR
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:FREQUENCY |:FREQ}SP<numeric>CR

Description: This command sets the selected generator output frequency.

Numeric: 952 to 1223 MHz (decimal ASCII).

Example: :ATC:DO260:TYPE:NORMAL:GENS:GENA:FREQ 1091\r

Example: :ATC:DO260:TYPE:OVERLAP:GENS:GENC:FREQ 1089\r

Default: 1090

Query: :ATC:DO260:TYPE:NORMAL:GENS:GENA:FREQ?\r

Return: 1091.0

5.6.1.9 MODE S DATA

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:MODES} {:DATA}SP<mode s hex data>CR {:ATC |:ATC5000NG}{:DO260}{:TYPE} {:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA } {:MODES} {:DATA}SP<mode s hex data>CR
Description:	This command defines the Mode S message to transmit through the selected generator. For long Mode S, the <mode s hex data> contains 28 hexadecimal figures. For short Mode S, the <mode s hex data> contains 14 hexadecimal figures. The last six hexadecimal figures are used to define the Mode S Address. By default, the Mode S data is 00000000000001.
Example:	:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 8800000148000000000000000001\r
Example:	:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA F100088\r
Default:	00000000000001
Query:	:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA?\r
Return:	0000000FEFA0C0

5.6.1.10 MODE S PULSE PARAMETERS

5.6.1.10.1 PREAMBLE DELTA PULSE POSITION

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P2 |:P3 |:P4 }{:DPOS}SP<numeric>CR
Description:	This command sets the delta position of the selected Mode S pulse on the selected generator.
Numeric:	-1000 to 1000 ns in 25 ns steps (decimal ASCII)
Example:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:3:P3:DPOS 25\r
Default:	0
Query:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:3:P3:DPOS?\r
Return:	25

5.6.1.10.2 PREAMBLE DELTA PULSEWIDTH

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P1 |:P2 |:P3 |:P4 }{:DWIDTH}SP<numeric>CR
Description:	This command sets the delta width of the selected Mode S pulse on the selected generator.
Numeric:	-400 to 400 ns in 25 ns steps (decimal ASCII)
Example:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:2:P3:DWIDTH 200\r
Default:	0
Query:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:2:P3:DWIDTH?\r
Return:	200

5.6.1.10.3 PREAMBLE PULSE ENABLE

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P1 |:P2 |:P3 |:P4 }{:ENABLE}SP{ON | OFF}CR
Description:	This command enables or disables (not visible) the selected Mode S pulse.
Example:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:4:P4:ENABLE OFF\r
Default:	On
Query:	:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:4:P4:ENABLE?\r
Return	OFF

5.6.1.11 POWER LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:POWER |:POW}SP<numeric>CR
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:POWER |:POW}SP<numeric>CR

Description: This command sets the selected generator output power level.

Numeric: -20 to -90 dBm (decimal ASCII)

Example: :ATC:DO260:TYPE:NORMAL:GENS:GENC:POW -30\r

Example: :ATC5000NG:DO260:TYPE:ALTEREDPREAMBLE:GENS:GENA:POWER -30\r

Default: -20 dBm

Query: :ATC:DO260:TYPE:NORMAL:GENS:GENC:POW?\r

Return: -30

5.6.1.12 RANDOM MODE S DATA ON/OFF

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:MODES} {:RANDOM}SP{ON | OFF}CR

Description: This command enables or disables the random generation of Mode S Pulse to transmit using the selected generator.

Example: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM ON\r

Default: Off

Query: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM?\r

Return: ON

5.6.1.13 RANDOM STARTING POSITION ON/OFF

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:RSPOS}SP{ON | OFF}CR

Description: This command enables or disables the random starting position generation of the pulse to transmit using the selected generator. For the generator trigger source, the random starting position is disabled. If the random starting position is disabled with trigger mode set to random, then the starting position is the trigger source position plus the delay Value for that specific generator.

Example: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:RSPOS OFF\r

Default: On

Query: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:RSPOS?\r

Return: OFF

5.6.1.14 WALK ON/OFF

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF }{:WALK}SP{ON | OFF}CR

Description: This command enables or disables the walk status of the transmission using the selected generator. For the generator trigger source, the walk status is disabled. If walk is disabled, the transmission begins the delay Value from the trigger source. If walk is enabled, the transmission initially begins at the delay Value and moves 50 ns every transmission until the end.

Example: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:WALK OFF\r

Default: On

Query: :ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:WALK?\r

Return: OFF

5.6.2 LOAD

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:LOAD}SP<filename>CR
Description:	This command loads a CSV scenario file (specified filename) from the internal storage area. A "*" is returned upon completion of loading the file.
Example:	:ATC:DO260:LOAD test1.csv\r

5.6.3 NUMBER OF TRANSMISSIONS

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRANSMISSIONS |:TRANS}SP<numeric>CR
Description:	This command sets the number of transmissions.
Numeric:	{ 0, 20, 40, 60, 100, 200, 400, 600, 945, 1000, 2000, 4000, 6000, 10000} (decimal ASCII)
Example:	:ATC5000NG:DO260:TIMING:TRANSMISSIONS 20\r
Default:	0 (unlimited)
Query:	:ATC5000NG:DO260:TIMING:TRANSMISSIONS?\r
Return:	20

5.6.4 REPETITION INTERVAL

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TIMING}{:PERIOD |:PER}SP<numeric>CR
Description:	This command sets the transmission interval in ms.
Numeric:	10 to 2000 ms (decimal ASCII).
Example:	:ATC5000NG:DO260:TIMING:PERIOD 20\r
Default:	10 ms (100 repetitions per second)
Query:	:ATC5000NG:DO260:TIMING:PERIOD?\r
Return:	20

5.6.5 RESET

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:RESET}CR	
Description:	This command initializes the DO-260 test to the default values.	
Default:	Attribute	Value
	Test Type	Normal
	Trigger Source	GENA
	Trigger Mode	Delay+
	Period (ms)	10
	Number of Transmissions	0 - Unlimited
	Signal (All Generators)	OFF
	Power (All Generators)	-20 dBm
	Phase (All Generators)	0 deg
	Path (All Generators)	Top
	Delay (All Generators)	0 ns
	Message Type	None
Example:	:ATC:DO260:RESET\r	

5.6.6 SAVE

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:SAVE}SP<filename>CR
Description:	This command saves the current scenario into the internal storage area with the specified filename.
Example:	:ATC:DO260:SAVE test1.csv\r

5.6.7 SPECIAL TEST

The follow set of commands allow the user to setup some specific tests in RTCA DO-260 document. The special tests provided by the ATC-5000NG are Altered Preamble, BIT Failure, Confidence Test, Overlapping and Preamble Validation.

5.6.7.1 ALTERED PREAMBLE PARAMETERS

5.6.7.1.1 PULSE ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:ENABLE }SP{ON | OFF}CR

Description: This command enables or disables the selected pulse.

Example: :ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE ON\r

Default: On

Query: :ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE?\r

Return: ON

5.6.7.1.2 PULSE POSITION

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:POSITION |:POS}SP<numeric>CR

Description: This command sets the selected pulse delay. By default, the delay is 0 ns.

Numeric:

Pulse	Range	Default Value
P1	[-5000, 675]	0
P2	[675, 1425]	1000
P3	[3075, 3925]	3500
P4	[4075, 4925]	4500

Example: :ATC:DO260:TYPE:ALT:PULSE:P2:POS 1000\r

Query: :ATC:DO260:TYPE:ALT:PULSE:P2:POS?\r

Return: 1000

5.6.7.1.3 PULSE POWER

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:REFERENCE |:REF}SP{GENA | GENC }CR

Description: This command sets the selected pulse reference power. Only generators GENA and GENC are available.

Example: :ATC:DO260:TYPE:ALT:PULSE:P1:REF GENA\r

Default: GENA power

Query: :ATC:DO260:TYPE:ALT:PULSE:P1:REF?\r

Return: GenA

5.6.7.1.4 PULSE WIDTH

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4} {:WIDTH |:WID}SP<numeric>CR
Description:	This command sets the selected pulse width.
Numeric:	0 to 4500 ns. (decimal ASCII)
Example:	:ATC:DO260:TYPE:ALT:PULSE:P1:WID 200\r
Default:	500 ns
Query:	:ATC:DO260:TYPE:ALT:PULSE:P1:WID?\r
Return:	200

5.6.7.2 BIT FAILURE PARAMETERS

5.6.7.2.1 FIRST BAD CHIP

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:BFIRST}SP<numeric>CR
Description:	This command sets the first bit of the bad chips pulse.
Numeric:	0 for no bad chip (decimal ASCII) 1 to 112 if the reference is a long Mode S (decimal ASCII) 1 to 56 if the reference is a short Mode S (decimal ASCII)
Example:	:ATC:DO260:TYPE:BITF:CHIPS:BFIRST 33\r
Default:	0
Query:	:ATC:DO260:TYPE:BITF:CHIPS:BFIRST?\r
Return:	33

5.6.7.2.2 FIRST ENERGY CHIP

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:FIRST}SP<numeric>CR
Description:	This command sets the first energy bit of the bad chips pulse.
Numeric:	0 for no bad chip (decimal ASCII) 1 to 112 if the reference is a long Mode S (decimal ASCII) 1 to 56 if the reference is a short Mode S (decimal ASCII)
Example:	:ATC:DO260:TYPE:BITF:CHIPS:FIRST 33\r
Default:	0
Query:	:ATC:DO260:TYPE:BITF:CHIPS:FIRST?\r
Return:	33

5.6.7.2.3 LAST BAD CHIP

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:BLAST}SP<numeric>CR
Description:	This command sets the last bit of the bad chips pulse.
Numeric:	0 for no bad chip (decimal ASCII) 1 to 112 if the reference is a long Mode S (decimal ASCII) 1 to 56 if the reference is a short Mode S (decimal ASCII)
Example:	:ATC:DO260:TYPE:BITF:CHIPS:BLAST 39\r
Default:	0
Query:	:ATC:DO260:TYPE:BITF:CHIPS:BLAST?\r
Return:	39

5.6.7.2.4 LAST ENERGY CHIP

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF }{:CHIPS}{:LAST}SP<numeric>CR

Description: This command sets the last energy bit of the bad chips pulse.

Numeric: 0 for no bad chip (decimal ASCII)
1 to 112 if the reference is a long Mode S (decimal ASCII)
1 to 56 if the reference is a short Mode S (decimal ASCII)

Example: :ATC:DO260:TYPE:BITF:CHIPS:LAST 39\r

Default: 0

Query: :ATC:DO260:TYPE:BITF:CHIPS:LAST?\r

Return: 39

5.6.7.3 CONFIDENCE TEST PARAMETERS

5.6.7.3.1 BAD CHIPS

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:CONFIDENCE |:CONF }{:BADP}{:CHIPS}SP<numeric>[,<numeric>[,<numeric>[,<numeric>[,<numeric>]]]]CR

Description: This command sets the list of bits with bad chip pulses. This command allows defining up to five different bad bits.

Numeric: 1 to 112 if the reference is a long Mode S (decimal ASCII)
1 to 56 if the reference is a short Mode S (decimal ASCII)

Example: :ATC:DO260:TYPE:CONF:BADP:CHIPS 33\r

Default: No selection

Query: :ATC:DO260:TYPE:CONF:BADP:CHIPS?\r

Return: 33

5.6.7.3.2 ENERGY CHIPS

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:CONFIDENCE |:CONF }{:ENERGY}{:CHIPS}SP<numeric>[,<numeric>[,<numeric>[,<numeric>[,<numeric>]]]]CR

Description: This command sets the list of bits with energy on both halves of the chip. This command allows defining up to five different energy bits.

Numeric: 1 to 112 if the reference is a long Mode S (decimal ASCII)
1 to 56 if the reference is a short Mode S (decimal ASCII)

Example: :ATC:DO260:TYPE:CONF:ENERGY:CHIPS 33,36,45,56\r

Default: No selection

Query: :ATC:DO260:TYPE:CONF:ENERGY:CHIPS?\r

Return: 33,36,45,56

5.6.7.4 OVERLAPPING PARAMETERS

5.6.7.4.1 PULSE DELAY

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP}{:PULSE}{:DELAY}SP<numeric>CR

Description: This command sets the pulse delay relative to P1. By default, the width is 0 ns.

Numeric: -20000 to 2000 ns (decimal ASCII)

Example: :ATC:DO260:TYPE:OVERLAP:PULSE:DELAY 2000\r

Default: 0 ns

Query: :ATC:DO260:TYPE:OVERLAP:PULSE:DELAY?\r

Return: 2000

5.6.7.4.2 PULSE WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP}{:PULSE} {:WIDTH |:WID}SP<numeric>CR

Description: This command sets the overlapping pulse width.

Numeric: 0 to 130000 ns (decimal ASCII)

Example: :ATC:DO260:TYPE:OVERLAP:PULSE:WIDTH 4500\r

Default: 0 ns

Query: :ATC:DO260:TYPE:OVERLAP:PULSE:WIDTH?\r

Return: 4500

5.6.7.5 PREAMBLE VALIDATION TEST PARAMETERS

5.6.7.5.1 DELTA AMPLITUDE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }
{:CHIPS}{:DAMP}SP<numeric>CR

Description: This command sets the delta amplitude in dB for energy bits of the pulse.

Numeric: -10 to 10 dB (decimal ASCII).

Example: :ATC:DO260:TYPE:PREA:CHIPS:DAMP -6\r

Default: 0 dB

Query: :ATC:DO260:TYPE:PREA:CHIPS:DAMP?\r

Return: -6

5.6.7.5.2 FIRST ENERGY CHIP

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }
{:CHIPS}{:EFIRST}SP<numeric>CR

Description: This command sets the first energy bit of the message with amplitude.

Numeric: 0 for no bad chip (decimal ASCII)
1 to 112 if the reference is a long Mode S (decimal ASCII)
1 to 56 if the reference is a short Mode S (decimal ASCII)

Example: :ATC:DO260:TYPE:PREA:CHIPS:EFIRST 1\r

Default: 0

Query: :ATC:DO260:TYPE:PREA:CHIPS:EFIRST?\r

Return: 1

5.6.7.5.3 FIRST NO ENERGY CHIP

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }
{:CHIPS}{:NFIRST}SP<numeric>CR

Description: This command sets the first no energy bit of the message.

Numeric: 0 for no bad chip (decimal ASCII)
1 to 112 if the reference is a long Mode S (decimal ASCII)
1 to 56 if the reference is a short Mode S (decimal ASCII)

Example: :ATC:DO260:TYPE:PREA:CHIPS:NFIRST 1\r

Default: 0

Query: :ATC:DO260:TYPE:PREA:CHIPS:NFIRST?\r

Return: 1

5.6.7.5.4 INCLUDE DELTA AMPLITUDE (No Energy in Chips)

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA } {:CHIPS}{:IDAMP}SP{ON|OFF}CR
Description:	This command enables or disables the delta amplitude for no energy bits.
Example:	:ATC:DO260:TYPE:PREA:CHIPS:IDAMP ON\r
Default:	Off
Query:	:ATC:DO260:TYPE:PREA:CHIPS:IDAMP?\r
Return:	ON

5.6.7.5.5 LAST ENERGY CHIP

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA } {:CHIPS}{:ELAST}SP<numeric>CR
Description:	This command sets the last energy bit of the message with amplitude.
Numeric:	0 for no bad chip (decimal ASCII) 1 to 112 if the reference is a long Mode S (decimal ASCII) 1 to 56 if the reference is a short Mode S (decimal ASCII)
Example:	:ATC:DO260:TYPE:PREA:CHIPS:ELAST 5\r
Default:	0
Query:	:ATC:DO260:TYPE:PREA:CHIPS:ELAST?\r
Return:	5

5.6.7.5.6 LAST NO ENERGY CHIP

Command Syntax:	{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA } {:CHIPS}{:NLAST}SP<numeric>CR
Description:	This command sets the last no energy bit of the message.
Numeric:	0 for no bad chip (decimal ASCII) 1 to 112 if the reference is a long Mode S (decimal ASCII) 1 to 56 if the reference is a short Mode S (decimal ASCII)
Example:	:ATC:DO260:TYPE:PREA:CHIPS:NLAST 5\r
Default:	0
Query:	:ATC:DO260:TYPE:PREA:CHIPS:NLAST?\r
Return:	5

5.6.8 START

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:START}CR

Description: This command begins the execution of the DO260 test. The system returns a "*" if the start command is able to be performed. A "?" character is returned if the scenario is <u>not</u> able to be started.

Example: :ATC:DO260:START\r

5.6.9 STOP

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:STOP}CR

Description: This command stops the execution of the DO260 test.

Example: :ATC:DO260:STOP\r

5.6.10 TEST STATUS REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TEST?} CR

Description: This command returns the test transmission status.

Example: :ATC:DO260:TEST?\r

Return: ON | OFF

5.6.11 TRIGGER PARAMETERS

5.6.11.1 MODE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:MODE}SP<numeric>CR

Description: This command sets the trigger mode. Delay+ delays positively all the enabled generators according with each delay amount from the trigger source. Delay- delays all the enable generators negatively. Random alters the start of all the enable generators from transmission to transmission in the range specified. Walk moves the starting position of the enable generators from the initial delay by 50 ns every transmission.

Numeric: 0 to 3

Value	Mode
0	Delay+
1	Delay-
2	Random
3	Walk

Example: :ATC:DO260:TIMING:TRIG:MODE 0\r

Default: 0

Query: :ATC:DO260:TIMING:TRIG:MODE?\r

Return: 0

5.6.11.2 SOURCE

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:SOURCE}SP{GENA | GENB | GENC | GEND | GENE | GENF}CR

Description: This command sets the generator trigger source:
Low Power Mode - all generators are available.
High Power Mode - only generators GENA, GENC and GENE are available.

Example: :ATC:DO260:TIMING:TRIG:SOURCE GENA\r

Default: GENA

Query: :ATC:DO260:TIMING:TRIG:SOURCE?\r

Return: GENA

5.6.11.3 RANDOM POSITION WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:RANDOM}{:WIDTH |:WID}SP<numeric>CR

Description: This command sets the width of the random pulse in ns. This command is valid only if the trigger mode is Random.

Numeric: 0 to 120000 ns (decimal ASCII).

Example: :ATC:DO260:TIMING:TRIG:RANDOM:WID 120000\r

Default: 120000 ns

Query: :ATC:DO260:TIMING:TRIG:RANDOM:WID?\r

Return: 120000

5.6.11.4 RANDOM STARTING POSITION

Command Syntax: {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:RANDOM}{:POSITION |:POS}SP<numeric>CR

Description: This command sets the relative delay of the random pulse in ns. This command is valid only if the trigger mode is Random.

Numeric: -120000 to 120000 ns (decimal ASCII).

Example: :ATC:DO260:TIMING:TRIG:RANDOM:POSITION 0\r

Default: 0

Query: :ATC:DO260:TIMING:TRIG:RANDOM:POSITION?\r

Return: 0

5.6.12 BLOCK TRANSMISSION

This set of commands allows the user to define a transmission block of messages to periodically transmit to the unit under test. This set of commands is for block transmissions under the Multi-Receiver Menu. In order for these commands to work the Scenario Type must be set to Multi-Receiver.

5.6.12.1 BLOCK PARAMETERS

5.6.12.1.1 FRAME PERIOD

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK}{:PERIOD }SP<numeric>CR

Description: This command defines the block transmission period in ms.

Numeric: 10 to 90000 (decimal ASCII)

Default: 100

Example: :ATC:TXBLOCK:PERIOD 10\r

5.6.12.1.2 HIT

Command Syntax: {:ATC |:ATC5000NG}{ :TXBLOCK}{:HIT }SP<numeric>CR

Description: This command sets the number of consecutive blocks to transmit.

Numeric: 0 to 20 (decimal ASCII)

Default: 1

Example: :ATC:TXBLOCK:HIT 6\r

5.6.12.1.3 MISS

Command Syntax: {:ATC |:ATC5000NG}{ :TXBLOCK}{:MISS }SP<numeric>CR
Description: This command sets the number of consecutive non-transmitted blocks.
Numeric: 0 to 20 (decimal ASCII)
Default: 0
Example: :ATC:TXBLOCK:MISS 4\r

5.6.12.1.4 MODE

Command Syntax: {:ATC |:ATC5000NG}{ :TXBLOCK}{:MODE }SP{CONTINUOUS|INTERRUPT}CR
Description: This command sets the transmission mode.
Default: CONTINUOUS
Example: :ATC:TXBLOCK:MODE CONTINUOUS\r

5.6.12.1.5 TRANSMISSIONS

Command Syntax: {:ATC |:ATC5000NG}{ :TXBLOCK}{:TRANSMISSIONS|:TRANS}SP{NOLIMIT|<numeric>}CR
Description: This command sets the total number of blocks transmission.
Numeric: 1 to 50000 (decimal ASCII)
Default: NOLIMIT
Example: :ATC:TXBLOCK:TRANS NOLIMIT\r

5.6.12.2 LOAD

Command Syntax: {:ATC |:ATC5000NG}{ :TXBLOCK}{:LOAD}SP<filename>}CR
Description: This command loads a CSV scenario file (specified filename) from the internal storage area. A”*” will be returned upon completion of loading the file.
Default: :ATC:TXBLOCK:LOAD Test1.csv\r
Example: *

5.6.12.3 MESSAGE PARAMETERS

5.6.12.3.1 DATA

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK:}<message number> {:MESS |:MESSAGE}SP<numeric>CR
Description: This command sets the data message for the message selected.
Message Number: 1 to 1000
Numeric: Short message 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII)
Long message 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII) (The last six characters are the Mode S Address).
Default: 00000000000001 for Mode S Interrogation and Mode S Message.
Example: :ATC:TXBLOCK:1:MESS 7ABA3259A66BBB\r

5.6.12.3.2 POWER LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:POWER |:POW}SP<numeric>CR
Description: This command sets the power level of the message selected.
Message Number: 1 to 1000
Numeric: High Power Mode: 1 to -69 dBm (decimal ASCII)
Low Power Mode: -20 to -90 dBm (decimal ASCII)
Default: -20 dBm
Example: :ATC:TXBLOCK:3:POW -31\r

5.6.12.3.3 TIME

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:TIME}SP<numeric>CR

Description: This command sets the starting transmission time (in μs) within the block of the message selected.

Message Number: 1 to 1000

Numeric: 0 to 89999880 (decimal ASCII)

Default: 0 μs. Every additional message defaults 130 μs after the previous. Maximum time depends on frame period value.

Example: :ATC:TXBLOCK:3:TIME 77\r

5.6.12.3.4 TYPE

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:TYPE} SP<numeric>[,<numeric1>]CR

Description: This command sets the type of the message selected. The optional argument <numeric1> defines the ATCRBS Interrogation type.

Message Number: 1 to 1000

Numeric: 1-4 (decimal ASCII)

Value	Type
3	Mode S Message
4	ATCRBS Reply

Default: Mode S Message

Example: :ATC:TXBLOCK:4:TYPE 3\r

5.6.12.4 MESSAGE QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK}{:NMESSAGES|:NMESS}SP<decimal>CR

Description: This command sets the number of the messages.

Numeric: 0 to 1000 (decimal ASCII)

Example: :ATC:TXBLOCK:NMESS 45\r

5.6.12.5 RESET

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK}{:RESET}CR

Description: This command clears the transmission block.

Example: :ATC:TXBLOCK:RESET\r

5.6.12.6 RUN TIME REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK}{:TI |:TIME}?CR

Description: This command returns the current scenario run time.

Return Value: decimal ASCII value. 100 ms resolution.

Example: :ATC:TXBLOCK:TI?\r

Return: 13.9

5.6.12.7 SAVE

Command Syntax: {:ATC |:ATC5000NG}{:TXBLOCK}{:SAVE}SP<filename>CR

Description: This command saves the current scenario into the internal storage area with the specified filename.

Example: :ATC:TXBLOCK:SAVE test1.csv\r

5.6.12.8 START

Command Syntax:	{:ATC |:ATC5000NG}{:TXBLOCK:START} CR
Description:	This command begins the transmissions of block defined. The system will return a "*" if the start command was able to be performed. A "?" character will be returned if the scenario was not able to be started.
Example:	:ATC:TXBLOCK:START\r
Return:	*

5.6.12.9 STOP

Command Syntax:	{:ATC |:ATC5000NG}{:TXBLOCK:STOP} CR
Description:	This command stops the transmission of the block.
Example:	:ATC:TXBLOCK:STOP\r
Return:	*

5.7 SCENARIO COMMANDS

This set of commands allows the user to define dynamic and static intruders for Multi-Receiver, and UAT scenarios. The Multi-Receiver Menu and UAT Menu are options of the ATC-5000NG and require product key and calibration to enable.

5.7.1 INDIVIDUAL 1030 MESSAGES

The following set of commands allows the user to define a block of 1030 MHz interrogations. These commands are used in the Multi-Receiver Menu.

5.7.1.1 1030 MESSAGE BLOCK REPETITION RATE

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030}{:RATE }SP<numeric>CR
Description:	This command sets the block repetition rate.
Numeric:	1 to 2500 (decimal ASCII)
Example:	:ATC:SCE:I1030:RATE 25\r

5.7.1.2 1030 MESSAGE BLOCK QUANTITY

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030} {:NMESS |:NMESSAGES}SP<numeric>CR
Description:	This command sets the quantity of the 1030 messages in the block.
Numeric:	0 to 1000 (decimal ASCII)
Example:	:ATC:SCE:I1030:NMESS 2\r

5.7.1.3 1030 MESSAGES BLOCK MESSAGE POWER

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030:}<message number>{:PWR }SP<numeric>CR
Description:	This command sets the power level of the 1030 message selected.
Numeric:	High Power Mode: 5 to -65 dBm (decimal ASCII) Low Power Mode: -20 to -90 dBm (decimal ASCII) Very Low Power: -40 to -110 dBm (decimal ASCII)
Example:	:ATC:SCE:I1030:1:PWR -21\r

5.7.1.4 1030 MESSAGES BLOCK MESSAGE TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030:}<message number>{:TYPE }SP<numeric>CR

Description: This command sets the type of the 1030 message selected.

Numeric:

Value	Type
1	Mode S Interrogation
2	Mode A
3	Mode C
4	Mode A All Call
5	Mode C All Call
6	Mode A/Mode S All Call
7	Mode C/Mode S All Call

Example: :ATC:SCE:I1030:2:TYPE 2\r

5.7.1.5 1030 MESSAGES BLOCK MESSAGE DATA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030:}<message number>{:MESS |:MESSAGE }SP<numeric>CR

Description: This command sets the data message for the selected 1030 message.

Numeric: Short interrogation: 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII)
Long interrogation: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII)
The last six characters are the Mode S Address.

Example: :ATC:SCE:I1030:1:MESS 000404000F6705\r

5.7.2 INTRUDERS DEFINITION PARAMETERS

5.7.2.1 ALTITUDE MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:AMODE}SP{GILHAM | BINARY}CR

Description: This command sets the altitude data mode to either Gilham or Binary.
Altitude Binary Mode: -1000 to 50175 feet in 25 feet resolution
Altitude Gilham Mode: -1000 to 126700 feet in 100 feet resolution

Example: :ATC:SCE:STAT:1:AMODE GILHAM\r

Default: Binary

5.7.2.2 AIRBORNE POSITION MESSAGE

This set of commands allows the user to define the Airborne Position Squitter for the specified intruder (target).

5.7.2.2.1 AIRBORNE POSITION MESSAGE PARAMETERS

5.7.2.2.1.A CPR ENCODING FORMAT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CPR}SP{ODDEVEN|ODD|EVEN}CR

Description: This command sets the selected intruder airborne or surface position squitter compact position reporting format type to the specified value.

Value	Meaning
ODDEVEN	Alternate between “even” and “odd” CPR encoding.
ODD	Only “odd” CPR encoding. The transmission of the Position Even Squitter is turned off. Any <u>schedule definition for the Position Even Squitter</u> <XREF>is ignored during the scenario compilation.
EVEN	Only “even” CPR encoding. The transmission of the Position Odd Squitter is turned off. Any <u>schedule definition for the Position Odd Squitter</u> <XREF>is ignored during the scenario compilation.

Example: :ATC:SCE:STAT:1:CPR ODD\r

Default: ODDEVEN

5.7.2.2.1.B NIC SUPPLEMENT-B

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSNICB}SP<numeric>CR

Description: This command sets the selected intruder airborne position squitter NIC supplement-b to the specified value, if the intruder is an extended Mode S or is a TIS-B with message type ADS-B (Valid only for DO260 B).

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:STAT:1:POSNICB 1\r

Default: 0

5.7.2.2.1.C SINGLE ANTENNA FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSSAF}SP<numeric>CR

Description: This command sets the selected intruder airborne position squitter single antenna flag field to the specified value, if the intruder is an extended Mode S or is a TIS-B with message type ADS-B (Valid only for DO260 and DO260A).

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:STAT:1:POSSAF 1\r

Default: 0

5.7.2.2.1.D SURVEILLANCE STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSSS}SP<numeric>CR

Description: This command sets the selected intruder airborne position squitter surveillance status to the specified code.

Numeric: 0 to 3 (decimal ASCII)

Value	Surveillance Status
0	No Condition Information
1	Permanent Alert Condition
2	Temporary Alert Condition
3	Special Position Identification Condition

Example: :ATC:SCE:STAT:1:POSSS 2\r

Default: 0

5.7.2.2.1.E TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSTIME}SP<numeric>CR

Description: This command sets the selected intruder airborne position squitter time field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:STAT:1:POSTIME 1\r

Default: 0

5.7.2.2.1.F TYPE CODE

Command Syntax: Command Syntax:
{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSTYPE}SP<numeric>CR

Description: This command sets the selected intruder airborne position squitter to the specified type code.

Numeric: 0 or 9 to 22 (decimal ASCII) (except 19)

Example: :ATC:SCE:DYN:1:POSTYPE 11\r

Default: 9

5.7.2.2.2 AIRBORNE POSITION MESSAGE SCHEDULE

Airborne or Surface Position squitters are transmitted by the ATC-5000NG at a rate of 0.5 seconds. The CPR encoding is alternated every 0.5 second unless the user specifies to only transmit odd or even encoding.

Dynamic intruders (targets) allow definition of multiple time intervals where the Airborne or Surface Position odd and even squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Airborne or Surface Position squitter for the entire scenario.

5.7.2.2.2.A DYNAMIC POSITION SCHEDULE

5.7.2.2.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the position even or odd squitter message of the specified intruder.

Example: :ATC:SCE:DYN:2:SPOSEVEN:INT:2:ENA OFF\r

Default: On

5.7.2.2.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of position even or odd squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SPOSODD:NINT 25\r

5.7.2.2.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected position even or odd squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SPOSEVEN:INT:3:BEGIN 99\r

5.7.2.2.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN|:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected position even or odd squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:3:SPOSEVEN:INT:4:END 200\r

5.7.2.2.2.B STATIC POSITION SCHEDULE

5.7.2.2.2.B.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the position even or odd squitter message of the specified intruder.

Example: :ATC:SCE:STAT:3:SPOSODD:ENA ON\r

Default: On

5.7.2.3 AIRCRAFT OPERATIONAL STATUS MESSAGE

This set of commands allows the user to define the Operational Status Squitter for the specified intruder (target).

5.7.2.3.1 AIRCRAFT OPERATIONAL STATUS MESSAGE PARAMETERS

5.7.2.3.1.A 1090 ES IN

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ESI}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter 1090 ES In field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No capability to receive 1090 MHz Extended Squitter Messages.
1	Receives 1090 MHz Extended Squitter Messages.

Example: :ATC:SCE:DYN:3:SAOS:ESI 1\r

Default: 0

5.7.2.3.1.B AIR REFERENCED VELOCITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ARV}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter air referenced velocity field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No Air Referenced Velocity Report Capability.
1	Generates Air Referenced Velocity Report.

Example: :ATC:SCE:DYN:4:SAOS:ARV 1\r

Default: 0

5.7.2.3.1.C AIRCRAFT/VEHICLE LENGTH AND WIDTH CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:AVSIZE}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter aircraft/vehicle length and width code field to the specified value.

Numeric: 0 to 15 (decimal ASCII)

Value	Meaning
0	No Data or Unknown
1	Length <15 meters Width <23 meters
2	Length <25 meters Width <28.5 meters
3	Length <25 meters Width <34 meters
4	Length <35 meters Width <33 meters
5	Length <35 meters Width <38 meters
6	Length <45 meters Width <39.5 meters
7	Length <45 meters Width <45 meters
8	Length <55 meters Width <45 meters
9	Length <55 meters Width <52 meters
10	Length <65 meters Width <59.5 meters
11	Length <65 meters Width <67 meters
12	Length <75 meters Width <72.5 meters
13	Length <75 meters Width <80 meters
14	Length <85 meters Width <80 meters
15	Length <85 meters Width <90 meters

Example: :ATC:SCE:DYN:4:SAOS:AVSIZE 4\r

Default: 0

5.7.2.3.1.D B2 LOW POWER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:B2L}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter B2 low power field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Transmitter meets applicable class requirements.
1	Transmitter meets Class B2 except output power is <70 W.

Example: :ATC:SCE:DYN:5:SAOS:B2L 1\r

Default: 0

5.7.2.3.1.E BAROMETRIC ALTITUDE INTEGRITY CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NICB}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter barometric altitude integrity code field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Gilham Altitude Source with no cross-checking.
1	Cross-Checked Gilham or any other Altitude Source.

Example: :ATC:SCE:DYN:6:SAOS:NICB 1\r

Default: 0

5.7.2.3.1.F BAROMETRIC ALTITUDE QUALITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:BAQ}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter barometric altitude quality field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:DYN:3:SAOS:BAQ 1\r

Default: 0

5.7.2.3.1.G CDTI TRAFFIC DISPLAY CAPABILITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:CDTI}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter CDTI traffic display capability field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No Cockpit Display of Traffic Information (CDTI) capability.
1	CDTI Operational.

Example: :ATC:SCE:STAT:1:SAOS:CDTI 0\r

Default: 0

5.7.2.3.1.H DO-260 VERSION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:DO260}SP{- | A | B}CR

Description: This command sets the selected intruder DO-260 squitters to the specified revision level of DO-260.

Example: :ATC:SCE:STAT:2:DO260 A\r

Default: -

5.7.2.3.1.I GEOMETRIC VELOCITY ACCURACY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GVA}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter geometric velocity accuracy field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown or >150 meters
1	≤150 meters
2	≤45 meters
3	Reserved

Example: :ATC:SCE:DYN:2:SAOS:GVA 1\r

Default: 0

5.7.2.3.1.J HORIZONTAL REFERENCE DIRECTION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:HRD}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter horizontal reference direction field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	True North
1	Magnetic North

Example: :ATC:SCE:DYN:1:SAOS:HRD 1\r

Default: 0

5.7.2.3.1.K IDENT SWITCH ACTIVE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:IDT}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter IDENT switch active field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	IDENT not active.
1	Set for 18 seconds after IDENT switch pressed.

Example: :ATC:SCE:STAT:1:SAOS:IDT 1\r

Default: 0

5.7.2.3.1.L LATERAL AXIS GPS ANTENNA OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLAT}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter lateral axis GPS Antenna offset field to the specified value.

Numeric: 0 to 7 (decimal ASCII)

Value	Meaning
0	No Data
1	2 meters Left
2	4 meters Left
3	6 meters Left
4	0
5	2 meters Right
6	4 meters Right
7	6 meters Right

Example: :ATC:SCE:STAT:2:SAOS:GPSLAT 3\r

Default: 0

5.7.2.3.1.M LONGITUDINAL AXIS GPS ANTENNA OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLONG}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter longitudinal axis GPS Antenna offset field to the specified value.

Numeric: 0 to 31 (decimal ASCII)

Value	Meaning
0	No Data
1	Applied by sensor
2	2 meters
3	4 meters
4 to 31	6 to 60 meters

Example: :ATC:SCE:STAT:2:SAOS:GPSLONG 2\r

Default: 0

5.7.2.3.1.N MODE SUBTYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:OM}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter operational mode subtype field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Example: :ATC:SCE:STAT:1:SAOS:OM 2\r

Default: 0

5.7.2.3.1.O NAVIGATION ACCURACY CATEGORY FOR POSITION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLAT}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter navigation accuracy category for position field to the specified value.

Numeric: 0 to 15 (decimal ASCII)

Value	NAC_P	Comment
0	EPU ≥10 Nm	Unknown Accuracy
1	EPU <10 Nm	RNP-10
2	EPU <4 Nm	RNP-4
3	EPU <2 Nm	RNP-2
4	EPU <1 Nm	RNP-1
5	EPU <0.5 Nm	RNP-0.5
6	EPU <0.3 Nm	RNP-0.3
7	EPU <0.1 Nm	RNP-0.1
8	EPU <0.05 Nm	GPS (SA on)
9	EPU < 30 m and VEPU <45 m	GPS (SA off)
10	EPU <10 m and VEPU <15 m	WAAS
11	EPU <3 m and VEPU <4m	LAAS
12 to 15	Reserved	Reserved

Example: :ATC:SCE:STAT:2:SAOS:GPSLAT 1\r

Default: 0

5.7.2.3.1.P NAVIGATION ACCURACY CATEGORY FOR VELOCITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NACV}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter navigation accuracy category for velocity field to the specified value.

Numeric: 0 to 7 (decimal ASCII)

Value	Meaning
0	Unknown or >10 m/s
1	<10 m/s
2	<3 m/s
3	<1 m/s
4	<0.3 m/s

Example: :ATC:SCE:STAT:1:SAOS:NACV 3\r

Default: 0

5.7.2.3.1.Q NIC SUPPLEMENT-A

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISA}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter NIC Supplement-A field to the specified value.

Numeric: 0 to 1(decimal ASCII)

Example: :ATC:SCE:STAT:2:SAOS:NISA 1\r

Default: 0

5.7.2.3.1.R NIC SUPPLEMENT-B

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISB}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter NIC Supplement-B field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SAOS:NISB 1\r

Default: 0

5.7.2.3.1.S NIC SUPPLEMENT-C

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISC}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter NIC Supplement-C field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SAOS:NISC 1\r

Default: 0

5.7.2.3.1.T NOT TCAS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NT}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter "Not TCAS" field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	TCAS Operational or Unknown.
1	TCAS <u>not</u> installed or <u>not</u> operational.

Example: :ATC:SCE:STAT:2:SAOS:NT 1\r

Default: 0

5.7.2.3.1.U POSITION OFFSET APPLIED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:POA}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter position offset applied field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Position is antenna referenced.
1	Position is adjusted to Surveillance Position Reference Point.

Example: :ATC:SCE:DYN:2:SAOS:POA 1\r

Default: 0

5.7.2.3.1.V RECEIVING AIR TRAFFIC CONTROL SERVICES

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ATC}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter receiving air traffic control services field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Required Setting
1	Reserved

Example: :ATC:SCE:DYN:2:SAOS:ATC 1\r

Default: 0

5.7.2.3.1.W RESERVED FOR ADS-R FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ADR}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter reserved for ADS-R flag field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Example: :ATC:SCE:STAT:2:SAOS:ADR 1\r

Default: 0

5.7.2.3.1.X SERVICE LEVEL MSB

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SLM}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter service level MSB field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Example: :ATC:SCE:STAT:2:SAOS:SLM 3\r

Default: 0

5.7.2.3.1.Y SERVICE LEVEL LSB

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SLL}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter service level LSB field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SAOS:SLL 3\r

Default: 0

5.7.2.3.1.Z SINGLE ANTENNA FIELD

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SAF}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter single antenna field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Antenna Diversity Operational.
1	Single Antenna Operational.

Example: :ATC:SCE:STAT:2:SAOS:SAF 1\r

Default: 0

5.7.2.3.1.AA SOURCE INTEGRITY LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SIL}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter source integrity level field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown
1	1×10^{-3} per flight hour or per sample
2	1×10^{-5} per flight hour or per sample
3	1×10^{-7} per flight hour or per sample

Example: :ATC:SCE:STAT:2:SAOS:SIL 2\r

Default: 0

5.7.2.3.1.AB SOURCE INTEGRITY LEVEL (SIL) SUPPLEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SILS}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter SIL supplement field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Probability of Exceeding NIC Radius of Containment “per Hour.”
1	Probability of Exceeding NIC Radius of Containment “per Sample.”

Example: :ATC:SCE:DYN:2:SAOS:SILS 1\r

Default: 0

5.7.2.3.1.AC SYSTEM DESIGN ASSURANCE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SDA}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter system design assurance field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Example: :ATC:SCE:STAT:1:SAOS:SDA 3\r

Default: 0

5.7.2.3.1.AD TARGET STATE REPORT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TS}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter target state report field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No Target State Report Capability.
1	Generates Target State Report.

Example: :ATC:SCE:DYN:1:SAOS:TS 1\r

Default: 0

5.7.2.3.1.AE TCAS RESOLUTION ADVISORY ACTIVE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:RA}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter TCAS resolution advisory active field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	TCAS Resolution Advisory is inactive or Unknown.
1	TCAS Resolution Advisory is Active.

Example: :ATC:SCE:STAT:1:SAOS:RA 1\r

Default: 0

5.7.2.3.1.AF TRACK ANGLE/HEADING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TOH}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter track angle/heading field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Track Angle
1	Heading

Example: :ATC:SCE:DYN:1:SAOS:TOH 1\r

Default: 0

5.7.2.3.1.AG TRAJECTORY CHANGE REPORT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TC}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter trajectory change report field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	No Trajectory Change Report Capability.
1	Generates Trajectory Change +0 Report only.
2	Generates multiple Trajectory Change Reports.
3	Reserved

Example: :ATC:SCE:STAT:1:SAOS:TC 3\r

Default: 0

5.7.2.3.1.AH UAT IN

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:UAT}SP<numeric>CR

Description: This command sets the selected intruder aircraft operational status squitter “UAT In” field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No Capability to Receive ADS-B UAT Messages.
1	Receives UAT ADS-B Messages.

Example: :ATC:SCE:DYN:2:SAOS:UAT 1\r

Default: 0

5.7.2.3.2 AIRCRAFT OPERATIONAL STATUS MESSAGE SCHEDULE

Airborne Operational Status squitter is transmitted by the ATC-5000NG at a rate of 2.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Airborne Operation Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Airborne Operational Status squitter for the entire scenario.

5.7.2.3.2.A DYNAMIC AOS SCHEDULE

5.7.2.3.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the aircraft operational status squitter message of the specified intruder.

Example: :ATC:SCE:DYN:1:SAOS:INT:1:ENA ON\r

Default: On

5.7.2.3.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of aircraft operational status squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:1:SAOS:NINT 2\r

5.7.2.3.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected aircraft operational status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:SAOS:INT:2:BEGIN 25\r

5.7.2.3.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected aircraft operational status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:SAOS:INT:1:END 25\r

5.7.2.3.2.B STATIC AOS SCHEDULE

5.7.2.3.2.B.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SAOS}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the aircraft operational status squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:1:SAOS:ENA ON\r

5.7.2.4 AIRCRAFT STATUS MESSAGE

This set of commands allows the user to define the Aircraft/Emergency Status Squitter for the specified intruder (target).

5.7.2.4.1 AIRCRAFT STATUS MESSAGE PARAMETERS

5.7.2.4.1.A ACTIVE RESOLUTION ADVISORIES

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:ARA}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter ARA field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 3FFF (hexadecimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:SAS:ARA 12F\r

5.7.2.4.1.B EMERGENCY/PRIORITY STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:EPS}SP<numeric>CR

Description: This command sets the selected intruder aircraft status squitter emergency/priority status field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is Emergency/Priority Status (1).

Numeric: 0 to 7 (decimal ASCII)

Value	Meaning
0	No emergency
1	General Emergency
2	Lifeguard/medical emergency
3	Minimum fuel
4	No communications
5	Unlawful interference
6	Downed Aircraft
7	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:SAS:EPS 4\r

5.7.2.4.1.C MULTIPLE THREAT ENCOUNTER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:MTE}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter MTE field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:SAS:MTE 1\r

5.7.2.4.1.D RA COMPLEMENTS RECORD

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:RAC}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter RAC field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 15 (decimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:SAS:RAC 6\r

5.7.2.4.1.E RA TERMINATED INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:RAT}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter RAT field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:SAS:RAT 1\r

5.7.2.4.1.F SUBTYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:SUBTYPE}SP<numeric>CR

Description: This command sets the selected intruder aircraft status squitter subtype field to the specified value, if the intruder is an extended Mode S.

Numeric: 1 to 2 (decimal ASCII)

Value	Meaning
1	Emergency/Priority Status
2	TCAS Resolution Advisory (RA)

Default: 1

Example: :ATC:SCE:STAT:1:SAS:SUBTYPE 1\r

5.7.2.4.1.G THREAT IDENTITY DATA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:TID}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter TID field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 3FFFFFF (hexadecimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:SAS:TID 435\r

5.7.2.4.1.H THREAT TYPE INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:TTI}SP<numeric>CR

Description: This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter TTI field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

Numeric: 0 to 3 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:SAS:TTI 2\r

5.7.2.4.2 AIRCRAFT STATUS MESSAGE SCHEDULE

Aircraft/Emergency Status squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Aircraft/Emergency Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Aircraft/Emergency Status squitter for the entire scenario.

5.7.2.4.2.A DYNAMIC AIRCRAFT STATUS SCHEDULE

5.7.2.4.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the aircraft status squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:DYN:2:SAS:INT:1:ENA ON\r

5.7.2.4.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of aircraft status squitter message intervals for the selected intruder. The spaces <u>not</u> defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SAS:NINT 3\r

5.7.2.4.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected aircraft status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SAS:INT:2:BEGIN 6\r

5.7.2.4.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected aircraft status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SAS:INT:2:END 120\r

5.7.2.4.2.B STATIC AIRCRAFT STATUS SCHEDULE

5.7.2.4.2.B.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SAS}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the aircraft status squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:1:SAS:ENA OFF\r

5.7.2.5 ALTITUDE REPORTING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ALTRPT}SP{ON | OFF}CR

Description: This command sets the altitude reporting for the selected intruder on or off. If set to off, Mode S Extended, TIS-B or ADS-R altitude data is not available. (For example, DF0 contains all zero in Altitude Code.)

Default: On

Example: :ATC:SCE:STAT:1:ALTRPT OFF\r

5.7.2.6 ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the specified intruder.

Default: On

Example: :ATC:SCE:STAT:1:ENA ON\r

5.7.2.7 GROUND STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:GRO |:GROUND}SP{ON | OFF}CR

Description: This command sets the ground status of the intruder. If the intruder is an extended Mode S and ground status is enabled, the surface position squitters are transmitted.

Default: Off

Example: :ATC:SCE:STAT:2:GRO ON\r

5.7.2.8 ICAO/MODE A FLAG

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IMF}SP <numeric>CR
Description:	This command sets the type of identity associated with the aircraft data reported in the TIS-B message. IMF equal to zero indicates the TIS-B data is identified by an ICAO-24 bit aircraft address. IMF equal to one indicates the TIS-B data is identified by a Mode A Code.
Numeric:	0 to 1 (decimal ASCII)
Default:	0
Example:	:ATC:SCE:STAT:1:IMF 1\r

5.7.2.9 IDENTIFICATION MESSAGE

This set of commands allows the user to define the Identification Squitter for the specified intruder (target).

5.7.2.9.1 IDENTIFICATION MESSAGE PARAMETERS

5.7.2.9.1.A EMITTER CATEGORY

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENTEC}SP <numeric>CR
Description:	This command sets the selected intruder emitter category for the Ident squitter.
Numeric:	0 to 7 (decimal ASCII)
Default:	0
Example:	:ATC:SCE:DYN:1:IDENTEC 2\r

5.7.2.9.1.B IDENTIFICATION

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENT}SP{<characters>|BLANK|NODATA}CR
Description:	This command sets the selected intruder identification characters for the Ident squitter. The maximum length is eight characters (blank characters are defined with the keyword “BLANK”). Default: Static intruders will be STAT001, STAT002, …. Dynamic intruders will be DYN01, DYN02,…
Default:	Static intruders: STAT001, STAT002, …. Dynamic intruders: DYN01, DYN02,…
Example:	:ATC:SCE:STAT:1:IDENT RG4\r

5.7.2.9.1.C IDENTIFICATION TYPE

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENTTYPE}SP <numeric>CR
Description:	This command sets the selected intruder identification type for the Ident squitter.
Numeric:	1 to 4 (decimal ASCII)
Default:	1
Example:	:ATC:SCE:DYN:1:IDENTTYPE 3\r

5.7.2.9.2 IDENTIFICATION MESSAGE SCHEDULE

Identification squitter is transmitted by the ATC-5000NG at a rate of 5.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Identification squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Identification squitter for the entire scenario.

5.7.2.9.2.A DYNAMIC IDENTIFICATION SCHEDULE

5.7.2.9.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the identification squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:DYN:2:SIDENT:INT:2:ENA ON\r

5.7.2.9.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SIDENT}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of identification squitter message intervals for the selected intruder. The spaces <u>not</u> defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:1:SIDENT:NINT 3\r

5.7.2.9.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected identification squitter message interval for the selected intruder. The spaces <u>not</u> defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:SIDENT:INT:2:BEGIN 45\r

5.7.2.9.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected identification squitter message interval for the selected intruder. The spaces <u>not</u> defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:SIDENT:INT:2:END 120\r

5.7.2.9.2.B STATIC IDENTIFICATION SCHEDULE

5.7.2.9.2.B.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SIDENT}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the identification squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:2:SIDENT:ENA ON\r

5.7.2.10 MODE A CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ACODE}SP<numeric>CR

Description: This command sets the Mode A code.

Numeric: 0 to 7777 (octal ASCII)

Default: 0000

Example: :ATC:SCE:STAT:1:ACODE 1234\r

5.7.2.11 MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MOD |:MODE}SP{ TIS-B | EXTENDED | ADS-R | UAT}CR

Description: This command sets the selected intruder to a specific intruder type. The intruder types are TIS-B, Mode S Extended, ADS-R or UAT. When the intruder type is set to ADS-R, the Control Field (CF) is set with the Value6 automatically. To define the UAT intruder parameters, refer to para 1-2-5.UAT ADS-B DEFINITION PARAMETERS, UAT ADS-B DEFINITION PARAMETERS).

Default: EXTENDED

Example: :ATC:SCE:STAT:1:MOD EXTENDED\r

5.7.2.12 MODE-S ALL CALL REPLY (DF=11) MESSAGE

DF11 squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the DF11 squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the DF11 squitter for the entire scenario.

5.7.2.12.1 MODE-S ALL CALL REPLY (DF=11) MESSAGE SCHEDULE

5.7.2.12.1.A DYNAMIC DF=11 SCHEDULE

5.7.2.12.1.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the DF11 squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:DYN:2:SDF11:INT:3:ENA ON\r

5.7.2.12.1.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of DF11 squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:2:SDF11:NINT 3\r

5.7.2.12.1.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected DF11 squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SDF11:INT:2:BEGIN 55\r

5.7.2.12.1.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected DF11 squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SDF11:INT:2:END 125\r

5.7.2.12.1.B STATIC DF=11 SCHEDULE - INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SDF11}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the DF11 squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:2:SDF11:ENA ON\r

5.7.2.13 MODE S DATA PARAMETERS

5.7.2.13.1 CROSSLINK CAPABILITY (CC)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CC}SP{ON | OFF}CR

Description: This command either enables or disables crosslink capability bit for the specified intruder.

Default: Off

Example: :ATC:SCE:STAT:1:CC ON\r

5.7.2.13.2 DOWNLINK REQUEST (DR)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:DR}SP<numeric>CR

Description: This command sets the DR field for a Mode S intruder.

Numeric: 0 to 31 (decimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:DR 4\r

5.7.2.13.3 FLIGHT STATUS (FS)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:FS}SP<numeric>CR

Description: This command sets the FS field for a Mode S intruder.

Numeric: 0 to 7 (decimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:FS 3\r

5.7.2.13.4 MODE S ADDRESS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MSADDR}SP<numeric>CR

Description: This command sets the Mode S address.

Numeric: 0 to FFFFFF (hexadecimal ASCII)

Default: Static starts at 0x000021
Dynamic starts at 0x000001

Example: :ATC:SCE:DYN:1:MSADDR 501235\r

5.7.2.13.5 SENSITIVITY LEVEL (SL)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SL}SP<numeric>CR

Description: This command sets the SL (sensitivity level) field for a Mode S intruder.

Numeric: 0 to 7 (decimal ASCII)

Value	Sensitivity Level
0	No TCAS Sensitivity Level
1	Sensitivity Level 1
2	Sensitivity Level 2
3	Sensitivity Level 3
4	Sensitivity Level 4
5	Sensitivity Level 5
6	Sensitivity Level 6
7	Sensitivity Level 7

Default: 0

Example: :ATC:SCE:STAT:1:SL 1\r

5.7.2.13.6 REPLY INFORMATION (RI; AQ=0)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:AQ0}SP<numeric>CR

Description: This command sets the RI field for a Mode S intruder for an AQ=0 reply.

Numeric: 0 to 7 (decimal ASCII)

Value	RI
0	No Onboard TCAS
1	Not Assigned
2	No Resolution
3	Vertical Only Resolution
4	Vertical and Horizontal
5	Not Assigned
6	Not Assigned
7	Not Assigned

Default: 0

Example: :ATC:SCE:DYN:1:RI:AQ0 3\r

5.7.2.13.7 REPLY INFORMATION (RI; AQ=1)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:AQ1}SP<numeric>CR

Description: This command sets the RI field for a Mode S intruder for an AQ=1 reply.

Numeric: 0 to 7 (decimal ASCII)

Value	RI
0	No Airspeed
1	Airspeed ≤75 knots
2	75 <Airspeed ≤150 knots
3	150 <Airspeed ≤300 knots
4	300 <Airspeed ≤600 knots
5	600 <Airspeed ≤1200 knots
6	1200 knots <Airspeed
7	Not Assigned

Default: 0

Example: :ATC:SCE:DYN:1:RI:AQ1 2\r

5.7.2.13.8 REPLY INFORMATION DF16 (RI)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:DF16}SP<numeric>CR

Description: This command sets the RI field for an extended Mode S intruder for a DF16 reply.

Numeric: 0 to 15 (decimal ASCII)

Value	RI
0	No Onboard TCAS
1	Not Assigned
2	No Resolution
3	Vertical Only Resolution
4	Vertical and Horizontal
5	Not Assigned
6	Not Assigned
7	Not Assigned
8	No Airspeed
9	Airspeed ≤75 knots
10	75 <Airspeed ≤150 knots
11	150 <Airspeed ≤300 knots
12	300 <Airspeed ≤600 knots
13	600 <Airspeed ≤1200 knots
14	1200 knots <Airspeed
15	Not Assigned

Default: 0

Example: :ATC:SCE:DYN:1:RI:DF16 4\r

5.7.2.13.9 TRANSPONDER CAPABILITY (CA)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CA}SP<numeric>CR

Description: This command sets the CA field for a Mode S intruder.

Numeric: 0 to 7 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:CA 6\r

5.7.2.13.10 UTILITY MESSAGE (UM)

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:UM}SP<numeric>CR

Description: This command sets the UM field for a Mode S intruder.

Numeric: 0 to 63 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:UM 22\r

5.7.2.14 POSITION PARAMETERS

The following set of commands allows the user to define the intruder (target) initial position and, if the intruder is dynamic, the movement direction of the intruder.

5.7.2.14.1 ALTITUDE

5.7.2.14.2 BEARING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ALT |:ALTITUDE}SP{NODATA|<numeric>}CR

Description: This command sets the selected intruder to the specified altitude. If altitude data is not available, use the “NODATA” keyword.

Numeric: Altitude Binary Mode: -1000 to 50175 feet in 25 feet resolution (decimal ASCII)
Altitude Gilham Mode: -1000 to 126700 feet in 100 feet resolution (decimal ASCII)

Default: 1000 feet

Example: :ATC:SCE:STAT:1:ALT 3000\r

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:BEA |:BEARING}SP<numeric>CR

Description: This command sets the selected intruder to the specified bearing from own aircraft.

Numeric: 0 to 359 degrees (decimal ASCII)
0 True North

NOTE: The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

Default: 0

Example: :ATC:SCE:DYN:2:BEA 45\r

5.7.2.14.3 LATITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:LAT |:LATITUDE}SP<numeric>CR

Description: This command sets the selected intruder to the specified latitude.

Numeric: -90 to 90 degrees (double ASCII)

NOTE: The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

Default: Calculated using the range and bearing and the own aircraft position.

Example: :ATC:SCE:DYN:1:LAT 89.9\r

5.7.2.14.4 LONGITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:LONG |:LONGITUDE}SP<numeric>CR

Description: This command sets the selected intruder to the specified longitude.

Numeric: -180 to 180 degrees (double ASCII)

NOTE: The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

Default: Calculated using the range and bearing and the own aircraft position.

Example: :ATC:SCE:DYN:1:LONG -45.6123\r

5.7.2.14.5 RANGE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RAN |:RANGE}SP<numeric>CR

Description: This command sets the selected intruder to the specified range from own aircraft.

Numeric: 0 to 150 nmi (decimal ASCII)

NOTE: The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

Default: 0 nmi

Example: :ATC:SCE:DYN:1:RAN 27.5\r

5.7.2.14.6 TRACK

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TRA |:TRACK}SP<numeric>CR

Description: This command sets the selected intruder track angle.

Numeric: -180 to 180 degrees (decimal ASCII)
0 to 360 degrees (decimal ASCII)

NOTE: The track information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

Default: 0

Example: :ATC:SCE:DYN:1:TRA 150\r

5.7.2.14.7 VELOCITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VEL |:VELOCITY}SP{NODATA|<numeric>}CR

Description: This command sets the selected intruder to the specified velocity. If velocity data is not available, then use the keyword “NODATA”. If velocity data is not available then the E/W velocity, N/S velocity and Ground Speed information is not available.

Numeric: 0 to 5782 knots (decimal ASCII)

NOTE: The track information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

Default: 0

Example: :ATC:SCE:DYN:1:VEL 250\r

5.7.2.15 START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:BEGIN}SP<numeric>CR

Description: This command sets the scenario time when the intruder becomes active.

Numeric: 0 to 6550 seconds (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:BEGIN 25\r

5.7.2.16 STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:END}SP<numeric>CR

Description: This command sets the scenario time when the intruder becomes inactive.

Numeric: 0 to 6550 seconds (decimal ASCII)

Default: Scenario End Time

Example: :ATC:SCE:DYN:1:END 400\r

5.7.2.17 SQUITTER PARAMETERS

5.7.2.17.1 ANTENNA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQANT}SP{TOP | BOTTOM | BOTH}CR

Description: This command sets if the squitter is transmitted on both antennas simultaneously, top only or bottom only.

Default: Both

Example: :ATC:SCE:DYN:1:SQANT TOP\r

5.7.2.17.2 ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQU |:SQUITTER}SP{ON | OFF}CR

Description: This command either enables or disables squitters for the specified intruder. When transmission of squitters is disabled, the squitter scheduled transmission is ignored and any subsequent definition of a waypoint for enabling transmission of squitters activates the definition of the squitter scheduled transmission.

Default: On

Example: :ATC:SCE:DYN:1:SQU OFF\r

5.7.2.17.3 POWER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQPWR}SP<numeric>CR

Description: This command sets the power level of the squitter messages.

Numeric: Multi-Receiver
High Power Mode: -65 to 5 dBm (decimal ASCII)
Low Power Mode: -90 to -20 dBm (decimal ASCII)
Very Low Power : -110 to -40 dBm (decimal ASCII)
UAT
-110 to 5 dBm (decimal ASCII)

Default: -50 dBm (Multi-Receiver)
-20 dBm (UAT)

Example: :ATC:SCE:DYN:1:SQPWR -35\r

5.7.2.18 SURFACE POSITION MESSAGE PARAMETERS

The following set of commands allows the user to define the surface position information for any intruder (target).

5.7.2.18.1 MOVEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MOV |:MOVEMENT}SP{SPEED | MISC}CR

Description: This command sets the type of movement for a ground intruder.

Default: Speed

Example: :ATC:SCE:DYN:1:MOV SPEED\r

5.7.2.18.2 MOVEMENT MISCELLANEOUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MMISC }SP<numeric>CR

Description: This command sets the selected intruder to the selected miscellaneous movement, if Movement has been set to miscellaneous.

Numeric: For DO-260 and DO-260A:
0 to 5 (decimal ASCII)

Value	Movement
0	No Movement Information
1	Aircraft Stopped
2	Speed ≥175 kts
3	Reserved for Decelerating
4	Reserved for Accelerating
5	Reserved for Backing-Up

For DO-260B:
0 to 6 (decimal ASCII)

Value	Movement
0	No Movement Information
1	Aircraft Stopped
2	Ground Speed ≤0.125 kts
3	Speed >175 kts
4	Reserved for Decelerating
5	Reserved for Accelerating
6	Reserved for Backing-Up

Example: :ATC:SCE:DYN:1:MMISC 2\r

5.7.2.18.3 SPEED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SPEED}SP<numeric>CR

Description: This command sets the selected ground intruder to the specified ground speed, if the Movement has been set for speed.

Numeric: 0.125 to 176 knots (decimal ASCII)

NOTE: The velocity information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

Default: 0.125 kts

Example: :ATC:SCE:DYN:1:SPEED 77\r

5.7.2.18.4 TYPE CODE

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:SURFACETYPE}SP<numeric>CR
Description:	This command sets the selected intruder surface position squitter to the specified type code, if the intruder is an extended Mode S.
Numeric:	0 or 5 to 8 (decimal ASCII)
Default:	5
Example:	:ATC:SCE:DYN:1:SURFACETYPE 7\r

5.7.2.19 TARGET STATE AND STATUS MESSAGE

The following set of commands allows the user capability of defining for any intruder the Target State and Status squitter.

5.7.2.19.1 TARGET STATE AND STATUS MESSAGE PARAMETERS

5.7.2.19.1.A ALTITUDE HOLD MODE

5.7.2.19.1.B ALTITUDE TYPE

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:AHM}SP<numeric>CR
Description:	This command sets the selected intruder target state and status squitter altitude hold mode field to the specified value, if the intruder is an extended Mode S.
Numeric:	0 to 1 (decimal ASCII)

Value	Meaning
0	Altitude Hold not Active or Unknown
1	Altitude Hold Active

Default:	0
Example:	:ATC:SCE:DYN:1:STARGET:AHM 1\r

Command Syntax:	{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:AT}SP<numeric>CR
Description:	This command sets the selected intruder target state and status squitter altitude type field to the specified value, if the intruder is an extended Mode S.
Numeric:	0 to 1 (decimal ASCII)

Value	Meaning	
	DO-206A	DO-260B
0	Target Altitude referenced to Pressure Altitude (Flight Level)	Data derived from the MCP/FCU
1	Target Altitude referenced to Baro-Corrected Altitude (Mean Sea level)	Data derived from the FMS

Default:	0
Example:	:ATC:SCE:DYN:1:STARGET:AT 1\r

5.7.2.19.1.C APPROACH MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:APP}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter approach mode field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Approach Mode not Active or Unknown
1	Approach Mode Active

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:APP 1\r

5.7.2.19.1.D AUTOPILOT ENGAGED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:AEG}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter autopilot engaged field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Autopilot Disengaged or Unknown
1	Autopilot Engaged

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:AEG 1\r

5.7.2.19.1.E BACKWARD COMPATIBILITY FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:BCF}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter backward compatibility flag field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Required value
1	Invalid message

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:BCF 1\r

5.7.2.19.1.F BAROMETRIC ALTITUDE INTEGRITY CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:NICB}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter barometric altitude integrity code field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Gilham Altitude Source with no cross-checking
1	Cross-Checked Gilham or any other Altitude Source

Default: 0

Example: :ATC:SCE:STAT:1:STARGET:NICB 1\r

5.7.2.19.1.G BAROMETRIC PRESSURE SETTING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:BPS}SP{NODATA |<numeric>}CR

Description: This command sets the selected intruder target state and status squitter barometric pressure setting field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 408 (decimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:STARGET:BPS NODATA\r

5.7.2.19.1.H CAPABILITY/MODE CODES

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:CMC}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter capability/mode codes field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	TCAS Operational / No RA Active
1	TCAS Operational / RA Active
2	TCAS Not Operational / No RA Active
3	TCAS Not Operational / RA Active

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:CMC 2\r

5.7.2.19.1.I EMERGENCY/PRIORITY STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:EPS}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter emergency/priority status field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 7 (decimal ASCII)

Value	Meaning
0	No emergency
1	General Emergency
2	Lifeguard/medical emergency
3	Minimum fuel
4	No communications
5	Unlawful interference
6	Downed Aircraft
7	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:EPS 3\r

5.7.2.19.1.J HORIZONTAL DATA AVAILABLE/SOURCE INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:HDASI}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter horizontal data available/source indicator field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	No valid horizontal target state data is available
1	Autopilot control panel selected value, such as MCP or FCU
2	Maintaining current heading or track angle
3	FMS/RNAV system

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:HDASI 3\r

5.7.2.19.1.K HORIZONTAL MODE INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:HMI}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter horizontal mode indicator field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown mode
1	Acquiring Mode
2	Capturing or Maintaining Mode
3	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:HMI 1\r

5.7.2.19.1.L LNAV MODE ENGAGED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:LMG}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter LNAV mode engaged field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	LNAV Mode not Active or Unknown
1	LNAV Mode Active

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:LMG 1\r

5.7.2.19.1.M MCP/FCU MODE BITS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:SMD}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter status of MCP/FCU mode bits field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	No Mode Information/Invalid
1	Valid Mode Information in bits 80,81,82,84

Default: 0

Example: :ATC:SCE:STAT:1:STARGET:SMD 1\r

5.7.2.19.1.N NAVIGATION ACCURACY CATEGORY FOR POSITION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:NACP}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter navigation accuracy category for position field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 15 (decimal ASCII)

Value	NAC_P
0	EPU ≥10 Nm
1	EPU <10 Nm
2	EPU <4 Nm
3	EPU <2 Nm
4	EPU <1 Nm
5	EPU <0.5 Nm
6	EPU <0.3 Nm
7	EPU <0.1 Nm
8	EPU <0.05 Nm
9	EPU <30 m and VEPU <45 m
10	EPU <10 m and VEPU <15 m
11	EPU <3 m and VEPU <4m
12 to 15	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:NACP 4\r

5.7.2.19.1.O RESERVED FOR ADS-R FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:ADR}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter reserved for ADS-R flag field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:ADR 1\r

5.7.2.19.1.P SELECTED HEADING STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:SHS}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter selected heading status field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Selected Heading Invalid
1	Selected Heading Valid

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:SHS 1\r

5.7.2.19.1.Q SOURCE INTEGRITY LEVEL SUPPLEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:SILS}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter source integrity level supplement field to the specified value, if the intruder is an extended Mode S (DO-260B).

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Probability of exceeding NIC Radius of Containment “per hour”
1	Probability of exceeding NIC Radius of Containment “per sample”

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:SILS 1\r

5.7.2.19.1.R SUBTYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:SUBTYPE}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter subtype field to the specified value, if the intruder is an extended Mode S (DO-260B).

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:SUBTYPE 1\r

5.7.2.19.1.S SURVEILLANCE INTEGRITY LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:SIL}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter surveillance integrity level field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown
1	$1x10^{-3}$ per flight hour
2	$1x10^{-5}$ per flight hour
3	$1x10^{-7}$ per flight hour

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:SIL 2\r

5.7.2.19.1.T TARGET ALTITUDE CAPABILITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:ACAP}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter target altitude capability flag field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Capability for reporting holding altitude only
1	Capability for reporting either holding altitude or autopilot control panel selected altitude
2	Capability for reporting either holding altitude, autopilot control panel selected altitude or any FMS/RNAV level-off altitude
3	Reserved

Default: 0

Example: :ATC:SCE:STAT:1:STARGET:ACAP 3\r

5.7.2.19.1.U TARGET ALTITUDE/SELECTED ALTITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:TALT}SP{NODATA |<numeric>}CR

Description: This command sets the selected intruder target state and status squitter target altitude or MCP/FMS selected altitude field to the specified value, if the intruder is an extended Mode S.

Numeric: -1000 to 100,000 (decimal ASCII)

Default: 0

Example: :ATC:SCE:STAT:1:STARGET:TALT 10\r

5.7.2.19.1.V TARGET HEADING/TRACK INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:THTI}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter target heading/track indicator field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Target Heading Angle being reported
1	Target Track Angle being reported

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:THTI 1\r

5.7.2.19.1.W TCAS OPERATIONAL

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:TOP}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter TCAS operational field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	TCAS not Operational (RI ≠ 3 or 4)
1	Approach Mode Active (RI =3 or 4)

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:TOP 1\r

5.7.2.19.1.X TRACK HEADING/TRACK ANGLE OR SELECTED HEADING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:THTA}SP{NODATA |<numeric>}CR

Description: This command sets the selected intruder target state and status squitter track heading or selected heading field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 360 degrees (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:THTA NODATA\r

5.7.2.19.1.Y VERTICAL DATA AVAILABLE/SOURCE INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:VDASI}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter vertical data available or source indicator field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Vertical Data Available/Source Indicator
0	No valid vertical target state data is available
1	Autopilot control panel selected
2	Holding Altitude
3	FMS/RNAV System

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:VDASI 3\r

5.7.2.19.1.Z VERTICAL MODE INDICATOR

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:VMI}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter vertical mode indicator field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown Mode
1	Acquiring Mode
2	Capturing or Maintaining Mode
3	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:VMI 2\r

5.7.2.19.1.AA VNAV MODE ENGAGED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:VEG}SP<numeric>CR

Description: This command sets the selected intruder target state and status squitter VNAV mode engaged field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	VNAV Mode not Engaged or Unknown
1	VNAV Mode Engaged

Default: 0

Example: :ATC:SCE:DYN:1:STARGET:VEG 1\r

5.7.2.19.2 TARGET STATE AND STATUS MESSAGE SCHEDULE

Target State and Status squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Target State and Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Target State and Status squitter for the entire scenario.

5.7.2.19.2.A DYNAMIC TARGET STATE AND STATUS SCHEDULE

5.7.2.19.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the target state and status squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:DYN:1:STARGET:INT:1:ENA ON\r

5.7.2.19.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of target state and status squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:1:STARGET:NINT 3\r

5.7.2.19.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected target state and status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:STARGET:INT:2:BEGIN 40\r

5.7.2.19.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:STARGET}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected target state and status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:STARGET:INT:2:END 101\r

5.7.2.19.2.B STATIC TARGET STATE AND STATUS SCHEDULE

5.7.2.19.2.B.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:STARGET}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the target state and status squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:1:STARGET:ENA ON\r

5.7.2.20 TIS-B MESSAGE PARAMETERS

The following set of commands allows the user to define some parameters specific to a TIS-B intruder.

5.7.2.20.1 MESSAGE TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TISB}{:MTYPE}SP{ADS-B |FINE |COARSE}CR

Description: This command sets the TIS-B message type of the intruder selected.

Default: ADSB

Example: :ATC:SCE:DYN:1:TISB:MTYPE ADS-B\r

5.7.2.20.2 TIS-B COARSE POSITION MESSAGE PARAMETERS

5.7.2.20.2.A GROUND TRACK STATUS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:COARSE}{:GTS}SP<numeric>CR

Description: This command sets the validity of the Ground Track Value of the intruder selected.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Not Valid
1	Valid

Default: 1

Example: :ATC:SCE:DYN:1:COARSE:GTS 1\r

5.7.2.20.2.B SERVICE VOLUME ID

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:COARSE}{:SVID}SP<numeric>CR

Description: This command sets the service volume identification of the intruder selected.

Numeric: 0 to 15 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:COARSE:SVID 3\r

5.7.2.21 VELOCITY MESSAGE

The following set of commands allows the user to define the velocity squitter information for any intruder.

5.7.2.21.1 VELOCITY MESSAGE PARAMETERS

5.7.2.21.1.A AIRSPEED INFORMATION AVAILABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:AIRSPEED}SP{NODATA|<numeric>}CR

Description: This command sets the selected intruder to the specified airspeed. If airspeed data is <u>not</u> available, then use the “NODATA” keyword.

Numeric: 0 to 4088 knots (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:AIRSPEED 287\r

5.7.2.21.1.B AIRSPEED TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELAT}SP{IAS|TAS}CR

Description: This command sets the selected intruder velocity squitter airspeed type field to the specified value, if the intruder is an extended Mode S and the velocity type is Airspeed and Heading.

Default: IAS

Example: :ATC:SCE:DYN:1:VELAT TAS\r

5.7.2.21.1.C DIFFERENCE FROM BAROMETRIC ALTITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELDBA}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter difference from barometric altitude field to the specified value, if the intruder is an extended Mode S.

Numeric: -3150 to 3150 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:VELDBA -30\r

5.7.2.21.1.D E/W VELOCITY INFORMATION AVAILABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:EWV}SP{ON | OFF}CR

Description: This command enables or disables the east/west velocity information of the specified intruder. OFF setting means no east/west velocity information available.

Default: On

Example: :ATC:SCE:DYN:1:EWV ON\r

5.7.2.21.1.E GNSS ALTITUDE SOURCE DATA DIFFERENCE INFORMATION AVAILABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:GNSS}SP{ON | OFF}CR

Description: This command enables or disables the GNSS altitude source data difference information of the specified intruder. When set to OFF, no GNSS altitude source data difference information is available.

Default: On

Example: :ATC:SCE:DYN:1:GNSS OFF\r

5.7.2.21.1.F IFR CAPABILITY FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELIFR}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter IFR capability flag field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:VELIFR 1\r

5.7.2.21.1.G INTENT CHANGE FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELINTENT}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter intent change flag field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example :ATC:SCE:DYN:1:VELINTENT 1\r

5.7.2.21.1.H NAVIGATION ACCURACY CATEGORY FOR POSITION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNACP}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter navigation accuracy category for position field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 15 (decimal ASCII)

Value	NAC_P
0	EPU ≥10 Nm
1	EPU <10 Nm
2	EPU <4 Nm
3	EPU <2 Nm
4	EPU <1 Nm
5	EPU <0.5 Nm
6	EPU <0.3 Nm
7	EPU <0.1 Nm
8	EPU <0.05 Nm
9	EPU < 30 m and VEPU <45 m
10	EPU <10 m and VEPU <15 m
11	EPU <3 m and VEPU <4m
12 to 15	Reserved

Default: 0

Example: :ATC:SCE:DYN:1:VELNACP 9\r

5.7.2.21.1.I NAC-V

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNACV}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter NACv field to the specified value, if the intruder is an extended Mode S.

Numeric: 0 to 7 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:2:VELNACV 6\r

5.7.2.21.1.J NIC SUPPLEMENT-A

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNISA}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter NIC Supplement-A field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:2:VELNISA 1\r

5.7.2.21.1.K N/S VELOCITY INFORMATION AVAILABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:NSV}SP{ON | OFF}CR

Description: This command enables or disables the north/south velocity information of the specified intruder. When set to OFF, no north/south velocity information is available.

Default: On

Example: :ATC:SCE:DYN:2:NSV OFF\r

5.7.2.21.1.L SURVEILLANCE INTEGRITY LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELSIL}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter surveillance integrity level field to the specified value.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	Unknown
1	$1x10^{-3}$ per flight hour
2	$1x10^{-5}$ per flight hour
3	$1x10^{-7}$ per flight hour

Default: 0

Example: :ATC:SCE:DYN:2:VELSIL 2\r

5.7.2.21.1.M SOURCE BIT FOR VERTICAL RATE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELVRS}SP{ BARO | GEO}CR

Description: This command sets for the selected intruder the source bit for vertical rate.

Default: 0

Example: :ATC:SCE:DYN:2:VELVRS BARO\r

5.7.2.21.1.N STATUS BIT FOR HEADING/GROUND TRACK

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:HSGS}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter status bit for heading or ground track field to the specified value, if the intruder is an extended Mode S (applies when the velocity type is Airspeed and Heading or in the surface position squitter).

Numeric: 0 to 1 (decimal ASCII)

Default: 1

Example: :ATC:SCE:DYN:1:HSGS 1\r

5.7.2.21.1.O TRUE/MAGNETIC HEADING TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELHRD}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter true/magnetic heading type field to the specified value.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	True North
1	Magnetic North

Default: 0

Example: :ATC:SCE:DYN:1:VELHRD 1\r

5.7.2.21.1.P VELOCITY TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELTYPE}SP<numeric>CR

Description: This command sets the selected intruder velocity squitter to the specified type, if the intruder is an extended Mode S.

Numeric: 0 to 7 (decimal ASCII)

Value	Velocity Type
0	Subtype 0 - Reserved
1	Ground Speed Normal
2	Ground Speed Supersonic
3	Airspeed Heading Normal
4	Airspeed Heading Supersonic
5	Subtype 5 - Reserved
6	Subtype 6 - Reserved
7	Subtype 7 - Reserved

Default: 1

Example: :ATC:SCE:DYN:2:VELTYPE 3\r

5.7.2.21.1.Q VERTICAL RATE INFORMATION AVAILABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VRV}SP{ON | OFF}CR

Description: This command enables or disables the vertical rate information of the specified intruder. When set to OFF, no vertical rate information is available.

Default: On

Example: :ATC:SCE:DYN:2:VRV OFF\r

5.7.2.21.1.R VERTICAL SPEED

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VERT |:VERTICAL}SP<numeric>CR

Description: This command sets the selected intruder vertical speed.

Numeric: -32704 to 32704 feet per minute (decimal ASCII)

NOTE: The vertical speed information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

Default: 0

Example: :ATC:SCE:DYN:1:VERT 50\r

5.7.2.21.1.S VERTICAL VELOCITY SOURCE / GEO FLAG

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}< intruder no >{:VVSOURCE}SP<numeric>CR

Description: This command sets the Vertical Velocity source or GEO flag of the specified intruder.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Vertical Rate information from Geometric Source
1	Vertical Rate information from Barometric Source

Default: 0

Example: :ATC:SCE:DYN:1:VVSOURCE 1\r

5.7.2.21.2 VELOCITY MESSAGE SCHEDULE

Velocity squitter is transmitted by the ATC-5000NG at a rate of 0.5 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Velocity squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Velocity squitter for the entire scenario.

5.7.2.21.2.A DYNAMIC VELOCITY SCHEDULE

5.7.2.21.2.A.1 INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the velocity squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:DYN:2:SVEL:INT:2:ENA ON\r

5.7.2.21.2.A.2 INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of velocity squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:1:SVEL:NINT 3\r

5.7.2.21.2.A.3 INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected velocity squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:2:SVEL:INT:2:BEGIN 86\r

5.7.2.21.2.A.4 INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected velocity squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, only the user can define the intervals where the message is transmitted.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:SVEL:INT:2:END 205\r

5.7.2.21.2.B STATIC VELOCITY SCHEDULE - INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SVEL}{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the velocity squitter message of the specified intruder.

Default: On

Example: :ATC:SCE:STAT:1:SVEL:ENA ON\r

5.7.3 SCENARIO PARAMETERS

The following set of commands allows the user to define some scenario parameters before executing the start of scenario.

5.7.3.1 CHANNEL GROUPING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:CH |:CHANNEL}SP{1090RX1 |UATRX1|UATRX2}CR

Description: This command allows grouping by channel commands that are used to define UAT and Multi-Receiver scenarios. This command must precede the commands used to define intruders that are transmitted by the specified channel. According to the scenario type selected, the valid arguments are:

Scenario Type

UAT	MULTI (Multi-Receiver)
UATRX1	1090RX1
UATRX2	UATRX1

Default: Scenario Type

UAT	MULTI (Multi-Receiver)
UATRX1	1090RX1

Example: :ATC:SCE:CH 1090RX1\r

5.7.3.2 COMPILE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:COMP |:COMPILE}CR

Description: This command must be sent before to the Scenario Start command. This command completes the definition of the Mode S Squitters for the intruders declared as Mode S Extended, ADS-R or TIS-B. A “*” is returned when the compile function has been completed.

Example: :ATC:SCE:COMP\r

5.7.3.3 EXPORT DATA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:EXPORT |:EXP}SP<filename>CR

Description: This command creates a “SDF” file in the internal storage area with the specified filename. If the command is received during the running of a scenario, the creation of the file finishes when the scenario finishes and all data for the scenario has been processed. If the command is received after the scenario stops, the file generation process starts and finishes as soon as all the data has been processed (the command can be sent before or after the completion of the scenario). The benefit of sending the command after the scenario has started is that file generation finishes sooner after the scenario stops. When the export process is finished, a “%" character is returned.

Example: :ATC:SCE:EXPORT test1\r

5.7.3.4 INTRUDERS QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}{:QUAN |:QUANTITY}SP<numeric1>[,<numeric2>]CR

Description: This command sets the number of static or dynamic intruders depending on the scenario type selected. The field <numeric2> is optional. The absence means zero.

Numeric: 0 to 1500 (decimal ASCII)

According to the scenario type selected, the numeric fields have the following meaning:

Scenario Type

	UAT	MULTI (Multi-Receiver)
<numeric1>	The number of static or dynamic targets in the UAT RX1 channel.	The number of static or dynamic 1090 targets.
<numeric2>	The number of static or dynamic targets in the UAT RX2 channel.	The number of static or dynamic UAT targets.

Default: Scenario Type

UAT	MULTI (Multi-Receiver)
1500	568
32	32

Example: :ATC:SCE:DYN:QUAN 3,4\r

5.7.3.5 LOAD

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:LOAD}SP<filename>CR

Description: This command loads a CSV scenario file (specified filename) from the internal storage area. A “*” is returned upon completion of loading the file. Must have previously saved a scenario.

Example: :ATC:SCE:LOAD test1\r

5.7.3.6 MODE S MESSAGE CAPTURE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:CAP |:CAPTURE}SP{ON | OFF}CR

Description: This command turns on or off the capture of Mode S messages.

Default: Off

Example: :ATC:SCE:CAP ON\r

5.7.3.7 MSO STEP

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:MSOSTEP}SP<numeric>[,<numeric1>]CR

Description: This command sets the increment used to define the Message Start Opportunities for each UAT ADS-B message defined. If the scenario type selected is MULTI, the <numeric> and <numeric1> are used to define the MSO step for dynamic and static UAT respectively. This command requires ATC-5000NG UAT Hardware.

Numeric: 1 to 100 (decimal ASCII)

Example: :ATC:SCE:MSOSTEP 20,25\r

5.7.3.8 POWER MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:POW |:POWER}SP{HI | LO | VLO}CR

Description: This command sets the scenario for high, low or very low power mode. This command is ignored for the scenario type UAT and XPDR. A”*” is returned if the command is able to complete successfully or “?” if a failure occurs.

	Power Mode		
	High Power	**Low Power**	**Very Low Power**
Minimum dBm	-65 dBm	-90 dBm	-110 dBm
Maximum dBm	5 dBm	-20 dBm	-40 dBm

Default: Low power

Example: :ATC:SCE:POW VLO\r

5.7.3.9 RESET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:RES |:RESET}CR

Description: This command resets the Scenario Menu to no active intruder, interrogator (ground station) and video data block.

Example: :ATC:SCE:RES\r

5.7.3.10 RUN TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TI |:TIME}SP<numeric>CR

Description: This command sets the total scenario time.

Numeric: 1 to 6550 seconds (decimal ASCII)

Default: 6550 seconds after power-up. After power-up the last set time is remembered.

Example: :ATC:SCE:TI 400\r

5.7.3.11 RUN TIME REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TI |:TIME}?CR

Description: This command returns the current scenario run time.

Return Value: decimal ASCII value. 100 ms resolution.

Example: :ATC:SCE:TI?\r

Return: 13.9

5.7.3.12 SAVE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SAVE}SP<filename>CR

Description: This command saves the current scenario in the internal storage area with the specified filename.

Example: :ATC:SCE:SAVE test1\r

5.7.3.13 SCENARIO TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TYPE}SP{UAT |XPDR |MULTI |DME}CR

Description: This command sets the ATC-5000NG to interpret the scenario commands as UAT, XPDR, MULTI or DME mode. This command must precede all commands used to define the scenario. The UAT mode requires ATC-5000NG UAT Hardware.

Default: MULTI

Example: :ATC:SCE:TYPE XPDR\r

Query: :ATC:SCE:TYPE?\r

Return: XPDR

5.7.3.14 SCENARIO UTC TIME GPS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UTCGPS}SP{ON | OFF}CR

Description: This command turns on or off the UTC time from the GPS signal. When the UTC Time GPS is disabled, the UTC time is obtained from the ATC-5000NG clock.

Default: On

Example: :ATC:SCE:UTCGPS OFF\r

5.7.3.15 SLANT RANGE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SLA |:SLANT}SP{ON | OFF}CR

Description: This command sets the ATC-5000NG to generate targets with actual slant range or horizontal plane range. In slant range mode the altitude difference between the own aircraft and intruder is used for reply delay.

Default: Off. Reset command turns off slant range.

Example: :ATC:SCE:SLA ON\r

5.7.3.16 START

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STA |:START} CR

Description: This command starts a predefined scenario. The system returns a “*” if the start command was able to be performed. A “?” character is returned if the scenario was <u>not</u> able to be started. **Note: It is recommended to send the COMPILE command prior to the start command.**

Example: :ATC:SCE:STA\r

5.7.3.17 STATIC TEST MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STEST}SP{ON | OFF}CR

Description: This command turns on or off the Static Test Mode. The Static Test Mode allows running the scenario without taking into account the time duration of the scenario. When the Static Test Mode is enabled, the Mode S static and dynamic intruders maintain the position acquired when the maximum time duration is reached.

Default: Off. Reset command turns off this parameter.

Example: :ATC:SCE:STEST ON\r

5.7.3.18 STOP

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STO |:STOP}CR

Description: This command stops a scenario immediately and does <u>not</u> wait for scenario time to expire.

Example: :ATC:SCE:STO\r

5.7.3.19 SWEEP MODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP}SP{ON | OFF}CR

Description: This command turns on or off the sweeping UAT mode. This command is valid only for UAT scenario type.

Default: Off

Example: :ATC:SCE:SWEEP ON\r

5.7.3.20 SWEEP STEP

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP:STEP}SP<numeric>CR

Description: This command specifies the sweep step. This command is valid only for UAT scenario.

Numeric: 50 to 200 ms (decimal ASCII)

Default: 50 ms

Example: :ATC:SCE:SWEEP:STEP 2\r

5.7.3.21 SWEEP INTERVAL

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP:INTERVAL}SP<numeric>CR

Description: This command specifies the sweep interval. This command is valid only for UAT scenario.

Numeric: 200 to 994 ms (decimal ASCII)

Default: 200 ms

Example: :ATC:SCE:SWEEP:INTERVAL 200\r

5.7.3.22 UAT TEST MODE DOPPLER FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:DOPPLER}SP<numeric>CR

Description: This command sets the carrier frequency for the Doppler Test. This command is valid only for UAT scenario.

Numeric: 1.335 to 85.45 kHz (decimal ASCII)

Default: 20.0 kHz

Example: :ATC:SCE:UAT:STEST:DOPPLER 10\r

5.7.3.23 UAT TEST MODE DOPPLER SHIFT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:DSHIFT}SP{PLUS|+|MINUS|-}CR

Description: This command sets the shift for the Doppler Test. This command is valid only for UAT scenario.

Default: PLUS

Example: :ATC:SCE:UAT:STEST:DSHIFT MINUS\r

5.7.3.24 UAT TEST MODE FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:FREQUENCY|:FREQ}SP<numeric>CR

Description: This command sets the frequency for the UAT Test Mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (DME Fruit 12 µs spacing and DME Fruit 30 µs spacing).

Numeric: 952 to 1223 MHz (decimal ASCII).

Default: 978.0 MHz

Example: :ATC:SCE:UAT:STEST:FREQ 979\r

5.7.3.25 UAT TEST MODE HORIZONTAL SPACING

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:HSPACING|:HSP}SP<numeric>CR

Description: This command sets the horizontal spacing for the UAT test mode selected in 10 ns steps. This command is valid only for UAT scenarios. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

Numeric: 600 to 960 ns (decimal ASCII).

Default: 960.

Example: :ATC:SCE:UAT:STEST:HSP 600\r

5.7.3.26 UAT TEST MODE I/Q FILTER MAGNITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:IQFILTER|:IQF}SP<numeric>CR

Description: This command sets the I/Q filter magnitude for the UAT test mode selected. This command is valid only for UAT scenarios. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

Numeric: 0 to 3 (decimal ASCII).

Default: 0 (No Filter).

Example: :ATC:SCE:UAT:STEST:IQF 3\r

5.7.3.27 UAT TEST MODE MODULATION FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:MODULATION |:MOD}SP<numeric>CR

Description: This command sets the modulation frequency for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

Numeric: 156.25 to 683.59 kHz (decimal ASCII).

Default: 312.5 kHz

Example: :ATC:SCE:UAT:STEST:MOD 157.0\r

5.7.3.28 UAT TEST MODE PULSE POWER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:POWER|:POW}SP<numeric>CR

Description: This command sets the power level for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (DME Fruit 12 μs spacing, 1090 Pulse Interference and DME Fruit 30 μs spacing).

Numeric: 1 to -98 dBm (decimal ASCII)

Default: -20 dBm

Example: :ATC:SCE:UAT:STEST:POW -80\r

5.7.3.29 UAT TEST MODE TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:TYPE}SP<numeric>CR

Description: This command specifies the UAT test mode type. This command is valid only for UAT scenario.

Numeric: 1 to 13 (decimal ASCII)

Value	Test Mode Type
1	Normal
2	Overlapping
3	DME Fruit 12 µs spacing
4	Retrigger Long ADS-B Message
5	Retrigger Long Ground Link Message
6	1090 Pulse Interference
7	Ground Link Message Invalid MSO
8	Airborne Message Invalid MSO
9	Doppler Test
10	Modulation Frequency
11	DME Fruit 30 µs spacing
12	Doppler and Modulation Frequency
13	Receiver Selectivity

Default: 1 (Normal)

Example: :ATC:SCE:UAT:STEST:TYPE 10\r

5.7.3.30 UAT TEST MODE PULSE WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:WIDTH|:WID}SP<numeric>CR

Description: This command sets the power width for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the 1090 Pulse Interference UAT test mode.

Numeric: 0 to 50 µs (decimal ASCII)

Example: :ATC:SCE:UAT:STEST:WID 40\r

5.7.4 UAT ADS-B DEFINITION PARAMETERS

The following set of commands allows the user to define ADS-B (airborne) UAT intruder.

5.7.4.1 ADDRESS QUALIFIER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:ADDRQ}SP<numeric>CR

Description: This command sets the address qualifier of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 7 (decimal ASCII)

Value	Address Type
0	ADS-B target with ICAO 24 bit address
1	ADS-B target with self-assigned temporary address
2	TIS-B or ADS-R target with ICAO 24 bit address
3	TIS-B target with track file identifier
4	Surface Vehicle
5	Fixed ADS-B Beacon
6	ADS-R target with non-ICAO address
7	Reserved

Example: :ATC:SCE:STAT:1:ADDRQ 5\r

5.7.4.2 AIRCRAFT SIZE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:AVSIZE}SP<numeric>CR

Description: This command sets the A/V size of the specified intruder. This command is valid only for intruders with AG state grounded. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 15 (decimal ASCII)

Value	Meaning(Length meters/Width meters)
0	No Data
1	15/23
2	25/28.5
3	25/34
4	35/33
5	35/38
6	45/39.5
7	45/45
8	55/45
9	55/52
10	65/59.5
11	65/67
12	75/72.5
13	75/80
14	85/80
15	85/90

Example: :ATC:SCE:DYN:1:AVSIZE 11\r

5.7.4.3 AIR/GROUND STATE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:AGSTATE}SP<numeric>CR

Description: This command sets the AG state of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 3 (decimal ASCII)

Value	State
0	Subsonic
1	Supersonic
2	Grounded
3	Reserved

Example: :ATC:SCE:DYN:2:AGSTATE 2\r

5.7.4.4 ALTITUDE TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:ALTTYPE}SP<numeric>CR

Description: This command sets the altitude type of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 1 (decimal ASCII)

Value	Altitude Type
0	Pressure Altitude
1	Geometric Altitude

Default: 0

Example: :ATC:SCE:DYN:1:ALTTYPE 1\r

5.7.4.5 LATERAL AXIS GPS ANTENNA OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:UAT}{:GPSLAT}SP<numeric>CR

Description: This command sets the lateral axis GPS antenna offset of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 7 (decimal ASCII)

Value	Meaning
0	No Data
1	2 meters Left
2	4 meters Left
3	6 meters Left
4	0 meters
5	2 meters Right
6	4 meters Right
7	6 meters Right

Default: 0

Example: :ATC:SCE:DYN:2:UAT:GPSLAT 2\r

5.7.4.6 LONGITUDINAL AXIS GPS ANTENNA OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:UAT}{:GPSLONG}SP<numeric>CR

Description: This command sets the longitudinal axis GPS antenna offset of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 31 (decimal ASCII)

Value	Meaning
0	No Data
1	Applied by sensor
2	2 meters
3	4 meters
4 to 31	6 to 60 meters

Default: 0

Example: :ATC:SCE:DYN:2:UAT:GPSLONG 3\r

5.7.4.7 MSO

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:MSO}SP<numeric>CR

Description: This command sets the MSO of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 3951 (decimal ASCII)

Example: :ATC:SCE:DYN:2:MSO 22\r

5.7.4.8 NAVIGATION INTEGRITY CATEGORY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:NIC}SP<numeric>CR

Description: This command sets the NIC of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 15 (decimal ASCII)

Value	Meaning
0	Rc Unknown
1	Rc <20 NM
2	Rc <8 NM
3	Rc <4 NM
4	Rc <2 NM
5	Rc <1 NM
6	Rc <0.6 NM
7	Rc <0.2 NM
8	Rc <0.1 NM
9	Rc < 75 m
10	Rc <25 m
11	Rc <7.5 m
12	Reserved (NIC=12)
13	Reserved (NIC=13)
14	Reserved (NIC=14)
15	Reserved (NIC=15)

Example: :ATC:SCE:DYN:2:NIC 6\r

5.7.4.9 OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no >{:OFFSET}SP<numeric>CR

Description: This command sets the offset or delay of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 65500 (decimal ASCII)

Example: :ATC:SCE:DYN:1:OFFSET 99\r

5.7.4.10 OFFSET MANUAL OVERRIDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:OFFMANUAL}SP{ON | OFF}CR

Description: This command enables or disables the manual override of the offset for the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Example: :ATC:SCE:DYN:2:OFFMANUAL OFF\r

5.7.4.11 TRACK ANGLE/HEADING TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TAH}SP<numeric>CR

Description: This command sets the track and heading type of the specified intruder. This command is valid only for intruders with AG state grounded. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 3 (decimal ASCII)

Value	Meaning
0	No Data
1	True Track
2	Magnetic Heading
3	True Heading

Example: :ATC:SCE:STAT:1:TAH 1\r

5.7.4.12 VERTICAL VELOCITY SOURCE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VVSOURCE}SP<numeric>CR

Description: This command sets the VV source of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Vertical Rate information from Geometric Source
1	Vertical Rate information from Barometric Source

Example: :ATC:SCE:STAT:1:VVSOURCE 1\r

5.7.4.13 UPLINK FEEDBACK

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UPLINK}SP<numeric>CR

Description: This command sets the uplink feedback encoding of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 7 (decimal ASCII)

Value	Score
0	0
1	1 to 13
2	14 to 21
3	22 to 25
4	26 to 28
5	29 to 30
6	31
7	32

Example: :ATC:SCE:STAT:1:UPLINK 2\r

5.7.4.14 UTC COUPLED CONDITION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UTC}SP{ON | OFF}CR

Description: This command enables or disables the UTC coupled condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Example: :ATC:SCE:STAT:1:UTC ON\r

5.7.4.15 UAT DYNAMIC ADS-B PAYLOADS

> **NOTE**
>
> **S**ee the example in section “5.12.8, UAT Scenario Definition Example” on page 145 to aid in proper command order to setup the UAT scenario.

5.7.4.15.1 GPS ANTENNA AXIS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:GPSAXIS}SP<numeric>CR

Description: This command sets the GPS antenna axis of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Lateral Axis
1	Longitudinal Axis

Example: :ATC:SCE:DYN:1:UAT:ADSB:1:GPSAXIS 0\r

5.7.4.15.2 QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:NADSB}SP<numeric>CR

Description: This command sets the number of ADS-B messages for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 255 (decimal ASCII)

Default: 0

Example: :ATC:SCE:DYN:1:UAT:NADSB 5\r

5.7.4.15.3 PAYLOAD TYPE CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLCODE}SP<numeric>CR

Description: This command sets the payload type code of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 10 (decimal ASCII)

Value	Type Code
0	ADS-B Message Payload Type Code 0
1	ADS-B Message Payload Type Code 1
2	ADS-B Message Payload Type Code 2
3	ADS-B Message Payload Type Code 3
4	ADS-B Message Payload Type Code 4
5	ADS-B Message Payload Type Code 5
6	ADS-B Message Payload Type Code 6
7	ADS-B Message Payload Type Code 7
8	ADS-B Message Payload Type Code 8
9	ADS-B Message Payload Type Code 9
10	ADS-B Message Payload Type Code 10

Example: :ATC:SCE:DYN:1:UAT:ADSB:2:PLCODE 3\r

5.7.4.15.4 AUXILIARY STATE VECTOR PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLASV}SP<numeric>CR

Description: This command sets the auxiliary state vector payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘1’, ‘2’, ‘5’ and ‘6.’ The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFF (10 hexadecimal ASCII)

Example: :ATC:SCE:DYN:1: UAT:ADSB:1:PLASV CCCCCCC\r

5.7.4.15.5 MODE STATUS PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLMS}SP<numeric>CR

Description: This command sets the mode status payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘1’ and ‘3.’ The data message is padded on the right with zeros for a length 24 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)

Example: :ATC:SCE:DYN:1:UAT:ADSB:1:PLMS AAAAAAAAAAAAAAAAAA\r

5.7.4.15.6 TARGET STATE PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLTS}SP<numeric>CR

Description: This command sets the intruder state payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘3’, ‘4’ and ‘5.6.’ The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFF (10 hexadecimal ASCII)

Example: :ATC:SCE:DYN:1:UAT:ADSB:3:PLTS EEEEEEE\r

5.7.4.15.7 PAYLOAD MESSAGE SCHEDULE INTERVAL ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR

Description: This command enables or disables the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Example: :ATC:SCE:DYN:1:UAT:ADSB:2:INT:1:ENA ON\r

5.7.4.15.8 PAYLOAD MESSAGE SCHEDULE INTERVAL POWER

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:PWR }SP<numeric>CR

Description: This command sets the power level of the ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: -110 to 5 dBm (decimal ASCII)

Example: :ATC:SCE:DYN:1:UAT:ADSB:1:INT:1:PWR -80\r

5.7.4.15.9 PAYLOAD MESSAGE SCHEDULE INTERVAL QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:NINT |:NINTERVALS}SP<numeric>CR

Description: This command sets the number of ADS-B payload message intervals for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:DYN:1:UAT:ADSB:1:NINT 4\r

5.7.4.15.10 PAYLOAD MESSAGE SCHEDULE INTERVAL START TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR

Description: This command sets the start time for the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:UAT:ADSB:2:INT:2:BEGIN 55\r

5.7.4.15.11 PAYLOAD MESSAGE SCHEDULE INTERVAL STOP TIME

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR

Description: This command sets the stop time for the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

Example: :ATC:SCE:DYN:1:UAT:ADSB:2:INT:2:END 105\r

5.7.4.16 UAT STATIC ADS-B PAYLOAD

> **NOTE**
>
> **S**ee the example in section “5.12.8, UAT Scenario Definition Example” on page 145 to aid in proper command order to setup the UAT scenario.

5.7.4.16.1 PAYLOAD GPS ANTENNA AXIS

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GPSAXIS}SP<numeric>CR

Description: This command sets the GPS antenna axis of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 1 (decimal ASCII)

Value	Meaning
0	Lateral Axis
1	Longitudinal Axis

Example: :ATC:SCE:STAT:1:UAT:GPSAXIS 0\r

5.7.4.16.2 PAYLOAD TYPE CODE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLCODE}SP<numeric>CR

Description: This command sets the payload type code of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 14 (decimal ASCII)

Value	Type Code
0	ADS-B Message Payload Type Code 0
1	ADS-B Message Payload Type Code 1
2	ADS-B Message Payload Type Code 2
3	ADS-B Message Payload Type Code 3
4	ADS-B Message Payload Type Code 4
5	ADS-B Message Payload Type Code 5
6	ADS-B Message Payload Type Code 6
7	ADS-B Message Payload Type Code 7
8	ADS-B Message Payload Type Code 8
9	ADS-B Message Payload Type Code 9
10	ADS-B Message Payload Type Code 10
11	Basic ADS-B Message
12	Long ADS-B Message
13	Ground Uplink Message
14	Ground Uplink Matrix Message

Example: :ATC:SCE:STAT:1:PLCODE 10\r

5.7.4.16.3 BASIC/LONG ADS-B MESSAGE DATA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLMSG}SP<numeric>CR

Description: This command sets the basic or long data message of the specified intruder. This command is valid only for Payload Type Code 11 (Basic ADS-B) and 12 (Long ADS-B). The data message is padded on the right with zeros for a length according to the payload type code code (36 hexadecimal ASCII for Basic ADS-B and 68 hexadecimal ASCII for Long ADS-B). This command always recalculates the FEC parity when setting the ADS-B basic or long data message. The <intruder no> specifies the number of the intruder in the channel grouping specified. This command is valid to define the ADS-B message data used in the UAT Special Test Mode (Retrigger Long ADS-B Message). The data message is padded on the right with zeros for a length according to the data set size identified by excess (for instance, if length ϵ [96, 128] then length = 128). According with the length of the ADS-B message data will be calculated for the data set size.

Numeric: Basic ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF (36 hexadecimal ASCII)
Long ADS-B:
0 to
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
(68 hexadecimal ASCII)
Retrigger Long ADS-B Message (214 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:PLMSG FFFF\r

5.7.4.16.4 BASIC/LONG ADS-B MESSAGE FEC PARITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLFEC}SP<numeric>CR

Description: This command sets the FEC parity of the specified intruder. This command applies to ADS-B Messages with payload type code ‘11’ (Basic ADS-B) and ‘12’ (Long ADS-B). The data message is padded on the right with zeros for a length according to the payload type code (24 hexadecimal ASCII for Basic ADS-B and 28 hexadecimal ASCII for Long ADS-B). The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: Basic ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)
Long ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:PLFEC 0\r

5.7.4.16.5 GROUND UPLINK REED-SOLOMON BLOCK PAYLOAD

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:RSB:}<block number>{:PLMSG}SP<numeric>CR

Description: This command sets the Reed-Solomon block payload data message of the specified intruder. This command is valid only for Payload Type Code 14 (Ground Uplink Matrix Message). The data message is padded on the right with zeros for a length according to the payload type code (144 hexadecimal ASCII). The <intruder no> specifies the number of the intruder in the channel grouping specified. The <block no> specifies the Reed-Solomon block number.

Numeric: <block no> 1 to 6 (decimal ASCII)
<numeric> FFFFFFFF….FFFFFF (144 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:RSB:1:PLMSG F\r

5.7.4.16.6 GROUND UPLINK REED-SOLOMON BLOCK FEC PARITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:RSB:}<block number>{:PLFEC }SP<numeric>CR

Description: This command sets the Reed-Solomon block FEC parity of the specified intruder. This command is valid only for Payload Type Code 14 (Ground Uplink Matrix Message). The data message is padded on the right with zeros for a length according to the payload type code (40 hexadecimal ASCII). The <intruder no> specifies the number of the intruder in the channel grouping specified. The <block no> specifies the Reed-Solomon block number.

Numeric: <block no> 1 to 6 (decimal ASCII)
<numeric> FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF (40 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:RSB:2: PLFEC FF\r

5.7.4.16.7 MODE STATUS PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLMS}SP<numeric>CR

Description: This command sets the mode status payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘1’ and ‘3.’ The data message is padded on the right with zeros for a length 24 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:PLMS AF\r

5.7.4.16.8 AUXILIARY STATE VECTOR PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLASV}SP<numeric>CR

Description: This command sets the auxiliary state vector payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘1’, ‘2’, ‘5’ and ‘5.6.’ The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFF (10 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:PLASV B254\r

5.7.4.16.9 TARGET STATE PAYLOAD MESSAGE ELEMENT

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLTS}SP<numeric>CR

Description: This command sets the intruder state payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of ‘3’, ‘4’ and ‘6.’ The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to FFFFFFFFFF (10 hexadecimal ASCII)

Example: :ATC:SCE:STAT:1:PLTS C84397\r

5.7.4.16.10 RETRIGGER LONG ADS-B MESSAGE DATASET SIZE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:DSSIZE}SP{48 |64 |80 |83 |107}CR

Description: This command sets the dataset size for the ADS-N long message data used for UAT Special Test Mode (Retrigger Long ADS-B Message) of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Default: 48

Example: :ATC:SCE:STAT:1:DSSIZE 64\r

5.7.5 UAT GROUND UPLINK DEFINITION PARAMETERS

The following set of commands allows the user to define a ground uplink UAT message. See section 5.11.8. UAT Scenario Definition for an example.

5.7.5.1 UAT-SPECIFIC HEADER

5.7.5.1.1 APPLICATION DATA VALID

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:ADVALID}SP{ON | OFF}CR

Description: This command enables or disables the Application data valid condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Default: Off

Example: :ATC:SCE:STAT:1:UAT:GUS:ADVALID ON\r

5.7.5.1.2 GROUND STATION LATITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:LAT}SP<numeric>CR

Description: This command sets the latitude of the ground station. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: -90 to 90 degrees (double ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:LAT 30\r

5.7.5.1.3 GROUND STATION LONGITUDE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:LONG}SP<numeric>CR

Description: This command sets the longitude of the ground station. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: -180 to 180 degrees (double ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:LONG -45\r

5.7.5.1.4 POSITION VALID

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:POSVALID}SP{ON | OFF}CR

Description: This command enables or disables the Position valid condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Default: Off

Example: :ATC:SCE:STAT:1:UAT:GUS:POSVALID ON\r

5.7.5.1.5 SLOT ID

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:SLOTID}SP<numeric>CR

Description: This command sets the time slot where the Ground Uplink Message transmission occurs. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 31 (decimal ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:SLOTID 22\r

5.7.5.1.6 TIS-B SITE ID

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:TISBID}SP<numeric>CR

Description: This command sets the TIS-B Site ID of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 31 (decimal ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:TISBID 12\r

5.7.5.1.7 UTC COUPLED CONDITION

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UTC}SP{ON | OFF}CR

Description: This command enables or disables the UTC coupled condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Example: :ATC:SCE:STAT:1:UTC ON\r

5.7.5.2 GROUND UPLINK APPLICATION DATA

5.7.5.2.1 INFORMATION FRAMES QUANTITY

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME}{:NIFRAMES}SP<numeric>CR

Description: This command sets the quantity of information frames for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 255 (decimal ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:IFRAME:NIFRAMES 7\r

5.7.5.2.2 INFORMATION FRAME DATA

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME:}<frame no>{:IFDATA} SP{{TEXT,<text>}|{HEX,<numeric>}|{FILE,<pathname>}}CR

Description: This command sets the frame data content for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified. The <frame no> specifies the number of the information frame. The source of the frame data content is from an alphanumeric string (TEXT), a hexadecimal string (HEX) or a file (FILE).

{TEXT,<text>}
<text> text ASCII

{HEX,<numeric>}
<numeric> hexadecimal ASCII

{FILE,<pathname>}
<pathname> text ASCII. For a correct pathname replace the ":" character next to the driver letter with the ".." character.

Example: :ATC:SCE:STAT:2:UAT:GUS:IFRAME:2:IFDATA HEX,4441544153414d504c45\r

5.7.5.2.3 INFORMATION FRAME TYPE

Command Syntax: {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME}<frame no>{:IFTYPE}SP<numeric>CR

Description: This command sets the frame data format for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

Numeric: 0 to 15 (decimal ASCII)

Example: :ATC:SCE:STAT:1:UAT:GUS:IFRAME:2:IFTYPE 2\r

5.8 SETTINGS COMMANDS

The following set of commands allows the user to modify the Generator Frequency, Modulation (CW/ Pulse), Factory Setting (Factory Reset), ATC-5000NG Scope Port and Generator Power.

These commands are used for troubleshooting the ATC-5000NG and for calibration and factory testing of the ATC-5000NG.

5.8.1 SETTINGS MENU RESET

Command Syntax:	{:ATC |:ATC5000NG}{:SET |:SETTINGS}{:FACT |:FACTORY}SP{DME |XPDR |MULTI |UAT} CR
Description:	This command sets the Unit to the factory default settings for the current scenario type. It resets all of the generators to factory default power level and frequency and modulation to pulse mode.A"*" is returned if the command was able to complete successfully or "?" if a failure occurs. This command should always be executed immediately after changing from one instrument to another (DME to XPDR, XPDR to DME, etc.). A 10 second delay is recommended to allow this command to complete before reading the reply.
Example:	:ATC:SET:FACT XPDR\r
Return:	*

5.8.2 SCOPE PORT

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:SCO |:SCOPE}{:CH1 | :CH2}SP<numeric>CR

Description: This command sets the scope multiplexer for Scope 1 or Scope 2 to the signal represented by the numeric value.

Numeric: 0 to 31 (decimal ASCII)

Value	Receiver
0	1090 Log Video Top
1	1030 Log Video Top
2	1090 Log Video Bottom
3	1030 Log Video Bottom
4	DPSK 1030 Top (Delay) Not Used
5	DPSK 1030 Bottom (Delay) Not Used
6	Transmitter 1 (Gen A) Pulse Modulation
7	Transmitter 2 (Gen B) Pulse Modulation
8	Transmitter 3 (Gen C) Pulse Modulation
9	Transmitter 4 (Gen D) Pulse Modulation
10	Transmitter 5 (Gen E) Pulse Modulation
11	Transmitter 6 (Gen F) Pulse Modulation
12	Transmitter 2 (Gen B) DPSK Modulation
13	Transmitter 4 (Gen D) DPSK Modulation
14	Transmitter 6 (Gen F) DPSK Modulation
15	I 1030 Top Receiver
16	I 1030 Bottom Receiver
17	Q 1030 Top Receiver
18	Q 1030 Bottom Receiver
19	I 1090 Top Receiver
20	I 1090 Bottom Receiver
21	Q 1090 Top Receiver
22	Q 1090 Bottom Receiver
23	Suppression In
24	Sync
25	Sync (Transmitter FPGA Test Point)
26	Log Video 1030 Digital AGC Video
27	Log Video 1090 Digital AGC Video
28	DPSK Demodulation
29	+3.3 V Monitor
30	+1.8 V Monitor
31	+1.2 V Monitor

Default: Last state before power down.

Example: :ATC:SET:SCO:CH1 24\r

Query: :ATC:SET:SCO:CH1?\r

Return: 24

5.8.3 TX GENERATOR PARAMETERS

> **NOTE**
>
> The Generator commands are for use in the RTCA/DO-260 Test mode and Factory calibration ONLY. To set power and frequency use commands listed under the specific test sections.

5.8.3.1 FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:FREQ |:FREQUENCY}SP<numeric>CR

Description: This command sets the selected generator frequency. The frequency is set from 952 to 1223 MHz in 100 kHz steps. A"*" is returned if the command is able to complete successfully or "?" if a failure occurs.

Default: The default Value depends of the scenario type selected:

	MULTI (Multi-Receiver)	XPDR (Transponder)
GenA	978 MHz	1030 MHz
GenB	1090 MHz	1030 MHz
GenC	978 MHz	1030 MHz
GenD	1090 MHz	1030 MHz
GenE	1090 MHz	1030 MHz
GenF	1030 MHz	1030 MHz

For the scenario type UAT, the default settings depend of the UAT Test Mode. The generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

UAT Test Mode	GenA	GenB	GenC
Normal	978 MHz	Disabled	978 MHz
Overlapping	978 MHz	Disabled	978 MHz
DME Fruit 12 µs spacing	978 MHz	Disabled	978 MHz
Retrigger Long ADS-B Message	978 MHz	Disabled	978 MHz
Retrigger Long Ground Link Message	978 MHz	Disabled	978 MHz
1090 Pulse Interference	978 MHz	978 MHz	Disabled
Ground Link Message Invalid MSO	978 MHz	Disabled	978 MHz
Airborne Message Invalid MSO	978 MHz	Disabled	978 MHz
Doppler Test	978 MHz	Disabled	978 MHz
Modulation Frequency	978 MHz	Disabled	978 MHz
DME Fruit 30 µs spacing	978 MHz	Disabled	978 MHz
Doppler and Modulation Frequency	978 MHz	Disabled	978 MHz

Example: :ATC:SET:GENA:FREQ 1031\r

Query: :ATC:SET:GENA:FREQ?\r

Return: 1031.0

5.8.3.2 MODULATION

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:MOD |:MODE}SP<CW | PULSE>CR

Description: This command sets the selected generator to CW, pulse modulation or off. A"*" is returned if the command is able to complete successfully or "?" if a failure occurs.

Default: Pulse

Example: :ATC:SET:GENA:MOD CW\r

Query: :ATC:SET:GENA:MOD?\r

Return: CW

5.8.3.3 PATH

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:PATH}SP<TOP | BOTTOM>CR

Description: This command sets the selected generator path to the top or bottom antenna. A"*" is returned if the command is able to complete successfully or "?" if a failure occurs.

Default: The default Value depends of the scenario type selected.

	MULTI (Multi-Receiver)	**XPDR (Transponder)**
GenA	Top	Top
GenB	Top	Top
GenC	Bottom	Bottom
GenD GenB	Bottom	Bottom
GenE	Top	Top
GenF	Top	Top

For the scenario type UAT, the default settings depend of the UAT Test Mode. The generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

UAT Test Mode	**GenA**	**GenB**	**GenC**
Normal	Top	Disabled	Bottom
Overlapping	Top	Disabled	Bottom
DME Fruit 12 µs spacing	Top	Disabled	Bottom
Retrigger Long ADS-B Message	Top	Disabled	Bottom
Retrigger Long Ground Link Message	Top	Disabled	Bottom
1090 Pulse Interference	Top	Top	Disabled
Ground Link Message Invalid MSO	Top	Disabled	Bottom
Airborne Message Invalid MSO	Top	Disabled	Bottom
Doppler Test	Top	Disabled	Bottom
Modulation Frequency	Top	Disabled	Bottom
DME Fruit 30 µs spacing	Top	Disabled	Bottom

Doppler and Modulation Frequency	Top	Disabled	Bottom

Example: :ATC:SET:GENA:PATH BOTTOM\r

Query: :ATC:SET:GENA:PATH?\r

Return: BOTTOM

5.8.3.4 POWER

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:POW |:POWER}SP<numeric>CR

Description: This command sets the selected generator output power level. . A”*” is returned if the command is able to complete successfully or “?” if a failure occurs.

Numeric: The default Value depends of the scenario type selected.

MULTI (Multi-Receiver) (depends on the Power Mode)

Low Power: -90 to -20 dBm (decimal ASCII)

High Power: -65 to 5 dBm (decimal ASCII)

Very Low Power: -110 to -40 dBm (decimal ASCII)

UAT and XPDR (Transponder) (depends on the Antenna Power Switch)

Normal: -90 to -20 dBm (decimal ASCII)

20 dB Amplifier: -65 to 5 dBm (decimal ASCII)

20 dB Attenuator: -110 to -40 dBm (decimal ASCII)

For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

Default: -20 dBm | -40 dBm

Example: :ATC:SET:GENA:POW -20\r

Query: :ATC:SET:GENA:POW?\r

Return: -20.0

5.8.3.5 ANTENNA POWER SWITCH

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:APSW}SP{AMP|NOR\ATT}\r

Description: This command sets the Antenna Power Switch in either "DME Settings Menu" or "Transponder Settings Menu" to one of three output level ranges on all the active generators.

Text: NOR - Normal Power Level (-90 to -20 dBm)
AMP - 20 dB Amplifier (-65 to 5 dBm)
ATT - 20 dB Attenuator (-110 to -40 dBm)

Example: :ATC:SET:APSW AMP\r

5.8.3.6 RISE/FALL TIME

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENC |:GENE }{:RISE |:RISEFALL}SP<numeric>CR

Description: This command sets the selected generator pulse rise and fall time. A”*” is returned if the command is able to complete successfully or “?” if a failure occurs. This command is ignored if the scenario type selected is XPDR (Transponder).

Numeric: 0 to 5 (decimal ASCII)

For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

Value	Rise/Fall
0	Less than 50/50
1	100/200
2	230/230
3	600/600
4	Nominal (75/75)
5	1500/1500

Default: 50/50

Example: :ATC:SET:GENA:RISE 2\r

Query: :ATC:SET:GENA:RISE?\r

Retrun:
2

5.8.3.7 SIGNAL

Command Syntax: {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:SIGNAL |:SIG}SP<ON | OFF>CR

Description: This command enables or disables the signal of the selected generator. A”*” is returned if the command is able to complete successfully or “?” if a failure occurs. For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

Default: On

Example: :ATC:SET:GENA:SIG OFF\r

Query: :ATC:SET:GENA:SIG?\r

Return: OFF

5.9 TRANSPONDER COMMANDS

This set of commands allows the user to define the Unit to perform Transponder testing.

5.9.1 CABLE LOSS

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:CABLOS}SP<numeric>CR
Description:	This command sets the cable loss for the top antenna in 0.1 dB steps.
Numeric:	0 to 2 dB (decimal ASCII)
Default:	0 dB
Example:	:ATC:XPDR:CABLOS 0.1\r
Query:	:ATC:XPDR:CABLOS?\r
Return:	0.1

5.9.2 CABLE LOSS BOTTOM

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:CABLOSBOT}SP<numeric>CR
Description:	This command sets the cable loss for the bottom antenna in 0.1 dB steps.
Numeric:	0 to 2 dB (decimal ASCII)
Default:	0 dB
Example:	:ATC:XPDR:CABLOSBOT 0.1\r
Query:	:ATC:XPDR:CABLOSBOT?\r
Return:	0.1

5.9.3 INTERFERENCE PULSE

This set of commands allows the user to define an interference pulse. The first pulse is reference to the top P1 pulse in a single interrogation and the first interrogation in a double interrogation. The second interference pulse needs to be enabled to be transmitted.

5.9.3.1 FIRST INTERFERENCE PULSE WIDTH

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:P1WIDTH|:P1W}SP<numeric>CR
Description:	This command sets the width of the first interference pulse.
Numeric:	0 to 32 µs (decimal ASCII)
Default:	0.8 µs
Example:	:ATC:XPDR:INTERF:P1W 0.9\r
Query:	:ATC:XPDR:INTERF:P1W?\r
Return:	0.900

5.9.3.2 INTERFERENCE POSITION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:POSITION |:POS}SP<numeric>CR
Description:	This command sets the first interference pulse position.
Numeric:	-17.5 to 400 µs (decimal ASCII)
Default:	2.0
Example:	:ATC:XPDR:INTERF:POS 3.9\r
Query:	:ATC:XPDR:INTERF:POS?\r
Return:	3.900

5.9.3.3 INTERFERENCE PULSE AMPLITUDE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:AMPLITUDE|:AMP}SP<value>CR

Description: This command sets the interference pulse amplitude. This affects both interference pulses if enabled.

Value: -19 to 9 dB (decimal ASCII) or CAL or OFF

Default: CAL

Example: :ATC:XPDR:INTERF:AMP 3.0\r

Query: :ATC:XPDR:INTERF:AMP?\r

Return: 3.0

5.9.3.4 INTERFERENCE PULSE ENABLE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}SP{ON |OFF}CR

Description: This command turns on or off the interference pulse. This command is valid only for single interrogation, double interrogation and interrogation table.

Default: Off

Example: :ATC:XPDR:INTERF ON\r

Query: :ATC:XPDR:INTERF?\r

Return: ON

5.9.3.5 SECOND INTERFERENCE PULSE POSITION

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:SPACING |:SPAC}SP<numeric>CR

Description: This command sets the spacing of the second interference pulse (P2) from the first.

Numeric: 0 to 400 μs (decimal ASCII)

Default: 8.0

Example: :ATC:XPDR:INTERF:SPAC 7.0\r

Query: :ATC:XPDR:INTERF:SPAC?\r

Return: 7. 0

5.9.3.6 SECOND INTERFERENCE PULSE STATE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:STATE}SP{ON |OFF}CR

Description: This command turns on or off the second interference pulse (P2).

Default: Off

Example: :ATC:XPDR:INTERF:STATE ON\r

Query: :ATC:XPDR:INTERF:STATE?\r

Return: On

5.9.3.7 SECOND INTERFERENCE PULSE WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:P2WIDTH|:P2W}SP<numeric>CR

Description: This command sets the width of the second interference pulse.

Numeric: 0 to 32 μs (decimal ASCII)

Default: 0.8 μs

Example: :ATC:XPDR:INTERF:P2W 0.9\r

Query: :ATC:XPDR:INTERF:P2W?\r

Return: 0.900

5.9.4 INTERROGATION FREQUENCY

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:FREQ |:FREQUENCY}SP<numeric>CR
Description:	This command sets the transmission frequency of six generators.
Numeric:	952 to 1223 MHz (decimal ASCII)
Default:	1030 MHz
Example:	:ATC:XPDR:FREQ 1031.01\r
Query:	:ATC:XPDR:FREQ?\r
Return:	1031.01

5.9.5 INTERROGATION ON/OFF

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:RF}SP{ON |OFF}CR
Description:	This command turns on or off the interrogations. This command is equivalent to start test.
Example:	:ATC:XPDR:RF ON\r
Query:	:ATC:XPDR:RF?\r
Return:	ON

5.9.6 INTERROGATION TEST TYPE

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TYPE}SP<numeric>CR
Description:	This command sets the transponder interrogation test type. This command must be sent before to define the pulse parameters.
Numeric:	0 to 3 (decimal ASCII)

Value	Mode
0	Single Interrogation
1	Double Interrogation
2	Interrogation Table (Multiple)
3	Block Transmission
4	Interrogation with CW

Default:	0
Example:	:ATC:XPDR:TYPE 1\r
Query:	:ATC:XPDR:TYPE?\r
Return:	1

5.9.7 INTERROGATION TOP ANTENNA POWER

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:POW |:POWER}SP<numeric>CR
Description:	This command sets the antenna power for the top antenna. The bottom antenna power uses this value plus the antenna power deviation setting.
Numeric:	5 to -110 dBm (decimal ASCII)
Default:	-20 dBm
Example:	:ATC:XPDR:POW -21\r
Query:	:ATC:XPDR:POW?\r
Return:	-21.0

5.9.8 LOAD TEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:LOAD}SP<filename>CR

Description: This command loads a CSV test file (specified filename) from the internal storage area. A”*” is returned if the command was able to complete successfully or “?” if a failure occurs.

Example: :ATC:XPDR:LOAD Xpdr1.csv\r

NOTE: Must have previously saved a test named Xpdr1.csv.

5.9.9 RESET

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:RES |:RESET}CR

Description: This command resets the transponder test.

Example: :ATC:XPDR:RES\r

5.9.10 SAVE TEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:SAVE}SP<filename>CR

Description: This command saves the current test into the internal storage area with the specified filename.

Example: :ATC:XPDR:SAVE Xpdr1.csv\r

5.9.11 SCOPE TRIGGER

Command Syntax: {:ATC |:ATC5000NG}{:XPDR:SCOPE}SP{INTERR |REPLY}CR

Description: This command sets the scope trigger either to the interrogation or the reply.

Default: Interrogation

Example: :ATC:XPDR:SCOPE REPLY\r

Query: :ATC:XPDR:SCOPE?\r

Return: REPLY

5.9.12 SCOPE TRIGGER OFFSET

Command Syntax: {:ATC |:ATC5000NG}{:XPDR:SCOPE:INTERR:OFFSET}SP<numeric>CR

Description: This command sets the scope trigger offset from P1 of the interrogation.

Numeric: -1 to 600 usec (Decimal ASCII)

Default: -1

Example: :ATC:XPDR:SCOPE:INTERR:OFFSET 3\r

Query: :ATC:XPDR:SCOPE:INTERR:OFFSET?\r

Return: 3

5.9.13 START TRANSMISSION

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:STA |:START} CR

Description: This command starts a predefined test.

Example: :ATC:XPDR:STA\r

Query: No – See INTERROGATION ON/OFF

5.9.14 STOP TRANSMISSION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:STO |:STOP}CR
Description:	This command stops a test.
Example:	:ATC:XPDR:STO\r
Query:	No – See INTERROGATION ON/OFF

5.9.15 SUPPRESSION OUTPUT

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:SUP |:SUPPRESSION}SP{ON |OFF}CR
Description:	This command turns on or off the suppression output of the unit.
Default:	Off
Example:	:ATC:XPDR:SUP ON\r
Query:	ON
Return:	

5.9.16 SUPPRESSION PERCENTAGE

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:SUPPERC |:SUPP}SP<numeric>CR
Description:	This command sets the suppression percentage.
Numeric:	0 to 100 (Decimal ASCII)
Default:	0
Example:	:ATC:XPDR:SUPP 100\r
Query:	:ATC:XPDR:SUPP?\r
Return:	100

5.9.17 TRANSMISSION MODES

5.9.17.1 BLOCK TRANSMISSION

This set of commands allows the user to define block of messages to be transmitted.

5.9.17.1.1 BLOCK PARAMETERS

5.9.17.1.1.A FRAME PERIOD

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK}{:PERIOD }SP<numeric>CR
Description:	This command defines the block transmission period in ms.
Numeric:	10 to 90000 (decimal ASCII)
Default:	100
Example:	:ATC:XPDR:TXBLOCK:PERIOD 10\r
Query:	:ATC:XPDR:TXBLOCK:PERIOD?\r
Return:	10

5.9.17.1.1.B HIT

Command Syntax: {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:HIT }SP<numeric>CR
Description: This command sets the number of consecutive blocks to transmit.
Numeric: 0 to 20 (decimal ASCII)
Default: 1
Example: :ATC:XPDR:TXBLOCK:HIT 6\r
Query: :ATC:XPDR:TXBLOCK:HIT?\r
Return: 6

5.9.17.1.1.C MISS

Command Syntax: {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:MISS }SP<numeric>CR
Description: This command sets the number of consecutive non-transmitted blocks.
Numeric: 0 to 20 (decimal ASCII)
Default: 0
Example: :ATC:XPDR:TXBLOCK:MISS 4\r
Query: :ATC:XPDR:TXBLOCK:MISS?\r
Return: 4

5.9.17.1.1.D MODE

Command Syntax: {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:MODE }SP{CONTINUOUS|INTERRUPT}CR
Description: This command sets the transmission mode.
Default: CONTINUOUS
Example: :ATC:XPDR:TXBLOCK:MODE CONTINUOUS\r
Query: :ATC:XPDR:TXBLOCK:MODE?\r
Return: CONTINUOUS

5.9.17.1.1.E TRANSMISSIONS

Command Syntax: {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:TRANSMISSIONS|:TRANS}SP{NOLIMIT|<numeric>}CR
Description: This command sets the total number of blocks transmission.
Numeric: 1 to 50000 (decimal ASCII)
Default: NOLIMIT
Example: :ATC:XPDR:TXBLOCK:TRANS NOLIMIT\r
Query: :ATC:XPDR:TXBLOCK:TRANS?\r
Return: NO LIMIT

5.9.17.1.2 MESSAGE PARAMETERS

5.9.17.1.2.A DATA

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number> {:MESS |:MESSAGE}SP<numeric>CR
Description:	This command sets the data message for the message selected.
Message Number:	1 to 1000
Numeric:	Short message 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII) Long message 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII) (The last six characters are the Mode S Address).
Default:	00000000000001 for Mode S Interrogation and Mode S Message.
Example:	:ATC:XPDR:TXBLOCK:1:MESS 7ABA3259A66BBB\r
Query:	:ATC:XPDR:TXBLOCK:1:MESS?\r
Return:	7ABA3259A66BBB

5.9.17.1.2.B MESSAGE QUANTITY

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK}{:NMESSAGES|:NMESS}SP<decimal>CR
Description:	This command sets the number of the messages.
Numeric:	0 to 1000 (decimal ASCII)
Default:	
Example:	:ATC:XPDR:TXBLOCK:NMESS 45\r
Query:	:ATC:XPDR:TXBLOCK:NMESS?\r
Return:	45

5.9.17.1.2.C POWER LEVEL

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:POWER |:POW}SP<numeric>CR
Description:	This command sets the power level of the message selected.
Message Number:	1 to 1000
Numeric:	5 to -110 dBm (decimal ASCII)
Default:	-20 dBm
Example:	:ATC:XPDR:TXBLOCK:3:POW -31\r
Query:	:ATC:XPDR:TXBLOCK:3:POW?\r
Return:	-31.0

5.9.17.1.2.D TIME

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:TIME}SP<numeric>CR
Description:	This command sets the starting transmission time (in μs) within the block of the message selected.
Message Number:	1 to 1000
Numeric:	0 to 99880 (decimal ASCII)
Default:	0 μs. Every additional message defaults 130 μs after the previous. Maximum time depends on frame period value.
Example:	:ATC:XPDR:TXBLOCK:3:TIME 77\r
Query:	:ATC:XPDR:TXBLOCK:3:TIME?\r
Return:	77

5.9.17.1.2.E TYPE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:TYPE} SP<numeric>[,<numeric1>]CR

Description: This command sets the type of the message selected. The optional argument <numeric1> defines the ATCRBS Interrogation type.

Message Number: 1 to 1000

Numeric: 1 to 2 (decimal ASCII)
If the scenario type selected was XPDR (Transponder), the valid values are 1 and 2.

Value	Type
1	Mode S Interrogation
2	ATCRBS Interrogation

Default: Mode S Message

Numeric1: 1 to 6 (decimal ASCII)
Valid only if the type of message defined in <Numeric> is ATCRBS Interrogation.

Value	Type
1	Mode A
2	Mode C
3	Mode A Only All Call
4	Mode C Only All Call
5	Mode A/Mode S All Call
6	Mode C/Mode S All Call

Default: Mode A

Example: :ATC:XPDR:TXBLOCK:4:TYPE 2,2\r

Query: :ATC:XPDR:TXBLOCK:4:TYPE?\r

Return: 2,2

5.9.17.2 DOUBLE INTERROGATION

This set of commands allows the user to setup double interrogations. In double interrogations, both interrogations are outputted on the top antenna port.

5.9.17.2.1 FREQUENCY

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:FREQ |:FREQUENCY}SP<numeric>CR

Description: This command sets the transmission frequency of the selected double interrogation. <interrogation number> defines the double interrogation number.

Numeric: 952 to 1223 MHz (Decimal ASCII)

Default: 1030 MHz

Example: :ATC:XPDR:DBL:1:FREQ 1031\r

Query: :ATC:XPDR:DBL:1:FREQ?\r

Return: 1031.0

5.9.17.2.2 INTERLACED MODE

This set of commands allows the user to define an interlace mode. The illustration below demonstrates how the interlaced ratio operates.

5.9.17.2.2.A INTERLACED MODE ON/OFF

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL}{:INTERLACED|:INT}SP{ON |OFF}CR

Description: This command turns on or off the interlaced mode.

Default: Off

Example: :ATC:XPDR:DBL:INT ON\r

Query: :ATC:XPDR:DBL:INT?\r

Return: On

5.9.17.2.2.B INTERLACED RATIO

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL}{:IRATIO}SP<numeric>CR

Description: This command sets the interlace ratio between the first interrogation and the second. For example, if the user enters an interlaced ratio of 2, the second interrogation is transmitted every other interrogation period of the first.

Numeric: 1 to 1000 (decimal ASCII)

Default: 1

Example: :ATC:XPDR:DBL:IRATIO 11\r

Query: :ATC:XPDR:DBL:IRATIO?\r

Return: 11

5.9.17.2.3 MODE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:MOD |:MODE}SP<numeric>CR

Description: This command sets the transponder interrogation mode of the selected double interrogation. <interrogation number> defines the double interrogation number.

Interrogation: 1 to 2 (decimal ASCII)

Numeric: 0 to 11 (decimal ASCII)

Value	Mode
0	Mode A
1	Mode C
2	Mode A Only All Call
3	Mode C Only All Call
4	Mode A/Mode S All Call
5	Mode C/Mode S All Call
6	Mode S
7	P1 to P2
8	Pulse
9	DME 12 µs Spacing
10	DME 30 µs Spacing
11	Alternate Mode A/Mode C

Default: 0

Example: :ATC:XPDR:DBL:2:MOD 6\r

Query: :ATC:XPDR:DBL:2:MOD?\r

Return: 6

5.9.17.2.4 MODE S INTERROGATION MESSAGE DATA

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:UF}SP<numeric>CR

Description: This command sets the data message for the Mode S Interrogation of the selected double interrogation. <interrogation number> defines the double interrogation number.

Interrogation: 1 to 2 (decimal ASCII)

Number: Short interrogation 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII)
Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.

Default: 00000000000001

Example: :ATC:XPDR:DBL:2:UF 5AC4727338FF22\r

Query: :ATC:XPDR:DBL:2:UF?\r

Return: 5AC4727338FF22

5.9.17.2.5 P1 TO P1 SPACING

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL}{:P1TOP1}SP<numeric>CR

Description: This command sets the interrogations spacing from P1 of the first interrogation to P1 of the second interrogation.

Numeric: 0 to 400 µs (decimal ASCII)

Default: 0

Example: :ATC:XPDR:DBL:P1TOP1 44\r

Query: :ATC:XPDR:DBL:P1TOP1?\r

Return: 44

5.9.17.2.6 POWER LEVEL RANGE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}{:PMODE}SP{HI |LOW |VLO}CR

Description: This command sets the power level range to the high, low, or very low mode.

	Power Mode		
	High Power	**Low Power**	**Very Low Power**
Minimum	-65 dBm	-90 dBm	-110 dBm
Maximum	5 dBm	-20 dBm	-40 dBm

Default: Low Power

Example: :ATC:XPDR:DBL:PMODE HI\r

Query: :ATC:XPDR:DBL:PMODE?\r

Return: HI

5.9.17.2.7 PULSE POWER LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:POW |:POWER}SP<numeric>CR

Description: This command sets the antenna power for the top antenna of the selected double interrogation. <interrogation number> defines the double interrogation number. The power level range depends on the power mode selected using the previous command. The bottom antenna power uses this value plus the antenna power deviation setting**.**

Numeric: -110 to 5 dBm (decimal ASCII)

Default: -20

Example: :ATC:XPDR:DBL:1:POW -31\r

Query: :ATC:XPDR:DBL:1:POW?\r

Return: -31.0

5.9.17.2.8 PULSE PARAMETER

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PUL: |:PULSE:}<pulse>SP<value>[,<value1>] CR

Description: This command sets the selected pulse parameter of the selected double interrogation. <interrogation number> defines the double interrogation number. The optional <value1> is ignored if the interrogation mode is not “Alternate Mode A/Mode C” for the selected double interrogation. For “Alternate Mode A/Mode C”, the <value> is used to define the Mode A pulse and the <value1> is used to define the Mode C pulse.

Interrogation: 1 to 2 (decimal ASCII)

Pulse/Value

<pulse>	<value>|<value1>
:PALLWIDTH |:PALLW	0 to 1.95
:P1WIDTH |:P1W	0 to 1.95
:P2WIDTH |:P2W	0 to 1.95
:P3WIDTH |:P3W	0 to 1.95
:P4WIDTH |:P4W	0 to 1.95
:P5WIDTH |:P5W	0.2 to 1.95
:P6ENDWIDTH |:P6ENDW	0 to 1.95
:P1POWER |:P1P	-19 to 9 |CAL |OFF
:P2POWER |:P2P	-19 to 9 |CAL |OFF
:P3POWER |:P3P	-19 to 9 |CAL |OFF
:P4POWER |:P4P	-19 to 9 |CAL |OFF
:P5POWER |:P5P	-19 to 9 |CAL |OFF
:P12SPACING |:P12S	All Call |Mode C |Mode C Only All Call |Mode C/ Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0
:P13SPACING |:P13S	Mode A |Mode A Only All Call 7.0 to 9.0 |Mode A/ Mode S All Call 6.05 to 9.95 Mode C |Mode C Only All Call |Mode C/Mode S All Call 19.05 to 22.95. Not Valid for Mode S.
:P34SPACING |:P34S	Mode A Only All Call |Mode A/Mode S All Call | Mode C Only All Call |Mode C/Mode S All Call 0.05 to 3.95. Not Valid for Mode A, Mode C and Mode S.
:P16SPACING |:P16S	1.55 to 5.45. Valid only for Mode S.
:P1SPRSPACING |:P1SPRS	3.75 to 5.75. Valid only for Mode S.
:P15SPACING|:P15S	2.4 to 6.3. Valid only for Mode S.

Example: :ATC:XPDR:DBL:1:PUL:P3W 1.1\r (for mode A interrogation)

Example: :ATC:XPDR:DBL:1:PUL:P3W 1.1,1.9\r (for Alternate mode A/mode C interrogation)

Query: :ATC:XPDR:DBL:1:PUL:P3W?\r (Not applicable for PALLWIDTH)

Return: 1.100

5.9.17.2.9 PULSE REPETITION FREQUENCY (PRF)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:} <interrogation number>{:PRF }SP<numeric>CR

Description: This command sets the pulse repetition rate (PRF) of the selected double interrogation. <interrogation number> defines the double interrogation number.

Interrogation: 1 to 2 (decimal ASCII)

Numeric: 1 to 10000 (decimal ASCII)

Mode	**Numeric**
Mode A	1 to 500
Mode C	1 to 500
Mode A Only All Call	1 to 500
Mode C Only All Call	1 to 500
Mode A/Mode S All Call	1 to 500
Mode C/Mode S All Call	1 to 500
Mode S	1 to 500
P1 to P2	1 to 10000
Pulse	1 to 10000
DME 12 µs Spacing DME 30	1 to 500
µs Spacing Alternate Mode	1 to 500
A/Mode C	1 to 500

Default: 100

Example: :ATC:XPDR:DBL:2:PRF 50\r

Query: :ATC:XPDR:DBL:2:PRF?\r

Return: 50

5.9.17.2.10 PULSE WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PWIDTH |:PW}SP<numeric>CR

Description: This command sets the pulse width of the selected double interrogation. <interrogation number> defines the double interrogation number. **This command is valid only for the transponder interrogation mode Pulse.**

Interrogation: 1 to 2 (decimal ASCII)

Numeric: 0 to 5 µs (decimal ASCII)

Default: 0

Example: :ATC:XPDR:DBL:1:PW 1.1\r

Query: :ATC:XPDR:DBL:1:PW?\r

Return: 1.100

5.9.17.2.11 PRF SYNCHRONIZATION

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PRFSYNC}SP{ON |OFF}CR

Description: This command turns on or off the synchronization output of the selected double interrogation. <interrogation number> defines the double interrogation number. **This command is valid only for the following transponder interrogation modes: P1 to P2, Pulse, DME 12 µs Spacing and DME 30 µs Spacing.**

Interrogation: 1 to 2 (decimal ASCII)

Default: Off

Example: :ATC:XPDR:DBL:1:PRFSYNC ON\r

Query: :ATC:XPDR:DBL:1:PRFSYNC?\r

Return: ON

5.9.17.2.12 SIDE LOBE SUPPRESSION (SLS)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:SLS}SP{ON |OFF}[,{ON|OFF}]CR

Description: This command turns on or off SLS (P2) pulse in an ATCRBS interrogation of the selected double interrogation. <interrogation number> defines the double interrogation number. The optional {ON|OFF} is ignored if the interrogation mode is not “Alternate Mode A/Mode C” for the selected double interrogation. For “Alternate Mode A/Mode C”, the first {ON|OFF} is used to define the Mode A pulse and the second (or the optional) is used to define the Mode C pulse.

Interrogation: 1 to 2 (decimal ASCII)

Default: Off

Example: :ATC:XPDR:DBL:1:SLS ON\r

Query: :ATC:XPDR:DBL:1:SLS?\r

Return: ON

5.9.17.2.13 SYNCHRONIZATION

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DBL}{:SYNC}SP<numeric>CR

Description: This command allows selecting the interrogation number for synchronization. The measured UUT values are obtained from the reply associated with the interrogation selected for synchronization.

Numeric: 1 to 2 (decimal ASCII)

Default: 1

Example: :ATC:XPDR:DBL:SYNC 2\r

Query: :ATC:XPDR:DBL:SYNC?\r

Return: 2

5.9.17.3 INTERROGATION TABLE

This set of commands allows the user to define the Interrogation table. The table can have from 1 to 1000 interrogations. When the interrogations are enabled, the Unit transmits from the first entry on the table to the last entry. Each PRF cycle the Unit transmits one interrogation and advances to the next table entry. Once the last entry is transmitted the Unit starts with the first entry.

5.9.17.3.1 BURST MODE

Burst Mode transmits the interrogations in the table. If the table only has for example three interrogations and the burst count is five, then the following sequence of interrogations are transmitted: Entry1, Entry2, Entry3, Entry1 and Entry2. If a burst spacing greater than 0 is defined, then the next burst sequence begins with Entry1 again. I For example the table has ten interrogations and burst count is five, then the first five interrogations are transmitted and on the next burst the same five are transmitted. If the burst count is 0, then every time a burst start command is received the number of interrogations in the burst count are transmitted.

5.9.17.3.1.A BURST OPERATION ENABLE

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST}SP{ON |OFF}CR
Description:	This command enables or disables the burst operation.
Default:	Off
Example:	:ATC:XPDR:ITABLE:BURST ON\r
Query:	:ATC:XPDR:ITABLE:BURST?\r
Return:	ON

5.9.17.3.1.B BURST COUNT

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST:COUNT}SP<numeric>CR
Description:	This command sets the burst count which is the number of interrogations that are transmitted within each burst.
Numeric:	1 to 10,000 (decimal ASCII)
Default:	200
Example:	:ATC:XPDR:ITABLE:BURST:COUNT 10\r
Query:	:ATC:XPDR:ITABLE:BURST:COUNT?\r
Return:	10

5.9.17.3.1.C BURST SPACING

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST:GAP}SP<numeric>CR
Description:	This command sets the burst repetition gap time which is the delay time after one set of burst interrogations. The gap time is defined in 0.1 second steps. For a single occurrence, set the burst spacing to zero. Note: This shows as Burst Spacing on Burst Setting menu.
Numeric:	0 to 20 seconds (decimal ASCII)
Default:	0
Example:	:ATC:XPDR:ITABLE:BURST:GAP 3\r
Query:	:ATC:XPDR:ITABLE:BURST:GAP?\r
Return:	3.0

5.9.17.3.1.D BURST START/STOP

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST}{:START |:STOP}CR
Description: This command turns on or off the burst operation.
Example: :ATC:XPDR:ITABLE:BURST:START\r

5.9.17.3.1.E BURST STATUS, Version 19.04.2401 and above.

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST?}CR
Description: This command returns the status of the burst operation.

Reply	Burst Operation
OFF	Burst Setting is not selected.
ON, OFF	Burst Mode is selected, Burst Mode is not running.
ON, ON	Burst Mode is selected, Burst Mode is running.

Example: :ATC:XPDR:ITABLE:BURST?\r
Reply: OFF

5.9.17.3.2 NUMBER OF INTERROGATIONS

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:NINT}SP<numeric>CR
Description: This command sets the number of interrogations of the interrogation table.
Numeric: 1 to 1000 (decimal ASCII)
Default: 1
Example: :ATC:XPDR:ITABLE:NINT 3\r
Query: :ATC:XPDR:ITABLE:NINT?\r
Return: 3

5.9.17.3.3 POWER LEVEL RANGE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}{:PMODE}SP{HI |LO |VLO}CR
Description: This command sets the power level range to the high, low, or very low mode.

	Power Mode		
	High Power	**Low Power**	**Very Low Power**
Minimum	-65 dBm	-90 dBm	-110 dBm
Maximum	5 dBm	-20 dBm	-40 dBm

Default: Low power
Example: :ATC:XPDR:ITABLE:PMODE HI\r
Query: :ATC:XPDR:ITABLE:PMODE?\r
Return: HI

5.9.17.3.4 PULSE REPETITION FREQUENCY (PRF)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:PRF }SP<numeric>CR
Description: This command sets the pulse repetition rate (PRF) for all table entries.
Numeric: 1 to 10 KHz (decimal ASCII)
Default: 100
Example: :ATC:XPDR:ITABLE:PRF 125\r
Query: :ATC:XPDR:ITABLE:PRF?\r
Return: 125

5.9.17.3.5 TABLE ENTRY ANTENNA POWER DEVIATION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ANT |:ANTENNA}{:POW |:POWER}SP<numeric>CR
Description:	This command sets the antenna power deviation between the top and bottom antenna of the selected table entry.
Table Entry:	1 to 1000 (decimal ASCII)
Numeric:	-20 to 20 dB (decimal ASCII)
Default:	0
Example:	:ATC:XPDR:ITABLE:2:ANT:POW -19\r
Query:	:ATC:XPDR:ITABLE:2:ANT:POW?\r
Return:	-19.0

5.9.17.3.6 TABLE ENTRY ANTENNA TIME DEVIATION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ANT |:ANTENNA}{:TIM |:TIME}SP<numeric>CR
Description:	This command sets the antenna time deviation between the top and bottom antenna of the selected table entry.
Table Entry:	1 to 1000 (decimal ASCII)
Numeric:	-0.975 to 0.975 µs (decimal ASCII)
Default:	0
Example:	:ATC:XPDR:ITABLE:1:ANT:TIM 0.5\r
Query:	:ATC:XPDR:ITABLE:1:ANT:TIM?\r
Return:	0.5

5.9.17.3.7 TABLE ENTRY ENABLE

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ENABLE}SP{ON | OFF}CR
Description:	This command turns on or off the interrogation of the selected table entry.
Table Entry:	1-1000 (Decimal ASCII)
Default:	ON
Example:	:ATC:XPDR:ITABLE:1:ENABLE OFF\r
Query:	:ATC:XPDR:ITABLE:1:ENABLE?\r
Return:	OFF

5.9.17.3.8 TABLE ENTRY INTERROGATION MODE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:MOD |:MODE}SP<numeric>CR

Description: This command sets the transponder interrogation mode of the table entry selected. This command must be sent before defining the pulse parameters.

Table Entry: 1 to 1000 (decimal ASCII)

Numeric: 0 to 6 (decimal ASCII)

Value	Mode
0	Mode A
1	Mode C
2	Mode A Only All Call
3	Mode C Only All Call
4	Mode A/Mode S All Call
5	Mode C/Mode S All Call
6	Mode S

Default: 0

Example: :ATC:XPDR:ITABLE:1:MOD 6\r

Query: :ATC:XPDR:ITABLE:1:MOD?\r

Return: 6

5.9.17.3.9 TABLE ENTRY MODE S INTERROGATION MESSAGE DATA

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:UF}SP<numeric>CR

Description: This command sets the data message for the Mode S Interrogation of the selected table entry.

Table Entry: 1 to 1000 (decimal ASCII)

Numeric: Short interrogation 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII)
Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.

Default: 00000000000001

Example: :ATC:XPDR:ITABLE:1:UF 123456789ABCDE\r

Query: :ATC:XPDR:ITABLE:1:UF?\r

Return: 123456789ABCDE

5.9.17.3.10 TABLE ENTRY PULSE POWER LEVEL

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:POW |:POWER}SP<numeric>CR

Description: This command sets the antenna power for the top antenna of the table entry selected. The power level range depends of the power mode selected using the previous command.

Table Entry: 1 to 1000 (decimal ASCII)

Numeric: -110 TO 5 dBm (decimal ASCII)

Default: -20 dBm

Example: :ATC:XPDR:ITABLE:1:POW -31\r

Query: :ATC:XPDR:ITABLE:1:POW?\r

Return: -31.0

5.9.17.3.11 TABLE ENTRY PULSE PARAMETER

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:PUL: |:PULSE:}<pulse>SP<value>CR

Description: This command sets the selected pulse parameter of the selected table entry.

Table Entry: 1 to 1000 (decimal ASCII)

Pulse/Value:

<pulse>	**<value>**
:PALLWIDTH |:PALLW	0 to 1.95
:P1WIDTH |:P1W	0 to 1.95
:P2WIDTH |:P2W	0 to 1.95
:P3WIDTH |:P3W	0 to 1.95. Not Valid for Mode S.
:P4WIDTH |:P4W	0 to 1.95. Not Valid for Mode A, Mode C and Mode S.
:P5WIDTH |:P5W	0.2 to 1.95. Not Valid for Mode S.
:P6ENDWIDTH |:P6ENDW	0 to 1.95. Valid only for Mode S.
:P1POWER |:P1P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P2POWER |:P2P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P3POWER |:P3P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P4POWER |:P4P	-19 to 9 |CAL |OFF. Not Valid for Mode A, Mode C and Mode S.
:P5POWER |:P5P	-19 to 9 |CAL |OFF. Valid only for Mode S.
:P12SPACING |:P12S	Mode A |Mode A Only All Call |Mode A/Mode S All Call |Mode C |Mode C Only All Call |Mode C/ Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0
:P13SPACING |:P13S	Mode A |Mode A Only All Call 7.0 to 9.0 |Mode A/Mode S All Call 6.05 to 9.95 Mode C |Mode C Only All Call |Mode C/Mode S All Call 19.05 to 22.95. Not Valid for Mode S.
:P34SPACING |:P34S	Mode A Only All Call |Mode A/Mode S All Call | Mode C Only All Call |Mode C/Mode S All Call 0.05 to 3.95. Not Valid for Mode A, Mode C and Mode S.
:P16SPACING |:P16S	1.55 to 5.45. Valid only for Mode S.
:P1SPRSPACING |:P1SPS	3.75 to 5.75. Valid only for Mode S.
:P15SPACING|P15S	2.4 to 6.3. Valid only for Mode S.

Example: :ATC:XPDR:ITABLE:2:PUL:P1W 1.5\r

Query: :ATC:XPDR:ITABLE:2:PUL:P1W?\r

Return: 1.500

5.9.17.3.12 TABLE ENTRY SIDE LOBE SUPPRESSION (SLS)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:SLS}SP{ON |OFF}CR

Description: This command turns on or off SLS (P2) pulse in an ATCRBS interrogation of the selected table entry.

Table Entry: 1 to 1000 (decimal ASCII)

Default: Off

Example: :ATC:XPDR:ITABLE:1:SLS ON\r

Query: :ATC:XPDR:ITABLE:1:SLS?\r

Return: ON

5.9.17.3.13 TABLE ENTRY SYNCHRONIZATION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:SYNC}SP<numeric>CR
Description:	This command allows selecting the table entry for synchronization. The measured UUT values will be obtained from the reply associated with the interrogation selected for synchronization.
Table Entry:	1-1000 (Decimal ASCII)
Default:	1
Example:	:ATC:XPDR:ITABLE:SYNC 2\r
Query:	:ATC:XPDR:ITABLE:SYNC?\r
Return:	2

5.9.17.4 SINGLE INTERROGATION

This set of commands allows the user to define single ATCRBS or Mode S interrogations.

5.9.17.4.1 ANTENNA POWER DEVIATION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ANT |:ANTENNA}{:POW |:POWER}SP<numeric>[,<numeric1>]CR	
Description:	This command sets the antenna power deviation between the top and bottom antenna. The optional <numeric1> is ignored if the interrogation mode is not “Alternate Mode A/Mode C.” For “Alternate Mode A/Mode C”, the <numeric> is used to define the Mode A pulse and the <numeric1> is used to define the Mode C pulse.	
Numeric:	-20 to 20 dB (decimal ASCII)	
Default:	0	
Example:	:ATC:XPDR:ANT:POW -3\r	
Example:	:ATC:XPDR:ANT:POW -3,-4\r	(for Alternate Mode A/Mode C)
Query:	:ATC:XPDR:ANT:POW?\r	
Return:	3.0	(or -3.0,-4.0 for Alternate Mode A/Mode C)

5.9.17.4.2 ANTENNA TIME DEVIATION

Command Syntax:	{:ATC |:ATC5000NG}{:XPDR}{:ANT |:ANTENNA}{:TIM |:TIME}SP<numeric>[,<numeric1>]CR	
Description:	This command sets the antenna time deviation between the top and bottom antenna. The optional <numeric1> is ignored if the interrogation mode is not “Alternate Mode A/Mode C.” For “Alternate Mode A/Mode C”, the <numeric> is used to define the Mode A pulse and the <numeric1> is used to define the Mode C pulse.	
Numeric:	-1 to 1 µs (decimal ASCII)	
Default:	0	
Example:	:ATC:XPDR:ANT:TIM 0.8\r	
	:ATC:XPDR:ANT:TIM -0.5,0.5\r	(for Alternate Mode A/Mode C)
Query:	:ATC:XPDR:ANT:TIM?\r	
Return:	0.8	(or -0.5,0.5 for Alternate Mode A/Mode C)

5.9.17.4.3 INTERROGATION MODE

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:MOD |:MODE}SP<numeric>CR

Description: This command sets the transponder interrogation mode for the Single Interrogation type. This command must be sent before defining the pulse parameters.

Numeric: 0 to 11 (decimal ASCII)

Value	Mode
0	Mode A
1	Mode C
2	Mode A Only All Call
3	Mode C Only All Call
4	Mode A/Mode S All Call
5	Mode C/Mode S All Call
6	Mode S
7	P1 to P2
8	Pulse
9	DME 12 µs Spacing
10	DME 30 µs Spacing
11	Alternate Mode A/Mode C

Default: 0

Example: :ATC:XPDR:MOD 6\r

Query: See Transponder Queries

5.9.17.4.4 MODE S INTERROGATION MESSAGE DATA

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:UF}SP<numeric>CR

Description: This command sets the data message for the Mode S Interrogation.

Numeric: Short interrogation 0 to FFFFFFFFFFFFFF (14 hexadecimal ASCII)
Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.

Default: 00000000000001

Example: :ATC:XPDR:UF 123456789ABCDE\r

Query: :ATC:XPDR:UF?\r

Return: 123456789ABCDE

5.9.17.4.5 PULSE PARAMETER

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:PUL: |:PULSE:}<pulse>SP<value>[,<value1>]CR

Description: This command sets the selected pulse parameter. The optional <value1> is ignored if the interrogation mode is not “Alternate Mode A/Mode C.” For “Alternate Mode A/Mode C”, the <value> is used to define the Mode A pulse and the <value1> is used to define the Mode C pulse.

Pulse/Value:

<pulse>	<value> |<value1>
:PALLWIDTH | :PALLW	0 to 1.95
:P1WIDTH |:P1W	0 to 1.95
:P2WIDTH |:P2W	0 to 1.95
:P3WIDTH |:P3W	0 to 1.95. Not Valid for Mode S.
:P4WIDTH |:P4W	0 to 1.95. Not Valid for Mode A, Mode C and Mode S.
:P5WIDTH |:P5W	0.2 to 1.95. Valid only for Mode S.
:P6ENDWIDTH |:P6ENDW	0 to 1.95. Valid only for Mode S.
:P1POWER |:P1P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P2POWER |:P2P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P3POWER |:P3P	-19 to 9 |CAL |OFF. Not Valid for Mode S.
:P4POWER |:P4P	-19 to 9 |CAL |OFF. Not Valid for Mode A, Mode C and Mode S.
:P5POWER |:P5P	-19 to 9 |CAL |OFF. Valid only for Mode S.
:P12SPACING |:P12S	Mode A |Mode A Only All Call |Mode A/Mode S All Call |Mode C |Mode C Only All Call |Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0 Mode C/Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0
:P13SPACING |:P13S	Mode A |Mode A Only All Call 7.0 to 9.0 | Mode A/Mode S All Call 6.05 to 9.95 Mode C | Mode C Only All Call |Mode C/Mode S All Call 19.05 to 22.95. Not Valid for Mode S.
:P34SPACING |:P34S	Mode A Only All Call |Mode A/Mode S All Call |Mode C Only All Call |Mode C/Mode S All Call 0.05 to 3.95. Not Valid for Mode A, Mode C and Mode S.
:P16SPACING |:P16S	1.55 to 5.45. Valid only for Mode S.
:P1SPRSPACING |:P1SPS	3.75 to 5.75. Valid only for Mode S.
:P15SPACING|P15S	2.4 to 6.3. Valid only for Mode S.

Default:

Example: :ATC:XPDR:PUL:P1P -9\r

Example: :ATC:XPDR:PUL:P1P -9,-3\r (for Alternate Mode A/Mode C)

Query: :ATC:XPDR:PUL:P1P?\r

Return: -9.0 (or -9.0,-3.0 for Alternate Mode A/Mode C)

5.9.17.4.6 PULSE REPETITION FREQUENCY (PRF)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:PRF }SP<numeric>CR

Description: This command sets the pulse repetition rate (PRF).

Numeric: 1 to 10000 (decimal ASCII)

Default: 100

Example: :ATC:XPDR:PRF 150\r

Query: :ATC:XPDR:PRF?\r

Return: 150

5.9.17.4.7 PULSE WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:PWIDTH |:PW }SP<numeric>CR

Description: This command sets the pulse width. This command is valid only for the transponder interrogation mode Pulse.

Numeric: 0 to 10 µs (decimal ASCII)

Default: 0

Example: :ATC:XPDR:PW 1\r

Query: :ATC:XPDR:PW?\r

Return: 1. 0

5.9.17.4.8 PRF SYNCHRONIZATION

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:PRFSYNC}SP{ON |OFF}CR

Description: This command turns on or off the synchronization output. This command is valid only for the following transponder interrogation modes: P1 to P2, Pulse, DME 12 µs Spacing and DME 30 µs Spacing. This synchronizes all of the PRF generator outputs to align with the master generator.

Default: Off

Example: :ATC:XPDR:PRFSYNC ON\r

Query: :ATC:XPDR:PRFSYNC?\r

Return: ON

5.9.17.4.9 SIDE LOBE SUPPRESSION (SLS)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:SLS}SP{ON |OFF}[,{ON|OFF}]CR

Description: This command turns on or off SLS (P2) pulse in an ATCRBS interrogation. The optional {ON|OFF} is ignored if the interrogation mode is not “Alternate Mode A/Mode C.” For “Alternate Mode A/Mode C”, the first {ON|OFF} is used to define the Mode A pulse and the second (or the optional) is used to define the Mode C pulse.

Default: Off

Example :ATC:XPDR:SLS ON\r

Example: :ATC:XPDR:SLS ON,ON\r (for Alternate Mode A/Mode C)

Query: :ATC:XPDR:SLS?\r

Return: ON (or ON,ON for Alternate Mode A/Mode C)

5.9.17.5 TRANSPONDER QUERIES

5.9.17.5.1 ALTITUDE REPLY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:AREPLY? |:AREP? } CR

Description: This command returns the reply altitude.

Return Value: Decimal value in ASCII.
If the Unit is not ready to return an answer, “#” is returned.

Example: :ATC:XPDR:AREP?\r

Return: 28800

5.9.17.5.2 MODE A CODE REPLY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:CREPLY? |:CREP? } CR

Description: This command returns the reply code.

Return Value: Decimal value in ASCII.
If the Unit is not ready to return an answer, “#” is returned.

Example: :ATC:XPDR:CREP?\r

Return: 1240

5.9.17.5.3 MODE REQUEST (CORRECTION)

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:MOD? |:MODE?} CR

Description: This command replies with the current transponder interrogation mode. Note: Interrogation with CW reports the same as Single mode.

Reply	**Mode**
A	Single Interrogation - Mode A
C	Single Interrogation - Mode C
AC	Single Interrogation - Alternating Mode A/ Mode C
ACSA	Single Interrogation - Mode A Only All Call
ACSC	Single Interrogation - Mode C Only All Call
ACLA	Single Interrogation - Mode A/Mode S All Call
ACLC	Single Interrogation - Mode C/Mode S All Call
S	Single Interrogation - Mode S
P1P2	Single Interrogation - P1 to P2
PULSE	Single Interrogation - Pulse
DME1	Single Interrogation - DME 12 μs Spacing
DME2	Single Interrogation - DME 30 μs Spacing
DBL	Double Interrogation
ITABLE	Interrogation Table
BLOCK	Block Transmission

Example: :ATC:XPDR:MOD?\r

Return: AC

5.9.17.5.4 NUMBER OF INTERROGATION REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:NINTERR? } CR

Description: This command returns the number of interrogations top and number interrogations bottom.

Return Value: Decimal value in ASCII.

Example: :ATC:XPDR:NINTERR?\r

Return: 400, 0

5.9.17.5.5 REPLY CLEAR, Version 19.04.2401 and above

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:REPLY}{:CLEAR} CR

Description: This command clears the transponder reply information for “# Interr”, “%Reply(ATCRBS):” and “% Reply (Mode S):” for the next burst.

Example: :ATC:XPDR:REPLY:CLEAR\r

5.9.17.5.6 PERCENT REPLY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:PREPLY? |:PREP? } CR

Description: This command returns the percent reply.
If in Mode S, returns percent reply top and percent reply bottom separated by comma.
If in ATCRBS, returns percent reply ATCRBS top, percent reply ATCRBS bottom, percent reply Mode S Top and percent reply Mode S Bottom separated by comma.

Return Value: Decimal value in ASCII.
If the Unit is not ready to return an answer, “#” is returned separated by comma.

Example: :ATC:XPDR:PREP?\r

Return:

Mode S: 50.0,0.0

ATCRBS: 50.0,0.0,0.0,0.0

5.9.17.5.7 REPLY DELAY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:DREPLY? |:DREP? } CR

Description: This command returns the reply delay.

Return Value: Decimal value in ASCII.
If the Unit is not ready to return an answer, “#” is returned.

Example: :ATC:XPDR:DREP?\r

Return: 3.302

5.9.17.5.8 REPLY JITTER REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:XPDR}{:JREPLY? |:JREP? } CR

Description: This command returns the reply jitter.

Return Value: Decimal value in ASCII.
If the Unit is not ready to return an answer, “#” is returned.

Example: :ATC:XPDR:JREP?\r

Return: 3

5.10 UNIT COMMANDS

5.10.1 HARDWARE VERSION REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:HW?}CR
Description: This command returns the hardware version of the Unit.
Return Value: ASCII value
Example: :ATC:HW?\r
Return: 85

5.10.2 LAST CALIBRATION DATE REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:LASTCAL?}CR
Description: This command returns the last calibration date of the Unit.
Return Value: ASCII value
Example: :ATC:LASTCAL?\r
Return: 10/11/2017 3:44:22 PM - Pass

5.10.3 MODE OF OPERATION

Command Syntax: {:ATC |:ATC5000NG}{:ACCESS} SP{RMT | REMOTE | LCL | LOCAL}CR
Description: This command sets the mode of operation of the Unit.
Example: :ATC:ACCESS LCL\r

5.10.4 PART NUMBER REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:PN?}CR
Description: This command returns the part number of the Unit.
Return Value: ASCII value
Example: :ATC:PN?\r
Return: 138156

5.10.5 PRODUCT KEY REQUEST

Command Syntax: {:ATC |:ATC5000NG}{:PKEY?}CR
Description: This command returns the product key of the Unit.
Return Value: ASCII value
Example: :ATC:PKEY?\r
Return: 4D24E-333FC-1112C-86711-AAA53-11105144

5.10.6 RESET

Command Syntax:	{:ATC |:ATC5000NG}{:RESET}CR
Description:	This command executes a global reset to the Unit. A 10 second delay is recommended to allow this command to complete before reading the reply. This global reset includes the following tasks: Stop any execution. Reset RTCA/DO-260 Test. Reset Transponder Test. Reset Own Aircraft Position. Set the Own Aircraft Latitude, Longitude, Heading and Altitude to zero. Set the Own Aircraft Mode S Address to 4. Reset Scenario. Set the ATC-5000NG to the factory default settings.
Return Value:	A”*” is returned if the factory settings are able to complete successfully or “?” if a failure occurs.
Example:	:ATC:RESET\r
Return:	*

5.10.7 SERIAL NUMBER REQUEST

Command Syntax:	{:ATC |:ATC5000NG}{:SN?}CR
Description:	This command returns the serial number of the Unit.
Return Value:	ASCII value
Example:	:ATC:SN?\r
Return:	1000000003

5.10.8 SOFTWARE VERSION REQUEST

Command Syntax:	{:ATC |:ATC5000NG}{:SW?}CR
Description:	This command returns the software version of the Unit.
Return Value:	ASCII value
Example:	:ATC:SW?\r
Return:	26

5.10.9 UNIT NAME REQUEST

Command Syntax:	{:ATC |:ATC5000NG}{:NAME?}CR
Description:	This command returns the Unit name.
Return Value:	ASCII value
Example:	:ATC:NAME?\r
Return:	ATCSN1000000003

5.10.10 VERSIONS REQUEST

Command Syntax:	{:ATC |:ATC5000NG}{:VERSIONS?}CR
Description:	This command returns the firmware versions.
Return Value:	ASCII Value in the following format: <User Interface Version>,<Server Version>,<Receiver DSP Version>,<Receiver FPGA Version>,<Transmitter DSP Version>,<Transmitter FPGA Version>,<Receiver Module #1 FPGA Version>,<Receiver Module #2 FPGA Version>,<Transmitter Module #1 FPGA Version>,<Transmitter Module #2 FPGA Version>,<Transmitter Module #3 FPGA Version>,<Antenna Simulator/Switch Assembly FPGA Version>
Example:	:ATC:VERSIONS?\r
Return:	17.10.2501,17.10.2501,A.R,A.Q,A.R,A.V,A.0,A.0,A.B,A.B,A.B,A.0

5.11 DME COMMANDS

5.11.1 ACCELERATION

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:ACC | ACCELERATION} SP<numeric>CR
Description:	This command sets the acceleration parameter for range simulation.
Numeric	0 to 399 ft/s/s (decimal ASCII)
Default Value:	0 ft/s/s
Example:	:ATC:DME:ACC 125\r
Query:	:ATC:DME:ACC?\r
Return:	125

5.11.2 CABLE LOSS

Command Syntax:	{:ATC |:ATC5000NG}{:DME:CABLELOSS} SP<numeric>CR
Description:	This command sets the cable loss for the top antenna.
Numeric	0 to 2 dB (decimal ASCII)
Default Value:	0 dB
Example:	:ATC:DME:CABLELOSS 0.2\r
Query:	:ATC:DME:CABLELOSS?\r
Return:	0.2

5.11.3 CHANNEL

Command Syntax:	{:ATC |:AYC5000NG}{:DME:CHANNEL} SP<numeric>CR
Description:	This command sets the frequency for the select channel mode.
Numeric	1 to 126 for DME X and DME Y (decimal ASCII) 108.0 to 135.9 for 0 VOR Pair and 5 VOR Pair (decimal ASCII) 952 to 1223 for MHZ X and MHZ Y
Default Value:	978
Example:	:ATC:DME:CHANNEL 12\r
Query:	:ATC:DME:CHANNEL?\r
Return:	12

5.11.4 CHANNEL MODE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:CHANNEL:MODE} SP{DMEX | DMEY | 0VOR | 5VOR | MHZX |MHZY}CR
Description:	This command selects the style of the DME channel programming. Options are DME X, DME Y, 0 VOR Pair, 5 VOR Pair (50 kHz Offset), MHz X or MHz Y.
Default Value:	MHZ X
Example:	:ATC:DME:CHANNEL:MODE DME Y\r
Query:	:ATC:DME:CHANNEL:MODE?\r
Return:	DMEY

5.11.5 DIRECTION

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:DIR | DIRECTION} SP{IN | OUT}CR
Description:	This command sets the direction parameter for range simulation to inbound or outbound.
Default Value:	Outbound
Example:	:ATC:DME:DIR IN\r
Query:	:ATC:DME:DIR?\r
Return:	IN

5.11.6 ECHO

Command Syntax:	{:ATC |:ATC5000NG}{:DME:ECHO } SP{ON | OFF}CR
Description:	This command enables or disables the DME echo pulses.
Default Value:	Off
Example:	:ATC:DME:ECHO ON\r
Query:	:ATC:DME:ECHO?\r
Return:	ON

5.11.7 ECHO POWER

Command Syntax:	{:ATC |:ATC5000NG}{:DME:ECHO:POWER} SP<numeric>CR
Description:	This command sets the offset from the DME power for the echo pulses.
Numeric	+9 to -19 dBm (decimal ASCII)
Default Value:	0 dB
Example:	:ATC:DME:ECHO:POWER 2\r
Query:	:ATC:DME:ECHO:POWER?\r
Return:	2.0

5.11.8 EFFICIENCY

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:EFF | EFFICIENCY} SP<numeric>CR
Description:	This command sets the reply percentage.
Numeric	0% to 100% (decimal ASCII)
Default Value:	100%
Example:	:ATC:DME:EFF 80\r
Query:	:ATC:DME:EFF?\r
Return:	80

5.11.9 IDENT CHARACTER

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT{:CHAR | CHARACTER} SP<numeric>CR
Description:	This command sets the time associated with generating a character for Morse Code.
Numeric	150 to 750 ms (decimal ASCII)
Default Value:	450 ms
Example:	:ATC:DME:IDENT:CHAR 400\r
Query:	:ATC:DME:IDENT:CHAR?\r
Return:	400

5.11.10 IDENT CODE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:CODE } SP<characters>CR
Description:	This command selects the message that is generated in Morse Code.
Characters:	1 to 8 Alphanumeric
Default Value:	12345678
Example:	:ATC:DME:IDENT:CODE 2763\r
Query:	:ATC:DME:IDENT:CODE?\r
Return:	2763

5.11.11 IDENT DASH

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:DASH} SP<numeric>CR
Description:	This command sets the time associated with generating a dash for Morse Code.
Numeric	150 to 750 ms (decimal ASCII)
Default Value:	450 ms
Example:	:ATC:DME:IDENT:DASH 500\r
Query:	:ATC:DME:IDENT:DASH?\r
Return:	500

5.11.12 IDENT DOT

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:DOT} SP<numeric>CR
Description:	This command sets the time associated with generating a dot for Morse Code.
Numeric	50 to 250 ms (Decimal ASCII)
Default Value:	150 ms
Example:	:ATC:DME:IDENT:DOT 75\r
Query:	:ATC:DME:IDENT:DOT?\r
Return:	75

5.11.13 IDENT MODE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:MODE} SP{TONE | CODE | OFF}CR
Description:	This command selects the mode of operation for DME identification.
Default Value:	OFF
Example:	:ATC:DME:IDENT:MODE TONE\r
Query:	:ATC:DME:IDENT:MODE?\r
Return:	TONE

5.11.14 IDENT RATE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:RATE} SP<numeric>CR
Description:	This command sets the rate for the Morse Code.
Numeric	10 to 65 seconds (decimal ASCII)
Default Value:	30 seconds
Example:	:ATC:DME:IDENT:RATE 15\r
Query:	:ATC:DME:IDENT:RATE?\r
Return:	15.0

5.11.15 IDENT SPACE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:IDENT:SPACE} SP<numeric>CR
Description:	This command sets the time associated with generating a space for Morse Code.
Numeric	50 to 250 ms (decimal ASCII)
Default Value:	150 ms
Example:	:ATC:DME:IDENT:SPACE 55\r
Query:	:ATC:DME:IDENT:SPACE?\r
Retrun:	55

5.11.16 LOAD TEST

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:LOAD}SP<filename>CR
Description:	This command loads a CSV test file (specified filename) from the internal storage area. A ”*” is returned if the command is able to complete successfully or “?” if a failure occurs.
Example:	:ATC:DME:LOAD test1\r

5.11.17 P2 POSITION

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:P2POSITION |:P2POS } SP<numeric>CR
Description:	This command sets the DME P1 to P2 offset spacing.
Numeric	4.1 to 19.9 µs (X Channels) (decimal ASCII) 22.1 to 37.9 µs (Y Channels) (decimal ASCII)
Default Value:	12 µs (X Channels) 30 µs (Y Channels)
Example:	:ATC:DME:P2POS 5\r
Query:	:ATC:DME:P2POS?\r
Return:	5. 0

5.11.18 POWER

Command Syntax:	{:ATC |:ATC5000NG}{:DME:POWER} SP<numeric>CR
Description:	This command sets the DME transmission power.
Numeric	+5 to -110 dBm (decimal ASCII)
Default Value:	-50 dBm
Example:	:ATC:DME:POWER 5\r
Query:	:ATC:DME:POWER?\r
Return:	5.0

5.11.19 PRF?

Command Syntax:	{:ATC |:ATC5000NG}{:DME:PRF?}CR
Description:	This command returns the UUT transmission rate.
Return Value:	Decimal value in ASCII. (Number of transmissions in the last second.)
Example:	:ATC:DME:PRF?\r
Return:	101

5.11.20 PULSE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:PULSE} SP{P1 | P2}CR
Description:	This command sets which pulse to measure.
Default Value:	P1
Example:	:ATC:DME:PULSE P1\r
Query:	:ATC:DME:PULSE?\r
Return:	P1

5.11.21 RANGE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:RANGE} SP<numeric>CR
Description:	This command sets the DME range.
Numeric	0 to 400 nmi (decimal ASCII)
Default Value:	0 nmi
Example:	:ATC:DME:RANGE 100\r
Query:	:ATC:DME:RANGE?\r
Return:	100.

5.11.22 RANGE MODE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:RANGE}{:OFF | OFFSET} SP{-1 | NORMAL}CR
Description:	This command selects the normal range simulation or -1 nmi range simulation.
Default Value:	Normal
Example:	:ATC:DME:RANGE:OFF -1\r
Query:	:ATC:DME:RANGE:OFF?\r
Return:	-1

5.11.23 RESET

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:RES |:RESET}CR
Description:	This command resets the DME Test.
Example:	:ATC:DME:RES\r

5.11.24 SAVE TEST

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:SAVE}SP<filename>CR
Description:	This command saves the current DME Test into the internal storage area with the specified filename.
Example:	:ATC:DME:SAVE test1\r

5.11.25 SQUITTER

Command Syntax:	{:ATC |:ATC5000NG}{:DME}{:SQUIT |:SQUITTER} SP<numeric>CR
Description:	This command sets the DME squitter rate.
Numeric	0 to 8000 transmissions per second (decimal ASCII)
Default Value:	2700
Example:	:ATC:DME:SQUIT 500\r
Query:	:ATC:DME:SQUIT?\r
Return:	500

5.11.26 START

Command Syntax:	{:ATC |:ATC5000NG}{:DME:START} CR
Description:	This command starts the DME transmissions of squitters and replies.
Example:	:ATC:DME:START\r

5.11.27 STOP

Command Syntax:	{:ATC |:ATC5000NG}{:DME:STOP}CR
Description:	This command stops the DME transmissions of squitters and replies.
Example:	:ATC:DME:STOP\r

5.11.28 SUPPRESSION

Command Syntax:	{:ATC |:ATC5000NG}{:DME:}{SUPP | SUPPRESSION} SP{ON | OFF}CR
Description:	This command enables or disables the suppression output.
Default Value:	Off
Example:	:ATC:DME:SUPP ON\r
Query:	:ATC:DME:SUPP?\r
Retrun:	ON

5.11.29 SUPPRESSION PERCENTAGE

Command Syntax:	{:ATC |:ATC5000NG}{:DME:}{SUPP | SUPPRESSION}{:PERCENT |:PERCENTAGE} SP<numeric>CR
Description:	This command sets the percentage of suppression when suppression is activated.
Numeric	0 to 100 (decimal ASCII)
Default Value:	100
Example:	:ATC:DME:SUPP:PERCENT 90\r
Query:	:ATC:DME:SUPP:PERCENT?\r
Return:	90

5.11.30 VELOCITY

Command Syntax: {:ATC |:ATC5000NG}{:DME}{:VEL |:VELOCITY} SP<numeric>CR
Description: This command sets the velocity parameter for range simulation.
Numeric 0 to 10000 ft/s(decimal ASCII)
Default Value: 0
Example: :ATC:DME:VEL 599\r
Query: :ATC:DME:VEL?\r
Return: 599.0

5.11.31 WIDTH

Command Syntax: {:ATC |:ATC5000NG}{:DME:WIDTH} SP<numeric>CR
Description: This command sets the DME reply pulse width.
Numeric 3.5 to 9.0 μs (decimal ASCII)
Default Value: 3.5 μs
Example: :ATC:DME:WIDTH 4\r
Query: :ATC:DME:WIDTH?\r
Return: 4. 0

5.11.32 EQUALIZER

Command Syntax: {:ATC |:ATC5000NG}{:DME}{:EQUAL |:EQUALIZER } SP{ON | OFF}CR
Description: This command enables or disables the equalizer pulses.
Default Value: On
Example: :ATC:DME:EQUAL OFF\r
Query: :ATC:DME:EQUAL?\r
Return: OFF

5.11.33 TRIGGER

Command Syntax: {:ATC |:ATC5000NG}{:DME:TRIGGER } SP{SQUITTER | REPLY | ECHO | IDENT | INTERR}CR
Description: This command sets the scope trigger to the specified message.
Default Value: INTERR
Example: :ATC:DME:TRIGGER ECHO\r
Query: :ATC:DME:TRIGGER?\r
Return: ECHO

5.11.34 SELF INTERROGATION

Command Syntax: {:ATC |:ATC5000NG}{:DME:SELF} SP{ON | OFF }CR
Description: This command enables or disables the self- interrogation.
Default Value: Off
Example: :ATC:DME:SELF ON\r
Query: :ATC:DME:SELF?\r
Return: ON

5.12 EXAMPLES

5.12.1 SCENARIO TEST

The following example creates a scenario test with two static intruders and two dynamic intruders.
//Begin Scenario Test

Own Aircraft Definition Example

```
:ATC:OWN:LAT 25.91338
:ATC:OWN:LONG -80.3330058
:ATC:OWN:HEAD 0
:ATC:OWN:ALT 12000
:ATC:OWN:MSADDR 4
```

Scenario Definition Example

```
:ATC:SCE:TYPE MULTI
:ATC:SCE:RESET
:ATC:SCE:TIME 3000
:ATC:SCE:STATIC:QUANTITY 2
:ATC:SCE:DYNAMIC:QUANTITY 2
:ATC:SCE:INTERROGATOR:QUANTITY 2
:ATC:SCE:SLANT ON
:ATC:SCE:POWER LO
```

Static Intruder Definition Example #1

```
//Static Intruder Number 1
:ATC:SCE:STATIC:1:MODE EXTENDED
:ATC:SCE:STATIC:1:ENABLE ON
:ATC:SCE:STATIC:1:BEGIN 0
:ATC:SCE:STATIC:1:END 3000
:ATC:SCE:STATIC:1:MSADDR 2
:ATC:SCE:STATIC:1:GROUND OFF
:ATC:SCE:STATIC:1:ALTITUDE 12000
:ATC:SCE:STATIC:1:BEARING 135
:ATC:SCE:STATIC:1:RANGE 5
:ATC:SCE:STATIC:1:SQANT BOTH
:ATC:SCE:STATIC:1:SQPWR -50
:ATC:SCE:STATIC:1:VELOCITY 150
:ATC:SCE:STATIC:1:VERTICAL 0
:ATC:SCE:STATIC:1:TRACK 0
:ATC:SCE:STATIC:1:CC OFF
:ATC:SCE:STATIC:1:SL 0
:ATC:SCE:STATIC:1:RI:AQ0 0
:ATC:SCE:STATIC:1:RI:AQ1 0
:ATC:SCE:STATIC:1:RI:DF16 0
:ATC:SCE:STATIC:1:CA 0
:ATC:SCE:STATIC:1:UM 0
:ATC:SCE:STATIC:1:DR 0
:ATC:SCE:STATIC:1:FS 0
//0 By Default, 0 - Subtype 0 - Reserved, Valid only for Extended & TIS-B
//            1 - GroundSpeed Normal
//               2 - GroundSpeed Supersonic
//               3 - Airspeed Heading Normal
//               4 - Airspeed Heading Supersonic
//               5 - Subtype 5 - Reserved
//               6 - Subtype 6 - Reserved
//            7 - Subtype 7 - Reserved
:ATC:SCE:STATIC:1:VELTYPE 0
//STAT001 By Default, Alphanumeric digits
:ATC:SCE:STATIC:1:IDENT STAT001
//1 By Default, [1,4], valid only for Extended & TIS-B
:ATC:SCE:STATIC:1:IDENTTYPE 1
//- By Default, {-, A, B}, valid only for Extended
:ATC:SCE:STATIC:1:DO260 -
```

Static Intruder Definition Example #2

```
:ATC:SCE:STATIC:2:MODE TIS-B
:ATC:SCE:STATIC:2:ENABLE ON
:ATC:SCE:STATIC:2:BEGIN 0
:ATC:SCE:STATIC:2:END 3000
:ATC:SCE:STATIC:2:MSADDR 2
:ATC:SCE:STATIC:2:GROUND OFF
:ATC:SCE:STATIC:2:ALTITUDE 12000
:ATC:SCE:STATIC:2:BEARING 135
:ATC:SCE:STATIC:2:RANGE 5
:ATC:SCE:STATIC:2:SQANT BOTH
:ATC:SCE:STATIC:2:SQPWR -50
:ATC:SCE:STATIC:2:VELOCITY 150
:ATC:SCE:STATIC:2:VERTICAL 0
:ATC:SCE:STATIC:2:TRACK 0
:ATC:SCE:STATIC:2:CA 0
:ATC:SCE:STATIC:2:UM 0
:ATC:SCE:STATIC:2:DR 0
:ATC:SCE:STATIC:2:FS 0
:ATC:SCE:STATIC:2:VELTYPE 0
:ATC:SCE:STATIC:2:IDENT STAT002
//1 By Default, [1,4], valid only for Extended & TIS-B
:ATC:SCE:STATIC:2:IDENTTYPE 1
//0 By Default [0,7], No Valid for ATCRBS (ignored)
:ATC:SCE:DYNAMIC:1:FS 0
```

Dynamic Intruder Definition Example #1

```
//TCAS By Default
:ATC:SCE:DYNAMIC:1:MODE EXTENDED
:ATC:SCE:DYNAMIC:1:ENABLE ON
//0 By Default, [0, Scenario Time]
:ATC:SCE:DYNAMIC:1:BEGIN 0
//Scenario Time By Default, [0, Scenario Time], stop >= start
:ATC:SCE:DYNAMIC:1:END 3000
:ATC:SCE:DYNAMIC:1:MSADDR 1
//OFF by Default, No Valid for ATCRBS
:ATC:SCE:DYNAMIC:1:GROUND OFF
//1000 By Default
:ATC:SCE:DYNAMIC:1:ALTITUDE 12000
:ATC:SCE:DYNAMIC:1:BEARING 135
:ATC:SCE:DYNAMIC:1:RANGE 5
//BOTH By Default
:ATC:SCE:DYNAMIC:1:SQANT BOTH
//-50 dbm By Default
:ATC:SCE:DYNAMIC:1:SQPWR -50
//Binary By Default
:ATC:SCE:DYNAMIC:1:AMODE BINARY
//0000 By Default, Octal Digits, PadLeft(4, '0')
:ATC:SCE:DYNAMIC:1:ACODE 1234
:ATC:SCE:DYNAMIC:1:VELOCITY 150
:ATC:SCE:DYNAMIC:1:VERTICAL 0
:ATC:SCE:DYNAMIC:1:TRACK 0
:ATC:SCE:DYNAMIC:1:CC OFF
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:SL 0
//0 BY Default [0,7]
:ATC:SCE:DYNAMIC:1:RI:AQ0 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:RI:AQ1 0
//0 By Default [0,15]
:ATC:SCE:DYNAMIC:1:RI:DF16 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:CA 0
```

```
//0 By Default [0,63]
:ATC:SCE:DYNAMIC:1:UM 0
//0 By Default [0,31]
:ATC:SCE:DYNAMIC:1:DR 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:FS 0
```

Dynamic Intruder Definition Example #2

```
//Dynamic Intruder Number 2
:ATC:SCE:DYNAMIC:2:MODE TIS-B
:ATC:SCE:DYNAMIC:2:ENABLE ON
:ATC:SCE:DYNAMIC:2:BEGIN 0
:ATC:SCE:DYNAMIC:2:END 3000
:ATC:SCE:DYNAMIC:2:ALTITUDE 12000
:ATC:SCE:DYNAMIC:2:BEARING 135
:ATC:SCE:DYNAMIC:2:RANGE 5
:ATC:SCE:DYNAMIC:2:VELOCITY 150
:ATC:SCE:DYNAMIC:2:VERTICAL 0
:ATC:SCE:DYNAMIC:2:TRACK 0
//ON By Default
:ATC:SCE:DYNAMIC:2:ALTRPT ON
//To complete the definition of the Mode S squitters.
:ATC:SCE:COMPILE
```

5.12.2 DO-260 TEST SINGLE ADS-B EXAMPLE

The following example creates a normal test for a single ADS-B

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINTION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0

//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:NORMAL:GENS:GENA:POWER -20
:ATC:DO260:TYPE:NORMAL:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
:ATC:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 8800000148000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM OFF
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

5.12.3 DO-260 TEST DUAL ADS-B EXAMPLE

The following example creates a test of type normal for a dual ADS-B.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINTION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:NORMAL:GENS:GENA:POWER -20
:ATC:DO260:TYPE:NORMAL:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
:ATC:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 8800000148000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM OFF
:ATC:DO260:TYPE:NORMAL:GENS:GENB:POWER -30
:ATC:DO260:TYPE:NORMAL:GENS:GENB:PATH TOP
:ATC:DO260:TYPE:NORMAL:GENS:GENB:DELAY 0
:ATC:DO260:TYPE:NORMAL:GENS:GENB:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENB:MODES:DATA 8800000148000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENB:MODES:RANDOM OFF
```

//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.

5.12.4 DO-260 SPECIAL TEST OVERLAPPING PULSE EXAMPLE

The following example creates a special test for overlapping pulse.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINTION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:OVERLAPPINGPULSE:PULSE:WIDTH 4500
:ATC:DO260:TYPE:OVERLAP:PULSE:DELAY 0
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:POWER -20
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:SIGNAL ON //No Available for Special Test. Bussines
Rule's ATC-5000NG
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:MODES:DATA 8800000148000000000000000001
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:MODES:RANDOM OFF  //No Available for Special test.
Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:POWER -20
:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:PATH TOP
:ATC:DO260:TYPE:OVERLAP:GENS:GENc:DELAY 0
//:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:SIGNAL ON //No Available for Special test.
Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

5.12.5 DO-260 SPECIAL TEST BIT FAILURES EXAMPLE

The following example creates a special test for an ADS-B Bad Chips DF17 Energy in chips 33 thru 39.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINTION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:BITFAILURES:CHIPS:FIRST 33
:ATC:DO260:TYPE:BITF:CHIPS:LAST 39
:ATC:DO260:TYPE:BITF:GENS:GENA:POWER -20
:ATC:DO260:TYPE:BITF:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:BITF:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's ATC-5000NG
//:ATC:DO260:TYPE:BITF:GENS:GENA:SIGNAL ON //No Available for Special test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:BITF:GENS:GENA:MODES:DATA 8800000148000000000000000001
//:ATC:DO260:TYPE:BITF:GENS:GENA:MODES:RANDOM OFF //No Available for Special test. Business Rule's ATC-
5000NG
:ATC:DO260:TYPE:BITF:GENS:GENC:POWER -20
:ATC:DO260:TYPE:BITF:GENS:GENC:PATH TOP
:ATC:DO260:TYPE:BITF:GENS:GENC:DELAY 0
//:ATC:DO260:TYPE:BITF:GENS:GENC:SIGNAL ON //No Available for Special test. Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

5.12.6 DO-260 SPECIAL TEST ALTERED PREAMBLE EXAMPLE

The following example creates a special test for an ADS-B altered preamble.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINTION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:ALTEREDPREAMBLE:PULSE:P1:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P1:POSITION 0
:ATC:DO260:TYPE:ALTEREDPREAMBLE:PULSE:P1:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P2:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P2:POSITION 1000
:ATC:DO260:TYPE:ALT:PULSE:P2:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P2:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P3:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P3:POSITION 3500
:ATC:DO260:TYPE:ALT:PULSE:P3:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P3:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P4:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P4:POSITION 4500
:ATC:DO260:TYPE:ALT:PULSE:P4:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P4:ENABLE ON
:ATC:DO260:TYPE:ALTEREDPREAMBLE:GENS:GENA:POWER -20
:ATC:DO260:TYPE:ALT:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:ALT:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's ATC-5000NG
//:ATC:DO260:TYPE:ALT:GENS:GENA:SIGNAL ON //No Available for Special Test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA 8800000148000000000000000001
//:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:RANDOM OFF //No Available for Special test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:ALT:GENS:GENC:POWER -20
:ATC:DO260:TYPE:ALT:GENS:GENC:PATH TOP
:ATC:DO260:TYPE:ALT:GENS:GENC:DELAY 0
//:ATC:DO260:TYPE:ALT:GENS:GENC:SIGNAL ON //No Available for Special Test. Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

5.12.7 TRANSPONDER BLOCK TRANSMISSION EXAMPLE

The following example creates a block transmission:

```
//BEGIN TEST
:ATC:SCE:TYPE XPDR
//RESET BLOCK TRANSMISSION TEST
:ATC:XPDR:RESET
//BLOCK DEFINITION
// BLOCK TRANSMISSION PERIOD IN MILLISECONDS
:ATC:XPDR:TXBLOCK:PERIOD 100
//TRANSMISSION MODE CONTINUOUS OR INTERRUPT
:ATC:XPDR:TXBLOCK:MODE CONTINUOUS
//TOTAL NUMBER OF BLOCKS TRANSMISSION
:ATC:XPDR:TXBLOCK:TRANS 5
//DATA MESSAGE
:ATC:XPDR:TXBLOCK:1:MESS 00000000000001
//TYPE OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:TYPE 1
//THE STARTING TRANSMISSION TIME (in µs) WITHIN THE BLOCK OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:TIME 0
//THE POWER LEVEL OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:POWER -70
:ATC: XPDR:TXBLOCK:2:MESS 8D33333300000000000000000000; : XPDR:TXBLOCK:2:TYPE 1; :
XPDR:TXBLOCK:2:TIME 125; : XPDR:TXBLOCK:2:POWER -70
//BEGIN BLOCK TRANSMISSION
:ATC:XPDR:START  // The system will return a ACK.
//END OF TEST.
```

5.12.8 UAT SCENARIO DEFINITION EXAMPLE

The following example creates a scenario test with two statics intruders and two dynamic intruders by the channels UAT RX1 and UAT RX2. This capability requires ATC-5000NG specific UAT hardware.

```
//Begin Scenario Test
//Receiving Station Definition Example
:ATC:SCE:TYPE UAT  // sets the ATC-5000NG to interpret the scenario commands as UAT mode
:ATC:OWN:LAT 25.91338
:ATC:OWN:LONG -80.3330058
:ATC:OWN:HEAD 0
:ATC:OWN:ALT 12000
:ATC:OWN:MSADDR 4

//Scenario Definition Example
:ATC:SCE:RESET
:ATC:SCE:TIME 3000
:ATC:SCE:STATIC:QUANTITY 2,2
:ATC:SCE:DYNAMIC:QUANTITY 2,2
:ATC:SCE:UTCGPS OFF
:ATC:SCE:CAPTURE ON
:ATC:RCV:MASK F00

:ATC:SCE:CHANNEL  UATRX1
:ATC:SCE:STATIC:1:PLCODE 0            //payload type code 0..13. 0 by default.
:ATC:SCE:STATIC:1:ADDRQ 0             //Address qualifier 0..7
:ATC:SCE:STATIC:1:AVSIZE 0            //A/V Size 0..15
:ATC:SCE:STATIC:1:AGSTATE 0           //AG State 0..3
:ATC:SCE:STATIC:1:ALTTYPE 0           //Altitude Type 0..1
:ATC:SCE:STATIC:1:UAT:GPSLAT 0      //lateral axis GPS antenna offset 0..7. 0 by default. 0 - No
Data.
:ATC:SCE:STATIC:1:UAT:GPSLONG 0     //longitudinal axis GPS antenna offset 0..31. 0 by default
. 0 - No data
:ATC:SCE:STATIC:1:MSO 752             //MSO 752..3951
:ATC:SCE:STATIC:1:NIC 0               //NIC  0..15
:ATC:SCE:STATIC:1:OFFSET 0            //offset or delay 0..65500
:ATC:SCE:STATIC:1:OFFMANUAL OFF   //enables or disables the manual override of the offset
:ATC:SCE:STATIC:1:TAH 0               //track and heading type 0..3. 0 - No Data
:ATC:SCE:STATIC:1:VVSOURCE 0          //VV Source 0..1. 0 - From Geo 1 - From Baro
:ATC:SCE:STATIC:1:UPLINK 0            //uplink feedback encoding 0..7
:ATC:SCE:STATIC:1:UTC ON              //enables or disables the UTC coupled condition
:ATC:SCE:STATIC:1:UAT:GPSAXIS 0     //GPS antenna axis of the ADS-B message
:ATC:SCE:STATIC:1:ALTITUDE 12002;:BEARING 45;:RANGE 5

:ATC:SCE:STATIC:2:PLCODE 1            //payload type code 0..13
:ATC:SCE:STATIC:2:ADDRQ 1               //Address qualifier 0..7
:ATC:SCE:STATIC:2:AVSIZE 1              //A/V Size 0..15
:ATC:SCE:STATIC:2:AGSTATE 1           //AG State 0..3
:ATC:SCE:STATIC:2:ALTTYPE 1           //Altitude Type 0..1
:ATC:SCE:STATIC:2:UAT:GPSLAT 1      //lateral axis GPS antenna offset 0..7. 0 by default. 0 - No
Data.
:ATC:SCE:STATIC:2:UAT:GPSLONG 1     //longitudinal axis GPS antenna offset 0..31. 0 by default
. 0 - No data
:ATC:SCE:STATIC:2:MSO 754             //MSO 752..3951
:ATC:SCE:STATIC:2:NIC 1               //NIC  0..15
:ATC:SCE:STATIC:2:OFFSET 0            //offset or delay 0..65500
:ATC:SCE:STATIC:2:OFFMANUAL OFF  //enables or disables the manual override of the offset
:ATC:SCE:STATIC:2:TAH 1               //track and heading type 0..3. 0 - No Data
:ATC:SCE:STATIC:2:VVSOURCE 1          //VV Source 0..1. 0 - From Geo 1 - From Baro
:ATC:SCE:STATIC:2:UPLINK 1            //uplink feedback encoding 0..7
:ATC:SCE:STATIC:1:UTC ON             //enables or disables the UTC coupled condition
:ATC:SCE:STATIC:2:PLMS FFFF          //mode status payload message element. Apply only for
payload type 1 and 3. 24 hexadecimal. pad on the right with zeros.
```

```
:ATC:SCE:STATIC:2:PLASV FFFF        //the auxiliary state vector payload message element .
Apply only for payload type 1,2,5 and 6. 10 hexadecimal. pad on the right with zeros.
z
:ATC:SCE:DYNAMIC:1:UAT:NADSB 5
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLCODE 1
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLMS AAAAAAAAAAAAAAAAA
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLASV CCCCCCC
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:PLCODE 2
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:PLASV BBBBBBB
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:PLCODE 3
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:PLTS EEEEEEE
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLCODE 6
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLTS FFFFF
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLASV DDDDDDDDD
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:NINTERVALS 10
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:1:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:BEGIN 100
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:END 150
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:PWR -32
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:NINTERVALS 8
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:INTERVAL:11:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:INTERVAL:5:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:INTERVAL:5:PWR -55

:ATC:SCE:CHANNEL  UATRX2
:ATC:SCE:STATIC:1:PLCODE 3
:ATC:SCE:STATIC:1:ADDRQ 0
:ATC:SCE:STATIC:1:AVSIZE 0
:ATC:SCE:STATIC:1:AGSTATE 0
:ATC:SCE:STATIC:1:ALTTYPE 0
:ATC:SCE:STATIC:1:UAT:GPSLAT 0
:ATC:SCE:STATIC:1:UAT:GPSLONG 0
:ATC:SCE:STATIC:1:MSO 752
:ATC:SCE:STATIC:1:NIC 0
:ATC:SCE:STATIC:1:OFFSET 0
:ATC:SCE:STATIC:1:OFFMANUAL OFF
:ATC:SCE:STATIC:1:TAH 0
:ATC:SCE:STATIC:1:VVSOURCE 0
:ATC:SCE:STATIC:1:UPLINK 0
:ATC:SCE:STATIC:1:UTC ON
:ATC:SCE:STATIC:1:PLMS FFFF
:ATC:SCE:STATIC:1:PLTS FFFF

:ATC:SCE:STATIC:2:PLCODE 13 //Ground Uplink
:ATC:SCE:STATIC:2:UTC on
:ATC:SCE:STATIC:2:UAT:GUS:POSVALID on
:ATC:SCE:STATIC:2:UAT:GUS:ADVALID on
:ATC:SCE:STATIC:2:UAT:GUS:LAT 5
:ATC:SCE:STATIC:2:UAT:GUS:LONG 6
:ATC:SCE:STATIC:2:UAT:GUS:SLOTID 7
:ATC:SCE:STATIC:2:UAT:GUS:TISBID 8
:ATC:SCE:STATIC:2:SQPWR -30
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:NIFRAMES 20
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:2:IFDATA FILE,C..\ATG\test_1.txt
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:20:IFDATA HEX,4441544153414d504c45
```

5.12.9 EXAMPLE PROGRAM

```
// This example program is provided to allow you to quickly get started communicating with the
// unit. It requires National Instruments LabWindows/CVI. Version 2010 or above is recommended.
// This program shows how to communicate using GPIB and Ethernet. The following text can be
// copied and pasted into 4 files and compiled.


//
==============================================================================
// Title:      Main.h
// Purpose:    Main header file.
//
// Created on:  9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:   VIAVI AvComm. All Rights Reserved.
//
==============================================================================

#ifndef __Main_H__
#define __Main_H__

#ifdef __cplusplus
   extern "C" {
#endif

//
==============================================================================
// Include files

#include "cvidef.h"


#ifdef __cplusplus
   }
#endif


#endif  // ndef __Main_H__
//==============================================================================
//=== END MAIN HEADER FILE ====================================================
//==============================================================================
//==============================================================================
// Title:      Main.c
// Purpose:    Main function to show how to communicate with the unit using
//             GPIB and Ethernet.
//             This example program was compiled and tested using
//             National Instruments LabWindows/CVI Ver 2010.
//
// Created on:  9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:   VIAVI AvComm. All Rights Reserved.
//==============================================================================

//==============================================================================
// Include files
#include <ansi_c.h>
#include <userint.h>
#include <utility.h>
#include <formatio.h>
#include "ATC_Driver.h"
//==============================================================================
void main(void)
{
  ViStatus status = 0;
```

```
  int bytes = 0;
  ViChar readBuff[512] = {0};
  ViChar Message[512] = {0};
  ViReal64 cmdWait = 0.030;

// Initialize communication using GPIB or Ethernet.
// Uncomment the line for the method you desire and set the address.

// status = ATC_init (ATCGen1,"ATC-5000NG", "138156", "ETHERNET","10.170.170.52", "");

 status = ATC_init (ATCGen1,"ATC-5000NG", "138156", "GPIB", "8", "");


  if(status < 0)       // failed to initialize
  {
    // Display error message
    Fmt(Message,"%s<The ATC-5000NG failed to initialize. \n   Terminating program.");
    status = MessagePopup ("Error", Message);
    exit(0);
  }

  // The carrage return is appended by the ATC_writeInstrData function.

  // Get Unit Name
  status = ATC_writeInstrData (ATCGen1, ":ATC:NAME?", cmdWait);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  // readBuffer = ATCSN1000000003

  // Get Unit Serial Number
  status = ATC_writeInstrData (ATCGen1, ":ATC:SN?", cmdWait);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  // readBuffer = 1000000003

  // Get Unit Last Calibration Date
  status = ATC_writeInstrData (ATCGen1, ":ATC:LASTCAL?", cmdWait);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  // readBuffer = 2/20/2017 3:25:43 PM - Pass

  // Note the *IDN? is valid on all interfaces after version 17.03.3101
  // before this version it is only valid on GPIB.
  status = ATC_writeInstrData (ATCGen1, "*IDN?", cmdWait);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  // readBuffer = Aeroflex;ATC-5000NG RF Test Set;138156

  // Get Unit Version Information
  status = ATC_writeInstrData (ATCGen1, ":ATC:VERSIONS?", cmdWait);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  // readBuffer = 17.03.2205,17.03.2205,A.P,A.L,A.N,A.M,A.0,A.0,3.E,3.E,3.E,A.0

  // Block transmission example
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:RESET", cmdWait);
  // Delay three seconds to allow unit to switch to proper
  // instrument and clear the transmission block.
  Delay(3);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:PERIOD 100", cmdWait);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:MODE CONTINUOUS", cmdWait);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:TRANS 5 ", cmdWait);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:1:TYPE 3", cmdWait);
```

```
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:1:TIME 0", cmdWait);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:1:POWER -70", cmdWait);
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:1:PHASE 0", cmdWait);

  // Command Concatonation example
  status = ATC_writeInstrData (ATCGen1,
    ":ATC:TXBLOCK:2:MESS 8D33333300000000000000000000;:TYPE 3;:TIME 125;:POWER -
70;:PHASE 0", cmdWait);

  //This command retruns an "*" or "?"
  status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:START", cmdWait);
  Delay(1);
  memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
  status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
  if (FindPattern (readBuff, 0, -1, "?", 0, 0) >= 0)
  {
    // Display error message
    Fmt(Message,"%s<:ATC:TXBLOCK:START reported an error.");
    status = MessagePopup ("Error", Message);
  }

  // Unit Reset
  // ATC_reset has a 10 second delay to allow the unit to complete the reset.
  status = ATC_reset (ATCGen1);

  status = ATC_close (ATCGen1);
}

//=============================================================================
//=== END MAIN FILE ===========================================================
//=============================================================================
```

```
//=============================================================================
// Title:       ATC_Driver.h
// Purpose:     Driver header file.
//
// Created on:  9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:   VIAVI AvComm. All Rights Reserved.
//=============================================================================
#include <cvidef.h>


#ifndef __ATC_HEADER
#define __ATC_HEADER

#define __ATC_GLOBALS
#include <vpptype.h>

#if defined(__cplusplus) || defined(__cplusplus__)
extern "C" {
#endif

#ifdef __ATC_GLOBALS
  #define ATC_EXT
#else // __ATC_GLOBALS is not defined
  #define ATC_EXT extern
```

```
#endif // __ATC_GLOBALS

/****************************************************************************/
/***  Defined STRUCTURES                                                 ***/
/****************************************************************************/
struct device                    /*  DEVICE RESOURCE Description           */
{
  char Type[20];                  /*  Device Name, Type Or Model            */
  char Pn[15];                   /*  Device Part Number                 */
  char Opt[10];                  /*  Device Option Or MOD Level            */
  char Bus[10];                  /*  Device Communications Bus Type        */
  char PriAddr[41];               /*  Device Primary Address               */
  char SecAddr[41];                /*  Device Secondary Address              */
};


//=============================================================================
//= Define Instrument Specific Error/Warning Codes Here ======================
//=============================================================================
#define VI_ERROR_PARAMETER9              (_VI_ERROR+0x3FFC0009L)//0xBFFC0009
#define VI_ERROR_PARAMETER10              (_VI_ERROR+0x3FFC000AL)
#define VI_ERROR_PARAMETER11              (_VI_ERROR+0x3FFC000BL)
#define VI_ERROR_INSTR_FILE_OPEN           (_VI_ERROR+0x3FFC0800L)//0xBFFC0800
#define VI_ERROR_INSTR_FILE_WRITE          (_VI_ERROR+0x3FFC0801L)//0xBFFC0801
#define VI_ERROR_INSTR_INTERPRETING_RESPONSE (_VI_ERROR+0x3FFC0803L)//
0xBFFC0803

#define VI_INSTR_WARNING_OFFSET                    (0x3FFC0900L)
#define VI_INSTR_ERROR_OFFSET             (_VI_ERROR+0x3FFC0900L)//0xBFFC0900

#define ATC_ERROR_INVALID_CONFIGURATION (VI_INSTR_ERROR_OFFSET + 0xF0L)//
0xBFFC09F0
#define ATC_ERROR_INVALID_COMMAND       (VI_INSTR_ERROR_OFFSET + 0xF1L)//
0xBFFC09F1
#define ATC_ERROR_NAC                  (VI_INSTR_ERROR_OFFSET + 0xF2L)//0xBFFC09F2
#define ATC_ERROR_COMMAND_ERROR         (VI_INSTR_ERROR_OFFSET + 0xF3L)//
0xBFFC09F3
#define ATC_ERROR_NO_DATA              (VI_INSTR_ERROR_OFFSET + 0xF4L)//0xBFFC09F4
#define ATC_ERROR_CMD_WAIT             (VI_INSTR_ERROR_OFFSET + 0xF5L)//0xBFFC09F5
#define ATC_ERROR_SESSION_ALREADY_EXITS (VI_INSTR_ERROR_OFFSET + 0xF6L)//
0xBFFC09F6
#define ATC_ERROR_TOO_MANY_SESSIONS     (VI_INSTR_ERROR_OFFSET + 0xF7L)//
0xBFFC09F7

#define DEFAULT_BAUD   115200         // Default baud rate
#define DEFAULT_DBITS  8             // Default data bits
#define DEFAULT_SBIT   1             // Default stop bit
#define DEFAULT_PARITY 0             // Default parity

#define OFF       0
#define ON        1

#define ATCGen1    1
#define ATCGen2    2

typedef struct {
   ViInt32      baudrate;
   ViInt32      databits;
   ViInt32      parity;
   ViInt32      stopbits;
   ViInt16      connect;         // ON or OFF
   ViInt32      resourcename;      // 0-device name; 1-lan IP address
```

```
} typATCGenConfigs;


#ifdef __ATC_GLOBALS
   static typATCGenConfigs ATCGenConfig;   // config parameters
#else // __ATCGEN_GLOBALS is not defined
   extern typATCGenConfigs ATCGenConfig;   // config parameters
#endif // __ATCGEN_GLOBALS


//==============================================================================
//= GLOBAL USER-CALLABLE FUNCTION DECLARATIONS (Exportable Functions) =========
//==============================================================================
ATC_EXT ViStatus _VI_FUNC ATC_init (ViInt16 ATCGen, ViChar ATCGenType[],
                    ViChar ATCGenPartNumber[], ViChar ATCGenBus[],
                    ViChar primaryAddr[],ViChar secondaryAddr[]);

ATC_EXT ViStatus _VI_FUNC ATC_close (ViInt16 ATCGen);

ATC_EXT ViStatus _VI_FUNC ATC_reset (ViInt16 ATCGen);

ATC_EXT ViStatus _VI_FUNC ATC_writeInstrData (ViInt16 ATCGen,
                                    ViString writeBuffer,
                                    ViReal64 waitToNxtCmd);

ATC_EXT ViStatus _VI_FUNC ATC_readInstrData (ViInt16 ATCGen,
                                   ViInt32 numberBytesToRead,
                                   ViChar _VI_FAR readBuffer[],
                                   ViPInt32 numBytesRead);

ATC_EXT ViStatus _VI_FUNC ATC_errorQuery (ViInt16 ATCGen,
                                 ViInt32 *errorCode,
                                 ViChar _VI_FAR message[]);

#if defined(__cplusplus) || defined(__cplusplus__)
}
#endif

#endif
//==============================================================================
//=== END INCLUDE FILE ========================================================
//==============================================================================


//==============================================================================
// Title:       ATC_Driver.c
// Purpose:     Driver functions to control the ATC-5000NG using
//              GPIB, Ethernet or Serial. Serial is not recommended.
//
// Created on:  9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:   VIAVI AvComm. All Rights Reserved.
//==============================================================================
#include <utility.h>

#include <visa.h>
#include <formatio.h>
#include <toolbox.h>
#include "ATC_Driver.h"


#define   WAITTIME0_01      0.01      // Seconds wait time
#define   WAITTIME0_02      0.02      // Seconds wait time
#define   WAITTIME0_03      0.03      // Seconds wait time
```

```
#define   WAITTIME1_00      1.       // Seconds wait time
#define   WAITTIME5_00      5.       // Seconds wait time
#define   WAITTIME7_00      7.       // Seconds wait time
#define   WAITTIME10_00    10.       // Seconds wait time

#define TIME_OUT_NORM_VAL 3000

#define MAX_SESSIONS 2

struct {
  ViSession session;
  ViReal64  startTime;
  ViReal64  curWaitTime;
  ViChar    resourceName[40];
} sessionInfo[MAX_SESSIONS] = {{0,0,0,""},{0,0,0,""}};

#define BUFFER_SIZE         512L         // File I/O buffer size



//==============================================================================
//=  Driver Specific Error/Warning Codes  ====================================
//==============================================================================
#define NOT_AVAILABLE      0xFFFFFC18  // Function Not Available      (-1000)
#define INVALID_SELECTION  0XFFFFFC17  // Invalid device selected     (-1001)
#define NOT_INSTALLED      0XFFFFFC16  // Device  Not installed       (-1002)
#define ABORT_FLAG_SET     0XFFFFFC15  // Test Exec. Abort Flag Set   (-1003)
#define NOT_INITIALIZED    0x3FFFFC01  // Instrument Not Initailized Warning

#define ERR_PARAMETER1    0XFFFFFC13  // Parameter 1 Out-Of-Range.  (-1005)
#define ERR_PARAMETER2    0XFFFFFC12  // Parameter 2 Out-Of-Range.  (-1006)
#define ERR_PARAMETER3    0XFFFFFC11  // Parameter 3 Out-Of-Range.  (-1007)
#define ERR_PARAMETER4    0XFFFFFC10  // Parameter 4 Out-Of-Range.  (-1008)
#define ERR_PARAMETER5    0XFFFFFC0F  // Parameter 5 Out-Of-Range.  (-1009)
#define ERR_PARAMETER6    0XFFFFFC0E  // Parameter 6 Out-Of-Range.  (-1010)
#define ERR_PARAMETER7    0XFFFFFC0D  // Parameter 7 Out-Of-Range.  (-1011)
#define ERR_PARAMETER8    0XFFFFFC0C  // Parameter 8 Out-Of-Range.  (-1012)
#define ERR_PARAMETER9    0XFFFFFC0B  // Parameter 9 Out-Of-Range.  (-1013)
#define ERR_PARAMETER10    0XFFFFFC0A  // Parameter 10 Out-Of-Range. (-1014)
#define ERR_PARAMETER11    0XFFFFFC09  // Parameter 11 Out-Of-Range. (-1015)

#define NOT_SUPPORTED      0XFFFFFC03  // Command Not Supported.     (-1021)
#define OPTION_MISSING     0XFFFFFC02  // Option Not Installed.      (-1022)
#define WRONG_INSTRUMENT   0XFFFFFC01  // Incorrect Instrument       (-1023)
#define INVAL_TERMINATION  0XFFFFFC00  // Invalid term character(s). (-1024)

ViSession        ATCGenSession[MAX_SESSIONS];  // session handle
struct device    ATCGenDevice[MAX_SESSIONS];   // device parameters
ViInt16          ATCGenConnect[MAX_SESSIONS];

//==============================================================================
//= INSTRUMENT-DEPENDENT COMMAND ARRAYS
========================================
//==============================================================================
ViInt32 Equal[20];
ViInt32 Separator[20];
ViInt32 i;
ViInt32 j;
ViInt32 bytesRead;
ViChar Buffer[80];
ViChar Buffer1[80];
ViChar Buffer2[80];
ViChar Buffer3[80];
```

```
ViChar Buffer4[80];
ViChar Buffer5[80];
ViChar Buffer6[80];
ViChar Buffer7[80];
ViChar Buffer8[80];
ViChar Buffer9[80];
ViChar Buffer10[80];
ViChar Buffer11[80];
ViChar Buffer12[80];
ViChar Buffer13[80];
ViChar Buffer14[80];
ViChar Buffer15[80];
ViChar Buffer16[80];
ViChar Buffer17[80];
ViChar Buffer18[80];
ViChar Buffer19[80];
ViChar tmp_buffer[20][80];
ViChar OutBuffer[100];
ViChar InBuffer[1024];

static char   saved_buffer[2][512];
static long   is_buffer_occupied[2];

//===========================================================================
//====================== Function Prototypes ===================================
//===========================================================================

ViStatus _VI_FUNC ATC_read_IDN (ViSession,ViChar mfg[],ViChar desc[],
                                ViChar pn[]);

ViStatus ATC_initialize (ViRsrc, ViBoolean,ViBoolean, ViPSession);
ViStatus ATC_initCleanUp (ViSession, ViPSession, ViStatus);
ViStatus ATC_sessionInfoOpen (ViSession, ViRsrc resourceName);
ViStatus ATC_sessionInfoClose (ViSession);


ViStatus ATC_sessionInfoResource (ViSession, ViChar resourceName[]);
ViStatus ATC_nxtCmdWait (ViSession);
ViStatus ATC_nxtCmdLog (ViSession, ViReal64 waitToNxtCmd);
ViBoolean ATC_invalidViBooleanRange (ViBoolean);

static void ClearStoredBuffer(ViSession);
static long ReadAndStoreIntoBuffer(ViSession);

//===========================================================================
//=================== User Callable Functions ===================================
//===========================================================================

/*==========================================================================
   This is a list of error codes that may be returned from the callable
   functions below.

   3FFF0005  The specified termination character was read.
   3FFF0006  The specified number of bytes was read.
   BFFF0000  Miscellaneous or system error occurred.
   BFFF000E  Invalid session handle.
   BFFF0015  Timeout occurred before operation could complete.
   FFFFFC16  Device not installed
   FFFFFC17  Invalid device selected
   FFFFFC18  Function not available
   BFFF0034  Violation of raw write protocol occurred.
   BFFF0035  Violation of raw read protocol occurred.
   BFFF0036  Device reported an output protocol error.
```

```
   BFFF0037  Device reported an input protocol error.
   BFFF0038  Bus error occurred during transfer.
   BFFF003A  Invalid setup (attributes are not consistent).
   BFFF005F  No listeners condition was detected.
   BFFF0060  This interface is not the controller in charge.
   BFFF0067  Operation is not supported on this session.
=========================================================================*/

//========================================================================
// Function: ATC_Init
// Purpose:  This function initializes the ATCGen specified in the "Type"
//          input parameter to a known state.
// Parameter List: ATCGen - Generator number, ATCGen1 or ATCGen2
//                ATCGenType[] - "ATC-5000NG" or "NOT INSTALLED"
//                ATCGenPartNumber[] - 138156
//                ATCGenBus[] - "GPIB", "RS232" or "ETHERNET"
//                primaryAddr[] - This is the address used for the unit.
//                                GPIB: 0-32, RS232 1-256 for ethernet it
//                                it should be similar to 10.168.168.2
//                secondary_Adress[] - usually not used set to ""
// Return Values:  Zero on success, non-zero otherwise
//========================================================================
ViStatus _VI_FUNC ATC_init (ViInt16 ATCGen,
                 ViChar ATCGenType[],
                 ViChar ATCGenPartNumber[],
                 ViChar ATCGenBus[],
                 ViChar primaryAddr[],
                 ViChar secondaryAddr[])
{
  ViStatus ATC_status = VI_SUCCESS;    // reset error status code
  ViChar resource[50] = {NULL};


  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;      // set error status code
  else
  {
    if (ATCGenSession[(ATCGen-1)] != 0)
    {
      if ((ATC_status = ATC_close (ATCGen)) < 0)
        ATCGenSession[(ATCGen-1)] = 0;
    }

    ATCGenSession[(ATCGen-1)] = 0;    // Zero Session Handle



    strcpy (ATCGenDevice[(ATCGen-1)].Type, ATCGenType);
    strcpy (ATCGenDevice[(ATCGen-1)].Pn, ATCGenPartNumber);
    strcpy (ATCGenDevice[(ATCGen-1)].Bus, ATCGenBus);
    strcpy (ATCGenDevice[(ATCGen-1)].PriAddr, primaryAddr);
    strcpy (ATCGenDevice[(ATCGen-1)].SecAddr, secondaryAddr);

      // check for ATCGen 1 = ATC-5000NG and initialize
    if (strcmp(ATCGenDevice[(ATCGen-1)].Type, "SIMULATED") == 0)
    {
      ATC_status = 0;
    }
    else if (strcmp (ATCGenDevice[(ATCGen-1)].Type, "ATC-5000NG") == 0)
    {
      if (strncmp ("GPIB", ATCGenDevice[(ATCGen-1)].Bus, 4) == 0)
      {
        ViRsrc bus;           // communication bus type of device
```

```
    ViChar busType[10];   // bus type such as GPIB, VXI or MXI
    // ADD "GPIB::" TO address string for visa inst
    strcpy(busType, ATCGenDevice[(ATCGen-1)].Bus);
    bus = strcat(busType, "::");
    strcpy(bus, busType);
    strcat (bus, ATCGenDevice[(ATCGen-1)].PriAddr);
    strcpy (resource, bus);

    if ((ATC_status = ATC_initialize (resource, VI_OFF, VI_OFF,
                         &ATCGenSession[(ATCGen-1)])) < 0)
    {
      ATCGenSession[(ATCGen-1)] = 0;
    }
    else {
      // Set variable so other driver calls won't bail out
      ATCGenConnect[(ATCGen-1)] = ON;
    }
  }
  else if (strcmp ("RS232", ATCGenDevice[(ATCGen-1)].Bus) == 0)
  {   // RS-232

    if((atoi(ATCGenDevice[(ATCGen-1)].PriAddr)> 0) &&
      (atoi(ATCGenDevice[(ATCGen-1)].PriAddr) <256))
    {
      Fmt (resource, "%s<ASRL%i::INSTR",
                     atoi (ATCGenDevice[(ATCGen-1)].PriAddr));
      if ((ATC_status = ATC_initialize (resource, VI_OFF,
               VI_OFF, &ATCGenSession[(ATCGen-1)])) < 0)
      {
        ATCGenSession[(ATCGen-1)] = 0;
      }
      else {
        ATCGenConfig.baudrate = DEFAULT_BAUD;
        ATCGenConfig.databits = DEFAULT_DBITS;
        ATCGenConfig.parity = DEFAULT_PARITY;
        ATCGenConfig.stopbits = DEFAULT_SBIT;

        // Set resource baud rate
        if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
             VI_ATTR_ASRL_BAUD, ATCGenConfig.baudrate)) < 0)
          return ATC_status;

        if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
            VI_ATTR_ASRL_DATA_BITS, ATCGenConfig.databits)) < 0)
          return ATC_status;

        if (ATCGenConfig.parity == 0)
        {
          if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                 VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_NONE)) < 0)
            return ATC_status;
        }
        else if (ATCGenConfig.parity == 1)
        {
          if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                 VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_ODD)) < 0)
            return ATC_status;
        }


        else if (ATCGenConfig.parity == 2)
        {
          if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
```

```
                    VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_EVEN)) < 0)
                return ATC_status;
            }
            else
              ATC_status = ERR_PARAMETER8;

            if (ATCGenConfig.stopbits == 1)
            {
              if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                    VI_ATTR_ASRL_STOP_BITS, VI_ASRL_STOP_ONE)) < 0)
                return ATC_status;
            }
            else if (ATCGenConfig.stopbits == 2)
            {
              if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                    VI_ATTR_ASRL_STOP_BITS, VI_ASRL_STOP_TWO)) < 0)
                return ATC_status;
            }
            else
              ATC_status = ERR_PARAMETER8;

            if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                VI_ATTR_ASRL_FLOW_CNTRL, VI_ASRL_FLOW_RTS_CTS)) < 0)
              return ATC_status;

            // Set variable so other driver calls won't bail out
            ATCGenConnect[(ATCGen-1)] = ON;
          }
        }
        else
        {
          ATC_status = ERR_PARAMETER6;   // set error status code
        }
      }
      else if (strcmp ("ETHERNET", ATCGenDevice[(ATCGen-1)].Bus) == 0)
      {   // Ethernet
        Fmt (resource, "TCPIP::%s::2001::SOCKET",
                          ATCGenDevice[(ATCGen-1)].PriAddr);

        if ((ATC_status = ATC_initialize (resource, VI_OFF,
                      VI_OFF, &ATCGenSession[(ATCGen-1)])) < 0)
        {
          ATCGenSession[(ATCGen-1)] = 0;
        }
        else
        {
          // Set variable so other driver calls won't bail out
          ATCGenConnect[(ATCGen-1)] = ON;
        }
      }
      else
        ATC_status = ERR_PARAMETER5;
    }
  }

  return ATC_status;                    // return error status code
}

//=============================================================================
// Function: Close
// Purpose:  This function closes the instrument.
// Parameter List: ATCGen - Generator number
// Return Values: Zero on success, non-zero otherwise
```

```
//===========================================================================
ViStatus _VI_FUNC ATC_close (ViInt16 ATCGen)
{
  ViSession rmSession;
  ViSession *instPtr;
  ViStatus ATC_status = VI_SUCCESS;


  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;   // set error status code
  else
  {
    if (ATCGenConnect[(ATCGen-1)] == OFF)   // Disconnected
    { // do nothing
    }
    else if (strcmp(ATCGenDevice[(ATCGen-1)].Type, "ATC-5000NG") == 0)
    {
      if ((ATC_status = viGetAttribute (ATCGenSession[(ATCGen-1)],
                             VI_ATTR_RM_SESSION, &rmSession)) < 0)
        return ATC_status;

      if ((ATC_status = viGetAttribute (ATCGenSession[(ATCGen-1)],
                               VI_ATTR_USER_DATA, &instPtr)) < 0)
        return ATC_status;

      if ((ATC_status = viClose (ATCGenSession[(ATCGen-1)])) < 0)
        return ATC_status;

      if ((ATC_status = viClose (rmSession)) < 0)
        return ATC_status;

      ATC_status = ATC_sessionInfoClose (ATCGenSession[(ATCGen-1)]);

      if (instPtr != NULL)
        free (instPtr);
     }
  }

  return ATC_status;
}

//===========================================================================
// Function: ATC_writeInstrData
// Purpose:  This function writes a command string to the instrument.
// Parameter List: ATCGen - Generator number
//                 writeBuffer - String to write
//                 waitToNxtCmd - Delay to next command
// Return Values: Zero on success, non-zero otherwise
//===========================================================================
ViStatus _VI_FUNC ATC_writeInstrData (ViInt16 ATCGen,
                        ViString writeBuffer,
                        ViReal64 waitToNxtCmd)
{
  ViStatus ATC_status = VI_SUCCESS;
  ViChar WriteBuf[200] = "", Terminator[3] = "";
  ViInt32 bytes;
  ViInt16 retry;
  ViUInt16 statusbyte = 0;
  ViChar resourceName[50] = "";
  clock_t   start_time;
  long   device = 0;

  Terminator[0]=0x0d;                // Add CR and null to end of string
```

```
  Terminator[1]=0x00;
  Fmt(WriteBuf,"%s<%s%s", writeBuffer, Terminator);
  bytes = strlen (WriteBuf);

  retry = 0;                    // Initialize

  if (strcmp (OutBuffer, writeBuffer) != 0)
  {
    strcpy (OutBuffer, writeBuffer);
  }

  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;   // set error status code

  if ((ATC_status = ATC_sessionInfoResource (ATCGenSession[(ATCGen-1)],
                                             resourceName)) < 0)
    return ATC_status;



  if (FindPattern (resourceName, 0, -1, "ASRL", 0, 0) != -1)
  {
RETRY1:
    // Flush input and output buffer
    if ((ATC_status = viFlush (ATCGenSession[(ATCGen-1)],
                                       VI_WRITE_BUF_DISCARD)) < 0)
      return ATC_status;

    if ((ATC_status = viFlush (ATCGenSession[(ATCGen-1)],
                                       VI_READ_BUF_DISCARD)) < 0)
      return ATC_status;

    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
      return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
                               (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
    {
      // Log this as the last command transmission time
      if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                             waitToNxtCmd)) < 0)
        return ATC_status;

      if (retry++ < 1)
        goto RETRY1;
      return ATC_status;
    }

    // Log this as the last command transmission time
    if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                             waitToNxtCmd)) < 0)
      return ATC_status;

  }
  else if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
  {
    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
      return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
```

```
                              (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
      return ATC_status;
    // Log this as the last command transmission time
    if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                          waitToNxtCmd)) < 0)
      return ATC_status;

    start_time = clock() ;
    do{
      ATC_status = viReadSTB( ATCGenSession[(ATCGen-1)], &statusbyte ) ;
      if( (clock()-start_time) > 5000 )
        break ;
    }while((statusbyte & 0x20) == 0 ); //Completion BIT not set

    if( (statusbyte & 0x10) != 0 ) //Message Available
    {
      ATC_status = ReadAndStoreIntoBuffer( ATCGenSession[(ATCGen-1)] ) ;

      if((saved_buffer[device][0] == '!') ||
                         (saved_buffer[device][0] == '?')) // error
      {
        ClearStoredBuffer( ATCGenSession[(ATCGen-1)] ) ;
        return ATC_ERROR_COMMAND_ERROR ;
      }
      // normal return from some commands
      if( saved_buffer[device][0] == '*' )
      {
        //ClearStoredBuffer( ATCGenSession[(ATCGen-1)] ) ;
        return ATC_status ;
      }
    }

  }


  else if (FindPattern (resourceName, 0, -1, "TCPIP", 0, 0) != -1)
  {
    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
      return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
                              (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
      return ATC_status;
    // Log this as the last command transmission time
    if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                          waitToNxtCmd)) < 0)
      return ATC_status;

    // If the command is a querry
    if (FindPattern (WriteBuf, 0, -1, "?", 0, 0) == -1)
    {
    Delay (WAITTIME0_02);
    }
  }
  return ATC_status;
}

//=============================================================================
// Function: ATC_readInstrData
// Purpose:  This function reads the output buffer of the instrument.
// Parameter List: ATCGen - Generator number
//            numberBytesToRead - maximum bytes to read
```

```
//              readBuffer - String to write
//              numBytesRead - bytes actually read
// Return Values: Zero on success, non-zero otherwise
//=============================================================================
ViStatus _VI_FUNC ATC_readInstrData (ViInt16 ATCGen,
                        ViInt32 numberBytesToRead,
                        ViChar _VI_FAR readBuffer[],
                        ViPInt32 numBytesRead)
{
  ViInt32 k, index;
  ViChar Buf[1024];
  ViStatus ATC_status = VI_SUCCESS;
  ViInt32 comma = 0, buffer_num = 0;
  long device = 0;
  ViChar resourceName[50] = "";

  *numBytesRead = 0L;

  memset (readBuffer, 0x0, sizeof (readBuffer));
  memset (tmp_buffer, 0x0, sizeof (tmp_buffer));
  memset (Buffer, 0x0, sizeof (Buffer));
  memset (Buffer1, 0x0, sizeof (Buffer1));
  memset (Buffer2, 0x0, sizeof (Buffer2));
  memset (Buffer3, 0x0, sizeof (Buffer3));
  memset (Buffer4, 0x0, sizeof (Buffer4));
  memset (Buffer5, 0x0, sizeof (Buffer5));
  memset (Buffer6, 0x0, sizeof (Buffer6));
  memset (Buffer7, 0x0, sizeof (Buffer7));
  memset (Buffer8, 0x0, sizeof (Buffer8));
  memset (Buffer9, 0x0, sizeof (Buffer9));
  memset (Buffer10, 0x0, sizeof (Buffer10));
  memset (Buffer11, 0x0, sizeof (Buffer11));
  memset (Buffer12, 0x0, sizeof (Buffer12));
  memset (Buffer13, 0x0, sizeof (Buffer13));
  memset (Buffer14, 0x0, sizeof (Buffer14));
  memset (Buffer15, 0x0, sizeof (Buffer15));
  memset (Buffer16, 0x0, sizeof (Buffer16));
  memset (Buffer17, 0x0, sizeof (Buffer17));
  memset (Buffer18, 0x0, sizeof (Buffer18));
  memset (Buffer19, 0x0, sizeof (Buffer19));

  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;   // set error status code

   if ((ATC_status = ATC_sessionInfoResource (ATCGenSession[(ATCGen-1)],
                                              resourceName)) < 0)
    return ATC_status;



  // check for data in buffer
  if( is_buffer_occupied[device] != 0 )
  {
    strncpy( readBuffer, saved_buffer[device], numberBytesToRead-1 );
    readBuffer[numberBytesToRead-1] = 0;
    *numBytesRead = strlen( saved_buffer[device] );
    ClearStoredBuffer( ATCGenSession[(ATCGen-1)] );
    return 0;
  }

  // Make sure to wait the minimum amount of time between commands
  if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
    return ATC_status;
```

```
if ((ATC_status = viRead (ATCGenSession[(ATCGen-1)], (ViPBuf)readBuffer,
        numberBytesToRead, (ViPUInt32)numBytesRead)) < 0)
{  // Retry especially in case of timeout
   // Log this as the last command transmission time
   if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                             WAITTIME0_03)) < 0)
      return ATC_status;

   memset (readBuffer, 0x0, sizeof (readBuffer));

   if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
      return ATC_status;

   if ((ATC_status = ATC_writeInstrData(ATCGenSession[(ATCGen-1)],
                        (ViString)OutBuffer, WAITTIME0_03)) < 0)
      return ATC_status;
   // Log this as the last command transmission time
   if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                             WAITTIME0_03)) < 0)
      return ATC_status;

   // Make sure to wait the minimum amount of time between commands
   if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
      return ATC_status;

   if ((ATC_status = viRead (ATCGenSession[(ATCGen-1)], (ViPBuf)readBuffer,
        numberBytesToRead, (ViPUInt32)numBytesRead)) < 0)
      return ATC_status;
}
// Log this as the last command transmission time
if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                             WAITTIME0_03)) < 0)
   return ATC_status;

index = FindPattern (readBuffer, 0, -1, "\r", 0, 0); // Find CR
if (index != -1)
{   // Remove line feed
   readBuffer[index] = 0;
   *numBytesRead = strlen (readBuffer);
}
else
{
     if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
   {  // no carrage return on gpib return
   }
   else
   {   // Incomplete read
      return ATC_ERROR_INVALID_COMMAND;
   }
}

j = 0;
memset (Equal, 0, sizeof (Equal));
memset (Separator, 0, sizeof (Separator));
for (i = 0; i <= *numBytesRead; ++i)       // Separate parameters
{
   if (readBuffer[i] == 0x3d)            // =
      Equal[j] = i;                     // Store index of = sign


   if (readBuffer[i] == 0x3b ||           // ;
      (readBuffer[i] == 0xd && Equal[0] != 0) ||  // CR
```

```
    (readBuffer[i] == 0xa && Equal[0] != 0      // LF
    && readBuffer[i-1] != 0xd))
  {
    Separator[j] = i;               // Store index of separator
    ++j;
  }
}
Separator[j] = i - 1;               // set end of string

// Parse data with 'equal' separator
for (k = 0; k < j; ++k)             // extract parameters
{
  for (i = Equal[k] + 1; i < Separator[k]; ++i)
  {
    Buf[i-(Equal[k] + 1)] = readBuffer[i];
  }

  Buf[i-(Equal[k] + 1)] = 0;        // store values

  if (Equal[k] == 0) break;

  Fmt(tmp_buffer[k], "%s<%s", Buf);
}

// Parse data with 'comma' separator
buffer_num = 0;
for (index = 0; index < k; index++)
{
  comma = 0;
  do
  {
    if ((comma = FindPattern (tmp_buffer[index], 0, -1, ",", 0, 0)) != -1)
    {  // Comma found
      switch (buffer_num)
      {
      case 0:
        Fmt (Buffer, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 1:
        Fmt (Buffer1, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 2:
        Fmt (Buffer2, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 3:
        Fmt (Buffer3, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 4:
        Fmt (Buffer4, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 5:
        Fmt (Buffer5, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 6:
        Fmt (Buffer6, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 7:
        Fmt (Buffer7, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 8:
        Fmt (Buffer8, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
      case 9:
```

```
      Fmt (Buffer9, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 10:
      Fmt (Buffer10, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 11:
      Fmt (Buffer11, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;


    case 12:
      Fmt (Buffer12, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 13:
      Fmt (Buffer13, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 14:
      Fmt (Buffer14, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 15:
      Fmt (Buffer15, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 16:
      Fmt (Buffer16, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 17:
      Fmt (Buffer17, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 18:
      Fmt (Buffer18, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    case 19:
      Fmt (Buffer19, "%s<%s[i0w*]", comma, tmp_buffer[index]);
      break;
    }

    Fmt (tmp_buffer[index], "%s<%s[i*w*]", comma+1,
       strlen(tmp_buffer[index])-comma-1, tmp_buffer[index]);
  }
  else
  {
    switch (buffer_num)
    {
    case 0:
      strcpy (Buffer, tmp_buffer[index]);
      break;
    case 1:
      strcpy (Buffer1, tmp_buffer[index]);
      break;
    case 2:
      strcpy (Buffer2, tmp_buffer[index]);
      break;
    case 3:
      strcpy (Buffer3, tmp_buffer[index]);
      break;
    case 4:
      strcpy (Buffer4, tmp_buffer[index]);
      break;
    case 5:
      strcpy (Buffer5, tmp_buffer[index]);
      break;
    case 6:
      strcpy (Buffer6, tmp_buffer[index]);
```

```
          break;
        case 7:
          strcpy (Buffer7, tmp_buffer[index]);
          break;
        case 8:
          strcpy (Buffer8, tmp_buffer[index]);
          break;
        case 9:
          strcpy (Buffer9, tmp_buffer[index]);
          break;
        case 10:
          strcpy (Buffer10, tmp_buffer[index]);
          break;
        case 11:
          strcpy (Buffer11, tmp_buffer[index]);
          break;
        case 12:
          strcpy (Buffer12, tmp_buffer[index]);
          break;
        case 13:
          strcpy (Buffer13, tmp_buffer[index]);
          break;


        case 14:
          strcpy (Buffer14, tmp_buffer[index]);
          break;
        case 15:
          strcpy (Buffer15, tmp_buffer[index]);
          break;
        case 16:
          strcpy (Buffer16, tmp_buffer[index]);
          break;
        case 17:
          strcpy (Buffer17, tmp_buffer[index]);
          break;
        case 18:
          strcpy (Buffer18, tmp_buffer[index]);
          break;
        case 19:
          strcpy (Buffer19, tmp_buffer[index]);
          break;
        }
      }
      buffer_num++;              // Increment buffer counter
    } while (comma != -1);
  }

  // Check to see if the command was read as a result. If so, there is
  // an error.
  if (strcmp (readBuffer, OutBuffer) == 0)
    return VI_ERROR_INV_RESPONSE;

  return ATC_status;
}

//==========================================================================
//Function: ATC_read_IDN
//Purpose:  This function performs the *IDN? query and returns the Manufacturer
//          Description and part number as strings.
//==========================================================================
ViStatus _VI_FUNC ATC_read_IDN (ViSession instrumentHandle,
                     ViChar mfg[],
```

```
                  ViChar desc[],
                  ViChar pn[])
{
  ViStatus ATC_status = VI_SUCCESS;
  ViInt32 pos = -1;
  ViChar tmpchar[100] = {0};

//---------------------------- Output to ATC   -------------------------
  Fmt (OutBuffer, "%s<*IDN?");

  // Change timeout
  if ((ATC_status = viSetAttribute (instrumentHandle, VI_ATTR_TMO_VALUE,
                                      TIME_OUT_NORM_VAL))<0)
    return ATC_status;

  if ((ATC_status = ATC_writeInstrData(instrumentHandle,
                          (ViString)OutBuffer, WAITTIME0_02)) < 0)
    return ATC_status;

//---------------------------- Input Parameters ---------------------------
  if ((ATC_status = ATC_readInstrData (instrumentHandle, 150, InBuffer,
                              &bytesRead)) < 0)
    return ATC_status;

  // Restore
  if ((ATC_status = viSetAttribute (instrumentHandle, VI_ATTR_TMO_VALUE,
                                      TIME_OUT_NORM_VAL))<0)
    return ATC_status;

  mfg[0] = NULL;
  desc[0] = NULL;
  pn[0] = NULL;




  // Manufacturer
  pos = FindPattern (InBuffer, 0, -1, ";", 0, 0);
  if (pos != -1)
  {
    Fmt (mfg, "%s<%s[i0w*]", pos, InBuffer);
    RemoveSurroundingWhiteSpace (mfg);

    strcpy (tmpchar, InBuffer);
    Fmt (InBuffer, "%s<%s[i*w*]", pos+1, (strlen(tmpchar)-pos)-1, tmpchar);
  }
  else
    return ATC_ERROR_INVALID_CONFIGURATION;

  // Instrument description
  pos = FindPattern (InBuffer, 0, -1, ";", 0, 0);
  if (pos != -1)
  {
    Fmt (desc, "%s<%s[i0w*]", pos, InBuffer);
    RemoveSurroundingWhiteSpace (desc);

    strcpy (tmpchar, InBuffer);
    Fmt (InBuffer, "%s<%s[i*w*]", pos+1, (strlen(tmpchar)-pos)-1, tmpchar);
  }
  else
    return ATC_ERROR_INVALID_CONFIGURATION;

  // PN number
```

```
  pos = 0;
  if (strlen(InBuffer)>0)
  {
    Fmt (pn, "%s<%s[i0w*]", pos, InBuffer);
    RemoveSurroundingWhiteSpace (pn);
  }
  else
    return ATC_ERROR_INVALID_CONFIGURATION;


  return ATC_status;
}

//===========================================================================
// Function: Reset
// Purpose:  This function resets the instrument. If the reset function
//           is not supported by the instrument, this function returns
//           the warning VI_WARN_NSUP_RESET.
//===========================================================================
ViStatus _VI_FUNC ATC_reset (ViInt16 ATCGen)
{
  ViStatus ATC_status = VI_SUCCESS;

  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;   // set error status code

  //  Initialize the instrument to a known state
  if ((ATC_status = ATC_writeInstrData (ATCGen, ":ATC:RESET",
                                        WAITTIME0_02))< 0)
    return ATC_status;

  Delay (WAITTIME10_00);

  if ((ATC_status = ATC_readInstrData (ATCGen, 150, InBuffer,
                                   &bytesRead)) < 0)
  if(FindPattern (InBuffer, 0, -1, "*", 0, 0) == -1)
    return ATC_ERROR_COMMAND_ERROR;

  return ATC_status;

}


//===========================================================================
// Function: errorQuery
// Purpose:  This function requests the instrument status.
//           This is only valid on newer versions of the ATC system software
//           after 4/15/2017
//===========================================================================
ViStatus _VI_FUNC ATC_errorQuery (ViInt16 ATCGen, ViInt32 *statusCode,
                        ViChar _VI_FAR message[])
{

  ViStatus ATC_status = VI_SUCCESS;

  if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1;   // set error status code

  //  Request the status
  if ((ATC_status = ATC_writeInstrData (ATCGen, ":ATC:STATUS?\r",
                                        WAITTIME0_02))< 0)
    return ATC_status;
```

```
  if ((ATC_status = ATC_readInstrData (ATCGen, 150, InBuffer,
                                                   &bytesRead)) < 0)
    return ATC_status;

  if((FindPattern (InBuffer, 0, -1, "?", 0, 0) >= 0) ||
                  (FindPattern (InBuffer, 0, -1, "!", 0, 0) >= 0))
    return ATC_ERROR_COMMAND_ERROR;

  *statusCode = (ViInt32)atoi(InBuffer);

  Fmt(message,"%s<");

  if( *statusCode & 1)
    Fmt(message,"%s[a]<%s", "Last Command Syntax Error, ");
  if( *statusCode & 2)
    Fmt(message,"%s[a]<%s", "Execution Error, ");
  if( *statusCode & 32)
    Fmt(message,"%s[a]<%s", "Command Complete/Unit Ready ");

// Status byte bit meaning
// D0  Last Command Syntax Error
// D1  Execution Error, Detectable Unit Function Failure.
//                  Clear by GPIB command *CLS.
// D4  Transmitter Queue Not Empty (Data available for GPIB read),(GPIB Only)
// D5  Command Complete/Unit Ready

  return ATC_status;
}

//=============================================================================
//= UTILITY ROUTINES (Non-Exportable Functions) ===============================
//=============================================================================

//=============================================================================
// Function: Initialize
// Purpose:  This function opens the instrument, queries the instrument
//          for its ID, and initializes the instrument to a known state.
//=============================================================================
ViStatus ATC_initialize (ViRsrc resourceName, ViBoolean IDQuery,
            ViBoolean resetDevice, ViPSession instHandle)
{
  ViStatus ATC_status = VI_SUCCESS;
  ViSession rmSession = 0;

  //- Check input parameter ranges ----------------------------------------
  if (ATC_invalidViBooleanRange (IDQuery))
    return VI_ERROR_PARAMETER2;
  if (ATC_invalidViBooleanRange (resetDevice))
    return VI_ERROR_PARAMETER3;

  //- Open instrument session ---------------------------------------------
  if ((ATC_status = viOpenDefaultRM (&rmSession)) < 0)
    return ATC_status;



  if ((ATC_status = viOpen (rmSession, resourceName, VI_NULL, VI_NULL,
                                                   instHandle)) < 0)
  {
    viClose (rmSession);
    return ATC_status;
  }
```

```
// Register this session in the command wait system
if ((ATC_status = ATC_sessionInfoOpen (*instHandle, resourceName)) < 0)
  return ATC_status;


if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
{
  //- Configure VISA Formatted I/O ------------------------------------
  if ((ATC_status = viSetAttribute(*instHandle,VI_ATTR_TMO_VALUE,
                                          TIME_OUT_NORM_VAL))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetBuf(*instHandle,VI_READ_BUF|VI_WRITE_BUF,4000))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
             VI_FLUSH_ON_ACCESS)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
             VI_FLUSH_ON_ACCESS)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  // Send EOI
  if ((ATC_status = viSetAttribute (*instHandle,
                                 VI_ATTR_SEND_END_EN, VI_TRUE))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

}
else if (FindPattern (resourceName, 0, -1, "ASRL", 0, 0) != -1)
{
  //- Configure VISA Formatted I/O ------------------------------------
  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TMO_VALUE,
                                          TIME_OUT_NORM_VAL))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetBuf(*instHandle,
                                VI_READ_BUF|VI_WRITE_BUF, 4000))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
                                        VI_FLUSH_WHEN_FULL)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
                                          VI_FLUSH_DISABLE)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_ASRL_END_IN,
                                      VI_ASRL_END_TERMCHAR)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TERMCHAR_EN,
                                                VI_TRUE))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

  if ((ATC_status = viSetAttribute (*instHandle,
                                    VI_ATTR_TERMCHAR, '\n')) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);
}
else if (FindPattern (resourceName, 0, -1, "TCPIP", 0, 0) != -1)
{
  //- Configure VISA Formatted I/O ------------------------------------
```

```
    if ((ATC_status = viSetAttribute(*instHandle, VI_ATTR_TMO_VALUE,
                                          TIME_OUT_NORM_VAL))<0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);



    if ((ATC_status = viSetBuf(*instHandle,
                              VI_READ_BUF|VI_WRITE_BUF, 4000))<0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
               VI_FLUSH_ON_ACCESS)) < 0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
               VI_FLUSH_ON_ACCESS)) < 0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TERMCHAR_EN,
                                              VI_TRUE))<0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle,
                                VI_ATTR_TERMCHAR, '\n')) < 0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);
  }

  if (IDQuery)
  {
    ViChar mfg[50], desc[50], pn[50];
    if ((ATC_status = ATC_read_IDN (*instHandle, mfg, desc, pn)) < 0)
      return ATC_initCleanUp (rmSession, instHandle,
                                   VI_ERROR_FAIL_ID_QUERY);
  }

  //- Reset instrument ---------------------------------------------------
  if (resetDevice)
  {
    if (IDQuery)
      Delay(WAITTIME0_02);
    if ((ATC_status = ATC_reset (*instHandle)) < 0)
      return ATC_initCleanUp (rmSession, instHandle, ATC_status);
  }

  return ATC_status;
}

//===========================================================================
// Function: Log session into wait list
// Purpose:  This function adds the session to the open list
//===========================================================================
ViStatus ATC_sessionInfoOpen (ViSession instHandle, ViRsrc resourceName)
{
  int index;

  // Check to see if the session handle already exists
  for (index = 0; index < MAX_SESSIONS; index++)
  {
    if (sessionInfo[index].session == instHandle)
      break;
  }
  if (index < MAX_SESSIONS)
    return ATC_ERROR_SESSION_ALREADY_EXITS;
```

```
    // Check to see if there is room to open another session handle
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == 0)
        {
            strcpy (sessionInfo[index].resourceName, resourceName);
            sessionInfo[index].session     = instHandle;
            sessionInfo[index].curWaitTime = WAITTIME0_02;
            sessionInfo[index].startTime   = Timer();

            return VI_SUCCESS;
        }
    }

    // Return error
    return ATC_ERROR_TOO_MANY_SESSIONS;
}



//===============================================================================
// Function: Remove session from wait list
// Purpose:  This function removes the session from the open list
//===============================================================================
ViStatus ATC_sessionInfoClose (ViSession instHandle)
{
    int index;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    // Session not open abort
    if (index >= MAX_SESSIONS)
        return ATC_ERROR_CMD_WAIT;

    sessionInfo[index].session     = 0;
    sessionInfo[index].curWaitTime = 0;
    sessionInfo[index].startTime   = 0;
    strcpy (sessionInfo[index].resourceName, "");

    return VI_SUCCESS;
}

//===============================================================================
// Function: Get session from wait list
// Purpose:  This function gets the resource name from the open list
//===============================================================================
ViStatus ATC_sessionInfoResource (ViSession instHandle, ViChar resourceName[])
{
    int index;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    // Session not open abort
    if (index >= MAX_SESSIONS)
```

```
    return ATC_ERROR_CMD_WAIT;

  strcpy (resourceName, sessionInfo[index].resourceName);

  return VI_SUCCESS;
}

//==========================================================================
// Function: Wait to commincate with instrument
// Purpose:  This function waits for the previous mimium delay to have
//           occured before proceeding.
//==========================================================================
ViStatus ATC_nxtCmdWait (ViSession instHandle)
{
  int index;
  double delay;

  // find session index
  for (index = 0; index < MAX_SESSIONS; index++)
  {
    if (sessionInfo[index].session == instHandle)
      break;
  }
  // Invalid Session abort
  if (index >= MAX_SESSIONS)
    return ATC_ERROR_CMD_WAIT;

  // Wait until the minimum delay has been achieved
  do {
    delay = Timer() - sessionInfo[index].startTime;
  } while (delay < sessionInfo[index].curWaitTime);

  return VI_SUCCESS;
}


//==========================================================================
// Function: Log last command transmission
// Purpose:  This function stores the timer count when called to indicate
//           the time when the instrument was last communicated with.
//==========================================================================
ViStatus ATC_nxtCmdLog (ViSession instHandle, ViReal64 waitToNxtCmd)
{
  int index;

  // find session index
  for (index = 0; index < MAX_SESSIONS; index++)
  {
    if (sessionInfo[index].session == instHandle)
      break;
  }

  // Invalid Session abort
  if (index >= MAX_SESSIONS)
    return ATC_ERROR_CMD_WAIT;

  sessionInfo[index].startTime   = Timer();
  sessionInfo[index].curWaitTime = waitToNxtCmd;

  return VI_SUCCESS;
}

//==========================================================================
```

```
//  Function Name: ReadAndStoreIntoBuffer()
//        Purpose: Reads over GPIB and stores the result into a buffer.
// Parameter List: instHandle - VISA session handle
//  Return Values: Zero on success, non-zero otherwise
//===========================================================================
static long ReadAndStoreIntoBuffer( ViSession instHandle )
{
   long          device = 0 ;
   unsigned long   ret_count = 0 ;
   long          status ;

   if ((status = ATC_nxtCmdWait (instHandle)) < 0)
      return status;

   status = viRead( instHandle, (unsigned char*) saved_buffer[device],
                                                 511, &ret_count );
         // Log this as the last command transmission time
   if ((status = ATC_nxtCmdLog (instHandle, WAITTIME0_03)) < 0)
      return status;

   saved_buffer[device][ret_count] = 0 ;
   if( status < 0 )
      return status ;

   is_buffer_occupied[device] = (ret_count>0)?1:0 ;
   return status ;
}

//===========================================================================
//  Function Name: ClearStoredBuffer()
//        Purpose: Clears the buffer.
// Parameter List: instHandle - VISA session handle
//  Return Values: Zero on success, non-zero otherwise
//===========================================================================
static void ClearStoredBuffer( ViSession instHandle )
{
   long    device = 0 ;

   saved_buffer[device][0] = 0 ;
   is_buffer_occupied[device] = 0 ;
}



//===========================================================================
// Function: Boolean Value Out Of Range - ViBoolean
// Purpose:  This function checks a Boolean to see if it is equal to VI_TRUE
//           or VI_FALSE. If the value is out of range, the return value is
//           VI_TRUE, otherwise the return value is VI_FALSE.
//===========================================================================
ViBoolean ATC_invalidViBooleanRange (ViBoolean val)
{
   return ((val != VI_FALSE && val != VI_TRUE) ? VI_TRUE : VI_FALSE);
}

//===========================================================================
// Function: Initialize Clean Up
// Purpose:  This function is used only by the ATC_init function. When
//           an error is detected this function is called to close the
//           open resource manager and instrument object sessions and to
//           set the instHandle that is returned from ATC_init to
//           VI_NULL.
//===========================================================================
```

```
ViStatus ATC_initCleanUp (ViSession openRMSession,
          ViPSession openinstHandle, ViStatus currentStatus)
{
   viClose (*openinstHandle);
  viClose (openRMSession);
  *openinstHandle = VI_NULL;

  return currentStatus;
}

//==============================================================================
//=== END DRIVER FILE =======================================================
//
==============================================================================E
nd of Example program
```

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Section 3 - Specifications

1. ATC-5000NG PERFORMANCE SPECIFICATIONS

NOTE

A 60 minute (1 hour) warm-up period is required for all specifications.

Specifications are subject to change without notice.

Please refer to these notes which are referenced throughout product specifications.

1	Absolute output power under any test condition is limited to that shown under “Power” in the “TRANSMITTER” specification section.
2	Pulse Width/Position Exception: Block Mode timing accuracy +/-20 ns.
3	Any test configuration which results in SPR to P5 falling edge spacing >0.5 μs is not permitted and may result in unpredictable P5 behavior.
4	All-Call Long interrogations are limited to a PRF range of 1 Hz to 1 kHz.
5	Pulse-timing, measurement-accuracy specifications applicable for input signals at amplitudes ≥+30 dBm.

1.1 TRANSMITTER

1.1.1 FREQUENCY

Range:	952 to 1223 MHz
Resolution:	100 kHz
Accuracy:	2.5 ppm

1.1.2 POWER

Range:	
Transponder:	-110 to +5 dBm
Resolution:	0.1 dB
Accuracy:	±1 dB (-100 to +5 dBm) ±3 dB (<-100 dBm) at 1030 MHz
UAT (Top RF I/O (Antenna) Port only):	-110 to +5 dBm
Resolution:	0.1 dB
Accuracy:	±1 dB (-100 to +5 dBm) ±3 dB (<-100 dBm) at 978 MHz
Multi-Receiver:	-90 to -20 dBm (Low Power Mode) -65 to +5 dBm (High Power Mode) -110 to -40 dBm (Very Low Power Mode)
Resolution:	1.0 dB
Accuracy:	±1 dB (-100 to +5 dBm) ±3 dB (<-100 dBm) at 978, 1030 and 1090 MHz
DO-260B:	-90 to -20 dBm (Low Power Mode) -65 to +5 dBm (High Power Mode) -110 to -40 dBm (Very Low Power Mode)
Resolution:	1.0 dB
Accuracy:	±1 dB (-100 to +5 dBm) ±3 dB (<-100 dBm) at 1090 MHz
DME (Top RF I/O (Antenna) Port only):	-110 to +5 dBm
Resolution:	0.1 dB
Accuracy:	±1 dB (-100 to +5 dBm) ±3 dB (<-100 dBm) at 952 to 1223 MHz

1.1.3 SPECTRAL PURITY (TYPICAL)

Harmonics:	<-50 dBc
Spurious:	<-55 dBc, 350 to 1800 MHz
Residual FM:	250 Hz Peak
Phase Noise	<80 dBc/Hz at 100 kHz
DME Pulse Spectrum:	<-52 dBc at ±800 kHz Offset

1.1.4 CHANNELS

DME Option:	2
XPDR/UAT:	4
ADS-B Option:	6

1.1.5 DIVERSITY

Power[1]:	±20 dB
Resolution:	0.1 dB
Accuracy:	±1 dB
Timing:	±1 μs
Accuracy:	±10 ns
Resolution:	25 ns

1.1.6 MODULATION

Pulse ON/OFF Ratio:	>80 dB

1.1.7 PULSE POSITION[2]

Mode A Interrogation:	
P1 to P3 Default:	8.0 μs
Accuracy:	±10 ns
Mode C Interrogation:	
P1 to P3 Default:	21.0 μs
Accuracy:	±10 ns
ATCRBS Interrogation:	
P1 to P2 Default:	2 μs
Accuracy:	±15 ns
P3 to P4 Default:	2 μs
Accuracy:	±15 ns
Variation:	
Range:	±1.95 μs
Resolution:	25 ns
Accuracy:	
P1 to P2:	±15 ns
P1 to P3:	±10 ns
P3 to P4:	±15 ns

Mode S Interrogation:	
P1 to P2 Default:	2.0 μs
Accuracy:	±10 ns
P2 Variation:	±1.95 μs
Resolution:	25 ns
Accuracy:	±10 ns
P6 to SPR Default:	1.25 μs
Accuracy:	±15 ns
P6 Variation:	±1.95 μs
Resolution:	25 ns
Accuracy:	±15 ns
P2 to SPR Default:	2.75 μs
Accuracy:	±15 ns
SPR Variation[3]:	±1.0 μs
Resolution:	25 ns
Accuracy:	±15 ns
P5 prior SPR Default:	400 ns
Accuracy:	±15 ns
P5 Variation[3]:	±1.95 μs
Resolution:	25 ns
Accuracy:	±15 ns
Interference Pulse:	
Signal 1 (relative to P1):	-17.5 to 400 μs
Resolution:	25 ns
Accuracy:	±20 ns
Signal 2 (relative to Signal 1):	0 to 400 μs
Resolution:	25 ns
Accuracy:	±10 ns
Double/Interlace Interrogation (P1 to P1):	0 to 400 μs
Resolution:	25 ns
Accuracy:	±10 ns
DME:	
P1 to P2 Default:	12 or 30 μs
Accuracy:	±50 ns
P1 to P2 Variable:	
DME X:	-2.5 to +7.9 μs
Resolution:	25 ns
Accuracy:	±50 ns
DME Y:	±7.9 μs
Resolution:	25 ns
Accuracy:	±50 ns

1.1.8 PULSE WIDTH[2]

(Specified accuracies apply to pulses of width ≥ 0.2 us.)

ATCRBS Interrogation:	
P1/P2/P3 Default:	0.8 μs
Accuracy:	±10 ns
P4 Short Default:	0.8 μs
Accuracy:	±10 ns
P4 Long Default:	1.6 μs
Accuracy:	±10 ns
P1/P2/P3/P4 Variation:	
P1/P2/P3:	0 to 1.95 μs
Resolution:	25 ns
Accuracy:	±10 ns
P4:	0 to 2.75 μs
Resolution:	25 ns
Accuracy:	±10 ns
Mode S Interrogation:	
P1/P2 Default:	0.8 μs
Accuracy:	±10 ns
P1/P2 Variation:	0 to 1.95 μs
Resolution:	25 ns
Accuracy:	±10 ns
P6 Short Default:	16.25 μs
Accuracy:	±10 ns
P6 Long Default:	30.25 μs
Accuracy:	±10 ns
P6 Variation (offset):	-0.5 to 1.45 μs
Resolution:	25 ns
Accuracy:	±10 ns
P5 Default:	0.8 μs
Accuracy:	±10 ns
P5 Variation[3]:	0.2 to 1.95 μs
Resolution:	25 ns
Accuracy:	±10 ns
Interference Pulse:	0.2 to 8 μs
Resolution:	25 ns
Accuracy:	±25 ns
DME:	
P1/P2 Default:	3.5 μs
Accuracy:	±250 ns
P1/P2 Variation:	3.5 to 9.0 μs
Resolution:	25 ns
Accuracy:	±250 ns

1.1.9 PULSE RISE/FALL TIME

Transponder:	<50/<50 ns (<50 ns)
DME:	2.0/2.5 μs
Accuracy:	±0.25 μs

1.1.10 PULSE AMPLITUDE (RELATIVE TO P1)[1]

ATCRBS Interrogation Variation (all pulses):	-19 to +9 dB
Resolution:	0.1 dB
Accuracy:	±0.5 dB
Mode S Interrogation Variation P2, P6 and P5 (SLS):	-19 to +9 dB
Resolution:	0.1 dB
Accuracy:	±0.5 dB
Interference:	-19 to +9 dB
Resolution:	0.1 dB
Accuracy:	±0.25 dB
DME Echo:	-15 to +6 dB
Resolution:	1.0 dB
Accuracy:	±0.5 dB

1.1.11 INTERROGATION TABLE/BURST MODE

Unique Messages:	1 to 1000
Interrogations/Burst:	1 to 10,000
Burst Spacing:	0 to 20 s (0 s for single burst transmission)
Resolution:	0.1 s
Accuracy:	±100 ms
Bursts/Trigger:	1, continuous or until stop command received

1.1.12 BLOCK TRANSMISSIONS

Unique Messages:	1 to 2000 messages
Number of Blocks:	1 to 50000 (no limit transmissions OFF) Infinite (no limit transmissions ON)
Interrogation Spacing within Block:	(User defined spacing between interrogations.)
Minimum:	10 μs
Maximum:	Block Period - 120 μs
Resolution:	1 μs
Period:	10 ms to 90 sec
Resolution:	1 ms
Accuracy:	±1 ms

1.1.13 PRF[4]

Single Interrogation:	1 Hz to 10 kHz
Resolution:	1 Hz
Accuracy:	0.1% of setting
Interrogation Table/Burst (Continuous and Burst):	1 Hz to 10 kHz
Resolution:	1 Hz
Accuracy:	0.1% of setting
Double Interrogation:	1 to 10 kHz (PRF of double message transmission)
Resolution:	1 Hz
Accuracy:	0.1% of setting
Interlace:	1 Hz to 10 kHz
Resolution:	1 Hz
Accuracy:	0.1% of setting

1.1.14 INTERLACE RATIO

1:1 to 1:1000

1.1.15 SUPPRESSOR PULSE

XPDR:	
Position:	3.4 μs (±0.3 μs) prior to P1 of interrogation
Width:	Duration of transmission
DME:	
Position:	3.4 μs prior to P1 of reply
Accuracy:	±0.3 μs
Width:	36 μs
Accuracy:	±2 μs
Amplitude:	>25 V (fixed)

1.1.16 DME SIMULATION

Equalizing Pulse Pair:	100 μs after Ident pulse pair
Accuracy:	±0.1 μs
Ident Frequency:	1350 Hz
Accuracy:	±0.02%
Dot Default:	120 ms
Accuracy:	±1 ms
Dot Variation:	50 to 250 ms
Resolution:	10 ms
Accuracy:	±1 ms
Dash Default:	360 ms
Accuracy:	±1 ms
Dash Variation:	150 to 750 ms
Resolution:	10 ms
Accuracy:	±1 ms

Space Default:	150 ms
Accuracy:	±1 ms
Space Variation:	50 to 250 ms
Resolution:	10 ms
Accuracy:	±1 ms
Code Rate Default:	30 sec
Accuracy:	±100 ms
Code Rate Variation:	10 to 65 sec
Resolution:	0.1 sec
Accuracy:	±100 ms
Echo Range:	30 nmi
Accuracy:	±0.02 nmi
Range:	-1 to 400 nmi
Resolution:	0.01 nmi
Accuracy:	±0.02 nmi
Velocity:	0 to 10000 knots
Resolution:	1 knot
Accuracy:	±0.001% of setting
Acceleration:	0 to 400 ft/s^2
Resolution:	1 ft/s^2
Accuracy:	±0.05% of setting
Squitter:	0 to 8000 Hz
Resolution:	1 Hz
Accuracy:	10 Hz or 2% (whichever is greater), distribution designed to comply with ARINC 709-5 at 2700 Hz
Reply Efficiency:	0% to 100%
Resolution:	1%
Accuracy:	±0.5%
RNAV	
X Channel Spacing	50 µs at 0 nmi
Accuracy	±0.5 µs
Y Channel Spacing	50 µs at 0 nmi
Accuracy	±0.5 µs
Width	7.0 µs
Accuracy	±1.0 µs

1.2 RECEIVER

1.2.1 VSWR

<1.4 (952 to 1223 MHz)

1.2.2 MAXIMUM INPUT POWER

+60 dBm

1.2.3 RECEIVER DECODING MESSAGES

ATCRBS and Mode S Replies, UAT Ground and Airborne Messages, DME Interrogations

1.2.4 OPERATING RANGE

XPDR:	+17 to +60 dBm (1090 MHz, ±3 MHz)
UAT:	+30 to +57 dBm (978 MHz, ±3 MHz)
DME:	+17 to +60 dBm (1020 to 1155 MHz)

1.2.5 CHANNELS

2 (Top/Bottom)

1.2.6 MEASUREMENT

Power:	
XPDR:	+17 to +60 dBm (1090 MHz, ±3 MHz)
Resolution:	0.1 dB
Accuracy:	±0.5 dB
DME:	+17 to +60 dBm (1020 to 1155 MHz)
Resolution:	0.1 dB
Accuracy:	±0.5 dB
Frequency:	
XPDR:	1090 MHz (±3 MHz)
DME:	1020 to 1155 MHz (RX Channels, ±1 MHz)
Resolution:	1 kHz
Accuracy:	±50 kHz (XPDR) ±20 kHz (DME)
Pulse Spacing[5]:	
Resolution:	1 ns
Accuracy:	±10 ns (XPDR) ±50 ns (DME)
Pulse Width[5]:	
Resolution:	1 ns
Accuracy:	±15 ns (XPDR) ±50 ns (DME)
Pulse Rise/Fall Time[5]:	
Resolution:	1 ns
Accuracy:	±15 ns (XPDR) ±100 ns (DME)

ATCRBS Reply Delay:	
Resolution:	25 ns
Accuracy:	±50 ns
Mode S Reply Delay:	
Resolution:	25 ns
Accuracy:	±50 ns
Reply Jitter:	
Resolution:	1 ns
Accuracy:	±20 ns
Percent Reply:	0% to 100% (Sample size equal to PRF or 200, whichever is greater)
Resolution:	0.1%
Accuracy:	±1%
Mode S Squitter Rate:	
Range:	
DF11:	0.01 to 4.0 s
DF17:	
Airborne Position:	0.01 to 2.0 s
Surface Position:	0.01 to 15.0 s
A/C Identification:	0.01 to 25.0 s
Airborne Velocity:	0.01 to 2.0 s
Event Driven:	0.01 to 25.0 s
Resolution:	1 ms
Accuracy:	±1 ms, ±2.5 ppm
Interrogation Rate (DME):	0 to 10 kHz
Resolution:	1 Hz
Accuracy:	±1 Hz

1.2.7 SCOPE TRIGGER OUTPUT (SCOPE 1 AND SCOPE 2)

Width:	1 μs (±0.5 μs)
XPDR Position:	
Interrogation:	-1 to +600 μs prior to P1
Default Position:	-1.0 μs
Resolution:	25 ns
Accuracy:	±0.5 μs typical
Reply:	-1 μs prior to first pulse of reply (F1/P1)
Resolution:	25 ns
Accuracy:	±0.5 μs typical

DME Position:	
Squitter/Echo/Ident/Reply:	4.5 μs prior to first pulse of any selected transmission
Accuracy:	±0.5 μs
Interrogation:	2.5 μs following the rising edge of received interrogation pulse P1
Accuracy:	±0.5 μs typical

1.3 ENVIRONMENTAL

1.3.1 FULL SPECIFIED PERFORMANCE

23°C (±5°C)
Full specification performance requires a 1 hour warm-up from cold start.

1.3.2 OPERATING

0°C to 40°C

1.3.3 STORAGE

0°C to +71°C

1.3.4 RELATIVE HUMIDITY

0 to 95% non-condensing

1.3.5 DEGREE OF PROTECTION

IPX-0

1.3.6 PHYSICAL

Overall Dimensions:	10.5 in (H) x 19 in (W) x 24 in (D) (26.7 cm x 48.3 cm x 60.9 cm)
Weight:	41 lbs. (19 kg)

1.4 AC INPUT POWER

1.4.1 VOLTAGE RANGE

100 to 240 VAC, 50 to 60 Hz

1.4.2 POWER CONSUMPTION

100 W typical

1.5 COMPLIANCE/STANDARDS

The ATC-5000NG has been evaluated and meets the requirements of the following:

1.5.1 DIRECTIVES

Applicable requirements of the following directives:

EMC Directive (2014/30/EU) (CE Marking)
Low Voltage Directive (2014/35/EU)

1.5.2 EMC COMPLIANCE

EN 61326-1:2013
MIL-PRF-28800F (Class 3) Device Specifications

1.5.3 SAFETY STANDARDS

UL/EN 61010-1: 2010 3rd Edition

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Section 4 – Shipping

1. SHIPPING TEST SETS

1.1 INFORMATION

VIAVI Test Sets returned to factory for calibration, service or repair must be repackaged and shipped according to the following conditions:

1.1.1 AUTHORIZATION

Do not return any products to factory without first receiving authorization from VIAVI Customer Service Department.

VIAVI Solutions

Customer Service Department

10200 West York Street

Wichita, KS 67215

Telephone: 800-835-2350

Fax: 316-529-5330

email: AvComm.Service@viavisolutions.com

1.1.2 TAGGING TEST SETS

All Test Sets must be tagged with:

- Identification and address of owner
- Nature of service or repair required
- Model Number
- Serial Number

1.1.3 SHIPPING CONTAINERS

Test Sets must be repackaged in original shipping containers using VIAVI packing molds. If original shipping containers and materials are not available, contact VIAVI Customer Service for shipping instructions.

1.1.4 FREIGHT COSTS

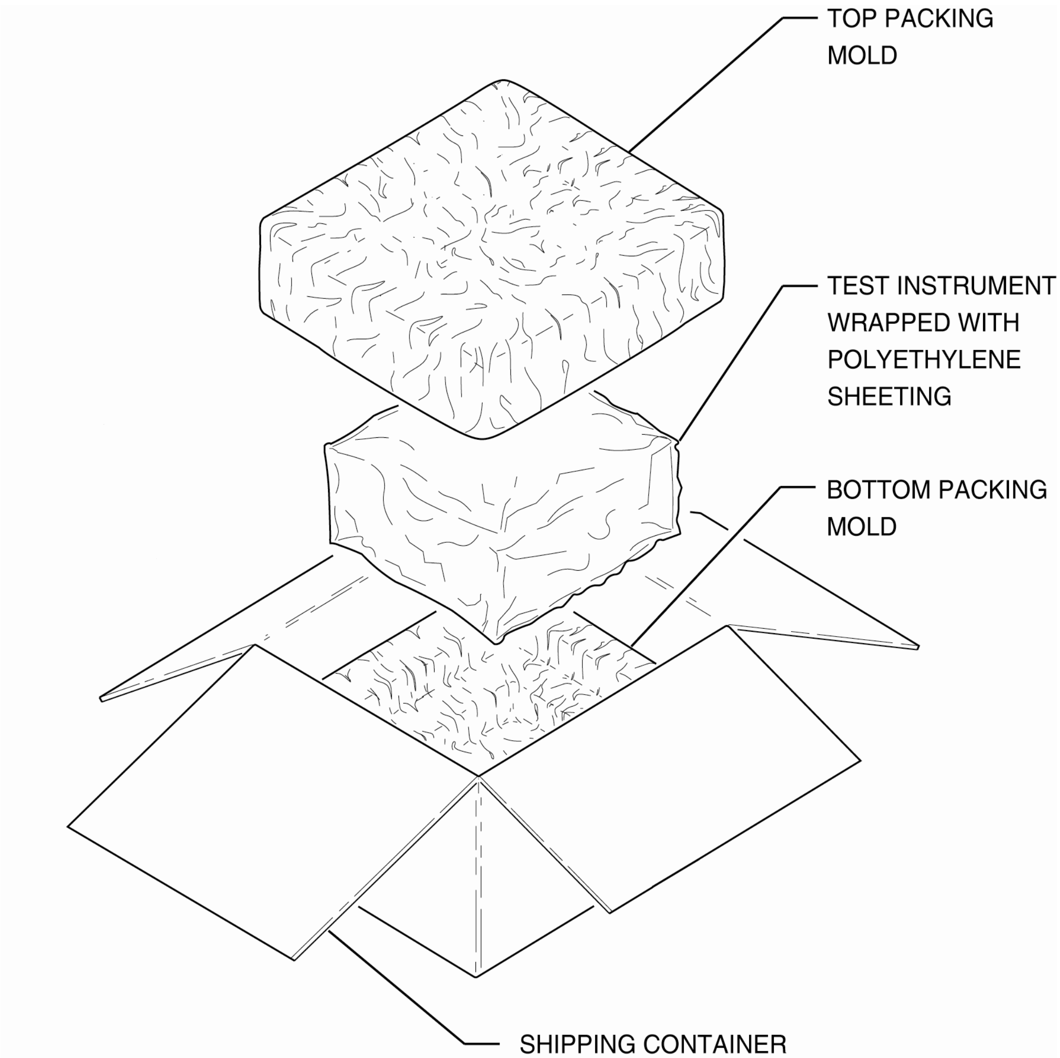
All freight costs on non-warranty shipments are assumed by the customer.

1.2 REPACKING PROCEDURE

Perform the following steps to repack the equipment for shipment (Figure 1.4.1 - 1 below):

- Make sure the bottom packing mold is seated on the floor of the shipping container.
- Carefully wrap the Test Set with polyethylene sheeting.
- Place the Test Set into the shipping container, making sure the Test Set is securely seated in the bottom packing mold.
- Place the top packing mold over the top of the Test Set and press down until the top packing mold rests solidly on the Test Set.
- Close the shipping container lids and seal with shipping tape or an industrial stapler. Tie all sides of the shipping container with break resistant rope, twine or equivalent.

Figure 1.4.1 - 1 Repacking Procedure



Section 5 – Storage

1. STORING TEST SET

Perform the following storage precautions whenever the Test Set is stored for extended periods of time (more than six months):

- Disconnect the Test Set from any electrical power source.
- Store the Test Set and other accessories together.

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Appendix A – Connector Pin-Out Tables

A.1. I/O CONNECTORS

A.1.1 FRONT PANEL I/O CONNECTORS

Figure A.1 - 1 ATC-5000NG Front Panel Connectors

Table A.1 - 1 Front Panel I/O Connectors

CONNECTOR	TYPE	INPUT/OUTPUT
LAN	RJ45	INPUT/OUTPUT
	Refer to Appendix A, Table 6 for LAN Connector description.	
RF I/O - TOP	D-Type	INPUT/OUTPUT
RF I/O - BOTTOM	D-Type	INPUT/OUTPUT
SCOPE	BNC	INPUT/OUTPUT
SUPP	BNC	INPUT/OUTPUT
USB (A)	USB 2.0 Type A	INPUT/OUTPUT
	Refer to Appendix A, Table 7 for USB (A) Connector description.	
USB (B)	USB 2.0 Type B	INPUT/OUTPUT
	Refer to Appendix A, Table 8 for USB (B) Connector description.	

A.1.2 REAR PANEL I/O CONNECTORS

Figure A.1 - 2 ATC-5000NG Rear Panel Connectors

Table A.1 - 2 Rear Panel I/O Connectors

CONNECTOR	TYPE	INPUT/OUTPUT
EXTERNAL PULSE MODULATION	BNC	INPUT/OUTPUT
SA BOTTOM	SMA	INPUT/OUTPUT
SA TOP	SMA	OUTPUT
SCOPE	BNC	INPUT/OUTPUT
SUPP	BNC	INPUT/OUTPUT
ATE LINE	D-SUB (37 Pin)	INPUT/OUTPUT
	Refer to Appendix A, Table 4 for ATE LINE Connector description.	
AUX CONTROL (Future Use)	N/A	N/A
GPIB BUS	Amphenol Type 57	INPUT/OUTPUT
	Refer to Appendix A, Table 5 for GPIB BUS Connector description.	
LAN	RJ45	INPUT/OUTPUT
	Refer to Appendix A, Table 6 for LAN Connector description.	

A.1.3 EXTERNAL PULSE MODULATION I/O CONNECTOR

Table A.1 - 3 External Pulse Modulation I/O Connector

TEST MODE	BNC #1	BNC #2	BNC #3
Transponder	PPS (not used in this Test Mode)	GPS Time Message Input (RX UTC time from GPS) Trimble TSIP Protocal-Message 0x8F 0xAB	Scope Sync Output
UAT/Multi-Receiver	PPS (pulse per second) Input Signal for GPS Sync	GPS Time Message Input (RX UTC time from GPS) Trimble TSIP Protocal-Message 0x8F 0xAB	Unused I/O
DME (ATC Only)	PPS (not used in this Test Mode)	GPS Time Message Input (not used in this Test Mode)	RNAV Output (Planned)

TEST MODE	BNC #4	BNC #5	BNC #6
Transponder	Unused I/O	Unused I/O	Unused I/O
UAT/Multi-Receiver	Unused I/O	Unused I/O	PPS (pulse per second) Output simulating GPS sync
DME (ATC Only)	Unused I/O	Distance Marker Output, a pulse for every change of 10 nmi in distance (for test only).	Velocity Marker Output, a pulse for every change of 50 knts velocity (for test only).

A.2 PIN-OUT DIAGRAMS AND TABLES

A.1.1 ATE LINE CONNECTOR PIN-OUT

Figure A.1 - 3 ATE Line Connector Pin-Out Diagram

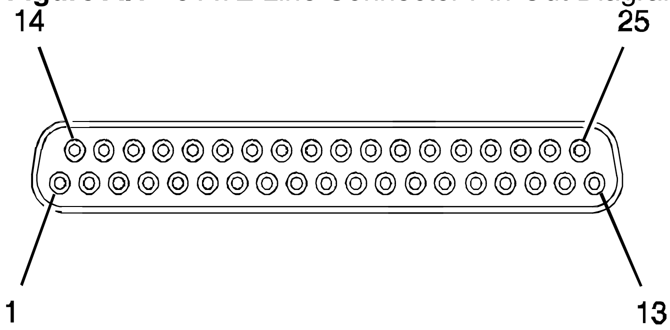

Table A.1 - 4 ATE LINE Connector Pin-Out Table

PIN NO.	SIGNAL NAME	PIN NO.	SIGNAL NAME
1	GND	20	GND
2	GND	21	ATE_SPARE_IN1
3	ATE_SPARE_OUT1	22	ATE_SPARE_IN2
4	ATE_SPARE_OUT2	23	ATE_SPARE_IN3
5	ATE_SPARE_OUT3	24	ATE_SPARE_IN4
6	ATE_SPARE_OUT4	25	ATE_D0
7	ATE_SPARE_OUT5	26	ATE_D1
8	ATE_SPARE_OUT6	27	ATE_D2
9	ATE_SPARE_OUT7	28	ATE_D3
10	ATE_SPARE_IN5	29	ATE_D4
11	ATE_SPARE_IN6	30	ATE_D5
12	ATE_SPARE_IN7	31	ATE_D6
13	ARINC_429_INA	32	ATE_D7
14	ARINC_429_INB	33	ATE_CK
15	ARINC_429_OUTA	34	ATE_A0
16	ARINC_429_OUTB	35	ATE_A1
17	ATE_SPARE_IN8	36	ATE_A2
18	+5.0V	37	GND
19	GND		

A.1.2 GPIB BUS CONNECTOR PIN-OUT

Figure A.1 - 4 GPIB BUS Connector Pin-Out Diagram

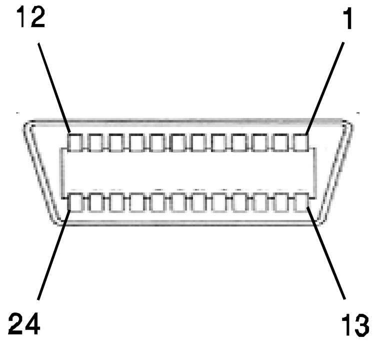

Table A.1 - 5 GPIB BUS Connector Pin-Out Table

PIN NO.	SIGNAL NAME
1	D101
2	D102
3	D103
4	D104
5	EOI
6	DAV
7	NRFD
8	NDAC
9	IFC
10	SRQ
11	ATN
12	SHIELD
13	D105
14	D106
15	D107
16	D108
17	REN
18	GND
19	GND

Table A.1 - 5 GPIB BUS Connector Pin-Out Table

PIN NO.	SIGNAL NAME
20	GND
21	GND
22	GND
23	GND
24	GND

A.1.3 LAN CONNECTOR PIN-OUT

Figure A.1 - 5 LAN Connector Pin-Out Diagram

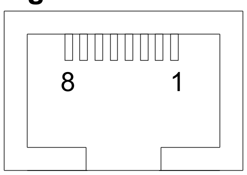

Table A.1 - 6 LAN Connector Pin-Out Table

PIN NO.	SIGNAL NAME
1	TX+
2	TX-
3	RX+
4	NOT USED
5	NOT USED
6	RX-
7	NOT USED
8	NOT USED

A.1.4 USB (A) CONNECTOR PIN-OUT

Figure A.1 - 6 USB (A) Connector Pin-Out Diagram

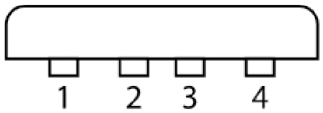

Table A.1 - 7 USB (A) Connector Pin-Out Table

PIN NO.	SIGNAL NAME
1	VCC
2	DATA-
3	DATA+
4	GND

A.1.5 USB (B) CONNECTOR PIN-OUT

Figure A.1 - 7 USB (B) Connector Pin-Out Diagram

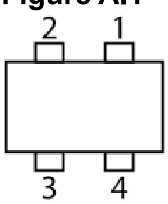

Table A.1 - 8 USB (B) Connector Pin-Out Table

PIN NO.	SIGNAL NAME
1	VBUS (5 V)
2	DATA-
3	DATA+
4	GND

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Appendix B – Metric/British Imperial Conversion Table with Nautical Distance Conversions

Table B.1 - 1 Metric/British Imperial Conversion Table

TO CONVERT:	INTO:	MULTIPLY BY:	TO CONVERT:	INTO:	MULTIPLY BY:
cm	feet	0.03281	meters	feet	3.281
cm	inches	0.3937	meters	inches	39.37
feet	cm	30.48	m/sec	ft/sec	3.281
feet	meters	0.3048	m/sec	km/hr	3.6
ft/sec	km/hr	1.097	m/sec	miles/hr	2.237
ft/sec	knots	0.5921	miles	feet	5280
ft/sec	miles/hr	0.6818	miles	km	1.609
ft/sec^2	cm/sec^2	30.48	miles	meters	1609
ft/sec^2	m/sec^2	0.3048	miles	nmi	0.8684
grams	ounces	0.03527	miles/hr	ft/sec	1.467
inches	cm	2.54	miles/hr	km/hr	1.609
kg	pounds	2.205	miles/hr	knots	0.8684
kg/cm^2	psi	0.0703	nmi	feet	6080.27
km	feet	3281	nmi	km	1.8532
km	miles	0.6214	nmi	meters	1853.2
km	nmi	0.5396	nmi	miles	1.1516
km/hr	ft/sec	0.9113	ounces	grams	28.34953
km/hr	knots	0.5396	pounds	kg	0.4536
km/hr	miles/hr	0.6214	psi	kg/cm^2	0.0703
knots	ft/sec	1.689	100 ft	km	3.048
knots	km/hr	1.8532	100 ft	miles	1.894
knots	miles/hr	1.1516	100 ft	nmi	1.645

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Appendix C – Abbreviations

A

A	Amperes
AC	Alternating Current
A/C	ATCRBS
AM	Amplitude Modulation
Ant, ANT	Antenna
AP	Address Parity
AQ	Acquisition
ATCRBS	Air Traffic Control Radio Beacon System
ATE	Automated Test Equipment
ATTN	Attenuation
AUTO	Automatic
AUX	Auxiliary

B

Bar	Barometric
BAT	Battery
BD	BDS Register
bps	Bits per Second
BRG	Bearing

C

C	Celsius or Centigrade
CA	Transponder Capability
CAL	Calibration
ccw	Counterclockwise
CDI	Course Deviation Indication
Ch	Channel
cm	Centimeter (10^{-2} Meters)
COMM	Communication
cont	Continued
CSV	Comma-Separated Values
CW	Continuous Waveform
cw	Clockwise

D

dB	Decibel
dBc	Decibels below Carrier
dBm	Decibels above one Milliwatt
DC	Direct Current
DDM	Double Depth Modulation
deg	Degrees
DF	Downlink Format
DEL	Delete
DEV	Deviation
DHCP	Dynamic Host Configuration Protocol
DIAGS	Diagnostics
Dir	Directional
DF	Direction Finding
DR	Downlink Request
DSP	Digital Signaling Processing
DWN	Down

E

EMC	Electromagnetic Compatibility
EXT	External

F

FEC	Forward Error Correction
FM	Frequency Modulation
FPGA	Field Programmable Gate Array
FREQ	Frequency
FRUIT	False Reply Uncorrelated in Time
FS	Flight Status
Ft	Foot/Feet
Ft/Min	Feet per Minute

G

Gen, GEN	Generator or Generate
Geo	Geometric
GND	Ground
GPIB	General Purpose Instrument Bus
GPS	Global Positioning System
G/S	Glideslope

H

Hr	Hour
Hrs	Hours
H/W	Hardware
Hz	Hertz

I

IFR	Instrument Flight Rules
ILS	Instrument Landing System
Imf	Interrupt Master Enable Flag
Intr, Interr	Interrogation
I/O	Input/Output
IP	Internet Protocol

K

kg	Kilogram (10^3 Grams)
kHz	Kilohertz (10^3 Hertz)
km	Kilometer (10^3 meters)
kt	Knot / Knots (Velocity)
kts	Knots (Velocity)

L

LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LOC	Localizer
LRU	Line Replaceable Unit
LSB	Least Significant Bit
LVL	Level

M

m	Meters
MAX	Maximum
MB	Message, COMM-B
MHz	Megahertz (10^6 Hertz)
min	Minutes
MOD	Modulation
mm	Millimeter (10^{-3} Meters)
M	MOD Master Modulation
ms	Millisecond (10^{-3} Seconds)
MSB	Most Significant Bit
MSO	Message Start Opportunity
mV	Milliwatt
mW	Millivolt

N - O

N/A	Not Applicable
NAV	Navigation
nmi	Nautical Miles
ns, nsecs	Nanosecond (10^{-9} Seconds)
OEM	Original Equipment Manufacturer
OUT	Output

P

para	Paragraph
PARAM	Parameter
ppm	Parts per Million
PREV	Previous
psi	Pounds per Square Inch
PWR	Power

R

RAM	Random Access Memory
RES	Resolution
RF	Radio Frequency
RI	Runway Incursion
RL	Reply Length
RMS	Root Mean Square
ROM	Read Only Memory
Rx, RX	Receiver

S

SA	Spectrum Analyzer
SDF	Software Development Folder (Compact Database File)
sec, secs	Seconds
SELCAL	Selective Calling
Sig Gen	Signal Generator
SL	Sensitivity Level
SLS	Side Lobe Suppression
SP	Spacing
SPM	Scans per Minute
SPR	Synchronous Phase Reversal
SQTR	Squitter
Sqtr	Squitter
SRQ	Service Request
SPR	Sync Phase Reversal
SRS	Segment Request Subfield
SSR	Secondary Surveillance Radar
STD	Standard
SUPP	Suppressor / Suppression
SWP	Sweep
SWR	Standing Wave Ratio
SYNC	Synchronous

T

TCAS	Traffic Collision Avoidance System
TCP/IP	Transmission Control Protocol/ Internet Protocol
Traf Proc	Traffic Protocol
Tx, TX	Transmit

U

UAT Universal Access Transceiver
UF Uplink Format
UHF Ultra High Frequency
USB Universal Serial Bus
UM Utility Message
UTC Universal Time Coordinate
UUT Unit Under Test

V

V Volt
VAC Volts, Alternating Current
VAR Variable
Vdc Volts, Direct Current
VHF Very High Frequency
VOR Very High Frequency Omni-Directional Radio Range
Vrms Volts Root Mean Square
VSWR Voltage Standing Wave Ratio

W

W Watt
WS Whisper Shout

W

XPDR Transponder

μA Microamps
μs, μsecs Microseconds
μW Microwatts
Ω Ohm

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Appendix D - ATC-5000NG Compatibility Command Set

D.1. SDX COMPATIBILITY COMMAND SET

NOTE

The ATC-5000NG returns the "#" character if the Unit cannot make a measurement. The SDX returns 0 if it cannot make a measurement.

The SDX provides a response for every command sent. The SDX responds with "OK\r\n" or an error message. The ATC-5000NG writes those errors to a table that is not accessible remotely and may or may not return "OK\r\n."

All SDX responses are terminated by \r\n. The ATC-5000NG may not use \r\n. (\r = Carriage Return, hex 0D) (\n= Line Feed, hex 0A).

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
Instrument Commands			
:INSTrument ATCRBS	Supported		:ATC5000:SCENARIO:TYPE XPDR :ATC5000:XPDR:TYPE 0 :ATC5000:XPDR:MODE
:INSTrument MODES	Supported		:ATC5000:SCENARIO:TYPE XPDR :ATC5000:XPDR:TYPE 2
:INSTrument DATALINK	Not Supported		None
:INSTrument DME	Supported		None
:INSTrument IFF	Not Supported		None
:INSTrument TACAN	Not Supported		None
:INSTrument DATALINK2	Not Supported		None
:INSTrument?	Supported	Formatting Differences	:ATC5000:XPDR:MODE?
:INSTrument:SAVE	Supported		:ATC5000:XPDR:SAVE
:INSTrument:RESTore	Supported		:ATC5000:XPDR:LOAD
:INSTrument:CABLOS	Supported		:ATC5000:XPDR:CABLOS
:INSTrument:CABLOS?	Supported	Formatting Differences	None
:INSTrument:CABLOSBOT	Supported		:ATC5000:XPDR:CABLOSBOT
:INSTrument:CABLOSBOT?	Supported	Formatting Differences	None
:INSTrument:FORMAT	Supported		None
:INSTrument:FORMAT?	Supported		None
:INSTrument:COMTEST?	Not Supported		None
:INSTrument:STATE	Supported		:ATC5000:ACCESS

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
ATCRBS Commands			
:ATCRBS:MODE	Supported		:ATC5000:XPDR:MODE
:ATCRBS:MODE?	Supported		:ATC5000:XPDR:MODE?
:ATCRBS:DOUBle	Supported		:ATC5000:XPDR:TYPE 1
:ATCRBS:DOUBle:SPACing	Supported	Use long form of command.	:ATC5000:XPDR:DBL:P1TOP1
:ATCRBS:DOUBle?	Supported	Formatting Differences	None
:ATCRBS:SUBmode	Supported		Multiple Commands for each submode
:ATCRBS:SUBmode?	Supported		None
Mode S Commands			
:MODES:MODE	Supported		Multiple Commands for each submode
:MODES:MODE?	Supported		None
:MODES:BURST	Supported		:ATC5000:XPDR:ITABLE:BURST{:START |:STOP}
:MODES:BURST:SQUITter	Not Supported		None
:MODES:BURST:SQUITter:COUNT	Not Supported		None
:MODES:BURST:COUNT	Supported		:ATC5000:XPDR:ITABLE:BURST:COUNT
:MODES:BURST:GAP	Supported		:ATC5000:XPDR:ITABLE:BURST:GAP
:MODES:BURST?	Supported	Formatting Differences	None
:MODES:DOUBle:SPACing	Supported		:ATC5000:XPDR:DBL:P1TOP1
:MODES:DOUBle:SPACing?	Supported	Formatting Differences	None
:MODES:INTERLace:RATIO	Supported		:ATC5000:XPDR:DBL:IRATIO
:MODES:INTERLace:RATIO?	Supported		None
:MODES:DIVersity	Supported		:ATC5000:XPDR:ITABLE:<table entry>:ANTENNA:TIME
:MODES:DIVersity?	Supported	Formatting Differences	None
:MODES:SUBmode	Supported		Multiple Commands for each submode
:MODES:SUBmode?	Supported		None
:MODES:TABLE	Supported		:ATC5000:XPDR:ITABLE:NINT
:MODES:TABLE:STATE	Supported		:ATC5000:XPDR:ITABLE:<table entry>:ENABLE
:MODES:TABLE:TYPE	Supported	Does not accept type UF0 - UF9. Requires format UF00 - UF09 to work. The power level of each table entry needs set individually. SIF interrogation entries not supported at this time.	:ATC5000:XPDR:ITABLE:<table entry>:MODE

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:MODES:TABLE:DATA	Supported		:ATC5000:XPDR:ITABLE:<table entry>:UF
:MODES:TABLE:ADDRess	Supported		None
:MODES:TABLE:STYLE	Not Supported		None
:MODES:TABLE?	Supported	Formatting Differences	None
:MODES:SYNC	Supported		:ATC5000:XPDR:ITABLE:SYNC
:MODES:SYNC?	Supported		None
:MODES:PREPULSE:POSition	Not Supported		None
:MODES:PREPULSE:POSition?	Not Supported		None
:MODES:ADDRess	Not Supported		None
:MODES:ADDRess?	Not Supported		None
:MODES:EXTSQUITter	Not Supported		None
:MODES:EXTSQUITter?	Supported		None
Datalink Commands			
:DATALINK:TABLE	Not Supported		None
:DATALINK:TABLE:STATE	Not Supported		None
:DATALINK:TABLE:TYPE	Not Supported		None
:DATALINK:TABLE:DATA	Not Supported		None
:DATALINK:TABLE:ADDRess	Not Supported		None
:DATALINK:TABLE:DELAY	Not Supported		None
:DATALINK:TABLE:STYLE	Not Supported		None
:DATALINK:TABLE?	Not Supported		None
:DATALINK:SYNC	Not Supported		None
:DATALINK:SYNC?	Not Supported		None
:DATALINK:MESSage	Not Supported		None
:DATALINK:MESSage?	Not Supported		None
:DATALINK:MESSage:TYPE	Not Supported		None
:DATALINK:MESSage:STATE	Not Supported		None
:DATALINK:MESSage:SEGments	Not Supported		None
:DATALINK:MESSage:MEASure	Not Supported		None
:DATALINK:MESSage:TABLE	Not Supported		None

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:DATALINK:MESSage:TABLE?	Not Supported		None
:DATALINK:MESSage:TABLE:TYPE	Not Supported		None
:DATALINK:MESSage:TABLE:STATE	Not Supported		None
:DATALINK:MESSage:TABLE:DATA	Not Supported		None
:DATALINK:MESSage:TABLE:ADDRess	Not Supported		None
:DATALINK:MESSage:TABLE:STYLE	Not Supported		None
:DATALINK:MESSage:COPY	Not Supported		None
:DATALINK:DELAY:INITial	Not Supported		None
:DATALINK:DELAY:SEGMENT	Not Supported		None
:DATALINK:DELAY:CLOSEout	Not Supported		None
:DATALINK:DELAY:MESSage	Not Supported		None
:DATALINK:DELAY?	Not Supported		None
:DATALINK:GLOADDR	Not Supported		None
Pulse Commands			
:PULSE:VARiable	Supported	Use short form of the command.	:ATC5000:XPDR:PULSE
:PULSE:VAR:AMPlitude	Supported	Use short form of the command.	:ATC5000:XPDR:PULSE
:PULSE:VAR:POSition	Supported	Use short form of the command.	:ATC5000:XPDR:PULSE
:PULSE:VAR:WIDth	Supported	Use short form of the command.	:ATC5000:XPDR:PULSE
:PULSE:VAR?	Supported	Use short form of the command.	None
:PULSE:INTERFerence:AMPlitude	Supported		:ATC5000:XPDR:INTERFERENCE:AMPLITUDE
:PULSE:INTERFerence:WIDth	Supported		:ATC5000:XPDR:INTERFERENCE:{P1WIDTH | P2WIDTH}
:PULSE:INTERFernece:POSition	Supported		:ATC5000:XPDR:INTERFERENCE:POSITION
:PULSE:INTERFernece:SPACing	Supported	Not working at this time.	:ATC5000:XPDR:INTERFERENCE:SPACING
:PULSE:INTERFernece:STATE	Supported		:ATC5000:XPDR:INTERFERENCE:STATE
:PULSE:INTERFerence?	Supported	Formatting Differences The SDX returns the offset from the default width. The ATC-5000NG returns the total pulse width.	None
:PULSE:SLS:AMPlitude	Supported		:ATC5000:XPDR:PULSE
:PULSE:SLS:POSition	Supported		:ATC5000:XPDR:PULSE
:PULSE:SLS:WIDth	Supported		:ATC5000:XPDR:PULSE

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:PULSE:SLS?	Supported	Not working in a MODE S instrument. SIF Formatting Differences	None
:PULSE:IFFBIT	Not Supported		None
:PULSE:IFFBIT:CONTrol	Not Supported		None
:PULSE:IFFBIT?	Not Supported		None
:PULSE:VAR:STATE	Support Planned		:ATC5000:XPDR:PULSE
Generator Commands			
:GEN:FREQuency	Supported	Formatting Differences	:ATC5000:XPDR:FREQUENCY
:GEN:FREQuency?	Supported	Formatting Differences	None
:GEN:FREQuency:OFFset	Supported	Not working in DME Instrument. Transponder Formatting Differences	None
:GEN:POWER:TOP	Supported		:ATC5000:XPDR:POWER
:GEN:POWER:TOP:CONTrol	Supported	In DME the OFF and CW control settings don't work.	:ATC5000:SETTINGS:GENx:SIGNAL :ATC5000:SETTINGS:GENx:MODE
:GEN:POWER:BOTtom	Supported		:ATC5000:XPDR:ITABLE:<table entry>:ANTENNA:POWER :ATC5000:XPDR:ANTENNA:POWER
:GEN:POWER:TOP:OFFset	Supported		:ATC5000:XPDR:POWER
:GEN:POWER?	Supported	When control is set to CW the top and bottom powers are returned in reverse order.	None
:GEN:PRF	Supported	Cannot set PRF value to 0.	:ATC5000:XPDR:PRF
:GEN:PRF?	Supported		None
:GEN:TRIGger	Supported	Scope trigger positions are different.	:ATC5000:XPDR:SCOPE
:GEN:TRIGger:POSition	Supported		:ATC5000:XPDR:SCOPE:INTERR:OFFSET
:GEN:TRIGger:DME	Supported		:ATC5000:DME:TRIGGER
:GEN:TRIGger:TACAN	Not Supported		None
:GEN:TRIGger?	Supported	Formatting Differences	None
:GEN:TRIGger:DME?	Supported	Formatting Differences	None
:GEN:TRIGger:TACAN?	Not Supported		None
:GEN:SUPPressor	Supported		:ATC5000:XPDR:SUPPRESSION
:GEN:SUPPressor:AMPlitude	Not Supported		None
:GEN:SUPPressor?	Supported	Formatting Differences	None
:GEN:SUPPressor:POSition	Not Supported		None

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:GEN:SUPPressor:WIDth	Not Supported		None
:GEN:EXTSYNC	Not Supported		None
:GEN:EXTSYNC?	Not Supported		None
:GEN:SETUP:REFerence	Not Supported		None
:GEN:SETUP:REFerence?	Supported		None
:GEN:SETUP:PRF	Not Supported		None
:GEN:SETUP:PRF?	Supported		None
:GEN:SETUP:MODulation	Not Supported		None
:GEN:SETUP:MODulation?	Supported		None
:GEN:SETUP:GATE	Not Supported		None
:GEN:SETUP:GATE?	Supported		None
:GEN:SETUP:VIDeo	Not Supported		None
:GEN:SETUP:VIDeo?	Supported		None
:GEN:SETUP:BOTtom	Not Supported		None
:GEN:SETUP:BOTtom?	Supported		None
Measurement Commands			
:MEASure:TABLE	Support Planned		:ATC5000:XPDR:ITABLE:SYNC
:MEASure:PULSE	Supported	Cannot select pulses SPI, X, S1-S112.	:ATC5000:MEASURE:SETTINGS:PULSE
:MEASure:PULSE?	Supported		None
:MEASure:FREQuency?	Supported	Formatting Differences	:ATC5000:MEASURE:FREQUENCY?
:MEASure:POWER?	Supported	Formatting Differences	None
:MEASure:POWERDBM?	Supported	Formatting Differences	:ATC5000:MEASURE:PULSE:POWER?
:MEASure:REPLY:DF?	Supported		None
:MEASure:REPLY:DATA?	Support Planned		None
:MEASure:REPLY:ADDRess?	Support Planned		None
:MEASure:PREPLY:TOP:ATCRBS?	Supported	Formatting Differences	:ATC5000:XPDR:PREPLY?
:MEASure:PREPLY:BOTtom:ATCRBS?	Supported	Formatting Differences	:ATC5000:XPDR:PREPLY?
:MEASure:PREPLY:TOP:MODES	Supported	Formatting Differences	:ATC5000:XPDR:PREPLY?
:MEASure:PREPLY:TOP:FIRST?	Supported		None
:MEASure:PREPLY:TOP:SECOND?	Supported		None

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:MEASure:PREPLY:BOTtom:MODES?	Supported	Formatting Differences	:ATC5000:XPDR:PREPLY?
:MEASure:SQUITter:DF?	Supported	Formatting Differences	None
:MEASure:SQUITter:DATA?	Supported		None
:MEASure:SQUITter:INTerval?	Supported	Formatting Differences	None
:MEASure:SQUITter:REPLY?	Support Planned		None
:MEASure:SQUITter:II?	Not Supported		None
:MEASure:DELAY?	Supported		:ATC5000:XPDR:DREPLY?
:MEASure:JITTER?	Supported	Formatting Differences	:ATC5000:XPDR:JREPLY?
:MEASure:WIDTH?	Supported	Formatting Differences	:ATC5000:MEASURE:PULSE:WIDTH?
:MEASure:SPACing?	Supported	Formatting Differences	:ATC5000:MEASURE:PULSE:POSITION?
:MEASure:CODE?	Support Planned		:ATC5000:XPDR:CREPLY?
:MEASure:GREY?	Supported	Formatting Differences	None
:MEASure:ALTitude?	Supported		:ATC5000:XPDR:AREPLY?
:MEASure:DMEPRF?	Not Supported		:ATC5000:DME:PRF?
:MEASure:RANGE?	Not Supported		None
:MEASure:IFFPULSE	Not Supported		None
:MEASure:IFFPULSE?	Not Supported		None
:MEASure:PRF?	Not Supported		None
:MEASure:STABility?	Not Supported		None
:MEASure:RXCONF	Not Supported		None
:MEASure:SQUITter:AIRPOS:DATA?	Support Planned		None
:MEASure:SQUITter:AIRPOS:INTerval?	Supported	Formatting Differences	None
:MEASure:SQUITter:SURPOS:DATA?	Support Planned		None
:MEASure:SQUITter:SURPOS:INTerval?	Supported	Formatting Differences	None
:MEASure:SQUITter:ACIDENT:DATA?	Supported	Formatting Differences	None
:MEASure:SQUITter:ACIDENT:INTerval?	Supported	Formatting Differences	None
:MEASure:SQUITter:AIRVEL:DATA?	Supported	Formatting Differences	None
:MEASure:SQUITter:AIRVEL:INTerval?	Supported	Formatting Differences	None
:MEASure:SQUITter:EVNTDRIV:DATA?	Supported	Formatting Differences	None
:MEASure:SQUITter:EVNTDRIV:INTerval?	Supported	Formatting Differences	None

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:MEASure:SQUITter:ACQuisition:DATA?	Supported	Formatting Differences	None
:MEASure:SQUITter:ACQuisition:INTerval?	Supported	Formatting Differences	None
:MEASure:AVGOFF	Supported		None
:MEASure:AVGON	Supported		None
:MEASure:AVG?	Supported		None
:MEASure:MINMAXREset	Supported	Formatting Differences	None
:MEASure:AVGPARAMeter	Supported		None
:MEASure:AVGPARAMeter?	Supported	Formatting Differences	None
:MEASure:AVGPARAMeter:SAMPLES	Supported		None
:MEASure:MINDELAY?	Supported	Formatting Differences	None
:MEASure:MAXDELAY?	Supported	Formatting Differences	None
:MEASure:MINJITTER?	Supported	Formatting Differences	None
:MEASure:MAXJITTER?	Supported	Formatting Differences	None
:MEASure:MINWIDTH?	Supported	Formatting Differences	None
:MEASure:MAXWIDTH?	Supported	Formatting Differences	None
:MEASure:MINSPACing?	Supported	Formatting Differences	None
:MEASure:MAXSPACing?	Supported	Formatting Differences	None
:MEASure:MINFREQuency?	Supported	Formatting Differences	None
:MEASure:MAXFREQuency?	Supported	Formatting Differences	None
:MEASure:MINPOWER?	Supported	Formatting Differences	None
:MEASure:MINPOWERDBM?	Supported	Formatting Differences	None
:MEASure:MAXPOWER?	Supported	Formatting Differences	None
:MEASure:MAXPOWERDBM?	Supported	Formatting Differences	None
:MEASure:PATH	Supported		:ATC5000:MEASURE:SETTING:TRIGGER:ANTENNA
DME Commands			
:DME:MODE	Supported		None
:DME:MODE?	Supported		None
:DME:EFFiciency	Supported		:ATC5000:DME:EFFICIENCY
:DME:EFFiciency?	Supported		None
:DME:SQUITter	Supported		:ATC5000:DME:SQUITTER

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:DME:SQUITTer?	Supported		None
:DME:RANGE	Supported		:ATC5000:DME:RANGE
:DME:RANGE:OFFset	Supported		:ATC5000:DME:RANGE:OFFSET
:DME:RANGE?	Supported	Formatting Differences	None
:DME:VELocity	Supported		:ATC5000:DME:VELOCITY
:DME:VELocity:DIRection	Supported		:ATC5000:DME:DIRECTION
:DME:VELocity?	Supported	Formatting Differences	None
:DME:ACCeleration	Supported	Use short form of the command.	:ATC5000:DME:ACCELERATION
:DME:ACCeleration?	Supported	Use short form of the command.	None
:DME:IDENT:MODE	Supported		:ATC5000:DME:IDENT:MODE
:DME:IDENT:CODE	Supported		:ATC5000:DME:IDENT:CODE
:DME:IDENT:DOT	Supported		:ATC5000:DME:IDENT:DOT
:DME:IDENT:DASH	Support Planned		:ATC5000:DME:IDENT:DASH
:DME:IDENT:SPACE	Supported		:ATC5000:DME:IDENT:SPACE
:DME:IDENT:CHARacter	Supported		:ATC5000:DME:IDENT:CHARACTER
:DME:IDENT:RATE	Supported		:ATC5000:DME:IDENT:RATE
:DME:IDENT?	Supported	Formatting Differences	None
:DME:WINDow	Not Supported		None
:DME:WINDow?	Not Supported		None
:DME:ECHO:CONTrol	Supported		:ATC5000:DME:ECHO
:DME:ECHO:AMPlitude	Supported		:ATC5000:DME:ECHO:POWER
:DME:ECHO?	Supported	Formatting Differences	None
:DME:EQUALizer	Supported		:ATC5000:DME:EQUALIZER
:DME:EQUALizer?	Supported	Use long form of the command.	None
:DME:TACAN	Not Supported		None
:DME:TACAN?	Not Supported		None
:DME:568:CONTrol	Not Supported		None
:DME:568:CONTrol?	Not Supported		None
:DME:568:DISTance	Not Supported		None
:DME:568:DISTance?	Not Supported		None

SDX Command	Supported / Not Supported	Comments	ATC-5000NG Equivalent (or Similar)
:DME:568:STATus?	Not Supported		None
:DME:WIDth	Supported	Use long form of the command.	:ATC5000:DME:WIDTH
:DME:WIDth?	Supported	Formatting Differences	None
:DME:CHANX	Support Planned		:ATC5000:DME:CHANNEL:MODE
:DME:CHANY	Support Planned		:ATC5000:DME:CHANNEL:MODE
:DME:CHANX?	Support Planned		None
:DME:CHANY?	Support Planned		None

D.2 ATC-1400A/S-1403D Compatibility Command Set

NOTE

Due to operational differences in ATC-1400A/S-1403DL and the ATC-50000NG units, tests written for the ATC-1400A/S-1403DL may not run on the ATC-5000NG without code modification. For best results it is recommended to rewrite the tests to use ATC-5000NG native commands.

The ATC-5000NG GPIB bus will time out if you read from the unit without first sending a query command. The ATC1400A can be read at any time and will return a " ?" If there is nothing in the buffer to return.

In Transponder Mode the ATC-5000NG defaults to measurements on the bottom channel. Use command ":ATC:MEA:SET:TRIG:ANT TOP" to make measurements on the top channel.

The ATC-1400A/S-1403DL measures both top and bottom channels simultaneously. The ATC-5000NG does not. You must adjust your code accordingly.

The ATC-5000NG will not parse a string of multiple 1400 commands. For example "XAF1030DF0RT0PS=100". All of the commands in the quotes may be accepted individually but are not accepted when combined.

D.1.1 ATC-1400A COMPATIBILITY COMMAND SET

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
!	Yes		:ATC:ACCESS LCL	Set ATC-1400A-2 in Local Mode
A	Yes		:ATC:DME:ACC	Set Acceleration (000 to 399 ft/sec2)
AXn	Partial	See individual Axn commands below for more details.		X10, Auxiliary Unit Instructions (n = 1 to 4) for the 1403 n is expected to be 3.
C?	Yes	The ATC-5000NG does not indicate improper F2 spacing. For example: With code set to 7654 and F2 spacing wide by 120ns, received " 007654" expected " F07654".	:ATC:XPDR:AREP? :ATC:XPDR:CREP? :ATC:RCV:LOG:DL?	Get XPDR Code/Altitude
C.	Yes	Command accepted. No action is taken because the value is displayed on main screen.		Display XPDR Code
CM0	Partial	Command accepted. No action is taken. This function is not available.		Select 1.45 µs CAL MARKS
CM1	Partial	Command accepted. No action is taken. This function is not available.		Select 1.0 µs CAL MARKS
D?	Yes			Get DME Distance (-1 to 399. NMi)
DC	Partial	Command accepted. No action is taken. This function is not available.		Display Message (1 to 6 Hex Characters)
DCL.	Yes	Command accepted. No action is taken. Use reset shown to the right.	#REF!	Device Clear (Return to Front Panel Setup)
DF	Yes			Set Delta Frequency Value (0. to 9.99 MHz)
DF0	Yes			Cancel Delta Frequency
DF+	Yes	Limited to 100 KHz Resolution		Add Delta Frequency to RF
DF-	Yes	Limited to 100 KHz Resolution		Subtract Delta Frequency
D.	Partial	Command accepted. No action is taken. This function is not available.		Display DME Distance

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
DI	Yes		:ATC:XPDR:DBL:P1TOP1	Enables Double Interr P1 t o P1 Spacing (20.5 + Mode Spacing to 399.0 µs)
DMEX	Yes		:ATC:DME:CHANNEL:MODE :ATC:DME:CHANNEL	Set DME Funct ion to X Channel
DMEY	Yes		:ATC:DME:CHANNEL:MODE :ATC:DME:CHANNEL	Set DME Funct ion to Y Channel
DV2	Yes		:ATC:DME:P2POS	Set DME P2 Pulse Spacing
DV20	Yes		:ATC:DME:P2POS	Set DME P2 to CAL
DV2+	Yes		:ATC:DME:P2POS	Deviate DME P2 Posi t ive (-19 to 9 dB)
DV2-	Yes		:ATC:DME:P2POS	Deviate DME P2 Negative
EQ0	Yes		:ATC:DME:EQUAL	Disable Equalizer Pulses
EQ1	Yes		:ATC:DME:EQUAL	Enable Equalizer Pulses
ES=	Yes		:ATC:DME:ECHO:POWER :ATC:XPDR:DBL:1:SLS or :ATC:XPDR:ITABLE:1:SLS or :ATC:XPDR:SLS	Set ECHO/SLS Pulse Ampli tude
E0	Yes		:ATC:DME:ECHO	Disable ECHO Pulses
E1	Yes		:ATC:DME:ECHO	Enable ECHO Pulses
E%	Yes		:ATC:DME:EFF	Set DME Reply Eff iciency (0% to 100%)
F	Yes		:ATC:DME:CHANNEL :ATC:XPDR:FREQ	Set RF Output (962 to 1213 MHz)
F?	Yes		:ATC:DME:CHANNEL? :ATC:XPDR:FREQ ?	Get RF Output (962 to 1213 MHz + DF)
F.	Partial	Command accepted. No action is taken because the value is displayed on main screen.		Display RF Output
FP1	Yes		:ATC:DME:PULSE :ATC:MEA:SET:PUL	Sample and Measure UUT's 1st Pulse
FP2	Yes		:ATC:DME:PULSE :ATC:MEA:SET:PUL	Sample and Measure UUT's 2nd Pulse
ID0	Yes		:ATC:DME:IDENT:MODE	Disable IDENT Tone
ID1	Yes		:ATC:DME:IDENT:MODE	Enable IDENT Tone
ID2	Yes		:ATC:DME:IDENT:MODE	Enable CODE Message

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
ID3	Yes		:ATC:DME:IDENT:CODE	Set CODE Message
IDD	Yes		:ATC:DME:IDENT:DOT	Set CODE Dot Time in ms (100, 125 or 160)
IDP	Yes		:ATC:DME:IDENT:RATE	Set Number of Dot Times for Period (1 to 999)
IP	Yes		:ATC:XPDR:INTERF ON :ATC:XPDR:INTERF:POS	Enable and Deviate INTRF Pulse (-17.5 to 399.9 µs)
IP0	Yes		:ATC:XPDR:INTERF OFF	Disable INTRF Pulse and Double INTERR Pulse
NM0	Yes		:ATC:DME:RANGE:OFF	Disable -1 NMi Range
NM1	Yes		:ATC:DME:RANGE:ON	Enable -1 NMi Range
P?	Yes		:ATC:DME:PRF? :ATC:XPDR:PREP?	Get PRF
P.	Partial	Command accepted. No action is taken because the value is displayed on main screen.		Display PRF
PS=	Partial	In DME with squitter off this command will not set the self interrogation rate as the 1400 does. The self interrogation rate is fixed at 100 Hz.	:ATC:DME:SQUIT :ATC:XPDR:DBL:2:PRF or :ATC:XPDR:ITABLE:PRF or :ATC:XPDR:PRF	Set XPDR PRF or DME Squitter Rate
P0	Yes		:ATC:XPDR:STOP	Disable XPDR PRF
P1	Yes		:ATC:XPDR:START	Enable XPDR PRF
R	Yes		:ATC:DME:RANGE	Set DME Range Delay (0 to 399. NMi)
R?	Yes		:ATC:DME:RANGE?	Get DME Range Delay (- 1 to 399. NMi)
R.	Partial	Command accepted. No action is taken because the value is displayed on main screen.		Display DME Range Delay
RF	Yes		:ATC:DME:POWER :ATC:XPDR:POWER or :ATC:XPDR:DBL:1:POW or :ATC:XPDR:ITABLE:1:POW	Set RF Output Level (0 to –127 dBm)
RI	Yes		:ATC:DME:DIR	Set Range Delay Inbound
RO	Yes		:ATC:DME:DIR	Set Range Delay Outbound
RT0	Yes		:ATC:DME:START :ATC:XPDR:START	Set RF Output to Normal
RT1	Yes		:ATC:DME:STOP :ATC:XPDR:STOP	Set RF Output to OFF
RT2	Yes			Set RF Output to CW

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
S0	Yes		:ATC:XPDR:DBL:1:SLS OFF or :ATC:XPDR:ITABLE:1:SLS OFF or :ATC:XPDR:SLS OFF	Disable XPDR SLS Pulse
S1	Yes		:ATC:XPDR:DBL:1:SLS ON or :ATC:XPDR:ITABLE:1:SLS OFF or :ATC:XPDR:SLS OFF	Enable XPDR SLS Pulse
SI0	Yes		:ATC:DME:SELF	Disable Self - Interrogation
SI1	Yes		:ATC:DME:SELF	Enable Self - Interrogation
SP0	Yes		:ATC:DME:SUPP	Disable Suppressor Pulse (Front Panel)
SP1	Yes		:ATC:DME:SUPP	Enable Suppressor Pulse (Front Panel)
SQ0	Yes		:ATC:DME:SQUIT	Disable DME Squit ter
SQ1	Yes		:ATC:DME:SQUIT	Enable DME Squit ter
SRM	No			Set SRQ Mask for Desired SRQ Signal
TC0	No			Disable TACAN Modulation
TC1	No			Enable TACAN Modulation
T0	Partial	The command works but you must also set the SCOPE 1 or 2 to SYNC using command ":ATC:SET:SCO:CH2 25". NOTE: The ATC-1400A has a negative sync pulse. When self-interrogate is on a single positive sync pulse is available on Scope 2.	:ATC:DME:TRIGGER :ATC:XPDR:SCOPE INTERR	Set SYNC to Interrogation
TD	Partial	The command works but you must also set the SCOPE 1 or 2 to SYNC using command ":ATC:SET:SCO:CH2 25". NOTE: The ATC-1400A has a negative sync pulse. It also provides a pulse for each reply pulse. The 5000 provides a single positive sync pulse alligned with P1.	:ATC:DME:TRIGGER :ATC:XPDR:SCOPE REPLY	Set SYNC to Reply
TT	No			Set SYNC to 15 Hz TACAN Modulation
UF?	Yes		:ATC:MEA:FREQ?	Get UUT Frequency (1020 to 1155 MHz)
UP?	Yes	Will not display the "F" when P1 to P2 spacing is out of tolerance. Use :ATC:MEA:PUL:POS? to measure spacing.	:ATC:DME:PRF?	Get UUT DME PRF
UW?	Yes		:ATC:MEA:PUL:POWER?	Get UUT Power in Watts (0.0 to 3999 W)
U%?	Yes		:ATC:XPDR:PREP?	Get UUT XPDR % Reply (0% to 159%)
V	Yes		:ATC:DME:VEL	Set DME Veloci ty (0 to 9990 KTS)
V?	Yes		:ATC:DME:VEL?	Get DME Veloci ty (0 to 9990 KTS)
V.	Partial	Command accepted. No action is taken because the value is displayed on main screen.		Display DME Velocity

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
WN	Partial	Command is accepted. No action is taken. Use :ATC:MEAS:PUL:POS? for spacing measurement.	:ATC:MEAS:PUL:POS?	Set Narrow Tolerance Window
WW	Partial	Command is accepted. No action is taken. Use :ATC:MEAS:PUL:POS? for spacing measurement.	:ATC:MEAS:PUL:POS?	Set Wide Tolerance Window
X1	No			Set XPDR Mode 1
X2	No			Set XPDR Mode 2
XA	Yes		:ATC:XPDR:DBL:2:MOD 0 or :ATC:XPDR:ITABLE:1:MOD 0 or :ATC:XPDR:MOD 0	Set XPDR Mode A
XB	No			Set XPDR Mode B
XC	Yes		:ATC:XPDR:DBL:2:MOD 1 or :ATC:XPDR:ITABLE:1:MOD 1 or :ATC:XPDR:MOD 1	Set XPDR Mode C
XD	No			Set XPDR Mode D
XT	No			Set XPDR Mode T
XA1	Yes		See double mode	Set XPDR Mode AC1
XA2	Yes		See double mode	Set XPDR Mode AC2
XP	Yes		:ATC:XPDR:PUL:P1W :ATC:XPDR:DBL:1:PUL:P1W :ATC:XPDR:ITABLE:1:PUL:P1W	Set XPDR Pulse Width (0.10 to 1.95 μs in 0.05 μs steps)
XP0	Yes		:ATC:XPDR:PUL:P1W :ATC:XPDR:DBL:1:PUL:P1W :ATC:XPDR:ITABLE:1:PUL:P1W	Set XPDR Pulse Width to CAL
XP1	Yes		:ATC:XPDR:PUL:P1W :ATC:XPDR:DBL:1:PUL:P1W :ATC:XPDR:ITABLE:1:PUL:P1W	Set XPDR Pulse Width (0.10 to 1.95 μs)
XV	Yes	On the 1400A pulses will merge and create a single pulse when P2 set to -1.8us. On the 5000 the pulses do not merge completely.	:ATC:XPDR:PUL:P12S :ATC:XPDR:DBL:1:PUL:P12S :ATC:XPDR:ITABLE:1:PUL:P12S	Set P2/P3 Deviation (0. to 1.95 μs in 0.05 μs steps)
XV20	Yes		:ATC:XPDR:PUL:P12S :ATC:XPDR:DBL:1:PUL:P12S :ATC:XPDR:ITABLE:1:PUL:P12S	Set P2 Pulse Spacing to CAL

ATC-1400A	Supported	Comments	ATC5000NG Equivalent (or Similar)	Command description
XV2+	Yes		:ATC:XPDR:PUL:P12S :ATC:XPDR:DBL:1:PUL:P12S :ATC:XPDR:ITABLE:1:PUL:P12S	Increase P2 Pulse Spacing by Value set in “XV=X.XX”
XV2-	Yes		:ATC:XPDR:PUL:P12S :ATC:XPDR:DBL:1:PUL:P12S :ATC:XPDR:ITABLE:1:PUL:P12S	Decrease P2 Pulse Spacing by Value set in “XV=X.XX”
XV30	Yes		:ATC:XPDR:PUL:P13S :ATC:XPDR:DBL:1:PUL:P13S :ATC:XPDR:ITABLE:1:PUL:P13S	Set P3 Pulse Spacing to CAL
XV3+	Yes		:ATC:XPDR:PUL:P13S :ATC:XPDR:DBL:1:PUL:P13S :ATC:XPDR:ITABLE:1:PUL:P13S	Increase P3 Pulse Spacing by Value set in “XV=X.XX”
XV3-	Yes		:ATC:XPDR:PUL:P13S :ATC:XPDR:DBL:1:PUL:P13S :ATC:XPDR:ITABLE:1:PUL:P13S	Decrease P3 Pulse Spacing by Value set in “XV=X.XX”

D.2 1403DL Compatibility Command Set

D.1.1 AXN COMMANDS S-1403DL

AXN COMMANDS S-1403DL	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
AX3=MODE?	Yes		See Old Style Commands in Section E.3.	See command descriptions below
AX3=ON	No	Use AX3=S1403C Instead.		
AX3=S1403C	Yes			
AX3=ANTB=	Yes	AX3=ANTB=0.95 reports invalid arguments and caused GPIB bus to hang. Have to press the GPIB reset button to continue.		
AX3=ANTB=OFF	Yes			
AX3=ANTB=0.	Yes	AX3=ANTB=0. reports invalid arguments and caused GPIB bus to hang. Have to press the GPIB reset button to continue.		
AX3=ANTB?	Yes			
AX3=PPMG=	Yes			
AX3=PPMG?	Yes	AX3=PPMG=OFF, Returned 3:8, Expected 3:OFF		
AX3=BURST=ACS	Yes			
AX3=BURST=ACL	Yes			
AX3=BURST=ATC	Yes			
AX3=BURST=SEQ	Yes			
AX3=BURST	Yes			
AX3=RFLV=	Yes			
AX3=RFLV?	Yes			
AX3=PPULSE=OFF	No			
AX3=DI=SEQ;SEQ	Partial	The sequence is one interrogation in length.		
AX3=DI=ATC;SEQ	Yes	All parameters must be present		
AX3=EXMOD=OFF	No			
AX3=EXMOD=ON	No			
AX3=EXSYN=;0.	No			
AX3=EXSYN=;;OFF	No			
AX3=EXSYN=OFF	No			

AXN COMMANDS S-1403DL	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
AX3=P3=CAL	Yes			
AX3=P3?	Yes			
AX3=P4=CAL;CAL;CAL	Yes			
AX3=P4?	Yes			
AX3=P6=CAL;CAL;CAL	Yes			
AX3=P6?	Yes			
AX3=P6=;;	Yes	All parameters must be present		
AX3=SPR=ON;CAL	Yes			
AX3=SPR?	Yes			
AX3=P2=CAL	Yes			
AX3=P2?	Yes			
AX3=P4=VAR	Yes			
AX3=P4=CAL;; (-1.95 TO +1.95)	Yes	All parameters must be present		
AX3=P4=CAL; (0.20 TO 3.20)	Yes	All parameters must be present		
AX3=SEQ	Yes			
AX3=SQn=;;;	Yes	All parameters must be present		
AX3=SQn?	Yes			
AX3=SPR=ON;	Yes			
SMR=101	No			

D.1.2 S-1403DL COMPATIBILITY COMMAND SET

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
		C10/C20 COMMANDS		
Format	Yes	ASCII only	:ATC:MEA:DFORMAT	Sets format for numerical data returns.
S1403C	Yes			Switches to old-style command interpreter.
SCPI	Yes			Switches to new SCPI command interpreter.
SYSTEM:LANGUAGE S1403c	Yes			Switches to old-style command interpreter.
INTERROGATION:TRIGGER:BURST	Yes		:ATC:XPDR:ITABLE:BURST:START	Activates the BURST Function if enabled.
HCOPY	No			Performs screen dump out RS-232 Connector.
HCOPY:SDUMP	No			Performs screen dump out RS-232 Connector.
PSCREEN	No			Performs screen dump out RS-232 Connector.
		C10/C20 COMMANDS		
GENERATOR:STATE	Yes		:ATC:XPDR:START :ATC:XPDR:STOP	Enables/disables interrogation for specified antenna.
GENERATOR:STATE?	Yes		:ATC:XPDR:RF?	Returns the interrogation signal status for the specified antenna.
GENERATOR:LEVEL:OFFSET	Yes		:ATC:XPDR:ANTENNA:POWER :ATC:XPDR:ITABLE:1:POW :ATC:XPDR:DBL:1:POW	Sets or returns the RF vernier for the specified antenna
GENERATOR:LEVEL:OFFSET?	Yes	Minimal format differences For example: For a set value of -2.9 the unit returns -2.9 as expected. For a set value of -3 the unit returns -3.0, Expected -3	:ATC:XPDR:POW? :ATC:XPDR:ITABLE:1:POW? :ATC:XPDR:DBL:1:POW?	Sets or returns the RF vernier for the specified antenna
GENERATOR:TIME:OFFSET	Yes		:ATC:XPDR:ANT:TIM :ATC:XPDR:ITABLE:1:ANT:TIM	Sets or returns the ANT B interrogation signal position in µs from the ANT A
GENERATOR:TIME:OFFSET?	Yes		:ATC:XPDR:ANT:TIM? :ATC:XPDR:ITABLE:1:ANT:TIM?	Sets or returns the ANT B interrogation signal position in µs from the ANT A
GENERATOR:LEVEL	Yes		:ATC:XPDR:POW :ATC:XPDR:ANT:POW :ATC:XPDR:ITABLE:2:ANT:POW	Sets or returns the ANTB output level
GENERATOR:LEVEL?	Yes		:ATC:XPDR:POW? :ATC:XPDR:ANT:POW :ATC:XPDR:ITABLE:2:ANT:POW?	Sets or returns the ANTB output level
INTERROGATION:FUNCTION:ATCRBS	Yes		:ATC:XPDR:MOD 0	Starts ATC function.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
INTERROGATION:FUNCTION:ACS	Yes		:ATC:XPDR:MOD 2	Starts ACS function.
INTERROGATION:FUNCTION:ACL	Yes		:ATC:XPDR:MOD 4	Starts ACL function.
INTERROGATION:FUNCTION:SEQUENCE	Yes		:ATC:XPDR:ITABLE:1:MOD 6	Starts SEQ function.
INTERROGATION:FUNCTION:INTERLACE	No	Candidate for future implementation.	:ATC:XPDR:DBL:IRATIO :ATC:XPDR:DBL:1:MOD	Starts Interlace/Sets ATCRBS to Mode S interrogation ratio.
INTERROGATION:FUNCTION:INTERLACE?	Yes		:ATC:XPDR:DBL:IRATIO?	Returns ATCRBS to Mode S interrogation ratio setting.
INTERROGATION:FUNCTION:DI	Yes		:ATC:XPDR:DBL:1:MOD :ATC:XPDR:DBL:2:MOD	Starts DI/Sets both interrogation types.
INTERROGATION:FUNCTION:DI?	Yes		:ATC:XPDR:DBL:1:MOD? :ATC:XPDR:DBL:2:MOD?	Returns DI interrogation types.
INTERROGATION:FUNCTION:BURST	Partial	Burst count limited to max of 1000.	:ATC:XPDR:ITABLE:BURST :ATC:XPDR:ITABLE:BURST:COUNT	Starts Burst/Sets interrogation type and number.
INTERROGATION:FUNCTION:BURST?	Yes		:ATC:XPDR:ITABLE:BURST?	Returns Burst interrogation type and number setting.
INTERROGATION:FUNCTION:BURST:CONDITION ?	Yes		:ATC:XPDR:ITABLE:BURST?	Returns Burst function status.
INTERROGATION:FUNCTION:ATCMONITOR	Yes		:ATC:XPDR:TYPE 0 or :ATC:XPDR:TYPE 1	Starts ATC Monitor pulse function.
INTERROGATION:FUNCTION?	Yes		:ATC:XPDR:TYPE?	Returns active interrogation function with parameters.
INTERROGATION:P3	Yes		:ATC:XPDR:PUL:P13S :ATC:XPDR:DBL:1:PUL:P13S :ATC:XPDR:ITABLE:1:PUL:P13S	Sets P3 pulse level.
INTERROGATION:P3?	Yes		:ATC:XPDR:PUL:P13S? :ATC:XPDR:DBL:1:PUL:P13S? :ATC:XPDR:ITABLE:1:PUL:P13S?	Returns P3 pulse level setting.
INTERROGATION:P2	Yes		:ATC:XPDR:PUL:P12S :ATC:XPDR:DBL:1:PUL:P12S :ATC:XPDR:ITABLE:1:PUL:P12S	Sets P2 pulse level.
INTERROGATION:P2?	Yes		:ATC:XPDR:PUL:P12S? :ATC:XPDR:DBL:1:PUL:P12S? :ATC:XPDR:ITABLE:1:PUL:P12S?	Returns P2 pulse level setting.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
INTERROGATION:P4	Partial	Allows input of width up to 3.55, but maximum transmitted P4 pulse width is 2.75.	:ATC:XPDR:PUL:P145 :ATC:XPDR:DBL:1:PUL:P145 :ATC:XPDR:ITABLE:1:PUL:P145	Sets P4 pulse level, width and position (deviation).
INTERROGATION:P4?	Yes		:ATC:XPDR:PUL:P145? :ATC:XPDR:DBL:1:PUL:P145? :ATC:XPDR:ITABLE:1:PUL:P145?	Returns P4 pulse level, width and position settings.
INTERROGATION:P6	Partial	The pulse width range is limited to -0.5 and +1.45.	:ATC:XPDR:PUL:P165 :ATC:XPDR:DBL:1:PUL:P165 :ATC:XPDR:ITABLE:1:PUL:P165	Sets P6 pulse status (level), width and position (deviation).
INTERROGATION:P6?	Yes		:ATC:XPDR:PUL:P165? :ATC:XPDR:DBL:1:PUL:P165? :ATC:XPDR:ITABLE:1:PUL:P165?	Returns P6 pulse level, width and position setting.
INTERROGATION:P6:SPR	Partial	ATC5000NG will not disable SPR.	:ATC:XPDR:PUL:P1SPS :ATC:XPDR:DBL:1:PUL:P1SPS :ATC:XPDR:ITABLE:1:PUL:P1SPS	Sets SPR control and position.
INTERROGATION:P6:SPR?	Yes		:ATC:XPDR:PUL:P1SPS? :ATC:XPDR:DBL:1:PUL:P1SPS? :ATC:XPDR:ITABLE:1:PUL:P1SPS?	Returns SPR control and position setting.
REPLY:ATCRBS?	Partial	X pulse and Ident are not reported.	:ATC:XPDR:AREP? or :ATC:XPDR:CREP?	Returns Mode C reply altitude or Mode A reply identification.
REPLY:DELAY:FIRST?	Yes		:ATC:XPDR:DREP?	Returns reply delay for current function.
REPLY:JITTER?	Yes		:ATC:XPDR:JREP?	Returns Mode S format and data received in replies to ATC, ACS or ACL interrogations.
REPLY:MODES?	Yes		:ATC:RCV:LOG:DL?	Returns Mode S format and data received in replies to ATC, ACS or ACL interrogations.
REPLY:SPACING?	Partial	Must select F2 to get the spacing measurement.	:ATC:MEA:PUL:POS?	Returns reply pulse spacing in μs.
REPLY:TIMEOUT	Yes			Sets time limit for getting no reply in seconds.
REPLY:WIDTH?	Partial	REPLY:WIDTH? "ATC" functions properly. REPLY:WIDTH? "MODES" returns all zeros even with width displayed on unit.	:ATC:MEA:PUL:WID?	Returns width of reply pulses in μs.
		C30 COMMANDS		
REPLY:PERCENT?	Yes		:ATC:XPDR:PREP?	Sets percent reply through selected antenna for set type.
REPLY:PERCENT:CLEAR	Yes			Clears percent reply readings.
		C40 COMMANDS		

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
REPLY:DELAY?	Partial	REPLY:DELAY? "ATC" returns all zero if replies are from Mode S, and REPLY:DELAY? "MODES" returns all zero if replies are ATCRBS.	:ATC:XPDR:DREP?	Returns reply delay in µs.
REPLY:DELAY:CLEAR	Yes			Clears reply data (delay, jitter and pulse measurements).
		C50/C60 COMMANDS		
SQTR:ADDRESS?	Yes		:ATC:RCV:LOG:DL?	Returns squitter address.
SQTR:TAIL?	Yes		:ATC:RCV:LOG:DL?	Returns squitter tail number and country.
SQTR:COUNT:PERIOD	Yes			Sets period in seconds for counting squitters.
SQTR:COUNT:PERIOD?	Yes			Returns period setting in seconds for counting squitters.
SQTR:COUNT?	No		:ATC:RCV:LOG:DL?	Returns squitter count during set period for selected type.
SQTR:COUNT:CLEAR	Yes			Clears squitter count readings.
SQTR:TIME?	No		:ATC:RCV:LOG:DL?	Returns squitter time intervals in seconds and data in selected format.
SQTR:TIME:CLEAR	Yes			Clears squitter time readings.
SQTR:CAPTURE:CLEAR	Yes			Clears all squitter buffer entries.
SQTR:CAPTURE:CONDITION?	No			Returns capture buffer status.
SQTR:CAPTURE:STATE	Yes			Sets squitter capture state.
SQTR:CAPTURE:STATE?	Yes			Returns squitter capture status.
SQTR:CAPTURE:COUNT?	No			Returns number of entries in capture buffer and capacity.
SQTR:CAPTURE:FILTER	Yes			Sets squitter capture filter.
SQTR:CAPTURE:FILTER?	Yes			Returns squitter capture filter setting.
SQTR:CAPTURE:GET?	Partial	When setup to capture a specific squitter category the unit fails to return the data even if it is shown in the receiver summary.	:ATC:RCV:LOG:DL?	Returns squitter capture buffer data.
SQTR:CAPTURE:MODE	Yes			Sets capture buffer operation mode.
SQTR:CAPTURE:MODE?	Yes			Returns capture buffer operation mode.
SQTR:GROUPING:DF17	Yes			
SQTR:TIME:TIMEOUT	No	Candidate for future implementation.		Sets time limits in seconds for looking at squitter periods.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
SQTR:TIME:TIMEOUT:DEFAULT	Yes			Sets default time limits for looking at squitter periods.
		C71 COMMANDS		
INTERROGATION:TRIGGER:SOURCE	Partial	Only supports TRIGGEN option		Sets interrogation trigger source.
INTERROGATION:TRIGGER:SOURCE?	Yes			Returns interrogation trigger source setting.
INTERROGATION:TRIGGER:GENERATOR	Partial	Sending a value in seconds is not supported it must be set in Hz.	:ATC:XPDR:DBL:1:PRF :ATC:XPDR:ITABLE:PRF :ATC:XPDR:PRF	Sets internal trigger generator.
INTERROGATION:TRIGGER:GENERATOR?	Yes		:ATC:XPDR:DBL:1:PRF? :ATC:XPDR:ITABLE:PRF? :ATC:XPDR:PRF ?	Returns internal trigger generator setting.
		C72 COMMANDS		
INTERROGATION:SCOPE	Partial	Scope out cannot be turned off. Scope out is set to interrogation for any interrogation. If the command state is on, the value is set in the scope interrogation offset. If the command is off the command is discarded. Also there is only one scope interrogation offset.	:ATC:XPDR:SCOPE INTERR :ATC:XPDR:SCOPE:INTERR:OFFSET	Sets SCOPE TRIG OUT Connector pulse.
INTERROGATION:SCOPE?	Yes		:ATC:XPDR:SCOPE INTERR? :ATC:XPDR:SCOPE:INTERR:OFFSET?	Returns SCOPE TRIG OUT Connector pulse settings.
		C73 COMMANDS		
INTERROGATION:SYNC:OUT	No			Sets EXT SYNC OUT Connector output.
INTERROGATION:SYNC:OUT?	No			Returns EXT SYNC OUT Connector output setting.
INTERROGATION:SYNC:OUT:DEVIATION	No			Sets EXT SYNC OUT Connector pulse in µs from P1.
INTERROGATION:SYNC:OUT:DEVIATION?	No			Returns set EXT SYNC OUT Connector pulse position.
		C74 COMMANDS		
INTERROGATION:PPMG	Partial	Cannot set PPMG to off state. Sent INT:PPMG "MODES",1,4, Expected "1,4", Received "1,2".	:ATC:MEA:SET:PUL	Sets PPMG control for specified pulse.
INTERROGATION:PPMG?	Yes		:ATC:MEA:SET:PUL?	Returns PPMG control pulse setting for specified type.
		C75 COMMANDS		

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
INTERROGATION:MODULATION	No			Specifies Mode S modulation for selected antenna.
INTERROGATION:MODULATION?	No			Returns Mode S modulation setting for selected antenna.
INTERROGATION:PPULS	No			Sets prepulse status and position.
INTERROGATION:PPULS?	No			Returns prepulse status and position settings.
C76 COMMANDS				
INTERROGATION:SMENU:FORMAT	Yes		:ATC:XPDR:DBL:2:UF :ATC:XPDR:ITABLE:1:UF :ATC:XPDR:UF	Sets numerical format for sequence menu data.
INTERROGATION:SMENU:FORMAT?	Yes		:ATC:XPDR:DBL:2:UF? :ATC:XPDR:ITABLE:1:UF? :ATC:XPDR:UF?	Returns numerical format setting for sequence menu data.
INTERROGATION:SMENU:SET:ALL	Partial	INTerrogation:SMENu:SET:ALL "ZERO" worked as expected with the exception that 1 interrogation will remain on.		Modifies all sequence menus.
INTERROGATION:SMENU:GLOBAL:ADDRESS	Yes			Sets global transponder address.
INTERROGATION:SMENU:GLOBAL:ADDRESS?	Yes			Returns global transponder address setting.
INTERROGATION:SMENU:GLOBAL:APXOR	Yes			Sets global XOR mask.
INTERROGATION:SMENU:GLOBAL:APXOR?	Yes			Returns global XOR mask setting.
C79 COMMANDS				
ATC1400A:ATCRBS	Partial	Supports Mode A and C only.	:ATC:XPDR:MOD	Specifies ATCRBS mode.
ATC1400A:ATCRBS?	Yes		:ATC:XPDR:MOD?	Returns ATCRBS mode setting.
ATC1400A:RF	Yes		:ATC:XPDR:RF	Specifies RF output control.
ATC1400A:RF?	Yes		:ATC:XPDR:RF?	Returns RF output control setting.
ATC1400A:SCOPE	Yes	With Scope port 2 set to SYNC and 5000 set to sync on reply(TD), the 5000 has a pulse 2us after P3 of the interrogation.	:ATC:XPDR:SCOPE	Specifies scope sync position.
ATC1400A:SCOPE?	Yes	OK	:ATC:XPDR:SCOPE?	Returns scope sync position setting.
ATC1400A:MODE	Partial	Works with the exception that Double interrogation power range is limited to -20 to -90 dBm.	:ATC:XPDR:TYPE 1 :ATC:XPDR:DBL:1:MOD :ATC:XPDR:DBL:2:MOD	Specifies DI spacing in µs.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
ATC1400A:MODE?	Yes		:ATC:XPDR:TYPE? :ATC:XPDR:DBL:1:MOD? :ATC:XPDR:DBL:2:MOD?	Returns DI spacing setting.
ATC1400A:P123:WIDTH	Yes		:ATC:XPDR:PUL:PxW :ATC:XPDR:DBL:1:PUL:PxW :ATC:XPDR:ITABLE:2:PUL:PxW	Specifies pulse width in µs.
ATC1400A:P123:WIDTH?	Yes		:ATC:XPDR:PUL:PxW? :ATC:XPDR:DBL:1:PUL:PxW? :ATC:XPDR:ITABLE:2:PUL:PxW?	Returns pulse width setting.
ATC1400A:P2:DEVIATION	Yes		:ATC:XPDR:PUL:P125 :ATC:XPDR:DBL:1:PUL:P125 :ATC:XPDR:ITABLE:2:PUL:P125	Specifies P2 deviation in µs.
ATC1400A:P2:DEVIATION?	Yes		:ATC:XPDR:PUL:P125? :ATC:XPDR:DBL:1:PUL:P125? :ATC:XPDR:ITABLE:2:PUL:P125?	Returns P2 deviation setting.
ATC1400A:P3:DEVIATION	Yes		:ATC:XPDR:PUL:P135 :ATC:XPDR:DBL:1:PUL:P135 :ATC:XPDR:ITABLE:2:PUL:P135	Specifies P3 deviation in µs.
ATC1400A:P3:DEVIATION?	Yes		:ATC:XPDR:PUL:P135? :ATC:XPDR:DBL:1:PUL:P135? :ATC:XPDR:ITABLE:2:PUL:P135?	Returns P3 deviation setting.
		C81 COMMANDS		
SYSTEM:COMMUNICATE:SERIAL:RCI	No			Enables/Disables control through RS-232 Connector.
SYSTEM:COMMUNICATE:SERIAL:RCI?	No			Returns control status through RS-232 Connector.
SYSTEM:COMMUNICATE:SERIAL:ECHO	No			Enables/Disables RS-232 RCI echo.
SYSTEM:COMMUNICATE:SERIAL:ECHO?	No			Returns RS-232 RCI echo status.
SYSTEM:COMMUNICATE:SERIAL:DUMP	No			Sets RS-232 screen dump parameters.
SYSTEM:COMMUNICATE:SERIAL:DUMP?	No			Returns RS-232 screen dump parameter settings.
		C82 COMMANDS		
SYSTEM:COMMUNICATE:SERIAL:BAUD	No			Sets RS-232 baud rate.
SYSTEM:COMMUNICATE:SERIAL:BAUD?	No			Returns RS-232 baud rate setting.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
SYSTEM:COMMUNICATE:SERIAL:BITS	No			Sets number of RS-232 data bits per word.
SYSTEM:COMMUNICATE:SERIAL:BITS?	No			Returns RS-232 bits per word setting.
SYSTEM:COMMUNICATE:SERIAL:SBITS	No			Sets RS-232 number of stop bits per word.
SYSTEM:COMMUNICATE:SERIAL:SBITS?	No			Returns RS-232 number of stop bits per word setting.
SYSTEM:COMMUNICATE:SERIAL:PARITY	No			Sets RS-232 parity check.
SYSTEM:COMMUNICATE:SERIAL:PARITY?	No			Returns RS-232 parity check setting.
SYSTEM:COMMUNICATE:SERIAL:PACE	No			Sets RS-232 software handshake mode.
SYSTEM:COMMUNICATE:SERIAL:PACE?	No			Returns RS-232 software handshake mode setting.
SYSTEM:COMMUNICATE:SERIAL:CONTROL:RTS	No			Sets RS-232 hardware handshaking (pacing) mode.
SYSTEM:COMMUNICATE:SERIAL:CONTROL:RTS ?	No			Returns RS-232 hardware handshaking mode setting.
		C83 COMMANDS		
SYSTEM:COMMUNICATE:GPIB:RCI	No	Always Enabled		Enables remote control through S-1403DL GPIB.
SYSTEM:COMMUNICATE:GPIB:RCI?	Yes			Returns S-1403DL GPIB remote control status.
SYSTEM:COMMUNICATE:GPIB:ADDRESS	Yes			Sets S-1403DL GPIB address.
SYSTEM:COMMUNICATE:GPIB:ADDRESS?	Yes			Returns S-1403DL GPIB address.
		C84 COMMANDS		
SYSTEM:COMMUNICATION:ATC1400:CONTROL	No			Sets S-1403DL control relationship with ATC-1400A.
SYSTEM:COMMUNICATION:ATC1400:CONTROL?	No			Returns S-1403DL control relationship with ATC-1400A.
SYSTEM:COMMUNICATION:ATC1400:S1403:ADDRESS	No			Sets S-1403DL IFR BUS address.
SYSTEM:COMMUNICATION:ATC1400:S1403:ADDRESS?	No			Returns S-1403DL IFR BUS address setting.
		C85 COMMANDS		
SYSTEM:KEY:REPEAT	No			Sets S-1403DL keyboard control parameters, delay and rate.
SYSTEM:KEY:REPEAT?	No			Returns S-1403DL keyboard control settings.
		C86 COMMANDS		

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
SYSTEM:DATE	No			Sets current date (year, month, day).
SYSTEM:DATE?	No			Returns current date setting.
SYSTEM:TIME	No			Sets current time (hours, minutes, seconds).
SYSTEM:TIME?	No			Returns current time setting.
		C89 COMMANDS		
*IDN?	Yes		*IDN?	Returns identification, serial number and firmware versions.
*OPT?	No		*OPT?	Returns option code.
*RST	No		:ATC:RESET	Resets S-1403DL to default settings.
		S000 TO S999 COMMANDS		
INTERROGATION:SMENU	Yes		:ATC:XPDR:UF :ATC:XPDR:DBL:2:UF :ATC:XPDR:ITABLE:1:UF	Sets interrogation data for specific sequence menu.
INTERROGATION:SMENU?	Partial	When user address is specified, query returns actual address instead of "USER". For example: Sent: INT:SMEN 3,ON,"S",5,"#H2A345670123654","USER" Then INT:SMEN? 3,"N" Received 1,N,5,#H2971211,#H123456 Expected 1,S,5,#H2971211,USER Sent INT:SMEN? 3,"A" Received 1,A,#H2A971211123456 Expected 1,A,#H2A971211000000	:ATC:XPDR:UF? :ATC:XPDR:DBL:2:UF? :ATC:XPDR:ITABLE:1:UF?	Returns specific sequence menu interrogation data settings.
INTERROGATION:SMENU:BITS	Partial	Sent "INTerrogation:SMENu:BITS 0,1,16,"#HF581"" then "INTerrogation:SMENu:BITS? 0,1,64"" Received "#HF581000012345600" expected "#HF581000000000000"		Sets selected interrogation data for specific sequence menu.
INTERROGATION:SMENU:BITS?	Yes			Returns selected data bits value for specific sequence menu.
INTERROGATION:SCOPE:SMENU	No			Activates/deactivates SCOPE TRIG OUT Connector pulse for selected sequence menu.
INTERROGATION:SCOPE:SMENU?	No			Returns SCOPE TRIG OUT Connector pulse status for selected sequence menu.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
REPLY:SMENU?	Yes	Sent "REPLy:SMENu? 1,"N"" Received "N,16,#H0801234560654321654 32,#H5A5A5A" Expected "N,16,#H0123456065432165 4321" With 17.10.0601 software, the table sync is not set by default so you must set the sync by sending command :ATC:XPDR:ITABLE:SYNC (smenu_index+1)		Returns selected sequence menu reply data in set format.
REPLY:SMENU:BITS?	Yes	With 17.10.0601 software, the table sync is not set by default so you must set the sync by sending command :ATC:XPDR:ITABLE:SYNC (smenu_index+1)		Returns selected sequence menu reply data.
		T23 COMMANDS		
TEST:MTL:ANTENNA	No			
TEST:MTL:ANTENNA?	No			
TEST:MTL:START	No			
TEST:MTL:TIME?	No			
TEST:MTL?	No			
TEST:MTL:LEVEL?	No			
		T31 COMMANDS		
TEST:ELM:SETUP:RESERVATION:DELAY	No			
TEST:ELM:SETUP:RESERVATION:DELAY?	No			
TEST:ELM:SETUP:CLOSEOUT:DELAY	No			
TEST:ELM:SETUP:CLOSEOUT:DELAY?	No			
TEST:ELM:SETUP:UELM:SPACING	No			
TEST:ELM:SETUP:UELM:SPACING?	No			
		T32/T33 COMMANDS		
TEST:ELM:UP:SMENU	No			
TEST:ELM:UP:SMENU?	No			
TEST:ELM:UP:START	No			
TEST:ELM:UP?	No			
		T34/T35 COMMANDS		
TEST:ELM:DOWN:SMENU	No			
TEST:ELM:DOWN:SMENU?	No			
TEST:ELM:DOWN:START	No			

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
TEST:ELM:DOWN:ELM:RECEIVED?	No			
TEST:ELM:DOWN?	No			
GENERAL TEST MENU COMMANDS				
TEST:RUNNING	No			
TEST:STOP	No			
MS/MR COMMANDS				
MEMORY:STORE	No		:ATC:XPDR:SAVE	Saves current settings in selected memory slot.
MEMORY:CATALOG?	No			
MEMORY:LOAD	No		:ATC:XPDR:LOAD	Recalls settings from selected memory slot.
MEMORY:NAME	No			
MEMORY:CLEAR	No			
MEMORY:CLEAR:ALL	No			
MENU DISPLAY COMMANDS				
DISPLAY:CMENU	No			
DISPLAY:CURRENT?	No			
DISPLAY:SMENU	No			
DISPLAY:TMENU	No			
OLD STYLE COMMANDS				
VER?	No			
NEWPB?	No			
MLDECL?	No			Returns MLD option status.
SCPI	Yes			Switches to new SCPI command interpreter.
S1403C	Yes			Switches to old-style command interpreter.
ATC.	Yes		:ATC:XPDR:TYPE 0 :ATC:XPDR:MOD 0	Enables ATC function.
SEQ.	Partial	Will not turn off Burst mode.	:ATC:XPDR:TYPE 2 :ATC:XPDR:DBL:2:MOD 6	Enables SEQ function.
ACS.	Yes		:ATC:XPDR:TYPE 0 :ATC:XPDR:MOD 2	Enables ACS function.
ACL.	Yes		:ATC:XPDR:TYPE 0 :ATC:XPDR:MOD 4	Enables ACL function.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
INTLCE=	Yes		:ATC:XPDR:TYPE 1 :ATC:XPDR:DBL:IRATIO	Enables INTLCE function/Sets Mode S to ATCRBS ratio.
DI=	Partial	"DI=ACL,ACS" reports "Bad parameter string". It can be sent with the AX3= prefix, "AX3=DI=ACL,ACS".	:ATC:XPDR:TYPE 1 :ATC:XPDR:MOD	Enables DI function/Sets types of interrogations.
BURST=	Partial	Burst is limited to 1000.	:ATC:XPDR:TYPE 1 :ATC:XPDR:ITABLE:BURST:COUNT	Enables BURST function/Sets interrogation type-number.
BURST.	Yes		:ATC:XPDR:ITABLE:BURST:START	Activates BURST function.
MODE?	Yes		:ATC:XPDR:MOD?	Returns current test function and settings if applicable.
RFLV=	Yes		:ATC:XPDR:POW :ATC:XPDR:ITABLE:1:POW	Sets ANT A RF vernier level (dB).
RFLV?	Yes		:ATC:XPDR:POW? :ATC:XPDR:ITABLE:1:POW?	Returns ANT A RF vernier level (dB).
P4=	Yes		:ATC:XPDR:PUL:P145 :ATC:XPDR:DBL:1:PUL:P145 :ATC:XPDR:ITABLE:1:PUL:P145	Sets P4 (ACS/ACL) pulse level control, width and position.
P4?	Yes		:ATC:XPDR:PUL:P145? :ATC:XPDR:DBL:1:PUL:P145? :ATC:XPDR:ITABLE:1:PUL:P145?	Returns status of P4 pulse.
P6=	Partial	The pulse width range is limited to -0.5 and +1.45.	:ATC:XPDR:PUL:P165 :ATC:XPDR:DBL:1:PUL:P165 :ATC:XPDR:ITABLE:1:PUL:P165	Activates and sets P6 (SEQ) pulse level, width and position.
P6?	Yes		:ATC:XPDR:PUL:P165? :ATC:XPDR:DBL:1:PUL:P165? :ATC:XPDR:ITABLE:1:PUL:P165?	Returns status of P6 pulse.
P2=	Yes		:ATC:XPDR:PUL:P125 :ATC:XPDR:DBL:1:PUL:P125 :ATC:XPDR:ITABLE:1:PUL:P125	Sets P2 level control.
P2?	Yes		:ATC:XPDR:PUL:P125? :ATC:XPDR:DBL:1:PUL:P125? :ATC:XPDR:ITABLE:1:PUL:P125?	Returns P2 level control status.
P3=	Yes		:ATC:XPDR:PUL:P135 :ATC:XPDR:DBL:1:PUL:P135 :ATC:XPDR:ITABLE:1:PUL:P135	Sets P3 level control.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
P3?	Yes		:ATC:XPDR:PUL:P135? :ATC:XPDR:DBL:1:PUL:P135? :ATC:XPDR:ITABLE:1:PUL:P135?	Returns P3 level control status.
SPR=	Partial	ATC5000NG will not disable SPR.	:ATC:XPDR:PUL:P1SPS :ATC:XPDR:DBL:1:PUL:P1SPS :ATC:XPDR:ITABLE:1:PUL:P1SPS	Activates and sets SPR position.
SPR?	Yes		:ATC:XPDR:PUL:P1SPS? :ATC:XPDR:DBL:1:PUL:P1SPS? :ATC:XPDR:ITABLE:1:PUL:P1SPS?	Returns SPR status.
RPDLY?	Yes		:ATC:XPDR:DREP?	Returns UUT reply delay (µs).
SQTR?	Yes		:ATC:RCV:LOG:DL?	Returns UUT squitter period (seconds).
SQTR<type>?	Yes		:ATC:RCV:LOG:DL?	Returns Sequence Menu (1 to 16) status.
PRPLY?	Yes		:ATC:XPDR:PREP?	Returns UUT % reply (ANT A ATC, ANT A Mode S,ANT B).
APER?	Yes		:ATC:XPDR:PREP?	Returns UUT ANT A ATCRBS % reply.
SPER?	Yes		:ATC:XPDR:PREP?	Returns UUT ANT A Mode S % reply.
BPER?	Yes		:ATC:XPDR:PREP?	Returns UUT ANT B % reply.
ANTB=	No	The bottom channel is always enabled. See equivalent commands.	:ATC:XPDR:ANT:TIM :ATC:XPDR:ITABLE:1:ANT:TIM	Activates ANT B (µs from ANT A P1).
ANTB?	Yes		:ATC:XPDR:ANT:TIM? :ATC:XPDR:ITABLE:1:ANT:TIM?	Returns ANT B status.
SQADD?	Yes		:ATC:RCV:LOG:DL?	Returns squitter address.
PPULSE=	No			Activates prepulse (µs prior to P1).
PPULSE?	No			Returns prepulse status.
EXSYN=	No			Activates Ext Sync output and sets Ext Sync output position (µs from P1) or activates Ext Sync Input.
EXSYN?	No			Returns Ext Sync output and input status.
PPMG=	Partial	PPMG cannot be disabled.	:ATC:MEA:SET:PUL	Sets PPMG control for any reply pulse.
PPMG?	Yes		:ATC:MEA:SET:PUL?	Returns PPMG control status.
EXMOD=	No			Sets ANT A for Ext Mod input only.
EXMOD?	No			Returns Ext Mod input only status.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
BRF=	Yes		:ATC:XPDR:ANT:POW :ATC:XPDR:ITABLE:2:ANT:POW	Sets ANT B output (-dBm).
BRF?	Yes		:ATC:XPDR:ANT:POW? :ATC:XPDR:ITABLE:2:ANT:POW?	Returns ANT B output (-dBm).
BRFLV=	Yes		:ATC:XPDR:ANT:POW :ATC:XPDR:ITABLE:2:ANT:POW	Sets ANT B RF vernier level (dB).
BRFLV?	Partial	Minimal format differences For example: For a set value of -2.9 the unit returns -2.9 as expected. For a set value of -3 the unit returns -3.0, Expected -3	:ATC:XPDR:ANT:POW? :ATC:XPDR:ITABLE:2:ANT:POW?	Returns ANT B RF vernier level (dB).
SQ<nn>=	Partial	This command currently takes approximately 1 minute to complete.	:ATC:XPDR:UF :ATC:XPDR:DBL:2:UF :ATC:XPDR:ITABLE:1:UF	Programs Sequence Menu (0 to 999).
SQ<nn>?	Partial	Does not report the short long indication correctly	:ATC:XPDR:UF :ATC:XPDR:DBL:2:UF :ATC:XPDR:ITABLE:1:UF	Returns Sequence Menu (1 to 16) status.
DFSQ<nn>?	Partial	The 1403 and 5000 do not return the same number of characters. For example:The 1403 returns 3:S;0;41441;26455132 The 5000 returns 3:S;0;000041441;26455132	:ATC:RCV:LOG:DL?	Returns DF data for Sequence Menu (0 to 999).
DFSQT<nn>?	Partial	Does not report the short long indication correctly For example: DFSQT2? Returns "3:S" Expected "3:L".	:ATC:RCV:LOG:DL?	Returns DF type for Sequence Menu (0 to 999).
DFSQF<nn>?	Yes		:ATC:RCV:LOG:DL?	Returns DF number for Sequence Menu (0 to 999).
DFSQD<nn>?	Partial	The 1403 does not return the complete data for a long. For example: The 1403 returns 3:004432126 The 5000 returns 3:22150530062503102625031020	:ATC:RCV:LOG:DL?	Returns DF data for Sequence Menu (0 to 999).
DFSQA<nn>?	Yes		:ATC:RCV:LOG:DL?	Returns DF address for Sequence Menu (0 to 999).
SAVE	No		:ATC:XPDR:SAVE	Stores current settings in selected memory slot.
RECALL	No		:ATC:XPDR:LOAD	Recall selected memory slot stored settings.
SEQN=	No			Activates MENU Display with Sequence Menu (0 to 999).
CMENU	No			Activates MENU Display with C10 or C20 Control Menu.

S-1403DL COMMAND	SUPPORTED	COMMENTS	ATC5000NG EQUIVALENT (OR SIMILAR)	COMMAND DESCRIPTION
ERRM?	No			Returns error status.
MTL=	No			Starts MTL test.
STATMTL?	No			Returns MTL test status.
MTL?	No			Returns UUT MTL (-dBm).